

The Influence of Blue Economics on Air Quality in Big Cities on the Seaside Using the SWOT Analysis Method

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Abstract

Air pollution can cause diseases, allergies, and even death to humans; it can also cause harm to other living organisms such as animals and food crops, and may damage the natural environment (for example, climate change, ozone depletion or habitat degradation) or built environment (for example, acid rain). Plankton produces the oxygen we breathe every day, even every second. In addition to producing oxygen, plankton also remove carbon dioxide from the atmosphere. Blue economy is a term in economics relating to the exploitation, preservation and regeneration of the marine environment. Its scope of interpretation varies among organizations. However, the term is generally used in the scope of international development when describing a sustainable development approach to coastal resources. This can include a wide range of economic sectors, from the more conventional fisheries, aquaculture, maritime transport, coastal, marine and maritime tourism, or other traditional uses, to more emergent spaces such as coastal renewable energy, marine ecosystem services (*i.e.* blue carbon), seabed mining, and bioprospecting. SWOT analysis identifies internal and external factors that are prioritized by experts in the world blue economic forum domain through an Analytical hierarchy process. The prioritized SWOT factors are used in the formulation of strategies using the TOWS matrix. Regional and international competitive destinations: Local competitors are developing a competitive festival world blue economic to attract tracks of similar profiles big city, improve technology and science and education blue economic.

Keywords: A blue economy • World blue economic forum • Carbon dioxide • Technology and science • SWOT analysis • TOWS matrix • Education Blue economic • Producing oxygen • Plankton

Introduction

Air pollution is the contamination of air due to the presence of substances in the atmosphere that are harmful to the health of humans and other living beings, or cause damage to the climate or to materials. There are many different types of air pollutants, such as gases (including ammonia, carbon monoxide, sulfur dioxide, nitrous oxides, methane, carbon dioxide and chlorofluorocarbons), particulates (both organic and inorganic), and biological molecules. Air pollution can cause diseases, allergies, and even death to humans; it can also cause harm to other living organisms such as animals and food crops, and may damage the natural environment (for example, climate change, ozone depletion or habitat degradation) or built environment (for example, acid rain). Air pollution can be caused by both human activities and natural phenomena [1]. The blue economy is a pro-ecosystem activity. Waste from fishery activities must be in a condition that does not pollute the soil and public waters. Both chemical waste and organic waste will directly or indirectly affect the habitat and life of the ecosystem. Therefore, it is

necessary to have science and technology in waste matters. If this can be realized, the blue economy integrated with the fisheries industrialization program will be more successful and advance the fisheries sector in Indonesia. Plankton produces the oxygen we breathe every day, even every second. In addition to producing oxygen, plankton also remove carbon dioxide from the atmosphere. By doing so, they help maintain the conditions on earth so that it is still, habitable for humans. Air pollution is the introduction of chemicals, particulate matter, or biological materials into the atmosphere, causing harm or discomfort to humans or other living organisms, or damaging ecosystems.

Air pollution can cause health problems including, but not limited to, infections, behavioral changes, cancer, organ failure, and premature death. These health effects are not equally distributed across the world population; there are demographic disparities by race, ethnicity, socioeconomic status, and education. Air pollution has affected the world since the beginning of the industrial revolution. According to a 2009 report, around "60 percent of world population live in areas where air pollution has reached unhealthy levels that can

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make people sick." Analyzing data from 2016-2018, the world lung association found major declines in air quality, including increases in ground level ozone. In 2016, a study found that levels of nitrogen oxides had plummeted over the previous decade, due to better regulations, economic shifts, and technological innovations. NASA reported a 32% decrease of nitrogen dioxide in big city and a 42% decrease in Atlanta between the periods of 2005-2007 and 2009-2011 [2]. 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 [3].

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, in order to avoid these disadvantages. Therefore, in the second part of the paper Analytic hierarchy process, method and SWOT analytic hierarchy process, hybrid method are described. Following the basic steps method, SWOT Analytic hierarchy process, is applied to the example of the maritime of world blue economic forum strategic Income plan definition.

Literature Review

SWOT analysis method

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 [5]. 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 [6]. 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.

