Design Restaurant Information System (RIS) Cloud Based with the Zachman Framework Approach

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ABSTRACT

Information system technology has become an especially important component in various companies in Indonesia, including the restaurant business. But some of the big problems that are often faced by the restaurant business in implementing SI have become increasingly clear, among which are systems that are running less than optimal due to lack of experience. This paper will examine a restaurant franchise in Indonesia called SS Restaurant. Currently, SS Restaurant is facing complaints against the restaurant information system (RIS) such as the RIS system which is no longer adequate and does not have the latest features and the research and development (R&D) process of the restaurant is not running due to slow data processing and not optimal control outlets. The purpose of this paper is to design and recommend new business processes in restaurant RIS and add new system models such as online ordering, real-time reporting, cloud-based systems and data analysis for restaurants. The model in the Zachman framework that will be used in this research framework becomes a 3x3 matrix, basedon 3 main perspectives required by Restaurant SS management that is: General Scope, Owner Perspective and Designer Perspective. By implementing this new RIS, Restaurant SS is expected to be able to further increase their business' performance through the benefits of improved operational efficiency and continual development of the implemented information system.

Key words: Restaurants, information systems, business process models, cloud-based systems, General Scope, Owner Perspective, Perspective Designer, Zachman Framework

1. INTRODUCTION

In a time dominated by technology, businesses that were rooted in direct customer service at their commercial sites for centuries could no longer avoid the tide of technological development. Information systems, which are disciplines in the use of technology for running business processes, are inseparable from any form of business. Restaurant is one of the business areas covered by modern automation and digitization processes. Large franchises are already utilizing online-based ordering systems to facilitate food delivery to their customers, which shows that the implementation of technology in this business helps businesses processes by increasing work efficiency and increasing company performance. Competitiveness in the food service sector is now measured not only through the quality of service and goods provided on-site, but also their technological capabilities.

SS Restaurant is a restaurant franchise that serves Indonesian specialties in several dozens of branches spread throughout Indonesia, especially in Java and its surroundings. As a developing franchise, SS Restaurant is facing several problems with the system in their company, including a restaurant information system (RIS) that has not been updated for a long time, resulting in technical problems when running, limited features, and limited technological development. Its effectiveness in restaurants and physical outletsis not optimal due to the limited RIS. These problems highlight the importance of technology in helping traditionally rooted businesses to advance their service level [1].

With a new information system architecture, the traditional business processes associated with a restaurant will also change drastically. This will demand Restaurant SS to properly adapt with the technological innovations introduced into the restaurant, such as focusing more on maintaining a database constantly, updating ledgers and providing a clear and concise flow of information to online delivery services. This will require time to adapt, but the experience in developing and interacting with a new information system is expected to help SS Restaurant in transitioning from a traditional business to a digitized one, and therefore augment their competitive value in the market.

Therefore, SS Restaurant must act immediately to be able to maintain competitiveness in the restaurant business which is also adapting rapidly in this modern era [2]. SS Restaurants can begin the process of modernizing their business by developing a simple information system based on the Zachman framework, which can then be used to design online ordering systems and continue to design proposals for cloud-based systems to store data in real-time. By implementing the new RIS in the SS Restaurant is expected to be able to benefit from the implementation of this new

information system to improve the workability and effectiveness of data distribution within restaurants and their outlets.

2. LITERATURE REVIEW

Zachman Framework is a framework, or framework that simply creates an overview of the elements that are relevant to business processes in an organization or company [3].This framework also provides a model for companies to identify approaches to their enterprise architecture designs, as shown in the picture above. The Zachman's framework matrix, pictured below in Figure 1, concerns all parties involved in the EA system, namely in terms of functional interests (scope, business models, system models, technology models and detailed representations) on the line, then in terms of functionality (data, functions, networks, people, time and motivation in the column section. Thus, this framework provides different perspectives on developing and managing company systems according to their needs [4].

Figure 1: Zachman framework graph

Implementing an information system in SS Restaurant is part of the transition of a traditional company towards a more automated system [5]. Some of the benefits expected from the new RIS that will be implemented are real-time data updating and processing that will accelerate data processing accurately, online ordering methods for convenience for customers who cannot visit physical locations [6], and the use of cloud systems. -based to be able to store data online such as customer data and as a backup for other important data that must be stored.

The final step in the development of this new information system is the application of cloud-based data storage. This storage system has benefits in two ways, namely increasing service flexibility and easy access to information[7]. In accordance with the EA stated earlier, this cloud system will use an infrastructure-as-a-service approach to integrate data from the EA that will be raised and the data is stored in a private cloud [8].There is research that has succeeded in making application design start with structure and how to navigate due to lack of content in the entire structure of cloud-based applications[9].In addition, there is also research into cloud computing applications, namely Open Stack application is a leading open source software to provide infrastructure as a service to users. It needs to investigate the security adequacy built into Open stack as OPEN STACK is intended to be used by many users[10].

