The Design of Online Promotion System for Entrepreneur in Palembang City Based on Mobile Application

Abdul Haris DALIMUNTHE[1]*, Desi Windi SARI[2], Puspa KURNIASARI[3]

[1,2,3]*Sriwijaya University, Palembang, Indonesia*
*Corresponding author : harisdalimunthe@ft.unsri.ac.id

ABSTRACT

Online (electronic) promotion system is an alternative media for the entrepreneur in promoting their business. The design of an electronic promotion system based on mobile applications in Palembang city aims to create a special mobile application that can be used by business people in Palembang city who want to promote their business. This application displays business-specific profiles about ready products, ongoing promo, the event that will be held, quizzes that will be run, the employment opportunity and video that visualize their interesting business. So, make entrepreneurs easier to promote their business whenever and where ever. In design, this system refers to the method of V model Application design as a reference with doing the addition and modification for adjusting the design. Some tools that are used on design are Kipling analysis (5W+1H) and SOAR method in the planning stage, while UML 2.0 diagrams in the design stage. PHP programming language with CodeIgniter framework, Ionic, the Netbeans media editor, and Visual studio code are used as tools at the coding stage. The testing stage uses the black box testing method. The testing is finished, this application is published and can be used and helpful for the entrepreneur in Palembang city.

Keywords: system, mobile application, electronic promotion, entrepreneur

INTRODUCTION

In the world of economics and business, promotion is one of the most important elements that can guarantee the business is ongoing, successful and enduring. The promotion itself is an effort in marketing activities by giving information about a product that is produced by business actors to attract buyers or prospective customers to increase the sales figures and obtain Advantage [1]. Examples of promotions include: Product discounts, purchase one item get one free item, purchase some items get one free item and many more ways business actors are doing in promoting their products. Promotional electronics is one way of conducting promotional activities through electronic media such as TV, radio, and the Internet. The Internet has been regarded as one of the right media targets and serves as a means of communication with consumers, as well as an effort to attract the attention and interest of consumers in the product [2].

Entrepreneur needs for online promotional media (e-promotion) become the main driver to create an online promotion system that can be running on smartphones. The entrepreneur who becomes the original object of the design of this system domiciled in the city of Palembang. This application system is a system with a special application for the entrepreneur to promote their products and services. This application consists of various feature services which include promo, culinary, products, events, services, sale, job openings, etc. With this feature service, users can view various promotional information by category from the sale.

The purpose of this application is to create an online promotion system (electronic) for the entrepreneur in Palembang based on the mobile application. This application can be directly used and implemented for the entrepreneur in the city of Palembang. It is hoped that this application can improve the economic turnover of businesspeople in Palembang. The criteria for the designed system are:

Mobile applications based on a smartphone that starts on the Android system so that it can be accessed anytime and anywhere.

Attractive application display with color determination and symbol design.

There are menus or content to suit their needs.

The collected data will be presented in a well-structured system.

RESEARCH METHODOLOGY

The research method in designing electronic promotion systems based on mobile applications is the V model method as a reference to this design [3]. The figure below is a stage development method for this research.
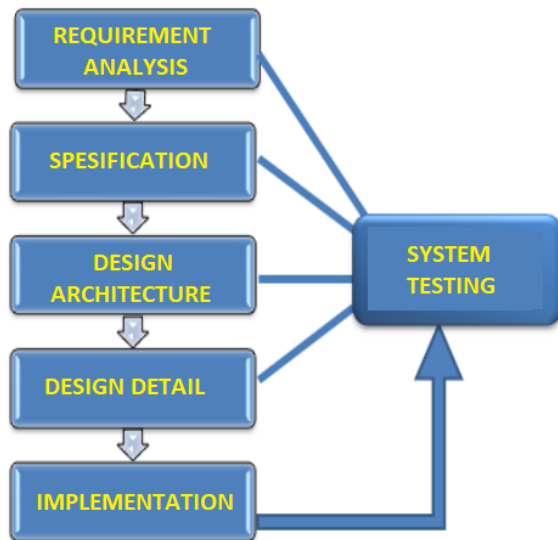
Figure 1. A stage development method

The processes carried out for each stage of the method in this research are :

1. Requirement Analysis
   Process : Conduct external and internal analyses related to the system.
   Results : Obtain the system analysis document.

