

## Success Factor Management Analysis of Self-Management System For Building Projects

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### Abstract

The requirement of project management in construction is needed to be able to set priority aspects of implementation from the beginning to the end, to make it succeed and happen as a plan. Self-management is one of the managements to the owner and some scope is to universities that have resources qualified as self-management. Success factor analysis of self-management aims to determine the priority success factors and characteristics of buildings that can be used for self-management. The analytical method used in this research is Analytical Hierarchy Project or AHP. Based on the results of the study, it was obtained 4 respondents who met the criteria for self-management and 10 factors of success, namely quality with 21.33%, leadership / managerial 16.94%, cost 16.89%, 15.68% customer satisfaction, administration 8%, human resources 7.40%, and the other factors such as time with 4.79%, suppliers 3.24%, labor 3.17%, and place characteristics 1.99%. The characteristics of buildings can be done independently, namely; having location or place of development that is owned by the community in a certain area, possessing the development that empowers human resources belonging to mass organizations and community groups, and owning a team of consultants and supervisors to improve planning, scheduling, and increased supervision.

**Keywords:** analysis, success factor, self-management, building.

## I. INTRODUCTION

The management systems are planning, organizing, leading, and controlling the activity of members and other resources to achieve the project goals that have been determined. Self-management is one of the ways that can be implemented in the procurement of government or non-government goods/services. An implementation is a form of optimizing and improving human resources in government and non-government environments and also can be a community resource. The self-management team consists of the preparation team, implementation team, and supervisor, who have their respective duties. The implementation of self-management is divided into four types. There are type I, type II, type III, and type IV. What is the basic that implementing self-management in a development project has different processes and management? Each has its advantage and disadvantage. Hence, the development of a self-managed system is needed to obtain a better self-management system and quality of work.

In terms of cost, self-management can use a budget plan with variable prices, and the owner pays all costs incurred during project implementation. This budget plan allows the owner to determine whether or not the work is to be done. The self-management system does not have a fee or profit for the implementer, consultant, or supervisor. Still, they implement a monthly salary system without tax so that it saves more on the cost of a project. Quality starts from the implementation stage to the delivery of the work good quality because the implementer does not pursue the benefit of this self-managed management system. In terms of time, self-management does not recognize any penalties if there is a delay. However, an effort is still being made to avoid uncertainty as much as possible.

The success factor analysis in self-managed management aims to determine the priority success factors and characteristics of the building that can use self-managed administration.

## II. BUILDING CONSTRUCTION MANAGEMENT SYSTEM

### A. Self-Management System

PP No. 16 of 2018 shows that the procurement of goods or services through self-management is called Self-Management. Self-Management is a way of obtaining goods or services by the Ministry/Institution/Regional Apparatus, Ministry of Institution/other Regional Apparatus, community organization, or community group.

In the self-managed management system, the project owner is also the planner, supervisor, and development implementer. The procurement of service providers in this system does not go through an auction or tender process (Lestari and Nasri, 2004). Using own people can optimize and improve human resources and technical capability.

LKPP No. 8 of 2018 explains good/service that can provide through Self-Management if they are eligible as follows:

- a) The location and character are not interested in Businessmen or Providers, such as small-scale routine maintenance, remote or outermost locations (conflict areas), and renovation of uninhabitable buildings.
- b) Service for organizing research and development, special training education, upgrading, seminar, and workshop or counseling.
- c) The organizer of a contest or competition.
- d) Domestic creative and cultural economic efforts produce it for procuring festivals and cultural parades.
- e) Census service, survey, data processing, policy formulation, laboratory testing, and governance system development.
- f) Good/service is still under development.
- g) Good/service produced by community organizations and community groups.
- h) Good/service whose procurement requires public participation.
- i) Good/service that is confidential and only can be carried out by the Ministry/Institution/Regional Apparatus concerned.

