DESIGN OF CHURCH FINANCIAL INFORMATION SYSTEM WITH ACCOUNTING STANDARDS USING RAPID APPLICATION DEVELOPMENT METHOD (RAD)

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ABSTRACT

Church is a non-profit religious institution. Church has a primary orientation for service to its congregations. Nevertheless, good financial management is still needed for the organization to grow and improve the quality of service to its congregations. Currently, most of the churches already have good financial management. However, most of the financial management that is implemented is still manual, yet to use a special information system for the management of their financial database. Based on these conditions which is reinforced by the demand for the development of financial information systems for several church, this research is conducted in the development of the Church's financial system. The system is developed using Rapid Application Development (RAD) approach, which consists of three main stages: planning, design and development, and system implementation. This article deals specifically with the design of the church's financial information system. The design of the system consists of the design of the flow diagram of the data entry accounting cycle, the use case diagram design, the Entity relationship diagram design, the activity diagram design, and the report design on the system. All the design results will be a guide in making the system.

Keywords: Church Financial Information System, Nonprofit Organization Financial Report, Rapid Application Development.

INTRODUCTION:

Good and regular financial management is required in all organizations. Good financial management strongly supports the sustainability and development of an organization. Church, as an organization, in religious field also requires a good and regular financial management. Today, most churches have a financial system. Some of the financial management concepts that is applied in some churches has also been applied in the financial accounting system. However, the system of storage, processing, and financial reporting in some churches still apply manual or traditional system (Butar-butar, 2007). They have not yet applied a computer-based system to execute their financial management. The manual bookkeeping system has several disadvantages such as recurring, recording and the need for large human resources to produce accurate and fast reports. This has an impact on the level of efficiency and effectiveness that are lacking in the management of financial in the organization.

Sourced from the above problems and the request of the church to be able to perform computerized data processing with database management for all financial data that they have, then become the basis for the development of a financial information system that meets the financial accounting standards. Information systems are developed using Rapid Application Development (RAD) approach. The selection of this method is based on the characteristics of methods that allow the development process to be done quickly and can be done in parallel by some programmers on a modular basis.

RAD method has four main stages which include planning, designing, system development, and implementation. Stages of design and system development is done repeatedly until the system is obtained as needed. This article specifically discusses the detailed design of the Church's Financial Information System. The design includes making Use Case Diagram, Entity Relationship Diagram, Activity Diagram, design process according to financial accounting cycle, and report design with financial accounting standards. The result of this research is a design of church financial information system that meets financial accounting standards.

LITERATURE REVIEW:

Financial Information System:

Information is a tangible or semi-real thing that can reduce the degree of uncertainty about a situation or event. It can also be interpreted as data that has been manipulated so that it can be useful for someone. Information also includes data or resources available within a company that may affect performance results of parts or elements within the company or organization. The main resources of a company can consist of human beings, materials, machinery, money that has a physical form and can be touched and the type of information resources that have value of what is represented (not in its form).

System is an integration of information systems that all work towards a goal. The system consists of three main elements namely input, data processing and output. Some systems can control their own operations or closed systems. Closed system includes a control mechanism, that regularly exchanges feedback with its external environment (McNamara, 2006). Open systems are systems that do not have control capabilities, in the sense that they are only related to their environment. The system can also be divided into several systems or sub-systems, each of which has common parts such as input, process, outputs, software, hardware, human, database, procedures and documentation.

Information system is a system within an organization that brings daily transaction processing needs, support operations, managerial and strategic activities of an organization and provide certain outside parties with the necessary reports (Suruali, 2010). The information system provides five key roles within the organization: improving efficiency, effectiveness, communication, collaboration, and competition. High-quality, up-to-date, easy-to-control information systems are computer-based information systems that are core of today's global corporations (Prismayadi & Surjawan, 2016).

The Financial Information System (FIS) is the main repository used by companies for financial management and reporting functions. The main functions of FIS include 1) Recording all financial transactions in general ledger; 2) Produce financial statements to meet management and legal requirements; 3) Controlling the overall finances through the control of the budget contained in the system and 4) Produce financial statements for companies (University of Toronto, 2006). Financial Information System requires the existence of data management.

Without data and the ability to process data, an organization or company will not be able to survive. Data and information has become the most important part in an organization / company. Through information, managers / corporate leaders can make both strategic and administrative decisions. Data can be defined as a set of facts or

events related to an object. The data can also be in the form of notes contained in books, papers or files that have not been organized, such as records of transactions of purchase and sale in a company. Information can be defined as a result of processing data into a form that is more useful for the recipient. Information is usually used as a basis for decision-making process. The information is generally in the form of reports, for example from daily sales transaction data can be processed into sales information monthly to know the sales turnover of the company for each month. Beside that, also can be obtained the information about the product most widely purchased for one month and customers who turnover the largest purchase. To turn data into useful information, it requires a good way of organizing data. On a computer-based system, data is organized in a hierarchy starting from the smallest part of the data called characters, fields / attributes, records, files, until turn into a database (Stair & Reynolds, 2014). In this research for data management, the researcher used approach of database system. In the database system approach, various programs interact on a set of related data. A database has the ability to share data and information among several application programs.

