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Fuzzy Rule-based Analysis of Promotional Efficiency in Vietnam's Tourism Industry

Nguyen Quang VINH
Corresponding Author, DaiNam University, quangvinh191081@gmail.com
Dam Van KHANH
Electric Power University, khanhdv@epu.edu.vn
Nguyen Viet ANH
DaiNam University, nguyenvietanh79@gmail.com

Abstract
This study aims to determine an effective method of measuring the efficiency of promotional strategies for tourist destinations. Complicating factors that influence promotional efficiency (PE), such as promotional activities (PA), destination attribute (DA), and destination image (DI), make it difficult to evaluate the effectiveness of PE. This study develops a rule-based decision support mechanism using fuzzy set theory and the Analytic Hierarchy Process (AHP) to evaluate the effectiveness of promotional strategies. Additionally, a statistical analysis is conducted using SPSS (Statistics Package for Social Science) to confirm the results of the fuzzy AHP analysis. This study finds that government policy is the most important factor for PE and that service staff (internal beauty) is more important than tourism infrastructure (external beauty) in terms of customer satisfaction and long-term strategy in PE. With respect to DI, experts are concerned first with tourist perceived value, second with tourist satisfaction and finally with tourist loyalty.
Keywords: Promotion Efficiency, Fuzzy Rule-Based, Vietnam Tourism Industry, Destination Attributes, Destination Image.
JEL Classification Codes: A11, D12, L83, M31.

Vietnam Turizm Sektöründe Reklam Stratejilerinin Bulanık Kural Tabanlı Analizi[*]

Öz
Bu çalışma, turizm sektöründe reklam stratejilerinin verimliliği analiz etmeyi amaçlamaktadır. Reklamcılık faaliyetleri, turistik yerlerin özellikleri ile bu yerlerin imajı, reklam verimliliğini etkileyen dinamikler olarak karşımıza çıkmaktadır. Çalışmada yöntem olarak reklam stratejilerinin verimliliğini hesaplamada bulanık küme teorisi ve analitik hiyerarşi süreci kullanılmıştır. Buna ek olarak ortaya çıkan sonuçları teyit etmek amacıyla da SPSS yardımıyla istatistiksel analizler yapılmıştır. Çalışmadan elde edilen bulgular, reklam stratejilerinin verimliliğine ilişkin devletin yürütmüş olduğu çalışmaların birinci dereceden önemli olduğunu ortaya koymuştur. Bunun yanında çalışmanın bulgularına göre müşteri memnuniyeti ve uzun dönemli stratejiler açısından turistik yerlerde sağlanan hizmetlerin o bölgenin altyapı ve fiziki şartlarından çok daha önemli olduğunu ortaya çıkarmıştır. Son olarak ise turizm bölgesinin imajıyla ilgili olarak öncelikle turistlere verilen değer, akabinde de müşteri memnuniyeti ve turistlerin bölgeye olan sadakati, uzmanlar tarafından ön plana çıkarılmaktadır.
Anahtar Kelimeler: Reklam Verimliliği, Bulanık Küme Teorisi, Vietnam Turizm Sektörü, Bölge Özellikleri, Yer İmajı.
JEL Sınıflandırma Kodları: A11, D12, L83, M31.

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1. Introduction

The tourism industry is considered as one of the key sector in Vietnam economic. Vietnam National Administration (VNAT) has been developing the long-term strategy for diversifying the tourism industry and improving the destination image in international visitor's perception, which creates the need for effective promotional strategies in the Vietnam tourism industry. In the face of strongly competition among countries, the measure of effective promotional are essential for tourism industry developing. Tourism promotion is increasingly important all over the world, Echtner & Prasad (2003) indicate that the tourism marketing in developing countries is received strongly consider and being popular.

There are a fast growing in tourism in developing region and become the focal point for marketing of new, adventurous and exotic tourism. As noted by UNWTO (1999) there are 30% of international tourists visit developing countries over the past 20 years. However, Echtner (2002) states that over the last few decades, there has been mounting of portrayal of these destination and promotion tolls. It is come from the criticism that related to unique marketing situation which characterizes the promotion of tourism in the developing countries. Beside as Skinner (2008) notes that the studies about destination marketing for tourism in developing countries still limited. As a developing country, Vietnam has many favourable conditions for tourism development and become an attractive destination in the international market. To have a positive image, Vietnam should care about creating, promoting to introduce the country's image abroad in an effort to the world. As research of Pacific Asia Travel Association (PATA, 2010) in recent years, Vietnam has had quite a lot of effort in creating and promoting the country's image to the region and the world. As noted in a 2010 VNAT report, the VNAT has been implementing a tourism promotion strategy to attract foreign visitors to Vietnam. However, the latest report of the World Economic Forum in 2011 showed that Vietnam's promotional activities are still inefficient because the number of tourists to Vietnam remains low compared with other countries in Southeast Asia.

The aim of this study is to measure promotional efficiency (PE) with the method of fuzzy theory to validate the output and influential factors from the feature of promotion activities, destination attributes and destination images. The likely influence of each feature, based on an expert survey, the finding from this study may give further understanding of factors and sub-factors that influence PE as related to Vietnam tourism industry. Firstly, this research provides both method of qualitative and quantitative from the literature review and experts survey to depict the academic backgrounds related to PE and its influential factors. Secondly, this study concludes that the three major factors of promotion activities (PA), destination attributes (DA), and destination image (DI) are influential factors for validating the output of fuzzy logic designation. Thirdly, this research

develops an AHP model that using those factors and sub-factors, culminating in the first stage questionnaire for experts in the tourism industry. Fourthly, the "Expert Choice 2000" is used to derive weighting from the AHP questionnaire. The study and then transfer the factors into fuzzy logic system with the IF-THEN rules and complies them in to the MATLAB functions as a controller. Next, the study uses plot of PE from the fuzzy logic with various dimensions. After that this study come out with the second stage questionnaire developing, after the questionnaires have been retrieved, this study employs statistical software (SPSS) to reach a final conclusions.

