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STRATEGIC DECISION SYSTEM IN A LEISURE SPORTS MARKET

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ABSTRACT. *The **purpose** of this study is to construct a new fuzzy calculation method used in recreational or leisure market strategy decision system. In this study, the **process** is constructing the index of demand and supply by using fuzzy two-dimensional questionnaire and fuzzy Dephi method. Fuzzy questionnaire select will be discovery of new strategy decision methods. The research **method** uses rule-base system to calculate the fuzzy-related membership function value and to do decision making. The empirical research and analysis **results** show the fuzzy-related membership function value based on a more robustic and close to the true value analysis. It was concluded that fuzzy questionnaire not only to overcome the traditional questionnaire fuzzy area of doubt, more reasonable and clearly expressed information presented by the message. **Therefore**, suggestions based on practical application proposed further research to description-statistics can still be fuzzy expectations and fuzzy variance, as well as in thinking and behavior are consistent*

Keywords: Fuzzy Measurement; Fuzzy Two-Dimensional Questionnaire; Fuzzy Dephi Method; Fuzzy Membership Function.

1. Introduction. According LaMondia, & Bhat, (2012) showed Leisure city, largely defined as travel to visit friends or relatives, for outside recreation, and for entertainment and other relaxing personal or group activities. For example, enduring involvement, commitment, loyalty, serious leisure, and specialization are. Additional, these select have been used to explore recreationists' select manner to leisure. Over the past few decades, these select have been used to explore recreationists' select manner to leisure. In fact, leisure travel has become human' way of life, with many traveler routinely make both daily short-distance leisure trips and long-distance vacation trips (Jun, Kyle, Vlachopulos, Theodorakis, Absher, & Hammitt, 2012). The city leisure index (CLI), comprehensive estimates of the recreational functions of cities and the development of a quantitative description of the city recreation system. It uses a combination of objective evaluation and subjective evaluation, the form of index to reflect the environment of a city's leisure, leisure conditions, leisure and economic development of standards and public awareness of urban leisure awareness.

The index by the casual index analysis (LSA) and the public evaluation (MOA) composed of two parts.

Brummet, Flamholtz & Pyle (1969) focused on HRA as a tool for increasing managerial effectiveness in the acquisition, development, allocation, maintenance, and utilization of its human resources. Flamholtz, Bullen & Hua (2003) utilized the HRA measure of expected realizable value, and found that employees' participation in a management development program increased the value of the individuals to the firm. Furthermore, human capital on the profit evaluation affects the composition of business, with substitution out of nonhuman capital into human capital. Therefore, two substitution margins affect financial evaluation rather than one as in a traditional business-life-cycle model. Analyzing the ways in which human capital affects the standard literature analysis of the financial treatment of capital is complicated by the fact that human capital occurs in both *general* and *specific* form. General human capital consists of skills that are portable across firms, whereas specific human capital consists of skills that are only useful while working for a particular employer.

2. Literature Review. Estimating factors of Leisure City, specialized culture and nature condition are complex. It involves vary elements, such as: traffic, people, and culture, effort and objective conditions. The value of LC is difficult to evaluate by traditional statistics. The difficulties of evaluating human capital follow from (1) the involvement of too many influential variables; (2) inappropriate measurement techniques (3) vagueness perception and cognition of specialized human capital. The monetary measuring method and non - monetary measuring method of the human resource value have not rationally been combined well and existed separately. The past literature indicates that culture(Amaize, Mady, & Benson, 2011; Wu, Xue, & Zhao, 2013; Rosa, & Privitera, 2013), entertainment(Chua, Goh, & Lee, 2012; Wong, & Rosenbaum, 2011), traffic(Cools, Moons, & Wets, 2010; Lian, & Ronnevik, 2011; Rako, Fortuna, Holcer, Mackelworth, Nimak-Wood, Plesić, Sebastianutto, Vilibić, Wiemann, & Picciulin, 2013; Dyck, Cerin, Conway, Bourdeaudhuij, Owen, Kerr, Cardon, Frank, Saelens, & Sallis, 2013; Cheung, & Chan, 2013; Adams, Goodman, Sahlquist, Bull, & Ogilvie, 2013), infrastructure(Gosseye, 2012; Rosa, & Privitera, 2013; Cheung, & Chan, 2013; Cheung, & Chan, 2013; Adams, Goodman, Sahlquist, Bull, & Ogilvie, 2013), green assessment(Rosa, & Privitera, 2013), Environment(Dyck, Cerin, Conway, Bourdeaudhuij, Owen, Kerr, Cardon, Frank, Saelens, & Sallis, 2013; Cheung, & Chan, 2013; Adams, Goodman, Sahlquist, Bull, & Ogilvie, 2013) was showed to be an important aspect in leisure.