Rapid Application Development Model:

Rapid Application Development (RAD) is a set of methodologies developed to overcome the weaknesses of traditional system development methods such as waterfall model and its variants (Dennis, Wixom, & Roth, 2014). RAD is a methodology used in Rapid Application Development cycles and also provides good software quality when compared to traditional software engineering approaches. Through Rapid Application Development process, organizations can reduce software development and maintenance costs (Naz & Khan, 2015) (Mcleod Jr & Jordan, 2002). But to develop applications one must quickly grasp a good understanding of the scope of the project so that the developer team can build systems with comprehensive functional capabilities in just a short time (for example, 60 to 90 days) (Mishra & Deepty , October 2013). RAD was first introduced by James Martin in the 90s. RAD is a combination of various structured techniques with prototyping techniques and joint application development techniques to accelerate system / application development (Bentley & Whitten, 2004). According to Pressman (2012), RAD is an incremental software model process that emphasizes short development cycles. The RAD model is an adaptation of the waterfall model, the difference is RAD using a component-based construction approach and waterfall using a sequential (non-iterative) approach. If each project's needs and constraints are well-defined, the RAD process allows the development team to create a "fully functional system" in a very short period of time (Pressman, 2012).

According to Kendall and Kendall (2010), RAD is an object-oriented approach to system development that includes a development method and tools. With RAD can make a shorter time than required in the old model system development cycle between designing and implementing an information system. The point is RAD try to meet the rapidly changing business requirements.

Figure 1. RAD Cycle (Kendall & Kendall, 2010)

Phases and Stages of Application Development:

According to Kendall, there are three phases in RAD that involve analysts and users in the assessment, design and implementation stages. The three phases are requirements planning, RAD design workshop, and implementation. In accordance with the Kendall RAD methodology, the following are the application development stages of each application development phase.

1) Requirements Planning:

In this phase, user and analyst meet to identify the application or system objectives and to identify the

information requirements that arise from those goals. The orientation in this phase is to solve organization problems. Although information technology and systems can direct some of the proposed systems, the focus will always remain on achieving company goals (Kendall & Kendall, 2010).

2) RAD Design Workshop:

This phase is a phase for designing and improving that can be described as a workshop. Analyst and programmer can work on building and showing a visual representation of design and work patterns to user. This design workshop can be done for several days depending on the size of the application to be developed. During the RAD design workshop, the user responds to an existing prototype and the analyst improves the modules designed based on the user's response. If a developer is an experienced developer or user, Kendall thinks that this creative endeavor can drive development to an accelerated level (Kendall & Kendall, 2010).

3) Implementation:

In this implementation phase, the analyst works intensively with the users during the workshop and designs the business and nontechnical aspects of the company. As soon as these aspects are approved and systems are built and filtered, new systems or parts of the system are tested and then introduced to the organization (Kendall & Kendall, 2010).

Nonprofit Organizational Financial Accounting System:

Accounting is defined as a tool of management used to control financial management functions. Information on accounting is very useful both for planning and supervision functions. To support the planning function, accounting information provides historical data as the basis for the preparation of budget planning. Meanwhile, in the supervisory function, accounting information is used as a comparison between planning and realization so that irregularities can be detected quickly and correction process can occur (Yayasan Pena Bulu, 2013). As a system, accounting has several elements (Yayasan Pena Bulu, 2013) namely (a) Accounting Entity or organization; (b) Going Concern, to nonprofit organizations this is related to the power of management to raise funds and organize programs funds for the continuity of organization; (c)Measurement; (d) Time period, financial reports present information for a given time or period; (e) Monetary units; (f) Accrual; (g) Exchange price; (h) Approximation means that accounting is inevitable judgments of value, price, age of allowance, and so on; (i) Judgment; (j) General purpose, the information presented in the financial statements produced by accounting is intended for users in general; (k) Interrelated Statement, means that the statement of financial position, activity report, and cash flow statement have a very close relationship and relate to each other; (l) Substance Over Form, meaningful accounting emphasizes the economic reality of an event rather than its legal evidence; (m) Materiality means the financial statements contain only the information that is considered important.

Nonprofit organizations are non-profit-oriented organizations. However, this organization also requires a good accounting system and in accordance with financial standards for their financial management. The financial statements of nonprofit organizations are used by both internal and external parties. For internal parties financial statements are used for program planning and oversight processes and as part of the report of liability for the funder. Meanwhile, for external parties, financial statements are useful for the performance of the organization, assessing the fairness and conformity of common standards in financial statements, and the financial statements may also reflect the amount of tax payments made.

The stage of the accounting process of a nonprofit organization is in common with other profit organizations. The accounting process begins with transaction documents, followed by journal inputs, ledgers, trial balance and ends with the preparation of financial statements. In the input stage of journal and ledger grouping process occurs, whereas between the ledger and trial balance occurs conclusion process (Foundation Pena Bulu, 2013). Stages of the accounting process can be seen in the Figure 2.
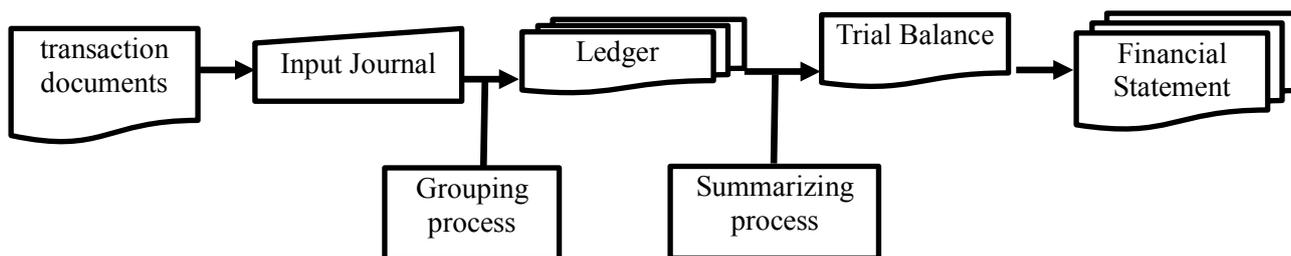

