



Designing a Curriculum Model for After-sales Service of the Automobile Industry in Iran

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Purpose: After-sales service includes a wide range of services and provides the basis for a long and easy use of the product. The present study was conducted with the aim of designing a curriculum model for after-sales service in the automobile industry in Iran.

Methodology: This was a mixed exploratory study (qualitative and quantitative). The research population in both the qualitative and quantitative sections were the CEOs and after-sales service assistants of the automobile industry, training managers and technical experts of the automobile industry, and according to the principle of theoretical saturation, 18 of them were selected as a sample using the snowball sampling method. The research tools were demographic information form and semi-structured interview with experts, the data of which were analyzed in the qualitative part with open, central and selective coding method in MAXQDA-10 software and in the quantitative part with exploratory factor analysis method in Smart PLS-3 software.

Findings: The findings showed that the after-sales service curriculum model of the automobile industry in Iran had 61 indicators in 6 categories of efficient and effective management, skilled and trained human resources, use of new technologies, training development, evaluation and customer satisfaction. Other findings showed that the after-sales service curriculum model of the automobile industry in Iran has 57 items (removal of 4 items due to factor loading less than 0.40) in 6 factors of efficient and effective management, skilled and trained manpower, use of new technologies, It was the development of training, evaluation and customer satisfaction. The validity of the factors based on the factor loading was higher than 0.60, the convergent validity was higher than 0.50 and the average variance extracted was higher than 0.70, and the reliability was higher than 0.80 with Cronbach's alpha method. In addition, the 6-factor model of the after-sales service curriculum of the automobile industry in Iran had a good fit and the effect of the said model had a direct and significant effect on all 6 factors ($P < 0.05$).

Conclusion: Managers and planners of the automobile industry and its after-sales services in Iran can use 6 categories of efficient and effective management, skilled and trained manpower, use of new technologies, training development, evaluation and customer satisfaction to improve the after-sales service curriculum. car industry to use.

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1. Introduction

Today, the adoption of effective and operational policies is the first step to smooth and achieve the desired goals in various industries, especially the automotive industry. The strategic automotive industry is the largest industry in the world and the second major economic activity after banks; So that the automobile industry has become the basis of national industries and can show the overall level of industry production (Kooshan and Ebrahimi, 2021). One of the most important industries that faces various challenges in the automotive supply chain is the automotive industry. Car production is an energetic and complex process and consumes considerable raw materials and water. In order to maintain the competitiveness of the main car equipment manufacturers, by continuously improving their production process and moving towards less carbon emissions and increasing sustainability, they are trying to provide products with better quality to customers (Aminpour, Irajpour, Yazdani and Mohtashami, 2020). The automobile industry is considered one of the most important economic sectors of most countries and plays an essential role in the growth and development of countries, and according to some experts of this industry, it is the most important driving force of economic development in the 20th century (Xiao, Zhou YDeng and Gu, 2020). Now in Iran, the automobile industry as a driving industry plays a fundamental role in activating its upstream and downstream industries, therefore this industry is a strategic industry and has a special importance and position, so that it is considered one of the largest industries in the country after the oil industry (Toudehrousta, Heidary, Pourezzat and Albadvi, 2020). The goal of all industries, including the automobile industry, is to provide high-quality products and products that satisfy customers, and all manufacturing industries seek to gain a sustainable competitive advantage (Mohaghar, Asgharzadeh, Ghodsypour and Samarrokhi, 2021).