This paper will present an integrated approach by evaluating each character of Leisure City resources and start to apply fuzzy statistics/soft computing. Hence the result shall be more objective. The use of a membership-function to establish a fuzzy-interval region and assess the value and grade is considered. While it is relatively easy to model the leisure resource, this is not the case where skills are job-specific to some degree.

There are more and more researches focus on the fuzzy statistical analysis and applications in the social science fields, such as Wu and Hsu (2004) identified the model construction through qualitative simulation; Chen and Wang (1999) proposed fuzzy statistical testing method to discuss the stability of Taiwan short-term money demand function; Wu and Sun (2001), demonstrated the concepts of fuzzy statistic and applied it to social survey; Wu

and Tseng (2002) used fuzzy regression method of coefficient estimation to analyze Taiwan monitoring index of economic. For an extensive treatment of the theory of fuzzy statistics the interested reader may refer to see Nguyen and Wu (2006). In addition, Chen and Niou (2011)、Yeh (2011)Fuzzy relative weights of the analysis of fuzzy numbers, these studies are to obtain good results. However, we found above study, which all make one dimension whether have exploring to two dimension conditions.

rule-base system(RBS**),** According the rule that was a natural knowledge representation, in the form of the 'IF … Then…' structure and rule base system (RBS) is popular for real applications among expert systems. The RBS which was consists of two components, inference engine and assertions. That expression been divided into a set of facts and a set of rules that can be fired by patterns in facts. The inference engine, an interpreter of an RBS, uses an iterative match-select-act cycling model. In act phase of the cycle, a fired rule may modify or generate some facts. Wherever, it is one of the most successful experts that system shell, which allows a knowledge base to be partitioned into modules, provides a feature called *defmodule*, and provides a more explicit method for controlling the execution of a system(CLIPS, 1998). Recently Lai & Tienliu (2013) indicates fuzzy function calculate that two-dimensions which exploring and application. It is each module that was able to inference sequentially and independently by inference engine. It is different domain knowledge that can be placed in different modules created by defmodule functions. Logically, related rules and facts can be collected into one module, which provides better maintenance and performance.

The RBS has many advantages (Reichgelt, 1991). The first is naturalness of expression since experts rely on rules rather than on textbook knowledge. The second is modularity that permits RBS easy to construct, to debug, and to maintain. Restricted syntax and ability of explanation are also the advantages of RBS. Although RBS is powerful enough in many applications, it has several disadvantages in maintenance and construction, e.g. the weak ability of incremental construction of knowledge (Lee & O'Keefe, 1996).nevertheless, many researches aim to integrate object-oriented and rule-based programming paradigms to take advantage of skill technology. There are two paradigms on the integration of objects and rules: incorporating rules into objects and embedding objects into rules. Knowledge objects are an integration of the object-oriented paradigm with logic rules (Wu, 2000). Furthermore, many rule-base tools, which cooperate with skill technology, are developed, e.g. COOL (CLIPS object-oriented language) (CLIPS, 1998).

3. Research Method.

3.1. The discussion domain for index of leisure resource. Leisure Index Analysis (LSA) seen from two related side: by the supply and demand (market) point of view. The data of supply can be found from the official statistical data and the factors can be analyzed by the sampling survey. Conventionally, CLI is treated like forms of earning assets. Moore (****) suggests that the value of CL should be more fully considered when making decisions about the acquisition and disposal of culture/people—and notes that the accounting practices currently employed by companies can have an undue influence in driving the strategic decisions of these companies.

In this section we proposed several factors of CL value which affect the LC. One outcome of this research was a paper representing one of the earliest studies dealing with human resource measurement-- and the one in which the term “CLI” was used for the first time. For non-monetary measurements, we may revert to Flamholtz (2004) who considered the methods of measuring each determinant of an individual's value to human organizations. We referred to the terms expected realizable value and conditional realizable value.

TABLE 3.1. AHP for the Leisure City evaluation

Supply	S_1.Natural Environment,	S_{11}View: Around Sea, The rivers, Lake, Mountain S_{12}Temperature and air quality S_{13}Natural Disaters:Eearthquake,Tsunami,NuclearRadiation
	S_2.Culture and Humanity	S_{21} Friendly, S_{22} Historical heritage S_{23}Folk activities
	S_3.Green Assessment	S_{31} Population /per green area S_{32}garbage treatment rate, water pollution S_{32}33 chemical pollution
Demand	D_1.Trafic and Live	D_{11} MRT, buses, text D_{12} MRT, train, high-speed rail D_{13} International airport, ship
	D_2Living and Facility	D_{21}Hotel,Vila, Camping D_{22} Meal, Snack, Drink Food, D_{23}, Traditional Market, Super Market, ShopingCenter
	D_3Entertainment	D_{31}Attractions D_{32}Festival D_{33} Game/Exercise