2. Specification
   Process : Specifies the users involved with the system and what actions can be taken, as well as describing the system in diagrammatic form.
   Results : Produce specification documents in the form of diagrams.

3. Design Architecture
   Process : Determine the software, hardware, computer networks, hosting, domain and system security used to develop the system.
   Result : Produce a written document of the architectural design process.

4. Design Detail
   Process : Produces a document in the form of a user display design and a database table.
   Result : Generates a document in the design of user views and database tables.

5. Implementation
   Process : Implementing the design results of the display application and its functions into the programming language and database creation.
   Result : Special software that can be used by business actors in promoting their business.

6. System Testing
   Process : Testing the system with the black box testing method and testing the user with a questionnaire.

Results : Produce documents in the form of the black box and questionnaire results.

RESULTS AND DISCUSSION

Requirement Analysis

In the requirement analysis, system identification is related to the system internally and externally. Internal identification of the system to help identify those things then used the Kipling method (5W + 1H) [4]. Here's an explanation of the Kipling method of the system to be designed:

1. *What* - What systems will be designed ?
   The system to be designed is an online (electronic) promotion system for the entrepreneur in Palembang based on the mobile application. This system is a special application for businesses in promoting their business products and services.

2. *When* - When the system can be used ?
   This application can be used if the application is connected to the Internet.

3. *Who* - Who will use the system ?
   Entrepreneur or communities in the city of Palembang who need an electronic promotion system to promote their business or products.

4. *Where* - Where this system will be used ?
   This system will be used in the city of Palembang.

5. *Why* - Why the system was designed and developed ?

   The system of promotional information online as one of the alternative media promotions in Palembang city thus helping the entrepreneur in promoting their business. Promotional activities themselves are important in increasing the selling value for the entrepreneur so it is expected that the system helps in broadcasting information precisely and effectively.

6. *How* - How this system is designed ?
   This technology system is designed for mobile applications that use the Android platform, in addition to this system is also designed for website admins. Data on the system will be stored in the database. In the design of this system, some devices must be both software and hardware that support it. Users of this electronic promotional application system are entrepreneurs. Entrepreneurs can use their accounts to promote their business and products without first getting an admin review. From the admin, the site uses the website as a supervisor and controller on the system.

Next, identify the external system using the SOAR analysis method (Strengths, Opportunities, Aspirations, and Results).

Table 1. SOAR Analysis Method

Strength	Opportunities
1. The availability of experienced human resources in designing and developing applications. 2. Internet network access available. 3. The number of entrepreneurs and communities who are using smartphones.	1. Electronic promotion based on android is needed. 2. The number of entrepreneurs is increasing in the city of Palembang. 3. Many people want to know information about promotions. 4. The needs in the business sector are already connected to the internet network
Aspiration	*Result*
1. There is a special media for entrepreneurs to facilitate the promotion of their businesses. 2. Having a good information security system as an electronic promotion media.	1. Increasing the purchasing power of the public. 2. Increase business revenue. 3. A mobile application to promote products or services used by entrepreneurs.

SPECIFICATION

This stage also determines the specification of the electronic promotion system with the addition of mobile application-based partner features in Palembang with the help of UML Diagram 2.0 [5]. The diagram will explain how the system will operate and interact with elements present in the system in the form of diagrams.

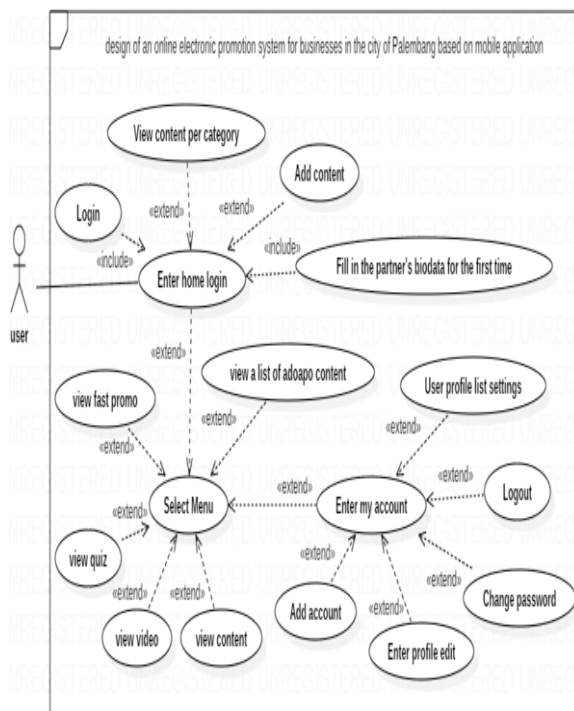*1.* Designing interactions between actors and systems actions

