Determining of the development research strategies in the Islamic Azad University branch of varamin (IRAN): A case study using AHP in SWOT analysis

***Davood samari*[*1], Moosa Kazemi[2], Somayeh Davari[3] , Majid Azizi[4] , Gholamhossein Saleh nasab[5]**

1-Islamic Azad University of Varamin branch, Tehran, Iran

drsamari@yahoo.com

Abstract:

This article aims at application of AHP in SWOT analysis. Science production level in every university is one of the main subjects in classifying of the universities, and it has a particular significance. This science production to branch off of the manner of doing research strategies. In this research at first we will consider at weak and strategies points of research activities and then opportunities and threats which the university is facing with them. Then we'll determine the appropriate research strategy based on AHP. So this article is looking for a fundamental link between AHP and SWOT.

Key words: AHP, internal and external environment, SWOT, strategic programming.

Introduction

Research is presently basic to scientific advancement and development. Accordingly, it can be said that in any society, there is a direct relationship between the level of development and both quality and quantity of research efforts, This holds true to the extent that hardly can a nation identify the problems that need to be solved through specific strategic design.

Any change in higher educational system can work effectively only when the system enjoys the competencies needed for addressing the basic functions of the universities or higher educational structure through the modern approach. In order to generate scientific knowledge, it is imperative to develop graduate and post-graduate courses on qualitative, systematic and organized bases. Scientific information system, on the other part, calls for over-all cooperative and coordination among universities, research institutions and industrial centers, as well as expansion of international academic exchanges and up-to dated scientific-research activities (sarkaraieh, M.R, 2000).

In the 21st century, economic, legal and social pressures are challenges for higher educational system. Strategic planning is frequently-used method to response the changing internal and external environments of the universities. The extent of strategic management applied in the universities is an indication to the dynamic nature of these educational institutions. (machado etal.,2004)

Strategic management process, by definition, may be divided into four stages; situation analysis, strategy formulation, strategy implementation, and strategy evaluation. Khalily Shorini(2000) suggests figure 1 as the strategic management model, in which strategic management is explained as a "process". This idea brings about several significant conclusions. First of all, it shows that a change in any of the components affects all or some of the other components. Second, formulation and implementation of the strategy follow a hierarchical order. Third, control, evolution and revitalization are available in educational systems. Authentic, academic and responsive rethinking along with rebuilding the structure of the educational system enables us to revitalize the system so as to provide learners with the envisaged outcomes when they enter in to the community.

