Iran University of Science and Technology

Automotive Science and Engineering

Journal Homepage: ase.iust.ac.ir

ISSN: 2008-9899

Investigating factors influencing the offer of motor oil brands by Iranian auto services using a fuzzy Delphi approach

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ARTICLE INFO

Article history:

Received : 25 May 2023

Accepted: 15 Sep 2023

Published: 5 Oct 2023

Keywords:

Engine oil

Auto service

Fuzzy Delphi

Brand

A B S T R A C T

The general public considers auto service operators to be experts in their work, and they use their advice and guidance when changing the oil. Therefore, due to the importance of this issue, during applied research conducted in a mixed (quantitative and qualitative) manner, an attempt was made to identify and prioritize factors affecting the offer of motor oil brands by Iranian auto services using the fuzzy Delphi technique. In terms of the research method, this research is considered descriptive-survey research, and its statistical population includes all the operators of Iranian auto services. The statistical sample of the research consists of 36 Iranian auto service operators who were selected as a cluster from all over Iran. In the following, after collecting data through semi-structured interviews and questionnaires and analyzing the information, it was determined that the engine oil quality factor is the most important in introducing the engine oil brand by the auto services, according to the experts present. Also, after the quality of the engine oil, the two factors of matching the engine oil with the technical specifications of the car and the timely delivery of orders from the manufacturing companies were placed in the second and third ranks of importance, respectively.

1. Introduction

In today's world and with the advancement of management science, we see that marketing research plays a more colorful role in managers' decision-making and has gained a particular position among managers so that many companies are familiar with the thinking. Modern marketing only designs its strategic plans after conducting marketing research. It should be known that one of the competitive advantages that some companies have is the positive attitude of customers towards them [1]. This issue will only be achieved with effort, especially in today's commercial world, where the culture of consumers has changed. We no longer see their boundless loyalty to a particular brand [2], and with the slightest dissatisfaction with the products, they abandon that brand and

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https://doi.org/10.22068/ase.2023.648

[DOI: 10.22068/ase.2023.648]

choose another. This issue has led various companies to strengthen their marketing structures and conduct as much research as possible in this field. Today's marketing issue is considered a practical area for all businesses and should be viewed as a standard process and concept for all personnel and not a theoretical concept [3]. Nowadays, marketing cannot be considered within the scope of the duties of a specific person, but all people engaged in the product sales chain participate in it. For this reason, today's companies try to involve all the people active in their sales chain in marketing.

In today's world, there is always fierce competition between different companies to maximize their share of the consumer market, and they are trying to introduce more customers to their products in different ways and add them to their loyal customers. Our country's motor oil is no exception to this, and the big motor oil producers of our country, which include Iranel, Sepahan, and Pars brands, in addition to the problematic competition they have with each other, compete with the global brands Alf, Castrol, Shell, Total, and... In the meantime, one of the most influential factors in gaining customer satisfaction is the benefit of a robust sales chain, and the role of retailers in introducing and selling different products and brands is undeniable. It is more practical. In Iran, it is estimated that there are more than 38,000 auto service centers serving customers, and their role in providing advice to customers on the use of motor oil cannot be ignored; it can even be safely said that it is the main component in choosing an oil brand. The motor from the customers is the advice given to the customers by the employees and officials of these auto services. Although the role of extensive advertising in choosing the brand of motor oil used by the customers cannot be ignored, since the different communities of the auto service employees are considered experts in their field of work, in some cases, their approval or disapproval even affects the advertisements. Despite what is expected in the world, car manufacturers are considered one of the critical factors in the field by introducing a particular type or brand of engine oil for use in their products. Still, this issue is sporadic in Iran, except for the choice of engine oil. No significant relationship has been observed with other cars from the owners of the Renault family cars.

In research that was conducted to investigate the effect of the manufacturer's logo on the choice of retail stores, it was found that the use of the motor oil manufacturer's logo (as a related sign) significantly affects the choice of retail stores [4]. Therefore, according to the proof of the role of motor oil brands in the selection of retail stores, which may be due to their reputation in any field (quality, price, proper performance, etc.), One of the factors that affect the image of retailers in the minds of customers is the image of the brands that are sold in that store. Now, it can be concluded that the reputation factor of the motor oil brand in its introduction by auto service employees is close to the mind; however, it is clear that the employees working in auto service with different motivations promote or introduce a particular brand. They use engine oil.