Figure 2. User Action Diagram of interaction to the system

2. Designing system Dynamic Behavior flow

The dynamic behavior flow of a system or system component through a control flow that illustrates generally between the actions that the user takes on the system.
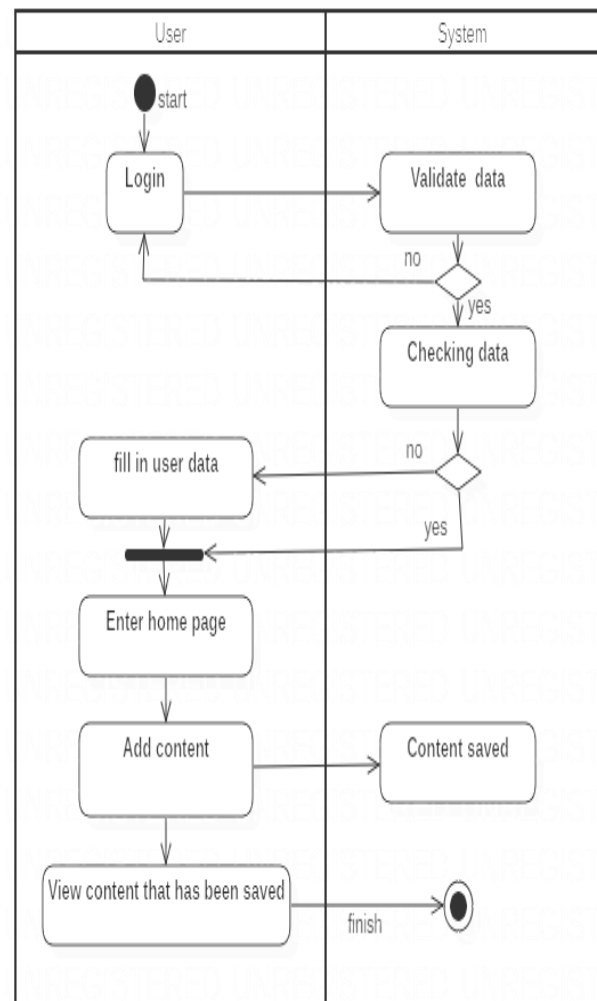

Figure. 3. User workflow diagrams against the system

DESIGN ARCHITECTURE

The following are specifications for determining *hardware, software*, and system security used:

Table 2. Hardware Specifications

No	Hardware	Specifications	Total
1	Laptop	DELL Processor Intel Core i3 Hardisk 219 GB Memory 6 GB Screen 14 inch	2 device
2	Smartphone	OS 5.1.1 lollipop, Memori internal 12GB 3GB RAM	2 device

2. Software

Software is an application that will be used in designing an electronic promotion system with the addition of mobile application based partner features in the city of Palembang,

Table 3. Software Specifications

| No.	*Software*	Applications
1	Web Browser	Mozzila, Chrome, etc
2	Operation System	Windows 7
3	DataBase	MySQL
4	Programming language	PHP, CSS 3, Javascript, HTML 5 dan Typescript
5	Frame Work	Code Igniter dan Ionic

3. Security System

The security system that used in this application is a token system, the way the system works is as follows: when the user doing the login process, the system will automatically change the user's in the form of tokens. To access each process on the system there will be a data token matching of the user's smartphone with the token data stored on the database. Tokens are created using the encryption of the SHA1 type code that will change every time the user login. This security system causes users not be able to log in on 2 (two) devices simultaneously.

1. Hardware

The following specifications are determination of hardware, software, computer network, hosting and domain as well as system security used :

ranging from software designing UML diagram to coding software.

