DEVELOPMENT OF ENTRUST SHOPPING TO TRADITIONAL MARKETS APPLICATION BASED ON ANDROID

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ABSTRAK

Development of communication and information technology has grown rapidly and can help human daily activities. One of these activities is entrust shopping to traditional markets by utilizing communication technology like a short message or chat in the communication. But three problems were found the first problem is that consumers don't know information availability of shopping courier, the second shopping courier had trouble managing a shopping order, and third couriers have difficulty determining the route when will send the ordered item if you get more than one order. The three problems above obtained by conducting interviews and surveys to related parties in this shopping activity. The research was carried out by descriptive research method which is intended for phenomena what is currently available can be described. This development of entrust shopping to traditional markets application based on android to solve all three of these problems using the software development paradigm method using the waterfall method to regulate the stages of work to be carried out. Using the beta testing method where for the testing application to the user using a questionnaire to 10 respondents, concluded that this application software was built 70% of respondents totally agree with interface of this application, 80% of respondents totally agree that the application helps this shopping activity. 60% totally agree and 30% of respondents agreed that this application is easy to use.
Keywords: Communication Technology, Android, Traditional market, Waterfall, Chat, Maps

1. PRELIMINARY

Human activities in doing shopping are already a common and habitual activity, the use of smartphones in communicating and utilizing chat features and / or SMS short messages has been widely used. However, based on interviews and conducting question and answer conducted to parties directly related, also making direct observations in the field, it can be summarized that there is a problem that is the first consumer or shopping participant is not aware of the availability of couriers who offer shopping services, the second even couriers have difficulty managing their customer order lists, and the third in sending orders that are more than one courier ordering difficult to determine the chosen route. With the construction of the application, it is said that you shop to the traditional Android-based market, with the consideration that Android devices have many users. If according to a survey by a research institute from Nielsen in mid-2012, 67% of the total respondents involved were those who used smartphones. And it is predicted that there will be an increase in number with market enthusiasm. [1] So with this consideration is the construction of this application with the aim of achieving a solution to overcome the three diaatas issues mentioned. And to post the steps used for this problem, the descriptive research methodology is considered the most appropriate, because this research aims to make the phenomenon that is happening can be clearly described. With data collection methods with literature studies by studying library sources and reference books, journals and other research results. Also conduct interviews where this step is to conduct direct question and answer with related parties regarding the problem.

2. THEORETICAL BASIS

2.1 Application

The application is also called the term warakat application software, where the creation is required programming language written by the program maker or called the programmer forwards will be compiled with the compiler with a test into a code that can be read by a hardware machine, with some examples of application software such as processors word or letter, number calculation table, and media player. [2] Economically produced is a must of software, so high reliability is needed. [3] It was also stated that the application is software in helping work for computer users. [4] From several reference books, it is stated that the design of application software as a design that involves logic that will be made in the development of applications, then in other references involves data in the design stages.. Both statements are not wrong either, because the application of information systems is very vital for designing data, and for applications that are not information systems are often ignored. [5]

2.2 Smartphone

A smartphone is a cellular phone device or cellphone with a microprocessor, modem, screen, and also a memory smartphone is a cellular phone device or cellphone with a microprocessor, modem, screen, and also memory. And is a multimedia cell phone where the functionality of a personal computer is combined. Wherein there are also text short messages, cameras, access e-mails, search searches, entertainment media players, GPS (Global Positioning System) features, internet, games, and the most important thing is the telephone and the internet itself. [6] The statement was stated by William and Sawyer in his book entitled Using Information Technology: A Practical Introduction to Computers & Communications, which was released in 2011. Indeed rapid development, mobile smartphone technology if observed even its development is up to a matter of days. Connectivity, existing sensors, and other features also experience development. [7]

2.3 Android

The definition of android itself is a combination and / or collection of software that has the nature of open source which includes, among other things, the operating system, the Kuci application along with its API or Application Programming Interface, aiming to build mobile applications that produce views, functions and advantages of a mobile android device. [8] In the Android architecture there is also one of them, namely Android Runtime, which is so that applications can run and function properly wherein the process uses Linux implementations. [9]

2.4 Android Application Components

Programming with the Java programming language, is a programming language used for writing programming languages when building android applications. The Java code will be compiled with all the required files which later will be packaged by a tool called APT tools so that it will generate a file with an extension of the apk on the android package. The so-called APK file is an application that can later be installed on a mobile andoid device. [10]

