

QUANTITATIVE STRATEGIC PLANNING MATRIX APPLIED TO FOREST CONSERVATION MANAGEMENT IN BALURAN NATIONAL PARK

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Abstract- The Quantitative Strategic Planning Matrix can be applied to the management of forest conservation, especially in Baluran National Park. The Quantitative Strategic Planning Matrix has been used by managers as an institutional strategy. The purposes of this research are: (1) to explain and analyze internal factors affecting forest conservation management; (2) to explain and analyze external factors affecting forest conservation management; (3) to explain and analyze the strategical priorities for forest conservation management. The research design uses a survey method with data collection through a questionnaire. The purposive sample of this study is 170 respondents from households and 25 respondents from local government and Baluran National Park staff. Priority strategies based on the analysis are: (1) Increasing community participation in the management of natural tourism; (2) Utilizing Baluran National Park management policy transparently and accountable to maximize conservation efforts, including the implementation of sustainable tourism; and (3) Optimization of Baluran National Park's resources as a tourist attraction. The practical implications of this research provide information to managers and related parties about the importance of internal and external factors that affect the success of a management strategic plan. Original contributions of this research are the internal factor evaluation (IFE), external factor evaluation (EFE), the plotting of these on an internal-external (IE) matrix, as well as the evaluation and comparison of the external factors (opportunities and threats) and internal factors (strengths and weaknesses) in the SWOT matrix. The results can be used in decision-making and in the formulation of priority strategies by using QSPM analysis.

INTRODUCTION

A national park, as a forest conservation area, has a unique ecosystem of flora and fauna that can be relied upon to ensure the survival of humans both in the present and in the future PHKA (2008). However, almost all the protected areas face threats and interference in the form of encroachment and illegal cultivation is increasing from time to time Tahajuddin (2015).

The reason of threats and disturbances in the conservation area includes are: (1) the institutional role of BNP/ managers/ other relevant institutions are still weak in increasing the participation of local communities living around; (2) the level of

public awareness is still low against the values of environmental conservation; (3) the level of education/ knowledge of local communities; (4) lack of agricultural land; and (5) isolated villages around the conservation area Muntasib (1999).

The forest destruction in Baluran National Park includes: (1) forest fires in 2014, with 132 fires covering an area of around 2.005,90 ha. Rather than natural factors, the main causes of forest fires are local people not acting responsibly, a lack of security personnel guarding the forest, and weak law enforcement. Forest fires impact heavily on the flora and fauna. (2) Clearing activities as a result of 400 ha being devoted to agricultural plants business. (3) Timber theft (as well as theft of

firewood, fruit tart, hazelnut, gebang trees, ornamental fish and over grassing) especially in the Labuhan Merak resort. (4) Cattle grazing is a problem that is quite prominent, especially in the areas of Karangtekok, Labuhan Merak, and Balanan with about 3.450 ha. Cattle grazing (cows and goats) is widespread, with an average of 1.447 head of cattle per day. As a result of this illegal grazing, the soil becomes solid, which is harmful to plants and vegetation that could potentially be survival disruption of the park, as well as deer, antelope, and bison (the unique wildlife of Baluran National Park). (5) Local transmigration settlements since 1976, covering an area of 57 ha in Pandean area of Wonorejo village. (6) Illegal encroachment and the tilling of the soil. (7) Hunting of wildlife by people with firearms, snares, poison, and sap that often occurs during the dry season. Various factors affect the behavior and movement patterns of animals, including a limited source of drinking water for animals, especially in the dry season. Based on the above phenomena, this paper focuses on the damaged forest in the Baluran National Park, caused by the poor level of public participation Baluran (1997); Sabarno (2001), Baluran (2014a); Baluran (2014b).

According to Singh (2004) internal and mission strategic influenced by internal factor such as strengths and weakness and external factor such as opportunities and threats.

Research conducted by Fries (2006) found that an organization's strategy is influenced by the following variables: (1) goals and values; (2) resources and capabilities; (3) structure and system; and (4) environment variables such as competitors, communities, customers, government, industry, institutions, interest groups, the media, and the public.

Based on the results of Singh (2004) and Fries (2006), there is a gap to be studied by using variables internal to the organization (based on an analysis of the value chain of Michael E Porter by Hitt (2005) and external to it (based on research by Jochen (2006).