Figure 2: The stages of accounting process (Yayasan Pena Bulu, 2013)

Standards of financial reports in nonprofit organizations, internationally referred to the Financial Statements of Not-for-Profit Organizations (FASB 117) (Rupple, 2007). Meanwhile, the financial statements of non-profit

organizations refer to Statement of Financial Accounting Standards (PSAK) No. 45. According to FASB 117, the financial statements of non-profit organizations consist of 4 reports, namely Statement of financial position, Statement of Activities, Statement of cash flows, and Notes to the financial statements (Rupple, 2007). Meanwhile, on the standards set out in PSAK no. 45 there is the addition of one report of the report of net asset changes. However, in writing the report of net asset change into one with activity report. The calculation of net asset changes is included at the end of the report (Yayasan Pena Bulu, 2013).

The statement of financial position provides a snapshot of a not-for-profit organization's assets, liabilities, and net assets. When presenting a complete set of financial position, it should be prepared as of the not-for-profit organization's fiscal year-end. Meanwhile, the statement of activities presents the profit and loss to a not-for-profit organization's net assets over a period of time and the cash flow statements provides information about the not-for-profit organization's receipts and disbursements of cash. Cash flow is classified into three categories of activities such as operating activities, investing activities, and financing activities (Rupple, 2007).

RESEARCH METHODOLOGY:

There are three steps in this methodology to develop financial system for church: (1) Planning; (2) System Design; and (3) Implementation / System Development. This article specifically discuss system design for Church Financial System.

Planning:

Planning is the first step that must be done in developing the system. At this stage intensive communication with all the organizational elements is involved. In the process of planning, the development of the financial information system of the church involved two churches as the primary data source of the financial system. The two churches are Javanese Christian Church of Gondokusuman and Javanese Christian Church. The result of this planning process is a list of user requirements and architecture of the system. The development of architecture in the system using Enterprise Architecture approach with four main architectures are business architecture, information architecture, application architecture, and technical architecture (Delima & Kristanti, 2016).

System Design and Development:

The design process is done based on the system architecture that has been developed. The design uses several diagrams: Use Case Diagrams, Entity Relationship Diagrams, Activity Diagrams, Charts of accounting cycle processes, and financial accounting report design for the church. After the application process is done then the next step is doing the application development. The design and development of applications is done interatively until the system can meet the needs of users.

ANALYSIS AND DISCUSSION:

Accounting Data Recording Cycle Flow Diagram on System:

The Church's Financial Information System was developed by applying to financial accounting standards. At the beginning of the year, it will be input the data on the budget planning in the system. Then the process of recording the data followed by any financial transactions that occur. Every financial transaction includes proof of transaction. Based on evidence data of transaction, then the data will be entered into the system based on its type. There are four main types of transactions on the system: income, expenses, account mutation, and loans. After entering the transaction proof, transaction data will proceed with the creation of a general journal. Then the person responsible for doing validation to the truth of the data entered. After the data is assessed true and valid, this is then followed by posting to the transaction. This process will result in the church financial report covering activity reports, cash flow statements, financial position reports, and other financial statements required by the church. Flow diagram of the process of recording data on the system can be seen in the Figure 3.
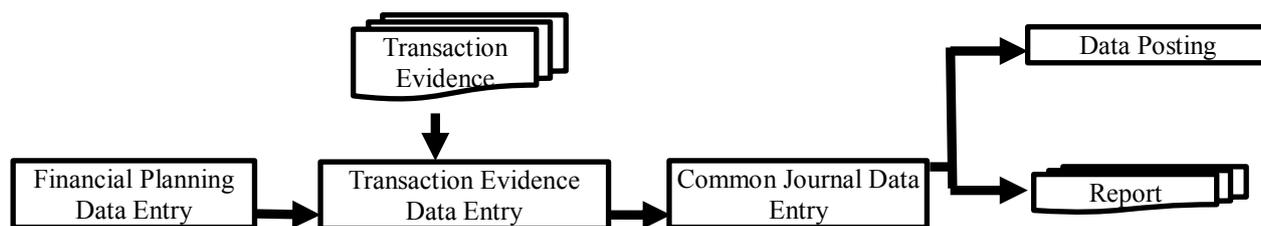

Figure 3: Accounting Data Entry Cycle Flow Diagram on Church Financial System

USE CASE DIAGRAM:

