University POLITEHNICA of Bucharest
Doctoral School of Industrial Engineering and Robotics
Doctoral field – Industrial engineering

SUMMARY OF THE DOCTORAL THESIS

Cercetări și contribuții privind analiza și îmbunatățirea performanței organizaționale în domeniul serviciilor din industria de automobile

Research and contributions on the analysis and improvement of organizational performance in the field of services in the automotive industry

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Bucharest
- 2023 -

Content

Keywords: organizational performance, stakeholders, service industry, continuous improvement, key performance indicators, business excellence

Introduction

In the current context, where competition in the automotive after-sales service market is increasingly fierce and organizations are faced with critical decisions, this Ph.D. thesis addresses organizational performance from the perspective of organizations providing automotive repair and maintenance services. For this reason, the Ph.D. thesis contributes to the development of an organizational performance analysis and improvement tool specific to management systems in the automotive industry. The developed tool integrates key factors in achieving performance by vehicle repair and maintenance organizations.

The thesis is structured into two parts and eight chapters that describe the research carried out to achieve the main objective. The first part presents the researched field's knowledge and includes chapters 1 and 2. The second part presents the research methodology and personal contributions resulting from the research process and includes chapters 3, 4, 5, 6, 7, and 8. It includes 18 annexes, a number of 306 pages, and each chapter contains an introduction, content, and a set of conclusions related to the aspect researched in the respective chapter.

Chapter 1 "*The research context of the doctoral thesis*" presents the important aspects that were the basis of the research: the need for the research, the main objective, the specific objectives, and the importance and, scientific relevance of the research theme.

Chapter 2 "*The current state of research on organizational performance*" presents the documentary research on organizations and their structure, organizational performance, methods, and tools used in performance measurement and management. Also in this chapter, specific research was carried out on vehicle repair and maintenance organizations to determine research directions.

Chapter 3 "*Stakeholder satisfaction research methodology*" presents the specific research based on a questionnaire and the comparison of the results obtained by the sampled organizations, with the aim of identifying the factors that influence the achievement of organizational performance, from the perspective of the three key stakeholders: customers, employees, and managers.

Chapter 4 "*Analysis of the validity of the questionnaires drawn up in order to evaluate the stakeholders satisfaction*" presents the results of the statistical testing of the questionnaires using SPSS. The validity of the questionnaires was determined in terms of feasibility, reliability, validity, and acceptability.

Chapter 5 "*Research and contributions on the factors that influence the performance of organizations*" proposes the conceptual model of the factors that influence the performance of vehicle repair and maintenance organizations. The factors were ranked in the model on three levels of importance.

Chapter 6 "*Research and contributions regarding the design and development of the customized tool for automotive services*" presents the premises that were the basis for the creation of the tool, as well as its structure and the factors taken into account.

Chapter 7 "*Validation of the analysis tool - case study in the organization*" presents the application algorithm of the proposed tool and the results of the simulation of the tool in the organization. The simulation within the organization thus validated the proposed model.

Chapter 8 "*Final conclusions. Personal contributions. Limitations of the research. Perspectives and directions regarding the research field*" presents the general conclusions of the specific research, the elements of originality brought by this thesis in the sphere of repair and maintenance services in the automobile industry, the limitations of the research, the perspectives and future directions regarding the research field.

Chapter 1. THE RESEARCH CONTEXT OF THE DOCTORAL THESIS

The special influence of organizations on the existence and development of society met an upward trend during the 20th century. Society is characterized by dynamism, speed, and confidence in progress, and the organizations we interact with in our daily lives represent the pillars of society. Analysts appreciate the emergence of organizations as a response to people's need for cooperation as they have limited power of action and there are things they cannot do alone. By researching the literature, it was found that the specialists together with the organizations, triggered and identified new ways of measuring performance, and the organizations supported by the specialists managed to face the new challenges. Organizations can measure their performance for various reasons, but the main reason is that performance can only be improved if it knows its actual level. Performance measurement is important because it indicates the level of achievement of objectives, guides managers in decision-making and allows the development of future strategies in the activities of evaluation, control, budget planning, employee motivation, and promotion in order to improve their performance.

Like any other organization car services have experienced a significant evolution in the last 10 years, as a result of the increase in the national car fleet. The Romanian sector of organizations that provide vehicle repair and maintenance services is undergoing transformation, is poorly capitalized, and lacks rigorous management. The aspects mentioned above, as well as how transformations are managed, directly influence society and can generate corresponding risks. Organizational performance has been a hotly debated topic for the past 30 years, and performance improvement concerns are indeed a common interest among organizations and practitioners alike. The Ph.D. thesis aims to conduct connected studies to improve the performance of vehicle repair and maintenance services.

The main objective of this doctoral thesis is *the development of a performance analysis tool specific to management systems in the automotive industry for identifying the best solutions for improving the organizational performance of automotive services.* Several **specific objectives** derive from the main objective as follows:

o **OS1 – Determination of research perspectives in accordance with performance measurement of organizations that provide vehicle repair and maintenance services, based on the literature review;**

- OS1.1 – Researching issues related to organizational performance regularly encountered in the specialized literature;
- OS1.2 – Identification of the most frequently used tools, methods, and models used in the measurement of organizational performance in the services area;
- OS1.3 – Identifying the fundamental aspects related to the services field in Romania;

o **OS2 – Identifying the main factors that contribute to improving the performance of organizations that provide vehicle repair and maintenance services;**

- OS2.1 – Designing and creating questionnaires as working tools to facilitate access to information on the performance of service organizations;
- OS2.2 – Analysis of the performance evaluation results of organizations in the services field;
- OS2.3 – Analysis of the validity of questionnaires intended to evaluate the performance of organizations in the services field;
- OS2.4 – Design and develop the model of the factors influencing the performance of service organizations;

o **OS3 – Design and development of a working tool specific to management systems in the automotive industry that can help organizations identify the best solutions to improve organizational performance and achieve excellence;**

- OS3.1 – Alignment of the model of factors that influence the performance of organizations with the European model of excellence EFQM 2020;
- OS3.2 – Development of the working tool specific to management systems in the automotive industry that can help organizations identify the best solutions to improve organizational performance on the way to excellence;
- OS3.3 – Validation of the specific work tool in some car services.

In order to achieve the general objective, a series of research was carried out as part of the doctoral thesis, as follows:

o Bibliographic and documentary research regarding the identification of the main aspects related to the measurement of organizational performance in the services field;

o Bibliographic and documentary research regarding the identification of the most frequently used tools, methods, and models used in measuring the performance of organizations in the services field;

o Documentary research on the identification of the fundamental aspects related to the services field in Romania;

o Documentary and comparative research on the identification of ways to approach Performance Management by vehicle repair and maintenance services;

o Documentary research on the identification of factors influencing the performance of vehicle repair and maintenance services;

o Development of the working tool specific to management systems in the automotive industry;

o Evaluation of the usefulness of the specific work tool within the analyzed organization.

Although the number of small and medium-sized organizations has increased in the last two decades, organizations that provide after-sales services in the automotive industry still face problems related to the application of methods and models of excellence. Existing methods and models mainly focus on large organizations, present work barriers, and are not yet fully aligned: they specify a multitude of criteria and factors to be considered, and organizations face the problem of resource allocation. On this basis, small organizations are placed on the defensive against the application of excellence methods and models, and the organizations participating in the research do not apply excellence models or only apply light methodologies, precisely for the reasons mentioned previously: difficulty in application or inadequacy.