2. Literature review

Positioning in the market is offering these images, the good impressions, unique, hard to forget about the destination in the tourist's mind by the appropriate marketing strategies. The effectiveness of promotion strategy in tourism is to validate the result of those positioning the destination to the visitors. As noted by Currie and Wesley (2008) the destination marketing is one of great interest to marketer as well as researcher. Hsu et al. (2009) suggests that measuring the effectiveness of tourism promotion and determining the influential factors are important in marketing strategy. The image of a destination is the evaluation of tourist destination based on the beliefs, attitudes and their views (Shukla et al., 2006). Lin and Huang (2008) show that tourist may have positive or negative impression of a destination. This impression may be the result of practical experience, or it may not. The image of the destination is created from the effects of direct and indirect, such as direct marketing and other marketing communication methods and perspectives of tourists on factors such as safety, affordability, and accessibility and attractive features. This study uses three main factors that effect on the promotional effectiveness as promotional activities, destination attributes and destination images.

Many studies have discussed or measured the images that potential visitors perceive regarding tourist destinations. However, few studies have examined the influence of destination image on authorities' decisions regarding tourism promotion policy (Tim, 1996). Tim (1996) points out that destination image may influence both political support for efforts to promote and develop tourism and the organic image developed by potential visitors from the information provided by host country residents It is commonly recognized that destination image, which is "the sum of beliefs, ideas, and impressions that a person has of a destination" (Crompton, 1979, 18), is an important aspect in tourism promotional efficiency. Although there is sufficient literature highlighting the marketing aspects of tourism, few articles have emphasized the discussion of the promotional aspects of tourism marketing. According to Bornhorst, Ritchie & Sheehan (2010) the destination image occupies a important role in the process of destination choice, especially for tourists plain. For those who have never visited a certain

destination, the travel does not exist and therefore cannot be seen, touched and felt before. This is the reason why the potential tourists often rely on the image to make a decision or choice destination point to another. A manager who is in charge of a destination is to create a positive image in the eyes of tourists in target markets. Organization of tourism will use strategic positioning and branding to try to improve or change the image of a point in a positive way to encourage international tourists to visit (Ritchie & Inkari 2006).

For promoting the tourism industry, marketers are hoped to see the successful management of tourist destinations is a complex and long- term task requiring the active participation of all sectors related to tourism activities in the destination. The existing studies firstly focuses on the role of government includes research addressing the method of allocating the funds on promotion of tourism (Sirakaya et. al., 2002; Pike, 2008). Deskins & Seevers in the study of examine the expenditure on tourism promotion, suggest that the higher spending in tourism promotion can get the higher levels of tourist and improve the labour in tourism industry. Hasan (1992) strongly recommends that initiating and implementing a marketing strategy directed to the specific potential market and avoiding broad-based policies to develop mass tourism for the destination are essential at the present stage. In addition, the highly competitive business of tourism can help travellers choose destinations; travel products diversified respective needs and their desires. In tourist attractions factors potentially choose to visit and return to a destination that is by emotional closeness, attractive destination (Hassan, 2000). In the view of tour-operator, as distribution channel tour-operator's role is to connect supply and demand in tourism by linking each individual product of various tourism products complete travel and increases their value to meet the needs of visitors. Tour-operator is responsible for answering the following questions: How to have position on the tourist market? Which is target market? How much quantity to sell? What is gap between sales and execution time? (Reimer, 1990). For these reasons, Vietnam should have a strategy to create and promote the image of the country with the participation of ministries, branches and localities in the country, and encourage the participation of all economic sectors of this work (Baloglu & Mangaloglu, 2001).

Nature environment or environment framework are attracting millions of travellers each year (Doods & Butler, 2010). The environment framework of a destination in tourism is defined as the nature backdrop in which the tourist enjoys of a tourism site. The environment framework includes destination's climate, flora and fauna, scenery and other physical assets as Dwyer & Kim (2003) and Truong & King (2009) defined. Beside nature resources, culture is one of the important factors for destination selection. Culture is a form of tourism based on cultural and ethnic identity with the participation of the community to preserve and promote traditional cultural values (Richards & Wilson, 2006).

The evaluation of service quality often suffers big huge communication process between customers and service staff (Baum, 2007). Thus, customer satisfaction is affected primarily by service attitude, polite behaviour, ready to help customers, the quality of the professional qualifications of staff. That proves that human in tourism plays a very important role in the development of the tourism industry. as Baum (2007, 1386) asserts that "the story of successful tourism enterprises is one that is largely about people—how they are recruited, how they are managed, how they are trained and educated, how they are valued and rewarded, and how they are supported through a process of continuous learning and career development."

In the tourism literature, perceived quality (perceived value) has been conceptualized, realization and application in many different ways and at many different levels including excellent value, in accordance with the requirements, just perfect to use, avoid the loss and meet or exceed the expectations of consumers (Chen & Tsai, 2007). However, this study defined and measured perceived value as assessed on the dominant beliefs related to the quality of a product / service, in this case, tourism product. When customers are satisfied with the services or goods, they tend to speak well of the destination services to other customers. The consumer satisfaction with services is emotional for services providers based on the individual contact or dealings with that destination (Chon & Olsen, 1991).

Satisfaction is the degree of a state of feeling people began comparing the results obtained with the products and services expected of it (Truong & King, 2009; Lai & Vinh, 2013). Expectations are viewed as desires or expectations of the people. It stems from personal needs, previous experience and external information, such as advertising, information, word of mouth from friends, family

The above discussion leads to the conclusion that promotional efficiency can be influenced by many factors and sub-factors, including the nature of the product, price, customers' locations, prevailing competition, cost involved, availability of the budget for promotion, and the company's overall objectives. It is worth mentioning here that the success of promotional activities largely depends on the realistic selection of promotional tool(s) and the creativity employed in conducting the promotional activities.

Based on the literature discussion and expert interviews, the researchers select factors for research that can be represented in a hierarchy of promotion efficiency (Figure 1). This study applies decision systems analysis (DSA) to formalize an interview procedure for the experts (Lai & Vinh, 2012). Table 1 describes factors and sub-factors influencing PE that has been collected through literature review and expert interviews.