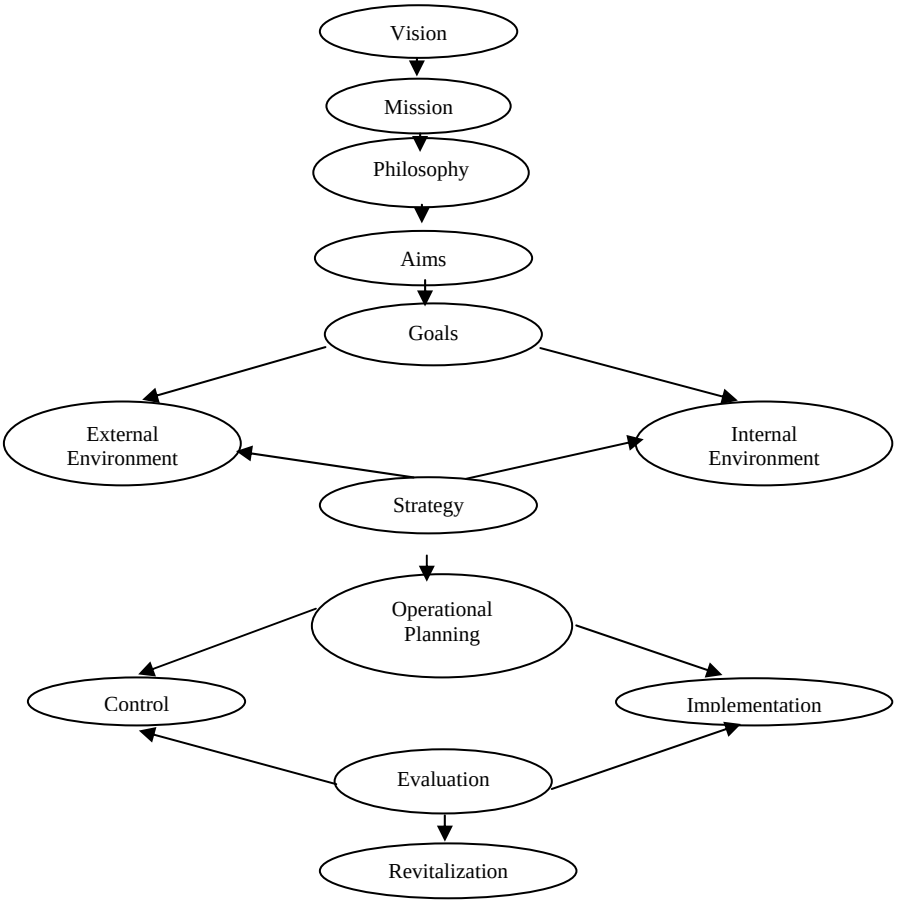

Figure1. Strategic management process
Source: khalili shorvini, 2000

A strategy can be developed or formulated effectively when the mission of the educational institution is clearly defined, both external and internal environments are accurately evaluated, and the internal environment of the institution is well-analyzed. Any successful strategy needs to have three vital components. First, it must be compatible with the conditions of the external environment. It must, in particular, take advantage of the available or anticipated opportunities to minimize the major threats. Second, it must use internal resources and capacities of the educational institution as the basic inputs. Third, it must be implemented accurately. In brief, the data gathered by the strategic planners should well reflect the educational institutions and the society for which they plan (mirsepassi, 2003).

Analysing the internal environment is a challenging task. In order to provide a real profile of the educational institution, such an analysis needs frequent compromises, value-based judgments, well-informed speculations, as well as objective analyses. This kind of analysis is necessary for formulating effective strategy. Internal environment analysis should identify the strategically important strengths and weakness. This is because the institution has to taken the into consideration for developing it's own strategy. Although the process of analyzing internal environment dose not necessarily follows a systematic pattern, it is regarded mostly a central part for strategy formulation (khalili shorini, 2000).

There are a set of external environmental factors that influence selection of direction, activities, organizational structure and internal process of the educational institution. They also create opportunities, threats and constraints for the organization.

Material and methods

This study is conducted through following four-step

Procedure:

1. Analysing and identifying internal and external factors.
2. Pair-wise comparisons between SWOT factors.
3. Pair-wise comparisons between the four SWOT groups.
4. Conclusion, evaluation and identification of the appropriate strategy.

Appropriate strategy

SWOT analysis was applied for internal and external evaluations of the university's research efforts.

Accordingly, strengths (S), weaknesses (W), opportunities (O) and threats (T) of research activities were extracted as follows:

a. strengths (S):

S1. Experinced faculty members;
S2. IT and ICT facilities;
S3. Developed and supported (reinforced) scientific associations; and
S4. Budget allocation

b. weakness (W)

W1. Lake of reliable academic magazines;
W2. Prioritizing teaching over research;
W3. Low marale for conducting group research activities;
W4. Inadequate laboratory facilities and spaces; and
W5. Time-intensive procedure for approval of research proposals

c. Opportunities(O):

O1. Supporting faculty members to participate in international sysmposia;
O2. Collaborating with well-known universities; and
O3. Catalyzing for development of post-graduate courses

d. Threats (T):

T1. Lake of support on the part of some organizations;
T2. High costs of research services;
T3. Brain drains; and
T4. Reliance on outside technologies

SWOT and AHP methods were employed for pair-wise comparisons between the four groups and factors. Saaty (1980) and Drake (1988) believe that AHP can be delineated performed through five major stages: 1) creating hierarchical tree, 2) pair-wise comparing of research criteria and options, 3) operations for computing data, 4) sensitivity analysis, and 5) level of non-adaptability(incompatibility). Accordingly, a hierarchical tree was designed as shown in figure2.