Expected realizable value and conditional value can be measured by ranking methods. The probability of maintaining membership can be measured by actuarial and subjective probabilities. We will classify several sets for the supply side. Then to find the solution by analyzing characters of core human resources and adopting the classified measuring model rectified with a fuzzy statistical method. First of all we classify the level of leisure resource into three set according to their contribution to the Leisure Index Analysis (LSA) are viewed from the "statistical indicators" and "market indicators" of two parts

3.2. Constructing the index of demand and supply. We use the fuzzy Dephi method to find the factors and weight of the demand as well as the supply. In this research we use the two dimensional questionnaires to get the result. A sample questionnaire with two dimensional cases is set up follows:

From the general point of view, that the rank of the journal, the *degree of similarity to the original work* and the time from *the first publication of this work.* Form the mathematical point of view we will consider how much does the factors related/correlated.

We will put these two parts of compensation by addition. While inside these two factors, we would like to take it by the production. Since inside the factors, the variables are highly co-integrated.

In this research, we take two dimensional fuzzy data: the weight X denote by $\mu_{U,w}(X)$ as well as the memberships of satisfactory $\mu_{\mathrm{U,s}}(a,b), a \le b$

a=minimal degree of satisfactory, *b*=maximal degree of satisfactory denote by $\mu_{U,s}(Y)$ for the questionnaires on the discussion domain *U*= { *factor one*, *factor two*, factor three, *factor four, factor five*}. Hence a random fuzzy sample for a two dimensional case can be written as

$$\mu_U(X,Y) = \frac{[\mu_1(X),\mu_1(Y)]}{\textit{factor one}} + \frac{[\mu_2(X),\mu_2(Y)]}{\textit{factor two}} + \frac{[\mu_3(X),\mu_3(Y)]}{\text{factor three}} + \frac{[\mu_4(X),\mu_4(Y)]}{\textit{factor four}}$$

Example 3.2 Suppose there are three principles are doing the survey. They are asked to write down the weight as well as the fuzzy satisfactory based on the factors of the discussion domain. Table 3.2 shows the result.

TABLE 3.2. Fuzzy weights and scores of School Leader's Fuzzy Satisfactory Indicators

Factor / *personal*	Factor one (W[a]; (1,2,3,4,5)[b])	Factor one (W; (1,2,3,4,5))	Factor one (W; (1,2,3,4,5))	Factor one (W;(1,2,3,4,5))
$\mu_{U,A}(X,Y)$,	(.4; (0,0,0,.5,.5))	(.3;(0,0,.5,.5,0))	(.2;(0,0,1,0,0))	(.1;(0,0,.8,.2,0))
$\mu_{U,B}(X,Y)$,	(.1; (.8,.2,0,0,0))	(.1;(0,0,1,0,0))	(0;(0,0,0,1,0))	(.8;(0,.0,0,.4,.6))
$\mu_{U,C}(X,Y)$,	(.2;(.4,.4,0,.2,0))	(.2;(0,0,0,.5,.5))	(.5;(0,0,.8,.2,0))	(0;(0,0,1,0,0))
Fuzzy mean	(.37;(.4,.2,0,.23,.17))	(.2;(0,0,.5,.33,.17))	(.23;(0,0,.6,.4,0))	(.3;(1,0,.6,.2,.2))

Note: a. W = Weight. b. 1= not important at all, 2 = unimportant, 3 = medium, 4= important, 5 = very important.

3.3. Evaluating Leisure City index based on the supply and demand In order to understand the relationship between supply and demand of the Leisure City index. Firstly, we use the concept of logistics in marketing, to analyze demand and supply of Leisure City index. When this index is not balanced there will be in short supply, oversupply two kinds of cases. The goal of Leisure City index balanced development including：(1)To find Leisure City index rule-based and multiple decision-making system.(2)If Leisure City index demand is greater than supply, then we should promote the policy to bridge the gap between course demand and supply.(3)When the higher education market demand is less than supply, we should remove the policy and consider.

3.4. What is a rule-base system? In computer science, rule-base systems are used as a way to store and manipulate knowledge to interpret information in a useful way. They are often used in artificial intelligence applications and research. Rule-base systems can be used in an expert system might help a doctor choose the correct diagnosis. Also known as the knowledge base, knowledge is stored as rules in the rule-base. Rules are of the form. so The rule-base system of Leisure City market management is a method of finding a rule in a rule-base. We can express the matching policies are as follows*:* Consists of a *rule-base* (permanent data); IF some condition THEN some action (Jocelyn, 1996 & Gupta, 1986).Therefore, the rule-base of the higher education market supply(S is abbreviated) and demand(D is abbreviated) model is set up as below:

Rule 1：If $-1 \leqq D - S < \leqq -0.5$, we will remove the Leisure City market policy.

