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DECISION MAKING SUPPORT IN DEVELOPING ENTREPRENEURSHIP TENANTS OF UAI INCUBATOR BUSINESS

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Abstract. Entrepreneurial incubators are established to develop entrepreneurship, in order to help entrepreneurs in carrying out their businesses. Entrepreneurship is the attitude, behavior, enthusiasm and ability of a person in running a business. Entrepreneurial incubators at UAI called Tajeer UAI are expected to be able to develop the business of tenants by increasing or developing entrepreneurship of tenants. In doing so, it is necessary to know the activities or policies that have a major influence to develop entrepreneurship tenants, so that Tajeer executors of the UAI can develop tenant entrepreneurship by paying attention to thixinformation. Then it is necessary to do a decision support analysis, so that it can be used as a consideration when running or developing a program. The ISM (Interpretive Structural Modeling) method is used to show the characteristics of each policy and activity based on the model structure, while priority information is shown using the ANP method, based on the ANP (Analytic Network Process) activities that need to be prioritized to develop entrepreneurship. priority value of 0.6323.

Introduction

Entrepreneurship is needed in running a business in order for its business to run well and to generate profits. Entrepreneurial incubators can help prospective entrepreneurs or new entrepreneurs to increase knowledge about entrepreneurship and develop the business of tenants through incubation. Tajeer UAI as an entrepreneur incubator in Al Azhar University of Indonesia needs to develop tenants' entrepreneurship in order to produce new technological innovations by applying enterprising university rules. In this study, the researcher will establish a decision support that can help Tajeer UAI to develop the entrepreneurship of tenants. The determination of the decision support is carried out using ANP and ISM methods.

Result and Discussions

Data collections in this study were obtained by brainstorming or interviewing 9 experts who have backgrounds as entrepreneurs which then interpreted in the form of questionnaires according to the needs of each method. The ISM (Interpretive Structural Modelling) method uses the opinions of 5 experts on contextual relationships between factors, while the ANP method uses the opinions of 5 experts regarding the level of importance between factors.

Influential elements and sub-elements in the Tajeer UAI were determined together with the executor of Tajeer UAI based on the program's condition and considered the results of Bank Indonesia's research "Kajian Inkubator Bisnis dalam Rangka Pengembangan UMKM" [1].

Table 1 Influential Elements in developing tenants' entrepreneurship in Tajeer UAI

Element	Sub-element
Activity	Branding Training
	Business Planning and Development Training
	Basic Marketing Training
	Digital Business Training
	Export and Import Training
	Photography and Editing Training
	Islamic Finansial Training
	Business Communication Training
	Marketplace Training
	Business Innovation Webinar and Incubator
	Economic and Islamic Webinars
	Digital Marketing Webinar
	IPR Webinar
	Bazaar
	Workshop
Alterable	Program and Activities
	IT Support
	Funding Sources
	Collaboration with supporting institutions
Constraints	Limited Incubator Funding
	HR Competence
	HR Limitations
	Less Supporting Policy and Networking
	Infrastructure Limitations
Needs	*Space*
	Shared
	Services
	Support
	Skill Development
	Seed Capital
	Synergy
Objective	Commercializing knowledge: utilize knowledge from lectures to create or develop businesses
	Providing Entreprenurial Informations
	Increasing the interest of entrepreneurship of young people
	Forming anf fostering a consultation forum
	Reducing the potential of failure in doing business
Social	Student
	Alumni
	University Employees
	University Leaders and Management

Data Processing

The methods used in data processing are ISM (Interpretive Structural Modelling) and ANP (Analytic Network Process). The ISM (Interpretive Structural Modelling) method is used to show the characteristics of each activity and policy in a visual form, while the ANP (Analytic Network Process) method is used to show priority policies or activities that can help the development of the entrepreneurship of tenants.

ISM (*Interpretive Structural Modeling)*

The ISM method will describe the results of interviews with experts who are experts in the field of Entrepreneurial or Business Incubators in the form of hierarchy and diagrams. Data processing is done using SisISM Software.

