A Fuzzy Multi Criteria Decision Making Model Approach For Ranking Automobile Dealership Selection Criteria

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Abstract

This article aims to sort important key factors in the selection of automobile dealers that make sense for automobile dealers to understand what consumer aspects. Consumer preferences on dealer's attributes that make consumer decision-making which easier will be identified by applying a fuzzy multi criteria decision making model. At the evaluation procedure, the F-AHP was applied to determine the relative weights of evaluation criteria. Managers should be able to strive for alignment within corporate branding by tracking the character of the supply-chain relationship and monitoring for discrepancies between corporate and dealer perspectives. The results will subject to the propositions being tested, make an important contribution in terms of confirming the impact of strategic collaboration, brand and dealer image, and distribution channels.

Otomobil Bayii Seçim Kriterlerini Sıralamak İçin Bulanık Çok Kriterli Karar Verme Modeli Yaklaşımı

Özet

Bu makale, tüketicilerin otomobil satıcılarının seçiminde önemli faktörlerin sıralamasının nasıl olduğunu belirlemeyi amaçlamaktadır böylece otomobil bayileri tüketicilerin ne beklediğini görecektir. Tüketiciler karar vermeyi kolaylaştıran satıcının niteliklerine ilişkin tüketici tercihleri bulanık çok kriterli karar verme modeli ile belirlenmektedir. Değerlendirme sürecinde, kriterlerinin göreceli ağırlıklarının belirlenmesi için F-AHP uygulanmıştır. Yöneticiler, tedarik zinciri ilişkisinin karakterini kurumsal ve satıcı perspektifleri arasındaki tutarsızlıkları izleyerek kurumsal markalaşma içinde uyum sağlamaya çalışmaktadır. Sonuç olarak, test edilecek önermelere tabi olarak stratejik işbirliğinin, marka

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ve bayi imajının ve dağıtım kanallarının etkisinin teyit edilmesi açısından önemli katkıda bulunacaktır.

INTRODUCTION

Consumers' dealer selection decisions depends on consumers' perceived dealer value. Dealer value and reputation is constructed by consumers' perceptions of dealer attributes, such as dealer intrinsic and extrinsic technical ability, intangible assets, financial performance, manufacturer support, logistics service quality, market knowledge, and relationship quality. Moreover, dealer payment equity, dealer trust, and dealer switching costs and consumers' prior experiences with the dealer were also analyzed. Dealer trust, is the customer's willingness to rely on the ability of the dealer to perform its stated function, (Chaudhuri and Holbrook, 2001) Customer's prior relationship experience (Rust et al., 2004) with the dealer indicates whether the customer is going to purchase a car from the same dealer or not (Verhoef et al., 2007). Beside trust and experience, brand image and overall reputation are other critical intangible assets in dealer selection.

Moreover, dealer technological ability, knowledge and the service quality factors like on-time response, polite service, accurate order number and order fulfillment, order rate of required car accessories, urgent response to customers and qualified technical service are among fundamental evaluation factors. Rather than those, dealers' financial situation, its debt to equity and return to equity ratios, return on assets, and the cost management of showroom expenses, buying-selling costs and mutually beneficial agreements with the manufacturer, so the profitability play an important role in dealer selection. The market knowledge of the dealer is also important since the dealer should be aware of the customers' expectations, market price, and other rivals competitive strategies.

DEALER SELECTION CRITERIA

Dealer selection criteria are defined as a)technical ability (intrinsic dealer, technical quality and after sale service), b) intangible assets, (brand and dealer image& dealer-manufacturer alignment), investments to dealer image, experience with dealer, staff quality), c)Financial performance(pricing strategy, sale strategy, showroom display, strategic collaboration, Manufacturer support), d)Logistics service quality, e)Market knowledge(customization, marketing strategies, market access, market analysis), f)Relationship(relationship with manufacturer, relationship with customer, bargaining strategies, mutual trust) based on literature overview below.

