



Plagiarism Checker X Originality Report

Similarity Found: 7%

Date: Thursday, September 10, 2020

Statistics: 258 words Plagiarized / 3884 Total words

Remarks: Low Plagiarism Detected - Your Document needs Optional Improvement.

International Journal of Psychosocial Rehabilitation, Conference Special Issue ISSN: 1475-7192 Received: 02 Jan 2020 | Revised: 12 Feb 2020 | Accepted: 17 Mar 2020 372 Fuzzy AHP model in influencing the decision to visit a coffee shop 1Asrianda, 2Munawar Khalil, 3Asnawi, 4Naufal Bachri ABSTRACT--The results have been well proven by using the classical AHP method, but failing to produce better results in many cases of application. The results obtained in showing coffee quality products are very desirable for visitors to visit a coffee shop, where strategic location and facilities are a priority for visiting coffee shops.

The availability of Wi-Fi and good service is not a consideration for visitors to visit a coffee shop. However, the price receipt is a priority for visitors to visit the coffee shop. Cheaper price is not an indication that a coffee shop will be a priority for visitors to visit the coffee shop. Satisfaction of coffee taste attracts visitors to visit the coffee shop.

Keywords-- model, influencing, decision, visit coffee shop I. INTRODUCTION The coffee shop is used as a gathering place and completing work as well as a place for discussion both with colleagues or family.

Many of the students use the coffee shop as an alternative place to complete assignments or exchange ideas between students. Not infrequently also civil servants and professionals use the coffee shop as an alternative place to entertain business partners in informal meetings. The most widespread business is business related to food, drinks, and wifi facilities provided. Many businesses in the field of food or culinary that present all forms of facilities in it.

As with the widespread coffee shop business in Lhokseumawe City, many coffee shops that provide a variety of unique flavors and various facilities in it make consumers

interested in trying. This makes consumers have many considerations for buying coffee in a coffee shop. Some of the considerations include the quality of the coffee served, the variety of coffee variants, the atmosphere of the coffee shop, and other supporting facilities 1. The number of variants of coffee in a coffee shop is very important in choosing a coffee shop, the atmosphere of a coffee shop is a consideration to choose a coffee shop as a place to enjoy coffee.

Consumer behavior can change due to external influences, such as culture, social and others 2. AHP (Analytic Hierarchy Process) is a method of analysis in decision making based on quantity, coefficient, weight and coefficient of the index calculated based on the rank 3. Decision making with the AHP method uses subjective criteria, in solving the problem, fuzzy set techniques are developed in AHP 4. 1 University of Malikussaleh, asrianda@unima.ac.id 2 University of Malikussaleh, khalil@unimal.ac.id 3 University of Malikussaleh, asnawiabd@yahoo.com 4 University of Malikussaleh, nauvri_e@yahoo.co.id International Journal of Psychosocial Rehabilitation, Conference Special Issue ISSN: 1475-7192 Received: 02 Jan 2020 | Revised: 12 Feb 2020 | Accepted: 17 Mar 2020 373 The most basic problem often faced in the decision making process is the difficulty of defining feelings, thoughts and decisions quickly and precisely. Feelings, thoughts and decisions are expressed in a range of numerical values rather than using integers, which are reliable 5.

This calculation, it has been proven that good results have been achieved using the classical AHP method, but failed to produce good results in many application cases. In this study, we applied the fuzzy AHP method in determining the influence of the buyer's decision to visit a coffee shop in Lhokseumawe City. There are 4 main criteria, namely product, price, distribution, and service. In the product criteria there are sub criteria namely satisfying taste, interesting form, quality. Price has sub criteria, namely affordable prices, according to quality and cheap.

Distribution has sub criteria namely strategic location, attractive place, clean and complete facilities. Process has sub criteria, namely price receipt, service and WiFi. II. LITERATURE REVIEW 2.1 Analytical Hierarchy Process Fuzzy Analytical Hierarchy Process (FAHP) is a combination of AHP method and fuzzy concept approach. Fuzzy AHP covers the weaknesses found in AHP, namely problems that have a subjective nature. Uncertainty in numbers is represented by scale. Determination of the degree of Fuzzy AHP membership by using the triangle membership function (Triangular Fuzzy Number/TFN) 4.