Table 1: Description of Influential Factors and Sub-Factors

Factor	Sub-factor	Description
Promotion efficiency		The effectiveness of promotion strategy in tourism is to validate the result of those positioning the destination to the visitors. Promotional efficiency can be influenced by many factors and sub-factors, including the nature of the product, price, customers' locations, prevailing competition, cost involved, availability of the budget for promotion, and the company's overall objectives
Promotional Activities	Government Policy (GP)	Promoting tourism-related laws, regulations, and restrictions will have a great impact on tourism activities, which include the position and role of tourism in the TISN and the government policy to improve the destination image. Examples: Policy for coordinating all sectors, regulation for promotion strategy, efficiency of promotion department.
	Promotional Budget (PB)	The spending for tourism promotion activities and the budget source. Examples: Budget from government, budget from tourism organization (includes both public and private organizations, which may profit from promotion programs).
	Destination Marketing Management (DMM)	The marketing activities of destination marketing organizations (DMOs) are mainly centered on the promotion of the destination as a whole. Destination marketing management includes the factors of enhancing the appeal of the core resources and attractors, strengthening the quality and effectiveness of the supporting factors and resources, and best adapting to the constraints imposed by situational conditions.
	Promotional Method (PM)	The method of promotion used to implement promotion activities. This includes promotion tools, information channels, and promotion programs.
Destination Attributes	Environmental Framework (EF)	The environmental framework of a tourism destination is defined as the natural resource within which the visitor enjoys the destination. The environmental framework also includes the physiography, climate, flora and fauna, scenery and other physical assets. A destination's endowment of natural resources is crucial for many forms of tourism and visitor satisfaction.
	Heritage/Cultural Festival (HCF)	The heritage and culture of a destination, such as its history, institutions, customs, architectural features, cuisine, traditions, artwork, music, handicrafts, and dance, provide a basic and powerful attracting force for the prospective visitor.
	Service staff (SS)	Service staff is a central factor in achieving competitiveness and highlights the importance of consumer loyalty in maintaining high demand. Workers in tourism service organizations must be highly skilled, reliable, educated individuals.
	Tourism Infrastructure (TI)	Tourism infrastructure includes features such as accommodation facilities, food services, transportation facilities, themed attractions, fast food outlets, taverns/bars, receptive tourism plant, tour wholesalers, tour operators, travel agents, car rental firms, and local convention and visitor bureaus.
Destination Image	Tourist Satisfaction	The extent of overall pleasure or contentment felt by the visitor, resulting from the ability of the trip experience to fulfill the visitor's desires, expectations and needs in relation to the trip.
	Tourist Perceived Value (TPV)	The visitor's overall appraisal of the net worth of the trip, based on the visitor's assessment of what is received (benefits), and what is given (cost or sacrifice).
	Tourist Loyalty (TL)	The visitor's perception of the destination after visiting, including judgment about the likeliness to revisit the destination or the willingness to recommend the destination to others.

Fuzzy research in tourism study:

Fuzzy set theory is introduced firstly by Zadeh (1965), which is based on the rationality of uncertainty due to imprecision or unclear. Today, fuzzy logic becomes standard techniques and applications in the data analysis and sensor signals. Fuzzy logic applications in economics and finance. This research takes advantage of a combination of AHP and fuzzy set theory, which is known as fuzzy AHP (FAHP). Many researchers have explored the integration of fuzzy reasoning and evolutionary algorithms. Cordon et al. (1996) present a bibliography of nearly 300 papers that discuss the combination of fuzzy reasoning and evolutionary algorithms for a variety of applications.

As Hamedi & Jafari (2011, pp. 123) state that "using efficient and helpful techniques to suggest better options to tourists will result in customer satisfaction, which in turn attracts tourists and promote tourism industry". With the discussion of fuzzy logic Valente & Oliveria (1999) conclude that fuzzy logic can improves classification and decision support systems by allowing the use of overlapping class definitions and improves the interpretability of the results by providing more insight into the classifier structure and decision making process. as discussion by Aşkın & Güzin (2007), fuzzy set and related methods are still conflictions in the literature so fuzzy AHP applications have some risk about it, but the conventional AHP still cannot reflect the human thinking style. Avoiding these risks on performance, the fuzzy AHP, a fuzzy extension of AHP, was developed to solve the hierarchical fuzzy problems. In this study, the method is based on the fuzzy rule-based method described in a study by Lai & Tsai (2009).

3. Research methodology

In the real –world problem, some data decisions can be evaluated correctly while others cannot. A fuzzy rule is a key expression IF - THEN in the form of natural language represents a causal dependency between variables. From that researchers seek the automatic process for determining the values of input criteria.

Expert interview and AHP result

Most of the problem is given in practice must meet the criteria at the same time, an assessment of the problem to provide a solution that meets all the criteria increasingly popular. To assess the quality issues of multi-criteria analysis with a good result, we need a method of multi-criteria evaluation. Therefore, the existence of AHP method has solved part of the multi-criteria problems. Using the AHP method, the first stage questionnaire (see table 2).aims to diagnose PE in the tourism industry. There 18 experts who are working in tourism sector were invited to this survey. In this survey 5 questionnaire have inconsistent answers, then there were returned to respondents to fill again, whereupon 2 respondents refused to revised the answers. Therefore this research result is included 16 respondents (see

table 2). All of the chosen experts have served in the tourism industry for more than 10 years experiences. The consistency index (CI) is sued to exam the quality of questionnaires with the validity rate is 88%. The influential factors and sub-factors are classified in table 1 the put in to AHP research framework to validate PE as showed in figure 1 and figure 2.