Use Case Diagram is a diagram describing who the users of the system are and what each user can do. In the Financial Information System of the Church there are 2 main actors namely Finance Administrator and Finance Officer. The financial responsibility of the church, especially the Javanese Kristem Church (GKJ), is usually with the finance / wealth department. The main difference between the two actors is the ability to access the database on the System. Finance Administrator has access/rights to manage all data on the system while the Finance Officer can only access data related to financial transactions such as planning, receipts, expenses, account mutations, loans, and reporting. Use case diagrams for the Church Financial Information System can be seen in Figure 4.
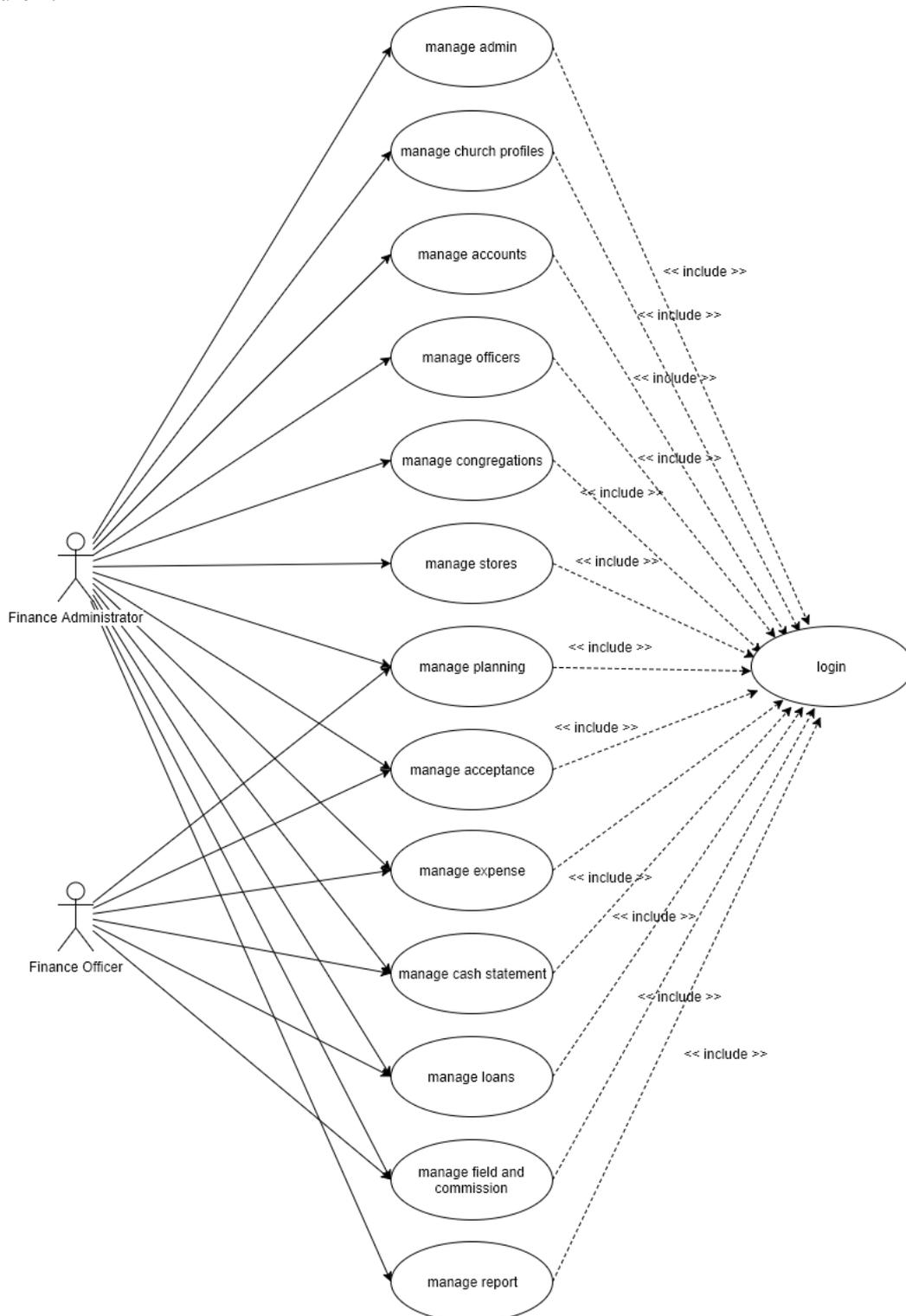

Figure 4. Use Case Diagram for Church Financial Information System

ENTITY RELATIONSHIP DIAGRAM:

Based on previously developed system architecture (Delima & Kristanti, 2016), the system has 15 related tables. The fifteen tables formed are categorized into three groups: organizational data, main data, and transaction data. The organizational data consists of only 1 table, the table / entity of the church profile, while the main data consists of 10 tables: admin table, account group, account subgroup, account type, responsible person, congregation, shop, financial planning, field, and commission. Transaction data has 4 related table that is individual acceptance, note, transaction, and transaction evidence. ER Diagram Scheme can be seen in Figure 5.

ACTIVITY DIAGRAM ON SYSTEM:

Activity diagram is a diagram that showing the activity of the system based on the user. This diagram show which parts are done by a particular user, making it easier in determining the user rules and previliges. Here are 3 sections of diagram of activities, namely activities by financial administration, and there are 2 diagrams that show the use of the system by the financial administration and financial section. Activity diagram of financial administration can be seen in figure 6. Diagram of transaction data input activity is in figure 7, and print report can be seen in figure 8. Activity diagram on transaction data input and print report can be done by both user, both financial administration and part finance. But to setup, master data can only be done by financial administration.

