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## Analysis of Accounting System Requirements for Construction Companies

Sintia Nurani Korompis, Hedy Desiree Rumambi, Andreuw Kristian Pantow, Alpindos Toweula, Revleen Kaparang

Accounting Department, Manado State Polytechnic, Buha, Mapanget, Manado, 95252  
North-Sulawesi, Indonesia

Corresponding Author's Email: [hedydr@yahoo.com](mailto:hedydr@yahoo.com)

### Abstract

This study aims to determine the business processes of construction companies and analyze their accounting system requirements. This research uses a descriptive qualitative approach. It was conducted on 2 MSMEs in construction services (namely SUJM and SA) in North Sulawesi with business scales of K and M. To collect data, researchers used in-depth interview techniques. Intensive interviews were conducted with 4 informants such as the owners and the project manager from SUJM and SA companies to explore their perspectives on the overview of the entity, business activities, and business transactions. Data collection is also done through literature studies about accounting systems, internal control, and systems analysis. After collecting and reducing the data, we present the data focused on the construction company's business flow and the accounting system's needs. The researcher conducted a system requirements analysis with the stages of preliminary analysis, preparation of proposals for the implementation of system analysis, implementation of system analysis, and preparation of reports on the results of system analysis. From the results of the analysis, the researcher concludes an accounting system is needed by construction companies. The results show that the construction business process consists of project information, prequalification, tender, contract, execution, and product submission. Based on business processes and system analysis, the accounting system in construction companies includes the main accounting system, namely the reporting system, and the supporting accounting system, namely the cash receipts and disbursements system. The existence of the accounting system will assist the company in coordinating and monitoring its operational activities and make it easier for companies to prepare financial reports and tax reporting. This research has a practical contribution to construction companies in developing countries in building their accounting systems.

**Keywords:** Construction, Business Process, Accounting System Requirements.

### Introduction

The construction industry is one of the most developed business sectors today. This sector has a role in national development and has a great contribution to its users. One of the factors that cause competitiveness in the construction industry is an abundant workforce,

adequate supporting industries, and government support (Deng et al., 2013). A construction company is a company that generates income through the services provided. The results provided are usually at the request of the employer. Every company certainly expects profit growth in each period as a short-term goal. The long-term goal is to maintain the viability of the company so that it can survive in the midst of increasingly fierce business competition. One of the tools to achieve the company's goals is to build a good accounting system. An accounting information system is a computer-based system that ensures the quality of accounting information, enhancing control and cooperation within an organization. It helps in supporting the control, planning, and analysis of organizational activities (Teru et al., 2017). Accounting information systems have an important role for the progress of a company. With an accounting information system, it can carry out all its activities more effectively and efficiently. In addition, the output of the accounting Information system can also be accounted for in a decision making. Without an accounting system, an organization will experience difficulties in coordinating between parts of the company to monitor the number of ongoing operational activities and prepare financial reports. Elements of internal control in the form of organization, authorization system, and records are needed in making an accounting system. For this reason, the company needs to design an adequate accounting system so that it can improve internal control and minimize the occurrence of fraud that may be committed by employees. Implementation of accounting information systems can run well if the entity pays attention to the condition of the organization (Xu, 2010). Previous research found that accounting information systems can improve organizational performance (Al-Waeli et al., 2020; Putri & Endiana, 2020; Ahmad & Al-Shbiel, 2019; Hosain, 2019; Trabulsi, 2018; Khan, 2017; Dan Ali et al., 2016).