One of the main parts of the automobile industry is its after-sales service department, based on which customer satisfaction and service delivery are the most important issues of the day related to the automobile industry. Because customer satisfaction is the reason for the durability and survival of manufacturing companies, and many large car companies chose the slogan of serving customers for their after-sales service department (Sharj Sharifi, 2011). Service quality and customer satisfaction are two factors that determine long-term business success, and these two factors, especially customer satisfaction, which is somewhat dependent on after-sales service, increase customer loyalty (Qin, Shao and Jiang, 2020). In some goods, providing services to customers and consumers does not end with the sale of goods, but after-sales services come to the customer's aid and complete the sale. Today, after-sales service is a profitable business, and consumers are looking for products whose manufacturer provides more after-sales service (Farouk, Sadok and Nidhal, 2022). Experts believe that protecting the rights of consumers and being customer-oriented is the key to the survival of suppliers of goods and services, and paying attention to after-sales service is one of the important criteria for the life of any company. In many countries, car manufacturers earn most of their income from after-sales services. Therefore, by assessing the needs of the customers' expectations and correcting them in the dealerships, it is possible to increase the satisfaction of the customers from the after-sales service agency and lead to the creation of profit in the dealership. In general, today the world has come to the conclusion that in the automobile industry, about 4% of the income is from the sales area and about 60% of the income is from the after-sales service area of cars (Ebrahimi Sadrabadi, Seyedesfahani and Kimiagari, 2018). After-sales service is the service provided by the manufacturer after the sale of the product in order to gain the confidence and satisfaction of the customer; So that these services include transportation, installation and commissioning, maintenance, provision and distribution of spare parts, training documentation, how to use, guarantee, etc. (Rebelo, Pereira, Silva, Ferreira, Sa and Mota, 2021). In other words, after-sales service is all the things that the company does after selling the product in order to satisfy customers and help them get the most value from the products or services they bought (Chen, Hu and Wei, 2017). Car after-sales services are properly and fully implemented when every buyer benefits from after-sales services in the best and most convenient way possible. Therefore, the development of authorized agencies, the use of diverse and effective methods in the provision of services and the increase

and improvement of the quality level of services along with the reduction of the price of its provision can be among the issues that are effective in the development of after-sales services (Kato, 2021). Good quality after-sales service leads to longer customer relationships and patronage, and in addition, they recommend others to go there. In fact, after-sales service and customer support seem essential for greater satisfaction and building a long-term relationship to gain competitive advantage (Murali, Pugazhendhi and Muralidharan, 2016).

One of the most effective elements in after-sales services in any industry, including the automotive industry, can be the curriculum element. Curriculum is one of the most challenging and controversial theoretical topics in the fields of knowledge, which is considered an important factor in education (Ja'afari Sani, Pak Mehr and Eslamian, 2013). The purpose of curriculum in industrial education is to design a curriculum to create the way of thinking and physical and mental skills needed in employees for industry (Keshavarzi and Rahgozar, 2010). Determining the appropriate point of view or points of view of the curriculum is the result of a deep study of the philosophical and theoretical aspects of the curriculum and aligned with the goals. Varagnolo, Formentin and Rasheed, 2022). Curriculum products and services represent the results and consequences of the curriculum process, which may lead to the examination of limited and short-term products and services or extensive and long-term effects and results (Keiper, Donovan and DeVries, 2018). A curriculum can be done in ten stages, which are: identifying the need, determining the learning outcomes, agreeing on the content, organizing the content, deciding on educational strategies, deciding on learning methods, preparing assessment methods, curriculum communication, promoting an appropriate educational environment. and the management of the educational program that an independent group should be responsible for standards and quality assurance (Johnson, Rastetter and Olayiwola, 2022).

Few researches have been done about the after-sales services of the automobile industry in Iran, and no research has attempted to design a curriculum model for it, but the following researches can be mentioned from the most important research results.

Heidariyeh, Hemati and Razaghi Haris (2014) conducted a research on the evaluation pattern of factors affecting customer satisfaction with after-sales services in Iran's automotive industry and concluded that the effective factors include accessibility and access time, politeness and behavior of employees, cost or price. Service, cleanliness and neatness, the quality of the service were prioritized, the way the staff dealt with it, and they were polite at the promised time.

Safarzadeh and Mahmoudi (2010) conducted a research on the factors affecting customer satisfaction with sales and after-sales services in Saipa manufacturing companies and concluded that six factors include the behavior of employees and customer service, how prices are determined, and payment terms. , the process of exchanging information between customers and sales agents, the characteristics of the location and interior space of the dealerships, car delivery services, follow-up and actions after delivery, and the geographical location of the dealership were identified.