3. RESEARCH METHOD

This study uses a qualitative method with the aim to completely redesign the RIS business process at SS Restaurant. While the method used in collecting this research data is by conducting observations, interviews and directed discussions to the end-user system and the Restaurant SS owners involved in using RIS. The findings and results will be verified and the formulation of the most effective zachman model will be carried out for the design of RIS at the SS Restaurant.

In the formulation of the Zachman Framework also pay attention to literature studies that have been done, especially about RIS. The results of the literature study are expected to provide a broad perspective for assessing all business processes in RIS, especially with the Reporting system which is generally directed at RIS. The implementation of the framework is expected to provide an appropriate reference in manage more complex business processes in the application of the new RIS. The model in the Zachman framework that will be used in this research framework becomes a 3x3 modul, based to 3 main perspectives required by Restaurant SS management: General Scope, Owner Perspective and Designer Perspective. The perspective to be used is then combined with the APA data dimension, HOW function, and which network to map the missing domains in the development of RIS Restaurant SS.

4. FINDING AND DISCUSSION

Based on a comprehensive process of observation, interview and directed discussion, the results are then summarized into:

4.1 Scope Restaurant SS

This scope aims to determine the objectives and directions in the design of RIS based on the perspective of the planner. The perspective that will be used is: The First about data (What), describes objects related to RIS, which consists of an enhanced ordering modules and application of cloud

computing in improving the RIS module; The Secondabout function (How), describes each process carried out by RIS such as: the process of ordering food. This process is carried out by each outlet or branch in the SS Restaurant and in real-time must also produce a report; The Third about network (Where), describes the location where the RIS system is located. Currently all SS Restaurant chains are connected through cloud-based RIS networks as software as a service (SaaS).

4.2 Enterprise Model Restaurant SS

This corporate model aims to explore the scope discussed in section (4.1 Scope) in company settings. This enterprise model captures the entire network architecture and logical structure of RIS. The 3x3 matrix line in the Zachman framework describes the system of the Restaurant SS owner's view: The First about data (What): this data section, each object in the data will be detailed based on the owner's perspective. In Figure 2 below it explains each object related to other objects; The Second about function (How): this section will explain the interaction of each actor (user) with the ordering system. Figure 3 shows the relationship and interaction between actors (users) and the system in which there are 5 different actors who can produce their own report data; The third network (Where): the network portion in the company perspective will show the network for Restaurant SS. Figure 4 shows that there are 6 departments that can use the system and access data.
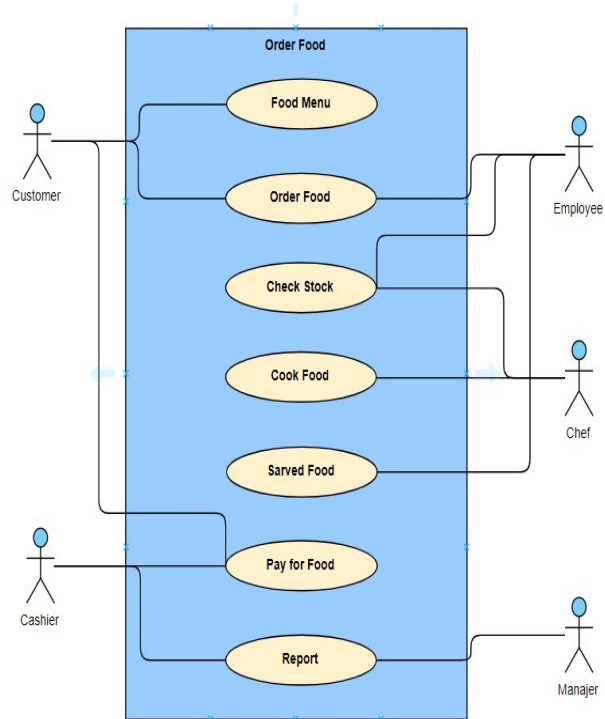

