

Analysis of Development Revenue Cycle Information System for Broadcasting of Television Media Advertisement: Case Study - PT XYZ

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Abstract: This study aims to analyze the development of an information system of revenue cycle for the broadcasting of television media advertisement at PT XYZ. Right now, there are two information systems that used by PT XYZ and have not integrated yet with each other; those are Broadcast Management System (BMS) as an advertisement production system and Oracle Finance (ORAFIN) as an Enterprise Resource Planning (ERP) system. Moreover, there are is no main feature integrated yet in the system that caused several problems that affect the performance of the related divisions. As a result, it can make a different values of an advertisement billing because the current system does not meet the user needs. This research is a case study with a qualitative method. The research methodology is using Participatory Action Research (PAR), where researchers use users of information systems directly PT XYZ to identify information of information systems that exist nowadays and analyze their subsequent needs. Data was acquired by interview, documents analysis, and observation at PT XYZ. The method used to develop information systems of revenue cycle is FAST (Framework for the Application of System Technique) method. The result of this study provides a new revenue cycle information system that can integrate the existing system to minimize the billing error and provide the reliable information as based on decision making.

1 INTRODUCTION

Nowadays, television media is one of the media that has great potential of influencing public opinion of an issue. Television media is still considered as an information center for most people in the world, include in Indonesia.

Along with the number of private television stations that have sprung up, then advertisement has become something that must be on every television broadcast in Indonesia. Furthermore, advertisement is one of the most effective marketing communication media and is one of the biggest supporters in operational activities that can increase company profits.

In this era, the development of information systems and the application of information technology is increasingly rapid. This situation is the basis for a company or organization to develop more professionally in terms of performance effectiveness and efficiency. Each company has a different

strategy from other companies for reaching the expected targets. Therefore, in order to achieve company goals, each company is required to implement and develop an information system that can support the company's internal control as a support in the right decision-making process. With the support of a well-designed information system, the information produced will be precise and accurate so that the company is superior in competing with other companies.

Moreover, the development of the current business environment clearly great affects the company's workflow and business cycle that requires them to be able to provide services quickly and accurately. Therefore, company that operates in the media industry are advised to use qualified information technology, so that the wishes of corporate stakeholders can be fulfilled properly and optimally.

For television companies, advertisement is the main requirement for the continuity of broadcast

production. Without advertisement, the television station will have difficulties to face a business competition in media industry. Those advertisements that appear on televisions are become company's main income to run the wheels of business, that is for finance any production including production costs for broadcast the programs and show on that television.

To be able to display advertisements on television, a company of products, services, or place of business must be contact the television. The aim is to arrange related matters of advertising, such as how much the advertisement costs per second, when the advertisement will appear, in what program the advertisement will appear and so on. Therefore, an information system and technology are needed to arranging and processing all related matters of the advertisement serving. Starting from the request to make an advertisements, advertisement serving, until payment billing of advertisement that become revenue for television Company.

In this research, the author will examine information and technology systems of revenue cycle that is in one of the television media companies in Indonesia, namely XYZ Company. At present the information system applied to XYZ Company still has several weaknesses, there is does not yet has several features that are integrated in the system, thus raises several problems that affect the performance of related divisions within the company.

This research has two research questions, the first is how to control the current revenue cycle information system for advertisement serving activities and how the design of revenue cycle information system development in the new advertisement serving activity at XYZ Company.

The purpose of this research is to analyze the control of current revenue cycle information system and provide recommendations for system development design in advertisement serving on XYZ Company called the Smart Intelligence Broadcasting Orchestration System.

2 THEORETICAL FRAMEWORK

According to Romney and Steinbart (2015), internal control is a process carried out to providing adequate guarantees for the purposes of internal control, including safeguarding assets, managing records with good detail to report company assets fairly and accurately, providing information that is reliable and trustworthy, prepare financial reports that are in

accordance with predetermined criteria, improving operational efficiency, encouraging compliance with predetermined managerial policies, and complying with applicable laws and regulations.

Meanwhile, internal control according to Mulyadi (2002) is a series of actions that are pervasive and become an inseparable part, not only as an addition, from the entity's infrastructure.