Analytic hierarchy process method

This chapter describes the Analytic hierarchy process, 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 analytic hierarchy process, as hybrid that deal with the priorities of SWOT factors and Osuna, E.E., Aranda, A. Thus, the idea behind using analytic hierarchy process, is to systematically evaluate the SWOT factors [7]. This chapter provides a theoretical background of Analytic hierarchy process, method, and the next chapter describes SWOT Analytic hierarchy process, and emphasizes reasons for integration of two methods.

Analytical hierarchy process, 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. Analytic hierarchy process, 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. Analytic hierarchy process, 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 analytic hierarchy process, method are ranked alternatives and the weight coefficients of criteria in relation to the goal. Analytic hierarchy process, 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. Analytic hierarchy process, method is now one of the most popular and commonly used method for multi-criteria decision making in solving real problems. It was developed.

Application of analytic hierarchy process

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 analytic hierarchy process, method has been applied to solve certain types of problems. In the period since 1983. to 2003 Vaidya, O., Kumar, S. Analytic hierarchy process, 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 analytic hierarchy process, 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 analytic hierarchy process, method in that period occurred in the five studies combined with SWOT analysis. SWOT analytic hierarchy process, method This chapter describes a hybrid method of SWOT analytic hierarchy process, first, the reasons why combination of these two methods is necessary, followed by a review of SWOT analytic hierarchy process 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 analytic hierarchy

process, method. As a result, a hybrid method is obtained that produces quantitative values for the SWOT factors [8-10]. As advantages of derived hybrid method, literature most often states its simply maritime, efficiency and the ability to combine qualitative and quantitative criteria [11]. 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 analytic hierarchy process, 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. Analytic hierarchy process, enables quantization of priorities to support decision making. However, analytic hierarchy process, does not include the statistical uncertainty of the results. Consistency measure of comparison and consistency ratio, resulting from analytic hierarchy process, calculation, does not give direct information about the uncertainty derived priorities.

Results and Discussion

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 analytic hierarchy process, method. SWOT analysis provides the basic framework which conducts analysis of the situation in which the decision was made, while the analytic hierarchy process, helps to conduct the SWOT in analytic way. Potential advantages of using analytic hierarchy process, in SWOT analysis lie in the possibilities of quantitative testing of SWOT factors and involvement of decision maker's preferences in the planning.

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 analytic hierarchy process, 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 analytic hierarchy process, 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.

Steps of SWOT analytic hierarchy process method

According to Yeon and Kim, SWOT analytic hierarchy process, 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.

Step 1: SWOT analysis.

Relevant external and internal factors are identified and included in the SWOT analysis. When applied to a standard method of analytic hierarchy process, 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.

Application of SWOT analytic hierarchy process method

In several previous studies the combined model SWOT and analytic hierarchy process, method was used stated this hybrid method is often used to improve the usability of a SWOT analysis as analytic hierarchy process, quantitatively determines the importance of the factors in SWOT groups [12]. In the above studies, among other things, research subjects are exploring the opportunities and challenges of agroforestry by applying SWOT analysis in combination with analytic hierarchy process, assessing perceptions of stakeholders regarding the suitability of the access control based on

the community. Have recently used the SWOT and analytic hierarchy process, model to, firstly, prioritize strengths, weaknesses, threats and weaknesses of the group, and secondly, to decide and evaluate alternative strategies of e-government [13]. In each of these studies case study approach have been used to examine specific situations.

SWOT analytic hierarchy process, method was applied in even more domains such as environmental protection, project management, Archipelago, manufacturing, energy, Archipelago, industry, machine tools, etc.

Strategic planning of world blue economic forum in a small town

In this chapter the use of SWOT analytic hierarchy process, is demonstrated in the field of world blue economic forum. Development of a strategic plan for a small town in the northwest of the Croatian, world blue economic forum is presented. World blue economic forum is a maritime with less than 50,000 inhabitants, the capital maritime of world blue economic forum county and the economic center of the World.

Systematic approach to strategic planning of world blue economic forum world blue economic forum development is implemented by using SWOT analysis integrated with analytic hierarchy process, 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 world blue economic forum: A person who graduated from the faculty of world blue economic forum 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 maritime events. Elements of each of these strengths are fully explained in Table 1.

Expert has recognized the weaknesses of world blue economic forum relating to the following characteristics: Limited availability, underdeveloped world blue economic forum, inadequate Income promotion, poor coordination between world blue economic forum authorities and unstructured world blue economic forum management.