This research was conducted on a company in North Sulawesi which is engaged in the construction sector. The entity has the main characteristics of a construction company, namely the work carried out based on the request of the employer stipulated by the contract. Research on the existing accounting system is still general in nature, consisting of several cycles that form the system, namely the income cycle, the expenditure cycle, the production cycle, the human resource management cycle, and the ledger and reporting cycle (Romney & Steinbart, 2017). The system should be formed according to the needs of the company. The system design is needed to support the application of the system to be built, whether the new system is to be implemented according to needs (Wirawan et al., 2016). Based on the results of a survey on K (small) and M (medium) scale construction companies, it was found that some companies do not have an accounting system. The significance of this research is knowing the needs of the accounting system needed by construction companies to make it easier for entities to design accounting systems. A person's intention to use an accounting system is determined by the perceived benefits of using a system (Pantow et al., 2021) dan (Rahmawati & Narsa, 2019). This is indicated by the preparation of financial statements by external parties. To build an accounting system, the company needs to identify the system requirements according to its business processes. Therefore, the purpose of this study is to determine the business processes of construction companies and analyze the needs of the accounting system. This research is important or useful for construction companies in developing countries and is expected to be a reference for further researchers in the field of accounting information systems.

## Literature Review

### Accounting System

The system is two or more components that are interrelated and interact in achieving a goal (TMBooks, 2017). The accounting system is the organization of forms, records, and reports that are coordinated in such a way as to provide the financial information needed by management to facilitate the management of the company (Mulyadi, 2016). An accounting information system is a method of collecting, storing, and handling accounting and financial data that is useful for managers to make business decisions (Romney & Steinbart, 2017). The acceptance of accounting information systems in business has increased the effectiveness of the organization's operations, especially in large companies as well as good resource control and cost management, which will increase the value of the organization. (Saira et al., 2010).

Previous research conducted by Al-Hiyari et al (2013); Fitriati & Mulyani, 2015; Fitrials (2016) shows that acceptance of accounting information systems in business is likely to result in better quality accounting information. Information system processes can be summarized into three important groups, namely the revenue cycle, expenditure cycle, and resources (Mudjahidin, 2005). The revenue cycle means selling and earning revenue, and the expense cycle contains the process of obtaining materials to meet payments, and resources which means obtaining, storing, using, and optimizing the acquired resources. (Romney & Steinbart, 2017) explains the accounting information system consists of several cycles that make up the system, namely the income cycle, expenditure cycle, production cycle, human resource management cycle, and the general ledger and reporting cycle.

### System Analysis

Systems analysis is an exciting endeavor as well as an active field in which analysts continually learn new techniques and approaches to develop systems more effectively and efficiently (Ifeanyi Cosmas, 2018). System analysis can help stakeholders to provide information needs to users to carry out activities. It is hoped that the system created can provide benefits for management in supporting each of the existing functions. The system analysis stage is crucial in developing an information system (Mulyadi, 2016). If the system analysis does not go well, the resulting system cannot provide benefits to the user and becomes useless.

Therefore, it is necessary to have clear and structured stages so that the analysis of this system can be a strong basis for entering the next stage, namely system design. and system implementation. Four stages can be carried out in system analysis (Mulyadi, 2016). First, the preliminary analysis, this initial stage aims to identify the system to be built to provide information for the management of business activities. All information related to the company's operational activities is comprehensively collected and recorded. These data relate to the problems that occur. Second, proposing the implementation of system analysis, The implementation proposal contains the reasons for developing the system, the expected performance requirements of the proposed system, the limitations of the system analysis to be made, the information needed, and the sources that provide the information. Third, Implementation of system analysis, The implementation of system analysis is divided into the analysis of reports generated by the current system; analysis of transactions related to related organizational units, the study of the first record, and the study of the last record. Fourth, a compilation of reports on system analysis results, the report on the results of the system analysis contains the findings of the current system to be submitted to the information user. The contents of the report on the results of the system analysis also convey recommendations

related to the proposed system or the requirements that must be met by the proposed system.