Rule 2：If $-0.5 < D - S \leqq -0.1$, we will substantially remove the Leisure City market policy.

Rule 3: If $-0.1 < D - S \leqq 0$, we will minutely remove the Leisure City market policy.
Rule 4: If $0 < D - S \leqq 0.1$, we will substantially adjust the Leisure City market policy.
Rule 5: If $0.1 < D - S \leqq 0.5$, we will minutely adjust the Leisure City market policy
Rule 6: If $0.5 < D - S \leqq 1$, we will maintain the Leisure City market policy.

3.5. Using of the index of demand and supply in this study. We use the fuzzy Dephi method to find the factors and weight of the demand as well as the supply. In this research we use the two dimensional questionnaires to get the result. A sample questionnaire with two dimensional cases is set up follows: From the general point of view, the rank of the journal, the *degree of similarity to the original work* and the time from *the first publication of this work.* Form the mathematical point of view we will consider how much does the factors related/correlated.

4. Empirical Study. This study is a city, for example, that use six items which natural environment, culture and humanity, green assessment, traffic, Infrastructure, and entertainment. And the participants were 10.

TABLE 4.1. Leisure Activity's Supply of Indicators of Fuzzy Satisfactory Indicators

Supply	(A) Environment	(B) Culture & Humanity	(C) Green Assessment	(D)Traffic	(E) Infrastructure	(F) Entertainment
μ_{UA}	(0.5;(0,0,0.5,0,0.5))	(0.0;(0.5,0,0,0,0.5))	(0.1;(0,0.3,0,0,0.7))	(0.1;(0,08,0,0,0.2))	(0.0;(0.8,0,0,0,0.2))	(0.3;(0,0.5,0,0,0.5))
μ_{UB}	(0.5;(0,0,0.5,0,0.5))	(0.1;(0,0.5,0,0.5,0))	(0.0;(0,0.4,0,0,0.6))	(0.0;(0,0.7,0,0,0.3))	(0.2;(0.5,0,0,0.5,0))	(0.2;(0.3,0,0,0,0.7))
μ_{UC}	(0.1;(0,0.3,0,0.2,0.5))	(0.1;(0,0,1,0,0))	(0.5;(0,0,0.4,0.6,0))	(0.3;(0,0.3,0,0,0.7))	(0.0;(0,0.8,0,0,0.2))	(0.0;(0.7,0,0,0,0.3))
μ_{UD}	(0.0;(0.3,0.3,0,0.2,0))	(0.1;(0,0.3,0,0.3,0.4))	(0.3;(0,0,0.5,0.5,0))	(0.1;(0.5,0,0,0,0.5))	(0.1;(0.3,0,0,0,0.7))	(0.4;(0,0.2,0,0,0.8))
μ_{UE}	(0.6;(0.5,0,0.4,0,0.1))	(0.1;(0.7,0,0,0.3,0))	(0.0;(0.5,0,0,0,0.5))	(0.0;(0,0.9,0,0,0.1))	(0.1;(0.8,0,0,0.2,0))	(0.2;(0.9,0,0,0,0.1))
μ_{UF}	(0.0;(0.4,0,0.3,0,0.2))	(0.1;(0,0.7,0,0,0.3))	(0.5;(0,0,0.5,0,0.5))	(0.1;(0.7,0,0,0.3,0))	(0.0;(0,0.9,0,0,0.1))	(0.3;(0,0.6,0,0.4,0))
μ_{UG}	(0.6;(0,0,0.5,0,0.5))	(0.0;(0,0.6,0,0.4,0))	(0.0;(0,0,0.4,0,0.6))	(0.0;(0.3,0,0.5,0.2,0))	(0.4;(0.9,0,0.1,0,0))	(0.0;(0,0.5,0.5,0,0))
μ_{UH}	(0.0;(0.5,0.5,0,0,0))	(0.0;(0.4,0,0,0,0.6))	(0.4;(0,0,0.3,0,0.7))	(0.6;(0,0,0.3,0,0.7))	(0.0;(0,0.6,0,0.4,0))	(0.0;(0.7,0,0.3,0,0))
μ_{UI}	(0.3;(0.2,0.3,0,0.5,0))	(0.2;(0.3,0,0.7,0,0))	(0.2;(0.2,0,0,0.8,0))	(0.1;(0,0,1,0,0))	(0.1;(0,0,1,0,0))	(0.1;(0,0,1,0,0))
μ_{UJ}	(0.1;(0,0,0,0,1))	(0.2;(0,0.3,0,0,0.7))	(0.2;(0,0,0.4,0,0.6))	(0.3;(1,0,0,0,))	(0.1;(0,1,0,0,0))	(0.1;(0,0,0,0,1))
FT	(2.3;(1.9,1.4,1.7,0.9,3.3))	(0.9(1.9,2.4,1.7,1.3,2.5))	(2.2(0.7,0.7,2.5,1.9,4.2))	(1.6(1.6,2.7,1.8,0.5,2.5))	(1.0(3.3,3.3,1.1,1.1,1.2))	(1.6(2.6,1.8,1.8,0.4,3.4))
FM	(.23;(.19,.14,.17,.09,.33))	(.09(.19,.24,.17,.13,.25))	(.22(.07,.07,.25,.19,.42))	(.16(.16,.27,.18,.05,.25))	(.10(.33,.33,.11,.11,.12))	(.16(.26,.18,.18,.04,.35))
TFM	(0.23;0.20)	(0.09;0.14)	(0.22;0.25)	(0.16;0.18)	(0.10;0.16)	(0.16;0.2)
OAFM	0.1904					