From here it follows **the need for the doctoral thesis "Research and contributions on the analysis and improvement of organizational performance in the field of services in the automotive industry"**, which highlights the problems faced by vehicle repair and maintenance organizations. The doctoral thesis topic reports on a current issue, with particular importance in improving the performance of organizations that provide car repair and maintenance services.

The novelty offered by the doctoral thesis consists of the development and validation of a working tool specific to automobile services (ILSSA) aligned to the EFQM 2020 excellence model. The developed tool makes an important contribution both in the theoretical and practical fields, providing an appropriate framework for improving organizational performance. The specific working tool proposes the identification of performance improvement directions, being based on the results established by going through the proposed work algorithm. The important contribution in practice that the tool brings refers to the fact that car repair and maintenance services will be able to benefit from the advantages of the EFQM excellence model just by applying this tool and at the same time they will make less effort in terms of resource allocation.

Chapter 2. THE CURRENT STATE OF ORGANIZATIONAL PERFORMANCE RESEARCH

As customer demands become ever greater, most of the concerns of organizations revolve around improving organizational performance. Organizational performance can only be improved if its true level is known and therefore it must be analyzed within the limits of the environment in which the organization operates. Within this chapter, the identification, classification, and characterization of organizations were carried out in order to define performance and performance management.

Defining the concept of organization is difficult even in specialized literature, a situation justified by the diversity and complexity of organizations, so "the difficulty of defining the concept of organization is determined not only by the multitude of perspectives from which it is analyzed but also by the evolution of organizational analysis itself, which established new ways of definition, depending on the contributions made over time by various theoretical and practical types of research [V03]. Although the specialized literature has so far accumulated an extraordinary amount of material on organizations, uncertainties regarding their analysis and classification still exist.

In time, the great theorists of organizations looked at organizations from various perspectives and added new classification criteria, so we encounter classifications according to size, type, or the main stated purpose. Specialized literature [B13], [N04] includes nine various typologies that do not fully protect the diversity of organizations. A first conclusion can state that the development and diversification of organizations led to increasingly complex classifications, the emergence of richer information, and last but not least the difficult definition of performance. It was identified that over time performance was defined according to the system of activities carried out, meanings, or goals, and there is no general and exhaustive definition of the concept of performance until now.

Organizational performance undoubtedly represents the most studied concept in numerous research and scientific works in the field of the 21st century, which is why the theorists have supported organizations by laying the foundations of performance management by clarifying, designing, and developing ideas and strategies for this purpose. Given that the field of management is reshaping itself along with the changes taking place in society, a review of the literature was carried out in order to determine the extent to which organizational performance remains part of today's research. 1271 studies were identified, but only 1187 papers were considered. Therefore, starting from the definitions presented in this chapter, the second conclusion can say that organizational performance represents the method of fundamental measurement of the success of an organization and at the same time the direct result of all the efforts made in carrying out an activity, regardless of the variant definition.

Also in the analysis of the current state, the identification, classification, and, characterization of the main elements that help to evaluate the organizational performance were achieved. Over time, due to global developments in performance and its measurement, performance measurement systems have gradually begun to include framework models or theoretical models that propose a series of general elements grouped into evaluation criteria quantifiable by indicators. Of course, in the specialized literature, there are more tools and models for measuring organizational performance than those mentioned in this chapter:

- Key Performance Indicators:
  - Financial performance indicators (1880-1980);
  - Non-financial performance indicators (1980 to present);
- Instruments:

- TBSG General Strategic Dashboard (the interwar period);
- Benchmarking (1990);
- The performance pyramid (1990);
- Balanced Scorecard (1992);
- G.I.M.S.I. Painting or Dashboard (1998);
- Models of excellence:
  - Deming model of excellence (1951);
  - Malcolm Baldrige's model of excellence (1987);
  - EFQM model of excellence (1992);
  - The new EFQM Excellence Model (2020);
  - Romanian Quality Award – Joseph M. Juran (1999).

To obtain a correct picture of the organization's performance, its measurement should be carried out using a performance measurement system based on a coherent set of financial and non-financial indicators, general or specific, tools and measurement models, which provide organizations the opportunity to identify areas where things are not going well, to determine opportunities for improvement and last but not least to strengthen their market position. This system must be modified depending on the changes inside the organization, as well as from outside it. Thus, a third conclusion can state that the implementation of a performance measurement system adapted to the organization's needs is of major importance in performance management.

The overall analysis of the organization's performance and measurement methods and models is transferred to the service field [***26] and subsequently to the services provided in the automotive industry. The tertiary sector covers all the services provided at the level of the national economy, and its rapid and continuous development has made the economic and social functions it fulfills gain major importance in stimulating the economy on a domestic and international level. Currently, in addition to the role of complementing material goods, services also fulfill the role of binder between material goods, ideas, capital, and information on a national and global scale. In the context of these aspects, it can be said that services generally represent those activities distinct from products, which satisfy individual or social needs of the population or other organizations and which hold a distinct sector in the economy.

The development and diversification, as well as the complexity and heterogeneity of services, have led to a systematic division of services in several directions. So, in the last 25-30 years, specialists have made great efforts to harmonize the classification of services. After conducting literature research, it was found that the service sector is classified by a wide variety of criteria. A complete picture of services intended for the population is presented in Table 2.9 [I02].

From the diversity of services analyzed in the Romanian market, a priority role is played by services as consumer goods for the population (with a weight of 80%), more precisely vehicle repair and maintenance services from the automobile industry. Through the remarkable volume reached by its development in the last 15 years, but also by the huge potential for profit the personalization of this sector of activity which is given by automobiles equipped with increasingly complex systems, vehicle repair and maintenance services in the automobile industry have become a point strong for the national economy.

The level and proportions of vehicle repair and maintenance services indicate that they not only have a social role, but rather an economic one supporting the efficiency of the economy and meeting people's travel needs.

Table 2.9. General table of services intended for the population

Beneficiary characteristics		The existential role	Importance for consumption	The content of the activity
Services for the people	Personal character (individual)	Independent services (associated with individuals)	Separate services within some sectors (residential character)	- Rentals of objects, houses, and cars; - Public lighting; - Healthiness;
			Services organized as distinct branches of the economy	- Repairs and maintenance of products; - After-sales services; - Laundries and cleaners; - People and goods transportation; - Post and telecommunications; - Healthcare; - Tourism (hotel, restaurant); - Culture and art; - Food production and preservation; - Making clothes and footwear;
		Services associated with goods	Industrial services	- Freight transport; - Post and telecommunications; - Tourism (hotel, restaurant);
			Non-industrial services	- Education and Science; - Informatics; - Healthcare;
	Collective character (public or social)	Market services (customized and paid for by the population)		- Private education; - Private healthcare; - Stenodactylography and translations; - Banking and insurance services; - Transport (rail, road, sea, and air); - Transport and distribution of electricity, heat, gas, and water supply; - Post, telecommunications, and radio; - Tourism (hotel, restaurant); - Repair and maintenance of products; - Personal hygiene and human aesthetics;
		Non-market services (publicly funded)		- Education, health, and social assistance; - Public catering; - Environmental protection; - Public Order, National Defense, and External Relations;

Table 2.7 shows the business environment in Romania, the data referring to organizations in the financial and non-financial fields (industry, construction, trade, and services).