### *Internal Control in Accounting Systems*

Internal control is one of the fundamental and necessary factors for efficient and effective management. The internal control system can also affect the characteristics of financial statements. The benefits of internal control will provide feedback on organizational achievements. Internal control systems and financial accounting systems had a significant positive effect on the quality of financial statements (Bangsa, 2018). Research conducted (Kiranayanti, 2016) shows that the internal control system has a positive effect on the quality of financial statements. An effective and efficient internal control system can prevent an organization from making mistakes or irregularities in carrying out its duties and authority, so that information produced in the financial statements can meet the criteria of financial statements and have good financial reporting quality (Septarini & Papilaya, 2016). The internal control system helps the company in safeguarding its assets. Not only that, the internal control system will ensure accurate and reliable financial and managerial reporting, optimize the use of resources economically and efficiently, and improve compliance with provisions and legislation (Efendi et al., 2013).

The internal control system has 6 basic elements, namely, honest and competent employees, proper procedures for granting authority, complete documents and records, adequate physical control of assets and records, and independent verification (Hall, 2007). According to the COSO (The Committee Of Sponsoring Organizations of Treadway Commission), Internal control consists of five components, namely: control environment, risk assessment, control activities, information and communication, and monitoring. The internal control system is useful for preventing or maintaining the occurrence of undesirable things (errors or frauds). Internal control functions to oversee all financial activities that occur in the company. Internal control can help the company and serve as a tool to implement control effectively. With the existence of internal control, managers can assure themselves that the information contained in the financial statements can be trusted.

### **Methodology**

This type of research is descriptive qualitative research that aims to explain the characteristics of the subject under study, investigate various aspects of a particular phenomenon, and provide ideas for the problem to be tested or investigated (Indriantoro & Supomo, 2016). This research was conducted on 2 MSMEs in construction services (namely SUJM and SA) in North Sulawesi with business scales of K (small) and M (medium). The classification of business scales of K and M is based on the number of contracts per year. To collect data, researchers used in-depth interview techniques. In-depth interviews are a qualitative research technique. Intensive interviews were conducted with a small number of informants to explore their perspectives on a particular idea, program, or situation so that the researcher could obtain more detailed information about a person's thoughts and behavior or explore a new problem in depth (Boyce & Neale, 2006).

The number of informants involved in the interview process was 4 people consisting of the owners and the project manager from SUJM and SA companies. The data collected includes an overview of the entity, business activities, and business transactions. Data collection is also done through literature studies about accounting systems, internal control, and systems analysis. Data analysis consists of data reduction, data presentation, and



conclusion drawing (Miles et al., 2014). Data reduction is done by summarizing, selecting, and focusing on business processes, activities and transactions. The presentation of the data is focused on the business flow of the construction company and the needs of the accounting system. To analyze the accounting system requirements, researchers conducted 1) Preliminary analysis, 2) Preparation of proposals for the implementation of system analysis, 3) Implementation of system analysis, 4) Compilation of system analysis reports so that conclusions can be drawn from the accounting system requirements for the construction company.