Table 2: The Backgrounds of the Respondents

No.	Expert's organization	Department/Sector	Experience	Title
1	VNAT	Marketing	9 years	Executive
2	VNAT	R&D	8 years	Executive
3	VNAT	Administrative	28 years	Deputy
4	VNAT	Promotion project	10.5 years	Vice chair
5	VNAT	Promotion project	10.5 years	Vice chair
6	Hotel	Public	20 years	Manager
7	Hotel	Public	15 years	Manager
8	Hotel	Public	12 years	Manager
9	Hotel	Public	12 years	Manager
10	Tourism company	Private	16 years	Manager
11	Tourism company	Public	20 years	Manager
12	Tourism company	Private	6 years	Tour guide
13	Tourism university	Public	30 years	Professor
14	Tourism university	Private	15 years	Professor
15	Tourism agency	Marketing	7 years	Executive
16	Tourism organization	Consultancy	9 years	Executive

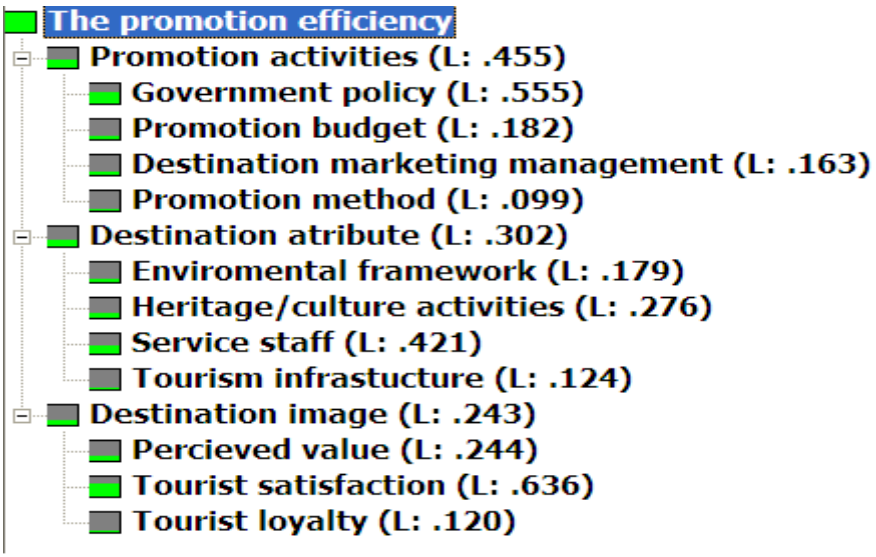


Figure 1: Output of the Expert Choice

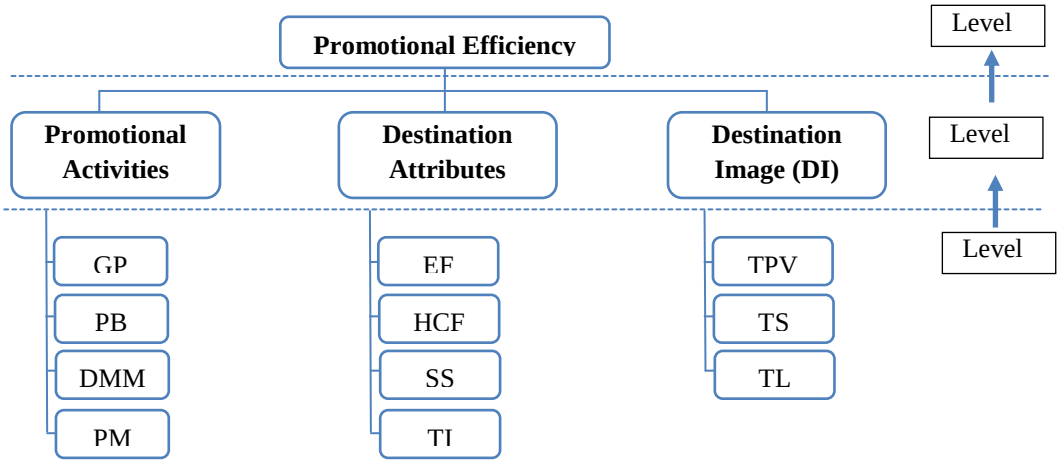


Figure 2: The PE Hierarchy Framework

In this research, fuzzy set theory is extended to the field of Fuzzy Logic Decision Systems (FLDS) Figure 2 shows that X represents the set of key attributes that influence the performance of a considered PE and Y represents the output of PE.

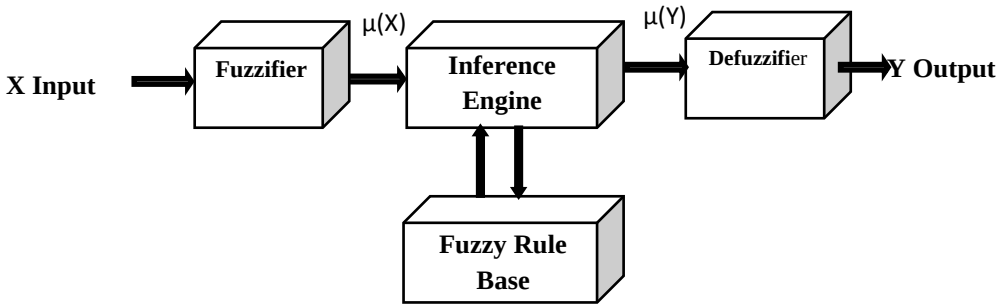


Figure 3: Basic Elements of Fuzzy Logic Decision Systems

Fuzzy Inference System of Mamdani. As Mamdani rule modelling a crisp, it has the input and output crisp. Law is the form of fuzzy variables. The function of each input is estimated for each input crisp and the results are used in the law "IF –THEN". Figure 3 shows the Mamdani inference method applied to major influential factors of PE using Matlab fuzzy tools.

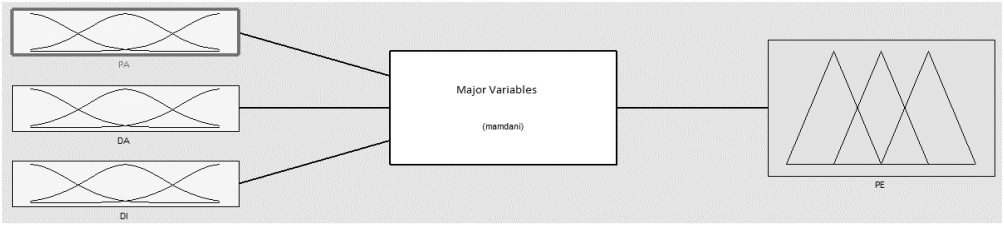


Figure 4: Mamdani Inference Method Applied to Major Influence Factors of PE

Note that some laws may be more important than others in determining the legal status of the system. To do so, the basis of our laws that allows the user to define the weight of each rule in the range from 0 to 1 output of each rule is multiplied by its weight. Membership functions can have different shapes. The most commonly used shapes are triangular, trapezoidal, Gaussian and bell-shaped membership functions (Monicka et al., 2011). This study uses triangular and bell-shaped membership functions. The bell-shaped function produces successive output and smoothly generates a less fuzzy square measure, which results in less fuzziness. This study uses bell-shaped membership functions to calculate output and input. Mateo (2012) emphasizes these laws cannot be represented facts vague and inaccurate, but in reality there are many statements in natural language in this form. Zadeh's theory of fuzzy or demonstrate the lack of precision in speech quantitative way by giving a membership function sets (set membership function) to receive real value between 0 and 1. Therefore, this study raises three important anchor properties (Moderate High, Moderate Middle and Moderate Low), in the input criteria and output of "moderate". Functional member of the influential factors are shown in Figure 4.

