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Improvement Strategy Service Functional Eligibility Certificate Using the AHP Method

Endi Susilo Prayogo[a], Anik Ratnaningsih[b*], Krisnamurti[c]

[a,b,c] *Technique Civil, University of Jember, Jember and 68121, Indonesia*

[a]*Email: endisusilo649@gmail.com* ,[b]*Email: anikteknik@gmail.com,* [c]*Email:krisna.teknik@unej.ac.id*

Abstract

Failure building is one worry for owner building. There is usually failure because of errors in planning, so the government makes an effort to enforce regulation of SLF applications. The goal is to ensure a level of safety, convenience, and health building. However, in implementation publishing, there are inhibiting factors. The objective of the study is to develop improvement strategies for SLF service. The AHP method is used as evaluation in compile priority, which is later level 80% priority is used for developing strategies through the Triangulation Method. For priorities selected as follows: implementation of SLF socialization; existence building Regional Regulation; fulfillment of admin and technical requirements; HR competency who understands SLF response building owner; availability of consultant; concern public against SLF; coordination between service technical; completeness tool help inspection building eligibility; completeness document licensing; standardization to mechanism evaluation. For the sake of improving SLF services in Jember Regency, then the strategy can be taken is need procurement socialization of the importance of SLF in society, information building regulations are tightened and distributed in a way evenly, necessary good coordination between departments, consultants, and applicants. Besides that, additional human resources are needed for officer SLF issuance to speed up the implementation process.

Keywords: AHP; Triangulation; SLF; Strategy; Failure,

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* Corresponding author.

1. Introduction

Failure building causes building. No one can work. One of the factors of failure building is error in planning and supervision. Error design in planning will give rise to failure, and the necessity to repair repeat To get appropriateness function building [1,2,3]. In terms of the government, an effort so no failure building Keeps going continuously. One of his efforts is to enforce regulations for the public to submit an agreement on building structure and functional worthiness certificate (SLF) for the desired building to be built. As stated in Regional Regulation PP no. 16 of 2021, which contains Regulation Implementation Building Law No. 28 of 2002, there is a substance arrangement about the obligation of owner building Construction to get SLF.

The purpose of the government is to guarantee the level of safety, convenience, and health in buildings that are in use. The hope can realize mark functionality, reliability, and alignment to the environment [4,5]. There is an effort they believe can contribute to orderly development and harmony with the environment.

SLF is given to the government for state feasibility function building, ensuring the building is safely used and meets standard safety standards. However, in implementation publication, there are various problems, such as: a lack of human resources [6]; deemed procedures complicated [7]; worry exists case and expensive cost SLF [8]. From various the problem is there, then need done evaluation to influence variables success publishing.

On research, This aims to get improvement strategies for SLF service. Use the Analytical Hierarchy Process (AHP) method as a solution problem, maximizing assessment and giving consistency [9,10,11,12,13]. The advantages of AHP are that it can help solve multivariate problems [14, 15]. Lin C.L., and his colleagues. stated that by using the AHP method, a model can be developed to predict the main risk factors and construction quality. In addition, AHP is useful for verifying its influence on construction. The accuracy of the prediction model is 85%, useful for conducting effective risk management and designing decision-making strategies for construction management [16]. Additionally, the method can combine various aspects and criteria with weighting based on the level of interest so that the result is more representative. Idris F., and his colleagues. (2023) using the AHP method stated that the results obtained regarding the maintenance priorities of structural and architectural elements of buildings from various aspects and criteria were very representative of the environment [17]. AHP aims to compile priority from various alternatives so that the level of priority obtained can be useful as a basis for strategy. The strategy improvements will be made using the triangulation method of various source persons.

2. Configuration and Results Method

The case study was conducted in Jember Regency, East Java Province, and it was a four-month time study of the data collection and processing process. In research, In this case, the AHP method is used To analyze and compile priority from various alternative [18]. Before that, I collected secondary data (literature review) and primary data through a spread questionnaire to the respondent's applicant SLF publishing, consultant compiler SLF documents, and SLF Technical Services. Deployment questionnaire: This questionnaire is sent online to the respondents to speed up the data collection process. Then, the data obtained is tested for validity and reliability to prove that the data can be used. After getting the test results declared valid as well as reliable, then to the next process. The value

of comparison from each respondent was further assisted by AHP analysis with Excel and Expert Choice Software.