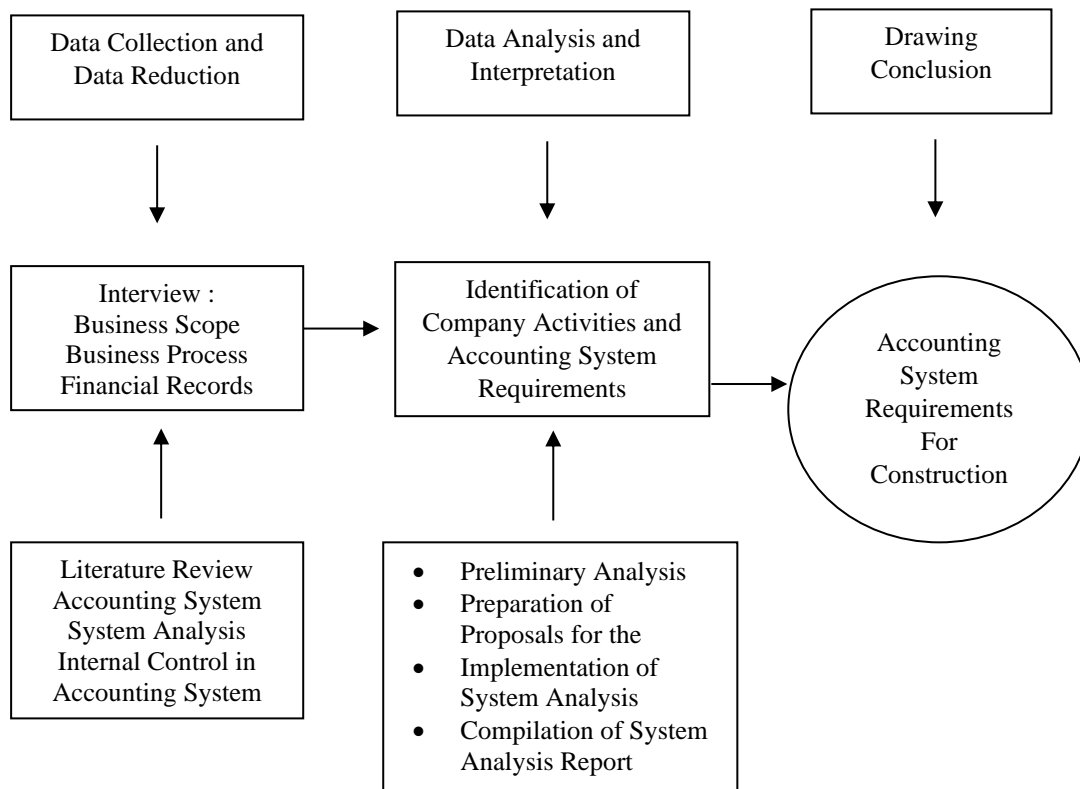


Figure 1: Research Method

## Results and Discussion

This section includes an explanation of the findings and the four stages that can be carried out in system analysis, including 1) Preliminary analysis, 2) Proposal for the implementation of system analysis, 3) Implementation of system analysis, and 4) Compilation of reports on system analysis results. The findings explain the data obtained from interviews and literature studies after which it begins with system analysis.

### a. The Business Process of a Construction Company

The initial stage of this research is to identify the business processes of construction companies. A construction company is a company engaged in construction services and actively participates in construction work auctions in government and private agencies. Data, general description, and flow of operations related to the company were obtained by conducting interviews and observations with company owners. Based on the information obtained, the researcher then analyzes the needs of the accounting system needed to support the company's goals, namely to earn profits and maintain the viability of the company. By

analyzing system requirements, the implementation of the system to be built can be carried out appropriately according to user needs.

A business process is a series of interrelated activities to achieve certain business goals that are completed sequentially or in parallel, by humans or systems, both inside and outside the organization (Maleyeff, 2020). A collection of related activities is carried out to generate demand from consumers. Identification of business processes is an important part of building an accounting system. The organization's business processes are factors that must be considered when planning a new accounting information system (Laudon & Laudon, 2010).

A collection of related activities is carried out to generate demand from consumers. Identification of business processes is an important part of building an accounting system. The organization's business processes are factors that must be considered when planning a new accounting information system. The construction company's business process begins with Project Information. Project information is obtained by the company to obtain new projects. This information can be obtained from various sources, including print media and online media, and directly from clients or customers. Construction companies that have a good track record usually have potential clients who will later be needed for the next project from the relevant client or other projects based on the recommendations of clients who have had satisfactory results from the work of the construction company. This stage is also used by the company to introduce the company and provide offers to customers.