Table 2.7. The picture of the business environment in Romania [***15]

Organization Type	The financial and non-financial field		The non-financial field		Services sector		Vehicle maintenance and repair services	
	Number	Weight (%)	Number	Weight (%)	Number	Weight (%)	Number	Weight (%)
Small and medium (IMM)	566145	99,7	485757	99,7	276432	99,8	21143	99,9
Big	1738	0,3	1667	0,3	582	0,2	23	0,1
Total	567883	100	487424	100	277014	100	21166	100

The analysis carried out in 2020 on the consumption needs of the population [***25] highlights the most important factors that influence the dynamics and evolution of services addressed to the population: the economic system, the income and purchasing power of the population, the inflation rate, income inequalities among the population, the unemployment rate, the proportion of free time or the lifestyle.

The increase in income and purchasing power on the one hand, and the increase in free time of the population on the other, have contributed greatly to the development of the services provided to the population in recent years. Services that solve the general needs of the population such as easing everyday life, saving time, and caring for and assisting children or people with special needs, have profound economic and social implications and contribute to boosting the population's standard of living. The analysis carried out in this chapter demonstrates the fact that services for the population are simultaneously both a condition and a consequence of Romanian economic and social development. In addition to all this, there is a tangential element: the cultural aspect.

The in-depth study of the service sector in Romania allowed the identification of the research direction, more precisely the development of a work tool specific to management systems in the automobile industry. To achieve the objectives of the Ph.D. thesis, the repair and maintenance service sector of the automotive industry with a focus on official representatives was studied.

As a form of after-sales service, automotive maintenance and repair have become increasingly important in commercial environments. These services are the contact points after the sale of the vehicles between the manufacturer and the customers, proving to have a fundamental contribution in fixing the problems arising under the warranty not only that, they are closely interconnected with the production as they provide information related to the problems arising to the manufacturer so that he can fix the dysfunctions in the manufacturing process, in the continuous satisfaction of the customers, in increasing the brand loyalty and determining the re-purchases and last but not least in creating the strategic competitive advantage of the manufacturers. However, although the repair and maintenance services sector has been in continuous expansion for the past 30 years and has long-term importance, research related to this sector is extremely insufficient.

Following the research carried out by Daedalus Millward Brown in partnership with Auto. ro [***17], the official services turned their attention to improving services to personalize and differentiate services according to customer needs, and to maintain long-term relationships with them. In the case of these official services, the builder imposes severe conditions on them by fully aligning with its technical, qualitative, and ethical standards, but at the same time provides them

with free professional training, technical assistance, and all the documentation and information they need in the implementation activities. More importantly, the manufacturer requires its representative to use only original spare parts in maintenance and repairs. Considerations regarding the growth of the vehicle repair and maintenance market are justified by the fact that vehicles have quickly established themselves as the main means of transport in Romania and there are millions of people driving used or new vehicles that will need to be maintained and repaired. The increase in the number of cars can explain the significant evolution of the appearance of repair services in Romania.

In order to obtain an overview of this sector, secondary research was carried out to carry out the top of the 10 big car builders in Bucharest through the first official service. The analysis confirms that the 10 organizations have not adopted an already existing model but have combined different existing elements, creating their own, adapted program. Among the key elements used in the strategies, we find Quality, Continuous Improvement, Standardization, Safety and Compliance, Customers and Employees, Efficiency, Environment, and Society. The first conclusion formulated following this analysis summarizes the fact that although these organizations operate within the same activity sector, each organization approaches organizational performance differently and has implemented elements for which they have assumed the limitations of each.

The last conclusion of this first chapter, following the examination of the current situation regarding vehicle repair and maintenance services in Romania, but also the research of specialized literature, states the existence of a problem related to the application of excellence models as well as the lack of rigor in the application of Performance Management models and tools [D06]. The tool that will be developed in the following chapters will allow for determining the performance of the management systems in the automobile industry by identifying the influencing factors on it.

Chapter 3. STAKEHOLDER SATISFACTION RESEARCH METHODOLOGY

Automotive repair and maintenance services are organizations that adopt and implement strategies taking into account the needs and expectations of stakeholders [M01]. In the work "Strategic management: A stakeholder approach", Freeman defines stakeholders as "individuals or groups interested in any decision or activity of an organization" [F06].

The first step taken to determine the degree of satisfaction was to identify the stakeholders of the quality and performance of automotive repair and maintenance services. This stage involved determining the groups with the greatest interest in the issue under study, taking into account the assessment of the interests and importance of each stakeholder. Stakeholders have been identified according to the standards ISO 9001: 2015 - principles that ensure that all customers receive high-quality products and services and ISO 26000: 2020 - guidance on the relationship between the organization, stakeholders, and society. Thus, the interested parties were established as: customers, employees, and managers [***10, ***21]. At the base of this selection, however, two other important aspects were found. The first aspect is that customer orientation, leadership, constant purpose, and development and involvement of employees are principles of excellence and basic criteria of the EFQM excellence model. The second aspect is that employees and customers have been the main concern in the Automobile Repair and Maintenance Organization, in which the author of this thesis has operated for 4 years.

This stage was followed by the establishment of research methods and tools. Stakeholder satisfaction expresses the perceptions of the services provided, and for the research and evaluation of the degree of satisfaction, as well as for obtaining evidence for the analysis, it was necessary to use scientific methods and already known tools: direct observation, documentary research, questionnaires, analysis, and synthesis. [L01], [M20]. The reason why it was decided to apply questionnaires as a research tool for data collection was based on the idea that the information obtained is quantitative and qualitative and on the fact that the interested parties can express themselves directly [A03, M04]. Also, the application of the questionnaires allowed the monitoring and management of the collection process, as well as the determination of the current level of major concerns related to the development of the car service activity, and allowed the deepening of information impossible to access from alternative sources.

The set of three questionnaires was applied to the statistical population of the main stakeholders. The total population (723 customers, 1809 employees, and 10 general managers) was sampled by the simple random sampling method, resulting in the following samples: 80 customers, 200 employees, and 10 managers. 60, 143, and 7 completed questionnaires were received, respectively, but after verification, some of them were cancelled because they were not complete. In the end, 51, 120, and 6 questionnaires were validated respectively. Data were collected simultaneously, and the research population was informed that the results would be disseminated within this Ph.D. thesis. Considering the answers received, a research model of the factors that influence the performance of these organizations can be proposed. Figures 3.2, 3.4, and 3.6. presents the formulated working hypotheses, which are to be tested during this study.

