

# Web-based Food Delivery Management System

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**Abstract**— The process of ordering meal in an organization is still using a conventional system or in other words, the civitas organization must come to the cafeteria to order the desired menu. The conventional system uses paper to order recording process. So the problem happens repetitively, such as redundancy of order data, lack of good data report, and also stacking of order notes. This study aims to build a web-based food delivery in the organization environment which focuses on the admin (=the representative who manages all accounts and transaction data in the system) and financial section. Web application eatime! is built by using the iterative incremental methodology and uses the MVC concept that utilizes the PHP programming language with CI framework and MySQL database. The application is expected to provide the ease of organization in the process of ordering delivery food with several features available, such as food orders, the search of food menu, view balance, recap history of purchase and sale transactions, and print of the sales transaction history report. Usability tests performed on this application are using the McCall method to know the quality of web application eatime!.

**Keywords**—iterative incremental, Mc Call, Web-based Food Delivery Management System

## I. INTRODUCTION

INTRODUCTION In general, an organization located in a big city area has a canteen. The cafeteria that has many sellers is usually separated from the main building where the civitas organization works. The far position of the canteen from the workplace sometimes makes the civitas organization discouraged to go to the cafeteria; moreover, the canteen does not have enough space to accommodate them at break time. Also, time-consuming jobs also become one of the reasons why they cannot go to the cafeteria. Online order delivery service is the right solution to solve the problem. eatime! is the application of Android-based food delivery solution in the organization environment. The development of this application aims as a medium of ordering and delivering of food and processing of order transaction history and storage of information data to provide convenience to the organization members in ordering food and the sellers in recording the history of sales transactions. By using this application it is expected to provide the ease of organization in the process of

ordering delivery food with several features available, such as order food, search the menu, view the remaining balance, recap the history of order transactions, and print report order transaction history. eatime! is a startup business built to work with organizations, where this is a unique value proposition from eatime!. It is different from the others, eatime! focus more on the organization environment.

## II. BASIC THEORY AND METHODOLOGY

### A. CodeIgniter Framework

CodeIgniter is one example of an existing PHP framework. CodeIgniter is an open source web application framework for PHP programming language. CodeIgniter has many features that make it different from other frameworks. Unlike some other PHP frameworks, the documentation for CI is very complete, covering all aspects of the framework. CodeIgniter is also capable of running on a Shared Hosting environment because it has a very small size, but has a very remarkable performance [1].

### B. MVC (Model View Controller)

MVC is a pattern or programming technique that separates application developers based on major components of an application, such as data manipulation, user interface and parts that become application controls [1]. There are three types of components that build MVC pattern:

- 1) *Models*, related to data and database interactions. It usually deals with SQL query commands.
- 2) *View*, related to everything that located in the end-user. Usually a web page.
- 3) *Controller* is a link between model and

### view. C. Iterative and Incremental Methodology

The iteration process begins with a simple implementation of a subset of software requirements and iteratively develops and upgrades until the system as a whole is implemented. At each iteration, design modifications are made and added with new

functionality. The basic idea behind this method is to develop a system through iterative cycles in a shorter time (incremental) [4]. The concept of iterative and incremental methodology consists of several phases, including [2]:

1) *Inception phase*, that creates a plan by identifying the scope, risk analysis, and requirement to minimize the occurrence of errors in the future.

2) *Elaboration phase* that describes the system to meet non-functional requirements.

3) *Construction phase*, that is done gradually by filling out software that is originally still in the form of architectural design with production code that has been prepared to result from analysis, design, implementation, and testing functional requirements to be distributed to the user.

4) *Transition phase*, that introduces products that have been generated to the user and testing user acceptance.

#### D. Usability Testing

The McCall method is a method used by the research to measure the quality of the web service app eatime!. According to McCall's rule, how to measure attribute quality is arranged hierarchically, where the lower level is called a criterion, and the upper level is called a factor. Viewed from the user point of view, factors show product quality attributes. While the criteria is a parameter of product quality seen from the software point of view. These factors are the factors of determination of usability, correctness, reliability, and efficiency [3]. The formula is:

$$F_a = w_1.C_1 + w_2.C_2 + \dots + w_a.C_a$$

Note:  $F_a$  is the total value of factor  $a$ ;  $w$  is the weight that depends on the product and the interest;  $c$  is a metric that affects the software quality factor. The total value multiplied by 100% with the terms weighted value in percent is as follows [4]:

|           |               |
|-----------|---------------|
| 80 - 100% | = Very Good   |
| 50 - 79%  | = Good Enough |
| 0 - 49.9% | = Less Good   |

### III. RESULTS AND DISCUSSION

#### A. Inception Phase

1) *Identification of Actors*: There are three actors associated with admin eatime! and the financial organization division section, namely the civitas organization, sellers, and prospective partners.

