

Strategy development by using SWOT - AHP

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Abstract – This paper employs combination of SWOT analysis and Analytic Hierarchy Process (AHP) in strategic planning for tourism of small mid-european city Varazdin, which is located in the north west of Croatia. SWOT analysis identifies internal and external factors which are prioritized by expert in tourism domain by means of AHP. The prioritized SWOT factors are used in strategies formulation using TOWS matrix. Results indicate that proactive communication strategy and isolation strategy with effective marketing promotional strategy were the best strategies that could have been implemented.

Keywords – SWOT, AHP, strategy formulation.

1. Introduction

Every organization is faced with a variety of internal and external forces which, on the one hand, can be a stimulus, or on the other hand, can be potential threat regarding the performance of the organization or the goals that the organization wants to achieve. As a first step in strategic planning managers need to identify and evaluate these strategic factors that either help or make difficulties to the organization on the way to realize their full potential [7]. Because each organization operates in a dynamic environment, the relative importance of each strategic factor is exposed to constant change.

Defined strategic factors can be used as a starting point for creating a strategic plan. Their biggest advantage is helping decision makers explore different areas of management, give an insight into the importance of individual components within the enterprise, and allowing them to initiate appropriate action. For a successful business in this regard, the organization must concentrate his future goals on their strengths and turn tendencies associated with weakness. Response to the internal strengths and weaknesses is therefore an essential component of strategic management [7].

Strategic management can be defined as a set of decisions and actions taken by management, in collaboration with all levels within the organization in order to establish long-term activities of the organization [13].

Literature review shows that many approaches and techniques can be used to analyze the strategic

cases in the strategic management process. One of them is the SWOT analysis. This article explains the SWOT analysis, provides the theoretical background and an overview of the application of the SWOT analysis. As some authors have identified weaknesses of the SWOT, analysis is combined with a method for multi-criteria decision analytic hierarchy process (AHP) in order to avoid these disadvantages. Therefore, in the second part of the paper AHP method and SWOT AHP hybrid method are described. Following the basic steps method, SWOT AHP is applied to the example of the city of Varazdin strategic marketing plan definition.

2. SWOT analysis

SWOT is an acronym of strength, weakness, opportunities and threats. The first two factors (strengths and weaknesses) are related to internal organizational factors, while opportunities and threats cover a wider context or environment in which the entity operates [4]. The first are likely to be under control of the organization but the latter one, although they are no less important when looking at the impact on the enterprise, are not.

SWOT is one of the most widespread methods of management and is an instrument used by managers in creating strategies [9]. Commonly used as a tool for the analysis of internal and external factors in order to achieve a systematic approach and support to address the situation. Internal and external factors are the most important for the future of businesses. They are called strategic factors and are presented in the SWOT matrix. The ultimate goal of the strategic planning process, of which the SWOT is one of the initial phases, is development and adoption of strategy resulting in a good relationship between the internal and external factors. SWOT can also be used when the alternative appears suddenly and need to analyze the context of decisions with respect to that. SWOT analysis is actually a method to help with strategy formulation. The analysis aims to identify the strengths and weaknesses of the organization and the opportunities and threats in the environment of the organization. SWOT analysis is an important tool that serves as a support for decision-making and is often used as a tool for the systematic analysis of the organization, both internal and external influences on the organization [13]. Identifying their strengths,

weaknesses, opportunities and threats, organizations can build a strategy on their strengths, eliminate weaknesses and exploiting its capabilities, or to use an option in the fight against threats. SWOT analysis summarizes the most important internal and external factors (strategic factors) that may affect the future of the organization.

A comprehensive analysis is important to identify the internal and external factors facing the organization. On the one hand, these factors may include incentives, on the other hand may represent a potential limitation in terms of performance of the organization or the goals that the organization wants to achieve [13]. The resulting information can be systematically presented in a matrix form, different combinations of the four factors of the matrix can help to determine a strategy that will mean long-term progress

2.1. Advantages and disadvantages of SWOT analysis

Collins-Kreiner and Wall emphasize that the SWOT analysis is simple and useful for organizing information, especially for preliminary research, but also as a basis for more applied and theoretical work [4]. One of the advantages but at the same time disadvantage of SWOT analysis is the fact that it is the method of valuation. The emphasis on the evaluation of the work seems more applied than theoretical. SWOT has proved very useful in understanding the environment of the organization and, consequently, in the strategic planning of their growth and development.

Typically used at the enterprise level, but can be applied at higher levels, for example, in strategic plan in tourism of the destination [8]. Strategic planning for the destination could be a difficult task as there are many possible strategies derived from the assessment of environmental factors. But the decision without a systematic approach would result in less effective strategies.