The research model with the four hypotheses related to the customer questionnaire is presented in figure 3.2. Hypotheses related to the customers' questionnaire are:

- H1: Appointment time influences customer satisfaction;
- H2: Customer service experience influences customer satisfaction;
- H3: Customer return to service influences customer satisfaction;

- H4: Customer satisfaction influences customer loyalty.
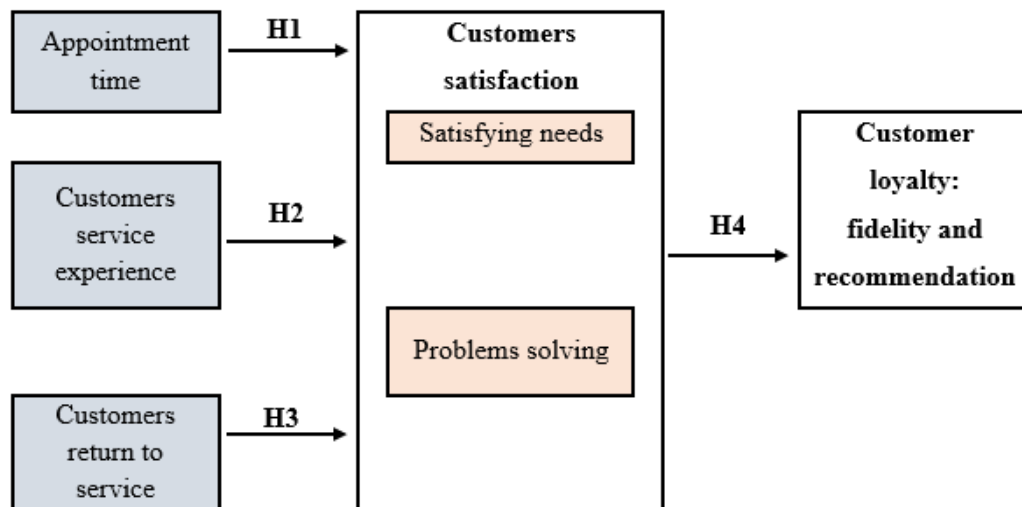
Figure 3.2. Hypothesis Research Model of Customer Questionnaire

The research model with the five hypotheses related to the employees' questionnaire is presented in Figure 3.4. Hypotheses related to the employees' questionnaire are:
- H5: Working conditions have a positive effect on employees satisfaction;
- H6: The quality of company collaboration has a positive effect on employees satisfaction;
- H7: Economic factors have a positive effect on employees satisfaction;
- H8: Professional development conditions have a positive effect on employees satisfaction;
- H9: Employee satisfaction has a significant positive effect on employee performance.
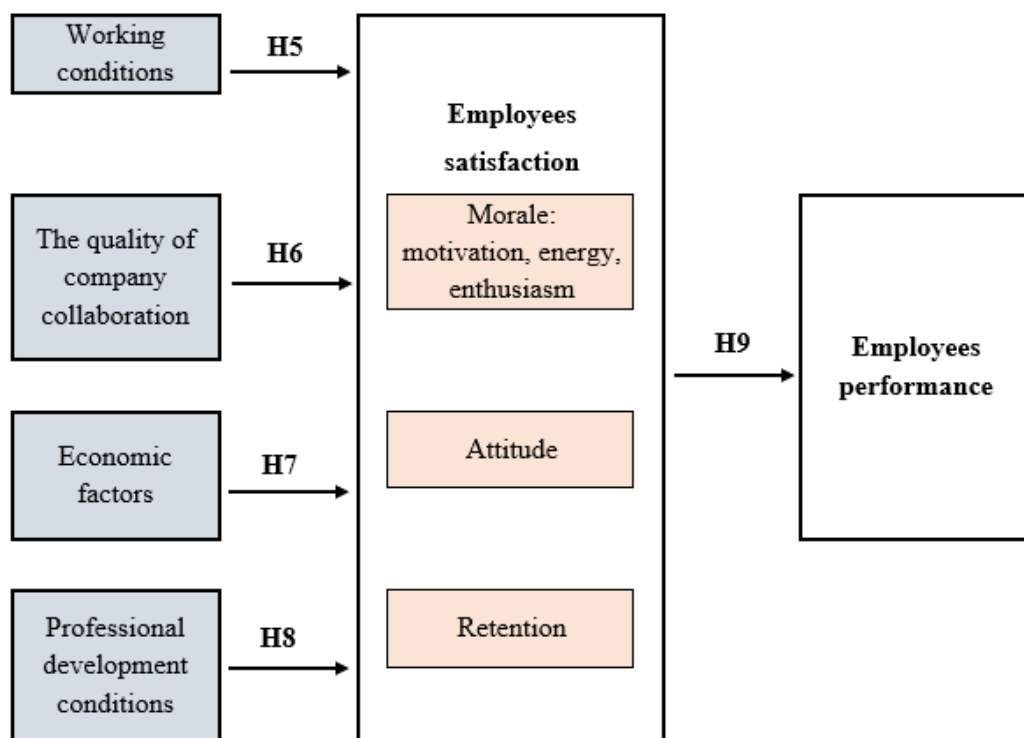
Figure 3.4. Research model with hypotheses related to employees questionnaire

The research model with the eight hypotheses related to the managers' questionnaire is presented in Figure 3.6. Hypotheses related to the managers' questionnaire are:

- H10: Management's approach positively influences the organization's strategy.
- H11: The organization's strategy positively influences risk management.
- H12: Management's approach positively influences risk management.
- H13: Risk management positively influences the performance of the organization.
- H14: Management approach positively influences employee management.
- H15: Employee orientation positively influences customer management.
- H16: Management's approach positively influences customer management.
- H17: Customer management positively influences organizational performance.
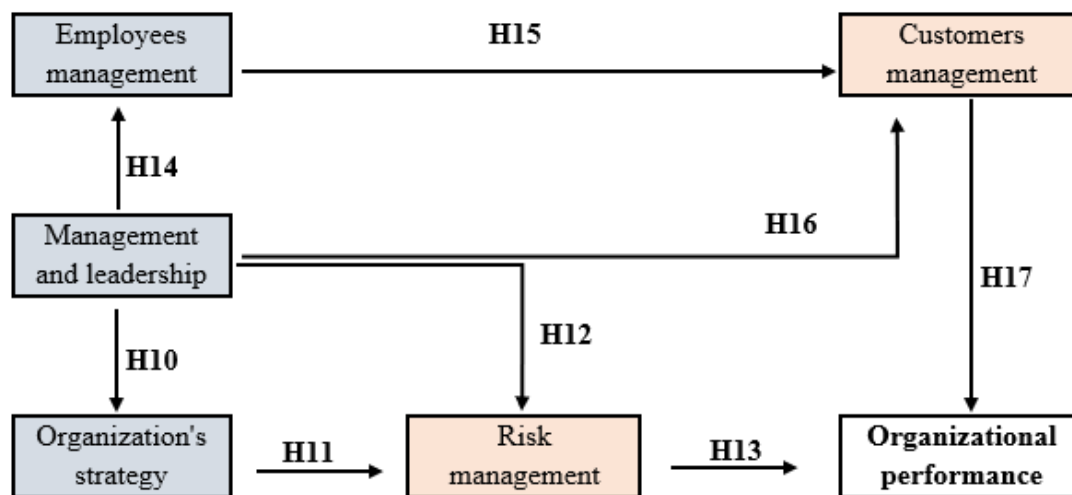
Figure 3.6. Research model with hypotheses related to managers' questionnaire

Following the examination of the responses received from selected interested parties, the need for change is highlighted by the low degree of satisfaction identified among customers and employees. The results of this model will be used to improve processes, better management, and implicitly increase the degree of satisfaction of the stakeholders.

The analysis of the customer questionnaire, which has a degree of achievement of only 74.4%, shows that organizations have real deficiencies in terms of customer orientation. In addition, an imbalance is identified among the criteria: appointment time - 84.3%, service experience - 96.7%, return to service - 33.3%, loyalty and reorder - 71.6%, and degree of satisfaction - 86.3%. The extent to which the customer questionnaire criteria are met is shown in Figure 3.20. (a).

The analysis of the employees' questionnaire, which has a degree of achievement of 85.6%, shows that organizations are partially oriented toward employees. The following degrees of the fulfillment of the criteria are identified: working conditions - 80%, quality of collaboration in the company - 88.1%, salary package, and salary advantages - 83.3%, and degree of satisfaction - 93.8%. The extent to which the criteria of the questionnaire applied to employees are met is presented in Figure 3.20. (b).