Romney and Steinbart (2015) stated that accounting information system is about of collecting, recording, storing, and processing data to produce information for decision makers. This system includes people, procedures and instructions, data, software, information technology infrastructure, as well as internal controls and security measures.

There are six components of the accounting information system, namely:

- a) People who use the system;
- b) Procedures and instructions used to collect, process and store the data;
- c) Data about the organization and its business activities;
- d) Software used to process data;
- e) Information technology infrastructure, including computers, peripheral devices, and communication network devices used in Accounting Information System (AIS);
- f) Internal controls and security measurements that store AIS's data.

According to Romney and Steinbart (2015), revenue cycle is a series of business activities and continuous processing of related information processing that provides commodities and services for customer and receive cash as payment for the sales.

The thinking framework used in conducting this research begins with determining the background for choose a research topic, then proceeding to determine the problem in the study, the purpose of the research, the contributions of the research, the limitations of the research and the methodology used, and systematics in this study. Furthermore, a collection of various literature related to this study was also conducted. The two stages above are stages in the planning section.

Then when the planning has been carried out, the next stage is the analysis phase. At this phase of the analysis, the data needed is a general description of the company along with its vision and mission. In addition, information is also needed is about the company's business processes, so that problems can be analyzed and how to recommend solutions for future needs. From the various data that have been

obtained, the analysis will be carried out using the theoretical literature in this study. Theoretical literature used is, the theory of internal control, information systems, revenue cycle and the method of developing information systems that used, there is FAST (Framework for the Application of Systems Technique).

In the design phase, recommendations for solutions proposed in the analysis phase must be present in system design according to the FAST (Framework for the Application of Systems Technique) approach developed by Whitten and Bentley (2007).

For the system development, an agile method – FAST (Framework for the Application of Systems Technique) – was used because its comprehensive approach (Whitten and Bentley, 2007). FAST method consists of phases as follows (this research used four early phases):

(1) Scope definition. The purpose of the scope definition phase is twofold. First, it answers the question, “Is this problem worth looking at?” Second, and assuming the problem is worth looking at, it establishes the size and boundaries of the project, the project vision, any constraints or limitations.

(2) Problem analysis. This phase studies the existing system and analyze the findings to provide the project team with a more thorough understanding of the problems that triggered the project.

(3) Requirements analysis. This phase defines and prioritizes the business requirements. Simply stated, researcher approaches the users to find out what they need or want out of the new system.

Logical design. This phase translates business requirements into system models. The logical design will use system design tools like functional decomposition diagram (FDD), data flow diagram (DFD), entity relationship diagram (ERD), and user interface design.

3 RESEARCH METHOD

This research was conducted in order to answer existing research questions, those are:

- a) How to control the current revenue cycle information system of advertisement serving activity at XYZ Company?
- b) How is the design of the revenue cycle information system development in the new advertisement serving activity at XYZ Company?

This research is a case study with a qualitative method using primary and secondary data. The method used to obtain these data is as follows.

a) Interviews and Observations

Field research was conducted directly at XYZ Company to obtain data and information needed by observation. This observation aims to study current operational activities. Primary data is obtained by interviewing related divisions of account receivable flow, those are the Sales Division, Traffic Division, Billing Division and Collection Division at XYZ Company. Meanwhile, secondary data is obtained by studying the Standard Operational Procedure (SOP) that applies to each related divisions.

b) *Participatory Action Research* (PAR)

According to Yolanda Wadworth in Agus Afandi (2013) Participatory Action Research (PAR) is a research method which implemented in a participatory manner among a group of people in a community. This research involves all relevant parties in actively examining together the current actions or conditions (which they experience as problems) in order to change and correct them.

In this research, the researchers directly involved the revenue cycle users information system at XYZ Company to directly identify the problems and weaknesses of the existing accounting information system and analyze their subsequent needs.

Researcher in this research act as authors and actors of the system, because researcher in this case are actively involves in the company's business processes. Information about the current problems is identified by conducting interviews with several respondents from related divisions. Those are, the Sales Division, the Traffic Division, the Billing Division and the Collection Division as the users of the revenue cycle accounting information system.