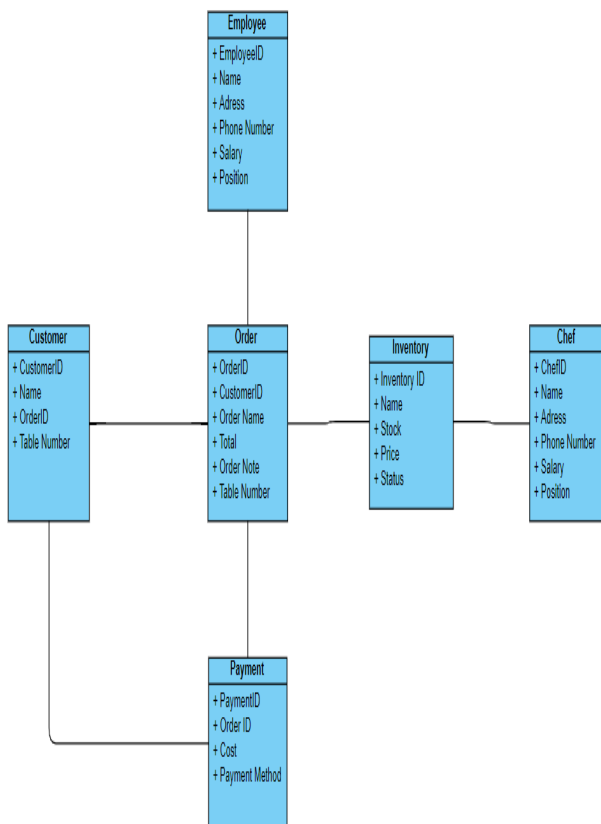**Figure 3:** Use Case Diagram (Currently)
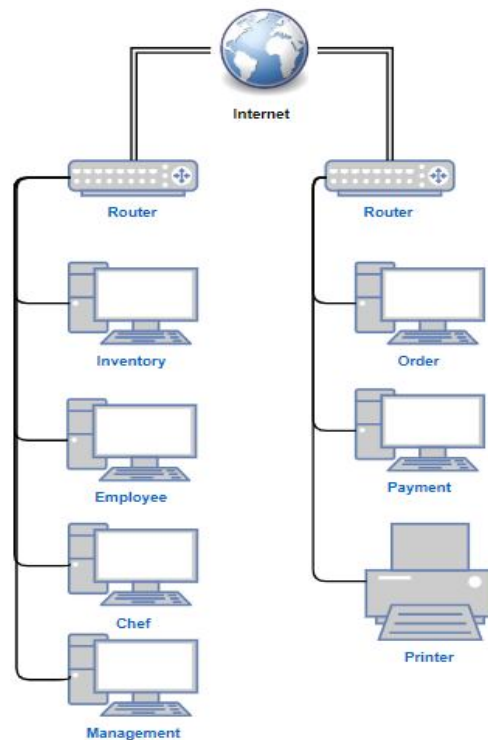

Figure 2: Class Diagram (Currently)

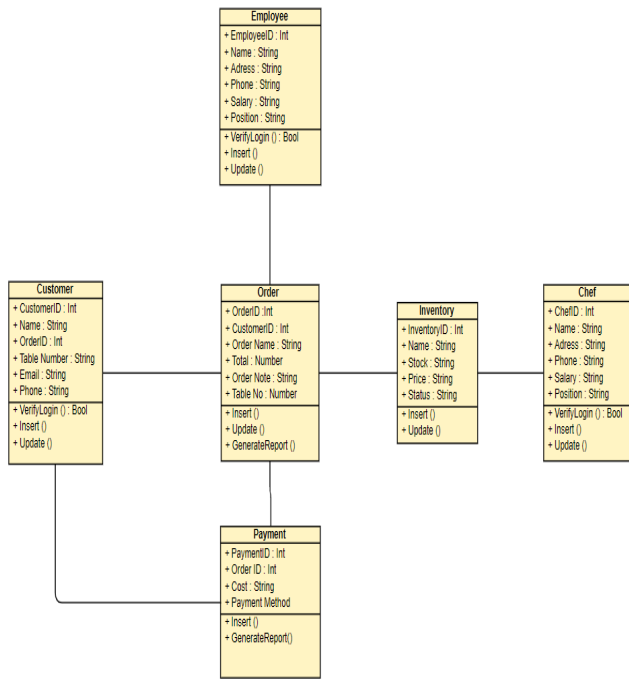**Figure 4:** Network Architecture (Currently)

Figure 5: Class Diagram (Order System)