Now that we have realized the importance of car oil retailers (auto services) in introducing and selling different brands, we must identify and rank the factors affecting these retailers' introduction of other brands. Most customers do not want to change the type and brand of engine oil they use over time for a particular car. (It is thought that changing the engine oil brand harms the engine's helpful life.) Therefore, according to this issue, being chosen by the customer change the oil for the first time after buying a car from him has a significant effect on his loyalty to the brand because after that, convincing the customer to change the brand of used oil on his part is a matter of importance. It becomes tricky and impossible except by spending much time and money. For this reason, this research has tried to identify and prioritize the factors influencing the introduction of motor oil brands by Iranian auto services.

2. Approach

Due to the novelty of the research subject, not much research has been done in Iran and around the world in this field, so it is almost impossible

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to obtain research backgrounds in this field. But if we see the process of selling motor oil in the form of three rings of manufacturing companies, auto services, and consumers, we can find research by Mahmoudi (2021) and Ghadri (2014) focusing on the two initial and final rings (producers and consumers). As will be mentioned in detail later, they identified the factors affecting the sale of motor oil from the point of view of experts working in manufacturing companies and drivers as the final consumers of motor oil.

Rasool Mahmoudi conducted research on the purchase of motor oil by customers in the thesis of his master's course with the topic of evaluating the factors affecting the purchase decision of customers using the fuzzy AHP multi-criteria decision-making technique (a case study of the motor oil industry). Mahmoudi went to eight motor oil-producing companies in Golestan and Isfahan provinces to collect the information he needed and considered nine experts and managers of these companies as his research experts. After going through the research and data analysis stages, he concluded that among the five identified, each of which had its sub-branches, purchasing in the motor oil industry occupies the first place of importance. After that, operational (after purchase) and decision-making management occupy the second and third ranks, respectively.

In 2014, a thesis was submitted on identifying and prioritizing factors affecting the choice of engine oil in Isfahan using the AHP technique. It was written by Ghadri [5]. As it is clear from the title of this thesis, he identified and prioritized these factors for the producers of this product, considering the necessity of knowing the criteria and priorities of consumers in purchasing motor oil. In the first step of this research, 20 factors were identified, among which nine were classified into five main groups, and at the end, the following results were announced as the output of the research:

The quality factor has the most influence, with a weight of 0.52.

The price factor, with 0.25, was ranked second most influential.

The third place, with a weight of 0.08, is assigned to the distribution factor.

The fourth rank belongs to the packaging agent, with a weight of 0.07.

Ultimately, the most influential factor is advertising, with a weight equal to 0.06.

Saberifar and his colleagues (2023) used the fuzzy Delphi method in their research to identify and evaluate suppliers based on traditional, pure, and agile criteria and rank them in the SAIPA company. By reviewing their research literature, they first identified the following criteria for traditional, lean, and agile vital criteria. Then, with the help of their statistical community, which included 30 experts and managers of Saipa Company, they identified 17 effective measures in this company. Through the fuzzy Delphi method, they were considered to continue the research. In the end, they found out that the agility criterion is ranked first in importance in the general ranking of the main criteria, and the pure and traditional standards are placed in the second and third ranks, respectively. Also, in the examination of the sub-criteria, it has been determined that the cost sub-criterion in the traditional criterion, the waste elimination sub-criterion in the Nabi criterion, and the flexibility sub-criterion in the agility criterion have the highest degree of importance among the sub-criteria of each standard [6].

Considering the high costs, the long duration of construction and operation, and the economic, social, and environmental impact of subway construction projects, Farhadi and his colleagues (2023) researched the topic of identifying and prioritizing critical factors for success in the management of subway construction projects. They paid. They categorized their 21 identified factors into the four main branches of finance, quality, sustainability, and organization, and then, with the help of the experts present in their research, they examined and prioritized the factors. In the end, they concluded that the quality dimension, compared to the other sizes, had a more significant impact on the research topic. Also, due to the high weight of the two factors of ecological value and adaptation to weather conditions compared to other

[DOI: 10.22068/ase.2023.648]

consequences, it can be said that paying attention to environmental issues is of particular importance to the success and sustainability of the project in the long term [7.