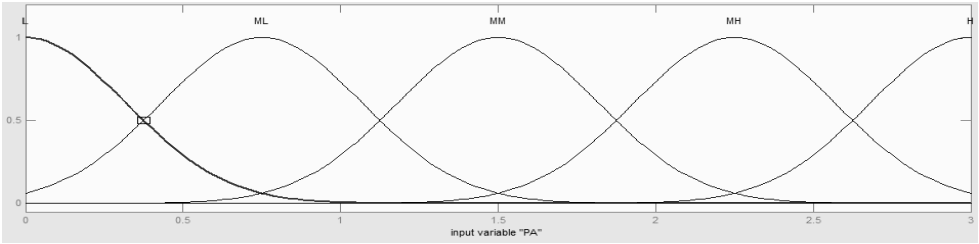


Figure 5: The Membership Function of Promotion Activities

IF-THEN Rules Editor. This research develop IF – THEN rules as shown in the Table 3

Table 3: **Definition of Input Criteria and Output Value of Major Influential Factors**

Input criteria				Output		
Influential Factor	**Sub-factors**	**Linguistic terms**	**Values**	**Name**	**Linguistic terms**	**Values**
PA	GP	High	3	Performance of PE	High	3
			2.5			2.5
	PB	High	2		High	2
		Moderate Middle	1.5		Moderate Middle	1.5
	DMM		1			1
	PM	Low			Low	
		Low			Low	
DA	EF	High	3			
			2.5			
	CHF	High	2			
		Moderate Middle	1.5			
	SS		1			
	TI	Low				
		Low				
DI	TPV	High	3			
			2.5			
	TS	High	2			
		Moderate Middle	1.5			
	TL		1			
		Low				
		Low				

The fuzzy numbers assigned to the linguistic term are described in the table 4 and an example of fuzzy rule-base calculation IF are shown in table 5

Table 4: Outcome Ranges and Linguistic Terms of PE

Ranges of Y	Linguistic term	Abbr.
2.6<Y≤ 3	High	H
2.2<Y≤ 2.6	Moderate High	MH
1.8<Y≤ 2.2	Moderate Middle	MM
1.4<Y≤ 1.8	Moderate Low	ML
1≤Y≤ 3	Low	L

Table 5: An Example of the Fuzzy Rule-Based Calculations of PE Main Factors

PE Scenarios		PA (0.424)	DA(0.28)	DI(0.299)	Outcome value	Linguistic term
1	if	L	L	L	1	L
2	if	L	L	ML	1.1495	L
3	if	L	L	MM	1.299	L
4	if	L	L	MH	1.4485	ML
5	if	L	L	H	1.598	ML
……						
121	if	H	H	L	2.402	MH
122	if	H	H	ML	2.5515	MH
123	if	H	H	MM	2.701	H
124	if	H	H	MH	2.8505	H
125	if	H	H	H	3	H

There are 11 sub-factors and 3 main factors are used as rule input. firstly 3 major factors IF _ THEN rules are shown, and then 11 sub-factors of IF –THEN rules are described. all rules have specific output definition for every input set.

1) For 3 main factors as PA, DA, DI with the five input as: H, MH, MM, ML and L can take five values. So there are 5x5x5 = 125 rules possible input sequences.

2) IF – THEN rules related PA factor with four sub-factors, namely GP, PB, DMM and PM, each of them can take 5 values (H, MH, MM, ML and L) so we have 5x5x5x5 = 625 rules

3) IF – THEN rules related DA factor with four sub-factors, namely EF, HCF, SS and TI, each of them can take 5 values (H, MH, MM, ML and L) so we have 5x5x5x5 = 625 rules

4) The sub-factors within DI are TPV, TS and TL. For these three sub-factors, there are 5x 5x5= 125 combinations. Therefore, DI has 125 rules relating internal sub-factors.

4. Empirical Results

4.1. The Result of First Stage Questionnaire

For testing the consistence index of first stage AHP questionnaire C.I. was determined to be less than 0.1, indicating the satisfy the requirements of AHP. Then the priority vectors of four main factors were analysed and the result are shown in table 6

Table 6: AHP Result of PE Influence Sub-Factors

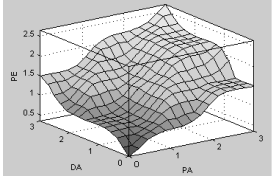
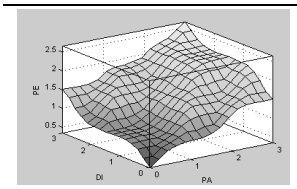
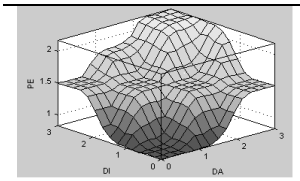
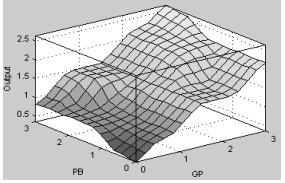
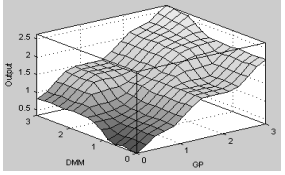
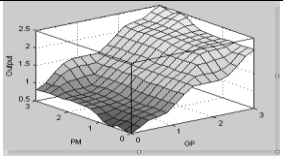
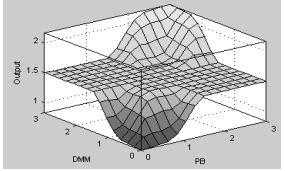
Main factors	Local weight	Rank	Sub-factors	Local weights	Global weights	Ranking
PA	0.421*	1	GP	0.55**	0.23	1
			PB	0.18**	0.08	2
			DMM	0.16**	0.06	3
			PM	0.10**	0.04	4
DA	0.28*	3	EF	0.18***	0.05	3
			HCF	0.28***	0.08	2
			SS	0.42***	0.12	1
			TI	0.12***	0.03	4
DI	0.299*	2	TPV	0.24****	0.07	2
			TS	0.64****	0.19	1
			TL	0.12****	0.04	3