A. Social Element

Social element is a community sector in Tajeer UAI which can influence or can be influenced by the Tajeer UAI program. Community involvement can help or hinder a program, so it is important to pay attention to the influential community sector for Tajeer UAI, so that it can avoid negative impacts and take advantage of its positive impact.

Table 2 Social Element Structural Self-Interaction Matrix (SSIM)

Sub-Elemen Description (i-j)		**1**	**2**	**3**	**4**
Student	**1**		A	V	A
Alumni	**2**			V	O
University Employees	**3**				A
University Leaders and Management	**4**				

Table 2 is a contextual relationship between sub-elements based on the results of interviews with experts. SSIM results are changed to binary matrix in table 3.

Table 3 Social Element Initial Reachability Matrix

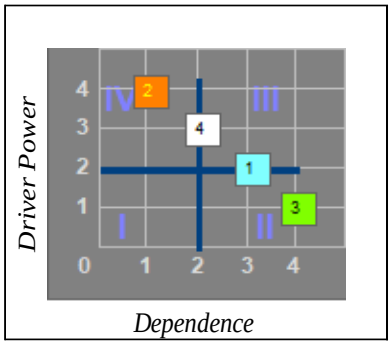
Sub-Elemen Description (i-j)		**1**	**2**	**3**	**4**
Student	**1**	1	0	1	0
Alumni	**2**	1	1	0	1
University Employees	**3**	0	0	1	0
University Leaders and Management	**4**	1	0	1	1

The matrix in Table 3 is revised to reduce the absence of relationships between sub-elements.

Table 4 Social Element Final Reachability Matrix

Sub-Elemen Description (i-j)		**1**	**2**	**3**	**4**	**DP**
Student	**1**	1	0	1	0	2
Alumni	**2**	1	1	1	1	4
University Employees	**3**	0	0	1	0	1
University Leaders and Management	**4**	1	0	1	1	3
D		3	1	4	2	
L		2	4	1	3	

Table 4 is the final matrix that will be used in classifying sub-elements and structuring the ISM model.



Fig, 1 Social Sub-Element Classification Diagram

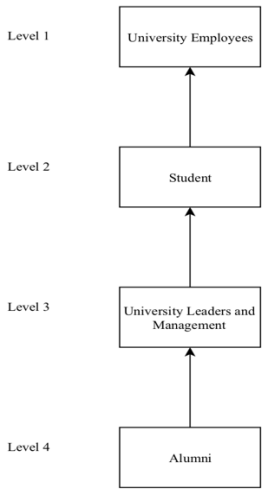


Fig.2 Social Element Structural ISM Model

In Fig.1 it is shown that Student (1) and University Leaders and Management (4) have linkage characteristic where every change will affect the sub-element and vice versa, thus it is necessary to carefully study the element. Alumni (2) have an independent characteristic where sub-elements have a big influence when a change is occurred, because it will cause changes in each of other sub-elements.

Fig.1 and Fig.2 are the results of data processing using ISM. Based on the picture shown, Alumni is the most influential community sector in Tajeer UAI. However, the alumni sector cannot be influenced by other sub-elements because the sector has no longer have any attachment to the university.

B. Needs Element

Needs will affect the running of a program, so it is necessary to know the needs that can support the course of the program. Bank Indonesia conducted research on entrepreneurial incubators in 2006 and stated that an incubator program can run if it has Space, Shared, Services, Support, Skill Development, Seed Capital and Synergy.