In 2022, the Journal of Economic Research and Agricultural Development of Iran published an article in which the researchers identified and analyzed the components of developing digital marketing of agricultural products using the fuzzy Delphi technique. They focused on the market of agricultural products in Kermanshah province. In the end, by analyzing the data with the fuzzy Delphi technique, they found that 14 factors have an impact in this field after prioritizing the three factors of education and improving the digital marketing environment, the availability of Necessary facilities and infrastructure, and the development of legal frameworks were ranked first to third [8].

One of the ways that retailers increase their sales is to use manufacturer logos on their doors. In 2021, Esfidani and Yousefi tried to investigate the impact of using manufacturers' logos on customers' choice of retail stores. For this purpose, they chose motor oil auto services, responsible for retail sales in the motor oil industry, and completed questionnaires with 416 domestic auto service customers. Their findings show that using the logo of motor oil manufacturers in auto services (as a related sign) has a significant effect on the choice of retail stores by customers, but the impact of using the logo of car manufacturers (as an unrelated sign) was not confirmed in the selection of auto services. Customer satisfaction with the manufacturer's brand, loyalty to the brand, and access to the brand also increases the choice of auto services that use the manufacturer's logo.

In another study, the factors affecting the satisfaction of customers of Mobarake Steel Complex in Isfahan were investigated using the fuzzy Delphi method. The researchers concluded that despite the increase in profit and capital of the organization with credit sales, considering that the policymakers and decision-makers of the organization are very satisfied with the current gain of Foulad, They did not recognize this method as a suitable one for the group because it would not have a significant impact on customer satisfaction or customer relationship management. It was mentioned that one of the most influential factors in managing the relationship with customers and attracting their satisfaction was suggested to Foulad Complex to plan and implement effective measures in this field [9].

Milad Fafadar Sidi Nesl (2014), in his thesis to achieve a conceptual model for determining the export marketing model in the oil industry, presents a model called export marketing using SRM structural equations. In its preparation, the effect of five management variables, part classification, strategy, focus, and marketing mix, has been measured on export performance. His research findings show that out of the five variables measured, three variables, segmentation, mix, and marketing management, have direct effects. In order of importance, two variables, strategy and marketing environment, indirectly impact producers' export performance [10].

In a study, Farahmand and his colleagues (2012) investigated the factors affecting the development of the saffron market using the fuzzy Delphi method. These researchers found that the three elements of e-commerce, packaging, and brand name play a decisive role in increasing the sales of saffron domestically and abroad from the country. Of course, these researchers found obstacles for each of the above cases, the most important of which is the need for high investment in packaging, the lack of high advertising, the holding of specialized exhibitions to identify the brand names of saffron suppliers, and the lack of responsibility doctrine. Madani pointed out economic losses in the e-commerce sector [11].

Torres Vergara and his colleagues (2023) identified and evaluated the practical criteria for the flexibility and stability of the supply chain in a research study. By studying previous research and with the help of experts (Fuzzy Delphi method experts), they identified 15 criteria classified into four dimensions of resilience: economic, environmental, and social. After collecting and examining data, they found that visibility, flexibility, supply chain risk

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management, working conditions, and communication have the most impact [12].

Commercial markets are constantly changing and fluctuating, so research on the relationship between sustainable product criteria and consumer decision-making has been significantly developed. In one of these studies, Lee and his colleagues (2021) investigated the purchase of clothes using the fuzzy Delphi method. After they selected 15 people who had been working in the garment industry for seven years, according to the opinions of experts and the previous literature, they chose criteria for review, which were determined after the views of experts and data analysis. The two measures of price and quality have the most excellent effect on consumers' choices. Also, the results of their research showed that the criterion of environmental concerns had the most negligible impact on consumers [13].

In today's era, consumers have started using organic or green products due to a change in their lifestyle. In the meantime, the sellers have taken more steps to meet this need of consumers. For this purpose, Ben Mabrouk conducted research in 2021 to identify and rank the factors affecting the selection of suppliers of green materials using the fuzzy Delphi technique. With the help of his experts, he identified 24 criteria and classified them into five categories: technological performance and ability, environmental management, pollution control, quality, and service [14].