Feurer (1995) stated that there are five stages in the preparation of an institution's strategic plan: (1) identification and classification of the organization's resources by identifying strengths and weaknesses; (2) identification of the organizational capabilities, i.e. what can be done it makes it more effective and efficient in the face of

competitors; (3) utilization of potential resources and ability to manage and achieve a competitive advantage in a sustainable manner while also achieving immediate results; (4) selection of a strategy that uses the organization's resources and skills effectively, as well as taking advantage of external opportunities; and (5) identification of gaps in resources that need to be filled by additional investment, expansion and upgrade of the resource base.

LITERATURE REVIEW

Koontz (1988) states that the design stage is where the strategic plans of the mission are established – objectives, policies, procedures, rules, programs, and budgets. This stage is tiered and hierarchical. The objective of this study is to use QSPM to analyze and explain the formulation of strategic priorities for forest management in Baluran National Park.

Meredith E. David (2009) noted that the quantitative strategic planning matrix (QSPM) has been widely used by strategic management professors and students for two decades. However, QSPM has not been widely adopted by strategic planning consultants and organizations.

Furthermore, Kazem Zare (2015) has stated that SWOT analysis is a powerful strategic tool for evaluating an organization according to key internal and external factors.

MATERIALS AND METHODS

Implementation of a strategy for forest conservation management using QSPM analysis involves three stages: (1) Preparing an evaluation matrix for external factors (EFE), and an internal factor evaluation matrix (EFI), (2) plotting these on an external or internal matrix (EI), which then determines the strategy to be implemented.

QSPM is (1) an approach to the evaluation of strategic opportunities for top-level strategic management; (2) a method of analysis that compares the effectiveness of suitable alternative strategies (3) a method of analysis which provides a three-stage strategy formulation framework; (4) an analytical tool that is able to select the best strategy objectively by using inputs and management techniques which are easy to compute www.mexi-pedia.com (2016).

RESULTS AND DISCUSSIONS

The External Factor Evaluation (EFE) Matrix

An external factor evaluation (EFE) matrix allows strategists to summarize and evaluate economic, social, cultural, demographic, environmental, political, governmental, legal, technological, and competitive information Fred and David, (2011).

An internal factor evaluation (IFE) matrix allows strategists to summarize and evaluate the major strengths and weaknesses in the functional areas of a business, and also provides a basis for identifying and evaluating relationships among those areas Fred and David (2011).

External factors are (1) elements outside the organization that affects the success of forest conservation management; they may be divided into opportunities (external factors that can encourage successful forest conservation management); and (2) threats from outside the organization (which increase the risk of failure to achieve management goals). The evaluation matrix of external factors which influence forest conservation management strategy is presented in Table 1.

Note that there are five opportunities and six threats faced by Baluran. Fifth opportunities are: (1) the existence of global support for conservation

in developing countries with a wealth of outstanding natural resources, (2) improving communication and coordination between the relevant parties, (3) accountable and transparent institutional policies for the management of budget and resources, (4) Baluran's position in a rapidly-developing geographical zone, (5) policies of the Ministry of Forestry which are encouraging management programs and development.

The six threats faced by Baluran managers are: (1) population growth around Baluran, requiring additional space and economic growth (2) the global economic downturn and job availability, (3) the growth of tourism object and attractions around BNP has not been able to provide incentives to, or improve the welfare of, the surrounding community, (4) the uncontrolled behavior of tourists and residents in the area of Baluran potentially causing damage to forests, (5) the trade in flora and fauna that affects the extraction of natural resources in Baluran, and (6) local government policies that are inconsistent (influenced by economic and political dynamics). The weight and value given to each of the external factors are based on the same criteria as in the EFE. EFE matrix analysis results are derived from weight score multiplied by rating score, and the result is 3.16.

