Identification and analysis of application of Construction Management System (CMS) in the implementation of construction management

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Identification and analysis of application of Construction Management System (CMS) in the implementation of construction management

B Hidayat[1], A Suraji[1], R Frankly[2]

[1]Civil Engineering Department, Andalas University, Padang, Indonesia.
[2]Student of master of Civil Engineering, Andalas University, Padang, Indonesia.

Email: bennyhidayat@eng.unand.ac.id

Abstract. Construction projects are growing increasingly large and complicated today both in terms of physical and cost. In practice a project has limited resources, in the form of people, materials, costs, tools, and in the completion of project administration. This requires a CMS (Contruction Management System) starting from the initial phase of the project to the project review phase. The Construction Management Association of America (CMAA) states that there are seven main categories of responsibilities for a construction manage, namely project management planning, price management, time management, quality management, contract administration, safety management, and professional practice. Therefore this study aims to determine whether the contractor implements CMS (Contruction Management System) from the initial phase of the project to the final phase of the project and to analyze the effect of the application of CMS (Contruction Management System) on the smooth construction of a construction project.

1. Preliminary

Construction projects are growing increasingly large and complicated today both in terms of physical and cost. In practice a project has limited resources, in the form of people, materials, costs, tools, and in the completion of project administration. This requires a CMS (Contruction Management System) from the initial phase of the project to the phase of project completion.

There are limited resources in a construction project, so that the implementation of CMS (Contruction Management System) is often neglected. The implementation of CMS (Contructions Management System) is not implemented from the initial phase of the project to the phase of project review. Therefore, the authors are interested in reviewing the evaluation of contractor qualifications on the application of CMS (Contruction Management System) in three construction project locations located in the city of Padang.

To find out whether the contractor applies CMS (Contruction Management System) from the initial phase of the project to the final phase of the project. To analyze the effect of the application of CMS (Contruction Management System) on the smoothness of a construction project.

This research is expected to generate awareness for the contractor in order to implement the CMS (Contruction Management System) from the initial phase of the project to the final phase of the project.

The problem limitation in this study is :

1. The project being reviewed is in companies engaged in the Contractor Executor namely PT.A, PT.B, CV.C, CV.D.

2. The CMS (construction management system) category that is taken is the implementation of cost management, time, quality, project administration, OHS management and identification of problems encountered in implementing the project.

The research methodology provides an overview of the research process and the way of thinking of the researcher starting from the basic preparation of conducting research, the process of collecting and analyzing data to drawing conclusions and suggestions. This research methodology is described in detail in section 3 in the form of thinking framework and research flow so that the research is well directed, the selection of research objects is PT.A, PT.B, CV.C, CV.D. Data collection methods by means of literature study, in-depth interviews and field observations and data analysis with qualitative deductive methods.

2. Literature review

The project is a set of activities that are interconnected where there are starting points and end points and certain results, the project is usually cross-functional organization so it requires a variety of skills (skills) from various professions and organizations. Every project is unique, not even two projects are exactly the same. Dipohusodo (1995) states that a project is an effort that mobilizes available resources, which are organized to achieve certain important goals, objectives and expectations and must be completed within a limited period of time in accordance with the agreement.

Construction management is a form / method in the construction industry construction process where the stages of design, planning and implementation are needed as an integrated / integrated system building (Donald S. Barrie, 1978). Whereas the construction manager is a multi-disciplinary professional, tough and independent institution / agency that works for project owners from the initial planning to the operation of the project to achieve optimal results in the aspects of time, cost and quality as determined and able to cooperate with architect engineers (AE) (Donald S. Barrie, 1978).

The ability of a company organization to determine its position for success depends on the management and character of the resources the contractor has as a competitive advantage in increasing the quality of the company. Characteristics of an organization will have the effect of competition in winning business competition which is the answer in the development of a business form (Syafarudin Alwi, 2001). According to the Construction Services Development Agency (LPJK) Number 11 of 2006, explains that the characteristics of the contractor relating to the qualification of the form of a business entity in re-registering a business entity that carries out construction services business.