TABLE I. IDENTIFICATION ACTORS

| No | Actor | Description  |
|----|-------|--|
| 1. | Admin | Actor who manages all accounts and all transaction data contained in the system. |

TABLE I. CONT.

|    |                                 |  |
|----|---------------------------------|--|
| 2. | Financial Organization Division | Actors who have access rights to manage data relating to the financial organization division such as manage data civitas organizational and seller, and manage the benefits balance. |
| 3. | Civitas Organization            | The actor who has the right to access an order transaction on the application.   |
| 4. | Seller                          | The actor who has access rights to manage data related to the seller such as confirmation of organizational civitas orders and demand for seller balance disbursement.               |
| 5. | Prospective Partner             | The actor who performs registration of organizational data.  |

2) *Identification of System Requirements*. The system requirements that have been obtained for admin eatime! consist of managing master data, managing request top-up balance, managing seller's balance disbursement, managing transaction history top-up, and viewing organization rank. While the system requirements for the finance organization division consist of managing profile, managing civitas organizational and sales data, managing request benefit balance, viewing civitas organization, and seller rank, and managing transaction history orders.

#### B. Elaboration Phase

1) *Use Case Diagram*. In the next page, Figure 1 illustrates all the functionality or activities that can be performed by the admin and the finance organization division of the web app eatime! admin and finance organization division.

2) *Deployment Diagram*. Diagram used to describe the hardware and software components is used and interlocked with each other. In the next page, Figure 2 is a deployment diagram created for the app eatime! which describes what components are needed for accessing the application.

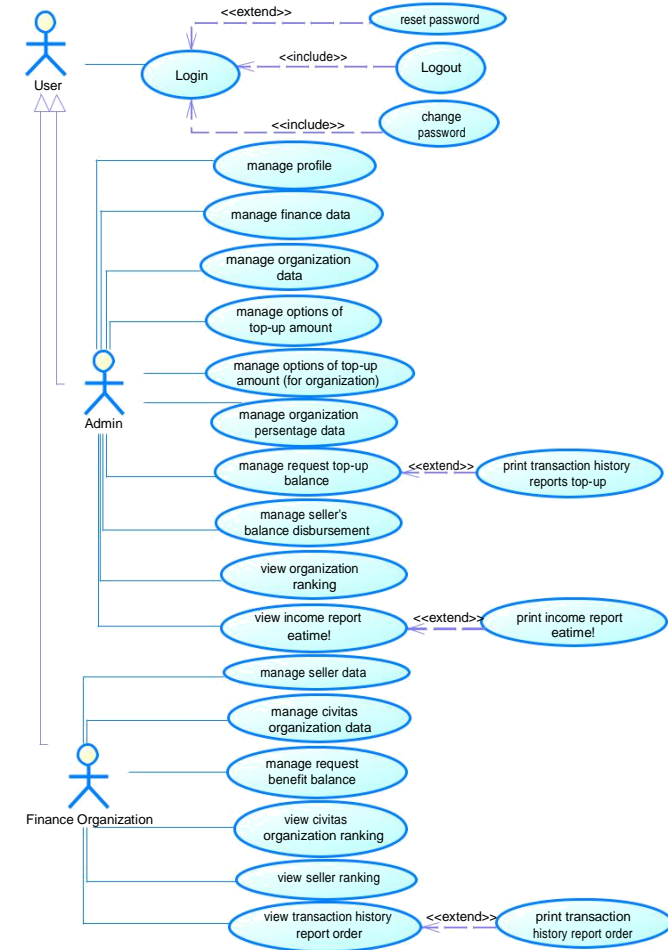


Fig. 1. Use case diagram

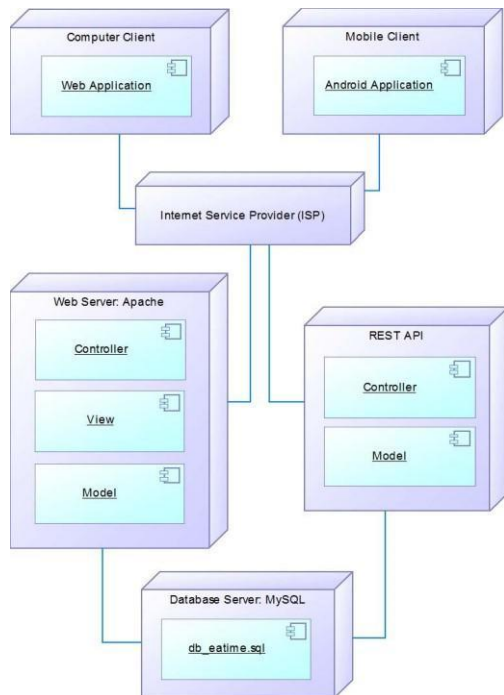


Fig. 2. Deployment diagram

### C. Construction Phase

1) *Implementation.* At this stage it will be explained what components are used in the web app development eatime!. The components are class/file. phpMyAdmin is used for data implementation on MySQL database. In Figure 3 is a data implementation in the form of tables required by the app eatime!.