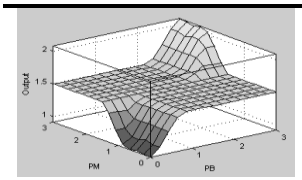
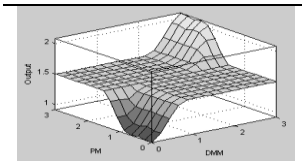
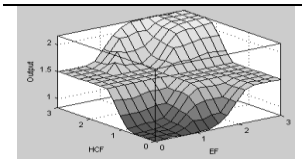
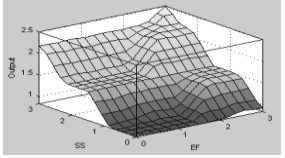
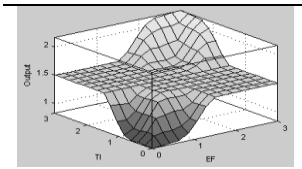
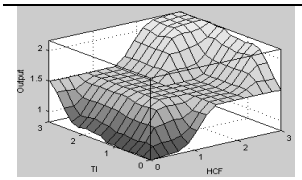
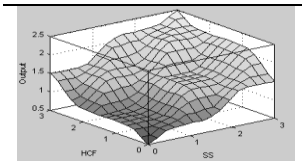
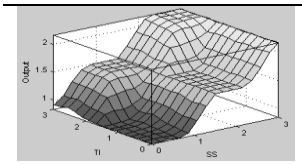
* C.I. = 0.003; C.R. = 0.005, (< 0.1); ** C.I. = 0.089; C.R. = 0.095, (<0.1);
*** C.I. = 0.000; C.R. = 0.000, (<0.1) **** C.I. = 0.021; C.R. = 0.037 (<01)

4.2. The Fuzzy Surfaces

After fuzzy rules – bases were edited and AHP weightings were considered, from the fuzzy logic system, there are 18 fuzzy surfaces were selected in this study. Table 7 provides each 3D plot and phenomenon analysis. From the discussions and combination of 18 plots, table 8 show the conclusion regarding the fuzzy surfaces dimensions of PA, DA and DI.

Table 7: **Phenomenon Analysis of 18 Fuzzy Surfaces**

3D plot	Phenomena
	Promotion Activities (PA) and Destination Attribute (DA): The plot shows that the PA factor has a stronger influence on promotional efficiency (PE) than the DA factor. When PA reaches 1.5, DA increases and influences PE. We observe that promotion activities generate the need to improve the destination attribute.
	Promotion Activities (PA) and Destination Image (DI): The PA factor boosts PE higher than DI does. Only when PA reaches 2 can we see the DI curve drastically increasing, which means that promotion activities are tourist information channels and can generate the tourist's desire to visit a destination. Through PA, DI increases and influences PE.
	Destination Attribute (DA) and Destination Image (DI): Both factors have the same influence on PE. If properly coordinated, these two factors can make PE highly effective. The improvement of DA can also improve DI, resulting in further improvement in PE.
	Government Policy (GP) and Promotion Budget (PB): The GP curve climbs quickly while PB rises more slowly. The plot shows that the need for government policy is intense, and when GP reaches 1.5, PB raises enough to have an effective output.
	Government Policy (GP) and Destination Marketing Management (DMM): GP dominates DMM. If GP reaches at least 1.5, DMM can generate effective output. A flexible policy should be proposed to develop an organization strong enough to handle the role, position, and importance of DMM.
	Government Policy (GP) and Promotion Method (PM): GP dominates PM and when GP reaches 2 on the scale, we can see the effect of PM. To execute a beneficial promotion method, a supportive government policy is needed to direct the relevant authorities, including finance and travel and tourism experts.
	Promotion Budget (PB) and Destination Marketing Management (DMM): PB and DMM positively reinforce each other when both factors generate influence and efficiently overlap promotion activities.

	Promotion Budget (PB) and Promotion Method (PM): PB increases the effect of PM; with a low budget, promotion tools cannot increase their influence and their effect remains level. Only when the budget reaches 1.5 does PM increase and exert positive effects on PE.
	Destination Marketing Management (DMM) and Promotion Method (PM): DMM increases faster than PM. Only when DMM is given enough expertise and clear strategy for tourism promotion can PM exert an effect and push the output higher to create tourist demand.
	Environmental Framework (EF) and Heritage/Cultural Festival (HCF): EF and HCF have a similar influence on output, but when we look closely at the plot, we can see that HCF rises faster than EF. HCF rises when it reaches 1, while EF rises at 1.5.
	Environmental Framework (EF) and Service Staff (SS): In the service industry, service staff is the most important element in creating both customer satisfaction and need. The plot shows that when the SS is well-trained and professional, it can make the EF more interesting.
	Environmental Framework (EF) and Tourist Infrastructure (TI): EF and TI positively reinforce each other when both factors generate influence and overlap; in this instance, the destination will become more interesting and attractive to visitors.
	Heritage/Cultural Festival (HCF) and Tourist Infrastructure (TI). In the tourism industry, heritage/cultural festivals are always considered to be primary factors and have a stronger influence than TI factors because the festivals generate a desire for visitors to explore new experiences in a different culture.
	Service Staff (SS) and Heritage/Cultural Festival (HCF): The plot shows that the SS factor has a stronger influence than the HCF factor. When SS reaches 1.5, HCF increases and has an influence on output, showing that when staff introduces the culture to visitors, this makes the culture more interesting and attractive.
	Service Staff (SS) and Tourist Infrastructure (TI): As SS rises to 1 TI has no impact on PE. At the same level of service quality, SS is more important than TI in the TISN.