The result of the interview that have been conducted will be summarized and concluded as the main problems that experienced by system users.

4 ANALYSIS

4.1 System Analysis

In this phase, an analysis of the current business process description of the company will be carried out. Then, it will explain the problems faced in

implementing the business process. Those problems will be analyzed on the implementation of the revenue cycle accounting information system that is still ongoing today and formulated the right solution for system improvement so that it can overcome these problems.

4.1.1 Scope Definition Phase

To analyze the accounting information system of XYZ Company, it begins by determining the scope using the PIECES framework (Performance, Information, Economics, Control, Efficiency, Service) developed by James Wetherbe in Whitten and Bentley (2007). The following is a table that shows the problems faced by XYZ Company and opportunities for solutions that can be applied to determine the scope of system development. Information in this table is obtained from direct observation and direct interviews with all relevant parts at XYZ Company.

Table 1: The Framework of PIECES

No	Existing Problems	The Opportunities
<i>Performance</i>		
(1)	In the sales process, the income report has not been monitored systemically.	The income report can be monitored continuously and automated.
(2)	The company has trouble to manage the cash flow for other importance activities.	The company can manage cash flow if the income report information can be known reliably.
(3)	Less effective and efficient in the entire real time collecting information.	The company can carries out the production activity and finances report effectively and efficiently if there is a new information system development.
<i>Information</i>		
(4)	This time the information about sales data should be imported manually from BMS system to ORAFIN system.	Sales data is updated and imported automatically.
(5)	The data have not integrated well and it is not easy to fulfill the new information needed.	All data is well integrated and can fulfill the other new information needed.
<i>Economics</i>		
(6)	There are differences value of	The incorrect collection of

	an advertisement billing.	advertisement billing can be minimized by the development of new information system.
(7)	Income cannot be accurately identified	Income can be accurately identified
<i>Control</i>		
(8)	The unavailability of information about advertisement detail can trigger errors differences value of an advertisement billing.	The incorrect collection of advertisement billing can be minimized by the development of new information system.
(9)	The company has trouble to manage the cash flow for other importance activities.	Information on advertisement revenue will help to make the right decision on XYZ Company's cash inflows and cash outflows.
<i>Efficiency</i>		
(10)	The existing system still not fulfill the user needs so that need a excessive effort to produce the accurate revenue information periodically.	The production process and recording off all broadcast activities and its conversion are more effective and more efficient if there is a new system development.
<i>Service</i>		
(11)	The employee and management have difficulties to get a reliable information.	(a) Facilitate the employee in doing any broadcast production activity and reporting. (b) Facilitate the management to access the existing report. (c) Facilitate all of divisions to find the source of trouble because every activity has been recorded in the system.

4.2 Problem Analysis Phase

The goal of the problem analysis phase is to study and understand the problem domain well enough to thoroughly analyze its problems, opportunities, and constraints (Whitten and Bentley, 2007).

In this phase, an analysis is carried out on the problems that arise in the business process because there is no development of information systems that appropriate with the user needs. As identified in the PIECES framework, from the results of the

interview with several related divisions in the company, those are: the Sales, Traffic, Billing and Collection divisions, table 2 describe some of the solutions proposed in overcoming the problems that occur in the revenue cycle information system development process PT XYZ.

Table 2: The analysis of cause and effect previous system and solutions for new system