Chang defined the value of AHP intensity into fuzzy triangles, namely dividing each fuzzy set by two, except for the number one intensity. Fuzzy Triangular Numbers (TFN)

are fuzzy set theory in measurements related to subjective judgments of human using language or linguistics. The use of fuzzy AHP is better because fuzzy valuation uses top and good values that are not used in AHP. Pairwise comparisons are described by the ratio scale that is related to the fuzzy scale, with fuzzy triangular numbers symbolized, defined in 3 series (l, m, u) with membership functions $\mu_A(x)$ (1), which is defined using equation (1).

$$\mu_A(x) = \begin{cases} \frac{x-l}{m-l} & l \leq x < m \\ \frac{u-x}{u-m} & m \leq x < u \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

Where x is the average value of A and l, m, u is the true value. By setting two TFN A and B with three values $A = (l_1, m_1, u_1)$ and $B = (l_2, m_2, u_2)$. Triangular Fuzzy Number mathematical rules as follows: 1. Addition $(l_1, m_1, u_1) + (l_2, m_2, u_2) = (l_1 + l_2, m_1 + m_2, u_1 + u_2)$ (2) 2. Multiplication $(l_1, m_1, u_1) \cdot (l_2, m_2, u_2) = (l_1 \cdot l_2, m_1 \cdot m_2, u_1 \cdot u_2)$ (3) $\frac{1}{(l_1, m_1, u_1)} = (\frac{1}{u_1}, \frac{1}{m_1}, \frac{1}{l_1})$.

2.3 Fuzzy Synthetic Extent Fuzzy synthetic extent value is used to obtain a goal, with extent analysis value 4, each object set can be carried out extent analysis on each object to get a goal. With the following values: z_1, z_2, \dots, z_n , $z_i = 1, 2, \dots, n$ (5) Where all $z_i = 1, 2, \dots$

, z_i is fuzzy triangular number, which is defined as follows: (6) Value of, can be determined by performing a fuzzy addition operation on the M extent analysis matrix. (7) and (8) To get the value of the weight vector on each criterion, it is necessary to consider the principle of comparison for fuzzy numbers. There are two possible questions 4, namely: 1. What is the smallest fuzzy value or the largest value in the set of fuzzy numbers 2.

Which is the smallest and largest number value among several numbers of fuzzy values To get the weight value of each criterion, two Fuzzy Triangular numbers $A = (l_1, m_1, u_1)$ and $B = (l_2, m_2, u_2)$ with possibility level $\mu_A = \mu_B$ can be defined as follows: $\mu_A(l_1) = \mu_B(l_2)$ (9) With sup represents supremum, $\mu_A(l_1) = \mu_B(l_2) = 1$, because A and B is a convex fuzzy defined by Fuzzy Triangular numbers $A = (l_1, m_1, u_1)$ and $B = (l_2, m_2, u_2)$, can be obtained by equation: $\mu_A(l_1) = \mu_B(l_2) = 1$; $\mu_A(l_1) = \mu_B(l_2) = h$ (10) W_i is only if represents d is the slice coordinate of the highest point between A and B , to get the result of d coordinate.

The term $hgt()$ is the highest fuzzy value in M having a slice between α_1 and α_2 , $\alpha_1 = (\alpha_1, \alpha_1, \alpha_1)$ and $\alpha_2 = (\alpha_2, \alpha_2, \alpha_2)$ coordinate slices are obtained from equation (10). And convex fuzzy numbers are obtained from equation (11). $h(\alpha_1, \alpha_2) = h(\alpha_1, \alpha_2) = \alpha_1 - \alpha_2 (\alpha_2 - \alpha_1) - (\alpha_1 - \alpha_1) = \alpha_1$ (11) Ratio between α_1 and α_2 , needs both values of α_1 and α_2 . The value of d is the coordinates of the highest intersection between α_1 and α_2 , ratio between α_1 and α_2 needs both values of α_1 and α_2 .