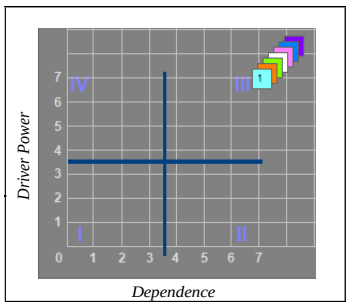


Fig.3 Needs Sub-Element Classification Diagram

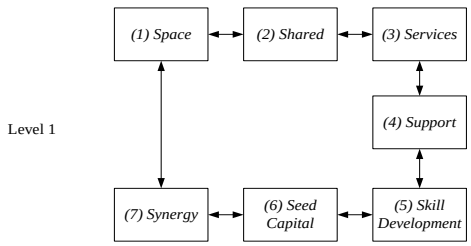


Fig.4 Needs Element Structural ISM Model

Fig.3 and Fig.4 are the results of data processing using the ISM method. Based on the picture, it is illustrated that by fulfilling one of the needs in the needs element, Tajeer UAI can meet the needs that are necessary to be owned by an entrepreneurial incubator program.

C. Constraints Element

Based on the results of interviews with the actors of Tajeer UAI, the program has not achieved its objectives to its full potential due to various constraints. Thus, it is necessary to pay attention to the constraints contained in the program so that can be control or carried out.

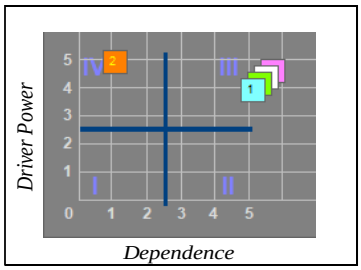


Fig.5 Constraints Sub-Element Classification Diagram

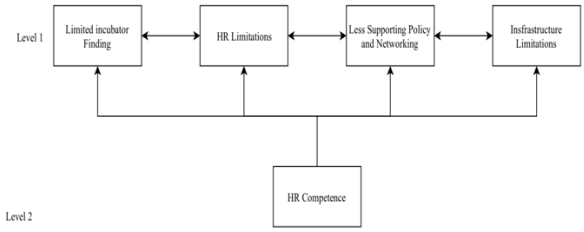


Fig.6 Constraints Element Structural ISM Model

Sub-elements including Limited Incubator Funding (1), Human Resources Limitations (3), Less Supporting Policy and Networking (4), and Infrastructure Limitations (5) have linkage characteristics, which means this sector could occur due to the existence of other constraints or causing other constraints to appear, so it needs to be assessed carefully so that the changes don't cause other obstacles to get worse. HR competence (2) has an independent characteristic or is not caused by other elements and is a major cause of other constraints.

Figure 4.5 is the result of ISM data processing. Human Resource Competence is the main cause that can cause other constraints to appear. Thus, it is necessary to increase the competency of HR in order to be able to improve the quality of Tajeer UAI so that many parties are interested in being involved in the program.

D. Alterables Element

Tajeer UAI involves many parties and has many needs that can experience changes at certain times, so it is necessary to know which things that might change in running an entrepreneurial incubator program so that a control can be done. Based on the results of the classification by ISM, it is obtained that Information Technology support and collaboration with supporting institutions are indicated as key elements, so that a change in other sub-elements will lead to a change in those related sub-elements and vice versa. Programs and Activities have independence characteristic where sub-elements have a large influence, because they can lead to changes in each of other sub-elements. The source of funds has the nature of dependence, this element can only change if there are changes from other elements.

Based on the results changes to programs and activities are the main causes which affects the changes in funding sources, information technology support, and collaboration with supporting institutions. Therefore, a careful assessment is needed in planning programs and activities to avoid changes in a direction that is negative or detrimental to UAI Tajeer.

E. *Objective Element*

The program can run stably or increasingly because it has a purpose, so it is necessary to clearly state the objectives of the Tajeer UAI program. ISM will show goals that can contribute in achieving other goals. The purpose of commercializing knowledge, providing entrepreneurial information, and forming and fostering a consultation forum for entrepreneurs having a strong influence to contribute in achieving the objectives of Tajeer UAI. The purpose to increasing the interest of entrepreneurship of young people and reducing the potential of failure in doing business has the characteristic of dependence where that purpose will be achieved if there is support or contribution from other goals that have been achieved.