4.3 System Model

In this system part model explains the SS restaurant display system namely: The first regarding data (What), explains the details of each object based on the company model using class diagrams. In the class diagram illustrates the detailed information of each object in the system. In RIS has 6 entities in the class diagram with attributes and functions that can be done on the system; The second function discusses the explanation (How), explains the interaction of each actor in the ordering system using the concept of use case diagrams. In use case diagrams explain the relationships and interactions between actors and systems. Before the actor uses the system, it is necessary to carry out several steps beforehand. Login to verify the position and identity, if successful, the user can do the activities they have. After completing the tasks and work, the system can make reports in real-time. Which discusses the explanation of the network (Where), describes RIS users in the network architecture for the ordering process in the system through cloud network diagrams. The network architecture shows all network components in RIS. There are ten departments connected to the RIS system in two fields. Each department can access its own file server to install security data. Based on the application of the previous RIS that runs on the premise server which has higher security is also associated with limited access in the use of the system. Related to the concept of cloud computing, it is expected that every application in the system. RIS used in cloud systems
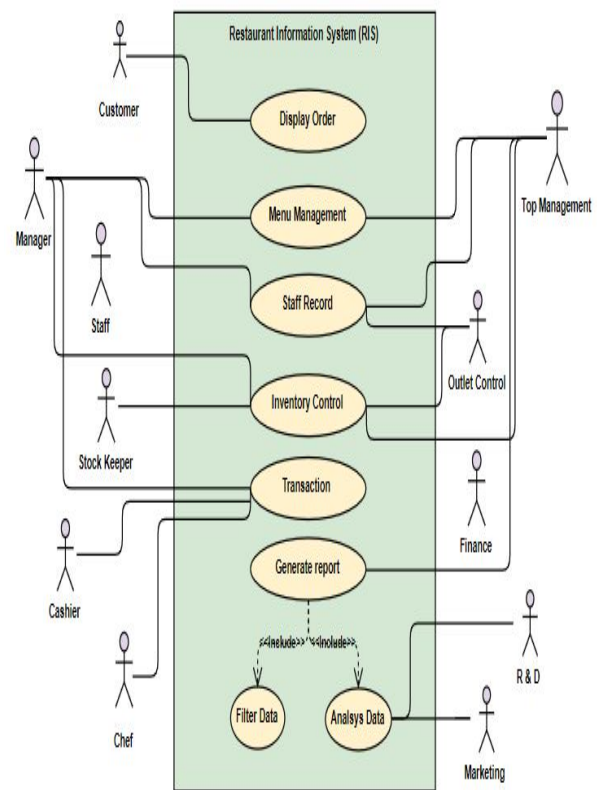

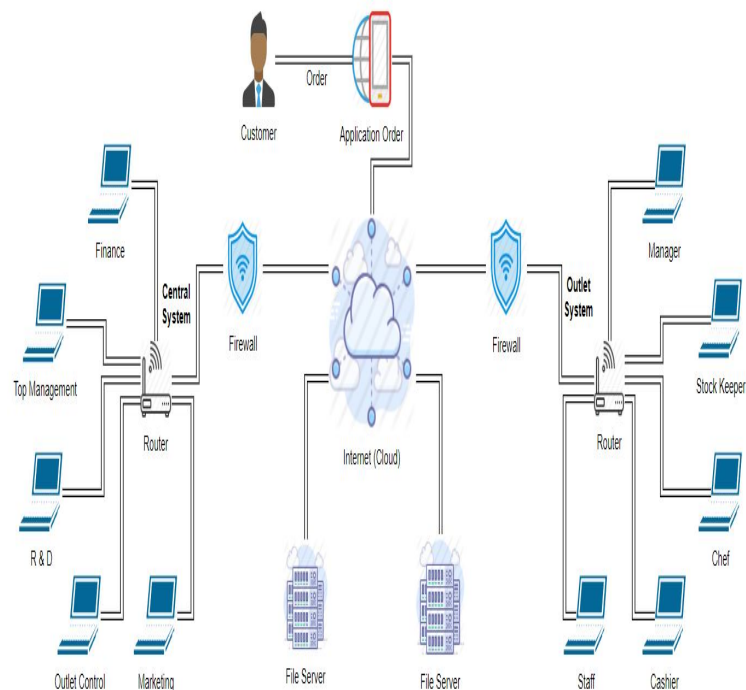**Figure 6:** Use Case Diagram (Order System)

Figure 7: Network Architecture of Restaurant SS (Order System)

In the order process send a request to the service (at the Service layer of the online ordering portal) provided by the system independent module. Then, an independent module will be connected to RIS through the cloud base and the

restaurant outlet where the order is placed. The order and transaction process is then processed and recorded by the system automatically so that the management at the head office can see the SS restaurant outlet data and sales reports quickly and easily.

5. CONCLUSION

This research paper proposes the use of the Zachman framework and online ordering, cloud computing and the control business between the head office and the restaurant branch, which has been a common problem faced by RIS at SS Restaurant. RIS is currently unable to describe the owner's expectations and desires of stakeholders such as owners, directors, managers, control outlets and so on. As a result, many complaints are directed at the current RIS, thus demanding a new RIS development process. This paper draws on Zachman's simplified 3x3 matrix with the aim of providing a reference to understand and map these different hopes and desires. This paper focuses on common issues such as ordering systems in the RIS network and preparation for effectively reviewing RIS development plans.

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