The analysis of the managers' questionnaire which has a questionnaire completion rate of 90% shows that the vehicle repair and maintenance services implement and maintain the Quality Management System. The analysis shows a perfect balance of the studied criteria, thus the degrees of fulfillment are management and leadership - 93.3%, strategies - 86.7%, management systems -

83.3%, customer management - 96.7%, employees management - 90%, risk management – 100% and performance and results achieved – 80%. The extent to which the criteria of the questionnaire applied to employees are met is presented in Figure 3.20. (c).

On the other hand, from the answers received to question number 36, deficiencies and risks can be identified in terms of the organization, operation, and management of these organizations. Performance is closely linked to internally set objectives and is reduced to relevant and recognized characteristics to create optimal conditions for achieving performance. From Figure 3.19. the main categories of problems faced by organizations can be observed: high staff turnover based on their dissatisfaction and negative feedback from customers. Insufficient employee involvement, lack of indicators regarding employee satisfaction, and lack of synchronization of expenses with receipts are identified with a slightly lower frequency.

i.

ii.

iii.
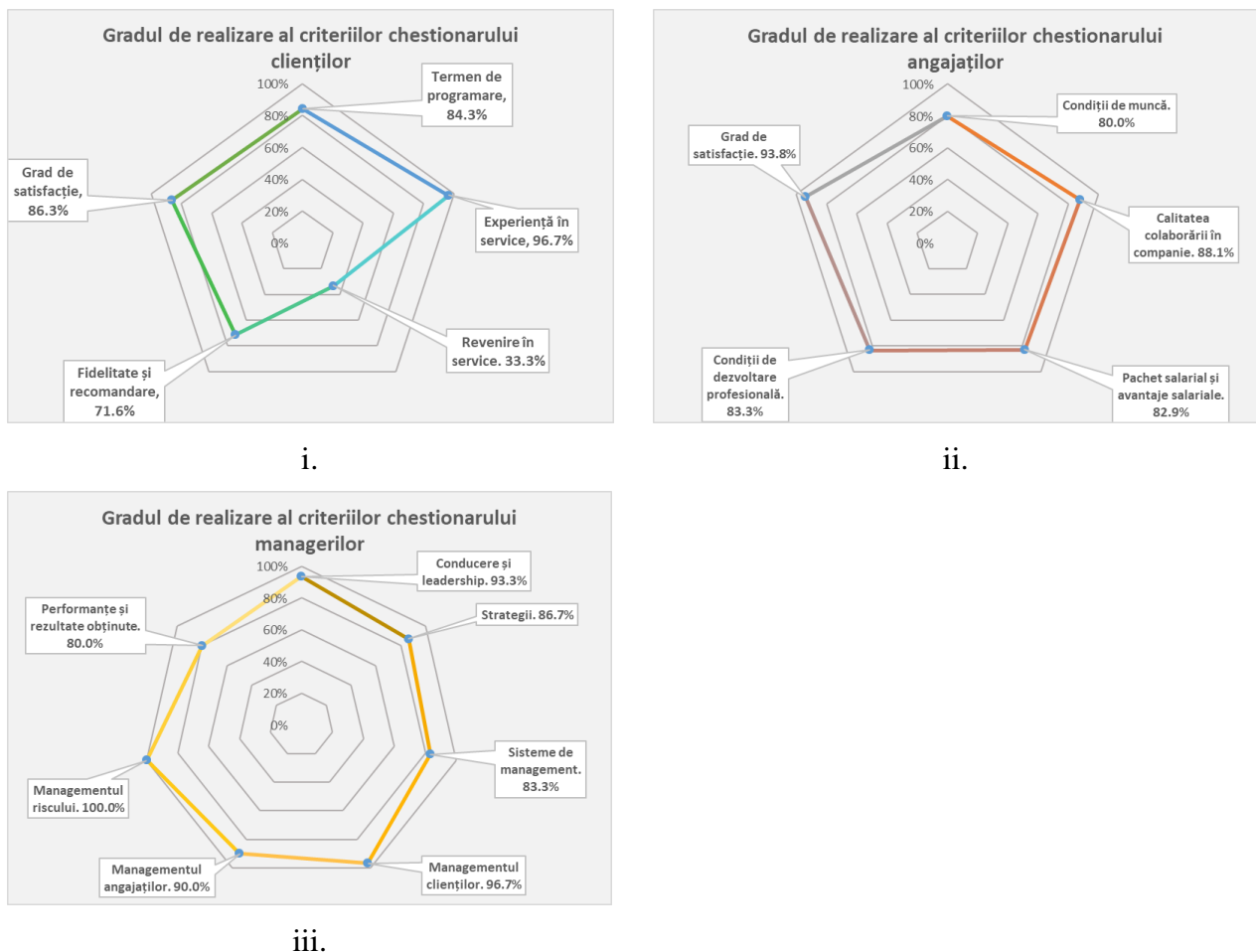
Fig. 3.20. Gradul de realizare al criteriilor chestionarelor: *clienților* (i), *angajaților* (ii), *managerilor* (iii)

Analyzing the common segments of the three questionnaires, a low correlation is identified between the answers of customers and the answers of managers, but also between the answers of employees and the answers of managers.

Chapter 4. VALIDITY ANALYSIS OF THE QUESTIONNAIRES PREPARED FOR THE ASSESSMENT OF INTERESTED PARTIES' SATISFACTION

The development of questionnaires as valid and reliable measurement tools of the factors that influence the satisfaction of the interested parties and implicitly the performance of the automotive repair and maintenance services was not an easy task and therefore required a coherent approach based on evaluation criteria and methods. Like any other research instrument, to be considered valid, the questionnaire must meet a series of five metric characteristics: be simple, precise, appropriate to the problem under study, be able to measure the problem under study, and be resistant to change over time [G01]. Therefore, based on research from other works in the field [T01] [D04] [M11] [B03] the list of questionnaire evaluation criteria is outlined: feasibility, reliability, validity, and acceptability. These main validity criteria and analysis techniques used are presented in Table 4.1.

Table 4.1. Evaluation criteria of the questionnaires

Evaluation criteria	Dimension	Analysis tool
Feasibility	Time for application Clarity of the questions Ease of processing	Research itself
Reliability	Internal consistency	Cronbach Alpha (α)
Validity	Facial	Cohen Kappa (CKI)
	Content	Literature review / Content validity report (CVR)
	Construct	Pearson/Spearman correlation
Acceptability	Perceptiveness	Response rate

This chapter presents the most important aspects related to the statistical processing of the data in order to validate the questionnaires using the Statistical Package for the Social Sciences (SPSS) statistical analysis software. The Statistics Standard 28.0 variant covering this analysis could be downloaded and used in a Trial version for a period of 30 days and includes the first-generation statistical techniques (regression, correlation, variance, association).

The proposed evaluation criteria and methodology can be used not only in the automotive industry but can also be applied in other industries or sectors. The concrete steps followed for the statistical processing of the answers to the three questionnaires were: data centralization, determination of feasibility, determination of reliability and validity, and determination of acceptability. Based on the factor analysis of each questionnaire, the factors that directly or indirectly affect the performance of automobile repair and maintenance organizations were identified.

The feasibility of the questionnaires refers to the ease with which the questionnaires were administered and processed, both from the perspective of the respondents and the researcher. The

evaluation did not involve statistical processing of the data, being the research itself. The feasibility of the three questionnaires is supported by the application of the guiding principles in the questionnaire design of Don Dillman and other authors.