Technical Ability

Intrinsic dealer (technical) quality

Intrinsic technical quality is defined as the perceived core service quality of dealers (e.g., quality of service delivery, order fulfillers, maintenance service) (Zeithaml, 1988). Intrinsic technical service quality has a positive relationship with consumers' loyalty to dealers. Dealers that are selling prestige brands need to assure high service quality, because prestige brand customers have more intrinsic quality expectations than consumers of economy and volume brand cars. The functional performance of a car increases with higher intrinsic technical quality. The functional performance is more important for economy or volume cars than more expensive cars, since functionality is the fundamental requirement while buying a car. For upper-class cars, consumers do not question functionality, assuming

that it has been certainly provided. They just think of other add-ins, added attributes while choosing them. Indeed, intrinsic technical competency of the dealer is more critical and essential factor while choosing an economy brand-car compared to higher brand cars. Thus, dealers of economy brand need to improve the functional performance of the cars. Indeed, dealer's repair performance and after-sale technical service quality gain more importance for lower-priced cars compared to expensive car brands. In contrast, dealer's new technology follow-ups and technological system knowledge will have an important role for prestige brand buyers. Dealers need to create a difference in their core technical service quality and a unique dealer-brand value perception for prestige brand customers (Verhoef et al., 2007).

After-sale service

Customer complaints at purchasing-stage or pro-purchasing may cause switching among dealers. A co-operative after-sale service has a critical effect on customer retention and loyalty with the help of an active complaint management system. Dealers should not just "add features" to themselves but also create differentiation using brand-new technology and sales strategies to compete with others. Barriers in front of the customers' complaints should be avoided or at least diminished in order to find appropriate solutions to consumers' problems. (Huber and Herrmann, 2001).

Intangible Assets

Brand and dealer image

The dealer image and reputation are closely related to evaluations of the dealer's showroom design (Grewal et al,. 2003). Consumers' perceptions about the showroom will influence consumers' choice of criteria, such as the balance between quality and price, and so their buying decisions (Baker et al., 2002). Moreover, dealer's image and reputation perceptions change based on brand characteristics like prestige or economic brands. Indeed, dealers of prestige brands should pay attention more on extrinsic quality compared to economy car dealers; if not consumers' positive attitudes through the dealer will diminish (Hsee and Leclerc, 1998). On the other hand, beside their low maintenance and service costs, dealers of economy car market should also offer a non-luxurious showroom environment and service counter to their customer staying consistent with their image (Verhoef et al., 2007). Different social activities of automobile manufacturers, like sponsorships of car racing and other sportive events, or even participation in car racing enhance also their brand image in both consumers' and stakeholders' minds (Anisimova and Mavondo, 2014).

Dealer-manufacturer alignment

Moreover, the mis-matching of the dealer with the company's ideal corporate image and culture will negatively affect commitment to dealer. The personality of a corporate brand should eliminate the intervals between internal and external identity of an organization (Ambler and Barrow 1996; Davies and Miles 1998; Davies and Chun 2002; Roper and Davies 2010). Customer satisfaction from dealer performance is influenced by mis-matching between the manufacturer's profile, brand image, management style and those of dealer. Indeed, the company's corporate values and how these values are perceived by dealers should follow and accompany each other (Anisimova and Mavondo, 2014). If not, the dealer reputation in the market will suffer (Anisimova and Mavondo, 2014). Hatch and Schulz's (2003) proposed that companies' strategic approaches and corporate culture have an important influence on brand image. As a result, brand image needs to be strengthening by

positive and co-operative attitudes of manufacturer and dealers to obtain a strong mutual corporate strategy and information flow in the supply chain. Brand image and effective co-operation between dealers and manufacturers positively affect B2B (business to business relationships) (Mudambi, 2002; Roper and Davies, 2010; Leek and Christodoulides, 2011, 2012).

Investments to dealer image

Dealer's image and reputation can be empowered with new investments for both showroom interior and exterior design interior (Akdeniz et al., 2010). The dimensions of dealer brand perception include brand image, brand personality and brand value. Corporate value of the manufacturer and perceived dealer performance are linked to each other. Indeed, manufacturers need to be aware of that their dealers are the fundamental elements of the supply chain, so manufacturers need to involve them in most of their applications and strategic decisions such as increasing advertising budget, implementing discount rate, supporting consistent information flow (Lloyd, 2004). The dealer is the ending point for pre-purchase stages like selection of alternatives, purchasing decision, and order delivery until the actual use of the car (Anisimova and Mavondo, 2014).