Karami (2010) conducted a research on the application of problem-based curriculum in the specialized training of production operators in the automotive industry and concluded that the use of a problem-based curriculum approach in industrial training increases the effectiveness of training courses, and regarding the components of effectiveness, the results showed that learners in the problem-based learning group were satisfied More, they had a more positive attitude, better learning and more competent performance change compared to the learners of the subject-oriented group.

Regarding the importance and necessity of the present research, it can be said that after-sales service in any industry, including the automobile industry, plays an important role in increasing the use of that industry and encouraging others to use it. Therefore, it is necessary to design an after-sales service curriculum model in the automotive industry so that specialists and planners can take effective steps to improve after-sales services in order to create a competitive advantage for the organization. One of the existing gaps that caused the topic to be proposed in the mind of the researchers was that after-sales service is very important in

every industry, but little research has been done about after-sales service in Iran's automobile industry, and no research has been done to design a curriculum model. As a result, the researchers of the present study tried to fill this gap and research about it. As a result, the present study was conducted with the aim of designing a curriculum model for after-sales service in the automobile industry in Iran.

2. Methodology

This study was applied in terms of purpose and exploratory (qualitative and quantitative) in terms of implementation method; So that qualitative content analysis was used in which qualitative content is transformed into quantitative content during manipulation. The research population in both the qualitative and quantitative sections were the CEOs and after-sales service assistants of the automobile industry, training managers and technical experts of the automobile industry, and according to the principle of theoretical saturation, 18 of them were selected as a sample using the snowball sampling method. In the snowball sampling method, researchers first selected some of the experts they knew as a sample if they had the conditions to enter the study, and then asked them to introduce other experts to the researchers. The conditions for entering the present study included at least 3 years of work experience in the position of managing director or deputy managing director in the field of car after-sales services, experience in relevant units such as educational managers, experts and technical staff, and at least a bachelor's degree.

Research tools included demographic information form and semi-structured interview with experts. The demographic information form included questions about position, age, gender, degree, field of study, and relevant work experience. The interview was semi-structured, the questions of which were designed with the help of professors and based on the theoretical foundations related to the current research. The interview included a number of main questions and a number of sub-questions, the main questions were asked to all the interviewees, but only some sub-questions were asked to each of the interviewees, and the purpose of the sub-questions was to guide the interviewees so as not to deviate from the framework of the main questions. The average duration of the interview with each of the experts was 50 minutes, and before conducting the interview with the experts, necessary arrangements were made with each of them regarding the place and time of the interview, and the conditions of the interview, including the recording of the interviews, after stating the importance and necessity of the research. And the commitment of the researcher to comply with ethical points was explained to them. The validity of the interviews was confirmed by the triangulation method and their reliability was calculated by the agreement coefficient method between two coders at 0.79.

The process of conducting the research was as follows: first, the theoretical foundations of the subject of the current research were studied and questions were designed for interviewing experts with the help of professors. In the next step, the samples were identified, and the samples were also asked to introduce other experts to the researchers, and this process continued until the research reached theoretical saturation. It should be noted that after conducting an interview with the 16th person, the research reached saturation, but to ensure the saturation was achieved, an interview was also conducted with 2 other people, and accordingly, the sample size was 18 people. After the completion of the interview, the interviewees were thanked and the data was prepared to be entered into the computer. The data obtained from the implementation of the demographic information form and semi-structured interview were analyzed in the qualitative part with the open, central and selective coding method in MAXQDA-10 software and in the quantitative part with the exploratory factor analysis method in the Smart PLS-3 software.

3. Findings

The samples of this study were 18 people in both qualitative and quantitative sections, and the results of their demographic information, including position, age, gender, degree, field of study, and related work experience, are presented in Table 1.