Table 1. The External Factor Evaluation (EFE) Matrix

No	Key External Factors	Weight	Value Rating	Score
Opportunities				
1	Global support to conservation of natural resources in developing countries with tremendous natural wealth	0.05	3.88	0.19
2	Communication is getting better and coordinated between the parties	0.09	3.40	0.31
3	Policy budget resource management and transparency	0.12	2.84	0.34
4	BNP located in geographical zones that are growing rapidly	0.07	3.28	0.23
5	The Minister of forestry policies are encouraging management programs and development	0.07	3.32	0.23
Threats				
1	Population growth around buffer village of BNP with the space requirements and ever increasing economic	0.14	3.04	0.43
2	The global economic downturn and the availability of jobs	0.09	3.28	0.30
3	Growth objects and attractions around BNP	0.12	2.76	0.33
4	The behavior of tourists and residents in the area of BNP uncontrolled, potentially causing damage to forests	0.09	2.96	0.27
5	The rise of rare flora and fauna trade that affect the extraction of natural resources	0.03	3.68	0.11
6	Local government policies that are inconsistent as influenced by economic and political dynamics	0.13	3.32	0.43
7	Growth objects and attractions around BNP	0.12	2.76	0.33
	Total	1,00	-	3.16

The Internal Factor Evaluation (IFE) Matrix

The analysis of the internal factors that influence the forest management indicates that there are seven strengths and nine weaknesses that affect the performance of forest management. Seventh strengths are: (1) biological and nonbiological diversity; (2) the sustainability empowerment program; (3) Bitakol area as an entrance area in Baluran National jungle zone; (4) the generally good relations between BNP and local people; (5) a coordinated, well-run relationship with local government; (6) effective training to improve the quality of human resources at BNP, partly indicated by the success of the staff who pass the competency of performance test, (7) a wealth of biodiversity which is able to attract the attention of the academics conducting studies and research.

Internal weaknesses are internal factors in forest management that affect the ability of forest management organization to reach goals which have been set. The results of the analysis of internal factors indicate nine weakness in forest management, namely: (1) the size of the area which has been disturbed by the invasion of exotic species, (2) Increasingly high levels of disturbance to the forest due to the lack of participation and

awareness, (3) the suboptimal resource management wizard has not been able to improve the welfare of the surrounding community, (4) enforcement of tourist activity regulations has not been performed properly, (5) law enforcement is not optimal and transparent, (6) the conservation efforts cattle conservation efforts have not shown optimal results, (7) the interaction of people still harms the BNP, (8) many memoranda of understanding (MOU) has not been implemented optimally; and (9) the lack of a roadmap of research, meaning that research trends have focused on the needs of researchers and research objects rather than those of BNP.

The weight of each internal factor indicates the importance of each factor in forest management. Weights range between 0.0 (indicating factors which are not important) and 1.0 (indicating factors which are very important and affect the success of forest management). Grades or rankings indicate how effective the strategy of forest management will increase the internal strengths or overcome internal weaknesses. Based on the analysis of EFI, the total score is 4.64. It means Baluran National Park has good potential internal factor.

Table 2. The Internal Factor Evaluation (IFE) Matrix

No	Key Internal Factors	Weight	Value Rating	Score
Strengths				
1	Biodiversity complex	0.09	4	0.34
2	Sustainability programs related to community empowerment which received support from various parties	0.15	3	0.46
3	Ex buffer zone (Bitakol) sign BNP area as jungle zone	0.09	3	0.28
4	Good relations with community institutions	0.07	3	0.23
5	Liaison and coordination with the local government goes well	0.06	3	0.20
6	BNP good in human resources, who pass the competency performance	0.14	3	0.40
7	The biological wealth to attract the attention of academics to conduct a study and research	0.10	3	0.30
Weaknesses				
1	Many areas have been impaired due to the invasion of exotic species habitat	0.07	3	0.24
2	Major anthropogenic disturbances	0.13	3	0.33
3	Resource management wizard that is not optimal	0.07	3	0.22
4	Enforcement of the rules of tourism activities that have not enforced properly	0.08	3	0.26
5	Law enforcement is not optimal	0.05	4	0.18
6	Bull conservation efforts have not shown optimal results	0.14	3	0.40
7	Community interaction (people) still hurt BNP	0.10	3	0.30
8	The amount of the memorandum of understanding (MOU) has not been implemented to the fullest	0.07	3	0.23
9	Road map research activities unavailable, so the research focused on the needs of researchers and research objects	0.09	3	0.28
Total		1	-	4.64

SWOT Matrix

Based on the strengths and weaknesses identified above, a SWOT analysis will be used to develop a forest management strategy to support the vision and mission of BNP. The use of SWOT analysis in this study aims to look at the feasibility of using greater community participation in the management of the region, with the goal of creating a sustainable forest management that is capable of providing independence and prosperity to the local society.

