DECISION SUPPORT SYSTEM FOR THE PURCHASE OF A PRINTER IN

HI-TECH MALL METHOD USING FUZZY TAHANI

[1]Sutrisno, [2]Eko Prasetyo, [3]Rani Purbaningtyas

Informatic Engineering
Universitas Bhayangkara Surabaya

Email : trissdahlan@rocketmail.com

ABSTRACT

With the availability of many brands and types of printers sold by shops in hi-tech Mall resulted in consumers ' difficulties in selecting the printer as needed. In addition, the seller is also complicated in helping consumers to choose the printer that will be purchased. The existence of this, research is trying to build a printer purchase decision support system using fuzzy method tahani implemented in the form of an informative website. The printer then purchase SPK tested to 15 people the user is divided into 5 testing query, where on every test there are three categories i.e. inkjet, color laser and laser mono. Furthermore, the results of these tests are compared with the opinion of the user regarding the printer that match criteria you selected, and the obtained results of 67% user opinions match up with the results of the recommendation given by the system.

Key words: decision support Systems, fuzzy tahani, purchase the printe

1. INTRODUCTION

Hi-Tech Mall is the center of trade in IT products that are in Surabaya is almost every day in hi-tech Mall crowded by visitors who seek information or conduct transactions and selling IT products either by credit or cash payment. From a wide range ofbuying and selling IT products, the most interesting thing to be discussed is the buying and selling of the printer because in addition to PCs and laptops, a printer is a product IT most in the search by visitor hi-tech Mall good for just looking for information,

the service to make a purchase the printer. With the availability of many brands, type and the type of printer that is sold in stores the hi-tech Mall ultimately poses some problems for the consumer and the seller in the transaction of buying and selling printers, which consumers sued for more selective in choosing a printer that fits your desires and needs, while the seller is required to be able to introduce product may seoptimal printers to consumers in order to make it easier for consumers to determine the purchase a printer that fits your desires and needs. Of some issues on buying and selling a printer in hi-tech Mall that most caught my attention is the issue of the selection of the printer by consumers who have difficulty in finding the printer as needed and valuable consideration with a cheap printer capabilities like print resolution, print speed,print A3 printers and function. Then the problems experienced by the store or the seller i.e. process serving and helping consumers, which consumers often make the difference in price from the internet with at the store and from one brand to another brand. Consumers want high specification with a low price and warranty printer question, which often take a while.

Based on the existence of these problems, then felt the need to do research on decision support system of purchasing a printer in hi-tech Mall method using Fuzzy Tahani.

2. METHODOLOGY

The methodology used in the development of a decision support system is a method of waterfall which steps can be explained as follows:

2.1 Requirement analysis

At this stage carried out interviews with some of the store owners and consumers who are in hi-tech Mall to know problems occurred and to collect the data required for the printer's research.

2.2 System design

In the design phase of the system is done designing systems and software using DFD and ERD to get an overview of the system to be built.

2.3 Implementation

At this stage the system began to be implemented with the php programming language and conduct testing to look for errors that may occur in the program. The results obtained will be re-evaluated, if it is not correct and appropriate expectations, then returned to the previous stage, namely the stage of designing.

2.4 Testing system

At this stage of the testing conducted trials against a system that was built to usersi.e. consumers by using the approach of black box testing equivalence class partitioning.

2.5 Maintenance

In this stage do the maintenance of the system by fixing the system in case of error or damage as well as evaluate to seeking weakness-kelamahan are there to do completion at a later date.

3. THE DESIGN

The system was created to assist the consumer in selecting the appropriate printer with wants and needs. To help that process, then use a analitikal model was used to analyze the data printer-printers on sale at some stores that serve the object of the research. The model is then formed using the PHP programming language to control execution model as well as translating commands from the user interface modeling. The model used is the method of fuzzy tahani. In this study, the process stages model fuzzy tahani is described using the flowchart, as can be seen in Figure 3.1 below.
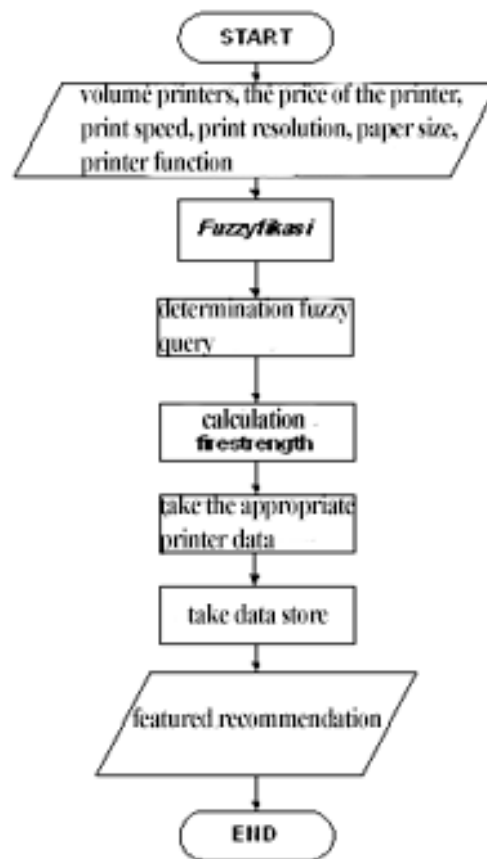
Figure 3.1 Flowchart Stages Model Fuzzy Tahani