The purpose and condition of self-management by LKPP No 8 of 2018, a requirement for an organizer who can carry out work through self-management:

- a) Self-Management Type I  
Self-Management organizers have sufficient resources and technical capability to implement Self-Management.
- b) Self-Management Type II  
Self-Management organizers have sufficient resources and technical capability to provide self-managed goods/services.  
Self-Management Type II can be carried out by:
  - 1) Ministry/Institution/Regional Apparatus that have duty and function following the self-management work to be carried out,
  - 2) Public service agency
  - 3) State University
- c) Self-Management Type III  
The requirements for implementing this Self-Management are as follows
  - 1) Community organization incorporated as a foundation or community organization incorporated as the association that has legal entity ratification from the Ministry in charge of legal affairs and human rights following statutory regulation,
  - 2) A Taxpayer Identification Number (NPWP) and fulfilled tax obligations in the last year, as evidenced by the submission of the Annual SPT (Statement Letter),
  - 3) An organizational structure/management,
  - 4) Article of Association (AD) and Bylaw (ART)
  - 5) A field of activity related to good/service held, following the AD/ART or Ratification of community organization,
  - 6) The managerial ability and technical experience in providing or working on similar goods/Services which have been self-managed within the last three years, both domestically and abroad, as the independent executor or in collaboration.
  - 7) A financial balance that has been adequately audited for the last three years following the law and regulations,
  - 8) An office with a correct, permanent, and transparent address in the form of personal or self-owned or leased, and
  - 9) If a community organization does a partnership, it must have a work agreement with the association that contains the responsibility of each representing the partnership.
- d) Self-Management Type IV  
Self-Management organizers fulfill the following requirements:
  - 1) Confirmation letter issued by the competent authority,
  - 2) an organizational structure/management,
  - 3) Article of Association (AD) and Bylaw (ART),
  - 4) A secretariat with a correct and precise address at the location where the activity is carried out,
  - 5) The technical ability to provide or work on similar good/Service that is self-managed.

**B. Factors Affecting the Success of Self-Managed Management**

The fifth edition of PMBOK states that the success of the project can achieve if it implements the following things

- a) The development process according to the project objective,
- b) An excellent approach to meeting the requirement for project success,
- c) Maintained communication and relationship and both are complying with the condition to suit stakeholder needs and expectations
- d) The balance between scope, schedule, Cost, quality, resource and risk, place characteristic, leadership/managerial, workforce, administration, supplier, and customer satisfaction.

In this study, ten factors influence the success of self-managed management cost, time, quality, place characteristic, leadership/managerial, human resource, labor, administration, supplier, and customer satisfaction.

**III. RESEARCH METHODOLOGY**

In this research, the research subject is the management system of self-management. In contrast, the object of the study is the success factor of building construction in the Special Region of Yogyakarta. The data collection technique that will be used is a questionnaire. This research uses the purposive sampling technique. Respondents' criteria are based on the requirement for implementing self-management that are suitable for research including:

- a) Owning sufficient resources (funds and land),
- b) Owning the technical ability of adequate human resources,
- c) Having knowledge and competence in self-management,
- d) Having in minimum two-year self-managed work experience,
- e) Being legally incorporated, and
- f) Owning an organizational structure or management in the institution.

**A. Data analysis methodology**

The AHP method is used to determine the priority of the success factor of a self-managed project. When the owner chooses a self-managed management system as a management option used for building construction projects, the work can be controlled better by the project and it possibly gets better work results as planned and agreed upon. Saaty's (1991) Analytical Hierarchy Process is the basis for making a decision, which is designed and carried out rationally by making the best selection of several alternatives evaluated with multiple criteria. According to Rajamuddin (2015), AHP must understand four basic principles,

- a) Decomposition that mean solving complex problems into an interconnected hierarchy.
- b) Comparative Judgment that is the process of assessing the relative importance of one criterion to one another.
- c) Assessment that affects the priority of the criteria. The comparison of each criterion element, according to Saaty, is like this:

TABLE I. SAATY SCALE

Scale	Description
1	Both the aspect are important
3	Element A is a little more important than the element B
5	Element A is more important than the element B
7	Element A is more important than the element B
9	Element A is more important than the element B

- d) Synthesis of Priority that uses the eigenvector value to get the deal of the relative weight for the decision-making element.
- e) Logical Consistency that means a consistent assessment of relative importance for interrelated criteria.