Table 1. The results of the demographic information of the samples of the present study

related work experience (years)	, field of study	degree	gender	age (years)	Side	Row
38	Management	P.H.D	Man	70	Secretary of the trade association of after-sales service companies	1
18	technology management	Masters	Man	38	Director of inspection services of Iran Standard Inspection and Quality Company	2
22	System orientation industrial management	P.H.D	Man	41	The head of the service promotion department of Iran Standard Inspection and Quality Company	3
32	Automotive technology engineering	Masters	Man	53	Responsible expert, instructor of technical courses in Isacco company, owner and employee of two independent repair shops	4
24	the mechanic	Masters	Man	54	Managing Director of Mayan Diesel Company	5
39	Industry	a professional doctor	Man	61	Former CEO of Top Service Company, consultant and instructor of training courses related to car after-sales services	6
24	Education Management	Masters	Man	50	The manager of the after-sales service network of Gawah company and the instructor of technical courses	7
21	the mechanic	Masters	Man	47	Training Manager of Saipa Yadak Company	8
16	Human resources management	P.H.D	Female	42	Head of Training and Development of Saipa Yadak Company	9
16	Executive management of information technology	Masters	Man	43	Development Manager of Bahman Motor Company	10
20	Industrial management of operations research	Masters	Man	45	Senior training expert at Persia Khodro Company	11
17	Educational management with business orientation	Masters	Man	50	Head of Customer Satisfaction and Service Unit of Renault Pars Company	12
12	Executive Management	Masters	Man	34	The head of the agency network of Iranoya company	13
21	the mechanic	Masters	Man	61	Director of Ferdowsi Technical and Vocational School	14
10	Management and engineering	Masters	Man	37	Advisor to the CEO of Martab Khodro and Safe Khodro	15
19	Executive Management	P.H.D	Man	40	After-sales service manager, easy operation of Hyundai	16
13	IT management	Masters	Female	37	Senior expert of Bahman Group's	17

					sales organization and after-sales service training unit	
26	the mechanic	Masters	Man	47	Managing Director of Shahab Yar Company	18

As can be seen in Table 1, out of a total of 18 people, there are 16 men (88.89 percent) and 2 women (11.11 percent), and the education level of 5 people is Ph.D. (27.78 percent), 10 people are masters (55.56 percent) and 3 bachelors (16.67 percent). The results of open, central and selective coding of the after-sales service curriculum model of the automobile industry in Iran were presented in Table 2.

Table 2. The results of open, central and selective coding of the after-sales service curriculum model of the automobile industry in Iran

Market coding	Axial coding	Selective encoding
1. Compatibility and compatibility, 2. Cooperation and interaction with foreign partner companies, 3. Friendly culture, 4. Necessity of interaction with automotive unions, 5. Management efficiency, 6. Importance of interaction between industry and university, 7. Understanding the position of business partners, 8. The desire to progress through standardization, 9. Determining the skill development path for technical employees, 10. Supporting business partners in difficult situations, 11. Scientific and practical focus, and 12. The role of the after-sales service curriculum model in the automotive industry in preventing A waste of time	Efficient and effective management	Curriculum of after-sales service of the automobile industry in Iran
1. Accuracy in selecting human resources, 2. Benefiting from specialized knowledge and collective wisdom, 3. Maintaining human resources, 4. Attracting and training capable teachers, 5. Accuracy in attracting human resources, 6. Updating employees based on technological needs. industry, 7. benefiting from the experiences of successful people in designing and compiling the curriculum, 8. providing necessary educational information by the automobile manufacturer to teachers, 9. preserving human resources and 10. compatibility	Skilled and trained manpower	
1. Taking advantage of technology, 2. The need to use technology, 3. The need to use new software technologies, 4. Software-oriented training, 5. Dealing with various topics in virtual training, 6. The effect of virtual training on reducing course implementation costs, 7. High access level in virtual trainings, 8. Remote consulting services to mechanics, 9. The role of standard parts in car performance and 10. Providing necessary training to car owners and consumers on a virtual platform.	Use of new technologies	
1. Ensuring the transfer of knowledge, 2. The need to implement skill courses in the workshop, 3. The existence of a difference between virtual and real training, 4. The nature of increasing the cost of training courses, 5. The introduction of new training topics for agency managers, 6. The need to develop training standards in The level of agency managers, 7. The impact of effective training on profitability and 8. Educational standard	Education development	
1. The necessity of separation between the educational organization and the educational evaluation organization, 2. The necessity of cutting off financial relations between the educational organization and the educational evaluation organization, 3. Specialization in the matter of educational evaluation, 4. The necessity of educational evaluation and ensuring educational effectiveness, 5. Focusing on programs Applied science, 6. The need to be aware of educational interactions in the international space, 7. Ensuring the transfer of course concepts, 8. Rating of teachers, 9. The need to identify educational standard gaps in the design of the after-sales service curriculum model of the automobile industry, 10. Benefiting from models Evaluation day, 11. Needs assessment standard, 12. Changing the attitude of evaluators from the role of evaluator to the role of consultant and 13. The need to evaluate and rank learners at the end of the course.	assessment	
1. Understanding the culture of customer orientation, 2. The effect of dissatisfaction with the way cars are sold in after-sales services, 3. The relationship between the development of skills and the culture of customer orientation, 4. The special position	Customer satisfaction	