When taking into account disadvantages, SWOT analysis is not able to quantify the effects of weight and strategic factors on alternatives [11]. Although some studies have included such quantitative weighting, none take into account the relationship or dependency factors in SWOT analysis. This is very important because it can't be assumed that factors of a SWOT analysis are independent and not connected one with another. When used SWOT, there is no possibility of a comprehensive evaluation of the strategic decision-making situations. In addition, SWOT does not include funds for the analytical determination of significance of the

factors. SWOT analysis is therefore mainly based on qualitative analysis; skills and expertise of people. As the planning process is often complicated by a number of criteria and interdependencies, sometimes using SWOT is insufficient. In a study from 1997., Hill and Westbrook [6] found that none of the 20 companies that were the subject of their study did not prioritize individual SWOT factors and only three companies use SWOT analysis in defining the mission. In addition, expression of certain factors was very brief and general in nature. Thus, it can be concluded that the results of the SWOT analysis are often only superficial and inaccurate or incomplete list of qualitative testing of internal and external factors.

2.2. Application of SWOT analysis

The beginnings of the SWOT analysis go back in 1960 and the application of the SWOT analysis from then until now extends to a wide range of areas. SWOT is used in many situations, e.g. for planning and development of the situation, as a tool for organizing and interpreting information. SWOT analysis is often used by consultants, but it is rarely by scientists. Chang et. al. stated that external factors can be classified according to its attractiveness and the likelihood of potential: opportunities to succeed and threats that will not materialize. The internal factors may be ranked in terms of their effectiveness and relevance [3]. Furthermore, they summarize internal and external strategic factors in EFAS (Synthesis of External Strategic Factors), the synthesis of external strategic factors and IFAS (Synthesis of Internal Strategic Factors), the synthesis of internal strategic factors. They showed how internal and external factors can be weighted to illustrate how management responds to these specific assessment factors in light of their perceived importance to the company. Weighting was carried out on a scale from 0 (not important) to 1 (most important). The result was a weighted score that indicates how well the company responds to the current and anticipated strategic factors in the environment. In addition to weighting and evaluating individual SWOT factors, they proposed weighting of four SWOT groups and their usage as additional multipliers for individual factors in order to assess their overall significance.

Following this analysis, managers can get some foundations, such as the factors on which we should base the future success of the strategy. However, none of presented approaches does not consist of a systematic technique for determining the importance of factors.

3. AHP method

This chapter describes the AHP method which is used in conjunction with a SWOT analysis in order to avoid the disadvantages of SWOT analysis. Previous studies have recognized the shortcomings of SWOT analysis and point out SWOT AHP as hybrid that deal with the priorities of SWOT factors ([8], [9], [10], [11]). Thus, the idea behind using AHP is to systematically evaluate the SWOT factors [13]. This chapter provides a theoretical background of AHP method, and the next chapter describes SWOT AHP and emphasizes reasons for integration of two methods.

Analytical Hierarchy Process (AHP) is one of the most popular methods of multiple criteria decision making. It is used to rank the alternatives by taking into account the importance of the different criteria. AHP allows structuring the problem, followed by comparing pairs of elements in the hierarchy. At the end of the process, mathematical model is determined by weighting factors of all elements of the hierarchy. AHP structures the problem of decision-making and monitors the process of decision making by defining objectives, criteria and alternatives, by comparing criteria and alternatives in pairs and defining priorities of alternatives. Results of the AHP method are ranked alternatives and the weight coefficients of criteria in relation to the goal. AHP successfully identifies and indicates the inconsistency of decision making by tracking inconsistencies for the whole process. Results are quantitative indicators that can argue the decision. AHP method is now one of the most popular and commonly used method for multi-criteria decision making in solving real problems. It was developed by Saaty in 1977.

3.1. Application of AHP

Vaidya and Kumar published in 2006. the literature review of 150 publications published in the prestigious international scientific journals in the period since 1983. - 2003, in which the AHP method has been applied to solve certain types of problems. In the period since 1983.to 2003 [12]. AHP method is most often used for the selection, evaluation and decision-making (more than 50% of the application is one of the three areas). Furthermore, the AHP has been applied in the planning, development, and in cost – benefit analysis, and less in medicine and for the purposes of prediction. The same article noted that the AHP method in that period occurred in the five studies combined with SWOT analysis.

4. SWOT AHP method

This chapter describes a hybrid method of SWOT AHP. First, the reasons why combination of these two methods is necessary, followed by a review of SWOT AHP method.