Experience with dealer

Prior relationship or purchasing experiences with the dealer is another important dealer selection criterion for the customer (Rust et al. 2004; Verhoef et al., 2007). Consumers' negative experiences with dealer it-self or negative experiences between the automotive company and those of its dealers diminish satisfaction from dealers (Anisimova and Mavondo, 2014).

Staff quality

New investments for education of sales people, technic personnel and complaint management services strongly influence dealer's current and prospective financial situation. As a result, the automotive company needs to pay attention in recruitment, education and continuous training of sales and technical support people (Akdeniz et al., 2010).

Financial Performance

Pricing strategy

The pricing strategy should be different based on brand criteria for prestige, economic and volume cars. High extrinsic investments in showrooms may create a perception like the dealer is not cost-effective for economy brands, since the showroom attributes and features will not be consistent with brand attributes (Miyazaki et al., 2005). Indeed, consumers may feel like they pay more than the perceived value of the chosen car. The perceived quality and the value will not intersect (meet) at one equilibrium point in their mind and that will harm dealer's reputation at the end. Extrinsic dealer quality with premium pricing strategy has smaller effect for relatively cheapest, economy cars. On the other hand, extrinsic dealer quality with higher pricing strategy, make the brand perceived more valuable by prestige brand customers (Verhoef et al., 2007).

Dealer payment equity, one of the factors used to evaluate dealer services (Bolton et al,. 2004), is the fairness of the price paid for total of goods and services by customers (Bolton and Lemon, 1999). Dealer payment equity is especially important for economy brand customers. Prestige brand consumers focus on status and image so the payment equity

seems less important for consumers of prestige brand. In addition to that, prestige car buyers are less price-sensitive, and have more willingness to pay premium prices (Blattberg and Neslin, 1990). Indeed, dealer payment equity is an important positive factor in pricing strategy for economy car dealers and vise-versa a negative factor in pricing strategy for prestige car market (Verhoef et al., 2007).

The dealers cost might be diminished by customer loyalty programs in the long term but some financial investment will be necessary to support these programs. However, it is not easy to afford these investments due to price-cutting competition among dealers so these expenses become constraints for dealers' retention. The buyers mostly make comparison among prices from dealers of the same brand, rather than the prices between different brands. One option is use of a mutually agreed price among them. If the dealer could manage prices in a systematic way using one-pricing strategy, the customer will perceive that price as the lowest possible price (Huber and Herrmann, 2001).

Sale strategy

Another approach is a distribution form with dual-channel model where the product is sold through both an e-channel and an independent dealer. In this model the dealer is free to adopt a mix of leasing and selling methods. If the manufacturer increases wholesale prices of the units sold through the e-channel to maximize its profits, this may hurt the dealer's profit. If the unit price increases, in order to compete, the dealer may implement leasing strategy to sell more cars. At that time, since most of the manufacturer's revenue come from retail sales, that time the manufacturer need to lower increased prices through internet sales for not to hurting its overall profit and to diminish number of leasing contracts. Manufacturers earn profits from two different sources; selling products through e-sales and wholesaling, retail sales using dealers. Although direct selling or e-selling seems more profitable than wholesaling in piece of product, most of the manufacturers' profit comes from wholesaling in total quantity. Indeed, manufacturers need to care certainly about the dealer's revenue, revenue from wholesaling. The manufacturer tries to diminish dealer's positive approach through leasing, and empower wholesaling aiming that the dealer will sell most of the cars via retail channel. In order to do that, the manufacturer decreases both the first-period wholesale price and the prices of units sold through internet channel, making sales from retail channel more attractive than direct selling for the customers (Xiong et al., 2012). For this reason, the dealer should have a balance between leasing and wholesaling to raise its financial stability and financial situation for its future profitability and growth rate.

Showroom display

Showroom occupancy expense is another important cue to be looked for. This expense is one of the important factors that differentiate dealers among them-selves. Similar car brands were displayed in unique and different ways in different dealers' showrooms. For this reason, showroom display has an essential role in consumers' purchasing decisions while choosing from which dealer they are going to buy (Akdeniz et al., 2010).