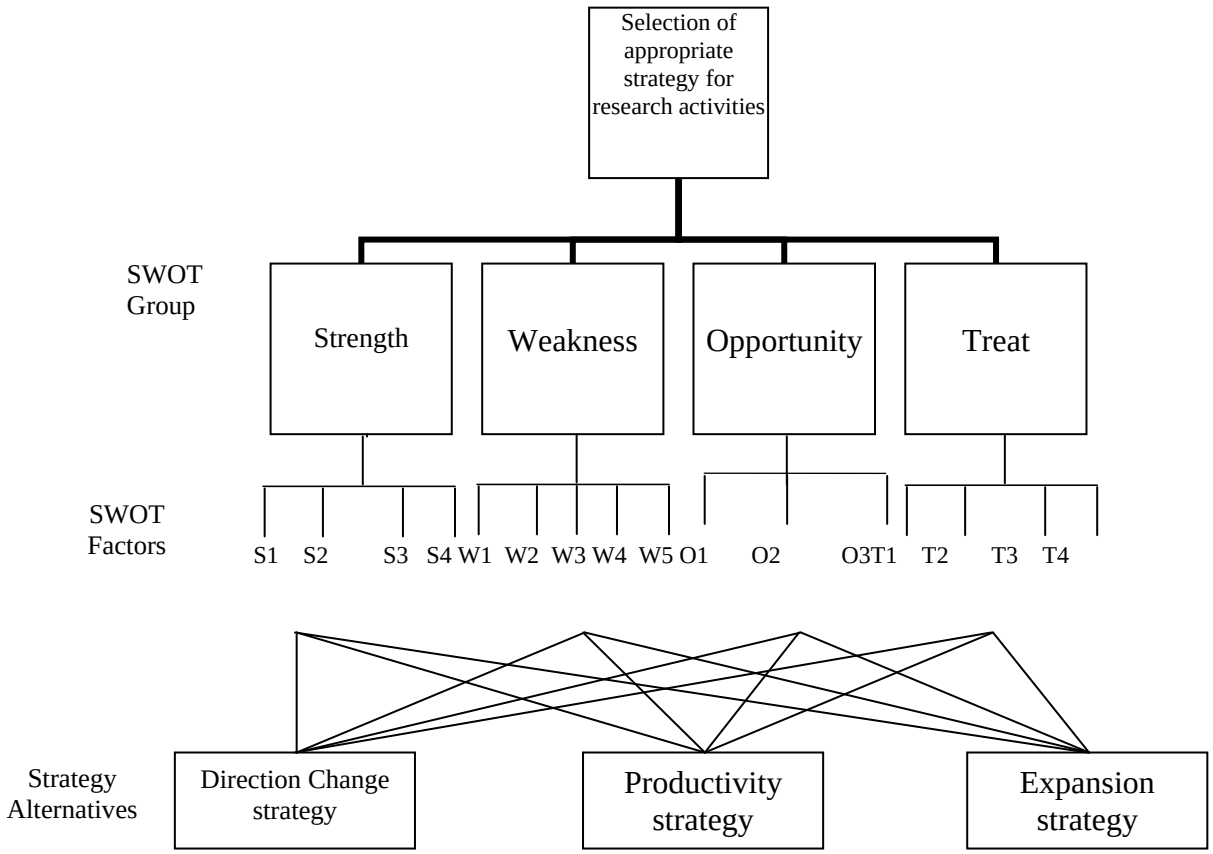

Figure2: Hierarchical tree

Apart from collating frequencies of responses, the SWOT analysis method must be regarded as a form of qualitative analysis method. To overcome this shortfall and improve the usability of the SWOT analysis, some hybrid methods have been applied. They include multi-sectoral qualitative analysis (Roberts and Stimson, 1998) and integration of the analytic hierarchy (AHP) process with SWOT analysis (A'WOT).