With progressive globalization and market dynamics, the business environment is becoming more turbulent than ever, and constant changes in technology, demand fluctuations, the emergence of new business models, and the Internet pose more challenges for businesses to achieve sustainable growth. This ongoing turbulence and rapid changes in the external environment have forced the business sector to be more agile and flexible. Customers also want to be able to choose specific products and services based on their needs. Therefore, providing flexible services to customers has become a significant task for service providers, especially in online sales, where competition is fire needs to bed there is no direct interaction with the customer. Therefore, to design a framework for online sales flexibility using a hybrid method, i.e., a combination of fuzzy theory and the qualitative Delphi method with data collected from non-probability sampling methods and a survey of experts [15].

Although extensive research has been done in marketing, research has yet to be done on the impact of auto services on motor oil sales. This is one of the few studies conducted on the factors affecting the sale of motor oil. It is research conducted by Khan Jiao and his colleagues in Vietnam in 2018 on the factors influencing the sale of Amalie motor oil in this country. In this research, these researchers found the five factors of quality: price, store, place of purchase, method, and delivery time. The goods and human resources of stores (sellers) are the most critical factors in selling this motor oil in Vietnam. However, these researchers stated that quality and price are far more crucial than other factors in customers' purchase decisions [16].

As mentioned before, no specific research has been done on the middle link of the motor oil sales process (auto services), so it can be said that the missing link of scientific research in the field of motor oil sales is research on the factors affecting oil sales. From the point of view of auto service operators, the engine plays a very decisive role in the sale of this product. Therefore, in this research, we tried to fill this research gap so that manufacturing companies can make better decisions in the field of their strategic sales plans using the results of this research.

3. Method

This research was conducted in a mixed (quantitative and qualitative) manner, which is applied in terms of purpose and descriptive survey in terms of method. The statistical population of the research comprises all the operators of the Iranian auto services; out of this population, 36 of these operators were selected as a sample of the study by a clustering method, and the research data was collected from them. Also, the data gathering tools are a semi-structured interview and an expert questionnaire. In the quantitative part of the research, using the

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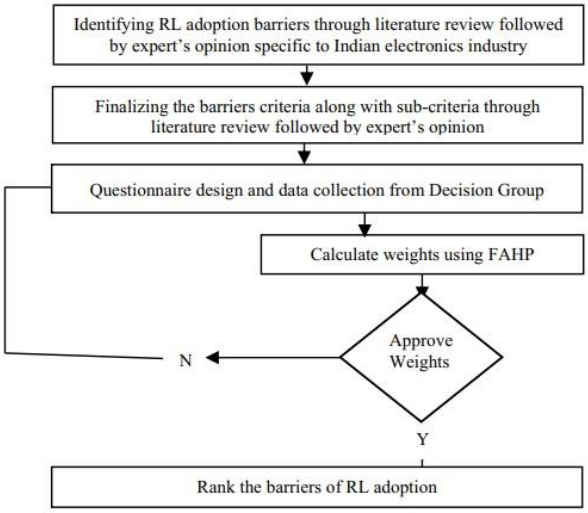
fuzzy Delphi method, the effective indicators of introducing the motor oil brand by Iranian auto services were identified and prioritized in the next step. To measure the validity of the questionnaire, the opinions of two university professors were used, and they confirmed the facts. Also, to measure the reliability of the questionnaire, Cronbach's alpha calculation method was used, and the result of the calculations is equal to 0.708, which indicates the reliability of the questionnaire.