F. Activity Element

Program activities will describe the performance of the program; thus, it is necessary to determine activities that have a massive influence in supporting the running of other activities. The main activity that needs to be done is Islamic Financial Training because knowledge about finance is a basic knowledge that entrepreneurs need to have, so that in carrying out other activities, tenants can immediately consider the financial pattern of their business

ANP (*Analytic Network Process*)

ANP in this study uses Super Decision Software. The ANP method requires a model that shows the relationships between nodes (sub-elements). It can be seen in Fig.7 the basic ANP model in this study.

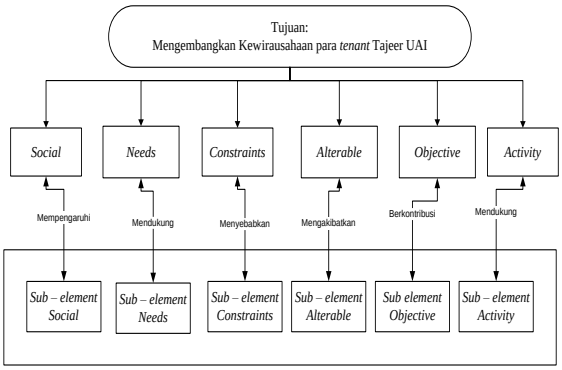


Fig.7 Basic ANP Model in developing tenants' entrepreneurship in Tajeer UAI

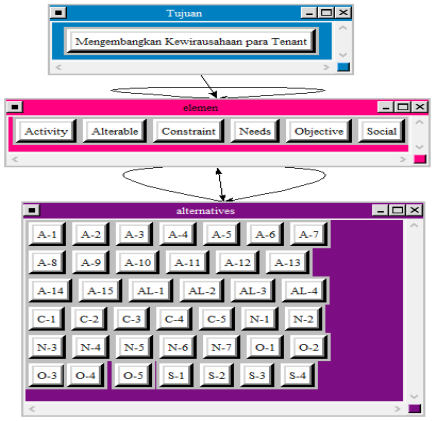


Fig.8 ANP Model (Analytic Network Process) in Super Decision Software

Fig.7 describes the relationship of objectives with elements. In order to achieve the objectives, it is necessary to pay attention to the elements of Activity, Alterable, Constraints, Needs, Objective and Social. After the basic model has been determined and a relationship based on ISM has been found, the ANP model is being conducted in the Super Decision Software using both models in Fig.8.

Literature References

A. Entrepreneurial Incubator

Entrepreneurial incubator is a system to improve the ability of community entrepreneurship which aims to improve welfare and can create new jobs in utilizing human resources. The incubator system pays attention to several components such as technology, business, and partnership [6]. Tajeer UAI is a Business Incubator or Entrepreneurial Incubator program in Al Azhar University of Indonesia which enacted the Decree of the Chancellor of Al Azhar University of Indonesia No. 039 / SK / R / UAI / II / 2018. The purpose of the establishment of Tajeer UAI's is to improve the quality of education, research and service to the community by applying the Enterprising University rules in making Al Azhar University of Indonesia as a leading educational institution on the basis of innovation and entrepreneurship so as to encourage the development of technological innovation products.

B. *Decision Support System (DSS)*

Decision is an action resulting from problem-solving activity based on logic and consideration. Decision Support System (DSS) is a computer-based information system in the form of an approach which aims to produce various decision alternatives to solve an unstructured problem in the form of data and models [2]. A DSS only provides alternative decisions as material for consideration, while the final decision is still determined by the decision maker (problem owner / strategy manager). Decision support system integrates intellectual resources in the form of expert opinions that combined by computer capabilities to improve the quality of decisions [4].

C. *Interpretive Structural Modeling* (ISM)

ISM (Interpretive Structural Modeling) is commonly used by researchers to understand the direct and indirect relationships of various variables [5]. This method is a decision support tool that describes a comprehensive understanding of a complex situation in the form of an issue or problem by linking and organizing elements in a visual map or hierarchy, so that it can show the characteristics of each variable [4].