2.5 Java Programming Language

Released and introduced formally in 1995, the public warmly welcomed the announcement of the presence of the Java language because with the internet era that was experiencing rapid progress. [11] The Java naming began with several people involved in the project from the Sun Micreosystem company named Java according to one type of coffee, namely Javanese coffee when they visited a coffee shop. Because at first this naming used the code name Green in 1991. [11] It can run on a variety of platforms and is easy to track as well as powerful, Java software is becoming very fast popular. Personal Computer (PC) based applications, based on Android and the web are some examples of applications built on this Java software. [12] Java can not only improve

pages from websites, it can also be used to build and develop an application. [13] Although actually on the web it requires web service technology, because there is no web attachment to any operating system and programming language. Then it can be used to make the application remain separate but still connected to each other like the system in one company, [14] and requires internet, implemented with XML or Extensible Markup Language. [15] It also aims to be able to provide information such as its owners and or organizations such as business organizations or individuals. [16] Can be run and functioned also on mobile phones or cell phones not only for various computers. [17] Web Service will send the data obtained in formats such as XML or JSON (Javascript Object Notation) because different size comparisons JSON has a small size compared to XML. [18] It is more important if the file size can be smaller for a web service, so that access to applications on mobile devices respond faster. [19] In handling data from JSON, PHP has a function that is json_decode. [20]

2.6 MySQL and SQL Language

Initially, MySQL aims to use one client, a database consulting company to develop web applications that it uses. [21] MySQL is not like other database processors like Oracle, which is commercial, MySQL has the same performance, speed in the process that is not inferior. [22]

2.6 Analisis Perancangan Berorientasi objek

For the sake of facilitating program design for programmers when designing programs, how are the shapes and relationships between objects to be modeled into a real system. Then the UML (Unified Modeling Language) modeling can be used to model the system because the approach is object oriented. Because the modeling language for software development and the system UML is the standard modeling language. [23]

In this UML there are several different diagrams that can be used to model software applications to be built. Some that are used are Use Case Diagrams, Activity Diagrams and Class Diagrams. Using the Use Case is to describe the functionality of the parts provided by this built system. [23] For examples of Use Case Diagrams can be seen in Figure 1 below :
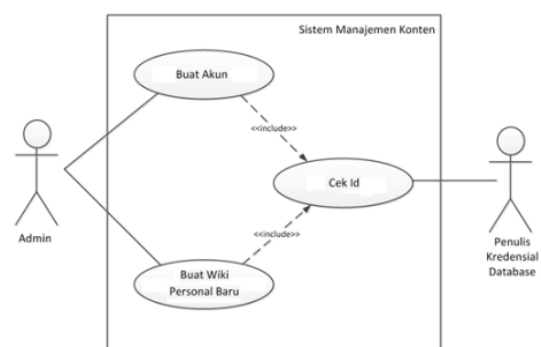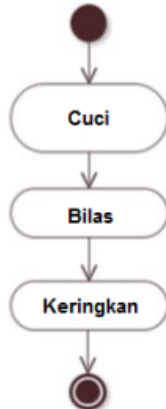

Figure 1 Use Case Diagram example [23]

In Activity Diagrams are more likely to express how the system built will achieve its objectives. [23] And as an example of Activity Diagram can be seen in Figure 2 below:

Gambar 2 Contoh Activity Diagram [23]

In the UML Class Diagram is also available, which serves to provide static and / or structural depiction of the system to be built. Its dynamic nature is the relationship between objects from the class in the diagram. [23] Examples of class diagrams can be seen in Figure 3 as follows:
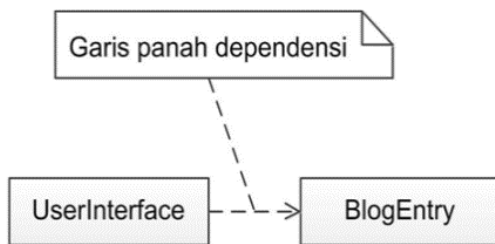

Figure 3 Class diagram example [23]