Decree of the Minister of Settlement and Regional Infrastructure No. 339 / KPTS / M / 2003, Regarding Standards and Guidelines for Construction Service Procurement, the contents of which are factors assessed for construction work implementation services (chartering) in participating in the tender process organized by the procurement committee for goods and services both with pre-qualification and post-qualification systems.

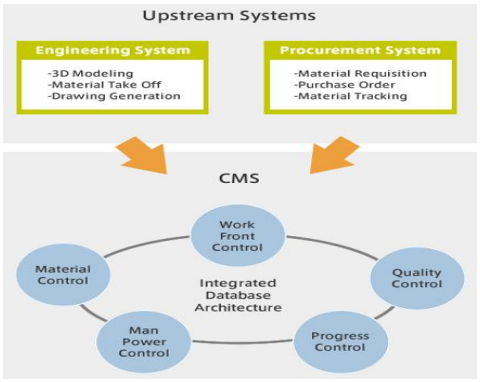


Figure 1. Construction management system

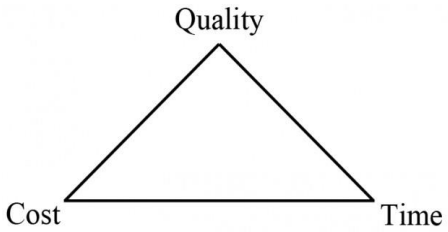


Figure 2. The main variable triangle in construction management

3. Research methods

The method that will be used for this research is a qualitative descriptive method, which is research that produces descriptive data in the form of written or verbal words from people and observable behavior. Qualitative research is also an inductive approach to the preparation of knowledge that uses research and emphasizes subjectivity and the meaning of experience for individuals (Brockopp, MarieT, Hastings-Tolsma, 2000). According to Sudjana 1989, descriptive method research is research that describes a symptom, fact, event, or event that is taking place or has occurred by revealing the true symptoms. This research method was chosen by the researcher to reveal the contractor's exposure to the management of costs, time, quality, project administration, K3 management and identification of problems in the implementation of the project. In the data collection method first determine the type of data to be collected and what techniques are used to collect the data.

The data to be collected is secondary data and primary data. Primary data collection was carried out by direct in-depth interview method with the contractor, questionnaires were given directly to the technical staff involved in the implementation of the project to be examined. Secondary data is data derived from the results of reports, literature studies, or other publication data. Preliminary surveys in the form of exploitative studies were carried out through field research. Field studies are carried out with in-depth observation and interview techniques, then will be analyzed qualitatively. Analysis of research data is processed from the data from in-depth interviews about the identification of contractor implementation on the management of costs, time, quality, project administration, OHS management and identification of problems in project implementation.

Qualitative analysis is participatory observation, namely researchers as observers as well as research participants. Data processing in this study uses data obtained from interviews and contract documents on the project under study. The case study taken consisted of 11 construction projects in 4 construction companies. From the results above it can be concluded that where will be obtained the results that the more disciplined the contractor in the implementation of the management of costs, time, quality, project administration, K3 management and identification of problems in the implementation of each project then the more smooth implementation of construction projects from the beginning or PCM until handover of work or PHO. After all matters relating to the research are completed, the conclusion is drawn from the study of the evaluation of the contractors' qualifications for the application of the CMS.

Table 1. Selection of contracting companies and projects done

No.	Company name	Project Work
1.	PT. A	Project A1
	Name of Respondent : AA	
		Project A2
		Project A3
2.	PT. B	Project B1
	Name of Respondent : BB	
		Project B2
3.	CV. C	Project C1
	Name of Respondent : CC	
4.	CV. D	Project D1
	Name of Respondent : DD	
		Project D2
		Project D3
		Project D4
		Project D5