of central repair shops in customer satisfaction, the high rate of customers referring to them and the interview of related challenges. 5. The nature of increasing the cost of after sales services, 6. The effectiveness of trainings on the quality of services and customer satisfaction, 7. The need to evaluate the skills of employees to satisfy customers and 8. The initial expectations of customers.

As can be seen in Table 2, for the after-sales service curriculum model of the automobile industry in Iran, it has 61 indicators in 6 categories of efficient and effective management, skilled and trained manpower, use of new technologies, training development, evaluation and customer satisfaction. became. The results of the assumptions of the exploratory factor analysis of the after-sales service curriculum model of the automobile industry in Iran were presented in Table 3.

Table 3. The results of the assumptions of the exploratory factor analysis of the after-sales service curriculum model of the automotive industry in Iran

88/0		The value of the sampling adequacy coefficient (KMO)
80/1424	Chi-square	Bartlett's test
411	Degrees of freedom	
001/0	meaningful	

As seen in Table 3, the results indicated the adequacy of sampling and sufficient correlation between the variables to perform exploratory factor analysis. The results of the exploratory factor analysis of the after-sales service curriculum model of the automobile industry in Iran were presented in Table 4.

Table 4. The results of the exploratory factor analysis of the after-sales service curriculum model of the automobile industry in Iran

Reliability	AVE	CR	factor load	Number of items	Factor
934/0	811	572/0	725/0	11	Efficient and effective management
882/0	782/0	634/0	682/0	9	Skilled and trained manpower
961/0	893/0	598/0	678/0	8	Use of new technologies
895/0	860/0	715/0	643/0	7	Education development
910/0	816/0	648/0	812/0	13	assessment
944/0	746/0	669/0	730/0	9	

As can be seen in Table 4, in the after-sales service curriculum model of the automobile industry in Iran, 4 items were removed due to the factor loading less than 0.40, and the final model has 57 items in 6 factors of efficient and effective management, skilled and trained human resources, the use of new technologies, the development of training, evaluation and customer satisfaction. The validity of the factors based on the factor loading was higher than 0.60, the convergent validity was higher than 0.50 and the average variance extracted was higher than 0.70, and the reliability was higher than 0.80 with Cronbach's alpha method. The results of the fit indices of the curriculum model of the after-sales service of the automobile industry in Iran were presented in Table 5.

Table 5. The results of the fit indicators of the after-sales service curriculum model of the automobile industry in Iran

Limit	the amount of	index name
Less than 3	63/1	X ² /df
Less than 0.10	03/0	RMSEA
More than 0.90	95/0	CFI
More than 0.90	93/0	NFI
More than 0.90	99/0	GFI
More than 0.90	91/0	AGFI

As can be seen in Table 5, the after-sales service curriculum model of the automobile industry in Iran had a good fit with 6 efficient and effective management factors, skilled and trained manpower, use of new technologies, training development, evaluation and customer satisfaction. The curriculum model of the after-sales service of the automobile industry in Iran was presented in T-statistics in Figure 1 and the results of the results in Table 6