And the next is a sequence diagram in which there are interaction stages of the parts of the system to be built. In essence sequence diagrams describe effective steps in the sequences and stages of the event called events in an interaction. [23] Examples of sequence diagrams can be seen in Figure 4 below:
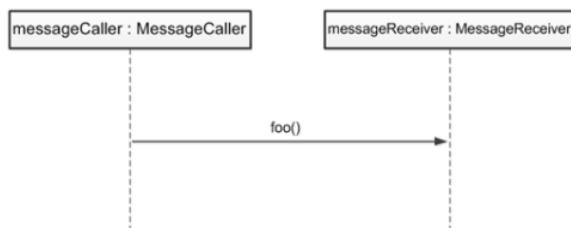

Figure 4 Sequence diagram example

For example the sequence diagram above shows method calls with horizontal arrows, given the method name including type, return type and parameters. The activation bar is when the object executes the method then a white bar is displayed below the lifeline object. [23]

3. RESEARCH METHODS

As mentioned earlier, the method used in this study is a descriptive research method, with the understanding that has been conveyed before. And for the software development method, it is a waterfall software paradigm. And in Figure 5 below are the stages of this software development, as follows
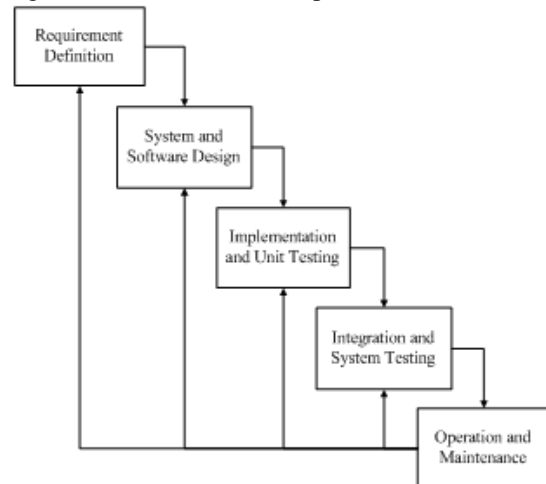

Figure 5 Waterfall Method Research Flow [24]

Data collection method in this research is the first by using literature study which is a method of data collection by studying from library sources such as reference books, other research results and related journals. And the second is by conducting interviews, where at this stage collecting data by conducting question and answer directly with relevant parties regarding the issues discussed.

And the stages in the application design that will be built can be seen in Figure 6. In the flow picture, a summary of the steps from the steps that have been carried out is also included. Where in the application design that will be built has systematic stages so that the development of the application is directed. The following are the steps:
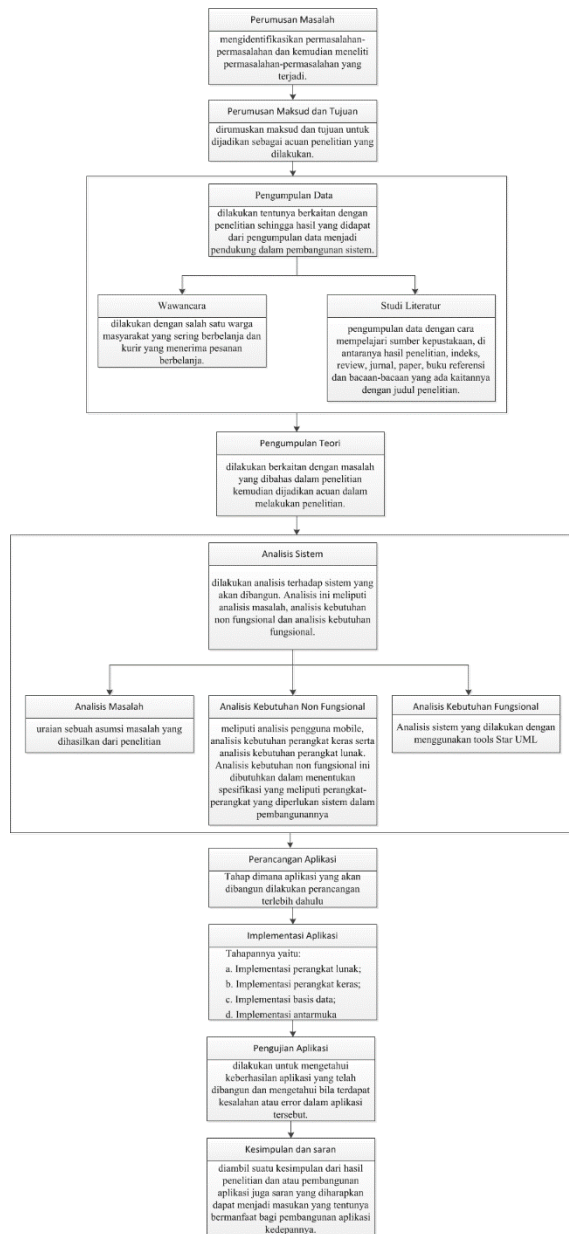
Figure 5 Stages of Application Design