Step AHP analysis: The first step is to make a hierarchy (can be seen in Figure 1), as the goal of the hierarchy is to get an implementation strategy certificate-worthy function (SLF). Then criteria support factors that influence these goals, namely convenience operational, speed time issue and amount costs, as well officer publishing. From various criteria, specified variables are his supporters, namely Y1 to Y20. After determining the hierarchy, the evaluation criteria and alternatives (basic evaluation can be seen in Table 2), as well as the value obtained from the comparisons of results made by respondents, are examined. Each value respondent entered in the participant menu on Expert Choice, from comparison criteria until the alternative. So that input results from all respondents can be used to determine prioritization and build matrix comparison. furthermore, the normalization matrix. test consistency through Equations 1 and 2, with CR requirement <0.1 [19,20,21,22]. A scale evaluation comparison pair [18] can be seen in Table 2.

$$CI = (\lambda max - n)/n-1 \quad (1)$$

$$CR = CI/IR \quad (2)$$

Where, CI (Consistency Index); n (number element); CR (Consistency Ratio); and IR (Index Random)

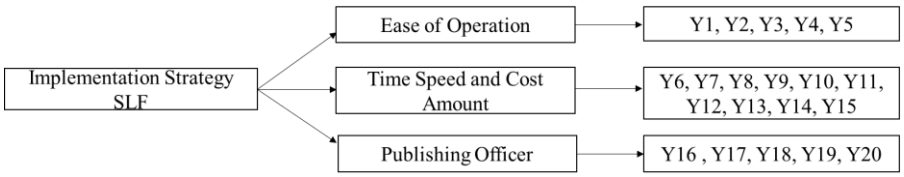

Figure 1: Structure AHP Hierarchy

Table 1: Variables of Influence of Service Improvement

No	Kode	Keterangan	Sumber
1	Y1	Existence of building regulations	Deden, 2021
2	Y2	Completeness of building feasibility tools	Iskandar dkk., 2014
3	Y3	Standardization of examination results	Mahmudi dkk., 2019
4	Y4	Sanctions for those who do not have SLF	Mulyo, 2016
5	Y5	Concerns about cases of building failure	Iskandar, dkk., 2014
6	Y6	Competence of human resources who understand SLF	Mahmudi, dkk., 2019
7	Y7	Implementation of SLF socialization	Mulyo, 2016
8	Y8	Fulfillment of admin and technical requirements	Iskandar, dkk., 2014
9	Y9	Building owner's response to apply for SLF	Zenith, dkk., 2018
10	Y10	Availability of competent consultants	PP No. 16 tahun 2021
11	Y11	Community concern for SLF	Deden,2021
12	Y12	Coordination between technical departments	Mulyo, 2016
13	Y13	The completeness of document	Iskandar, dkk., 2014
14	Y14	Owner's awareness of building maintenance	Zenith, dkk., 2018
15	Y15	Procurement costs in arranging SLF	Mulyo, 2016
16	Y16	Availability of SLF service tasks and functions	Iskandar, dkk., 2014
17	Y17	Implementation of SLF issuance procedures	Zenith, dkk., 2018
18	Y18	Competence of technical reviewers in the SLF process	Zenith, dkk., 2018
19	Y19	Technical reviewer's understanding of the methods and stages of the SLF process	Shamsiah, 2014
20	Y20	Adequate number of human resources in the SLF publishing technical service	Zenith, dkk., 2018

Table 2: Rating Scale Comparison Pair

Intensity Interest	Definition
1	Equally important
3	A little more important
5	More important
7	Very important
9	Absolute more important
2,4,6,8,	The middle value between two adjacent opinions
The opposite	If element *a* has 1 number on top of element *b*, so *b* has the opposite when compared to element *a*

After obtaining mark priority via the AHP Method, it is necessary to prepare improvement strategies for the service using the triangulation method. This method aims to identify various factors cause and do strategy formulation.

The results obtained are results assessment of 26 respondents of 5 applicants for SLF publishing, 13 consultants' compiler SLF documents, and eight service people SLF technicians, whose average age is 30-40 years. Respondent consists of 9 women and 17 men. Then, the results of the data evaluation questionnaire were compared to the use of the assisted AHP method through expert choice software. Based on the results of the AHP calculation, the level priority of each variable was obtained, as shown in Table 3. Priority level will be used to develop internal strategies to increase SLF services in the Jember Regency.