Strategic collaborations

Strategic collaborations create new ways to manage new car distributions by combining resources from both the manufacturer and the dealer. Strategic collaborations are required to achieve what the individual could not achieve. The car manufacturers and dealers need to work together and prepare realistic pro-forma budgets and cash-flows to

benefit from strategic collaboration in automotive industry (Mullineux, 1995). Car manufacturers more positively support dealers if the dealer could stay leaner, co-operative and supportive for both local and national marketing plans. The dealer should possess collaborative attitudes and strategies towards the car manufacturers in the long-term. Collaborative marketing helps both manufacturers and dealers to deal with easily financial constraints and struggles that hurt company's success (Omar, 1998).

Manufacturer support

Manufacturers' financial support like additional services, incentives and discounted unit prices create better manufacturer–dealer relationships in the distribution channels (Narus and Donath 2009, Wu et al., (2004) and Zineldin and Jonsson (2000). New investments, research and marketing support increases the level of achievement and quality in manufacturer–dealer working relationship (Anisimova and Mavondo, 2014, Narus and Donath (2009).

Logistics Service Quality

Distribution channels have an important role in explaining advantages in the car market, both at local and international level. Distribution channels have an important role in determination of car manufacturers' and dealers' market share. Thus, effective management of distribution channels build market share advantages, but especially for international manufacturers rather than domestic ones. Dealers are important parts of this distribution channels in the car market, both nationally and internationally. Indeed, logistics service quality of the dealers like order lead time, on time delivery, delivery reliability, and order availability, access to service channels or places should gain importance. Having established the importance of distribution networks, distribution networks play a strategic role in determining entry barriers for new and international car manufacturers (Nurski and Verboven, 2013).

Market Knowledge

Customization

New car buyers collect information mainly from dealer centric sources like sales persons, test drives, and showrooms. Managers have to orient their dealer networks to be receptive to this segment of consumers and follow updates in the market continuously. The sales people in showrooms have to be trained to provide all relevant information as quickly as possible. The market knowledge and customization based on customer characteristics is necessary based on cultural and traditional differences. For example, the influence of friends and collegues is found limited in the actual decision making stage in Indian context opposite to Western cultures since purchase decision of a car is still a family oriented behavior in India . Indeed, the retailer should know and follow-up the market in detail to learn government policies and competitors tactics (Satish and Bharadhwaj, 2010).

Marketing strategies

Dealers can obtain a higher customer loyalty at second-hand car market being reliable, accessible, consistent in order fulfillment and delivery, and technically competent. If it could be managed effectively, second-hand car selling may be even more profitable than sales of new cars. New development of competences and competitive advantages open the door to

new car markets and provide accessibility to new customer segments (Huber and Herrmann, 2001).

Market access

Automotive retail industry needs co-operative relationships depending on organizational culture and cultural changes among manufacturers and dealers in the long-term. Beside the need for relationship marketing to retain customers on hand, transactional marketing will also be necessary for customer loyalty (Huber and Herrmann, 2001).

Market analysis

Marketing strategies could be benchmarked in order to have sustainable growth and innovativeness. Dealers can identify role models and copy the marketing and financial implementation strategies of these more effectively managed dealers. The role model dealers could be identified using benchmarking data and communicate with the managers of their role model dealers. Unique marketing strategies of the dealer like marketing communication, selling at the counter, and market information management can collect all relatively important inputs under one single bundle of output. The bundle need to cover all expectations of the customer and offered as a single product with all required attributes. The importance of benchmarking has to be understood by managers. Marketing capabilities is one of the critical factors that define high yield or low yield performances among dealers. Organizational management strategy of a dealer can be empowered with strong and efficient marketing functions and always keeping its learning organization position. The automotive industry must be a learning organization that is open to newness and that learn from its competitors (Slater and Narver, 1995). Benchmarking is a powerful tool for market-based learning (Teece et al., 1997) while comparing, analyzing and even copying competitors' strategies. Benchmarking and marketing orientation create learning organizations that achieve competitive advantage in B2B markets (Akdeniz et al., 2010).

Relationship

Opinion leaders and potential opinion leaders have an important role in car. Opinion leaders enjoy more while shopping for a car, when compared to the other groups, since they lead others with their knowledge. Indeed, dealers could have separate relationship with opinion leaders, instead of sales people, to address the needs of customers. Dealers may measure personality traits on their own when a consumer comes to the showroom and categorize consumers based on this information. For example, dealers can identify consumer segments measuring their personality variables to determine potential car buyers (Cowley and Mitchell 2003). Customers differ in knowledge and expertise so communication flow must be tailored accordingly (Satish and Bharadhwaj, 2010).