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

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 income of world blue economic forum promotion as the main weaknesses of world blue economic forum as a track destination.

The next step of the development SWOT analytic hierarchy process, 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. S_1/O_4 means consideration of strength No.1 and opportunity No. 4.).

SO strategies (Maxi-Maxi)

Strategy of differentiated approach: Provides Income mix in a different way than competitive destinations (including $S_1/S_2/S_4/O_3/O_2$).

WO strategies (Mini-Maxi)

Strategy of shareholder involvement in world blue economic forum development: Involvement of shareholders in decision making, improve product quality and concern for consumers (including: $W_2/W_3/W_4/W_5/W_1/O_3/O_2$).

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 $W_3/W_2/W_5/W_1/O_3/O_2/O_1/O_3$).

ST strategies (Maxi-Mini)

Segmented Income strategy with product modification: Segmentation identifies specific categories of homogeneous preferences among tracks (includes $S_1/S_2/S_4/S_3/T_2/T_1$).

Proactive communication strategy: Prevent potential negative image in the minds of visitors, must be centralized, honest, transparent and informative ($S_1/S_2/T_2$).

WT Strategies: Mini-Mini

Launch efficient/flexible Income promotional strategies: Creating confidence in the target market: special events, billboards, trade shows, TV programs, public relations, advertising... are the best tactics for promotion ($W_3/T_2/T_1$).

Organizational interrelationships and team work: World blue economic forum is a set of variety services which include many parties, there fore it is necessary to develop a network among them ($W_2/W_1/W_3/T_2/T_1$).

Explained strategies are defined with the help of expert, following the theory of world blue economic forum. 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 (Table 1).

S: Strenght

W: Weaknesses

S₁: Characteristics of lineage: International Trade, World Blue Economic Forum.

W₁: Limited availability and accessibility: a little international ocean.

S₂: Geographical position and historical value as well as being included in the Blue Biodiversity: its location is in a Blue Biodiversity oceanscape, flowing with fertile rivers and ocean, has a good environmental carrying capacity.	W₂: The underdevelopment of World Blue Economic Forum: the lack of reputable international ocean and public facilities.
S₃: Improve Technology And Science Biodiversity	W₃: No Income promotion: No appropriate Income strategies for the promotion
S₄: Increase research on Blue Economic	W₄: No coordination between World Blue Economic Forum authorities: lack of involvement in public-private strategic decision-making.
S₅: Shorten And Streamline The Distribution Of Consumption Of Goods And Services	W₅: A little World Blue Economic Forum: obsolete laws relating to World Blue Economic Forum, an ad-hoc investment, insecure jobs.
O: Opportunities	T: Threats
O₁: Expand The Field Of Education And Teaching During Blue Economic.	T₁: Regional and International Competitive Destinations: local competitors are developing a competitive festival World Blue Economic to attract tracks of similar profiles big city.
O₂: Strengthen Coordination And Collaboration In The Economic Sector Of Goods And Services.	
O₂: The potential for World Blue Economic Forumdevelopment: a wealth of cultural resources concentrated in a large area ocean.	T₂: Role Political instability: unfavorable blue economic situation in domestic and international.
O₃: International Quality Resources: Blue economic products and blue economic technology.	T₃: The absence of an active controlling government authority for World Blue Economic Forum: No World Blue Economic Forum development plans.

Table 1. SWOT analysis method.

Conclusion

Blue economy is a term in economics relating to the exploitation, preservation and regeneration of the marine environment. Its scope of interpretation varies among organizations. However, the term is generally used in the scope of international development when describing a sustainable development approach to coastal resources. This can include a wide range of economic sectors, from the more conventional fisheries, aquaculture, maritime transport, coastal, marine and maritime tourism, or other traditional uses, to more emergent spaces such as coastal renewable energy, marine ecosystem services (*i.e.* blue carbon), seabed mining, and bioprospecting. SWOT analysis identifies internal and external factors that are prioritized by experts in the world blue economic forum domain through an analytical hierarchy process. The prioritized SWOT factors are used in the formulation of strategies using the TOWS matrix. Regional and international competitive destinations: local competitors are developing a competitive festival world blue economic to attract tracks of similar profiles big city, improve technology and science and education blue economic.

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