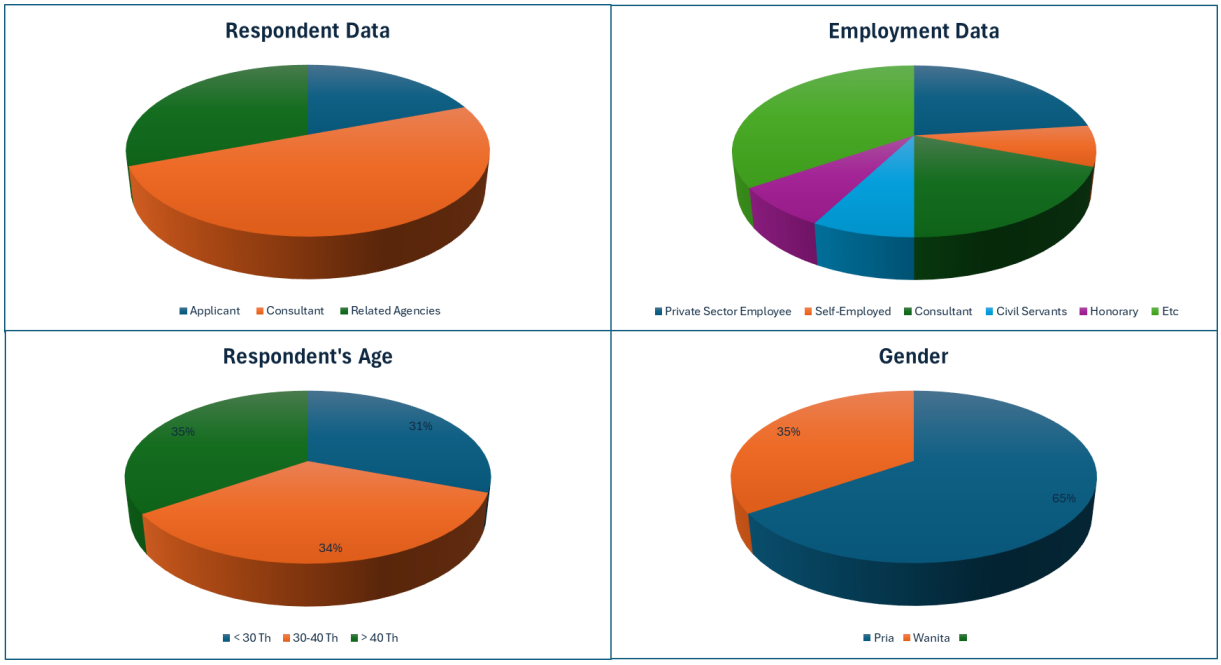

Figure 2: Respondent Data

After that, respondents and goals in the hierarchy are determined, and an assessment of each variable is performed. Validity and reliability tests were carried out, and the results obtained were r count > r table; in other words, the value was declared valid. Apart from that, reliability produces very high value, and then from that, the data can be used. Value from respondents is input into expert choice, and level consistency on each variable pair must not be enough from one (CR<1) as required. If each respondent has rated, then they need to combine results assessment (results combination can be seen in Figure 3).

Table 3: Comparison Matrix Pair

Information	Weight
Ease of Operation	0.41
Y1	0.38
Y2	0.22
Y3	0.15
Y4	0.12
Y5	0.11
Time Speed and Cost Amount	0.45
Y6	0.13
Y7	0.15
Y8	0.14
Y9	0.11
Y10	0.11
Y11	0.09
Y12	0.08
Y13	0.06
Y14	0.04
Y15	0.03
Publishing Officer	0.13
Y16	0.31
Y17	0.23
Y18	0.21
Y19	0.14
Y20	0.10

(The calculation results)

From Table 3, the results accumulation mark all over respondents is 0.41 for evaluation convenience operational, 0.45 for speed time issue and cost, as well as 0.13 for officer publishing. With this mark weighting, whole respondents who have been run are carried out in combination.