Relationship with manufacturer

To possess strong post-purchase and after-sales communications with the manufacturer is extremely important for the dealer. The post-purchase and after-sales communications should stay parallel among manufacturers and dealers. To avoid any misfit in this relationship circle, and to gain the potential power which will be gained by the authorized dealer in the future, dealers should stay close to manufacturers. Dealers need to

improve relationships with their manufacturers to stay competitive during mergers, acquisitions and strategic alliances in the vertical system (Huber and Herrmann, 2001).

Relationship with customers

The dealer satisfaction depends on mostly 'soft' factors like the politeness and helpfulness of the staff. A positive perception toward the brand will also reflect this positivity to the related dealer (Huber and Herrmann, 2001). Marketing investments help manufacturers to obtain higher revenue and profit yield returns. Accessible, competent and trustable sales agents are so important to build long-term relationships with the customer. Indeed, specific investments are necessary to increase marketing activities which in turn will also increase overall sales revenue (Akdeniz et al., 2010). The increase in professionalism in sales and technic personnel, market analysis, and distribution channel management, within the context of a single point-of-contact, the dealer, empower the role of the dealer in the market (Huber and Herrmann, 2001).

Bargaining strategies

Bargaining strategies (i.e., high risk, integrative strategies) empower positive outcomes especially for dealers having conflict with their suppliers (Graham, 1986; Mohr and Spekman, 1994; Xie et al., 1998). If manufacturers desire to build and sustain long-term relationships, they need to consider all power-oriented, integrative, and no integrative resolution strategies to solve conflicts with dealers. On the other hand, Hibbard et al., (2001) found that if dealers use more constructive approaches like persuasion tactics or searching for mutually agreed solutions to solve conflicts, as response to suppliers' destructive acts, their perceived performance decrease. Thus, only required level of bargaining power should be used by dealers, not more. Sometimes conflicts are necessary to find best practical options. In general, each partner needs to learn how to manage conflict, adapt changes and minimize constraints in relationship flow (Morys, 2009).

Mutual trust

Mutual trust among partners result in strategic collaboration that cover two essential elements (Larzelere and Huston, 1980; Rempel, et al., 1985): (1) trust in the partner's reliability, which is defined as how much the partner fulfils its promises and is sincere (Anderson and Narus, 1990), and (2) trust in the partner's benevolence, which is defined as how much the partner is interested being in collaboration and will not negatively affect the strategic collaboration (Anderson and Narus, 1990). Dealers need to prefer staying collaborative with the manufacturer instead of fighting for autonomy. Kumar et al.'s (1995) found that the greater total interdependence, the greater trust and commitment in manufacturer–dealer relationships. Dealers can earn additional benefits and obtain more customer satisfaction by way of better consumer relations like devoting more time with customers at the sales counter in showrooms (Omar, 1998).

METHODOLOGY

Fuzzy AHP is used due to the inconsistency of administrators' experiences, lack of experimental data as well as miscellaneous system condition; the subjective judgments given

by the administrators are vague and imprecise. The implementation of fuzzy set theory in AHP to handle the multi-criterion problem is suitable to capture the subjectiveness and vagueness decisions. The subjective judgments, selection and preference are highly predominated the AHP result. Incorrect judgment given by the expert will degrade the decision accuracy. Fuzzy linguistic term with symmetrical triangular fuzzy number will be utilized to indicate the influence strength of the judgments in the hierarchy elements. Linguistic term approach is convenient for decision makers to express their assessment. Due to the advantages of that applicable model, some recent studies are done by Ozfırat et al. (2017) that applied F-AHP to coal transportation mode selection; Onden et al. (2017) used F-AHP to evaluate and categorize fishing ports; Jenatabadi et al. (2016) applied F-AHP to to overcome the lack of reliable estimates on the willingness of Malaysian users to pay for public transportation; Hozairi (2015) selected creative industry sector ICT suitable developed in Pesantren using F-AHP; Zavadskas et al. (2015) used F-AHP to achieve weights of criteria in a group decision-making problem.