4. Results and discussion

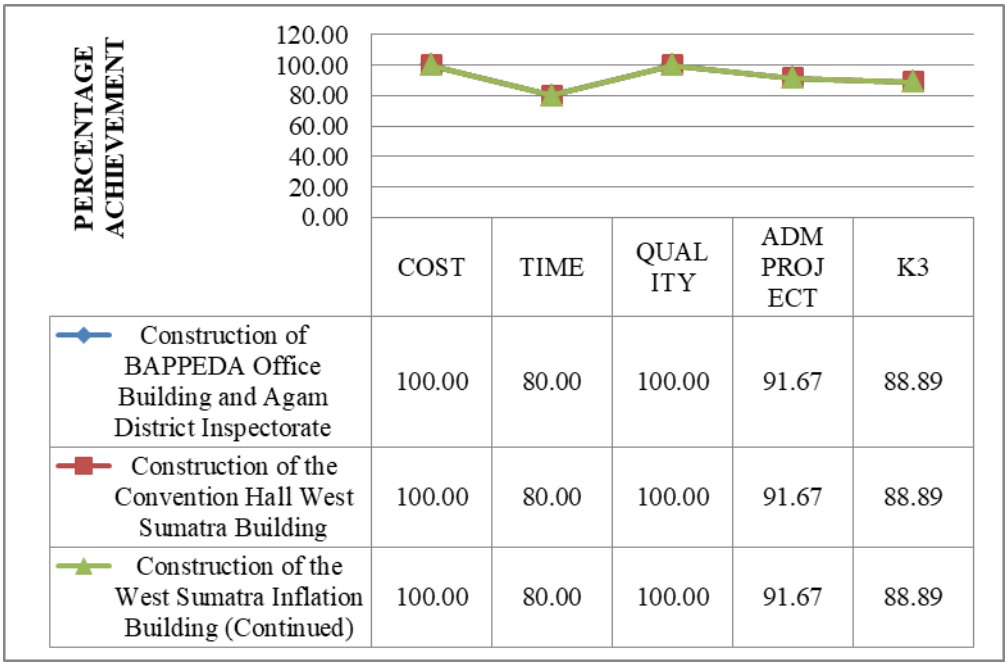


Figure 3. Percentage of achievement of PT.A in the application of CMS

From the picture above shows that the application of CMS in PT.A is known to apply the value of the percentage value of 100%, the application of the percentage time value of 80%, the application of the quality of the percentage value of 100%, the application of administration project percentage value of 91.67%, and application of K3 percentage value of 88.89%.

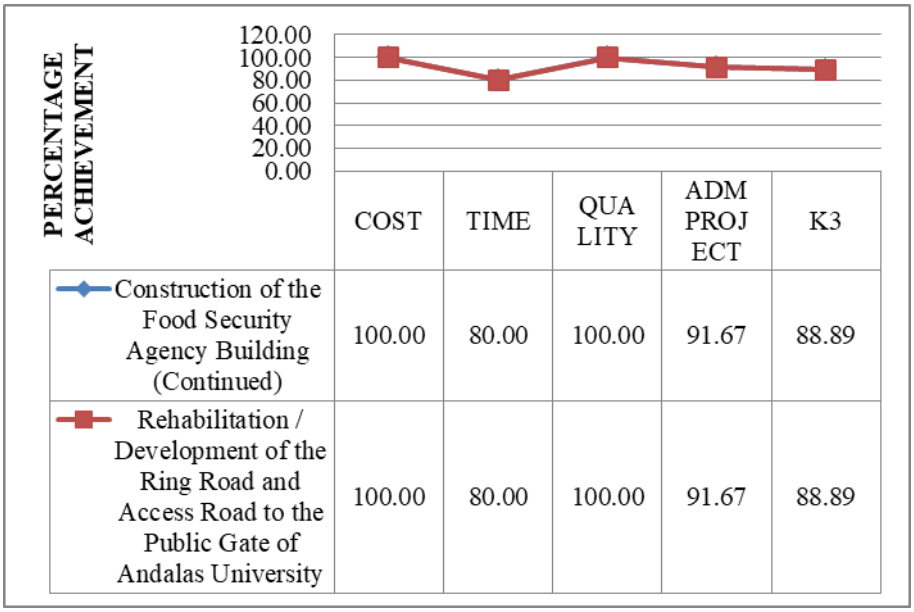


Figure 4. Percentage of PT.B achievement in CMS implementation

From the picture above shows that the application of CMS in PT.B is known to apply the percentage value of 100%, the application of the percentage value of 80%, the application of the quality of the percentage value of 100%, the application of adm. project percentage value of 91.67%, and application of K3 percentage value of 88.89%.

