SMEs Soft Loan with Decision Support System Model

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Abstract

The government pays incredible consideration to the advance of SMEs by giving delicate advance help through state-owned banks. In its usage, this banks offers delicate advance to SME all through Indonesia to move forward their trade. The Indonesian government offers full financing for the Little Medium Undertaking.. To urge this delicate credit, SME must yield a proposition that will be assessed for its achievability. The proposition built up will be assessed for its achievability by permitting for a few decided benchmarks. The technique utilized by checking on the guidelines that must be met by the SME to obtain delicate credit from the government at that point join together these criteria/standards with AHP. Subsequently, we produce a framework that can assistance management make the conclusion to supply soft loans to those who require help. The result could be a choice making show that makes a difference administration to convey delicate credit for SMEs.

Keywords
SME, decision support system, AHP

1. Introduction

Indonesia is nowadays a growing nation, this can be supposed from a variance of profitable fields have ongoing to appear. All peoples are stimulating to generate businesses, be they enterprises that are SME to huge scale. SMEs have a substantial role in growing, this can be gathered when the economic disaster drive Indonesia in 1998 where several giant corporations deceased broke. Although SMEs themselves are adept to stand up with a let moveable in the face of the existing crisis. Founded on data from the Ministry of SMEs, the proportion of the quantity of UMKMs in Indonesia in 2017 is almost 60%(Inayatulloh,2020)

The government arrangements SME of the community through imaginative trade exercises with the assistance of delicate advance. An genuine instrument is wanted so that this delicate advance is in assertion with the point by point necessities. Decision Support Framework may be a plot built to commitment choice creation and is perfect for examination and modeling. DSS can offer assistance company in creation choices where the information utilized determines from MIS. Management Data Framework is constructed to help administrators in carrying out their responsibilities, extraordinarily employments associated to choice making, assessing information. The going before think about utilized AHP (Explanatory Pecking order Handle) strategy in Bekraf(Inayatulloh,2020), to decide help for SME and Analytical hierarchical processing examination the Obstructions for green source series administration employment(Govindan,2014)

The decision support system strategy settle issues that have various requirement or MCDM. MCDM can be utilized to back choice creation that incorporates a extraordinary degree of trouble in characterizing the most noteworthy alternate of all accessible options (Akkaya,2013). . The past ponder utilized Promethee to choose Pioneer Winnowing

utilizing Analytical hierarchical processing -Promrthee Strategy(Bagla ,2012) to use Mining Strategy Choice by Coordinates analytical hierarchical processing and Promethee Strategy (Govindan,2014). This investigate purposes to assist enrolment administration make choices for SME that apply for delicate credit stores utilizing AHP and Promethee. AHP strategy may be a reasonable select for DSS SME since AHP parts a condition into various littler parcels or components and organizes the portion or component into a positioned arrangement. The government guarantees to assist SME in Indonesia to realize them corporate objectives with improvement corporate handle with delicate advances and updating they competitive advantage.

2. Literature Review

2.1. AHP (Analytical hierarchical processing)

AHP was produced 1970 (Thomas,2008). AHP may be a process of transgression multifaceted complications in shapeless conditions into element. Requesting this portion into a classified course of action. At that point exchange statistical values to individual choices on the comparative significance of independently element and combining the valuation for which element has the most extreme need that will influence the achievement of the condition. AHP may be a method of clarifying troublesome issues in circumstances and situations that are not guaranteed to be a few parts.

At that point give esteem to independently area and offer a personal valuation of unique element with other parts or factors. Person appraisal of positive amounts of factors must be decided which factors have the head need which can influence the resolve of the problematic. Analytical hierarchical processing join together person choice and judgment in a consistent approach. coherent approach preferential by creative energy, understanding and information to assemble a evaluating of issues grounded on rationale, discernment and encounter to deliver concern (Bogdanovic,2012)

AHP takes organized rationale and subjective valuation. Coherent valuation is based on person encounter and information impacted, equally of which can be engaged into concern in conclusive significances. The prepare within the AHP strategy includes of a few steps, namely:

1) Settled the arrange of issues confronted by various leveled action. Hence, characterize the general objective of the framework. The following degree includes of principles to measure substitutions and characterize options. Apiece basis can take sub-criteria beneath it and apiece basis can have an concentration esteem of separately.