Although SWOT is often used as a planning tool, this analysis also has weaknesses. Some of these weaknesses can be avoided and then the SWOT can be used more efficiently. In previous studies, this is done by connecting a SWOT analysis with AHP method. As a result, a hybrid method is obtained that produces quantitative values for the SWOT factors ([8], [9], [10], [11], [13]). As advantages of derived hybrid method, literature most often states its simplicity, efficiency and the ability to combine qualitative and quantitative criteria [8]. One problem of SWOT analysis lies in the uncertainty related to the future development and the outcome of various factors. This can complicate the comparison. However, the AHP method is able to manage the decision-making in situations of uncertainty. It is recommended that a number of factors (strengths, weaknesses, opportunities and threats) will be limited to 10, but it certainly allows the user to avoid overlap and negligence during construction of SWOT. On the other hand, the limitation is not so strict and the problem of the large number of comparisons it can be avoided by using at least two different techniques. First, grouping variables and second, by adding a new level in the hierarchy. If, for example, there is a large number of opportunities, they can be grouped into two or three subgroups. AHP enables quantization of priorities to support decision making. However, AHP does not include the statistical uncertainty of the results. Consistency measure of comparison and consistency ratio, resulting from AHP calculation, does not give direct information about the uncertainty derived priorities.

Numerical results, prioritized SWOT factors are useful in formulating or selecting the strategy. It is good to compare the external features compared to the internal potential, because all the factors are, at the same, a numerical scale. For example, if it turns out that one weakness is greater than all the benefits, then the chosen strategy may have to be focused on eliminating these weaknesses. Similarly, the selection of the new strategy probably should not be based only on the deletion of the existing opportunities and threats, if they are of equal size. In every situation of strategic planning can be used SWOT analysis and AHP method. SWOT analysis provides the basic framework which conducts analysis of the situation in which the decision was made, while the AHP helps to conduct the SWOT in analytic way. Potential advantages of using AHP in

SWOT analysis lie in the possibilities of quantitative testing of SWOT factors and involvement of decision maker's preferences in the planning. Some of the advantages of AHP method as a systematic approach to decision-making problems can be valuable properties in the SWOT analysis. The added value of the SWOT analysis can be achieved by making comparisons in pairs between SWOT factors and by analyzing the eigenvalues, as it works in the AHP method. This provides a good basis for testing the current or expected situation, or defines a new alternative strategy. After conducting these comparisons, decision makers will have new quantitative information about the situation of making a decision, for example, whether there is a weakness that requires greater attention, or if it is expected that the company will be faced with future threats.

This hybrid method is suitable for many situations of strategic planning. After defining the priorities of SWOT factors, new strategies can be constructed partly on the basis of information derived from the comparison. Furthermore, it is possible to compare two or more strategic options, so find out which is the best match to the SWOT factors. This can be done by adding an alternative strategy to the lowest level of the hierarchy and comparing them with respect to each factor in SWOT list. The result is a quantitative value that indicates the priority or preference of each option.

Combined use of AHP and SWOT proved promising. Making comparisons in pairs forces decision-makers to think about the weights of factors and more accurately analyze the situation. Hybrid method of AHP and SWOT increases and improves the information base for the strategic planning process. It also provides an effective framework for learning in support of strategic decision making in many situations and can be used as a tool for communication and education in the processes of decision-making where multiple decision makers involved.

5.2. Steps of SWOT-AHP method

According to Yeon and Kim, SWOT AHP steps are following: (1) conducting a SWOT analysis, (2) comparisons in pairs between SWOT factors within each SWOT group, (3) comparisons in pairs between the four SWOT groups, and (4) formulating strategies based on the results [11].

Step 1: SWOT analysis.

Relevant external and internal factors are identified and included in the SWOT analysis. When applied to a standard method of AHP, it is

recommended that a number of factors within the SWOT group does not exceed 10 because the number of comparisons in pairs that are needed in the analysis is rapidly increasing.

Step 2: Comparisons in pairs between SWOT factors were conducted within each SWOT group.

When comparisons are made, the question to be answered is: which of the two factors being compared is has higher impact: is it strenght, opportunity, weakness or threat. With these comparisons as input, the relative priorities of the local factors are calculated using the eigenvalues. These priorities reflect the perception of the decision maker on the relative importance of factors.

Step 3: Comparisons in pairs between four SWOT groups.

Factor with the highest local priority was chosen from each group to represent the group. These four factors are then compared and their relative priorities are calculated as in step 2.

These are the scaling factors of four SWOT groups and they are used to calculate the total global priorities of independent factors within them. This is done by multiplying the local priorities defined in the second step corresponding to the value of the scaling factor in SWOT groups. The sum of all factors of global priorities is one.