DESIGN FOR CHURCH FINANCIAL REPORT:

The financial statements are information that can be generated by the system based on data owned by the system. The Church's Financial Information System produces two main groups of reports: monthly financial statements and annual financial reports. The monthly financial statements are reports obtained based on the organization's daily transactions while annual reports are obtained based on the monthly reports that the system has generated. Monthly financial statements include Activity Report (Figure 9), Cash Flow Report (Figure 10), Financial Position Report (Figure 11), Cash Report (Figure 12), Acceptance Detail Report (Figure 13), detailed report expenses (Figure 14), Account Balance Report (Figure 15), and Cash Statement Report (Figure 16). Similar to the monthly financial statements, the annual financial statements also generate information on the Activity Report, Cash Flow Statement, Financial Statement / Balance Report, Cash Reports, Annual Report (Figure 17), Annual Expense Report (Figure 18), and Report Account Balance.

CONCLUSION:

Based on the design of Financial Information Systems that has been compiled then it can be formulated some of the following conclusions:

1. The design of Financial Information System developed includes flow charts of data recording accounting cycles, use case diagrams, entity relationship diagrams, activity diagrams, and draft design of financial statements of the church.
2. Data entry process on the system begins with budget planning, transaction evidence entry, general journal entry, and posting transactions.
3. The Financial System: The Church has 2 main users. i.e., the finance administrator, and the finance officer.
4. The system database consists of 15 tables divided into 3 groups, namely 1 church profile table, 10 main entity table and 4 tables of entity relation.
5. There are 3 activity diagrams that describe system activity that can be done by certain user.
6. The system is capable of producing 3 main reports of the financial system which includes activity reports, cash flow statements, and statement of financial position. In addition the system is also designed to produce 5 other financial statements in accordance with the needs of the church.

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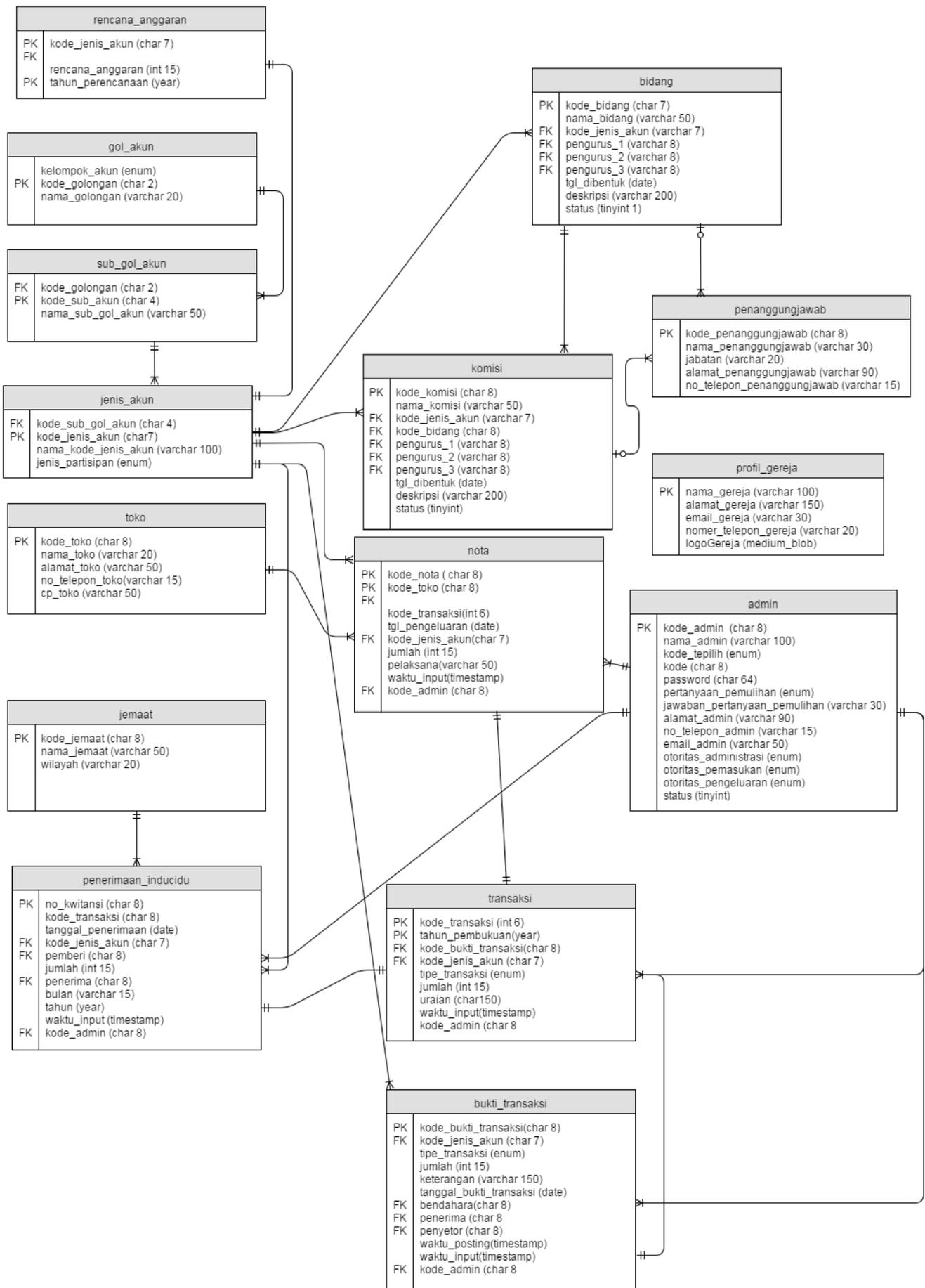
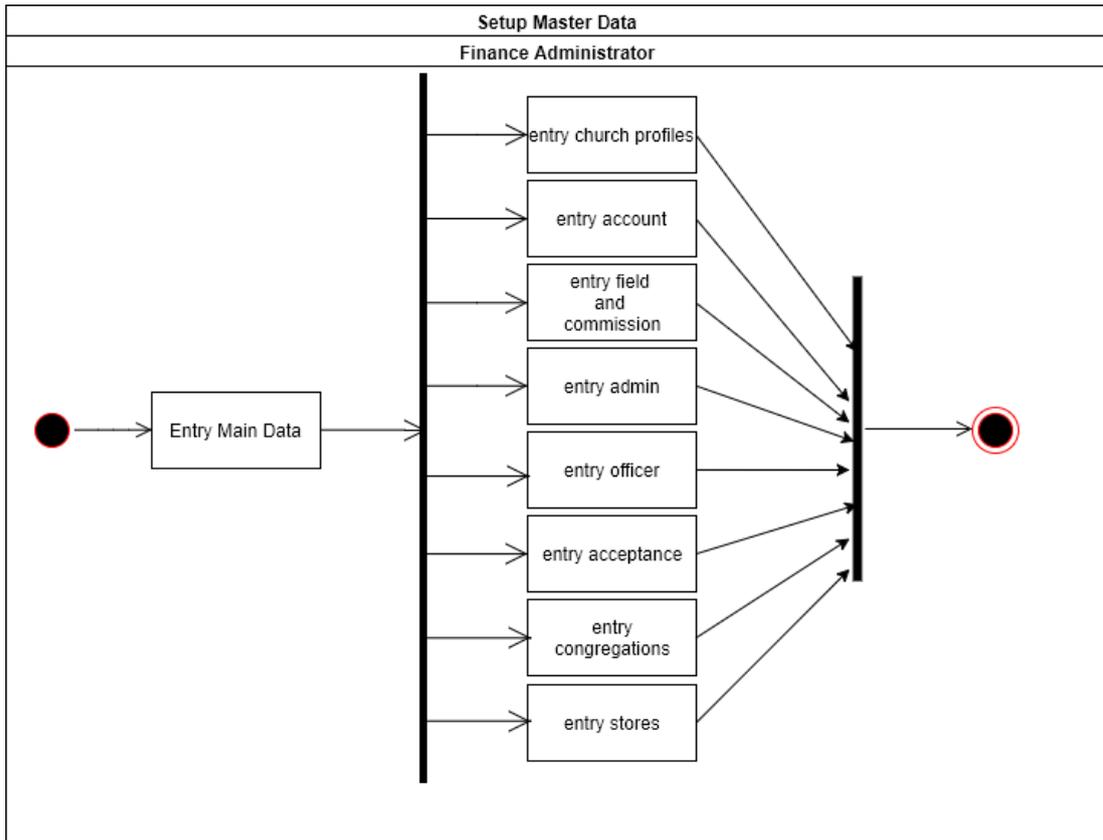**Figure 5: ERD for Christian Church's Financial System (Delima & Kristanti, 2016)**