No	Inhibitor	Effect	Proposed Solution
1.	Broadcast Management System (BMS) as the system used to process the advertisement broadcasting is not directly integrated with ORAFIN as an ERP system.	1. Sales data must be imported from BMS to ORAFIN at the end of each month. The risk is that if there is an incomplete processing then the data will not imported entirely so it must be re-imported continuously until the data can be moved entirely into the ORAFIN system. 2. Another thing is if one of the clients requests an invoice before the XYZ Company's specified date, then the billing division must import the client's sales data one by one over the client's sales data to issuance an invoice.	An information system that can integrate BMS with ORAFIN is needs to be made. So, all of sales data can be updated realtime.
2	The making of package order is still done manually by using Ms. Excel. It is done by the Marketing Division.	The Traffic Division cannot supervise the system over the client budget which used in certain month, whether or not the budget is appropriate with the package that has been approved.	An information system that can provide the create package order feature that integrated with the other programs in the system is needs to be made.
3	The making of media order is still done manually by using Ms. Excel. It is done by the Sales Division.	1. Traffic Division have to input the manual media order to the BMS system. 2. If there are additional orders, it will probably trigger errors in the number of billing to client because the additional order cannot be automatically updated by the system.	An information system that can provide the create media order feature that integrated with the other programs in the system is needs to be made.
4	The existing system does not has a detailed of database advertisement serving.	The Collection Division cannot know the real value of the broadcast when billing clients each month. So, there is a difference between the value stated on the package or media order and the value in the system because the sales	1. An information system that can provide the database of the advertisement or programs broadcast

		value has not been updated automatically.	detail is needs to be made. So, the Collection Division can reconciliation if there is a difference in the nominal value of the bill. 2. This system information is also can provide the Intelligent Alert feature on the changes that occur during the broadcasting process. Therefore, when there is a shift in broadcast time, then it will automatically give notification on emails to the Account Executive (AE) so the AE can immediately inform this shift to the client who coordinating the next client request.
5	There is no online database system for storing billing documents files.	The Collection Division must look for invoices file and its completeness such as sales packages, tax invoices, log proof, and other related documents to invoice's storage warehouse.	Provides an online database to store the invoices and their completeness combined in one folder according to the invoice's number.

4.3 Requirement Analysis Phase

After analyzing the existing problems and doing a more detailed understanding, an analysis is carried out to determine the user's needs for the development of the system by making a context diagram. Context diagram is a diagram that can describe the relationship between the system and the business as a whole. The related relationship is described as the flow of information and data that enters the system and exits the system. The information system context diagram for

advertisement serving revenue cycle can be seen in the following figure.

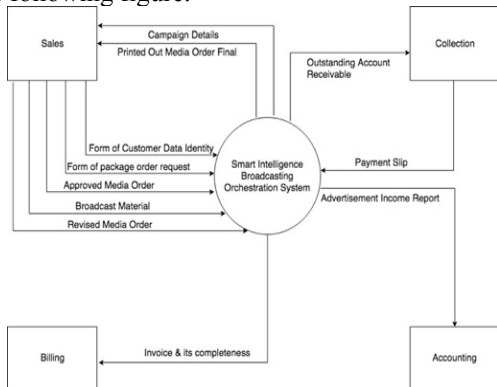


Figure 1: Context Data Flow Diagram

After creating a context diagram, then the Functional Decomposition Diagrams is arranged. According to Whitten and Bentley (2007), Functional Decomposition Diagrams (FDD) are made with the aim of describing the components contained in the system and sub-systems separately. Decomposition diagram shows top-down functional decomposition or system structure. FDD is the first step in making a diagram flow. From the FDD compiled, later Data Flow Diagrams (DFD) can be created. FDD Information system for advertisement serving revenue cycle can be seen in the following figure.

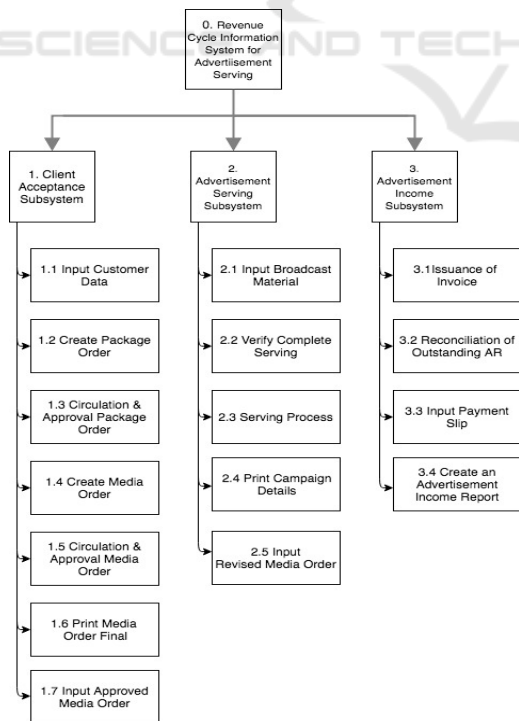


Figure 2: Functional Decomposition Diagram (FDD)

4.4 Logical Design Phase

This stage of logical design will transform the business requirements into a system both in the process and process data model. The purpose of this logical design is to obtain a more detailed picture of the information needed to develop an information system for the advertisement serving revenue cycle. Process modelling will be described by Data Flow Diagrams (DFD), while data modelling will be described by using the Entity Relationship Diagram (ERD).