The SWOT Matrix used is to identify

development options other than the main strategy that has been determined. The SWOT Matrix is constructed using the results of the analysis of internal and external strategic factors (strengths, weaknesses, opportunities, and threats). Table 3 shows the SWOT analysis matrix of BNP (Table 3).

Internal-External (IE) Matrix

The Internal External (IE) matrix arrangement is a step in the process of determining a strategy for forest conservation management in Baluran National Park. The IE matrix analysis results are shown in figure 1, the X axis shows EFE total score

Table 3. A SWOT Matrix

IFAS	Strengths	Weaknesses	
	<ol style="list-style-type: none"> 1. Biodiversity. 2. Sustainability programs related to community empowerment which receives support. 3. Bitakol area as an entrance area in Baluran National jungle zone Good relationships with community institutions 4. Well-run and coordinated relationships with local government. 5. High-quality human resources. 6. Biodiversity attracting academics to do research. 	<ol style="list-style-type: none"> 1. A large area of habitat has been disturbed. 2. Natural tourism is not optimal. 3. Regulation of tourist activities not enforced properly. 4. Law enforcement has not been optimal. 5. Bull conservation has not shown optimal results. 6. Interactions of people still hurt BNP 7. MOU has not been implemented 8. No road map for researchers. 	
EFAS			
Opportunities	<ol style="list-style-type: none"> 1. Global support for conservation 2. Improving communication. 3. Resource management transparency. 4. BNP as a main corridor of the Java-Bali. 5. Encouraging management programs. 	<p>Strategy SO Strategies that use strengths to take advantage of opportunities. BNP forest management strategies. (S 1,2,3,4,5,6,7; O 1,2,3,4,5)</p>	<p>Strategy WO Strategies that minimize weaknesses in order to exploit opportunities. The strategy of exploiting global support for the restoration of degraded areas. (W 1,2,4; O 1,2,3,4,5,6,7,8,9) Utilizing the global support strategy and communication efficiency coordination to enhance tourism competitiveness BNP. (W 3,4,5,6,7,8,9; O 1,2,3,4,5)</p>
Threats	<ol style="list-style-type: none"> 1. Population growth. 2. The global economic downturn. 3. The growth of tourism objects and attractions around BNP. 4. The behavior of tourists and residents. 5. The rise of the rare flora and fauna trade. 6. Local government policies. 	<p>Strategy ST Strategies that use strengths to overcome threats. Draw up strategies for optimizing the preservation of natural resources in BNP for the welfare of the local community (village buffer). (S 1,2,3,4,5,6,7; T 1,2,3,4,5,6)</p>	<p>Strategy WT Strategies that minimize weaknesses and avoid threats. The strategy of exploiting the transparency and accountability of management policies to maximize conservation efforts, including the implementation of sustainable tourism in TN Baluran. (W 1,2,3,4,5,6,7,8,9; T 1,2,3,4,5,6)</p>

and the Y axis shows IFE total score. The matrix shows that the appropriate strategy for forest conservation management is one which focuses on growth and conservation.

The last stage in determining the appropriate strategic priorities for the management of BNP (i.e. those which will improve sustainability in the economic, ecological, and social spheres) is the analysis of QSPM. Each strategy was analyzed to determine its ability to improve internal strengths to take advantage of existing opportunities, as well as to overcome internal weaknesses by controlling threats. In the analysis of QSPM, this capability is also called the appeal. The appeal is rated between 1 and 4, where 1 = not attractive, 2 = somewhat attractive, 3 = quite interesting, and 4 = very interesting.