2) Define priority essentials.

Define need essentials. The primary arrange in characterizing the need of a component is to create a coordinating comparison. The coordinating comparison to coordinate components in sets agreeing to the criteria given by utilizing the lattice shape. The framework could be a humble, solid put that give a system for testing consistency, picking up supplementary data by creation all potential comparisons and examining in general priority affectability to change concerns. The pairwise judgment prepare begins from the most noteworthy of the pecking order. This strategy to choose criteria, for illustration P, at that point from the level underneath the components to be paralleled are taken, for case P1,P2, P3, P4, P5, at that point the planning of the components in a conditions.

The following stage is Filling in a inverse judgment framework is to utilization amounts to characterize the comparative centrality. The relative importance one portion to the other portion within the frame of a degree from one to nine. This degree characterizes and depicts values 1 to 9 for thought in pairwise appraisals of components at independently equal of the pecking order counter to a measure at the next level. In case an part/element is in a framework and coordinated to itself, it is set a esteem of 1. In the event that i coordinated j becomes a unequivocal esteem, then j matched i is the inverse. The next could be a quantifiable measure of one to nine to degree the noteworthiness of an part with additional components as in Table 1.

F(.) could be a measure work. at that point P (...) is the work of inclination. In this manner, the crystalline work and inclination work are adjusted.) (Jean,1995) The inclination work Pj (x, y) implies elective inclination. Implies elective x for elective y for the criteria given.

2.2. Promethee

Promethee could be a strategy of deciding the arrange or need in MCDM (Multi Criteria Choice Making). The assumption of the dominance of the criteria utilized within the promethee is the utilize of esteem within the outranking relationship. Promethee may be a strategy of deciding the arrange (need) in multi-criteria analysis (Jean,1995)

2.3. Decision Support System

DSS utilized to help choice creators in overwhelming display troubles. Decision Support System isn't proposed to robotize choice making. Decision Support System is able to offer collaborative instruments for judgment producers to carry out numerous information examines, utilizing accessible prototypes.

3. Methods

Data

State possessed banks chooses a few preeminent criteria that must be placated by the SMEs, to be specific common necessities, extraordinary prerequisites. Assignment of criteria and perspectives utilized made on government methods over the regulation. The achievability of the comes about of the valuation is grounded on various criteria within the Tables 1 and 2.

Table 1. General Requirements

No	Aspect	Score	
		5	1
P1	Has a productive business in the category of Micro, Small and Medium Enterprises (MSMEs) and has been running for at least 1 (one) year	Yes	No
P2	Have a valid business license	Yes	No
P 3	Do not have problem loans with state owned Bank or with other banks.	No	Yes
P4	The majority of owners / management have experience in companies that will be financed for a minimum of 1 (one) year	Yes	No
P5	The business has earned a net profit in the past 1 (one) year	Yes	No

Table 2. Specific requirements

No	Aspect	Score	
		5	1
Q1	Indonesian citizen (citizen) with a minimum age of 21 years / married / never married	Yes	No
Q2	The maximum age at the time the credit is paid is 65 (sixty five) years	Yes	No
Q3	Husband / wife applicant's KTP, Family Card, and Marriage / Divorce Certificate	Yes	No
Q4	Deed of establishment of company - last deed of amendment	Yes	No
Q5	Income certificate submitted by the local village	Yes	No
Q6	Taxpayer Identification Number	Yes	No
Q7	Business license	Yes	No
Q8	The legality of the place of business	Yes	No
Q9	Business financial records	Yes	No
Q10	Financial statements	Yes	No
Q11	Savings / current account that shows business transactions	Yes	No
Q12	Credit designation details	Yes	No
Q13	Credit collateral		
Q14	Additional collateral in the form of fixed assets or movable objects		