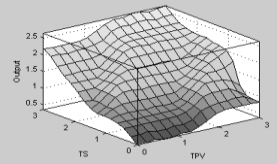
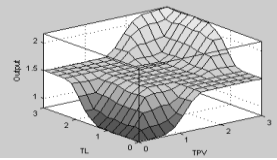
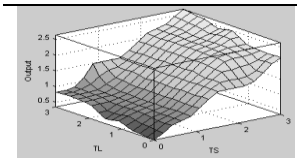
	Tourist Perceived Value (TPV) and Tourist Satisfaction (TS): The TS factor dominates the TPV factor. When tourists benefit from service quality during a trip, they experience a significant level of tourist satisfaction, as shown in this plot.
	Tourist Perceived Value (TPV) and Tourist Loyalty (TL): TPV is more important than TL. Only when tourists are served in the way they expect will they consider repeat visits to the same destination.
	Tourist Satisfaction (TS) and Tourist Loyalty (TL): TS influences TL. If tourists are satisfied with the destination, then they will return the destination or recommend it to their relatives and friends.

Table 8: Conclusions from the First Stage Questionnaire

PA feature	
1	PA generates the need to improve DA and DI in PE. Improving DA also improves DI, resulting in increased PE.
2	PA are tourists' channel for information and generate tourist desire to visit a destination.
3	GP is the most important factor for PE. GP influences PB, DMM and PM.
4	PB and DMM positively reinforce each other when both factors generate influence and overlap concurrently with high-efficiency PA.
5	PB and DMM enlarge the effect of PM. At low budgets, PE cannot be efficient, and only when DMM is given sufficient expertise and clear strategy can PM positively influence PE.
DA feature	
6	EF, HCF and TI are key attributes for attracting visitors and improving PE.
7	SS is the most important factor in creating need and satisfaction among customers. When service staff is well-trained and has the required professional skills, it can highly influence PE.
8	When SS introduces cultural activities and natural attractions to visitors, visitors find the destination more interesting and attractive.
9	At the same level of service quality, SS is more important than TI in the TISN.
DI feature	
10	When tourists benefit from service quality during their trip, they experience a significant level of tourist satisfaction.
11	If tourists are satisfied with a destination, then they will return to the destination or recommend it to their relatives and friends.

4.3. Result of the Second Stage Questionnaire

The result of first stage of research comes out with 11 conclusions. For further testing if this finding is work well in the practice management or not. This study develops the second stage questionnaire (see Table 9) . This study uses a survey questionnaire to elicit responses from the tourism experts in Vietnam about their perceptions/opinions relate to 11 conclusions. The survey instrument includes questions seeking demographic information. This study uses five point Likert scale to design questionnaire. The Google Spreadsheets tool was used to mail the questionnaire to experts working in Vietnam's tourism industry in Hanoi, Vietnam. SPSS 16.0 and Excel were used to collate and verify the data gathered from the questionnaires.

Table 9: Sample of Second Stage a Questionnaire

Statement	Scale
1. Promotion activities generate the need for improving destination attribute and destination image in promotion efficiency	① ② ③ ④ ⑤
2. Promotion activities are tourists channel information and generate the tourist desire to visit destination	① ② ③ ④ ⑤
....	

Table 10: Experts' Background for Second Stage Questionnaire

Expert's education			**Expert's field of work**			**Expert's work experience**		
	Frequ-ency	Per-cent		Frequ-ency	Per-cent		Frequ -ency	Per-cent
Bachelor's	41	29.7	Tourism School	54	39.1	1 -2 years	4	2.9
Master's	72	51.2	Tourism Company	44	31.9	3- 5 years	28	20.3
Ph.D.	25	19.1	Tourism Organization	26	18.8	6-9 years	86	62.3
Other	0	0.0	Other	14	10.1	> 9 years	20	14.5
Total	138	100.0	Total	138	100.0	Total	138	100.0

In order to validate the result from others experts to see if they agree or not agree with 11 conclusion in the fuzzy results, there are 200 questionnaires were sent to experts that were selected from tourism schools, organizations companies and other fields related to tourism or marketing in Vietnam, in which 152 questionnaire were collected. 14 unqualified questionnaires were deleted, resulting in a total of 138 valid questionnaires. The validity rate was 69%. Table 9, which summarizes the background of the experts who completed the second stage questionnaire, shows that 62.3% of the experts had worked in the tourism industry for 6-9 years and 14.5% had more than 9 years' experience. The table also shows that 29.7% of the experts had bachelor's degrees, 51.2% had master's degrees, and 19.1% had Ph.D. degrees. The Cronbach's α is 0.896 indicating the good reliability (table 10).

Table 11: Reliability – Cronbach's Alpha (α)

No	Cronbach's Alpha if Item Deleted	No	Cronbach's Alpha if Item Deleted
1	.892	9	.888
2	.890	10	.887
3	.891	11	.892
4	.889	12	.890
5	.891	13	.886
6	.884	14	.892
7	.890	15	.893
8	.888		
No. of experts = 138, No. of items = 15			
Cronbach's α = .896			

α > 0.7 trustworthy, α > 0.8 highly trustworthy,
α > 0.9 exceedingly trustworthy.

The second stage questionnaire are consistence with the conclusion from the first stage AHP questionnaire, the lowest mean value is 3.56 and the highest value is 4.28, it indicated that all 11 conclusion have high degree from the respondent. Table 11 shows the result of T-test.

Table 12: **Mean, Percentage, T-value, P-value and Rank of PE Conclusions**

No	%	Ranking (%)	Total ranking (%)	Mean	T-value	P-value
PA feature						
1	91	2	2	4.10	4.559	.000*
2	85	5	8	3.84	4.643	.000*
3	93	1	1	4.28	2.750	.007*
4	87	3	6	3.90	5.350	.000*
5	88	4	5	4.01	4.772	.000*
DA feature						
6	87	2	7	3.85	4.009	.000*
7	89	1	4	4.02	5.838	.000*
8	84	3	9	3.80	4.969	.000*
9	82	4	10	3.64	4.287	.000*
DI feature						
10	91	1	3	4.04	4.942	.000*
11	82	2	11	3.56	3.814	.000*

* p < 0.01

The result from table 10 indicates that 80% of experts in this study agree with the conclusion of the AHP questionnaire. Relating to PA, based on the T-values, mean and P-values in Table 10, The strong level of significant for the conclusions of No. 1, 3 and 4 (P<.001 for No. 1, 3, and 4 and T>0 for all conclusions, with No. 3 ranking 1st, No. 1

ranking 2nd, and No. 4 ranking 6th). These results indicate that GP is the most important factor for PE. GP generates and influences PB, DMM and PM (>87% of experts agree). In addition, 91% of experts agree that there is a strong relationship among PA, DA and DI in PE. The same evidence is found in the AHP rankings (refer to Table 5). The results show that to have an effective promotion method, it is necessary to have appropriate government policies relating to authorities such as finance and travel and tourism experts. The results also indicate that only when DMM is given sufficient expertise and clear strategy for tourism promotion can promotion methods be effective and push PE higher. For conclusion No. 2, 85% of the experts surveyed agree that promotion activities are tourists' channel of information and generate tourist desire to visit a destination ($P<0.01$), a strongly significant result.