The reliability of the questionnaire refers to the consistency and reproducibility of questionnaires over time. The Cronbach Alpha (α) coefficient was used to assess the internal consistency of the questionnaires. The coefficient α can vary between 0 and 1, but $\alpha \geq 0.7$ is considered sufficient and reliable. Reliability analysis of the three questionnaires shows that the items of the questionnaires are correlated with each other, have a high-intensity relationship and consistently measure over time the constructs related to the factors influencing customer satisfaction, employees satisfaction, and organizational performance. The high intensity of the relationship between the elements of the questionnaires leads to a high internal consistency that places the Cronbach Alpha coefficient in a high level of reliability.

o The Cronbach Alpha coefficient for customer questionnaires was calculated based on the 51 validated questionnaires from the sample of 80 distributed. The $\alpha=0.78$ value indicates a high level of reliability and shows at the same time that the items are correlated with each other, and the items of the questionnaire touch the same concept, the scores are similar and highlight the tendency of the answers. By analyzing the four working hypotheses it can be observed how each element correlates with the global score and the Cronbach-Alpha value. There are two columns of interest in Table 4.6:

- *Corrected Item – Total Correlation* shows how well each item correlates with the overall quiz score. Correlations lower than r=0.30 indicate that the item may not belong to the scale. From this column, it can be seen that all items are positively correlated with the global score. Questions Q1 and Q8 are the only items that seem problematic, so they should be removed. Low correlations with the global score indicate that they neither help nor hurt, providing no useful information relative to the attribute being measured.

- *Cronbach's Alpha if Item Deleted* is the most important column, which shows what the coefficient α would become if an item were removed from the questionnaire. As can be seen, in the situation of eliminating questions Q1 and Q8, the value of the Cronbach coefficient increases, and the questionnaire would become more reliable.

Table 4.6. Complete customer questionnaire analysis

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q1CQ	35.0000	16.120	.014	.088	.817
Q3MQ	33.9804	14.700	.465	.497	.763
Q4CQ	34.1176	12.706	.643	.729	.732
Q5CQ	33.8627	15.241	.449	.383	.769
Q6CQ	34.4118	11.007	.754	.806	.705
Q7CQ	34.3922	13.083	.564	.632	.744
Q8CQ	35.0392	16.118	.005	.124	.821
Q10CQ	34.3529	10.553	.907	.905	.676
Q11CQ	34.3333	12.787	.537	.538	.747

o The Cronbach Alpha coefficient for the employees questionnaires was calculated based on the 120 validated questionnaires from the sample of 200 distributed. The value $\alpha=0.853$ indicates a high level of reliability and at the same time shows that the items are correlated with each other, and the items of the questionnaire touch the same concept, the scores are similar and

show the tendency of the responses. By analyzing the five working hypotheses it can be observed how each element correlates with the global score and the Cronbach-Alpha value. There are two columns of interest in Table 4.11:

- *Corrected Item – Total Correlation:* it can be seen that all items are positively correlated to the overall score, but questions Q1, Q2, Q3, Q4, Q5, Q12, Q22, and Q23 are problematic items. Correlations lower than r=0.30 with the global score indicate that they should be removed.

- *Cronbach's Alpha if Item Deleted:* it can be seen that the exclusion of the elements Q1, Q2, Q4, Q12, and Q23 does not change the value of the coefficient α, so it can be said that they neither help nor harm. On the other hand, excluding the elements, Q3 and Q5 leads to an increase in the value of the coefficient α, so these elements can be excluded. The exclusion of the element Q22 entails the decrease of the coefficient α, so this element must be kept. As can be seen, in the situation of excluding questions Q1, Q2, Q3, Q4, Q5, Q12, and Q23, the value of coefficient α increases, and the questionnaire become more reliable.

Table 4.11. Complete employee questionnaire analyzis

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1EQ	96.3083	98.702	.284	.853
Q2EQ	96.3000	98.582	.289	.853
Q3EQ	95.8583	102.274	.189	.854
Q4EQ	95.7500	103.080	.203	.853
Q5EQ	96.2167	102.558	.107	.860
Q6EQ	96.1250	95.959	.597	.842
Q7EQ	96.0583	99.786	.419	.848
Q8EQ	96.4750	92.235	.627	.839
Q9EQ	97.0500	98.350	.600	.844
Q10EQ	96.6750	99.381	.589	.845
Q11EQ	96.0167	101.059	.367	.849
Q12EQ	95.7250	102.957	.215	.853
Q13EQ	96.6417	93.509	.478	.845
Q14EQ	96.3750	91.110	.634	.838
Q15EQ	97.1333	98.083	.474	.846
Q16EQ	96.5417	91.410	.648	.838
Q17EQ	95.9500	100.804	.332	.850
Q18EQ	96.6333	94.503	.403	.849
Q19EQ	96.0417	97.049	.453	.846
Q20EQ	95.8667	99.545	.398	.848
Q22EQ	96.0250	99.957	.286	.852
Q23EQ	97.5333	102.318	.215	.853
Q24EQ	96.9833	100.336	.341	.850
Q25EQ	96.9583	100.427	.432	.848
Q26EQ	95.9583	93.671	.719	.838

o The Cronbach Alpha coefficient for the managers' questionnaires was calculated based on the six validated questionnaires from the sample of 10 distributed. The α=0.869 value indicates a high level of reliability and shows at the same time that the items are correlated with each other, and the items of the questionnaire touch the same concept, the scores are similar and

highlight the tendency of the answers. By analyzing the eight working hypotheses it can be observed how each element correlates with the global score and the Cronbach-Alpha value. There are two columns of interest in Table 4.16:

- *Corrected Item – Total Correlation:* it can be seen that items Q1, Q5, Q6, Q10, Q11, Q18, Q21, Q22, Q26, Q28, and Q31 have zero variance and have been removed from the scale. Items Q7, Q8, Q17, Q30, and Q35 are negatively correlated with the global score, and questions Q4, Q7, Q8, Q17, Q19, Q27, Q29, Q30, Q34, and Q35 are problematic items. Low correlations with the global score indicate that they should be removed

- *Cronbach's Alpha if Item Deleted:* it can be seen that the exclusion of the element Q19 does not change the value of the Cronbach coefficient, so it can be said that it neither helps nor does harm. On the other hand, the exclusion of items Q4, Q7, Q8, Q17, Q27, Q29, Q30, Q34, and Q35 leads to an increase in the value of the Cronbach coefficient, so these items can be excluded. As can be seen, in the situation of excluding questions Q4, Q7, Q8, Q17, Q27, Q29, Q30, Q34, and Q35, the value of the Cronbach Alpha coefficient increases, and the questionnaire become more reliable.