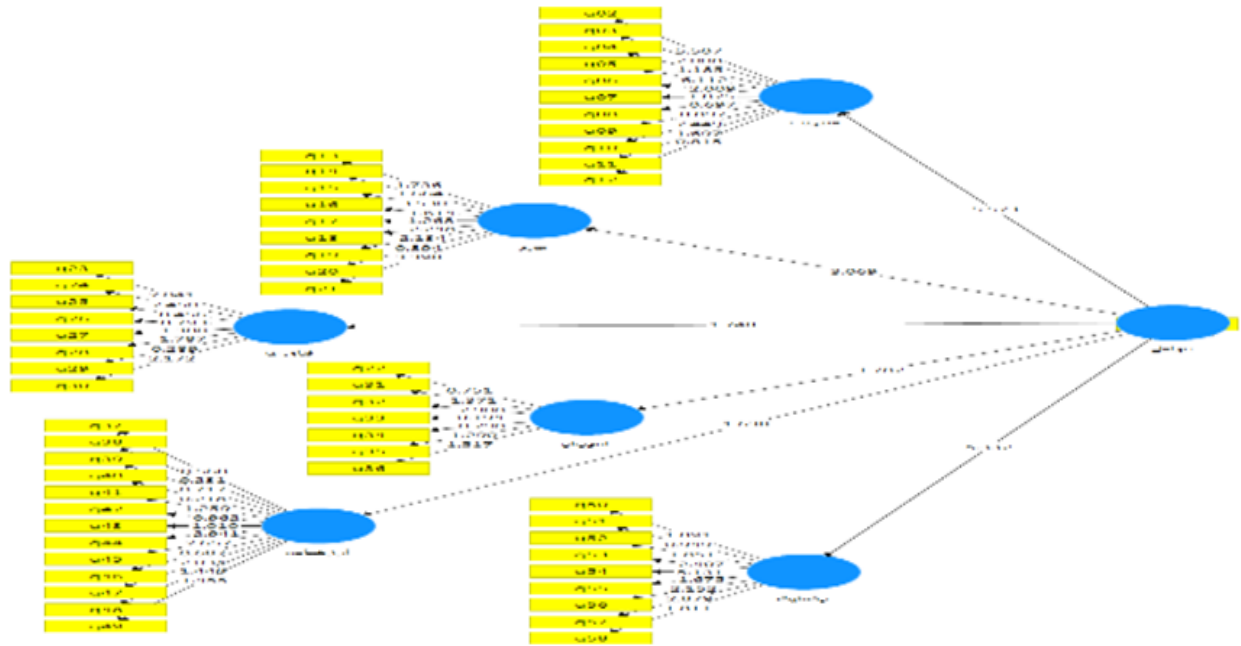


Figure 1. After-sales service curriculum model of the automobile industry in Iran in T-statistics mode

Table 6. The effects of the after-sales service curriculum model in the automobile industry in Iran

meaningful	t	Path	The effects
values	coefficients		
05/0<	523/5	384/0	After-sales service curriculum model on efficient and effective management
05/0<	069/3	275/0	After-sales service curriculum model on skilled and trained human resources
05/0<	748/1	184/0	Curriculum model of after-sales service based on the use of new technologies
05/0<	782/1	186/0	After-sales service curriculum model on education development
05/0<	638/1	179/0	After-sales service curriculum model on evaluation
05/0<	332/5	370/0	After-sales service curriculum model on customer satisfaction

As seen in Figure 1 and Table 6, the after-sales service curriculum model of the automobile industry in Iran is based on all six factors, including efficient and effective management, skilled and trained manpower, use of new technologies, training development, evaluation and customer satisfaction. It had a direct and significant effect ($P < 0.05$).

4. Discussion

The present study was conducted with the aim of designing a curriculum model for after-sales service in the automobile industry in Iran.