The second stage is the pre-qualification process. Employer companies at this stage are trying to get their companies included in the employer's tender list. Activities carried out by hiring companies are to monitor existing opportunities and the results of pre-qualification. While the selection process is carried out by the employer according to the established indicators. The next stage is the tender process. At this stage, the company has obtained a tender from the employer. The essence of this stage is the negotiation process between the employer and the recipient and the analysis of the wishes of the client. The results of the negotiations will produce a proposal containing technical activities, budgets, costs, and administration. Next is the contract-making process. Both parties check the contents and completeness of the contract and sign as proof of their agreement to the contents of the contract. After the contract is available, the next stage is the process of implementing the work. At this stage, the Company has prepared a work plan and coordinated with the parties involved until the work is completed. The last step is to make a report based on the activities that have been carried out. After all, stages are carried out and the work is available, the product is delivered to the customer.

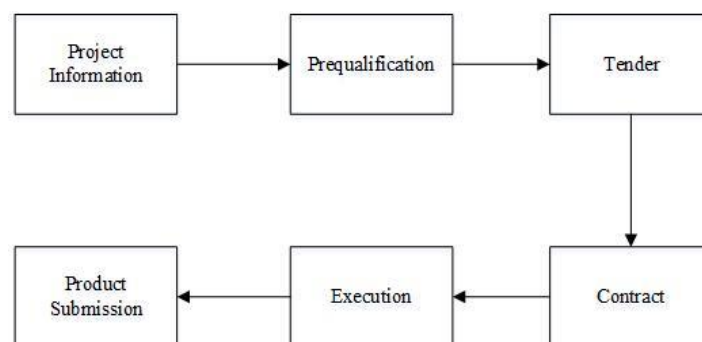


Figure 2: Business Process of Construction Company

**b. System Analysis in Construction Companies**

1) Preliminary Analysis

MSMEs in construction services, which are the object of our research, do not have an accounting system at all. The main problem faced by MSMEs in construction services is that the recording of financial transactions is still done manually. In addition, limited human resources are also an obstacle in carrying out operational activities. In MSMEs in construction services, financial records do not run as they should. The absence of an accounting system that regulates the financial procedures that run in the company. Financial management is only based on notes, proof of purchase/receipts, and checking accounts. Activities that overlap and only burden one party as well as irregular data storage are also caused by the absence of a system that regulates the company's operational activities. In receiving income for services provided by MSMEs, construction services receive payments by transfer to the account of the owner/director. Storage of data on the income is based on the checking account. Furthermore, in the management of cash disbursements are also not recorded directly. Documentation for each cash disbursement is based on purchase notes/receipts for the purchase of goods in operation as well as cash disbursements for administrative costs in the form of electricity, water, telephone, stationery, photocopy, stamp duty, and transportation. Based on these circumstances, it is necessary to develop an accounting system to support the operational activities of Construction SMEs.

2) Preparation of proposals for the implementation of system analysis.

The reason for the system analysis is to maintain company assets and check accounting data and internal control. The limitations of the accounting system are the management of cash receipts from income for project work by construction MSMEs and the management of cash disbursements for operational costs, purchases, and payment of wages/salaries. In addition, a system is built with the output of producing financial reports. Therefore, the company also needs a reporting accounting system.

3) Implementation of System Analysis

Table 1

*Identification of System Requirements*

Activities	System Requirements	Accounting System
Project Information	Management of the costs incurred getting clients, client maintenance, compiling and formulating project TORs, and presenting projects.	Cash Expenditure System and Reporting System.
Prequalification	Management of costs incurred to monitor pre-qualification opportunities, pre-qualification registration with tender holders, and preparation of documents related to pre-qualification.	Cash Expenditure System and Reporting System.
Tender	Management of the costs of analyzing client requests, preparing technical proposals for activities, costs to be incurred, administrative costs, the negotiation process, and costs incurred for experts to analyze projects.	Cash Expenditure System and Reporting System.



Contract	Management of costs incurred for completeness of contracts and filing (Transportation and administration costs).	Cash Expenditure System and Reporting System.
Execution	Management of costs incurred for coordination in the field of project design, project management with customers or related agencies, surveying the place of project implementation, and the cost of purchasing project raw materials.	Cash Expenditure System and Reporting System.  Cash Receipt System and Reporting System
Product Submission	Earning income from clients on project work.	