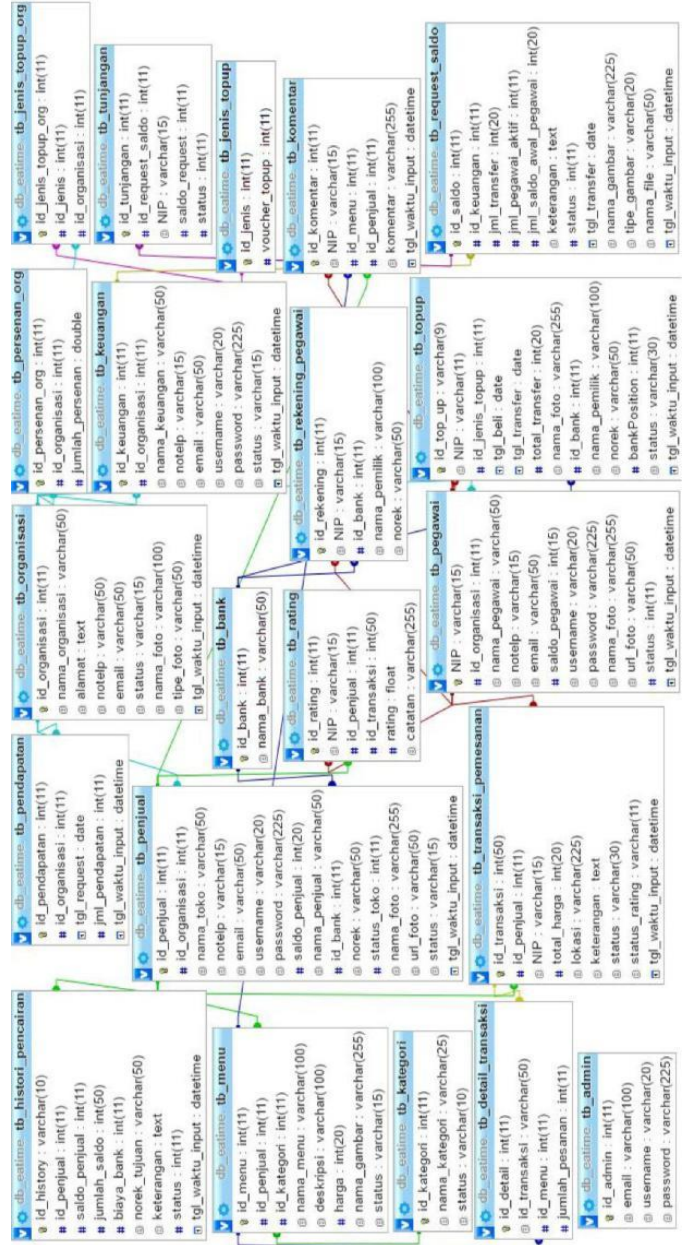


Fig. 3. Implementation of data eatime!

2) *The result of The Application.* Here are some results of the functional display of web app eatime! which has been successfully developed:



Fig. 4. Home page website eatime!

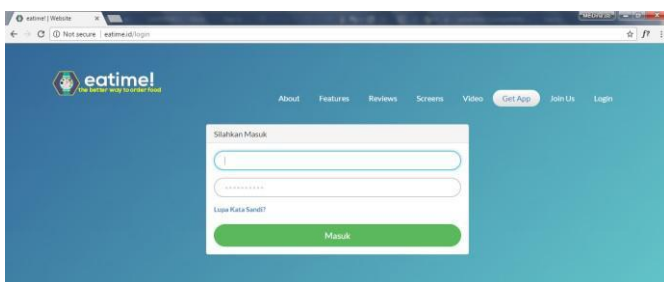


Fig. 5. Login page eatime!