Figure 6. Activity Diagram for Setup Master Data
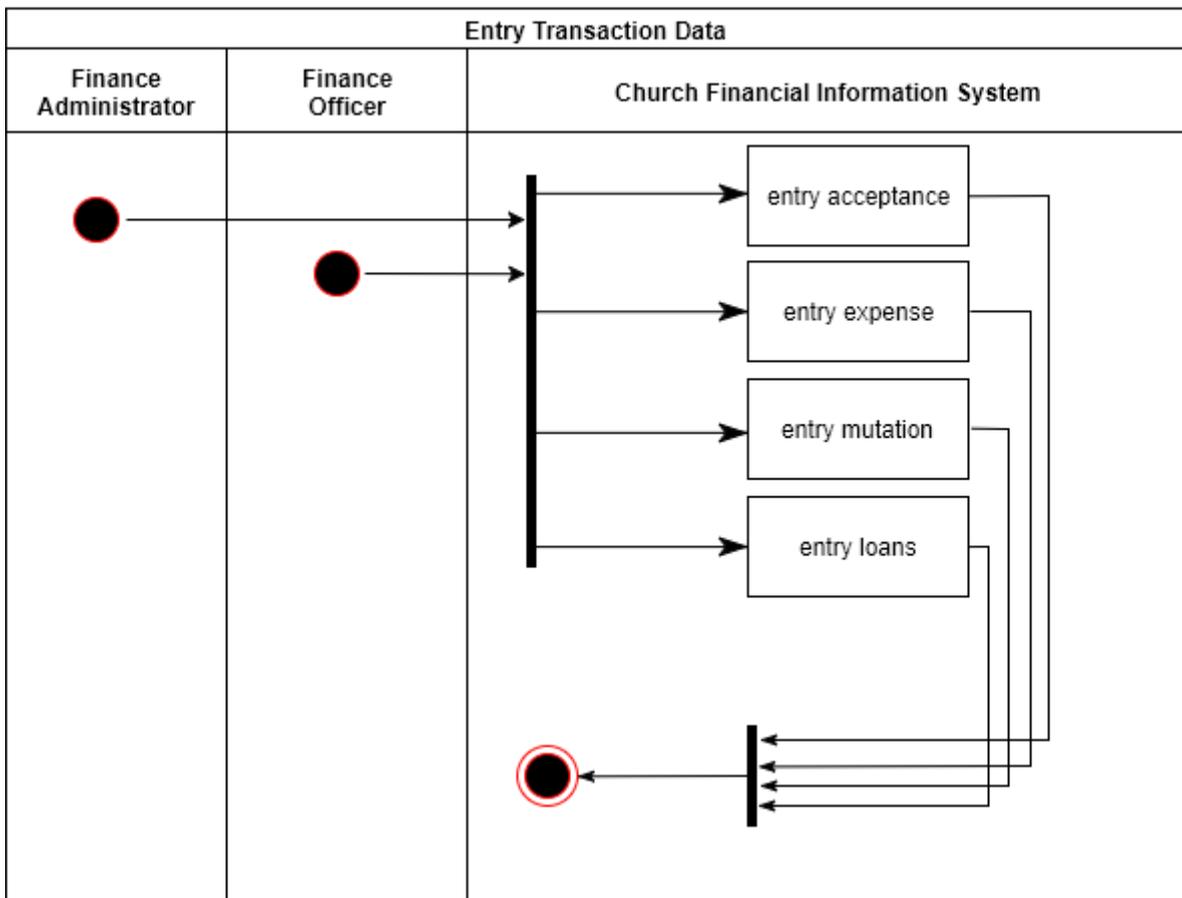
Figure 7: Activity Diagram for Input Transaction Data
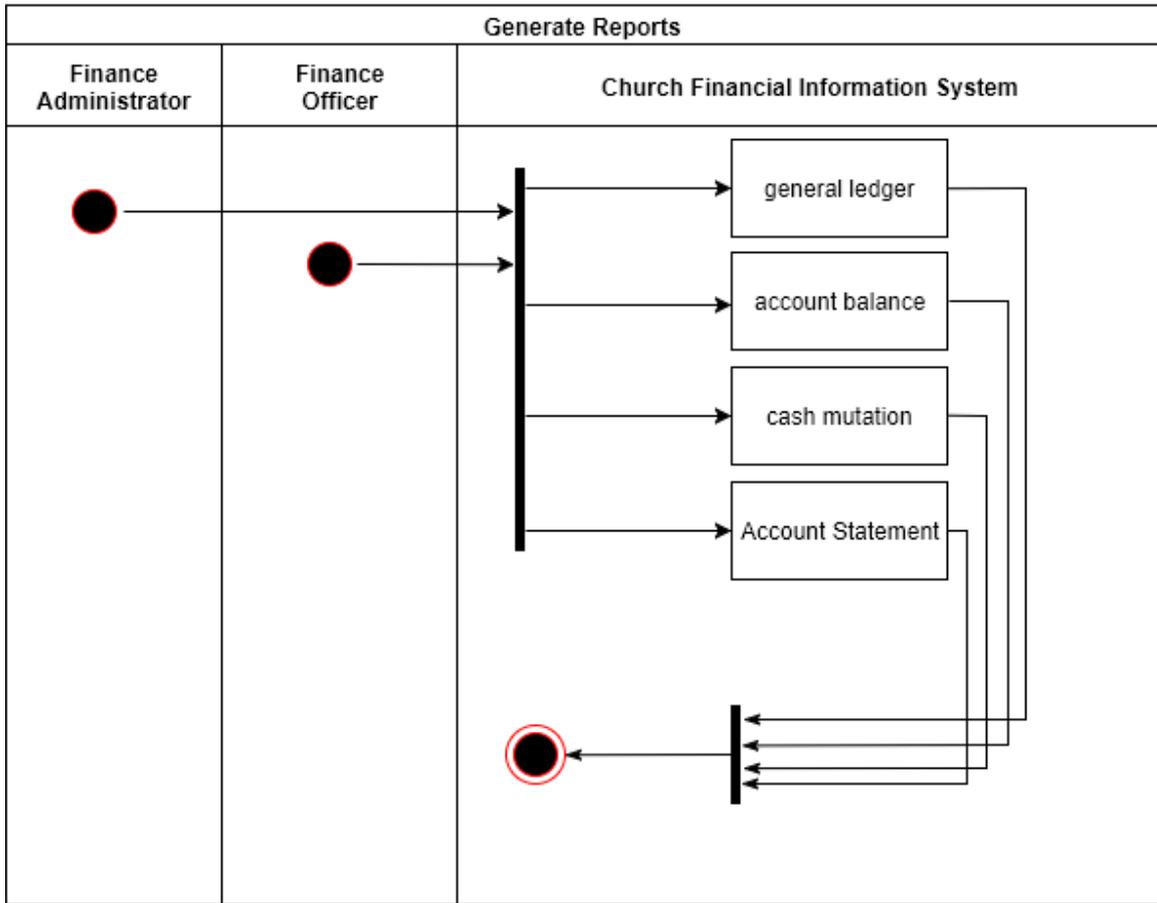
Figure 8: Activity Diagram for Generate Report