Note: FT = Fuzzy Total ; FM = Fuzzy Mean ; TFM = Total Function Membership ; OAFM = Over All Fuzzy Membership.

4.1. Environment. Acceding table 4.1 and 4.2, results presents which the supply is greater than demand (-0.01). This result is in accordance with rule 3; we will minutely remove the Leisure City market policy.

4.2. Culture and Humanity. Acceding table 4.1 and 4.2, results presents which the supply is greater than demand (0.56). This result is in accordance with rule 6; we will maintain the Leisure City market policy.

TABLE 4.2. Leisure Activity's Demand of Indicators of Fuzzy Satisfactory Indicators

Demand	(A) Environment	(B) Culture & Humanity	(C) Green Assessment	(D)Traffic	€ Infrastructure	(F) Entertainment
μ_{UA}	(0.3;(0.8,0,0,0.2,0.))	(0.2;(0.5,0,0.5,0,0))	(0.1;(0,0.7,0,0,0.3))	(0.1;(0,02,0,0,0.8))	(0.1;(0.2,0,0,0,0.8))	(0.2;(0,0.2,0,0,0.8))
μ_{UB}	(0.3;(0.5,0,0.5,0,0))	(0.2;(0,0.5,0,0.5,0))	(0.1;(0.8,0,0,0.2,0))	(0.1;(0,0.3,0,0,0.7))	(0.1;(0,0,0,0.5,0.5))	(0.2;(0.4,0,0,0,0.6))
μ_{UC}	(0.1;(0.7,0,0,0.3,0))	(0.1;(0.6,0,0.4,0,0))	(0.3;(0.5,0,0.5,0,0))	(0.2;(0,0.2,0,0,0.8))	(0.2;(0,0.8,0,0,0.2))	(0.1;(0.4,0,0,0,0.6))
μ_{UD}	(0.2;(0,0.8,0,0.2,0))	(0.2;(0.7,0.3,0,0,0))	(0.2;(0,0.5,0.5,0,0))	(0.2;(0.2,0,0,0,0.8))	(0.2;(0.3,0,0,0,0.7))	(0.0;(0,0,0.2,0.8,0))
μ_{UE}	(0.1;(0.6,0,0.4,0,0))	(0.1;(0.7,0,0,0.3,0))	(0.2;(0.5,0,0,0,0.5))	(0.2;(0,0.1,0,0,0.9))	(0.1;(0.2,0,0,0.8,0))	(0.3;(0,0.7,0,0,0.3))
μ_{UF}	(0.1;(0.7,0,0,0.3,0))	(0.1;(0,0.3,0,0,0.7))	(0.1;(0.5,0,0.5,0,0))	(0.6;(0.5,0,0,0,0.5))	(0.1;(0,0.1,0,0,0.8))	(0.0;(0,0.5,0,0.5,0))
μ_{UG}	(0.1;(0.5,0,0.5,0,0))	(0.1;(0,0.4,0,0.6,0))	(0.3;(0,0,0.6,0,0.4))	(0.4;(0.1,0,0.4,0.5,0))	(0.1;(0.9,0,0.1,0,0))	(0.0;(0,0.5,0.5,0,0))
μ_{UH}	(0.3;(0.5,0.5,0,0,0))	(0.2;(0.6,0,0,0,0.4))	(0.2;(0.3,0,0.7,0,0))	(0.3;(0,0,0.3,0,0.7))	(0.0(0,0.6,0,0.4,0))	(0.0;(0.2,0,0.8,0,0))
μ_{UI}	(0.3;(0,0.5,0,0.5,0))	(0.1;(0.7,0,0.3,0,0))	(0.0;(0.8,0,0,0.2,0))	(0.2;(0,0,0,0,1))	(0.1;(0,0,1,0,0))	(0.3;(0,0,0.5,0.5,0))
μ_{UJ}	(0.1;(0,0.5,0,0.5,0))	(0.1;(0,0.8,0,0,0.2))	(0.2;(0.4,0,0.6,0,0))	(0.5;(0,0,0,1,0))	(0.1;(0,0,1,0,0))	(0.0;(0,0,0,1,0))
FT	(1.9(4.3,2.3,1.4,2,0))	(1.4(3.8,2.3,1.2,1.7,1.3))	(1.7(3.8,1.2,3.4,0.4,1.2))	(2.8(0.8,0.8,0.7,1.5,6.2))	(1.1(1.6,1.5,2.1,1.7,3))	(1.1(1.0,1.9,2.0,1.9,2.3))
FM	(.19(.43,.23,.14,.2,0))	(.14(.38,.23,.12,.17,.13))	(.17(.38,.12,.34,.04,.12))	(.28(.08,.08,.07,.15,.62))	(.11(.16,.15,.21,.17,.3))	(.11(.1,.19,.2,.19,.23))
TFM	(0.19;0.19)	(0.14;0.7)	(0.17;0.16)	(0.28;0.28)	(0.11;0.22)	(0.11;0.19)
OAFM			0.2848			

