Design and Development of Web based E-Commerce Application for Logo Sales “Tokologo” Using CodeIgniter

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Abstract

A logo can be considered as the main success factor of a company. It is not only the representation of a company vision but also can used to attract public attention. Hence, we develop an e-commerce application to simplify production process of the logo, i.e. by two bridging gaps between companies with logo designers and by properly maintaining reasonable pricing or production cost. We use the waterfall and the UML tools, implemented in the Codeigniter framework, for developing the application. Because both of them are still considered as the most reliable tools in the object-oriented system development. There are also several tests conducted in this work to ensure that the application can work properly according to our design purposes.

Keywords


Introduction

Recently, in the middle of increasingly fierce business competition, logo is one of the keys to a company's success, because with a proper logo, a company can get the attention of the public so that people want to know more about the company. To create a logo, the company or business entity must first find the logo designer and then pay the logo designer to create a logo for them.
However, the main issue in the logo creation is the difficulty of finding a designer to create a logo design. In addition to the above problem is the complexity of the cost reimbursement process that must be resolved by the company or business entity for the designer.

The latter happens because there is no standard price for the logo. In practice, the price is very often based on an agreement between the company or business entity looking for a logo with a logo designer. Sometimes from price agreements that result from disadvantaged parties. The logo designer is the party who often lost their reasonable profit because the agreed price is usually not comparable with the number of revisions to the logo that has been made. This situation is typical because the logo users will find the best logo for minimum price.

In this work, we try to avoid the situation mentioned before by developing an e-commerce application that can facilitate sales transactions and purchasing of logos in a better way. Hence, the companies or business entities which is looking for logos can easily obtain a logo without the need to have trouble finding a designer first. We called this “TokoLogo” e-commerce.

Currently, an electronic commerce (EC or e-commerce) is a very promising information technology application. It has revolutionizes supply chain management and has great potential for manufacturing, retailing, and operating services (Giao, 2020; Wagner, 2020; Zheng, 2020). The e-commerce itself is a process of running a business electronically for fulfill organizational or individual goals. The main components of the EC is the advertising and production of goods and services via the Internet (Wakid et al., 1999). This e-commerce application uses auction techniques in the sales and purchase process.

In this study, creating an e-commerce website for logo marketing using the PHP Codeigniter programming language combined with a MySql database. The advantage of using this framework is to speed up and simplify website development because the programming structure is very neat in terms of code and php file structure.

With the application, a company can determine the budgeted costs to pay for a logo, then designers who are interested in the logo search offer can offer a logo design that has been created based on the needs of the company and then determine the price themselves. Then the company only needs to purchase the logo he wants. If the company wants to make a revision of the logo he has bought, the company is given the opportunity to revise the logo 2 (two) times (Foroudi, 2019; Montserrat, 2018; Walsh, 2019). Making this application is
This work consist of five sections. The first section gives an overview of our motivation to do this work. The next section presents literature study which supports our work. In the third section, we explain our research method to develop our application. Some results showing the application performance are presented in the fourth section. Finally, we conclude our work in the fifth section.

Literature Review

A. Definition of Design and Development

a) Design

According Ladjamudin (2005) design is an activity that has the aim to design a new system that can solve the problems faced by companies obtained from the selection of the best alternative system. Design objectives among others, as a place to meet customer needs, business needs, and technical considerations formulated in a product or system. The design model provides details about software data structures, architecture, interfaces, and components. In addition, design models can be assessed for quality and improved before the code is generated and tests are carried out (Pressman, 2005).

b) Development

According to (RS Pressman, 2005) develop or developing a system is an activity that creates a new system or that replaces an existing system. Therefore, it can be concluded that design and development is an activity of designing and develop a new system that can solve the problems that have been analyzed previously.