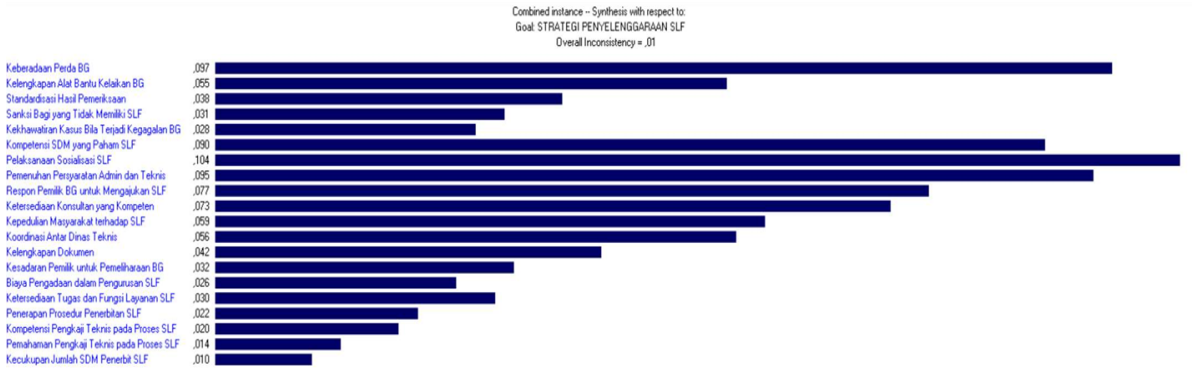

Figure 3: Combination Results

(Expert Choice Calculation)

Figure 3 shows that the overall inconsistency value is worth 0.01 and stated as worthy or in accordance. The priority value for each variable can be seen in Table 4.

Table 4: Priority Level

Information	Weight
Y1	0.09
Y2	0.05
Y3	0.03
Y4	0.03
Y5	0.02
Y6	0.09
Y7	0.10
Y8	0.09
Y9	0.07
Y10	0.07
Y11	0.05
Y12	0.05
Y13	0.04
Y14	0.03
Y15	0.02
Y16	0.03
Y17	0.02
Y18	0.02
Y19	0.01
Y20	0.01

(The calculation results)

Priority levels shown in Table 4 are values consistent because mark all CR (Consistency Ratio) < 0.1 in each variable research, so mark priority weighting criteria for implementation strategies Functional Eligibility Certificate (SLF) can used. Furthermore, with calculation cumulative on each weight, a value of 80% priority will be chosen for use as an improvement strategy SLF service. As for value, the cumulative 80 % sorted from level priority can be seen in Table 5.

Table 5: Percentage Weight Cumulative

Information	Priority Value	Cumulative (100%)	Ranking
Y7	0.10	10.0	1
Y1	0.09	20.1	2
Y8	0.09	29.6	3
Y6	0.09	38.6	4
Y9	0.07	46.3	5
Y10	0.07	53.6	6
Y11	0.05	59.5	7
Y12	0.05	65.1	8
Y2	0.05	70.6	9
Y13	0.04	74.8	10
Y3	0.03	78.6	11
Y14	0.03	81.8	12
Y4	0.03	84.9	13
Y16	0.03	87.9	14
Y5	0.02	90.7	15
Y15	0.02	93.3	16
Y17	0.02	95.5	17
Y18	0.02	97.5	18
Y19	0.01	98.9	19
Y20	0.01	100	20

(The calculation results)

In other words, the value priority in determining the strategy for implementing SLF is in implementation SLF outreach to the building owner, while the Lowest is on the sufficiency number of human resources in the technical department, as for the results percentage weight cumulative formed in a diagram as in Figure 4.