#### 4) Compilation of System Analysis Report

Based on the results of the analysis in the table above, the systems needed by Construction MSMEs include a cash receipt system, a cash expenditure system, and a reporting system.

##### *Cash Receipt System*

Revenues for Construction MSMEs come from construction project revenues. Cash receipts are sourced from the results of client payments in the form of cash transferred to the bank account of the company owner. The company has no accounting records. The proof of the transaction is only in the form of a checking account from the bank. The company does not have an accounting system to process activities related to the company's income. Financial records are only done simply. The impact of this is that the company does not have up-to-date information regarding the description of the company's financial transactions so making economic decisions will be difficult. Policy regarding cash receipts by the company through gradual disbursement. The process is that the customer will provide an advance amounting to the agreement between the client and the construction service provider company. Disbursement of the progress of work or physical percentage of the work that has been done.

The procedure for cash receipts is as follows: a) The client (government or private agency) provides the necessary information related to project implementation, b) the company prepares the project design and budget, c) the company participates in the tender, d) the company signs the contract, e) the preparation of the project work plan according to the contents of the contract letter, f) Disbursement of the project advance payment terms g) Project implementation based on the budget agreed in the contract accompanied by the disbursement of the next project term, h) The company completes the project and the disbursement period reaches 100%, i) The company makes Project Reports and records in the general journal.

##### *Cash Expenditure System*

Similar to the cash receipts accounting system, Construction MSMEs do not keep accounting records related to cash disbursements. The company only keeps evidence of cash disbursement transactions without recording cash disbursement activities that occur. The cash issued by the Company is for the needs of paying salaries, administrative and general costs such as telephone costs, electricity costs, transportation costs, client maintenance costs, and purchasing equipment and equipment for operating activities. The cash disbursement accounting system has the aim of spending efficiency and controlling the money that goes out of cash.

Cash disbursement procedures that occur in the two construction companies are divided into 3 parts: 1) Cash disbursement procedures for payment of employee salaries and wages. This procedure is based on employee attendance lists and payroll registers. The HR department will do that. Salary payments will be calculated based on the number of employee attendance and the calculation of wages based on the number of hours worked, 2) Cash disbursement procedures for administrative and general costs. This procedure is based on a letter of request for cash disbursements and proof of transactions for cash disbursements. A cash disbursement request letter is made by a party requiring cash disbursements to be given to the cash person in charge as the basis for cash disbursements. After the transaction is executed, the proof of the transaction is also submitted to the person in charge of cash for later making a cash disbursement report. 3) Cash disbursement procedures for purchases. The documents needed are invoices from suppliers and a list of purchases of goods. Based on this data, the purchasing department will physically match the goods with the information on the purchase list. After the goods inspection and invoice are received by the finance department, payment will be made.

### *Reporting System*

The Reporting System starts from the general journal which is the output of the cash receipts and disbursements system. The general journal is the initial accounting record and then proceeds according to the accounting cycle to produce financial statements and tax returns.

### **c. Accounting Systems In Construction Companies**

Internal control is needed to support the effectiveness and efficiency of the accounting process so that financial statements meet one of the qualitative principles of accounting information, namely reliability. A reliable accounting system means that the system built can protect the company's assets from actions that are detrimental to the company. The quality of the company's financial statements is influenced by whether or not the system is good. Therefore, internal control must be in all parts of the system, both the main system and the support system.

The internal control of the accounting information system refers to the relevant rules and regulations of the company to ensure the integrity of the normal business activities of accounting, accounting data, and the accuracy of the company's assets, by accounting principles and accounting systems, controls, business processes, etc. related management measures. The internal control system includes internal control procedures, internal control organization, manual accounting records, and human resources involved, and the overall interaction to achieve internal control of accounting information systems. So each sub-system that exists has its internal control and is interrelated with one another.