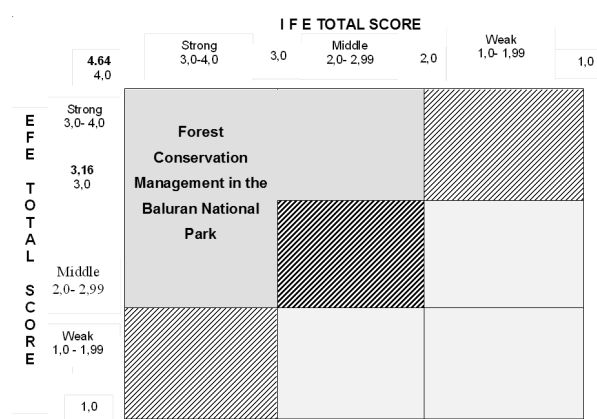


Fig. 1. Internal-External/I-E Matrix Forest Conservation Management in the Baluran National Park Quantitative Strategic Planning Matrix (QSPM)

Table 4. A QSPM Applied to Forest Conservation in BNP

Key Factors	Weight	Alternative					
		Strategy 1		Strategy 2		Strategy 3	
		AS	TAS	AS	TAS	AS	TAS
Opportunities							
Global support to conservation	0.05	4	0.55	4	0.56	4	0.52
Communication is getting better	0.09	3	0.45	3	0.45	3	0.45
Resource management transparency.	0.12	3	0.34	3	0.35	3	0.35
BNP as a main corridor of the Java-Bali.	0.07	3	0.10	3	0.32	3	0.31
Encouraging management programs	0.07	3	0.30	3	0.30	3	0.10
Threats							
Population growth	0.14	3	0.10	3	0.09	3	0.29
The global economic	0.09	3	0.23	3	0.20	3	0.25
Growth objects and attractions around BNP.	0.12	3	0.32	3	0.40	3	0.24
Behavior of tourists and residents	0.09	3	0.40	3	0.40	3	0.23
The rise of rare flora and fauna trade	0.03	4	0.05	4	0.05	4	0.15
Local government policies	0.13	3	0.10	3	0.10	3	0.10
	1.00						
Strengths							
Biodiversity complex	0.09	4	0.40	4	0.20	4	0.50
Sustainability programs received support	0.16	3	0.35	3	0.30	3	0.35
Bitakol area sign BNP area as jungle zone.	0.09	3	0.09	3	0.06	3	0.20
Relationships with community institutions well	0.08	3	0.08	3	0.03	3	0.15
Relationship and coordination running properly.	0.06	3	0.12	3	0.08	3	0.10
Human Resources very well	0.06	3	0.28	3	0.28	3	0.08
Biodiversity attract academics to do research	0.03	3	0.10	3	0.10	3	0.05
Weaknesses							
A large area of habitat has been disturbed	0.07	3	0.28	3	0.34	3	0.40
Natural tourism is not optimal.	0.03	3	0.45	3	0.40	3	0.18
Tourist activities not enforced properly.	0.07	3	0.06	3	0.06	3	0.06
Law enforcement has not been optimal.	0.08	3	0.04	3	0.04	3	0.04
Bull conservation not shown optimal results	0.02	4	0.12	4	0.12	4	0.12
Interaction people still hurt BNP	0.04	3	0.04	3	0.05	3	0.03
MOU has not been implemented	0.01	3	0.31	3	0.32	3	0.33
No road map for researchers	0.02	3	0.10	3	0.06	3	0.06
	1.00		5.79		5.82		5.80

Research results are as follows. The value of optimizing the resources of destinations and tourist attractions is 5.79. For strategies to increase community participation in the management of nature tourism, the value 5.82, utilizing transparent and accountable management policies to maximize conservation efforts, including the implementation of sustainable tourism, is valued at 5.80.

The following strategic priorities are based on the QSPM analysis, which specifies three priorities which have the highest total value attractiveness score (TAS): (1) Increasing community participation in the management of natural tourism, (2) Utilizing transparent and accountable management policies to maximize conservation efforts, including the implementation of sustainable tourism, (3) Optimizing the resources of tourist destinations and attractions in BNP.

CONCLUSION

When deciding which alternative strategies to pursue, developing a QSPM makes it less likely that key external/internal factors will be overlooked or weighted inappropriately. Although developing a QSPM requires a number of subjective decisions, making small decisions along the way enhances the probability that the final strategic decisions will be best for the firm.

As evidenced by its application to BNP in this paper, the QSPM can be a useful strategic planning tool even for small firms. In the present study, strategic priorities for BNP based on the QSPM analysis are: (1) Increasing community participation in the management of natural tourism, (2) Utilizing transparent and accountable management policies to maximize conservation efforts, including the implementation of sustainable tourism, (3) Optimizing the resources of tourist destinations and attractions in BNP.

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