Table 4.16. Complete managers' questionnaire analysis

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q2MQ	75.3333	57.467	.800	.856
Q3MQ	75.3333	57.467	.800	.856
Q4MQ	75.8333	62.967	.004	.884
Q7MQ	75.1667	64.967	-.172	.876
Q8MQ	76.0000	64.000	-.056	.884
Q9MQ	75.8333	51.767	.796	.849
Q13MQ	75.5000	55.100	.660	.856
Q14MQ	75.6667	53.067	.863	.848
Q15MQ	75.6667	53.067	.863	.848
Q16MQ	75.3333	54.267	.754	.852
Q17MQ	75.1667	64.567	-.112	.875
Q19MQ	75.6667	61.467	.280	.868
Q20MQ	75.1667	58.967	.776	.859
Q23MQ	75.6667	59.067	.588	.861
Q24MQ	75.8333	54.167	.836	.850
Q25MQ	75.8333	52.167	.765	.850
Q27MQ	75.1667	62.567	.196	.870
Q29MQ	75.3333	63.467	.032	.874
Q30MQ	75.1667	64.967	-.172	.876
Q32MQ	76.6667	59.467	.536	.862
Q33MQ	75.6667	53.467	.826	.849
Q34MQ	75.8333	60.967	.210	.872
Q35MQ	75.1667	65.367	-.232	.877

The validity of questionnaires indicates the degree to which the questionnaire "measures what it claims to measure" [B03]. Validity is described by three varieties: logical (face), content and construct. Logical validity determines the degree of operationalization of the questionnaire

(linguistic and analytical) for the people surveyed, content validity determines the fence in which the questionnaire covers the researched problem, and construct validity determines the degree to which the studied problem has been transposed and operationalized in the factors that explain it.

o *Logical validity* was determined by Cohen's Kappa coefficient (CKI) analysis. The Kappa coefficient can vary between -1 and +1, and a value ≥0.6 is considered an acceptable minimum. The coefficient signs + or - indicate the type of agreement between the two raters. The values of Kappa (CKI) for the three questionnaires are shown in Table 4.46 and indicate that the items are considered essential for the problem under study.

Table 4.46. Analysis of Cohen's Kappa coefficients

Stakeholder	CKI	p
Customers	0.792	0.007
Employees	0.766	<0.001
Managers	0.727	<0.001

Cohen's Kappa value for the customer questionnaire suggests a substantial strength of agreement between the two raters (k=0.792) and a value significantly different from zero (p=0.007). Cohen's Kappa value for the employees questionnaire suggests a substantial strength of agreement between the two raters (k=0.766) and a value significantly different from zero (p<0.001). Cohen's Kappa value for the employees questionnaire suggests a substantial strength of agreement between the two raters (k=0.727) and a value significantly different from zero (p<0.001).

o *Content validity* was determined by means of the content validity ratio (CVR) [L05]. The CVR coefficient can vary between -1 and +1, and a value ≥0.78 is required for a questionnaire item to be considered valid. Coefficient signs + or - indicate agreement or disagreement between raters. The CVR values for the three questionnaires are shown in Table 4.47 and suggest that the items in the questionnaires have high content validity, that is, they are relevant and representative of the problem under study.

Table 4.47. Analysis of CVR coefficients

Stakeholder	CVR
Customers	0.82
Employees	0.87
Managers	0.78

The CVR values for **the customer questionnaire** range between 0.33 and 1. The results indicate three items (Q1, Q2 and Q7) with a CVR=0.33 and seven items (Q3, Q4, Q5, Q6, Q8, Q9, Q10) with a CVR=1 . CVR=1 values indicate "essential" items in determining factors influencing customer satisfaction, and CVR=0.33 indicate items that require revision or elimination.

The CVR values for **the employees questionnaire** range between 0.33 and 1. The results indicate five items (Q1, Q3, Q6, Q9, Q23) with a CVR=0.33 and 21 items (Q2, Q4, Q5, Q7, Q8, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q21, Q22, Q24, Q25, Q26) with a CVR=1. CVR=1 values indicate "essential" elements in determining the factors influencing employee satisfaction, and CVR=0.33 indicate elements that require revision or elimination.

The CVR values for **the managers questionnaire** range between 0.33 and 1. The results show 12 items (Q5, Q11, Q12, Q15, Q18, Q26, Q27, Q29, Q30, Q31, Q34, Q35) with a CVR=0.33 and 23 items (Q1 , Q2, Q3, Q4, Q6, Q7, Q8, Q9, Q10, Q13, Q14, Q16, Q17, Q19, Q20, Q21, Q22,Q23, Q24, Q25, Q28, Q32, Q33, Q36) with a CVR =1. Values of CVR=1 indicate "essential" elements in determining the factors that influence the performance of organizations, and CVR=0.33 indicate elements that require revision or elimination.

o *Construct validity* was determined by analyzing Pearson (continuous variables) or Spearman (ordinal Likert-type variables) correlation coefficients (r). The coefficients r_P and r_S can vary between -1 and +1, and a value ≥0.5 is considered high and reliable. The + or - coefficient signs indicate whether there is a positive or negative relationship between the variables.

In the case of **customers**, since the answers to the variables in the questionnaire are of ordinal type, the assessment of construct validity for the related hypotheses was determined by means of the Spearman coefficient (r_S). The r_S values detailed in Table 4.48 show that the elements are positively or negatively correlated and have zero (H1b, H2b, H3b, and H4b), low (H1a, H3a values), moderate (H2a), or high (H4a) intensity relationship. Therefore, the following statements can be made:

- H1 is confirmed: *scheduling term* influences *the degree of customer satisfaction*;
- H2 is partially confirmed: *service experience* partially influences *customer satisfaction*;
- H3 is not confirmed: *return to service* does not have a negative effect on *customer satisfaction*;
- H4 is not confirmed: *degree of satisfaction* positively influences *customer loyalty*.

Table 4.48. Spearman coefficient values – customer questionnaire

Hypothesis	Secondary hypothesis		r_S	ρ
Appointment time influences customer satisfaction (H1)	H1(a):	Appointment time has a positive effect on meeting customer needs.	0.061	0.67
	H1(b):	Appointment time has a negative effect on solving customer problems.	-0.2	0.160
Customer service experience influences customer satisfaction (H2)	H2(a):	Service experience has a positive effect on satisfying customer needs.	0.470	0.026
	H2(b):	Service experience has a negative effect on solving customer problems.	0.07	0.649
Customer return to service influences customer satisfaction (H3)	H3(a):	Customer return to service has a negative effect on meeting customer needs.	0.278	0.048
	H3(b):	Returning the customer to service has a negative effect on the resolution of customer problems.	0.056	0.699
Customer satisfaction influences customer loyalty (H4)	H4(a):	Satisfying customer needs has a positive effect on customer loyalty.	0.807	<0.01
	H4(b):	Solving customer problems has a positive effect on customer loyalty.	0.074	0.605

In the case of **employees**, since the answers to the variables in the questionnaire are continuous variables, the evaluation of construct validity was carried out by means of the Pearson coefficient (r_P). The values of r_P detailed in table 4.49 show that the elements are positively or negatively

correlated and have zero (H5) or moderate (H6, H7, H8, and H9) intensity relationships. Therefore, the following statements can be made:

- H5 is not confirmed: *working conditions* do not influence *the degree of employees satisfaction*;
- H6 has confirmed: *the quality of collaboration* influences *the degree of employees satisfaction*;
- H7 is confirmed: *salary package and benefits* influence *the degree of employees satisfaction*;
- H8 has confirmed: professional development conditions influence the degree of employees satisfaction;
- H9 is confirmed: *degree of satisfaction i*nfluences *employees performance.*

Table 4.49. Pearson coefficient values – employees questionnaire

Hypothesis	Secondary hypothesis		r_P	ρ
Working conditions have a positive effect on employees satisfaction (H5)	H5(0):	Working conditions have no effect on employee satisfaction.	-0.009	0.51
The quality of collaboration in the company has a positive effect on employees satisfaction (H6)	H6(0):	The quality of company collaboration has no effect on employee satisfaction.	0.394	0.016
Economic factors have a positive effect on employees satisfaction (H7)	H7(0):	Economic factors have no effect on employee satisfaction.	0.424	0.004
Professional development conditions have a positive effect on employees satisfaction (H8)	H8(0):	Professional development conditions have no effect on employee satisfaction.	0.364	0.002
Employees satisfaction has a significant positive effect on employees performance (H9)	H9(0):	Employee satisfaction has no effect on employee performance.	0.413	<0.001