The objectives of internal control are operational effectiveness and efficiency, financial reporting reliability, and compliance with applicable rules and regulations. Control activities related to financial reporting include, among others, proper design of documents with serial numbers, segregation of duties, adequate authorization of every construction transaction that occurs, securing company assets and records, as well as creating independent checks on the work of other employees. For internal control over cash to run properly, one of the factors that need to be considered by the company is to use a petty cash fund system to facilitate the payment of various expenses that occur regularly and are relatively small in amount. The amount of petty cash fund and its use is determined based on company policy. Companies

can use the petty cash fund recording method with the fluctuation method or the fixed fund method. For large expenses/materials, it is necessary to use a check. Every transaction of disbursement of terms and expenses to purchase materials using a bank account. For the payment of wages for workers and employees, the company can withdraw funds from the bank only for the amount to be paid. Payment of wages is based on the working time records of each project worker. For the accounting information system built to produce adequate financial information, every cash receipt and disbursement must be based on valid evidence and have authorization from the authorities.

In addition, there needs to be a separation of duties between employees who perform the function of recording and storing cash. The design of an accounting information system for Construction Services SMEs is built from construction business activities. Interested parties (stakeholders) include company owners, employees, suppliers, clients, the government (tax office), and the general public. Suppliers are suppliers of materials that will be used in the construction process. The client is the party who gives the work/project. The government in this case is the tax office as the party receiving tax payments from the company. The general public is the community around the project site that receives the impact of construction activities.

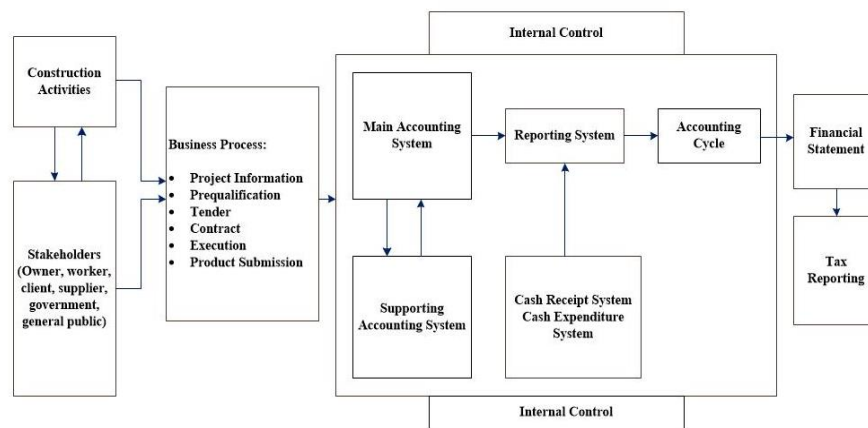


Figure 3: Accounting Information System Design

### Conclusion

Construction service companies are one form of MSME in North Sulawesi. Even though their business category is small and medium scale, their business management is still very simple with a very simple organizational structure. Their financial management is also still very simple by keeping financial records limited to money coming in and going out. They do not prepare financial statements but make balance sheets for tax reporting needs by using the services of external parties. So that company owners can carry out their operational activities more professionally and can present more accountable financial information, they need to build an accounting system based on their business processes.

From the business process of MSME construction services, an accounting information system can be designed which includes the main accounting system, namely the reporting system, and the supporting accounting system, namely the cash receipt and disbursement system. Considerations not to design a more complex system because it is based on very simple business activities where the source of business from construction service revenues and expenses that occur focuses on operational costs, material costs, and labor costs. Internal

control as part of the system also includes internal control over reporting, cash receipts, and disbursements. This accounting system will culminate in producing financial reports that will be used in tax reporting.

This research provides a practical contribution for construction companies in developing countries that have small and medium scale businesses in building their accounting systems. This study also broadens the concept of accounting system. The limitation of this study is the use of K and M scales companies. The larger the company will require a more complex accounting system.

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