Note: FT = Fuzzy Total; FM = Fuzzy Mean ; TFM = Total Function Membership ; OAFM = Over All Fuzzy Membership.

4.3. Green Assessment. Acceding table 4.1 and 4.2, results presents which the supply is greater than demand (0.09). This result is in accordance with rule 4; we will substantially adjust the Leisure City market policy.

4.4. Traffic. Acceding table 4.1 and 4.2, results presents which the demand is greater than supply (0.10). This result is in accordance with rule 4; we will substantially adjust the Leisure City market policy.

4.5. Facility (infrastructure). Acceding table 4.1 and 4.2, results presents which the demand is greater than supply (0.06). This result is in accordance with rule 4; we will substantially adjust the Leisure City market policy.

4.6. Entertainment. Acceding table 4.1 and 4.2, results presents which the demand is equal to supply (0.01). This result is in accordance with rule 4; we will substantially adjust the Leisure City market policy

4.7. Holistic comparison of supply and demand. Acceding table 4.1 and 4.2, results presents which the demand is equal to supply (0.09). This result is in accordance with rule 4; we will substantially adjust the Leisure City market policy

5. Conclusion. It is highly competitive and rapidly changing environment that today. The industry wants to survive, in this environment, isn't very easy. From individual indicators show that only environment needs to be minutely remove the Leisure City market policy. The results compared with previous studies that Environment was showed to be an important aspect in leisure (Dyck, Cerin, Conway, Bourdeaudhuij, Owen, Kerr, Cardon, Frank, Saelens, & Sallis, 2013; Cheung, & Chan, 2013; Adams, Goodman, Sahlquist, Bull, &

Ogilvie, 2013). Other indicators show that for substantially adjust the Leisure City market policy. The results conform past research(Amaize, Mady, & Benson, 2011; Adams, Goodman, Sahlquist, Bull, & Ogilvie, 2013; Cools, Moons, & Wets, 2010; Chua, Goh, & Lee, 2012; Cheung, & Chan, 2013; Dyck, Cerin, Conway, Bourdeaudhuij, Owen, Kerr, Cardon, Frank, Saelens, & Sallis, 2013; Gosseye, 2012; Rosa, & Privitera, 2013; Lian, & Ronnevik, 2011; Rako, Fortuna, Holcer, Mackelworth, Nimak-Wood, Plesić, Sebastianutto, Vilibić, Wiemann, & Picciulin, 2013; Rosa, & Privitera, 2013; Wong, & Rosenbaum, 2011; Wu, Xue, & Zhao, 2013; Rosa, & Privitera, 2013) was showed to be an important aspect in leisure too.

Also human capital is a wide-ranging and complex area, and its evaluation involves much dispute. The advantage of the fuzzy statistical analyzing techniques proposed in this article, lies in its method to handle human thought and recognition, improving on vague measurement. The presented integrated procedure differs from the traditional assessment method, and establishes the membership grade and soft computing techniques of evaluator's weight to better capture real values. And it changed into that two-dimensional manner calculated by the one-dimensional calculations. Moreover, suppose we are surveying an intelligent capital object. No matter how carefully we read the measuring process, we can never be certain of the exact value, but we can answer with more confident that the appropriate area lies within certain bounds. The fact is that intervals can be considered as a number or a according to the underlying applications. Though interval analysis and fuzzy set theory being as areas of active research in mathematics, numerical analysis and computer science began in the late 1950s and early1960s. The application to statistical evaluations is just beginning.