**B. AHP method flowchart**

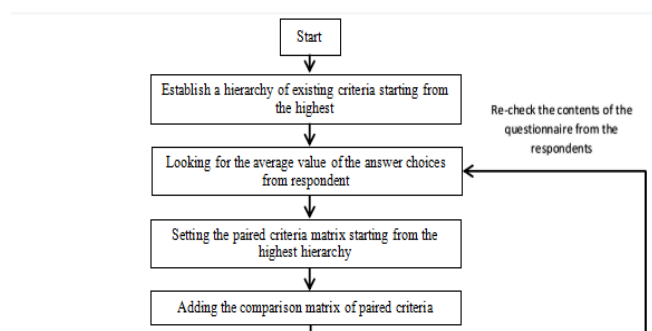


Figure 1. AHP Method

#### IV. DATA ANALYSIS AND DISCUSSION

##### A. Hierarchical Arrangement for Prioritizing Criteria

In the stages of building work construction, some aspects affect each of these stages. The planning stage includes part of the suitability of goal and objective (related to administration), aspect of field condition, aspect of quality standard and technical specification (related to supplier needs), aspect of implementation, economic aspect (related to cost), and aspect of effectiveness/efficiency (related to time). Then the implementation stage covers part of the cost, quality, and quantity aspect (related to quality), time aspect, resource management aspect, labor safety and welfare aspect, project environmental impact and involvement aspect, relationship, and service aspect (related to managerial), aspect of handling and solving problem (related to administrative), part of supervision, and aspect of result and benefit (related to customer satisfaction).

After that, the maintenance phase includes aspects of quality and quantity (related to quality) and cost elements. Then, the criteria obtained from the factors contained in each stage most frequently appear, like the criteria for cost, quality, time, and human resources. Other aspects that support the four main elements are environmental condition or place characteristic, relationship/service, and handling/solving problem or leadership/managerial, labor, administration, supplier needs, and customer/owner satisfaction. Those aspects can be used as criteria.

In selecting criteria related to each other at each stage of the self-management, the criteria used in the AHP method are obtained starting from the highest hierarchy. The most frequently occurring like cost, quality, time, human resources, characteristics of the place, leadership/managerial, labor, administration, suppliers, and customer satisfaction.

##### B. The weighting of Success Factor Criteria in Self-Management Management System

The data collection through questionnaires are related to priority ranking of Cost, time, quality, place characteristic, leadership/managerial, human resource, labor, administration, suppliers, and customer satisfaction. The result of the respondents' questionnaires that are analyzed based on the criteria of the respondent selected in the study are as follows:

TABLE II. LIST OF QUESTIONNAIRE RESPONDENTS

No	Name	Description
1	UII Waqf Board Foundation	R1
2	State University of Yogyakarta	R2
3	Muhammadiyah Yogyakarta University	R3

4	Ahmad Dahlan University	R4
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C. The weighting of Success Factor Criteria to Self-Management Management System

The results of the questionnaire data from the four were processed using Microsoft Excel, and a pairwise comparison matrix table was obtained between the success factor criteria as follows:

TABLE III. MATRIX OF PAIR COMPARISON

Criteria	Cost	Time	Quality	Place Characteristic	Managerial	Human Resource	Labor	Administration	Supplier	Consumer Satisfaction
Cost	1,0000	4,5000	0,7500	3,7500	1,7500	2,7500	5,0000	3,7500	5,2500	0,2500
Time	0,0000	1,0000	0,0000	1,5000	0,2500	0,2500	1,7500	2,7500	2,2500	0,0000
Quality	2,2500	4,5000	1,0000	2,7500	2,0000	3,2500	5,5000	4,0000	5,5000	1,5000
Place Characteristic	0,2500	0,2500	0,0000	1,0000	0,0000	1,2500	0,7500	0,0000	0,2500	0,0000
Managerial	2,7500	2,2500	1,2500	3,0000	1,0000	2,5000	3,5000	2,5000	4,5000	1,2500
Human Resource	0,2500	1,2500	0,0000	3,5000	1,5000	1,0000	2,2500	1,5000	2,0000	0,0000
Labor	1,5000	0,2500	0,0000	1,2500	0,0000	1,0000	1,0000	0,0000	0,7500	0,0000
Administration	0,0000	3,0000	0,0000	2,2500	0,5000	0,7500	2,5000	1,0000	1,7500	1,5000
Supplier	1,5000	1,0000	0,0000	1,0000	0,0000	0,5000	0,7500	0,2500	1,0000	0,0000
Consumer Satisfaction	3,5000	2,0000	1,7500	3,5000	1,0000	1,2500	2,5000	1,0000	3,5000	1,0000
Amount	13,0000	20,0000	4,7500	23,5000	8,0000	14,5000	25,5000	16,7500	26,7500	5,5000