Buckley (1985) was the first to investigate fuzzy weights and fuzzy utility for AHP techniques, extending AHP by geometric means method to derive the fuzzy weights. An evaluator always perceives the weight of a hierarchy subjectively. Therefore, to consider the uncertain, interactive effects coming from other criteria when calculating the weight of a specified criterion, we have used fuzzy weights of criteria. Table 1 represents pairwise comparison of the criteria.

Table 1. Comparison of the criteria via linguistic terms

Saaty scale	Definition	Fuzzy Triangular Scale
1	Equally important (Eq. Imp.)	(1, 1, 1)
2	The intermittent values between 1 and 3	(1, 2, 3)
3	Weakly important (W. Imp.)	(2, 3, 4)
4	The intermittent values between 3 and 5	(3, 4, 5)
5	Fairly important (F. Imp.)	(4, 5, 6)
6	The intermittent values between 5 and 7	(5, 6, 7)
7	Strongly important (S. Imp.)	(6, 7, 8)
8	The intermittent values between 7 and 9	(7, 8, 9)
9	Absolutely important (A. Imp.)	(9, 9, 9)

According to the corresponding triangular fuzzy numbers of these linguistic terms, for example if the decision maker states "Criterion 1 (C1) is Weakly Important than Criterion 2 (C2)", then it takes the fuzzy triangular scale as (2, 3, 4). On the contrary, in the pair wise contribution matrix of the criteria, comparison of C2 to C1 will take the fuzzy triangular scale as (1/4, 1/3, 1/2).

The pair wise contribution matrix is shown in Eq.1

$$\tilde{A}^k = \begin{bmatrix} \tilde{d}_{11}^k & \cdots & \tilde{d}_{1n}^k \\ \vdots & \ddots & \vdots \\ \tilde{d}_{n1}^k & \cdots & \tilde{d}_{nn}^k \end{bmatrix} \tag{1}$$

There are more than one decision maker so preferences of each decision maker $\tilde{d}_{ij}^k$ are averaged in the Eq. 2.

$$\tilde{d}_{ij} = \frac{\sum_{k=1}^{K} \tilde{d}_{ij}^k}{K} \tag{2}$$

The geometric mean of fuzzy comparison values of each criterion is calculated as shown in Eq. 3. Here, ˜ still represents triangular values.

$$\tilde{r}_i = \left(\prod_{j=1}^n \tilde{d}_{ij}\right)^{1/n}, i=1, 2, \ldots, n \tag{3}$$

The fuzzy weights corresponding to each criterion is as follows:

$$\tilde{w}_j = \tilde{r}_j \otimes (\tilde{r}_1 \oplus \cdots \oplus \tilde{r}_m)^{-1} \tag{4}$$

where is the geometric mean of each row of AHP reciprocal matrix

$$\tilde{r}_j = (\tilde{a}_{j1} \otimes \cdots \otimes \tilde{a}_{jm})^{1/m} \tag{5}$$

Measuring criteria

The evaluators were asked to make subjective judgments using linguistic variable measurement to demonstrate the criteria performance with expressions of effectiveness ranging from "very high", "high", "fair", "low", to "very low". Each linguistic variable was indicated using a Triangular Fuzzy Number (TFN) with a range from 0 to 100. Let indicate the fuzzy performance value in terms of evaluator k toward strategy i under criteria j and the performance of the criteria is represented by the S, then,

$$\tilde{E}_{ij}^k = (L, M, U), j \, S \tag{3}$$

In this study, we used the notion of average value to consolidate the fuzzy judgment value of m evaluators, i.e.,

$$\tilde{E}_{ij}^k = (1/m) \, (\tilde{E}_{ij}^1 \oplus \tilde{E}_{ij}^2 \oplus \cdots \oplus \tilde{E}_{ij}^m) \tag{4}$$

The sign denotes fuzzy multiplication and the sign denotes fuzzy addition. is the average fuzzy number from the judgment of the decision-maker. It can be represented using a triangular fuzzy number as follows:

$$\tilde{E}_{ij}^k = (L^{\tilde{E}_{ij}^k}, M^{\tilde{E}_{ij}^k}, U^{\tilde{E}_{ij}^k}) \tag{5}$$

where,

$$L\tilde{E}_{ij}^k = (1/m)\left(\sum_{k=1}^m L\tilde{E}_{ij}^k\right)$$

$$M\tilde{E}_{ij}^k = (1/m)\left(\sum_{k=1}^m M\tilde{E}_{ij}^k\right) \tag{6}$$

$$U\tilde{E}_{ij}^k = (1/m)\left(\sum_{k=1}^m U\tilde{E}_{ij}^k\right)$$

The preceding end point value solved using the method introduced by Chiu et al. (2006).