The findings of this research showed that the curriculum model of the after-sales service of the automobile industry in Iran had 61 indicators in 6 categories of efficient and effective management, skilled and trained manpower, use of new technologies, training development, evaluation and customer satisfaction. Other findings of this research showed that the after-sales service curriculum model of the automobile industry in

Iran has 57 items (removal of 4 items due to factor loading less than 0.40) in 6 factors of efficient and effective management, skilled and trained human resources, use of technologies New was the development of training, evaluation and customer satisfaction. The validity of the factors based on the factor loading was higher than 0.60, the convergent validity was higher than 0.50 and the average variance extracted was higher than 0.70, and the reliability was higher than 0.80 with Cronbach's alpha method. In addition, the 6-factor model of the after-sales service curriculum of the automobile industry in Iran had a good fit and the effect of the said model had a direct and significant effect on all 6 factors.

No research was found on the after-sales service curriculum model of the automobile industry in Iran, but the findings of this research are in some ways similar to the findings of Heidariyeh et al (2014) regarding the effective role of access factors and access time, politeness and behavior of employees, cost or price of services. Cleanliness and neatness, priority service quality, the way the staff behaves and pleasantness at the promised time in the evaluation model of factors affecting customer satisfaction with after-sales services in Iran's automotive industry, Safarzadeh and Mahmoudi (2010) based on the role of six factors affecting Customer satisfaction with sales and after-sales services in Saipa company's manufacturing companies, including the way employees behave and receive customers, how to determine prices and payment conditions, the process of exchanging information between customers and sales agents, the characteristics of the location and interior space of dealers, car delivery services, Follow-up and actions after delivery and geographic location of the agency for effective factors and Karami (2010) based on the effective role of using the problem-based curriculum approach in the specialized industrial training of production operators in the automotive industry on increasing the effectiveness of training courses and the effective role of problem-based learning compared to satisfaction-based issues. More, more positive attitude, better learning and more competent performance change were aligned.

In the explanation of these findings, it can be said that due to the rapid growth of new technologies in the production and supply of automobiles and related services, the competition market among automotive companies is very hot, and researchers try to use any means to gain a larger share of the market and ultimately profit. Make your own company. One of the success factors of any car manufacturing company is its powerful after-sales service network, and experienced and specialized manpower, a wide network of agencies throughout the country, and equipment are important factors of an after-sales service network. Among these factors, specialized manpower is more important. Because the thinking human power has the duty of guidance and exploitation compared to other factors. Therefore, the training of the human force working in the after-sales service organizations of the automobile industry is of special importance as the most valuable asset of any organization, and one of the ways to achieve this is the implementation of appropriate and desirable training courses. It is obvious that the design of the curriculum model that is appropriate to the mission of the employees with the aim of optimizing the processes of design, compilation, implementation and evaluation of training courses with regard to factors such as knowledge, skills and occupational and functional behavior of human resources is a matter of course. The curriculum model of the after-sales service of the automobile industry in Iran had six factors of efficient and effective management, skilled and trained manpower, use of new technologies, development of training, evaluation and customer satisfaction. This model was designed based on the conditions prevailing in Iran and based According to experts in the field of after-sales services of the country, it can be used as an upstream document for the preparation of current guidelines and methods for the design of curriculum used by car suppliers, including domestic car manufacturers and car importers.

Every research is faced with limitations, and one of the important limitations of this study is the limitation of the research community to the CEOs and vice-presidents of after-sales services of the automotive industry, training managers and technical experts of the automotive industry, and the use of non-random snowball sampling. Another limitation is the cross-sectional nature of the present study, and it is possible that if the same study is carried out at other times, different results will be obtained. Due to the limitations, it is suggested that this research be conducted at other times or even on other work groups in the

automotive industry and their results be compared with the results of this study. Another research proposal is to conduct different models for the after-sales service curriculum of the automobile industry and based on the results of all these studies, an effective step towards the design of a comprehensive after-sales service curriculum model should be designed and implemented, and finally, the results of their implementation will be examined and evaluated. be placed The results of this study have many practical implications for managers and planners of the automobile industry and its after-sales service sector, and based on the results of this study, they include indicators and six factors of efficient and effective management, skilled and trained manpower, use of new technologies, development of education. , evaluation and customer satisfaction can take an effective step in the direction of improving and promoting the after-sales service curriculum of the automobile industry.

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