DESIGN DETAIL

The design details stage will design the user's application display and will design the table of data structures that will be implemented in the database creation process [6].

1. User Interface Design

User interface design helps illustrate the display of mobile apps for system users. Here are some design results from the user interface.

Figure 4. Home design and select content categories display
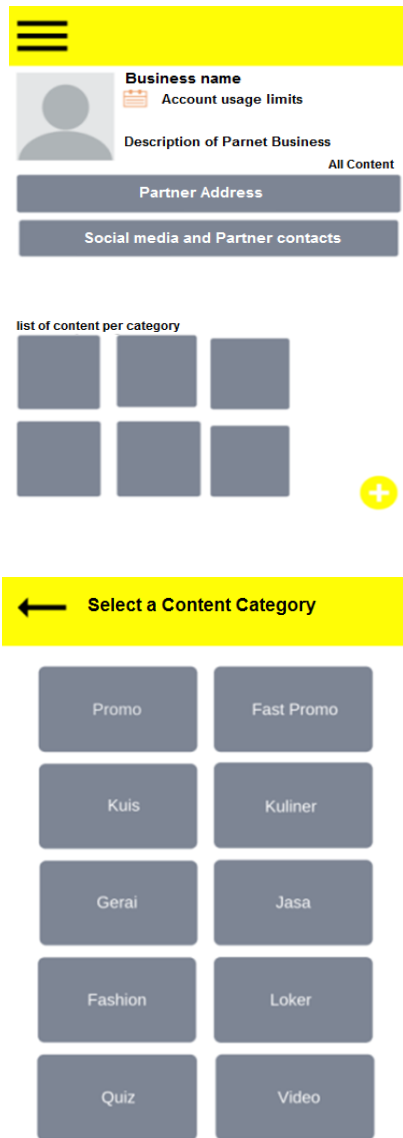
2. Database Design

The Database on this system uses a SQL database management system software [7]. The tables required on the electronic promotion system are Partner Table, Content Table, Table Categories, Fast Promo Tables, Quiz Table, Quiz Table Winners, Quiz Table Prizes, Video Partner Tables, Contact Table and Admin Table.
Here is the example of a partner table.

Table 4. Partner table on the database

No.	Field	Typed	Length
1.	Id	int	11
2.	Email	varchar	200
3.	Password	varchar	512
4.	Status	int	1
5.	Culinary	int	11
6.	Outlets	int	11
7.	Services	int	11
8.	Fashion	int	11

9.	Bussiness_Name	varchar	200
10.	Logo	varchar	70
11.	Contact	medium text	
12.	Description	medium text	
13.	Address	medium text	
14.	Latitude	medium text	
15.	Longitude	medium text	
16.	category_index	medium text	
17.	expired_date	varchar	10
18.	content_total	int	3
19.	content_max	int	11
20.	draft_total	int	11
21.	Token	varchar	512
22.	forget_password	int	1
23.	forget_password_code	varchar	8
24.	last_update	varchar	20

IMPLEMENTATION

At this stage, the output of the design detail stage of the user interface is implemented into the form of code in such a way using the programming language into a program that generates the system in a tangible form [8]. Here's an example of coding in application development:

Figure 5. Coding on the home page

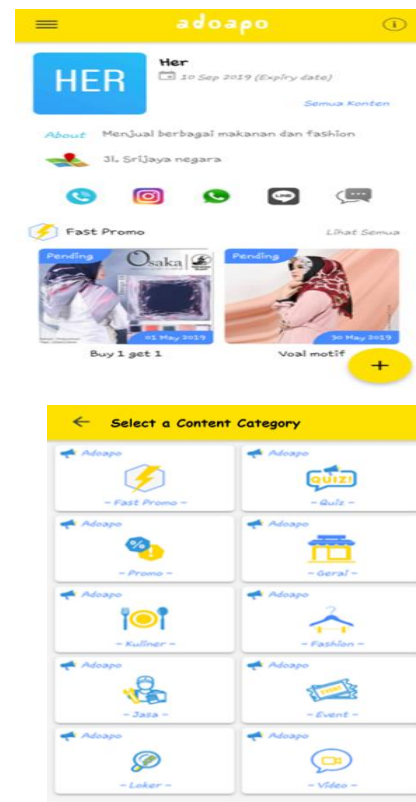Here are some displays of the coding results:

Figure 6. The Display of home page and select content categories

SYSTEM TESTING

Electronic promotion system testing with the addition of partner features is done by the black-box testing method that focuses on system functionality as well as testing on users who have registered business partners by filling out a questionnaire [9].