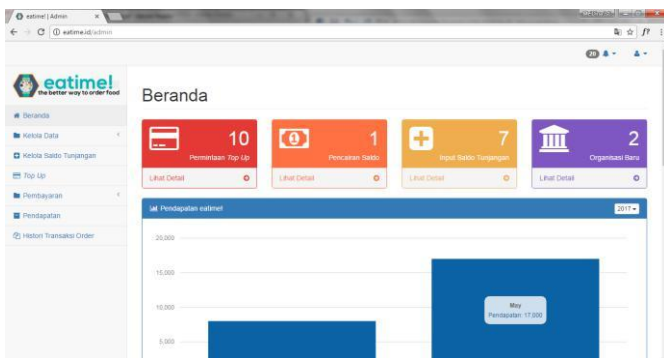


Fig. 6. Dashboard page admin eatime!

#### D. Transition Phase

In this phase it is discussed about the experiments conducted on the web app eatime!. In addition to using black-box testing, researchers also do usability testing. The usability testing is done directly by the respondent as an application user and the application is tried by accessing the website <http://eatime.id>. Data collection is done on May 28, 2017, with the total of respondents web app eatime! admin is seven people where the respondents are the students who are competent in programming, and for the web app eatime! The financial organization division there are seven respondents as well, where the respondents are the students of Telkom University. By determining the average value of each criterion, the

software quality assessment results obtained from each web app eatime! are shown in Table II-III.

TABLE II. RESULT OF MEASUREMENT QUALITY WEB APP EATIME! ADMIN

| No. | Factor      | Weight | Criteria  | Weight | Value |
|-----|-------------|--------|---|--------|-------|
| 1.  | Usability   | 0.4    | Display web applications is easy to use   | 0.2    | 4.14  |
|     |             |        | Menu Label in the application is clear and easy to understand   | 0.2    | 3.86  |
|     |             |        | Applications can provide convenient way to obtain related information to data management                                      | 0.2    | 4.29  |
|     |             |        | Applications can provide easy admin view to manage data and top up balance transactions, also disbursement of seller balances | 0.2    | 4.43  |
|     |             |        | The application is easy to understand   | 0.2    | 4.14  |
| 2.  | Correctness | 0.3    | The application has the suitability color of writing with the background  | 0.3    | 4.14  |
|     |             |        | The application has consistency in writing size   | 0.2    | 4.29  |
|     |             |        | The application has consistency in the size and shape of buttons  | 0.3    | 4.29  |
|     |             |        | Available features run well   | 0.2    | 4.14  |
| 3.  | Reliability | 0.1    | Data and information are shown accurately   | 1      | 3.57  |
| 4.  | Efficiency  | 0.2    | Functions add, change, and delete or manage data runs well  | 1      | 4.14  |

After being calculated, the total value of quality obtained for the web app eatime! admin is 82.32% and includes a very good predicate.



TABLE III. RESULT OF MEASUREMENT QUALITY WEB APP EATIME!  
FINANCIAL ORGANIZATION DIVISION

| No. | Factor      | Weight | Criteria   | Weight | Value |
|-----|-------------|--------|--|--------|-------|
| 1.  | Usability   | 0.4    | Display web applications easy to use   | 0.2    | 4.14  |
|     |             |        | Naming menus in the application is clear and easy to understand  | 0.2    | 4.14  |
|     |             |        | Applications can provide convenience in obtaining information related to organizational data management and seller | 0.2    | 4.29  |
|     |             |        | Applications can provide the ease of the financial section in order history of order transaction                   | 0.2    | 4.00  |
|     |             |        | Use of the app is easy to understand   | 0.2    | 4.00  |
| 2.  | Correctness | 0.3    | Has the suitability of using the color of writing with the background  | 0.3    | 4.14  |
|     |             |        | Has consistency in writing size  | 0.2    | 4.00  |
|     |             |        | Have consistency in the size and shape of buttons  | 0.3    | 4.14  |
|     |             |        | Available features run well  | 0.2    | 3.86  |
| 3.  | Reliability | 0.1    | Data and information showed accurately   | 1      | 3.86  |
| 4.  | Efficiency  | 0.2    | Function added civitas organization data runs well   | 1      | 4.29  |

After being calculated, the total value of quality obtained for the web app eatime! financial organization division is 82.12% and includes a very good predicate.

Based on the above test results, it can be concluded that the web app eatime! can be accepted by the user.

#### IV. CONCLUSION

This web app eatime! is built by using the MVC concept that utilizes the PHP programming language with CodeIgniter framework and MySQL database. Using the web-based app eatime! can provide benefits and meet the needs of the organization regarding food ordering and delivery system with the provision of features, such as ordering food, searching food menu, viewing balance, recaping history of purchase and sale transactions, and printing the transaction history report order. After testing the application quality measurement, the results show the total value of 82.32% for web eatime! Admin and 82.12% for web eatime! financial organization division with very good predicate..

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