B. Logo

According Rustan, (2013) defines that logos come from Greek, which is logos which means word, thought, speech of reason. The logo serves as a means to show self-identity and also a sign of ownership. Logos are also used to communicate information such as value and quality. There are 7 Reasons Why a Logo is Important (Wakid et al., 1999). First, Logo Grabs Attention, Attention spans are short these days, especially consumers’. A logo can quickly grab viewers’ attention and communicate a company’s core values in an interesting way. Second, It Makes a Strong First Impression, A logo is a company’s first introduction to consumers. If designed well, it can pique the interest of the public and invite them to
learn more about the company; if not, you’ve just alienated a potential customer base and basically tanked your business. Thirth, It's the Foundation of Your Brand Identity and Memorable, Logos are a point of identification because they are the symbol that customers use to recognize your brand (Bettels, 2019; Mahmood, 2019; Solomon, 2020; Tareen, 2020).

C. E-Commerce

According (Wong, 2013) e-commerce or electronic commerce is the buying, selling and marketing of goods and services through electronic systems such as radio, television and computer networks or the internet.

E-Commerce can be defined as any form of trade in goods and services carried out using electronic system media (Bruni, 2020; Gajewska, 2020; Xu, 2020). E-Commerce is an area that includes processes that are directly and indirectly related to buy, sell and trade products, services and information through computer networks, including the internet (Gunasekaran, 2002).

According (Block & Segev, 1996) suggest the following EC impacts on marketing:

a. Product promotion: EC enhances the promotion of products and services through direct, information-rich and interactive contact with customers.

b. New sales channels: EC creates a new distribution channel for existing products, owing to its direct support of research on customers and the bi-directional nature of communication.

c. Direct savings: The cost of delivering information to customers over the Internet results in substantial savings to senders (when compared with non-electronic delivery or delivery via VAN systems). Major savings are also realized in the direct delivery of digitized products (such as music and software) as compared to the costs of traditional delivery.

d. Reduced cycle time: The delivery time for digitized products and services can be reduced to seconds. Also, the administrative work related to physical delivery, especially across international borders, can be reduced significantly, reducing the cycle time by more than 90 percent.

e. Customer service: Customer service can be greatly enhanced by enabling customers to find detailed information online. (For example, FedEx allows customers to trace the status of their packages.) Also, intelligent agents can answer standard e-mail
questions in seconds. Finally, human expert services can be expedited using help-desk software.

D. Application

According (Supriyanto, 2005) is a program that has the activity of processing commands needed to carry out user requests with specific objectives.

The application is the result of the implementation of the design of a system that is translated into a particular programming language. The application was built to be able to facilitate certain jobs.

E. CodeIgniter

CodeIgniter is a powerful PHP framework with a very small footprint, built for developers who need a simple and elegant toolkit to create full-featured web applications (Raharjo, 2018).

Big reason to use CodeIgniter framework is its easy configuration. For this, you should only need to install this framework according to the configuration of your system. When you need to do programming on this framework, just start “config.php” and then, load the database, library, all arrays and save them immediately. There is no need to write the name of the database every time, but write once and use everywhere.

F. Waterfall Method

The waterfall method is a breakdown of project activities into linear sequential phases, where each phase depends on the deliverables of the previous one and corresponds to a specialisation of tasks (Roger Pressman, 2010).

G. Unified Modeling Language

According (Munawar, 2005) Unified Modeling Language (UML) is one of the most reliable tools in the world of object-oriented system development.

UML is a common language for business analysts, software architects and developers used to describe, specify, design, and document existing or new business processes, structure and behavior of artifacts of software systems.
Research Method

This research uses the waterfall method. This method is a systematic method and consists of five stages. The following are the stages of the waterfall method.

A. Requirements Definition

This stage aims to formulate and define user needs for making applications, so that application development can be carried out on target and produce applications that effectively solve existing problems. This stage, begins with an analysis of the needs in application development. The needs analysis consists of the following activities.

a. Study of Literature

Study of Literature is an activity carried out to obtain information needed in the design and construction of applications by studying the literature relating to the application to be designed and built. The literature used in this study is attached to the bibliography.

b. Observation

In designing the Tokologo application, observation and analysis of similar applications can be carried out to assist in the development and determination of features that will be designed for the Tokologo application. The draft observation plan that will be carried out in this study can be seen on the appendix page.

c. Interview

Interviews were conducted with a logo finder and a logo designer to obtain user needs for the application to be built. The draft interview to be used in this study can be seen on the attachment page.