Fuzzy Synthetic Decision

The weight of the different criteria and the fuzzy performance value needs to be operated using fuzzy integral techniques to generate the synthetic performance of each strategy within the same dimension.

Furthermore, we have calculated the synthetic performance of each alternative strategy using different values. Additionally, the fuzzy synthetic performance is conducted by a simple additive weight method assuming the criteria are independent in a fuzzy environment. Since each individual criterion is not completely independent from the others, we use the non-additive fuzzy integral technique to find the synthetic performance of each alternative, and to investigate the order of the synthetic performance of different values.

The result of fuzzy synthetic decisions reached by each alternative is a fuzzy number. It is therefore the non-fuzzy ranking method for fuzzy numbers that must be employed in order to compare the various strategies. In previous works the procedure of de-fuzzification had involved the location of the best non-fuzzy performance (BNP) value. The methods for defuzzified fuzzy ranking generally include the mean of maximum, center of area (COA) (Zhao and Govind, 1991; Opricovic and Tzeng, 2003).

We utilize the center of area (COA) method in this paper to rank the order of importance of each strategy. The BNP value for the fuzzy number can be found using the following equation:

$$BNP_i = [(U\tilde{R}_i - L\tilde{R}_i) + (M\tilde{R}_i - L\tilde{R}_i)]/3 + L\tilde{R}_i \qquad (6)$$

In order to demonstrate the practicality of our proposed method of enhancing the performance of mutual funds, we conducted an empirical study based on a total of 68 valid samples from 10 Turkish dealer companies. The dealer selection criteria weight process is examined below. By using the fuzzy AHP method the weights of the issues and aspects were found and are shown in Table 2.

Estimating the Performance Matrix

In this study, the evaluators define their individual range for the linguistic variables employed in this study based on their judgments within the range from Table 1. The fuzzy judgment values of different evaluators regarding the same evaluation criteria are averaged. In general, fuzzy addition and multiplication were used to retrieve the average fuzzy numbers for the performance values under each criterion indicated by the evaluators for mutual funds strategy.

Evaluation and prioritization of dealer selection

The empirical evidence in this paper indicates that the weight of criteria such as financial performance (0.034), intangible assets (0.026), logistics service quality (0.021), technical ability (0.019), and market knowledge (0.016) are all general key factors. So the financial performance was the most important factor to influence the dealer selection, next was the intangible assets. When we consider details we see that among those criteria strategic collaboration, brand and dealer image, and distribution channels have more influence on dealer selection process (see Table 3).

Table 2. The weights of dealer selection criteria

Criteria	Local weights	BNP of overall weight	Normalized weight
Technical ability	(0,036 0,177 0,219)	0,144	0,019967
Intrinsic dealer (technical) quality	(0,121 0,278 0,311)	0,237	0,032862
After-sale service	(0,209 0,346 0,401)	0,319	0,044232
Intangible assets	(0,098 0,187 0,292)	0,192	0,026622
Brand and dealer image	(0,308 0,502 0,654)	0,488	0,067665
Investments to dealer image	(0,136 0,399 0,452)	0,329	0,045618
Experience with dealer	(0,122 0,368 0,422)	0,304	0,042152
Staff quality	(0,209 0,346 0,401)	0,319	0,044232
Financial performance	(0,111 0,244 0,398)	0,251	0,034803
Pricing strategy	(0,090 0,143 0,244)	0,159	0,022047
Sale strategy	(0,085 0,122 0,216)	0,396	0,054908
Showroom display	(0,268 0,411 0,699)	0,459	0,063644
Strategic collaboration	(0,316 0,511 0,749)	0,525	0,072795
Manufacturer support	(0,199 0,307 0,487)	0,331	0,045896
Logistics service quality	(0,090 0,164 0,211)	0,155	0,021492
Distribution channels	(0,234 0,412 0,712)	0,453	0,062812
Market knowledge	(0,062 0,104 0,183)	0,116	0,016084
Customization	(0,179 0,344 0,498)	0,340	0,047144
Marketing strategies	(0,146 0,322 0,465)	0,311	0,043123
Market access	(0,085 0,122 0,216)	0,396	0,054908
Market analysis	(0,098 0,187 0,292)	0,192	0,026622
Relationship	(0,096 0,125 0,199)	0,14	0,019412
Relationship with manufacturer	(0,135 0,321 0,386)	0,281	0,038963
Relationship with customers	(0,064 0,101 0,168)	0,111	0,015391
Bargaining strategies	(0,026 0,088 0,102)	0,072	0,009983
Mutual trust	(0,098 0,187 0,292)	0,192	0,026622
Total			1,000000