The results of the questionnaire data from the four were processed using Microsoft Excel, and a pairwise comparison matrix table was obtained between the success factor criteria as follows:

TABLE IV. MATRIX OF NORMALIZED PRIORITY VALUE

Criteria	Cost	Time	Quality	Place Characteristic	Managerial	Human Resource	Labor	Administration	Supplier	Consumer Satisfaction	Priority Value
Cost	0,0769	0,2250	0,1596	0,1596	0,2188	0,1897	0,1961	0,2239	0,1963	0,0455	0,1689
Time	0,0000	0,0500	0,0638	0,0638	0,0313	0,0172	0,0686	0,1642	0,0841	0,0000	0,0479
Quality	0,1731	0,2250	0,1170	0,1170	0,2500	0,2241	0,2157	0,2388	0,2056	0,2727	0,2133
Place Characteristic	0,0192	0,0125	0,0426	0,0426	0,0000	0,0862	0,0294	0,0000	0,0093	0,0000	0,0199
Managerial	0,2115	0,1125	0,1277	0,1277	0,1250	0,1724	0,1373	0,1493	0,1682	0,2273	0,1694
Human Resource	0,0192	0,0625	0,1489	0,1489	0,1875	0,0690	0,0882	0,0896	0,0748	0,0000	0,0740
Labor	0,1154	0,0125	0,0532	0,0532	0,0000	0,0690	0,0392	0,0000	0,0280	0,0000	0,0317
Administration	0,0000	0,1500	0,0957	0,0957	0,06250	0,0517	0,980	0,0597	0,0654	0,2727	0,0856
Supplier	0,1154	0,0500	0,0426	0,0426	0,0000	0,0345	0,0294	0,0149	0,0374	0,0000	0,0324
Consumer Satisfaction	0,2692	0,1000	0,1489	0,1489	0,1250	0,0862	0,980	0,0597	0,1308	0,1818	0,1568

The consistency test can be calculated with the consistency ratio value. The consistency ratio (CR) value must be equal to 0.1 (10%) or less to indicate that the respondent's assessment is consistent. The IR value of the study corresponds to the number of criteria used is 1.49.

TABLE V. MATRIX OF NORMALIZED PRIORITY VALUE

Criteria	Priority Value	Matrix of Counting	Matrix of Counting-Priority
Cost	0,1689	1,8082	10,7025
Time	0,0479	0,5025	10,4849

<b>Quality</b>	0,2133	2,3735	11,1295
<b>Place</b>	0,0199	0,1985	9,9629
<b>Characteristic</b>			
<b>Managerial</b>	0,1694	1,9200	11,3325
<b>Human Resource</b>	0,0740	0,7646	10,3366
<b>Labor</b>	0,0317	0,4203	13,2469
<b>Administration</b>	0,0856	0,7857	9,1798
<b>Supplier</b>	0,0324	0,4359	13,4467
<b>Consumer Satisfaction</b>	0,1568	1,8272	11,6514
		<b>Amount</b>	111,4734
		<b>λ maks</b>	11,1473
		<b>CI</b>	0,1275
		<b>CR</b>	0,0856

#### D. Discussion

Based on PMBOK with quality, leadership/managerial (project manager), Cost (Cost), customer satisfaction (consumer satisfaction), administration, human resource (human resources), time (time), supplier, labor (stakeholders), and place characteristic can influence the success rate of a self-managed project.

The first position is occupied by the quality factor. It reaches 21.33% and shows that quality standards are needed as a reference for the success of the development project. Nurihsan and Subandar (2002) state that the quality of self-managed specification and quality management is better. The self-management team does not pursue profit and maintain the quality of the building. Agsarini (2015) suggests that quality is essential for the sustainability of customer satisfaction.

The second position is occupied by leadership/managerial with 16.94% range. Leadership quality contributes to the success of teamwork that jointly achieves goals. Leadership/executive has the responsibility to fill task requirements, team, and individuals in the implementation of project management. PMBOK fifth edition requires a project manager or project leader to have knowledge, performance, and personal competence.