4. RESULTS AND DISCUSSION

The main objective research is the result of solving the problems obtained. Also discussions related to various analyzes carried out, the modeling, design and implementation of the system being built. Then the steps taken along with the results of the testing of this research will be briefly presented.

The first is problem analysis, problem analysis obtained by evaluating the application to be built later. The problems obtained will be the background of the Application Development Request Shopping to Traditional Markets Based on Android. And here are the problems of the analysis that has been done,, among others:

1. Courier difficulties in managing who order and what are the details, especially when receiving orders from more than one order and each order more than 1 item.

2. Courier difficulties in arranging the route or flow of delivery of ordered goods when they have to deliver to more than one order.

3. The buyer does not know whether there is a courier in the vicinity of his residence actually also does not know whether the ordered goods are on the market or not.

The second is a similar application analysis, designed to analyze the flows and functionality that are in the same functionality as the software that will be built. Aiming also to choose which functionality and flow as what will be applied also to the system that will be studied based on the benefits generated from similar applications analyzed. And here are two similar applications that are analyzed, among others:

1. Go-Jek
   This Go-Jek application has indeed been widely used in various cities and districts in Indonesia. For this application there are several services such as Go-Food, Go-Ride, Go-Mart, Go-Shop and others..
2. Grab
   It can also be said that some services at Grab have similarities with Go-Jek, but Grab only provides three services, namely Grab Food, Grab Transport, and Grab Delivery.

Third is the analysis of the system that is running, which is a step in the steps of activities that explain anything, who is how the current process is done.

Based on the results of the interview with the person who will go to the market, the procedure for shopping for people to go to the market is as follows.
1. The customer wants to find or contact the person who will go to the market.
2. The customer needs to provide a shopping list via a short text message or chat to the courier who will go to the market.
3. Couriers who are entrusted shopping to the market are looking for their shopping and shopping is entrusted to the traders on the market.
4. Couriers who shop provide shopping information to shopping entrants such as total order prices.
5. Couriers who shop send groceries to consumers who buy shopping.
6. Courier who receives more than one order, will usually send an order to the customer who first ordered.

The fourth is non-functional needs analysis, which is an analysis that is needed to be able to determine the specifications of the needs of the system to be built. Covers the hardware and software needed to build until the built system is implemented. Where this also determines the input specifications needed by the system, the output produced is a desired output.

For analysis of hardware requirements, it is important because the process of analyzing the use of hardware that can run on the application to be built. And for the required hardware specifications can be seen in table 1 as follows.

Table 1 Minimum Specifications for Android Hardware Needs

Type	Specification
Memory RAM	512 Mb
Memory Internal	1 Gb
Processor	Dual Core

And for software requirements analysis, it is also important to build a system. Software is also an instruction to the hardware so that the system can interact between the two. For specifications, the software used can be seen in table 2 below:

Table 2 Software Requirements Specifications

Type	Specification
Computer Operating System	Microsoft Windows 7
Android Operating System	Android 4.1 (Jelly Bean)
Web Server	XAMPP 5.6.8
Browser	Google Chrome
Integrated Development Environment (IDE)	Android Studio
Text Editor	Sublime Text 3

Then the fifth is the analysis of functional needs which includes Use Case Diagrams. Class Diagrams, Activity Diagrams, and Sequence Diagrams. This is also a depiction of the process of activities that will be applied to the system, what are the needs needed for the system to run well.

1. Use Case Diagram
For identification of the use case of the system to be built, can be seen in figure 7 below:
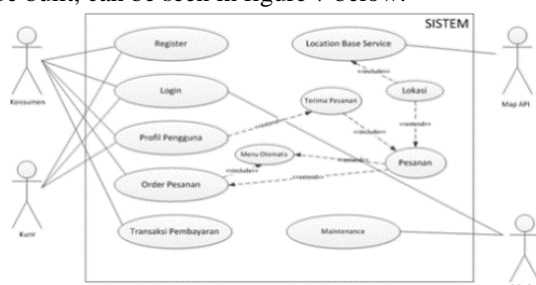

Figure 7 Use Case Diagram

And in table 3 below is an explanation of the use case identification of the system to be built, can be seen as follows.