For the first time in 1963, the Delphi method was presented by Dalkey and Helmer. Delphi is a survey method based on experts' opinions and has three main features: no need to introduce and mention the names of experts, repetition, and controlled feedback; and the third feature, statistical group response. Delphi is a systematic way to collect and agree on the informed opinions and judgments of several experts on a specific issue or topic by using a questionnaire and asking them for their views repeatedly, according to their feedback. With further investigations, it was determined that in specific and actual conditions, the judgment of experts could not be expressed and interpreted in the form of definite quantitative numbers; in other words, due to the ambiguity and uncertainty of decision makers' judgment, data, and actual numbers for modeling real-world systems are insufficient. For this reason, to solve this problem, Lotfizadeh presented the theory of fuzzy sets in 1965, which could cover the ambiguity and uncertainty in the decision-making process. In this way, Ishikawa et al. used a combination of the Delphi method and fuzzy set theory in 1993, which became known as the fuzzy Delphi method. In general, the fuzzy Delphi method and classic Delphi are very similar to each other, and the only difference is in the fuzzy It is the creation of the answers of the respondents that will define the variables qualitatively, and this is the advantage of the fuzzy method over the classical approach [17]. The current research used the fuzzy Delphi method to confirm, predominate, and prioritize indicators.

3.1 Fuzzy Delphi method algorithm

In Figure 1, we can see the implementation algorithm of the fuzzy Delphi method.



Source: [18]

Figure 1: Algorithm of the Fuzzy Delphi Method

3.2 Steps of fuzzy Delphi

Bouzon et al. (2016) [19] describe the steps of the fuzzy Delphi method as follows:

First step: a review of previous literature

Identifying the maximum influencing criteria for brand introduction by Iranian auto services by reviewing previous literature

Second step: collecting data from decision-making experts

This step itself was carried out in two separate stages. In the first stage, after identifying the criteria for introducing the motor oil brand by the auto services in Iran from the few previous researches, to make the study more comprehensive and reach the results faster, interviews were conducted with a number of the statistical samples of the investigation. Semi-structured interviews were conducted to identify more criteria. After the initial discussions with the experts present in the research, the opinions and standards raised by them were combined with the requirements specified by the previous literature review phase, and a questionnaire was prepared for distribution. Then, after confirming

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its validity, the questionnaire was distributed among the experts, and they were asked to express their opinions about the importance of each index according to the linguistic variable in Table 1. We should also know that there are different types of fuzzy numbers, such as triangular, trapezoidal, and exponential fuzzy numbers, which are used in this research due to the simplicity of understanding triangular fuzzy numbers.

Table 1: verbal expressions to confirm indicators [20 ; 21]

Linguistic term	Fuzzy number
Very low	(0 ، 0 ، 0.25)
Low	(0 ، 0.25 ، 0.5)
Medium	(0.25 ، 0.5 ، 0.75)
High	(0.5 ، 0.75 ، 1)
Very high	(0.75 ، 1 ، 1)

Third step: approval of essential criteria

This is done by comparing the acquired value of each index with the threshold value $\tilde{S}$. The threshold value is determined through the subjective inference of the decision-maker and will directly affect the number of indicators screened; there is no more straightforward scientific way to determine the threshold value. The threshold value is considered 0.7 in most research, so in this research [22], the threshold value will be deemed 0.7.

Next, the triangular fuzzy values of the experts' opinions will be calculated. After that, their fuzzy average will be calculated to estimate the standard of the views of n respondents. The calculation of the fuzzy number for each of the criteria is based on the following equations[22; 23].

$$\tilde{\tau}_{ij} = (a_{ij}, b_{ij}, c_{ij}), \quad i = 1,2,\dots,n \quad j = 1,2,\dots,m$$

$$a_j = \sum \frac{a_{ij}}{n} \quad ، \quad b_j = \sum \frac{b_{ij}}{n} \quad c_j = \sum \frac{c_{ij}}{n} \quad ،$$

In the above relationships, the indices i and j refer to the expert and the decision criteria, respectively.

Now, to obtain the final weight of each criterion, it is necessary to de-fuzzify the fuzzy numbers. There are different methods for de-phasing numbers, but in this research, we have used the simple center of gravity method, considered one of the most common methods. In this way, we will calculate the weighted average of the membership function according to the equation below [24].

$$a_j = \frac{l_j + m_j + u_j}{3}, j = 1,2,\dots,k$$

Now, it is possible to judge each criterion by calculating aj, which is a non-fuzzy number, and the result of summing up the opinions of all the experts.

The last step is choosing and determining indicators.