It is possible that value of convex fuzzy is greater than k number of convex fuzzy $(k = 1, 2, 3, \dots)$. $\alpha_1 = (\alpha_1, \alpha_1, \alpha_1)$, $\alpha_2 = (\alpha_2, \alpha_2, \alpha_2)$, $\alpha_3 = (\alpha_3, \alpha_3, \alpha_3)$, $\alpha_4 = (\alpha_4, \alpha_4, \alpha_4)$, $\alpha_5 = (\alpha_5, \alpha_5, \alpha_5)$, $\alpha_6 = (\alpha_6, \alpha_6, \alpha_6)$, $\alpha_7 = (\alpha_7, \alpha_7, \alpha_7)$, $\alpha_8 = (\alpha_8, \alpha_8, \alpha_8)$, $\alpha_9 = (\alpha_9, \alpha_9, \alpha_9)$, $\alpha_{10} = (\alpha_{10}, \alpha_{10}, \alpha_{10})$

International Journal of Psychosocial Rehabilitation, Conference Special Issue ISSN: 1475-7192 Received: 02 Jan 2020 | Revised: 12 Feb 2020 | Accepted: 17 Mar 2020 375

The convex fuzzy number value of M is greater than k number of fuzzy number in doing mathematical operations namely max and min **can be defined as** follows: $\alpha_1 = (\alpha_1, \alpha_1, \alpha_1)$, $\alpha_2 = (\alpha_2, \alpha_2, \alpha_2)$, $\alpha_3 = (\alpha_3, \alpha_3, \alpha_3)$, $\alpha_4 = (\alpha_4, \alpha_4, \alpha_4)$, $\alpha_5 = (\alpha_5, \alpha_5, \alpha_5)$, $\alpha_6 = (\alpha_6, \alpha_6, \alpha_6)$, $\alpha_7 = (\alpha_7, \alpha_7, \alpha_7)$, $\alpha_8 = (\alpha_8, \alpha_8, \alpha_8)$, $\alpha_9 = (\alpha_9, \alpha_9, \alpha_9)$, $\alpha_{10} = (\alpha_{10}, \alpha_{10}, \alpha_{10})$ (12) Assume that $\alpha_i = (\alpha_i, \alpha_i, \alpha_i)$, $i = 1, 3, 5, \dots, n$ and n is the end of the given number. Vector weight is obtained from $w = (w_1, w_2, \dots, w_n)$ (13) $w_i = 1/n$ ($i = 1, 2, 3, \dots, n$)

w_i is an alternative to the decisions obtained, $w = (w_1, w_2, \dots, w_n)$ shows the relationship to decision choices in the vector denoted by the equation below. $w = (w_1, w_2, \dots, w_n)$ (14) Eigen vector (w) is not fuzzy 3, which obtained from mathematical equation: $w = (w_1, w_2, \dots, w_n)$ (15) $w = (w_1, w_2, \dots, w_n)$ (16) III. RESEARCH METHODOLOGY The locations of coffee shop located in Lhokseumawe City were QBO Coffee, ND Coffee, Premium Coffee and ABUWA Coffee. Data collection was performed by distributing questionnaires to respondents according to predetermined criteria.

There are several variables as criteria as the choice of the writer in influencing the behavior of **visitors to visit the coffee shop**. In table 1, the decision makers identified criteria selection as a consideration by giving weight. The main criteria for choice are product, price, distribution and process. Table 1: Pairwise comparison between criteria In table 2, interviews are limited to several respondents to give an assessment of the criteria that have been determined. Satisfied is the opinion of respondents when visiting a coffee shop with good coffee flavor. Interesting means that the coffee is pleasing to the eye so interested in trying coffee. Quality means the taste of coffee with the best product from coffee.