4.4.1 Process Modelling

According to Whitten and Bentley (2007) process modelling is a technique used to organize and document the structure and flow of data from a system or logic, policies, and procedures so that it can be implemented by the system process.

To do process modelling, one technique that can be used is Data Flow Diagrams (DFD). DFD is a tool in modelling that allows system analysis to describe the system as a network of functional processes that are connected to each other by the flow of data, both manually and computerized. Data Flow Diagram Information system of advertising revenue cycle can be seen in the following picture.

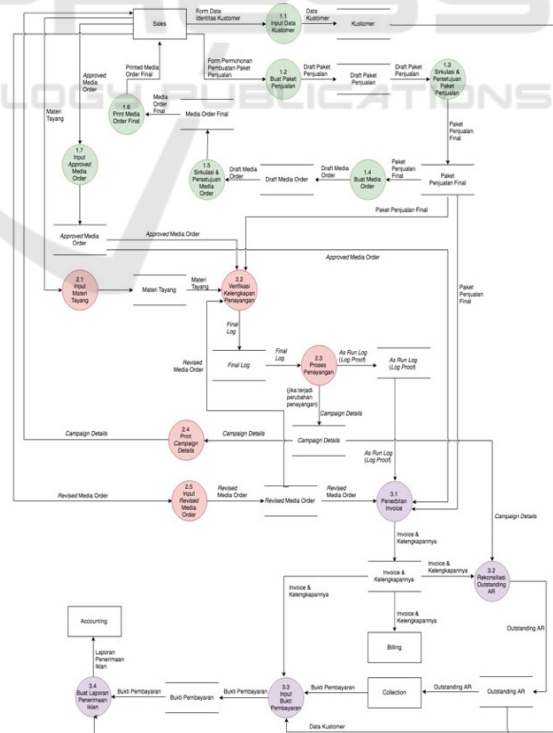


Figure 3: Data Floxew Diagram

4.4.2 Data Modelling

Data modelling is a technique in organizing and documenting the data that the system has. Often referred to as database modelling. The first step in modelling data is to determine the entities contained in the system. Information system database entity of XYZ Company's revenue cycle is determined by looking at the requirements of the system. After determining the entities contained in the system, then the next analysis is carried out to determine the relationships between entities. Relationships are natural business relationships between one or many entities (Whitten and Bentley, 2007). Next, an analysis is carried out to determine the cardinality between entities. Cardinality is the minimum and maximum number of occurrences of an entity and its relation to the emergence of other entities. After analyzing the relationship and cardinality between entities in the revenue cycle information system, the entity as a whole can be described in a fully attribute data model diagram in the form of an entity relational diagram. Figure 4 shows the Entity Relationship Diagram data model for XYZ Company's advertising revenue cycle information system.