We also found that (1) traditional methods use all equally weights for every assessment factor, but in reality, factors are variously important. This text proposes fuzzy weighting in accordance with real conditions. (2) This research provides a method for evaluating intellectual capital, using a Λ- type membership function to establish the value interval, according to the above weights and to determine a membership grade to calculate fuzzy value and rank. (3) This using a two-dimension calculated is close reality number that saw more information.

The future development of this research will be: (1) applying the soft computing technique to get the more appropriate evaluation (2) intellectual capital, wide ranging, complex expand the assessment of factors to include the type of enterprise, increasing the objectivity of the evaluation, and (3) using of the fuzzy regression methods, according to sub assessment factors, to determine the appropriate value of human capital. Also (4) make use of two-dimension calculated that explored other study.

REFERENCES

[1] Adams, E., Goodman, A., Sahlquist, S., Bull, F. C., and Ogilvie, D. (2013). Correlate of walking and cycling for transport and recreation_ factor structure, reliability and behavioural associations of the perceptions of the environment in the neighbourhood scale (PENS). *International Journal of Behavioral Nutrition and Physical Activity*, vol. 10, pp. 1-15.

[2] Amaize, O., Mady, T., and Benson, E. (2011). The Need for Academic Programs in Tourism, Arts & Culture, Sports, and Healthcare Management in the UAE. *World Journal of Management,* vol. 3, no. 1, pp. 96-108.

[3] Brummet, R. L., Flamholtz, E.G. and Pyle, W. C. (1969). Human Resource Accounting: *A tool to increase managerial effectiveness. Management Accounting,* pp. 12-15.

[4] Cheung, M-C., and Chan, W-M. (2013).Walking for recreation and perceptions of the neighborhood environment in older Chinese urban dwellers. *Journal of Urban Health: Bulletin of the New York Academy of Medicine,* vol. 90, no. 1, pp. 56-66.

[5] Chua, A. Y. K., Goh, D. H-L., and Lee, C. S. (2012). Mobile content contribution and retrieval_ An exploratory study using the uses and gratifications paradigm. *Information Processing and Management,* vol. 48, pp. 13-22.

[6] CLIPS (1998). CLIPS reference manual volume basic programming guide. Software Technology Branch, Lyndon B. Johnson Space Center, Version 6.10.

[7] Cools, M., Moons, E., & Wets, G. (2010). Assessing the impact of weather on traffic intensity. *American Meteorological Society, 2,* pp. 60-68.

[8] Dyck, D. V., Cerin, E., Conway, T. L., Bourdeaudhuij, I. D., Owen, N., Kerr, J., Cardon, G., Frank, L. D., Saelens, B. E., and Sallis, J. F. (2013)_Perceived neighborhood environmental attributes associated with adults' leisure-time physical activity_ Findings from Belgium, Australia and the USA. *Health & Place,* no. 9, pp. 59-68.

[9] Flamholtz, E. (1971). A Model for Human Resource Valuation: A Stochastic Process with. *The Accounting Review,* vol. 46, no. 2, pp. 253-267.

[10] Flamholtz, E. (1972). Assessing the Validity of a Theory of Human Resource Value. *A Field Study Journal of Accounting Research, vol. 10, Empirical Research in Accounting: Selected Studies 1972,* pp. 241-266.

[11] Flamholtz, E. (1972). Toward a Theory of Human Resource Value in Formal Organizations. *The Accounting Review,* vol. 47, no. 4, pp. 666-678.

[12] Flamholtz, E. (1973). Report of the Committee on Human Resource Accounting. *The Accounting Review, vol. 48, Committee Reports: Supplement to volume XLVIII of The accounting review,* pp. 169-185.

[13] Flamholtz, E. G., Bullen, M. L., and Hua, W. (2003). Measuring the ROI of management development: An application of the stochastic rewards valuation model. Journal of Human Resource Costing and Accounting, vol. 7, no. 1-2, pp. 21-40.

[14] Gosseye, J. (2012)_Leisure Politics The Construction of Social Infrastructure and Flemish Cultural Identity in Belgium, 1950s to 1970s. *Journal of Urban History,* vol. 38, no. 2, pp. 271-293.

[15] Jun, J., Kyle, G. T., Vlachopulos, S. P., Theodorakis, N. D., Absher, J. D., and Hammitt, W. E. (2012). Reassessing the structure of enduring leisure involvement. *Leisure Sciences,* no. 34, pp. 1-18.