Table 3 Use Case Diagram Identification

No	Use Case	Description
UC-01	Registrasi	Functionality to register account
UC-02	Login	Functionality to login account
UC-03	User Profile	Functionality for viewing and changing profile data
UC-04	Order	Functionality for managing orders
UC-05	Order Order	The functionality to order desired items
UC-06	Automatic Menu	Functionality to make requests to order goods automatically according to the system
UC-07	Payment Transactions	Functionality for making payments when ordered items have been received
UC-08	Receive Orders	Functions for couriers get orders from consumers
UC-09	Location Base Service	The system provides location information
UC-10	Location	The system displays the location of the consumer
UC-11	Maintenance	Admin is needed to carry out maintenance regularly or if an error occurs

2. Activity Diagram

Is a diagram that aims to describe the business process and workflow. And here is an example of a Login Activity diagram on a system that is built, can be seen in Figure 8 below:
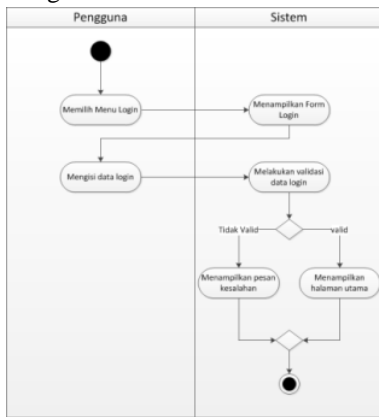

Figure 8 Activity Diagram Login

The sixth is the Relationship Scheme, this diomana is a series of relationships between two tabek and or more in a database system. For the relation scheme that is built in the software can be seen in Figure 9 as follows.
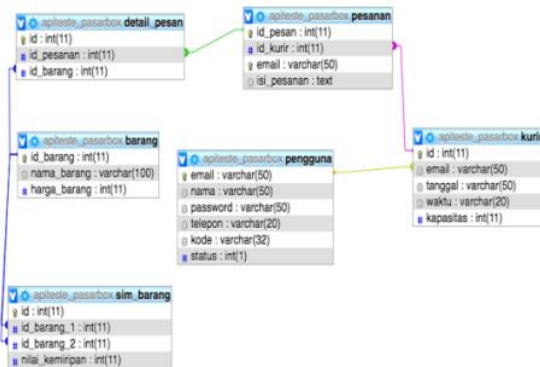

Figure 9 Relation Scheme

The seventh is the system architecture analysis of the system built, and can be seen in Figure 10 below:
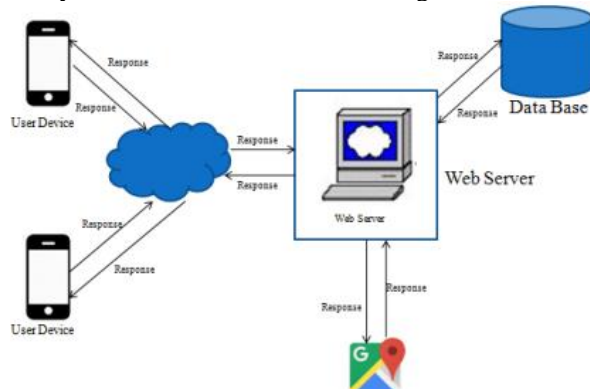

Figure 10 Analysis of System Architecture

The eighth is the design of the interface of the application to be built, and one example will be taken from the design of the home page display interface in which there are forecasts of menus from the application and all the content in the application, the home interface can be seen in Figure 11 below following.

Figure 11 Designing a Home Display

For the next, the ninth one is System Implementation, which aims to explain the manual to users who will use and utilize this built application. It can also provide input to developers who build applications for improvements that aim to make the system even better. In the implementation of the system there are several things that must be considered, among others:

1. Software Implementation, which is software that will run from the application system built.
2. Hardware Implementation, namely hardware or hardware that will be used to run from the application system that is built.
4. Data Implementation, namely the design based on previously created databases. Implemented using software that is MySQL.
5. Interface Implementation, which contains details of the displays that exist in the application software that is built which consists of the name of the interface or the file that represents it.