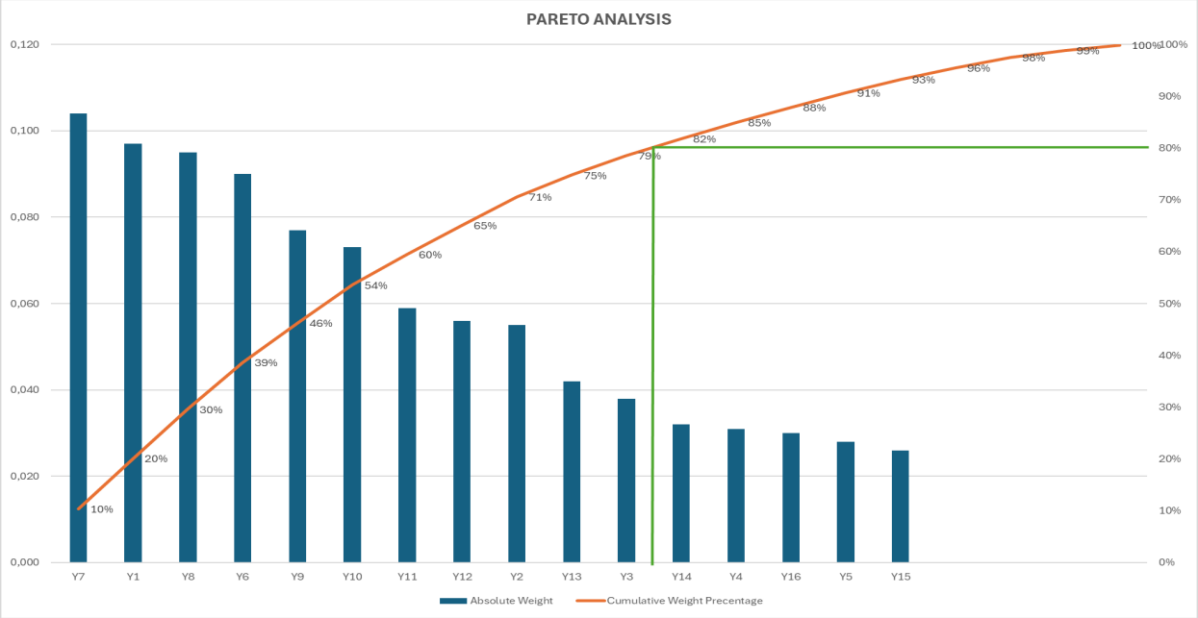

Figure 4: Percentage Weight Cumulative

Based on Table 5 and Figure 4, it is obtained order priority in a way whole as following:

1. Implementation of SLF socialization
2. Existence building regional regulation
3. Fulfillment of admin and technical requirements
4. HR competency who understands SLF
5. Response building owner
6. Availability consultant
7. Concern public against SLF
8. Coordination between service technical
9. Completeness tool help inspection building eligibility
10. Completeness of document licensing
11. Standardization to mechanism evaluation

The component in Figure 4 is the component selected that can be used as a determining parameter priority enhancement service. These factors are in accordance with the reality in Jember Regency and several other areas, such as lack of human resources, procedures that are considered complicated, concerns about cases and the high cost of SLF, etc [6,7,8]. From several existing factors, it is necessary to make the right strategy. In finding a strategy, you can use the Triangulation Method.

A. Bans-Akutey and B. M. Tiimub stated that method triangulation is a validity tool that shows how appropriate a research method is, although triangulation requires more resources from the researcher. Triangulation helps confirm research findings, reduces the shortcomings of one method or one source, provides more insight, quickly notices and eliminates inconsistent data, and increases the validity and credibility of the research. Ultimately,

research triangulation causes researchers to be more confident in research findings [23]. Then, the strategy and method triangulation are used from a few sources. Triangulation method used For determining strategy, namely, identify factors reason obstruction service SLF publishing Besides that method, they can formulate a strategy based on checking in the field [24,25]. This method is done based on checking the results of a study from various respondents or informants to get data validity. There are strategies that can be formulated for the enhancement of SLF services in Jember Regency are with:

1. Give socialization about what SLF is and the importance of SLF to owner building. Socialization can be done in every subdistrict or through social media so the public can understand the importance of SLF for building.
2. It is necessary to bring order and strengthen the existence of regional building regulations so that the public is more active and orderly in making proposals for the issuance of SLF for the security and safety of buildings.
3. A response to the importance of SLF and caring for the public based on the building regional regulation was issued so that document licensing and compliance conditions could be fulfilled smoothly.
4. The need exists for coordination service. Good technical skills are needed for successful service, and a consultant who understands and is suitable with SLF competency is needed. With that's the application process, SLF permits are available quicker and more precisely in accordance with what you want.
5. Building suitability inspection tools need to be equipped so that assessment mechanisms can be standardized quickly.

3. Conclusion

According to several respondents, there are several factors that are obstacles in the issuance of SLF permits. The AHP Method prioritizes the weight of the existing factors, then 80% of the priorities using Pareto Analysis are used to develop strategies. Respondents from agencies and consultants stated that the lack of competent officers and consultants is one of the obstacles in accelerating the process, in addition to service coordination has not been implemented properly. Meanwhile, the applicant stated that the factor that is an obstacle in the issuance of SLF permits itself is the lack of socialization to the community, so that the level of concern, awareness, and response to SLF is very minimal. Besides that, information about the existence of building regulations has not yet been spread evenly, so society has not orderly submission licensing them.

From the priorities obtained and using the Triangulation Method through sources from the service, consultants and applicants, it can be concluded how to form a strategy. To improve SLF services in Jember Regency, procurement socialization is needed. The importance of SLF and information building regulations are tightened and distributed in a way evenly, and it is necessary to have good coordination between the department, consultant, and applicant. Possible advice given is the need to accelerate in accordance with the strategy obtained, as well as add the amount of officer service SLF publishing. With So, the application process can walk smoothly and fast in accordance with what was expected.

4. Declaration of conflict of interests

The constraint in this study is the process of obtaining detailed information from the sources to process data using the AHP method takes a long time. However, in this study, the author does not declare any conflict of interest.

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