Step 4: Using results in the formulation of strategies and the evaluation process.

Contribution to the strategic planning process comes in the form of numerical values for the factors. New targets can be set, the strategies defined and the implementation plan taking into consideration based on the most important factors.

5.3. Application of SWOT-AHP method

In several previous studies the combined model SWOT and AHP method was used ([8] [9], [10], [11]). Kurttila et. al. stated this hybrid method is often used to improve the usability of a SWOT analysis as AHP quantitatively determines the importance of the factors in SWOT groups [9]. In the above studies, among other things, research subjects are exploring the opportunities and challenges of agroforestry by applying SWOT analysis in combination with AHP, assessing perceptions of stakeholders regarding the suitability of the access control based on the community. Kahraman et.al. have recently used the SWOT and AHP model to, firstly, prioritize strengths, weaknesses, threats and weaknesses of the group, and secondly, to decide and evaluate alternative strategies of e-government [12].

In each of these studies case study approach have been used to examine specific situations.

SWOT-AHP method was applied in even more domains such as environmental protection, project management, agriculture, manufacturing, energy, agriculture, industry, machine tools, etc.

6. Strategic planning of tourism in a small town

In this chapter the use of SWOT AHP is demonstrated in the field of tourism. Development of a strategic plan for a small town in the northwest of the Croatian, Varazdin is presented. Varazdin is a city with less than 50 000 inhabitants, the capital city of Varazdin County and the economic center of the North-West of Croatia.

Systematic approach to strategic planning of Varazdin tourism development is implemented by using SWOT analysis integrated with AHP method. Hybrid method follows the steps of development of described earlier in the paper. The first step is the SWOT analysis. SWOT matrix was developed by consulting an expert in the field of tourism: a person who graduated from the Faculty of Tourism Management. Identified strengths, weaknesses, opportunities and threats are found in Table 1 in the appendix of this paper. The following strengths were identified: characteristics of destination, geographical position and historical value, standard of living, cultural and religious events. Elements of each of these strengths are fully explained in table 1.

Expert has recognized the weaknesses of Varazdin relating to the following characteristics: limited availability, underdeveloped tourism, inadequate marketing promotion, poor coordination between tourism authorities and unstructured tourism management.

Expert has noted the following opportunities that can be exploited: geographical features of the destination recognized the potential for the development of tourism and international reputation. As threats to be aware of are identified: regional rival destinations, economical instability and the absence of controlling authority for active tourism.

In the next step, expert made comparisons in the pairs. First, comparisons were carried out in pairs among the SWOT factors within each of the four groups. Expert's task was to compare two factors with respect to the goal (development of the best strategic marketing plan). Each question included ranking on a scale of 1 to 9 (Saaty scale) in order to make relative judgment factors. These comparisons

were used as input to calculate the local priorities of the factors using the method of eigenvalues described by Saaty. The resulting priorities and ranking factors are shown in Table 2 in the appendix.

Table 2 shows opportunities have the greatest scaling factor. Inside the opportunities international reputation stands out as the strongest because it has the highest priority. International reputation is followed by geographic characteristics of destination. Other opportunities have significantly lower priorities.

As the greatest strength expert identified the characteristics of the destination. It is interesting to be noted that characteristics of the destination has priority higher than following two strengths together. Expert recognized underdeveloped and inadequate marketing of tourism promotion as the main weaknesses of Varazdin as a tourist destination.

The next step of the development SWOT AHP method involves defining strategies using TOWS matrix. The main objective of the strategy formulation is a change of current conditions or re-establish the image that is currently broken in the region. TOWS matrix provides four different combinations: SO, WO, ST and WT. Below are shown strategies identified in this research. For each strategy are listed SWOT combinations that are used in defining strategies (e.g. S1/O4 means consideration of strength No.1 and opportunity No. 4.).

SO Strategies (Maxi-Maxi)

- *Strategy of differentiated approach:* Provides marketing mix in a different way than competitive destinations (including S1/S2/S4/O3/O2).

WO Strategies (Mini-Maxi)

- *Strategy of shareholder involvement in tourism development:* involvement of shareholders in decision-making, improve product quality and concern for consumers (including: W2/W3/W4/W5/W1/O3/O2).

- *The strategy of diversification of distribution channels:* distribution channels have the power to influence it, "when", "where" and "how" people are traveling, and so to some extent, control how many people come to a destination (includes W3/W2/W5/W1 / O3/O2/O1/O3).