In Figure 3.1 is described about the flowchart of the stages of the system using fuzzy model tahani. Starting from the menginputkan data values are some of the specs of the printer such as paper size, function, print resolution, print speed, volume and the price of the printer. Then next is change the value of the firm from the printer specification value of membership degrees (input fuzzy) membership function using the formula. Afterwards can instantly determine fuzzy query for the search process of the printer by selecting the following criteria specified himpunanya system, after the query was created system will do the process of calculation of the value of firestrength by way of reading the data values of the degree of membership in the appropriate database queries from users where using the AND operator firestrength calculation is done with the following formula:

$$\mu A \cap B = \min(\mu A(x), \mu B(y))$$

and if you use the OR operator formulas used

$\mu A \cup B = \max(\mu A(x), \mu B(y))$

having obtained the results of the firestrength, the system takes data printer names and stores that sell in the next database to show 10 printer and the name of the store that sells the printer purchase as a recommendation in order by the value of the highest to lowest firestrength.

.

3.1 MEMBERSHIP FUNCTION

Decision support system uses two different types of parameters i.e., fuzzy parameters and parameters of non fuzzy. Non fuzzy parameters used are print A3 multifunctional and only have the value 1 and 0 degrees of membership, while the fuzzynya parameter that is print resolution, print speed, volume printers and printer prices.

3.1.1 Criteria Print Speed

Print speed criteria divided into 3 sets of fuzzy, namely: low, medium and high. Set low and high use of the membership function of the shape of the shoulders, while the set was using membership function of triangular shaped.
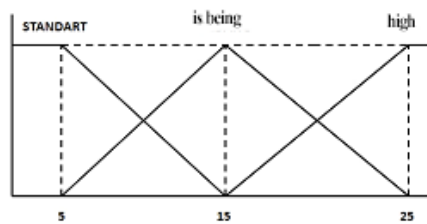
Figure 3.2 The membership Function Print Speed

1.1.2 Criteria Print Resolution

Print resolution criteria is divided into 3 sets of fuzzy, namely: regular, medium and fine. The set of REGULAR and good use of the membership function of the shape ofthe shoulders, while the set was using membership function of triangular shaped.
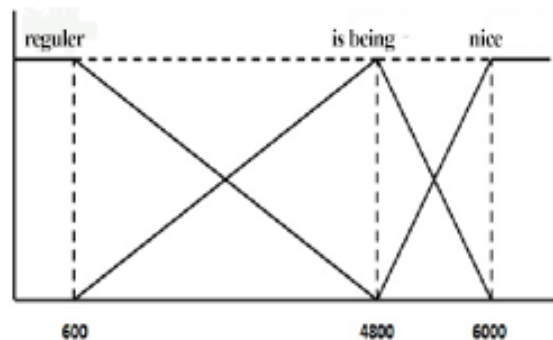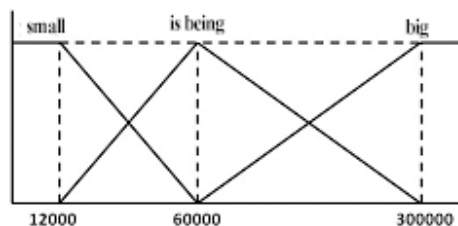

Figure 3.3 The membership Function Print Resolution

3.1.3 Criteria Volume Printers

The criteria volume printers is divided into 3 sets of fuzzy, namely: small, medium and large. The set of small and large use of the membership function of the shape of the shoulders, while the set was using membership function of triangular shaped.

Picture 3.4 the membership Function of the Volume of the Printer.

3.1.4 Criteria Of Price

Price criteria divided into 3 sets of fuzzy, namely: cheap, moderate and expensive. The set of cheap and EXPENSIVE use of the membership function of the shape of the shoulders, while the set was using membership function of triangular shaped.