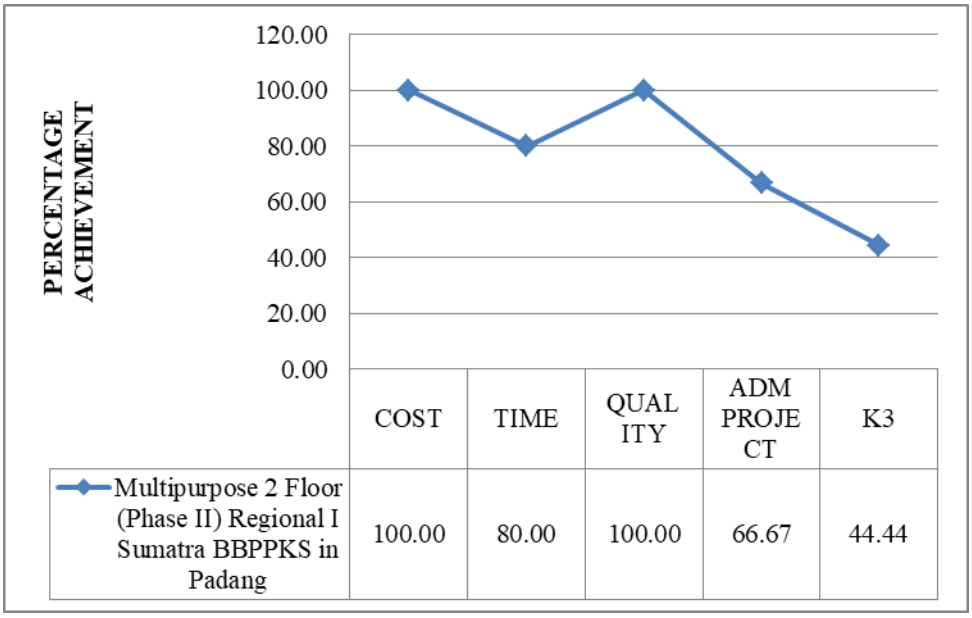
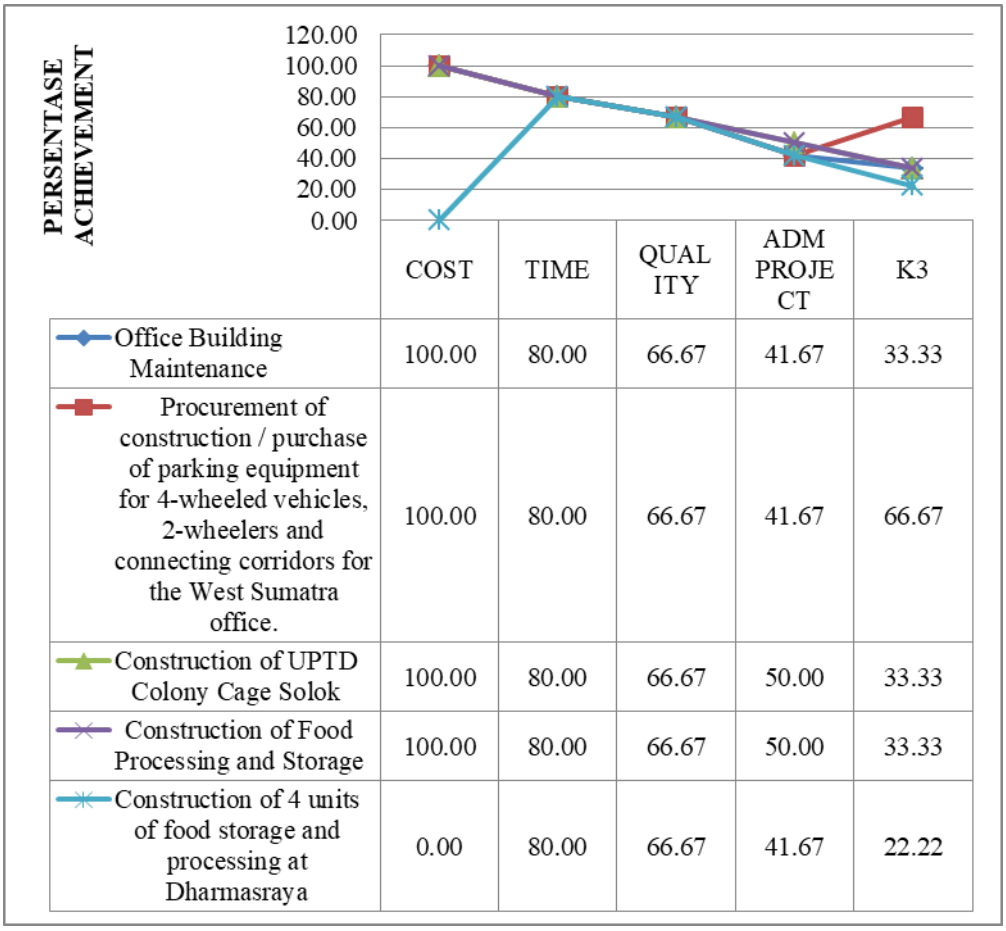