In the dimension of DA, conclusions No. 6, 7, 8 and 9 are highly significant ($p < 0.01$) and suggest three indications. First, improving destination attribute can also improve destination image and increase PE. Second, the top three highest ranks appear in the dimension of DA. For Nos. 6, 7, and 8, nearly 89% (No. 7) of experts agree that service staff is the most important factor in creating both customer need and satisfaction. When service staff is well-trained and has the required professional skills, it can highly influence PE. It can be seen that when service staff introduce cultural activities and natural attractions to visitors, the destination becomes more interesting and attractive (No. 8, 84%). Furthermore, environment framework, heritage/cultural festival and tourism infrastructure are key attributes for attracting visitors and improving PE (No. 6, 87%). Third, 82% of the experts agree that at the same level of service quality, service staff is more important than tourism infrastructure in the TISN, and this conclusion (No. 9) ranked last in the DA dimension and 10th in the overall rankings. However, No. 9 still shows a strong significance ($P =0.000$, $T=3.64$), from which it can be concluded that internal beauty (service staff) is more important than external (infrastructure) in terms of customer satisfaction and long-term strategy in PE.

In the dimension of DI, with regard to question No. 10, 91% of experts agree that when tourists benefit from the service quality during their trip, they experience a significant level of tourist satisfaction ($M = 4.04$ and $P< 0.01$). For item No. 11, 82% of experts expressed concern about tourist loyalty with the statement, "If tourists are satisfied with the destination, then they will return the destination or recommend it to their relatives and friends" ($P<0.001$, $M=3.56$). The tendency of P-values for DI fits the previous AHP and fuzzy surface analyses. Therefore, it can be said that the experts are concerned first with tourist perceived value, second with tourist satisfaction, and finally with tourist loyalty, which is reasonable for a developing country such as Vietnam, which has a low return rate compared with other countries. Vietnam has a return rate of just 5%, compared with Thailand's impressive 50%; the overall return rate for Asia is 30% (The economist, 2010).

5. Concluding Remarks and Future Works

The objective of this study is to present an analysis by using the AHP-Fuzzy method to validate the promotional efficiency in Vietnam tourism industry. The combination of AHP and fuzzy set theory has been widely used in different disciplines for many years. This study uses the DSA method in the first research stage to find out the main variables and sub-variables while there are so many variables of destination promotion analyzed in the literatures. With this analysis, the Vietnamese tourist industry in general and the tourism companies and hotels in particular can be appraised of the situation while formulating promotion strategies. In addition, this study may facilitate promotion strategy development for parties and provide an understanding of PE's influential factors. Employing AHP and a fuzzy inference system, this paper presents 11 conclusions. each conclusion were concluded from the fuzzy comprehensive analysis. To establish a definition of standard for those conclusions, this study employs a second stage questionnaire to verify the validity.

After testing the 11 conclusions, the study find that 100% of the conclusions were significant, and there are more that 80% of respondents agreed with this analysis. It stands to reason that those assumptions are highly verifiable and managers or hoteliers must be considered when a firm decides to implement a promotion strategy. From the perspective of marketing practice, this finding can assist the tourism industry marketers to develop marketing activities and tourism product that focus on the international market desire. For the government, this research found that promotion activities generate the need to improve both destination attribute and destination image in PE and are tourists' channel of information, generating tourist desire to visit a destination. Government policy is the most important factor for PE. GP generates and influences promotion budget, destination marketing management and promotion method. To have an effective promotion method, it is necessary to have appropriate government policies relating to finance authorities and travel and tourism experts. Promotion budget and destination marketing management positively reinforce each other when both factors generate influence and overlap, while promotion activities are highly efficient. Promotion budget enlarges the effect of promotion method; with a low budget, PE cannot be efficient. For tourism companies and VNAT, this study suggests that, only when destination marketing management is given sufficient expertise and clear strategies for tourism promotion can the promotion method be effective and increase the output, inducing tourists to visit. Improving the destination attribute also improves the destination image, further increasing PE. Environment framework, heritage/cultural festivals and tourism infrastructure are key attributes for attracting visitors and improving PE. Service staff is the most important factor in creating both customer need and satisfaction. When service staff is well-trained and has the required professional skills, it can strongly influence PE. This issue leads to the needs of well-cooperated strategies between tourism school, hotel and travel companies. The result points out that at the same level of service quality, service staff is more important than tourism infrastructure in the TISN. When tourists benefit from service quality during a trip, they experience a significant level of tourist satisfaction. Only when tourists are served more

than they expected will they be satisfied with the destination. If tourists are satisfied with the destination, then they will return to the destination or recommend it to their relatives and friends. The role of government in policy giving, using the strength of tourism resource as natural and cultural resources for promoting a country to the world is high recommendation. Also, improving the qualities of service staffs and tourism infrastructures is an urgent task while the quantity and quality of tourist is tremendously increasing in current modern society.

There are wide range of publications have been discussed about tourism promotion and its influential factors, this study attempts to take a managerial approach and give suggestion through a series of strict analysis and verification processes. From the finding of this study, the tourism organization and hoteliers can use the recommendation as the valuable references for their promotion strategy decision. The value contribution of this study is to make an understanding of influential factors for managers and researches and it help to validate the feasibility of tourism promotion. From the academic perspective, this study contributes the suggestion for evaluating the tourism promotion performance with the adoption from DSA and fuzzy – AHP method.

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