Method

Decision Support System that is constructed and established usages data in table 1. Possession data and projected data will be put away in Controlling data. Consequently, the AHP and PROMETHEE are mentions that will be used to evaluate the feasibility of the corporation. Appropriateness of received proposals will be assumed a ranking completed material can be made for investigation of DSS (Jean,1995). Each standard has a preliminary weight. Table 3 shows the weights among criteria

Table 3. Weight comparison matrix

	Criteria 1	…	Criteria n
Criteria 1			
…			
Criteria n			

Alternative	f1(.)	F2(.)	…	fm(.)
a1	f1(a1)		…	
a2	f1(a2)		…	
…	…	…	…	…
an			…	fm(an)

Coefficient criteria is the outcomes of AHP to display the consistency assessment. Last rating of SME proposals using consistency assessment created from AHP designs. Table III display the data of the promethee investigation. Alternative characterizes of SME, only fm (.) is an assessment criteria (Safari 2012). Defining net movements based on an alternative score if the alternative of the SME has the top value means that the SME has the greatest alternative

4. Research Diagram

Figure 1 displays the action of implementation the necessities of the application. The first stage is decisive the importance criteria. The next step filling in the assessment of one prerequisite with other necessities. The value in the procedure of computing AHP and Promethee which will effect in a position of proposals that have the maximum value

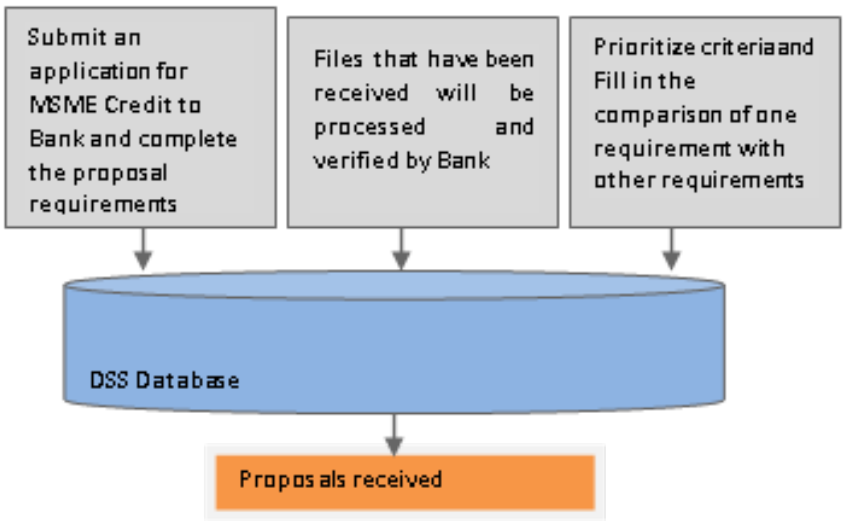

Figure 1. Action of implementation

5. Results and Discussion

DSS model constructed for SMEs in Figure 2. Figures 4 - 7 display the UI of this system. Figure 5 explains the data involvement for the criteria and sub-criteria that will be used to come in the weights. Figure 6 defines the input weights for one condition compared to the other conditions. For specimen importance criteria Q1 is larger than Q2 with a proportion of 0.4: 0.6, then input weights in standards Q1 are 0.6 and input weights in standards Q2 are 0.4. Figure 7 defines the input of SME identity as an organization that will submit an application for an invitation for government soft loan.