A'WOT (Kurttila et al., 2000) is an example of hybrid methods specially developed for the purposes of practical strategic planning that include qualities both of an approach recently often used in practice and of a more modern decision support method. It is a combination of two decision support tools: the AHP and SWOT analysis. The main aim in applying two different approaches in the one and the same planning process is to make use of their advantages in a compatible manner, but it also serves in adopting ideas of multiplecriteria decision support to practical planning tasks. The approach in which the SWOT forms the general framework, and the AHP is applied within this framework in order to bring quantitative analysis capacity into the planning process, has been given the name A'WOT. As with the HIPRE and outranking applications above, A'WOT has also been tested in strategic natural resource planning in state forestry in Finland (Pesonen et al., 2001b), but in a case different from the one presented here. As only preliminary tests have been made so far, the method is bound to evolve further, and new versions of it will be developed.

Results and Discussion:
The result of comparisons between SWOT factors and groups are shown in following table.

Table: Priorities and consistency ratios of comparisons of the SWOT groups and factors (the factor having greatest weight in each SWOT group is underlined). The overall priority of the factors is computed by multiplying the priority of the factor within the group by the priority of the group.

SWOT Group	Priority of the group	SWOT factors	Priority of the factor within the group	Overall Priority of the factor
Strengths	0.422	Experinced faculty members	0.45	0.192
		IT and ICT facilities	0.10	0.06
		Developed and supported (reinforced) scientific associations	0.15	0.04
		Budget allocation	0.30	0.130
Weaknesses	0.108	Lake of reliable academic magazines	0.10	0.011
		Prioritizing teaching over research	0.28	0.030
		Low marale for conducting group research activities	0.20	0.022
		Inadequate laboratory facilities and spaces	0.35	0.038
		Time-intensive procedure for approval of research proposals	0.07	0.007
Opportunities	0.390	Supporting faculty members to participate in international sysmposia	0.30	0.117
		Collaborating with well-known universities	0.20	0.078
		Catalyzing for development of post-graduate courses	0.50	0.195
Threats	0.08	Lake of support on the part of some organizations	0.10	0.008
		High costs of research services	0.20	0.016
		Brain drains	0.40	0.032
		Reliance on outside technologies	0.30	0.024

As show in table, priority weights (value) assigned to two criteria, i.e. "Strengths" and "Opportunities" are greater than the weights of other items. It also indicates that sub criteria "Experinced faculty members", "Inadequate laboratory facilities and spaces"," Catalyzing for development of post-graduate courses" and "Brain drains". As far as appropriate option for each sub-criterion is concerned, "Productivity strategy" option has been, by no means, selected as an appropriate strategy.

A combination of results reveals that the weights for the three above-mentioned strategies are as follows:

1- Productivity strategy = 49.8% (first option)

2- Expansion strategy= 35.4% (second option)

3- Direction Change strategy= 14.8% (third option)

References:

- Drake P.R. (1988). Using the AHP in Engineering Education. Int. J. Engineering Ed.Vol.14, No.3.
- Khalili Shorini, S .2000. The need for strategic management in higher education system of the Islamic Republic Of Iran, Strategic Defence Studies Journal (q)
- Kurttila M, Pesonen M, Kangas J, Kajanus M. 2000.Utilizing AHP in SWOT analysis: a hybrid method and its application. Forest Policy and Economics 1:41–52.
- Mirsepassi, Nasser .2003. Strategic management in Human Resiurces and Work Relations. Meer Publisher
- Pesonen, Metal (2001) Investment strategies of finish Forest Industry in North America: A case study using A'WOT (AHP in SWOT analysis), Kluwer Academic Pub.
- Pesonen M, Kurttila M, Kangas J, Kajanus M, Heinonen P. 2001b. Assessing the priorities among resource management strategies at the Finnish forest and park service. Forest Science 45: 534–541.
- Roberts, B. and Stimson. 1998. Multi-sectoral qualitative analysis: A tool for assessing the competitiveness of regions and formulating strategies for economic development. The Annals of Regional Science. 32: 469-494.
- Samari, D etal(2005) Selecting an appropriate forest extention model for Zagros Area through an AHP. 8th international symposium of the AHP. USA
- Sarkaraie, M.R.2000. Forms search for knowledge to generation of knowledge. Mosharekat Journal.
- Satty T.L. (1980). The Analytical Hierarchy Process Planning, Priority, Resource Allocation. RWS Publications USA.