product is smaller than the final value distribution of 1.06821096 The average value of the product is greater than the value of the process, the final result of 1 The average value of the price is smaller than the product, so the final result of 0.95020069 The average value of the price is smaller than the average value of the distribution, the final value obtained is 1.11910093 The average value of the product is smaller than the value of the average process, the final value is 1

$$\begin{aligned} & \frac{1}{2} (1 + 1) = 1 = -107 - 0,5 (0,227 - 0,5) - (0,247 - 0,107) = 1,06821096 \\ & \frac{1}{2} (1 + 1) = 1 = -107 - 0,5 (0,227 - 0,5) - (0,247 - 0,107) = 0,95020069 = \\ & -107 - 0,591 (0,278 - 0,591) - (0,227 - 0,107) = 1,11910093 \end{aligned}$$

International Journal of Psychosocial Rehabilitation, Conference Special Issue ISSN: 1475-7192 Received: 02 Jan 2020 | Revised: 12 Feb 2020 | Accepted: 17 Mar 2020

379 The average value of the distribution is greater than the average value of the product, the final value is 1 The average value of the distribution is greater than the average value, the final value is 1 The average value of the distribution is greater than the value of the average process, the final value is 1 The average value of the distribution is greater than the average product value, the final value is 1 The average value of the process is greater than the average price value, the final value is 1 The average value of the process is smaller than the average distribution value, the final value is 0.94350027 Step-3: Find vector weight The product average value is greater than the price value and the upper limit of the product value above the average value of the process.

The average value of the price is smaller than the average value of the product and is greater than the average value of the distribution, smaller than the average value of the process. The average value of the distribution is greater than the average value of the product, greater than the average value of the price and greater than the average value of the process. The average value of process is greater than the average value of the product, greater than the average value of the price and smaller than the average value of the distribution.

$V(S1) = \min (S1 > S2, S1 > S3; S1 > S4) = \min(1; 1,06821096; 1) = 1$
 $v(S2) = \min (S2 > S1, S2 > S3; S2 > S4) = \min (0,95020069; 1,11910093; 1) = 0,95020069$
 $V(S3) = \min (S3 > S1, S3 > S2; S3 > S4) = \min (1; 1; 1) = 1$
 $V(S4) = \min (S4 > S1, S4 > S2; S4 > S3) = \min (1; 1; 0,94350027) = 0,94350027$

Step-4: Find the results of vector weight

$$= \frac{1}{1 + 0,94350027} = 0,5117500135$$

$$= \frac{0,95020069}{1 + 0,95020069} = 0,4882499865$$

$$= \frac{1}{1 + 1} = 0,5$$

$$= \frac{1}{1 + 1,06821096} = 0,4817890399$$

International Journal of Psychosocial Rehabilitation, Conference Special Issue ISSN: 1475-7192 Received: 02 Jan 2020 | Revised: 12 Feb 2020 | Accepted: 17 Mar 2020

380 By following the steps as performed, the final value of the weight vector was obtained, product = 0.257; price = 0.244; distribution = 0.257 and process = 0.242.

W = (0,257;0,244;0,257;0,242) Table 9: Final score of product weight vector Table 10: Final score of price weight vector Table 11: Final score of distribution weight vector Table 12: Final score of process weight vector V. CONCLUSION AND IMPLICATION The results showed that the product and distribution had the same weight vector of 0.257 and the price was higher than the process. Visitors to the coffee shop are more concerned with more affordable prices and the desired process of service and facilities.

$d(S1) = 0,257$ $d(S2) = 0,244$ $d(S3) = 0,257$ $d(S4) = 0,242$ International Journal of Psychosocial Rehabilitation, Conference Special Issue ISSN: 1475-7192 Received: 02 Jan 2020 | Revised: 12 Feb 2020 | Accepted: 17 Mar 2020 381 Satisfaction with the taste of coffee is a great attraction for visitors to visit the coffee shop compared to processed coffee models and forms. The quality of coffee will be chosen by visitors from the beauty of the art offered by coffee shops to visitors. Cheaper prices are not an indication of visitors to visit the coffee shop, because the value obtained is the same price according to the product even though it is more expensive than general coffee.