The steps in working on ISM are as follows:

1. Creating a Structural Self-Interaction Matrix (SSIM), interpreting the results of the interview into the Structural Self-Interaction Matrix by using:
   V : If *i* have a contextual relationship with *j*
   A : If *j* has a contextual relationship with *i*
   X : If *i* and j have contextual relationships
   O : *i* and *j* don't have a relationship
2. Making Initial Reachability Matrix, after finding Structural Self-Interaction Matrix, the matrix is changed to a binary matrix with the following rules:
   if (*i, j*) is V, then the reachability matrix (*i, j*) = 1 and (*j, i*) = 0
   if (*i, j*) is A, then the reachability matrix (*i, j*) = 0 and (*j, i*) = 1
   if (*i, j*) is X, then the reachability matrix (*i, j*) = 1 and (*j, i*) = 1
   if (*i, j*) is O, then the reachability matrix (*i, j*) = 0 and (*j, i)* = 0
3. Creating a *Final Reachability Matrix*, correction of the SSIM binary matrix to obtain a closed matrix by performing a transitivity matrix, this test is done to reduce the absence of relationships in the matrix. Transitivity matrix is done by examining each matrix column based on the following rules:
   a) Examination is done from the leftmost column (Column A) and so on.
   b) Check the relationship to A, see if there is a value of 1 in column A.
   c) Mark the Mark the lines that have a relationship with A (B).
   d) Enter Line A into B which has a value of 0 or has no relationship.
4. Compile a level of model, after the Final Reachability Matrix is found, determine the level of each sub-element based on the sum of each column in the matrix.
5. *Sub-Element Classification,* at this stage sub-element classification is carried out based on the PD-D matrix diagram (Driver Power - Dependence), becoming [9]:
   Sector I: Weak driver – Weak dependent (Autonomous), sub-elements are not related to the system and may have little relationship even though the relationship can be strong.
   Sector II: Weak driver – Strongly dependent (Dependent), can change other sub-elements and will be affected by the program as a result of actions against other sectors.
   Sector III: Strong driver – Strongly dependent (Linkage), sub-elements in this sector need to be carefully studied, because every change will cause changes to other sub-elements and vice versa.
   Sector IV: Strong driver – Weak dependent (Independent), has a little dependency on the program, but changes in sub-elements in this sector can cause changes to the program.

The ISM method processing is carried out based on Hill and Warfield (1972) research on Saxena (1992) which stated that the study program was 9 elements or in accordance with the needs of the program which had an influence on the program to be able to control the running of the program so it could be useful for the present and the future [9]. These nine elements, namely Societal Sector, Needs, Constraints, Alterables, Objectives, Measure Objectives, Activities, Activities Measure, The Agencies.

D. *Analytic Network Process*

ANP (*Analytic Network Process*) is a decision support tool that considers the relationship of each element in a hierarchy and reciprocal (contextual) relationships between variables (sub-elements) to determine priorities of several alternatives [10].

Conclusions

After conducting a research using ANP and ISM methods, it is known that both methods have produced different result. ANP results can be used to determine the importance rankings based on priority values, while ISM results can be used to solve problems by showing the characters and relationships between variables in a visual form. The characteristics of Tajeer UAI's policies and activities are described in the classification and structural diagrams of the ISM model in their respective elements. Tajeer UAI have 5 policies and activities that need to be prioritized based on ANP results, Bazaar, Commercializing Knowledge, Controlling Limited Incubator Funding, Meeting the Needs of Seed Capital and Controlling Less Supporting Policies and Networking with a priority

value of 0.6323; 0.0277; 0,0199; 0.0182 and 0.0177. The subsequent studies could consider the opinions of members of the bureaucrats as experts, so that the results obtained could be adjusted to national circumstances at that time. ANP calculations should also be carried out in their respective elements, in order to know the priorities in each element.

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