ST Strategies (Maxi-Mini)

- *Segmented marketing strategy with product modification:* Segmentation identifies specific

categories of homogeneous preferences among tourists (includes S1/S2/S4/S3/T2/T1).

- *proactive communication strategy*: prevent potential negative image in the minds of visitors, must be centralized, honest, transparent and informative (S1/S2/T2).

WT Strategies: Mini-Mini

- *Launch efficient / flexible marketing promotional strategies*: creating confidence in the target market: special events, billboards, trade shows, TV programs, public relations, advertising ... are the best tactics for promotion (W3/T2/T1).

- *Organizational interrelationships and team work*: tourism is a set of variety services which include many parties, therefore it is necessary to develop a network among them (W2/W1/W3/T2/T1).

Explained strategies are defined with the help of expert, following the theory of tourism. The main advantage of this approach is that it takes into account the internal and external factors that are built into alternative strategies. The disadvantage is that certain combinations are not taken into account.

7. Conclusion

This paper describes two methods used to strategy development, SWOT and SWOT AHP. SWOT is one of the most widespread methods for developing strategies. It creates qualitative and subjective models based on which strategic decisions are made. This method is often combined with AHP method, which creates a SWOT AHP subjective quantitative model. This paper explains implementation of both methods and emphasizes their advantages and disadvantages. Following the basic steps of the SWOT AHP development, research presented in the paper employs this hybrid method in the domain of tourism and presents a case study of defining the strategy for the development of the marketing plan for one tourist destination Varazdin. The research results have the potential for large application in defining the strategy for the development of tourism in the city.

Appendix

POWER Which forces should be aware of?	WEAKNESSES Weaknesses that need to be recognized?
S1: <i>Characteristics of destination</i> : a city of culture, baroque and flowers, specific baroque spirit, culture and hospitality	W1: <i>Limited availability</i> : no airport
S2: <i>geographical position and historical value</i> : the location at the intersection of roads linking the Central and Southeastern Europe, formerly the capital of the Croatia	W2: <i>The underdevelopment of tourism</i> : the lack of reputable international airlines and hotels
S3: <i>The standard of living</i> : according to Forbes magazine the most desirable city to live in Croatia in 2011., the development of economic zones	W3: <i>Inadequate marketing promotion</i> : lack of appropriate marketing strategies for the promotion
S4: <i>Cultural and religious events</i> : Spancirfest - festival of street walkers, <i>Baroque Nights</i> , nearness of Ludbreg (“center of the world”) and religious manifestation <i>Holy Sunday</i>	W4: <i>Poor coordination between tourism authorities</i> : lack of involvement in public-private strategic decision-making
	W5: <i>Unstructured tourism management</i> : obsolete laws relating to tourism, an ad-hoc investment, insecure jobs
OPPORTUNITIES You can take advantage of the opportunities?	THREATS Threats which we must be aware of?
O1: <i>Geographic characteristics of destination</i> : "transit point" between East and West	T1: <i>Regional Competitive Destinations</i> : local competitors are developing a competitive festival tourism to attract tourists of similar profiles
O2: <i>The potential for tourism development</i> : a wealth of cultural resources concentrated in a small area	T2: <i>Political instability</i> : unfavorable economic situation in country
O3: <i>International reputation</i> : branded products (e.g. Varazdin clips)	T3: <i>The absence of an active controlling authority for tourism</i> : the lack of tourism development plans

Table 1. SWOT analysis

SWOT group	scaling factor	SWOT factors	Local priorities	global priorities
Strengths	0.2002	S1: Characteristics of destination[1]	0.4334	0.0868
		S2: geographical position and historical value [3]	0.2016	0.0404
		S3: The standard of living [4]	0.1498	0.0300
		S4: Cultural and religious events [2]	0.2152	0.0431
weaknesses	0.2413	W1: Limited availability [4]	0.1454	0.0351
		W2: Underdevelopment of tourism [1]	0.3448	0.0832
		W3: Inadequate marketing promotion [2]	0.2961	0.0715
		W4: Poor coordination between tourism authorities [3]	0.1243	0.0300
		W5: Unstructured tourism management [5]	0.0894	0.0216
opportunities	0.3251	O1: Geographic characteristics of destination [2]	0.2465	0.0801
		O2: The potential for tourism development [3]	0.2187	0.0711
		O3: International reputation [1]	0.5348	0.1757
threats	0.2314	T1: Regional Competitive Destinations [1]	0.4823	0.1116
		T2: Economical instability [2]	0.2654	0.0614
		T3: The absence of an active controlling authority for tourism[3]	0.2523	0.0584

Table 2. Factor priorities

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