At this stage, by creating a list of evaluated indicators, we will compare the final weight of each of them with the threshold value. Comparing these numbers with each other, the following logic will prevail:

Suppose the value of the final weight of the index is greater than or equal to the value of 0.7. In that case, that index will remain a qualitative characteristic in the continuation of the research.

If the final weight of the mentioned index is less than 0.7, the mentioned criterion will be removed.

Determining the number of repetitions of the fuzzy Delphi method will depend on the difference in the final weight of the indicators in two consecutive repetitions in such a way that the repetition of the fuzzy Delphi stages is mentioned in the order until the difference between the calculated values of the final weight of each index and the value of its previous set is less than or equal to 0.1 [25; 26]. When this value reaches less than or equal to 0.1, it indicates the consensus of experts on the indicators and the priority of each of them.

Now, if the purpose of the research is only to identify the factors and indicators, the data analysis can be stopped at this stage, and the results reported. Still, if the study aims to identify and prioritize the characteristics, then the indicators should be ranked. For this, we first list all the arrows and the final weight obtained for each hand in the last stage of the survey of

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fuzzy Delphi experts; then, we rank them according to the importance of each criterion.

3.3 Research demography

Due to the need to investigate the research demographics, the study's demographic findings are presented in Table 2.

Table 2: Demographic findings

Age	Abundance
20-30 years	5
30-40 years	16
40-50 years	10
More than 50 years	5
History	**Abundance**
under 10 years old	7
10-20 years	15
20-30 years	10
More than 30 years	4
Education	**Abundance**
Diploma and below	22
Associate degree	6
Bachelor Degree	6
Master's degree and above	2

It should be noted that, in terms of gender, all 36 experts are men. Of course, this position is close to the mind because, in Iran, only men choose the job of auto service and engine oil change, and the number of women working in this field, if any, is a handful. Also, the cities where the experts work are as follows: Tehran, Karaj, Kermanshah, Ilam, Ahvaz, Isfahan, Yazd, Tabriz, Khorramabad, Shiraz, Rasht, Mashhad, Qom, Sanandaj, Aleshatar, Ramhormoz, Islamabad Gharb, Ivan, and Islamshahr.

3.3 Research Criteria

In Table 3, the criteria studied in the research are coded.

Table 3: Research criteria

Criterion	Research criteria
customer's request	C1
Higher profit margin	C2
Commission and cash discounts of the producing company	C3
Engine oil quality (higher grade)	C4
Advertisements (TV, newspaper, city level, etc.)	C5
Term repayment service of the producer company	C6
Timely delivery of orders from the manufacturer	C7
companies Non-cash gifts from manufacturing companies	C8
Ethics and behavior of distribution and sales personnel of manufacturing	C9
The proposal of the car manufacturer	C10
Compatibility of engine oil with the technical specifications of the car	C11
Personal interest and loyalty to a particular brand	C12
lower price	C13
Offer according to the brands available in the shop	C14
Quality and design of motor oil packaging	C15

4. Results

This research uses library and field results such as books, publications of research centers, theses, and scientific articles for definitions, concepts, and research literature. Another part of the research was carried out in field form, and the data collection tool in this part is a questionnaire and a semi-structured interview. At first, with a semi-structured interview with several experts, several indicators were identified from library sources. It was discussed with them, and with their cooperation, the final indicators for the questionnaire preparation were determined. These interviews continued until six cases were identified, and in the sixth interview, we reached theoretical saturation, and no more new factors were identified. After the initial identification of the indicators affecting the introduction of motor oil brands by auto services, these indicators (elements), which include 15 factors, were prepared in the form of a questionnaire. Then, the questionnaire was validated by two university professors with some corrections. Little was approved.

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In the next step, the questionnaire was given to the expert group members, and they were asked to express their opinions about each criterion in the form of verbal variables included in the questionnaire. After each expert expressed their opinion, their ideas were represented in fuzzy numbers, and then the fuzzy average of all the experts' opinions was calculated. The criteria were applied. The results of the calculations for the first round of the expert survey are reported in Table 4.