[16] Lai, W-T., & Tien-Liu, T-K. (2013). Evaluate the employability of higher education by fuzzy data. *International Journal of Intelligent Technologies and Applied Statistics,* vol. 6, no. 1, 51-64.

[17] LaMondia, J. j., and Bhat, C. R. (2012). A conceptual and methodological framework of leisure activity loyalty accommodating the travel context. Transportation, no. 39, pp. 321-349.

[18] Lee, S., and O'Keefe, R. M. (1996). The effect of knowledge representation Scheme on maintainability of knowledge-based systems. *IEEE Transactions on Knowledge and Data Engineering,* vol. 8, no. 1, pp. 173-178.

[19] Lian, J. I., and Ronnevik, J. (2011)_Airport competition–Regional airports losing ground to main airports. *Journal of Transport Geography,* no. 19, pp. 85-92.

[20] Nguyen, H., and Wu, B. (2006). *Fundamentals of Statistics with Fuzzy Data*, Springer-Verlag: Heidelberg.

[21] Rako, N., Fortuna, C. M., Holcer, D., Mackelworth, P., Nimak-Wood, M., Plesić, G., Sebastianutto, L., Vilibić, I., Wiemann, A., and Picciulin, M. (2013). Leisure boating noise as a trigger for the displacement of the bottlenose dolphins of the Cres–Lošinj archipelago (northern Adriatic Sea, Croatia). *Marine Pollution Bulletin,* no. 68, pp. 77-84.

[22] Reichgelt, H. (1991). *Knowledge representation, an AI perspective.* Norwood, NJ: Ablex Publishing Corporation.

[23] Rosa, D. L., and Privitera, R. (2013). Characterization of non-urbanized areas for land-use planning of agricultural and green infrastructure in urban contexts. *Landscape and Urban Planning,* no. 109, pp. 94-106.

[24] Tam Wu, B., and Sun, C. (2001). *Interval-valued statistics, fuzzy logic, and their use in computational semantics. Journal of Intelligent and Fuzzy Systems,* no. 11, pp. 1-7.

[25] Verma, A. (1997). Construction of offender profiles using fuzzy logic. *An International Journal of Police Strategies & Management,* vol.20, no. 2, pp. 408-418.

[26] Wang, R-C., and Chen, C-H. (1995). Economic statistical np-control chart designs based on fuzzy optimization. *International Journal of Quality & Reliability Management,* vol. 12, no. 1, pp. 82-92.

[27] Wong, I. A., and Rosenbaum, M. S. (2011). Beyond Hardcore Gambling Understanding Why Mainland Chinese Visit Casinos in Macau. *Journal of Hospitality & Tourism Research,*vol. 36, no. 1, pp. 32-51

[28] Wu, B. (2000). Shadows of Fuzzy Sets-A natural Way to Describe 2-D and Mulyi-D Fuzzy Uncertainty in Linguistic Terms. *Procededings of the 2000 FUZZ-IEEE.*

[29] Wu, B., and Chang, K. (2007). On testing hypothesis o fuzzy mean. *Journal of Industrial and Applied Mathematics,* vol. 24, no. 2, pp. 171-183.

[30] Wu, B., and Hsu, Yu-Yun. (2004). A New approach of bivariate fuzzy time series: with applications to the stock index forecasting. *International Journal of Uncertainty, Fuzziness and Knowledge-based Systems,* vol. 11, no. 6, pp. 671-690.

[31] Wu, B., and Hsu, Yu-Yun. (2004). The use of kernel set and sample memberships in the identification of nonlinear time series. *Soft Computing Journal,* no. 8, pp. 207-216.

[32] Wu, B., and Tseng, N. (2002). A new approach to fuzzy regression models with application to business cycle analysis. *Fuzzy Sets and System.* no. 130, pp. 33-42.

[33] Wu, W., Xue, L., and Zhao, H. (2013). Inheritance and Innovation of Historical Culture in Urban Square Landscape Design under the Background of Globalization-Taking Xinjiang Ili Han Dynasty Culture Square as example. *Research Journal of Applied Sciences, Engineering and Technology,* vol. 5, no. 17 , pp. 4295-4300.

[34] Wu, X. (2000). *An approach to object-oriented rule base management system.* Master Thesis, Department of Computer and information Science, National Chiao Tung University.

[35] Yeh, C. T. (2011). Weighted semi-trapezoidal approximations of fuzzy numbers. *Fuzzy Sets and Systems,* no. 165, pp. 61-80.

[36] Zhang, H., Li, H., and Tam, C. M. (2004). Fuzzy discrete-event simulation for modeling uncertain activity duration. *Engineering, Construction and Architectural Management,* vol. 11, no.6, pp. 426-437.