Figure 5. CV.C achievement percentage in CMS implementation

From table 61 and figure 6, it can be seen that the application of CMS to CV.C is known to apply the percentage value of 100%, the application of the percentage time value is 80%, the application of the percentage value quality is 100%, the application of adm. project percentage value of 66.67%, and application of K3 percentage value of 44.44%.



	COST	TIME	QUALITY	ADM PROJECT	K3
Office Building Maintenance	100.00	80.00	66.67	41.67	33.33
Procurement of construction / purchase of parking equipment for 4-wheeled vehicles, 2-wheelers and connecting corridors for the West Sumatra office.	100.00	80.00	66.67	41.67	66.67
Construction of UPTD Colony Cage Solok	100.00	80.00	66.67	50.00	33.33
Construction of Food Processing and Storage	100.00	80.00	66.67	50.00	33.33
Construction of 4 units of food storage and processing at Dharmasraya	0.00	80.00	66.67	41.67	22.22

Figure 6. Percentage of achievement of CV.D in CMS implementation.

From table 62 and figure 7, it can be seen that the application of CMS to CV.D is known to apply a percentage value of 100% for four activities and 0% for development activities. 4 units of storage and feed processing in dharmasraya due to the construction of 4 place units. feed storage and processing in Dharmasraya does not make a cost control report and the contractor only controls the amount of money that has been spent on the project. application of the percentage time value of 80%, the application of the quality of the percentage value of 66.67%, the application of adm. project percentage value of 41.67% for maintenance of office buildings, procurement of construction / purchase of four-wheeled vehicle packing equipment, 2-wheeled vehicles and connecting corridors of the West Sumatra office, and construction of 4 units of storage and feed processing at Dharmasraya. And the percentage of 50% for development activities is sometimes the UPTD Kab. Solok and construction of feed processing and storage facilities. the application of K3 percentage value is 33.33% for the maintenance of office buildings, building the enclosure of the UPTD district colony. Solok and construction of food processing and listening facilities. the application of K3 percentage value of 66.67% for maintenance activities of office buildings, procurement of construction / purchase of packing equipment for 4-wheeled vehicles, 2-wheeled vehicles and connecting corridors of West Sumatra offices, and the application of K3 with a percentage value of 22.22% for the construction of 4 units feed storage and processing at Dharmasraya.

5. Conclusions and recommendations

Based on research that has been carried out from 4 companies and 11 projects under study, generally contractors who implement CMS (Contruction Management System) from the initial phase of the

project until the final phase of the project are M or medium qualified companies. Whereas for companies with K or small qualifications, applying CMS (Contruction Management System) does not work from the initial phase until the final phase of the project. The impact of the application of CMS (Contruction Management System) is known from 4 contractor companies and 11 construction projects under study. CMS (Contructions Management System) is very helpful and supports the smooth running of projects.

From the above conclusions, suggestions can be given that are useful for the next researcher: This research is a case study and only carried out on 4 contractor companies and 11 construction projects. So for further research should be done with the number of contractor companies and more construction projects. So finding more detailed benefits about implementing CMS (Contruction Management System) for contractors from the initial phase to the final phase of project implementation.

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