After checking the results obtained from the first round and comparing each factor's de-fuzzified numbers (final weight) with a threshold of 0.7, we find that 11 elements have been confirmed. Four advertising factors (television, newspaper, city level, etc.), the car manufacturer's offer, personal interest and loyalty to a particular brand, and a lower price are rejected. The rejection of these four factors means that the experts have reached a consensus that these four factors have little effect on introducing a specific brand by auto services. Therefore, at the end of this stage, these four factors are removed from the list of factors, and a new questionnaire is prepared with the remaining 11 elements.

Table 4: The results of experts' opinions in the first round

criterion	Fuzzy number	weight	Expert Consensus
C1	(0.528,0.778,0.944)	0.750	Accept
C2	(0.507. 0.750,0.917)	0.725	Accept
C3	(0.479, 0.729,0.917)	0.708	Accept
C4	(0.708,0.958,1.00)	0.889	Accept
C5	(0.299,0.521,0.750)	0.553	Reject
C6	(0.493,0.729,0.896)	0.706	Accept
C7	(0.611,0.854,0.972)	0.813	Accept
C8	(0.500,0.736,0.889)	0.708	Accept
C9	(0.735,0.771,0.910)	0.738	Accept
C10	(0.326,0.569,0.778)	0.558	Reject
C11	(0.701,0.951,1.00)	0.884	Accept
C12	(0.243,0.493,0.743)	0.493	Reject
C13	(0.333,0.583,0.806)	0.574	Reject
C14	(0.542,0.785,0.944)	0.757	Accept
C15	(0.486,0.729,0.896)	0.704	Accept

In this round, a questionnaire with 11 factors is provided to the experts, and the final weight (definite number) of each criterion is mentioned in the questionnaire provided to the experts so that the experts present in the research are informed about the weight of each standard in the previous round. At this time, the experts are again asked to answer the questions and express their opinions. Then, similar to the first round, the experts' views are analyzed using the previously mentioned relationships, and the results of these analyses are shown in Table 5.

Table 5: The results of experts' opinions in the second round

criterion	Fuzzy number	weight	Expert Consensus
C1	(0.535,0.785,0.951)	0.757	Accept
C2	(0.549,0.799,0.958)	0.769	Accept
C3	(0.493,0.743,0.924)	0.720	Accept
C4	(0.708,0.958,1.00)	0.889	Accept
C6	(0.507,0.750,0.917)	0.725	Accept
C7	(0.500,0.861,0.979)	0.817	Accept
C8	(0.500,0.743,0.903)	0.715	Accept
C9	(0.542,0.792,0.924)	0.752	Accept
C11	(0.701,0.951,1.00)	0.884	Accept
C14	(0.542,0.792,0.958)	0.764	Accept
C15	(0.500,0.750,0.917)	0.722	Accept

This time, we will compare the final weight of each of the criteria with the threshold value of 0.7, and as can be seen in Table 4, all the requirements have a final weight (definite number) higher than 0.7, so we can conclude that all identified criteria are confirmed. Now, with the end of the calculations of the second round, the difference between the final weight obtained from the analyses of the first and second rounds of each criterion should be checked. Therefore, in Table 6, the difference in the final weight of each index in the first and second rounds is mentioned.

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Table 6: The difference in final weight from the first and second polls

criterion	Weight First round	Weight Second round	Difference
C1	0.750	0.757	0.007
C2	0.725	0.769	0.044
C3	0.708	0.720	0.012
C4	0.889	0.889	0.000
C6	0.706	0.725	0.019
C7	0.813	0.817	0.005
C8	0.708	0.715	0.007
C9	0.738	0.752	0.014
C11	0.884	0.884	0.000
C14	0.757	0.764	0.007
C15	0.704	0.722	0.019

Now that the difference in the final weight of each criterion in the first and second rounds has been determined, it is possible to decide whether to continue or stop the survey of experts. Most research states that the difference between two consecutive times should be less than or equal to 0.1 to end the study of experts. Here, too, by examining Table 6, it is clear that all the differences are below 0.1, so the survey of experts can be stopped.

After stopping the experts' survey and the experts' consensus on the research subject, at this stage, it is possible to prioritize the factors affecting the introduction of the motor oil brand by the country's auto services, as identified by the group of research experts. This prioritization is based on the final weight numbers (definite numbers) obtained for each of the criteria, and each requirement with a higher actual value will be placed in a higher category. Prioritizing factors:

The results of prioritizing the criteria can be seen in Table 7.