B. System and Software Design

The stages allocate the requirements or system specifications that have been obtained by building the entire system architecture. Software design involves identifying and describing the abstractions of fundamental software systems and their relationships.

At this stage the system design is based on the results of defining the needs that have been obtained at the previous stage. The system design uses use Case diagram, Sequence Diagram, and entity relationship diagram.
C. System Implementation

At this stage, software design is realized as a series of programs or program units. Programming is done using the PHP programming language, HTML, CSS, and Codeigniter framework.

D. System Testing

Each program unit or program is integrated and tested as a complete system to ensure that software requirements are met.

E. Maintenance

This is the longest cycle phase. The application is installed and used practically. Maintenance involves correcting errors that are not found in the early stages of the life cycle, increasing the implementation of system units and improving system services when new requirements are discovered.

In addition, backups of application data are also performed to anticipate future data damage or loss. Data backup is done using online storage, and also uses an internal hard drive.

Result

A. Requirement Definition

Based on the results of the needs analysis obtained from literature studies, observations of similar applications, and interviews with users, it is formulated that the application to be built can carry out the following processes:

1. Perform a logo search based on needs and funds provided by the logo finder, make revisions to the logo, and make a purchase of the logo.
2. Perform logo sales, upload logos and upload the final logo file.

B. System and Software Design

At this stage the application design is done by referring to the results of the needs analysis that has been done. The design of the application is done using use Case diagrams, sequence diagrams, and entity relationship diagrams.
1) Use Case and Sequence Diagram

Based on the use case in Figure 1 the system has twenty cases, from three different users. The following is an explanation and description of the case in tokologo use case.

1. Case Cari Logo

Case Cari Logo is a case related to the process of starting a logo search by a logo searcher. The following is a scenario of the case search logo. This is cari logo scenario.

Actor : Pencari Logo
Description : Actors carry out the process of starting a logo search
Initial Conditions : Actor login
### Table 1 Case Cari Logo

<table>
<thead>
<tr>
<th>Actor’s Action</th>
<th>System Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Click the cari logo menu</td>
<td>2. Showing form determine budget</td>
</tr>
<tr>
<td>3. Fill out the form and press the save request button</td>
<td>4. Save the request</td>
</tr>
<tr>
<td>6. Fill the form description needs and click the save description button</td>
<td>5. Showing the needs description page</td>
</tr>
<tr>
<td>7. Save a description of needs</td>
<td></td>
</tr>
</tbody>
</table>

### Figure 2 Logo Scenario Sequence Diagram

#### 2. Jual Logo Case

Case is related to the process of offering the sale of a logo by a designer to a logo seeker. The following scenario is in Case selling logo. This is Jual Logo Scenario.

**Actor**: Desainer  
**Description**: Actors make sales offers for logo seekers who are looking for logos.

**Initial Conditions**: Aktor sedang login aplikasi, dan sedang berada pada halaman jual logo.

#### Table 2 Case Jual Logo Case

<table>
<thead>
<tr>
<th>Actor’s Action</th>
<th>System Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Click the view detail button on the logo search</td>
<td>2. Showing the description page of the logo search needs</td>
</tr>
<tr>
<td>3. Click the submit logo tab</td>
<td>4. Showing the submit logo form</td>
</tr>
<tr>
<td>5. Fill in the submit logo form, check the statement to understand and comply with applicable regulations, then click the submit button</td>
<td>6. Save the logo and showing the search room</td>
</tr>
</tbody>
</table>
2) Interfaces

Page Jual Logo Interface Design

This page is the page that appears when the logo designer clicks on the menu. This page is an interface created by referring to the Case Sell Logo. The following is the interface design of the sell logo page which can be seen in the image below.

Page “Determine Budget” Interface Design

This page is the page that appears when the logo searcher clicks on the search logo menu. This page is an interface created by referring to the Case Search Logo. The following is an interface design page set budget which can be seen in the picture below.
A. System Implementation

1) Jual Logo Implementation

It is a page that implements the logo sale interface design. The following picture is the implementation of jual logo.