And the location is not an influence on visitors to visit the coffee shop. The strategic location attracts visitors to visit the coffee shop from the facilities and other attractions offered by the coffee shop to attract visitors to visit the coffee shop. This is due to facilities and attraction did not affect visitors to visit the coffee shop. The receipt given by the coffee shop is a priority for visitors to visit the coffee shop rather than the availability of WIFI and good service. REFERENCES 1. Santoso, I: The Analysis of The Role of Instant Coffee Price and Quality in Consumer Preference and Purchasing Decision, in Malang, Using Partial Least Square Method, Wacana, J. Sos. dan Hum, 20, 9 14, 2017 2. de Sá, F. B. de Paiva, R. V. C., Souki, G.

Q. & Moura, L. R. C: Attributes considered by coffee consumers during their buying decision process: a study using factorial analysis, Organ. Rauris Agroindustry 19, 84 95, 2017. 3. Qiu, M., Li, R. & Chen, M: Application of AHP and Fuzzy theory in the Scientific Research Projects Management, I Business 05, 13 17, 2013. 4. Chang, D.-Y.: Applications of the extent analysis method on fuzzy AH, Eur. J. Oper. Res. 95, 649 655, 1996 5. Aysegul Tas.: A Fuzzy AHP approach for selecting a global supplier in pharmaceutical industry, AFRICAN J. Bus. Manag., 6, 5073 5084, 2012 6. Tang, Y. C. & Lin, T. W.:

Application of the fuzzy analytic hierarchy process to the lead-free equipment selection decision, Int. J. Bus. Syst. Res. 5, 35, 2010 7. Kahraman, C., Cebeci, U. & Ruan, D.: Multi-attribute comparison of catering service companies using fuzzy AHP: The case of Turkey, Int. J. Prod. Econ, 87, 171 184, 2004.

INTERNET SOURCES:

1% - <https://www.psychosocial.com/article/PR201324/15647/>

2% - <http://repository.unimal.ac.id/5887/>

<1% - <https://vum.bg/bachelor-degrees/gastronomy-culinary-arts/>

<1% -

<https://www.ukessays.com/essays/marketing/introduction-to-starting-a-coffee-shop-marketing-essay.php>

<1% - <https://www.sciencedirect.com/science/article/pii/S0886779819305188>

<1% - <http://www.ecoterra-online.ro/files/1550948288.pdf>

<1% -

<https://www.emathhelp.net/calculators/calculus-2/average-value-of-a-function-calculator/>

<1% -

https://www.researchgate.net/publication/257196293_A_fast_approach_to_compute_fuzzy_values_of_matrix_games_with_payoffs_of_triangular_fuzzy_numbers

<1% - <https://www.sciencedirect.com/science/article/pii/S095741741201322X>

<1% -

https://www.researchgate.net/publication/220354681_Fuzzy_Ordering_Of_Fuzzy_Numbers

<1% -

<https://www.thefreelibrary.com/Fuzzy+Triangular+Aggregation+Operators.-a0583486636>

<1% - <https://www.stat.auckland.ac.nz/~ihaka/120/Notes/ch03.pdf>

<1% -

https://www.researchgate.net/publication/273745187_Pavement_Condition_Assessment_Using_Fuzzy_Logic_Theory_and_Analytic_Hierarchy_Process

<1% - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4840156/>

1% - <https://www.sciencedirect.com/science/article/pii/S0304405X19300625>

<1% - <http://export.arxiv.org/abs/2001.08237>

<1% - <https://quizlet.com/128125728/stats-test-3-flash-cards/>

<1% -

<https://courses.lumenlearning.com/boundless-finance/chapter/net-present-value/>

<1% -

<https://www.janushenderson.com/en-us/investor/planning/calculate-average-cost/>

<1% - <https://academic.udayton.edu/PMIC/MC%20Questions/Chap%2010%20MC.pdf>

<1% - <https://www.mdpi.com/journal/applsci>

<1% - <https://www.ryanair.com/sk/en/useful-info/help-centre/faq-overview#!>

<1% -

https://www.researchgate.net/publication/261951788_A_Fuzzy_AHP_approach_for_select

ing_a_global_supplier_in_pharmaceutical_industry

<1% -

https://www.researchgate.net/publication/220592054_Framework_for_benchmarking_logistics_performance_using_fuzzy_AHP

1% - <https://link.springer.com/article/10.1007%2Fs12517-018-3510-x>