[Church Name]
Laporan Aktifitas
Periode : [month] [year] sampai [month] [year]

Pendapatan		Jumlah	Rumus
[account code]	[account name]	9999999	
Jumlah Pendapatan		**9999999**	Sum (pendapatan)
Beban			
[account code]	[account name]	9999999	
Jumlah Beban		**9999999**	Sum(beban)
Perubahan Aset Neto		**9999999**	Sum(pendapatan)-sum(beban)
Aset Neto Awal [month;year]		9999999	
Aset Neto Akhir [month;year]		**9999999**	Perubahan aset neto+aset neto awal

[city][date]
Bendahara,
[name]

Figure 9: Design of Activity Report on Church Financial Information System

[Church Name]
Laporan Arus Kas
Periode : [month] [year] sampai [month] [year]

Arus Kas Masuk		Jumlah
[account code]	[account name]	9999999
Jumlah Arus Kas Masuk		**9999999**
Arus Kas Keluar		**Jumlah**
[account code]	[account name]	9999999
Jumlah Arus Kas Keluar		**9999999**
Kenaikan bersih Kas		**9999999**
Saldo awal kas		
[account code]	[account name]	9999999
Saldo Akhir Kas		
[account code]	[account name]	9999999
Saldo Akhir Kas		**9999999**

[city][date]
Bendahara,
[name]

Figure 10: Design for Cashflow Report on Church Financial Information System

[Church Name]
Laporan Posisi Keuangan
Periode : [month] [year] [sampai] [month] [year]

Aktiva		Jumlah
[account code]	[account name]	9999999
Jumlah Aktiva		**9999999**
Pasiva		**Jumlah**
[account code]	[account name]	9999999
Jumlah Pasiva		**9999999**
Jumlah Aset Neto		**9999999**
Pasiva + Aset Neto		**9999999**

[city][date]
Bendahara, [name]

Figure 11: Design for Financial Position Report on Church Financial Information System

[Church Name]
Laporan kas
Periode : [month] [year] [sampai] [month] [year]

No	Kode	Pemasukan	Jumlah		No	Kode	Pengeluaran	Jumlah	
99		Saldo [bulan][tahun]			99				
99	[account code]	[account name]	9999999	9999999	99	[account code]	[account name]	9999999	9999999
							Jumlah Pengeluaran		**9999999**
							Saldo akhir kas		**9999999**
		Jumlah	**9999999**				**Jumlah**		**9999999**

[city][date]
Bendahara [name]

Figure 12: Design for Cash Report on Church Financial Information System

[Church Name]
Laporan Rinci Penerimaan
Periode : [month] [year] [sampai] [month] [year]

Kode	Uraian		Jumlah	
[account code]	**[account name]**			**99999999**
	[sub acc code]	[sub acc name]	9999999	
	Jumlah Pemasukan			**99999999**

[city][date]
Bendahara,
[name]

Figure 13: Design for Acceptance Detail Report on Church Financial Information System

[Church Name]
Laporan Rinci Pengeluaran
Periode : [month] [year] [sampai] [month] [year]

Kode	Uraian		Jumlah	
[account code]	**[account name]**			**99999999**
	[sub acc code]	[sub acc name]	9999999	
	Jumlah Pengeluaran			**99999999**

[city][date]
Bendahara,
[name]

Figure 14: Design for Detailed Report Expenses Report on Church Financial Information System

[Church Name]
Laporan Saldo Rekening
Periode : [month] [year] [sampai] [month] [year]

Kode	Nama Rekening		Saldo	
[account code]	**[account name]**			**99999999**
	[sub acc code]	[sub acc name]	9999999	

[city][date]
Bendahara,
[name]

Figure 15: Design for Rancangan Laporan Saldo Rekening pada Sistem Informasi Keuangan Gereja

[Church Name]
Laporan Mutasi Kas
Periode : [month] [year] [sampai] [month] [year]

Nomor Bukti	Tanggal	Kode Rekening	Nama Rekening	Mutasi		Saldo
				Debet	**Kredit**	
[no. bukti]	[date]	**[account code]**	**[account name]**	9999999	9999999	99999999

[city][date]
Bendahara,
[name]

Figure 16: Design for Cash Statement Report on Church Financial Information System

[Church Name]
Laporan Penerimaan Tahunan
Periode : [month] [year] sampai [month] [year]

No	Kode Rekening	Nama Rekening	Januari	Februari	Maret	……..	Desember	Jumlah
99	[account code]	[account name]	9999999	9999999	9999999	9999999	9999999	**99999999**
	Jumlah Penerimaan		**9999999**	**9999999**	**9999999**	**9999999**	**9999999**	**99999999**

[city][date]
Bendahara,
[name]

Figure 17: Design for Annual Report on Church Financial Information System

[Church Name]
Laporan Pengeluaran Tahunan
Periode : [month] [year] sampai [month] [year]

No	Kode Rekening	Nama Rekening	Januari	Februari	Maret	……..	Desember	Jumlah
99	[account code]	[account name]	9999999	9999999	9999999	9999999	9999999	**99999999**
	Jumlah Pengeluaran		**9999999**	**9999999**	**9999999**	**9999999**	**9999999**	**99999999**

[city][date]
Bendahara,
[name]

Figure 18: Design for Annual Expense Report on Church Financial Information System

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