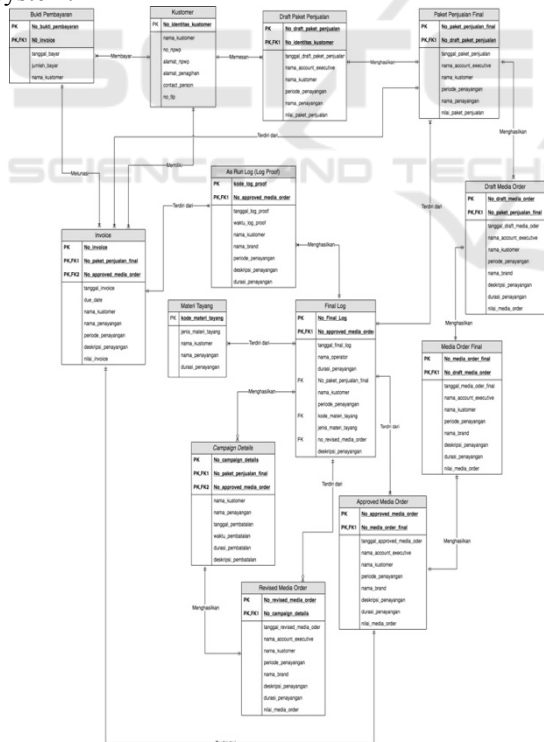


Figure 4 Fully Attribute Entity Relationship Diagram

4.5 Designing the User Interface

In designing this advertisement serving revenue cycle information system, the author uses middleware device technology, which is to integrate two different systems, those are the Broadcast Management System (BMS) as a processing system for displaying advertisements or programs in the television industry with Oracle Finance (ORAFIN) as an Enterprise Resources system Planning (ERP) used by XYZ COMPANY to be able to communicate between one and the other in processing data in realtime. In this case, the middleware device also provides features to create integrated sales and media order packages and access to approve that sales documents. In addition, the Intelligent Alert feature is also provided, where this feature serves to provide automatic e-mail notifications to the Account Executive (AE) for changes in impressions that occur and save the changes in the database provided.

The following is the information system design of the advertisement serving revenue cycle, named the Smart Intelligence Broadcasting Orchestration System, which was recommended by the author to XYZ COMPANY.

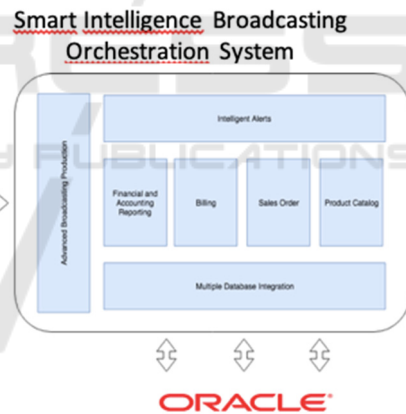


Figure 5: Smart Intelligence Broadcasting Orchestration System Design

5 RESULTS

The result of this research are the solution for XYZ Company in the form of a revenue cycle information system that has been integrated with the BMS and ORAFIN systems. In this system, a sales package and media order feature has been provided, the database of advertisement or program broadcast details, and an online database for storing invoices and other equipment. In addition, this system has the intelligent alert feature in the form of e-mail

notifications to the relevant Account Executive (AE) for changes in impressions that occur during the broadcasting process. With the creation of an revenue cycle information system, it is expected to minimize the occurrence of advertisement billing error and provide reliable information as based on decision making.

6 CONCLUSIONS, SUGGESTION & LIMITATION

6.1 Conclusions

From the result of analysis and data collection that has been conducted by the authors, conclusions can be taken as follows:

1. The information system of the advertisement serving revenue cycle that has been designed allows companies to minimize advertisement billing error. With the availability of the main features that have been integrated, it will make it easier for companies to carry out their activities.
2. Beside that, the revenue cycle information system designed is an information system based on realtime so that all changes that occur during advertisement serving can be identified and can be handled quickly.

6.2 Suggestion

Based on these conclusions, the author has suggestions that can be considered for the improvement and progress of the company, there is the implementation of revenue cycle information systems development is expected to help companies to dealing with the problems that has been identified in chapter 4. However, to reach the objectives to be achieved, when implementing the revenue cycle information system for the advertisement serving the company must take appropriate steps. Companies need to do a systematic way and follow existing rules, such as proceeding to the phase of system physical design, system testing, and maintenance of the system. Although this does not guarantee the success of implementing a system, work that follows the rules will bring closer results.

6.3 Research Limitation

The limitations of this study are only using the 4 stages of the FAST method, which only reaches the logical design stage. Research also has limited coverage because the analysis carried out only on the revenue cycle information system of the advertisement serving regardless of the

organization's needs for other systems. In addition, the design of this system can also be developed through the development of a better architecture so that system users can easily operate this system.

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