Table 7: Prioritisation of indicators

criterion	weight	Rank
C4	0.889	1
C11	0.884	2
C7	0.817	3
C2	0.769	4
C14	0.764	5
C1	0.757	6
C9	0.752	7
C6	0.725	8
C15	0.722	9
C3	0.720	10
C8	0.715	11

4. Conclusions

One of the most significant changes in the last decade of the 20th century to improve the performance of business institutions and companies in the marketing field was the recognition of measuring customer satisfaction as one of management systems' main elements and requirements. At the beginning of the third millennium, companies realized that the changes in their business environment should also change their approach, from companies with a product-oriented approach to companies with a customer-oriented approach. They found that in the commercial market of each institution or organization, customers are one of the essential elements whose satisfaction will lead to their permanence and loyalty, guaranteeing an increase in sales and the permanence of institutions and organizations [27]. For this reason, businesses have focused all their efforts on maintaining the satisfaction of their customers.

When the customer feels that the product's features align with his expectations, this state is the same as customer satisfaction. Dissatisfaction is also a state where the defects and disadvantages of the product cause discomfort, complaints, and criticism from the customer [28]. In today's management theories, measuring customer satisfaction has become an effective tool for controlling the overall performance of companies, which can help organizations identify their weaknesses and try

[DOI: 10.22068/ase.2023.648]

to fix them, as well as the possibility of identifying economic advantages based on time conditions that the company provides [29]. Therefore, there is no doubt that it is correct to pay attention to customers' needs and try to meet them with the highest quality. In this research, an attempt was made to identify factors affecting the satisfaction of car service operators, the largest customers of motor oil-producing companies in Iran, to provide the basis for the sales of these companies as much as possible.

In the current research, after studying the previous literature, several factors affecting the introduction of a particular brand of motor oil by car service operators were identified, and to complete these factors, semi-structured interviews were conducted with the experts present in the research until theoretical saturation was reached. In the end, 15 factors were identified and given to all experts as a questionnaire. At the end of this research, which was conducted using the fuzzy Delphi method, after analyzing the data, the researchers found that 11 factors were influential in introducing a particular brand of engine oil by Iranian auto services. After prioritizing the factors (indices), it was determined that the quality of engine oil was identified as the most critical factor among the eleven factors from the point of view of the experts participating in the research. Also, after the quality factor of engine oil, the elements of compatibility of engine oil with the car's technical specifications and timely delivery of orders from the manufacturer are in the second and third ranks of importance, respectively.

Qadri (2014) and Mahmoudi (2021), in different research studies, identified and prioritized the influential factors in choosing motor oil using the AHP technique and concluded that the quality of motor oil is the most critical factor that affects the customers' decision to buy a particular brand. In 2018, Khan Jiao and his colleagues found that the quality, price, store of purchase, method and time of product delivery, and human resources of stores (sellers) are the most critical factors in the sales of Amalie motor oil in Vietnam. As it is known, the current research results are consistent with the results of previous similar studies.

5. Suggestions

Several suggestions are presented to the motor oil-producing companies to benefit as much as possible from the research results.

- ✓ Considering the great importance of quality from the point of view of research experts, it is recommended that companies producing motor oil place more emphasis on quality control, the use of high-quality raw materials, the updating of production equipment, the use of modern knowledge, and the use of capable human resources. Experts and measures like this have improved the quality of their products as much as possible to take a larger share of the country's motor oil consumption market due to the higher rate compared to other competitors' products.
- ✓ Another critical point is the timely delivery of customers' orders. According to the experts present in the research, this issue is so essential that contrary to the researcher's initial idea, it was ranked higher than factors such as commissions and cash and non-cash gifts distributed by the manufacturing companies. Therefore, manufacturing companies should consider two essential points in this field. The first point is to determine the acceptance rate of their orders based on their production capacity to prevent the creation of a commitment greater than the production capacity and the subsequent delay in the delivery of orders. The second point is to pay attention to expanding our distribution network and creating regional warehouses to increase the speed of delivery of orders and reduce the costs of transporting goods.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

[DOI: 10.22068/ase.2023.648]

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