1. Black Box Testing

The following is an example table of several black-box testing scenarios.

Table 5. Black box testing functional login user

No	Scenario	Test Case	Hope	Result
1	It does not fulfill the entire field on the login page.	Username : not filled Password : not filled	The system rejects login to access and displays a warning result to complete the login data.	Valid
2	Fill in one of the fields on the login page.	Username: correct Password: not filled	The system rejects login to access and displays a warning result to complete the login data.	Valid
3	Fill in with registered username	Username : correct Password: correct	The system rejects login to access and displays a warning result to complete the login data.	Valid

2. User Testing

This test is carried out using a questionnaire and taking a sample of 20 entrepreneurs in the city of Palembang who have tried the previous system as respondents. The questions contained in the questionnaire are as follows:

1. Is this application suitable for the needs of promoting partner business?
2. Are the features and functions in the application easy to use?
3. Do you understand the overall workings of this application?
4. Does this application have an attractive design and display?
5. Does this application have good system security?
6. Does this application help you in promoting business and giving effect to your business?

Table 6. The results of the questionnaire percentage

Questions	Very Agree	Agree	Disagree	Strongly Disagree
1	75%	25%	0%	0%
2	65%	35%	0%	0%
3	55%	45%	0%	0%
4	45%	55%	0%	0%
5	45%	50%	5%	0%
6	45%	55%	0%	0%

After conducting the customer testing phase, it can be seen that this system is feasible to be used by entrepreneurs in promoting their products and services.

CONCLUSIONS

Based on the results of the design came the conclusion that has developed an electronic promotional system that can be used specifically by entrepreneurs in Palembang and operated on a mobile device based on Android. This application makes it easier for entrepreneurs to promote their business by publishing promo or content based on 10 categories that have been developed. The system has been tested based on the black box testing method and also users testing which 55% of respondents agreed that the system is beneficial for entrepreneurs in Palembang, even 45% are very agreed.

ACKNOWLEDGMENT

REFERENCES

[1]   Basu, Swastha. Introduction to Modern Business (translated), Third Edition.Yogyakarta, Liberty Yogyakarta. 2007.

[2]   Oetomo, B. S. D, Santoso, S. The Influence of the Web in Marketing Communication To Increase Online Consumer Attention and Interest (translated). Journal EKSIS, 8 (2):94-106. 2015.

[3]   Mathur S, Malik S. Advancements in the V-Model. International Journal of Computer Applications. Vol I: No 12. 2010.

[4]   Cooperrider, David L, Diana Whitney, Jacqueline M. Stavros. Appreciative Inquiry Handbook For Leaders of Change. Ohio: Crown Custom Publish, Inc. 2008.

[5]   Nugroho, Adi. Software Engineering Using UML and Java (translated). Yogyakarta, ANDI. 2009.

[6] Alan Dennis, Barbara Haley Wixom, David Tegarden. Systems Analysis and Design with UML Version 2.0. USA: John Wiley & Son. 2005.

[7]   Huda, Miftakhul dan Bunafit Komputer. Creating Database Applications with Java, MySQL, and NetBeans (translated). Jakarta: PT Elex Media Komputindo. Netben. 2010.

[8]   Abdullah, Rohi. Easily Create Android Applications with Ionic 3 (translated). Jakarta: PT Elex Media Komputindo. 2015.

[9]   Nidhra, Srinivas. dan Jagruthi Dondeti. 2012. Black Box and White Box Testing Techeniques. Internasional Journal of Embedded Systems and Applications (IJESA) Vol.2, No. 2

[10] Tim EMS. Android Programming in One Day (translated). Jakarta: PT Elex Media Komputindo. 2015

[11] Enterprise, Jubilee. Create a PHP Website with Codeigniter (translated). Jakarta: Elex Media Komputindo. 2015.

[12] Solichin, Ahmad. Web Programming with PHP and MySQL (translated). Jakarta: Budi Luhur. 2016.