Figure 6 Jual Logo Implementation

The process that occurs is to display all data from the logo search in progress and display it. The following is the jual logo code snippet.
2) Calculation Implementation

This page is a page that implements a budget-determined interface design. This page appears when the logo finder accesses the search logo menu. The following is an image of the implementation of determining the budget.

![Figure 8 Determine Budget Implementation](http://www.webology.org)
The process on this page occurs in the PencariLogo controller, which is the search_logo function. This function displays a view that contains a budget form and a logo search package option. After the logo searcher fills in the form and selects the package, and presses the save request button, it will perform the save_appointment function. The following is tentukan anggaran implementation code snippet.

```php
public function cari_logo()
{
    $datauser['pengguna']=$this->db->
>get_where('pengguna',
[ 'Email' =>
    $this->session->userdata('Email')])
>row_array();

    $cekdataakun['dataakun']=$this->db->
>get_where('pencarilogo',[ 'ID
Pengguna' =>
    $datauser['pengguna']['IDPeng
guna']]])->row_array();
    if ($cekdataakun['dataakun']!==NULL)
    {
        $cekpermohonan['pencarianlogo']=
$this->db->
>get_where('pencarianlogo',[ 'IDPeng
guna' =>$this->session->userdata('IDPeng
guna')])
>row_array();
        if (!$cekpermohonan['pencarianlo
go']['IDPengguna'])
        {
            $this->load
>view('PencariLogo/Header_Pen
cariLogo', $datauser);
        }else{
            $this->load
>view('PencariLogo/Header_Pen
cariLogo', $datauser);
        }
    }
}
```

Figure 9 Determine Budget Code Snippet

B. System Testing

Testing is done by referring to existing cases. there are twenty cases from three different users. The following are the results of application testing which can be seen in the table below.

<table>
<thead>
<tr>
<th>Goods Testing</th>
<th>Testing Detail</th>
<th>Output</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Login</td>
<td>Data is correctly inputted</td>
<td>Display Home</td>
<td>Accepted</td>
</tr>
<tr>
<td>Logout</td>
<td>Press the logout button</td>
<td>Display the Login Page</td>
<td>Accepted</td>
</tr>
<tr>
<td>Register</td>
<td>Data is correctly inputted</td>
<td>Display the Login Page</td>
<td>Accepted</td>
</tr>
<tr>
<td>Showing How It Works</td>
<td>Menu pressing the way it works</td>
<td>Shows the menu of how it works</td>
<td>Accepted</td>
</tr>
<tr>
<td>Selling Logo</td>
<td>Data is correctly inputted</td>
<td>Displays the search room page</td>
<td>Accepted</td>
</tr>
<tr>
<td>Display logo sold</td>
<td>Pressing the logo menu sold</td>
<td>Display the logo page sold</td>
<td>Accepted</td>
</tr>
<tr>
<td>Display logo offered</td>
<td>Pressing the logo menu offered</td>
<td>Displaying logo page offered</td>
<td>Accepted</td>
</tr>
</tbody>
</table>
| End Search         | Press the delete key                        | The selected search is no longer dis
played | Accepted   |
| Payment Confirmation | Press the payment confirmation button      | Confirmation Successful               | Accepted   |
| Remove Designer    | Press the delete key                        | Selected designer deleted             | Accepted   |
C. Maintenance

At this stage, maintenance of applications that have been built. Maintenance includes checking application features every 3 (three) months. If any damage is found to the application features after checking, it will immediately repair the application.

Conclusion

The design and development of e-commerce Application "Tokologo" logo sales are carried out by using the concept of object-based programming by using a codeigniter framework. Based on our test on the application we can achieve our design requirements as follows. First, the "Tokologo" logo sales e-commerce application facilitates the logo finder to describe the logo seeker's needs and desires when conducting a logo search, so that the logo offered later by the logo designer will be in accordance with the wishes and needs of the logo seeker. Second, it also facilitates the logo finder to describe the logo seeker's needs and desires when conducting a logo search, so that the logo is offered later by the logo designer will be in accordance with the wishes and needs of the logo seeker.

References