4. RESULTS and DISCUSSION

From the results obtained, in this system the user is given the ease in using the search feature of the printer which has been provided by the system by selecting criteriain the form the
printer search printers like the Figure 4.1 :

Figure 4.1 the content Search Printer

After the search process dilkaukan printer, then the system will display the results of the recommendation on the same content, namely content search printers as listed in Figure 4.2:

Figure 4.2 the results of Recommendations

Admin also given facilities to change the value limits set for process calculation of membership criteria printe fuction as shown in Figure 2.7 below.
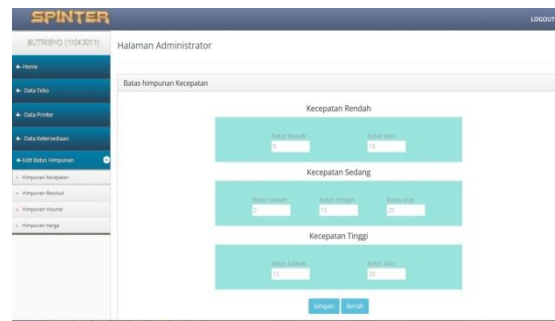
Figure 4.3 Results Recommendations

The results are then tested to 15 people the user with different queries, where on each test divided into three categories of tests i.e. inkjet, color laser and laser mono, all of which were given the freedom to use the operators AND or OR. The results of aquery based on the SPK was also compared to the user's opinion regarding the appropriate printer products the selected criteria or rules of a given query, to know the level of matches from theresults.

The level of match results are divided into 3 namely not suitable, fit and very fit. The overall percentage level matches the results of the recommendation system with the results given by the users of any testing that is done look at table 4.1:

Table 4.1 percentage of Matches SPK Printer Purchase

Testing	Level of suitability		
	Doesn't match	Match	Very Match
Testing 1	1	1	1
Testing 2	1	1	1
Testing 3	2	0	1
Testing 4	1	1	1
Testing 5	0	3	0
Average	5	6	4
Persentase	33%	40%	27%

From table 4.1 above can note that total overall rate matches the results
of the recommendation system amounted to 67%.

5. CONCLUSION

Trial results of SPK purchase printers, some conclusions can be drawn, namely

 a. the existence of this system, users or consumers better be facilitated in obtaining recommendations the printer products according the desired criteria.

b. If the results of the printer product recommendations is not found, the user is advised to change the criteria that have been selected or more prioritizing a criteria that is really needed.

c. be able to note that, the results of the recommendation system has a level of compatibility with the opinions of users who perform query testing of 67%, which is divided into 40% belongs to the category fits and 27% is perfect.

6. **REFERENCE**

[1] Agung, A., Winarti, T dan Vydia, V. (2013), *Sistem Pendukung Keputusan Penyeleksian Karyawan Di PT PLOSS ASIA Menggunakan Metode Fuzzy Tahani Dan Microsoft Visual Basic 6.0*, Universitas Semarang, Semarang, Vol. 1, No. 2, 15-30.

[2] Daihani, D.U. (2001), *Sistem Pendukung Keputusan,* Elex Media Komputindo, Jakarta.

[3] Faradilla, Syofrin. (2013), *Sistem Pendukung Keputusan Pemilihan Paket Internet Dengan Basis Data Fuzzy Tahani*, Sekolah Tinggi Teknik Indonesia Tanjungpinang, Tanjungpinang.

[4] Gelley, N dan Jang, Roger. (2000), *Fuzzy Logic Toolbox,* Mathwork, Inc, USA.

[5] Handoyo, Joko. (2011), *Sistem Pendukung Keputusan Pemilihan Operator Selular Dengan Basis Data Fuzzy Tahani,* STTR, Cepu.

[6] Kusumadewi, S dan Purnomo, H. (2013), *Aplikasi Logika Fuzzy Untuk Pendukung Keputusan, Edisi 2,* Graha Ilmu, Yogyakarta.

[7] Praditya, R.W. (2013), *Sistem Pendukung Keputusan Untuk Memilih Bank Dengan Logika Fuzzy,* Universitas STIKUBANK, Semarang.

[8] Purnomo, D.E.S. (2013), *Sistem Pendukung Keputusan Untuk Pemilihan Obyek Wisata Di Surakarta Menggunakan Metode Fuzzy Tahani,* Universitas STIKUBANK, Semarang.

[9] Rahayu, H.S. (2013), *Sistem Pendukung Keputusan Pemilihan Minat Bidang Studi Dengan Metode Fuzzy Tahani,* Universitas Bhayangkara, Surabaya.

[10] Rahmadani, M.A dan Septiarini, A. (2013), *Penerapan Fuzzy Tahani Pada Sistem Pendukung Keputusan Pemilihan Pembelian Rumah Di Kota Samarinda,* Universitas Mulawarman, Samarinda, Vol. 8, No. 2, hal. 56-60.

[11] Triswanto, E. dan Widhiyanti, K. (2014), *Sistem Pendukung Keputusan Rekomendasi Pemilihan Laptop Menggunakan Fuzzy Tahani*, Institut Informatika Indonesia, Surabaya.

[12] Turban, E., Aronson, J.E dan Liang, T.P. (2007), *Decision Support Systems And Intelligent Systems,* Edisi 7, Andi, Yogyakarta.