The cost is in the third position. It reaches 16.89%. The PMBOK's fifth edition project cost management includes planning, forecasting, budgeting, financing, funding, managing, and controlling costs to complete the project within the budget agreement.

The fourth position is occupied by the consumer satisfaction factor with 15.68%. It means that in every production of construction management result, there is a consumer or owner assessment of the contractor's work. PMBOK's fifth edition states that customer satisfaction is related to quality management, like understanding, evaluating, defining, and managing requirements, so that customer expectations are fulfilled.

The administration occupies the fifth position with 8.56%. Project implementation administration is an instruction system for continuous correction evaluation reports from a project and as a work control medium during the project implementation process. Administration in a self-managed management system can also be interpreted as a bureaucracy or extension line between the owner and the implementing team.

Human resources with 7.40% occupy the sixth position. Gunarso (2018) said that an engineering company must have high human resources. In line with the consideration for selecting a self-management system, self-management aims to empower human resources and the community to increase knowledge about development projects. The seventh position is time with 4.79%. Hartono (2011) says that time performance is a comparison that has been agreed upon between the owner and contractor with the actual time of project completion. Time is a criterion that can still be flexible for a self-managed management system because the owner can determine the speed of completion of work. Supplier occupies the eighth position with 3.24%. It shows that the material supplier selection is still related to quality, supply, delivery time, availability, maintenance, procurement cost, and good relation. The workforce occupies the ninth position with 3.17%. It proves that the success or failure of a construction project depends on its workforce management. Astina (2016) mentions labor factors like expertise, discipline, motivation, number, sense of nationalism, workforce turnover, and communication. The tenth position is occupied by the place characteristic with 1.99%. The aim is to arrange the location of the building, support the building, and provide access to mobilization and material so that the implementation will run efficiently, smoothly, and safely. It may follow the work plan to achieve the target.

The priority rating has a consistency ratio of 0.0856, which is less than the inconsistency limit of 0.1, which means that the assessment of the priority ranking is consistent. The priority ranking of the top position of the success factor of the self-managed management system in buildings in Yogyakarta is quality, leadership/managerial, cost, customer satisfaction, and administration. the Characteristics of construction that can run independently, such as; having a location or characteristic of a development site owned or owned by the community in a specific area, the development empowers its human resource or from a mass organization and community group. It has a team of consultants and supervisors to improve planning, scheduling, and increased supervision.

## V. CONCLUSION

Using the AHP (analytical hierarchy project) method, the criteria for the success factor of the dominant self-managed system of a building construction project is self-managed. The grades are 21.33% for quality, 16.94% for leadership/managerial, 16.89% for Cost, 15.68% for Customer satisfaction, the administration reaches 8.56%, Human Resources reaches 7.40%, and the other factors that follow are time with 4.79%, supplier with 3.24%, labor with 3.17%, and place characteristic with 1.99%.

The use of self-managed management for building construction has an advantage. A building project can be managed independently and the quality is under control. It can reduce construction costs by overlapping activities or reducing unnecessary work activities. An auction process that improves the quality of resources, including owned human workers, can change specifications or concepts without going through a meaningful supplement. Depending on the owner's financial ability, completion time can be accelerated or slowed. Field implementation does not seek profit or personal gain, so that it can guarantee quality according to target specifications. Delay or other conditional condition is not sanctioned by the owner and field implementer.

As well as having risks in its implementation, such as: if the existing resource is not qualified but they still want to continue to carry out self-management, the quality of the product produced cannot follow the desired specification. The owner as the proprietor cannot sue the executor if there is a delay in completion or a discrepancy building specification. Limited knowledge and understanding of self-management can frustrate and harm the owner, as well as the risk of an economic, political, and social condition that can change at any time. The building construction may become hampered.

## VI. SUGGESTION

Business sectors should use a self-managed management system to pay attention to, consider and monitor other influencing factors. The project work can be successful by following the need and expectations. Academic and future researchers may do further research to reveal another success factor that needs to be considered, such as market needs. Then the characteristic of the respondent is more in-depth, and the data comparison may be shown by both the owner and the field implementation team.

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