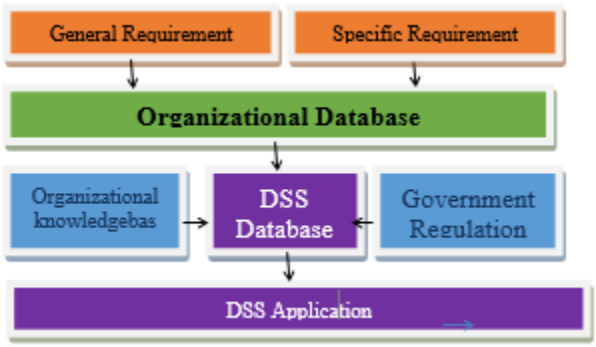

Figure 2. DSS model for soft loans

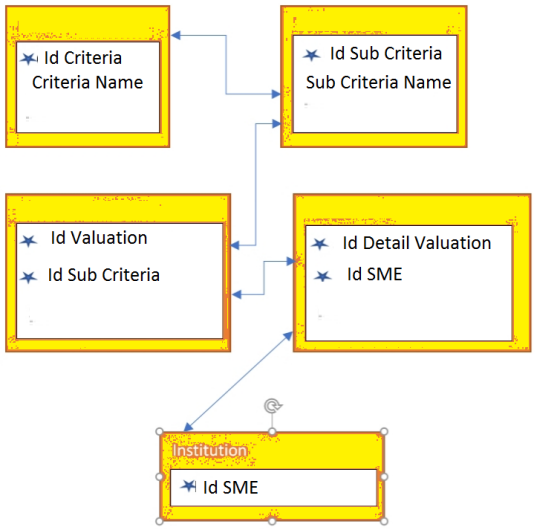

Figure 3. Model for database softloan

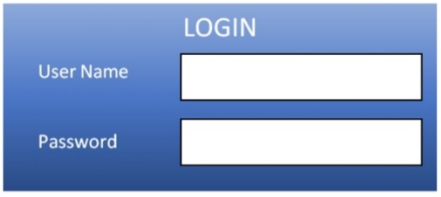

Figure 4. Login page

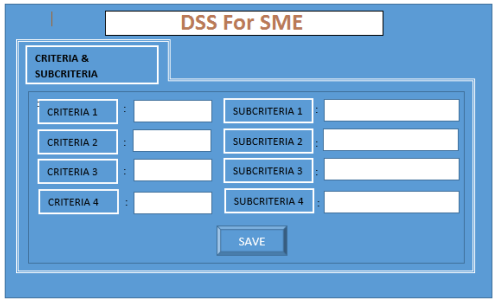

Figure 5. Criteria & Sub criteria page

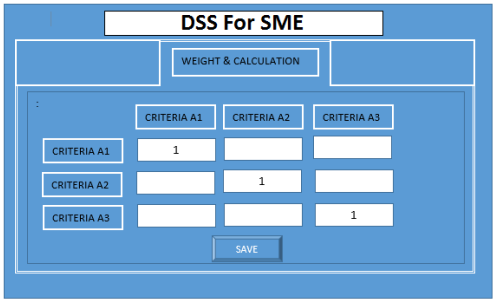

Figure 6. Weight comparison page

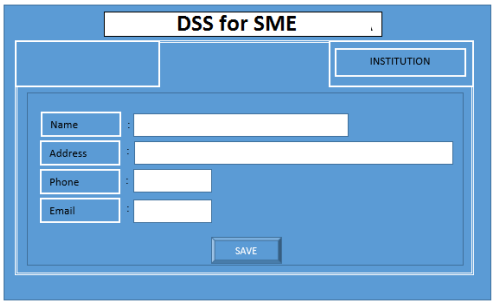

Figure 7.` Institution page

6. Conclusion

The inquire about anticipated the demonstrate of DSS to control the government delicate advance for SME utilizing Decision Support System and Promethee strategies. Hence, this prototypical can utilize to arrangement state claimed bank to evaluate the SME proposals and anticipated to assist the Indonesian government plan to expansion financial advancement through the enhancement of SME. SMEs benefit from soft loans such as low interest rates, ease of loan terms.
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Biography

Inayatulloh is a candidate doctor at Bina Nusantara University's Doctor of Computer Science. Since 2000, Inayatulloh has been a lecturer at Bina Nusnantara University, school of information system. I am experienced in system development in several companies such as garment, petroleum, retail and others. Scopus indexed publications have been produced with topics related to information systems such as e-learning, e-SCM, e-CRM. E-government, block chain and others