Table 3. The Ranking of dealer selection criteria

Criteria	Weight	Rank
Strategic collaboration	0,072	1
Brand and dealer image	0,067	2
Distribution channels	0,062	3

Due to the findings applied F-AHP model present an over ranking sorting. According to decision makers' general assessment result present strategic collaboration criterion has an important role while considering automobile dealer selection. Besides those results following criteria which are brand and dealer image, and distribution channels have a considerable important effect on dealer selection.

DISCUSSION of RESULTS

First of all, well-designed and executed, strategic collaborations can help expand the customer base, develop new sources of funding and cut costs without compromising any

partner's missions or quality, Car dealers also believed that it can help dealership organizations fund new showroom expansion. By combining various administrative functions, overheads and expenses, dealerships can realize economies of scale. Model presentation, distribution, marketing, dealing with customers and improved sales volumes are similar challenges for both dealers and manufacturers. Consolidating these functions within the manufacturer and dealership organizations can lead to better quality as well as lower costs. Collaboration has allowed several car manufacturers, such as the Ford Group, BMW, Honda and Daewoo, to reduce their administrative costs and allowed dealer representatives to earn additional income by providing car management services.

Secondly, when aggregated dealer perception of a corporate brand deviates from the company perspective, this will significantly and negatively influence dealer satisfaction and commitment. Organizational leaders should strive for alignment within corporate branding by tracking the character of the supply-chain relationship and monitoring for discrepancies between corporate and dealer perspectives. A dynamic field of cooperating objectives should exist between car manufacturers and dealers which is beneficial to both manufacturers and dealers. Since the aim in strategic collaboration is to create a new way of managing new car distribution by combining resources. This strategy enables both the manufacturers and dealers to reduce financial burden through efficiency. If car dealers who make car marketing decisions can agree on the usefulness of satisfaction as a performance measure, the profitability of cooperative efforts between the partners will improve significantly. The manufacturers in conjunction with their dealers should not enlarge the marketing territories and avoid overlaps.

Third, logistics and technical service quality gain importance. Managers could also consider providing more detailed technical and product related information on their Website. Since personality variables are important in segmenting consumers, managers may also want to begin measuring consumers' personality traits. Managers would need to devise different communication strategies for each different customer segments. Effective management of ongoing conflict issue situations requires organizations in manufacturer-supplier–dealer channel relationships to focus on building and maintaining compatible goals in order to strengthen bonds between them. Managers need to ensure the alignment between internal corporate values that manufacturer keeps internally and the values accepted at dealerships. In addition to that, discrepancies between the managerial vision and stakeholder views indicate major sources of problems to the brand performance and require alignment. Another insight for the marketing managers to yield higher returns can be enhancing relationships with customers through establishing technical knowledge management processes, effective complaint management processes, and interpreting customer satisfaction levels in addition to measuring them. Managers should translate and embed the results of their performance measures into their marketing strategy and relationships with the customers.

CONCLUSION

A specialized subject of car dealership selection criteria ranking is one of the important tasks for automobile dealers. Since determining most important criteria will make processes better. In this study Fuzzy Multi Criteria Decision Making approach as Fuzzy Analytic Hierarchy Processes used to demonstrate decision makers' preferences depend on mostly used criteria. Because of vagueness of linguistic variables, a fuzzy set theory conducted. With

respect to referenced criteria "strategic collaboration" criterion outperforms the other criteria.

In further studies, other multi criteria decision models such as ANP, ELECTRE, VIKOR, and PROMETHEE can be applied for the same problem and results can be compared. In addition, new criteria can be obtained with Delphi Method with different decision makers.

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