Until the last one is System Testing, testing the system functionally alpha and beta. First for the alpha testing using blackbox testing method that focuses on the functional of the software built. To find out if there was an error in its operation, the software's capabilities and the software's management. If testing the functionality of this system goes as expected, it can be said that the application made is correct. And to see the alpha testing scenario can be seen in table 4 as follows.

Table 4 Alpha Testing Plan

Test Class	Testing Points	Test Type
Login	Enter login data	Black Box

	Validation of login data	Black Box
Daftar AKun	Input registration data	Black Box
	Validation of registration data	Black Box
	Save registration data to the database	Black Box
Lupa Password	Data input forgets	Black Box
	Data validation forgot password	Black Box
	Save forgot password data to the database	Black Box
Daftar Kurir	Courier data input	Black Box
	Validation of courier data	Black Box
	Save the courier data to the database	Black Box
Titip Belanja	Enter data input	Black Box
	Validation of data	Black Box
	Save data entrusted to the database	Black Box

Then the second beta test, the test conducted aims to find out how far the application system is built. Beta testing is carried out to respondents who are called users of the application by collecting data using questionnaire methods. This questionnaire was given to ten respondents by giving four questions with an answer scale of 1 to 5.

Scale of answers to questionnaires and questions posed to respondents as follows.

1. Questionnaire Answer Scale
   SS   : Sangat Setuju
   S   : Setuju
   CS   : Cukup Setuju
   TS   : Tidak Setuju
   STS : Sangat tidak Setuju

2. Questions
   The following are the questions posed to the respondent:
   1. Menurut Anda, apakah aplikasi titip berbelanja ke pasar tradisional ini dari tampilan antarmuka menarik?
   2. Menurut Anda, apakah aplikasi titip berbelanja ke pasar tradisional ini bermanfaat dan membantu dalam kegiatan Anda?
   3. Menurut Anda, apakah aplikasi titip berbelanja ke pasar tradisional ini mudah untuk dipergunakan?
   4. Menurut Anda, aplikasi titip berbelanja ke pasar tradisional ini lebih baik dari aplikasi pesan antar serupa yang lainnya?

Based on the results of the questionnaire given to respondents as a sample, the percentage can be calculated using the formula:

$$rata - rata = \frac{total\ skor}{total\ responden}$$

And the following is the answer from the questionnaire given a score, can be seen in table 5 below:

Table 5 Questionnaire Answer Score

Answer Scale	Explanation	Score
SS	Sangat Setuju	5
S	Setuju	4
CS	Cukup Setuju	3
TS	Tidak Setuju	2
STS	Sangat Tidak Setuju	1

From the questionnaires that have been conducted, the following are the results of the quizers that have been filled in by 10 respondents as examples of the sample. Can be seen in table 6 below:

No.	Questions	SS	S	CS	TS	STS
1	Menurut Anda, apakah aplikasi titip berbelanja ke pasar tradisional ini dari tampilan antarmuka menarik?	7	3	0	0	0
2	Menurut Anda, apakah aplikasi titip berbelanja ke pasar tradisional ini bermanfaat dan membantu dalam kegiatan Anda?	8	2	0	0	0
3	Menurut Anda, apakah aplikasi titip berbelanja ke pasar tradisional ini mudah untuk dipergunakan?	6	3	1	0	0
4	Menurut Anda, aplikasi titip berbelanja ke pasar tradisional ini lebih baik dari aplikasi pesan antar serupa yang lainnya?	5	3	2	0	0

Based on beta testing, the conclusion that can be drawn is that the system that is built is easy to use, provides benefits and can help users in this shopping activity with the features provided by this built application, this is in accordance with the answers of the user respondents to the quiz questions given.

5. CONCLUSION

After doing analyzes, design and design, and also the implementation of the software design that was built. But suggestions are needed and very important for the improvement of software development for the future. The general conclusion can be summarized that the application can provide solutions and help overcome the three problems that arise and are discussed in the previous section. The results were obtained from the average respondent's answer from the 4 questionnaire questions given.

For applications, entrust shopping for traditional markets is still far from perfection, and certainly still has shortcomings. Then further development and / or improvement is needed. Suggestions that must be considered such as the application can accommodate direct chat between couriers and orderers, add categories of shopping items that can be ordered outside the specified category, and various other suggestions for improvement are even better.

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