In the case of **managers**, since the answers to the variables in the questionnaire are continuous variables, the evaluation of the construct validity was carried out by means of the Pearson coefficient (r_P). Since each hypothesis consists of two dimensions, and each dimension comprises several elements, it was decided to keep each Pearson coefficient to observe the influence on the hypothesis individually. The r_P values detailed in Table 4.50 show that items are positively or negatively correlated and have zero, low, moderate, high, or perfect intensity relationships. Therefore, the following statements can be made:

- H10 is not confirmed: *the management approach* does not influence, positively influence or negatively influence *the organization's strategy*;
- H11 is not confirmed: *the organization's strategy* does not influence, positively influence, or negatively influence *risk management*;
- H12 is not confirmed: *the management approach* does not influence, positively influence, or negatively influence *risk management*;
- H13 is not confirmed: *risk management* does not influence, positively influence, or negatively influence *the organization's performance*;

- H14 is confirmed: *management's approach* positively influences *employees management*;
- H15 is confirmed: *employees orientation* positively influences *customer management*;
- H16 is not confirmed: *management approach* influences either positively or negatively *customer management*;
- H17 has not been confirmed: *customer management* influences *the organization's performance* either positively or negatively.

Table 4.50. Pearson coefficient values – managers questionnaire

Hypothesis	Secondary hypothesis		r_P	ρ
Management's approach positively influences the organization's strategy (H10)	H10(0):	Management's approach has no effect on the organization's strategy.	0.455	>0.001
			0.991	>0.001
			-0.316	>0.001
			-0.433	>0.001
			-0.415	>0.001
			-0.034	>0.001
The organization's strategy positively influences risk management (H11)	H11(0):	The organization's strategy has no effect on risk management.	-0.200	>0.001
			-0.548	>0.001
			-0.415	>0.001
			0.000	>0.001
			0.131	>0.001
			0.548	>0.001
			0.581	>0.001
			0.632	>0.001
			1.00	>0.001
Management's approach positively influences risk management (H12)	H12(0):	Management's approach has no effect on risk management.	0.632	>0.001
			0.250	>0.001
			-0.316	>0.001
			-0.415	>0.001
			-0.657	>0.001
Risk management positively influences the performance of the organization (H13)	H13(0):	Risk management has no effect on the organization's performance.	0.759	>0.001
			0.500	>0.001
			0.316	>0.001
			0.200	>0.001
			0.171	>0.001
			-0.200	>0.001
			-0.316	>0.001
			-0.542	>0.001

Management approach positively influences employees management (H14)	H14(0):	Management approach has no effect on employee management.	0.448	>0.001
			0.495	>0.001
			0.500	>0.001
			0.657	>0.001
			0.686	>0.001
			0.919	>0.001
Employees orientation positively influences customer management (H15)	H15(0):	Employee orientation has no effect on customer management.	0.108	>0.001
			0.131	>0.001
			0.250	>0.001
			0.316	>0.001
			0.343	>0.001
			0.415	>0.001
			0.581	>0.001
			0.759	>0.001
Management's approach positively influences customer management (H16)	H16(0):	Management approach has no effect on customer management.	-0.250	>0.001
			-0.316	>0.001
			0.083	>0.001
			0.581	>0.001
			0.632	>0.001
			0.657	>0.001
Customer management positively influences organizational performance (H17)	H17(0):	Customer management has no effect on organizational performance.	-0.686	>0.001
			-0.632	>0.001
			-0.400	>0.001
			-0.200	>0.001
			0.108	>0.001
			0.158	>0.001
			0.200	>0.001
			0.250	>0.001
			0.316	>0.001
			0.800	>0.001

Acceptability of questionnaires refers to the degree to which the questionnaire was accepted by customers, employees, and managers. To evaluate the receptivity of the questionnaires, the response rate R was used. For the customer questionnaire, the response rate is 75%, for employees, it is 60%, and for managers, it is 70%. Table 4.45 presents the analysis of the responses received to the questionnaires. If the total number of possible respondents and the response rate are considered, it can be concluded that the interest given is high (68.33%), which proves that the research by applying face-to-face questionnaires was the most appropriate.

In conclusion, this chapter provides a useful framework for evaluating the factors that influence customer and employee satisfaction and, by implication, the performance of automotive repair and

maintenance service organizations. Because the questionnaires were developed according to Dillman's guidelines, they were easy for research participants to understand and complete.

Table 4.45. Analysis of the preliminary version of the questionnaires

Stakeholders	Number of questionnaires sent	Answers received	Validated answers	Canceled responses*	Answers received [%]	Validated answers [%]	Canceled responses* [%]
Customers	80	60	51	9	75	85	15
Employees	200	143	120	23	60	83.91	19.16
Managers	10	7	6	1	70	85.71	14.28

* The cancellation was due to the absence/duplication of an answer to at least one of the questions

Following the assessment of the psychometric characteristics of the questionnaires, we can state that they have proven to be usable, accessible, with high internal consistency, reliable, valid, and reliable instruments for assessing factors. This information can be a real help to the management of organizations in order to improve their internal processes.

Chapter 5. RESEARCH AND CONTRIBUTIONS ON FACTORS AFFECTING ORGANIZATIONAL PERFORMANCE

Confronted with the permanent transformations taking place at the national and international levels, organizations are forced to react to new circumstances, take advantage of opportunities and develop adaptation solutions that can facilitate them to maintain balance in the organizational environment. These transformations are forces of organizational change. Organizational change management involves "a continuous process of renewing the direction, structure, and ability to respond to the constantly changing needs of internal and external customers" [M18]. Organizational change can be executed on three levels, as shown in Fig. 5.1.

Figure 5.1. Levels of organizational change

Knowing the determining factors of organizational changes requires the analysis, description, and identification of the dynamic balance between these factors [T06]. If the organizational changes take place properly, then the road to achieving the organizational goals will be certain. The factors that trigger organizational change come from both internal and external environments of the organization.

Having as a starting point the answers collected following the distribution of the three questionnaires drawn up with the aim of identifying the factors influencing the performance of car repair and maintenance service organizations, the opportunity was identified to develop a model of the factors influencing performance and based on the assessments interested parties. By applying customized questionnaires for each interested party, the determining factors of organizational changes could be identified. The answers received from customers, employees and managers form the basis for the model of the factors that influence the performance of car repair and maintenance service organizations and implicitly the model of analysis and improvement of organizational performance that will be proposed.

Within this chapter, the influencing factors were defined and distributed according to importance levels according to the number of responses received. Following the analysis of the influencing factors resulting from the sum of the answers received from customers, employees, and managers, it can be noted that more than 50% of the factors were placed on the I level of importance.

In the case of *customers*, the distribution of responses by levels of importance was drawn up individually to identify the customers' vision in isolation, and for a clearer picture of the centralized factors, Figure 5.6 was developed.

Figure 5.6. The cumulation of influence factors on customers

In the case of *employees*, the distribution of answers by levels of importance was drawn up individually to identify the employees' vision in isolation, and for a clearer picture of the centralized factors, Figure 5.10 was drawn up.
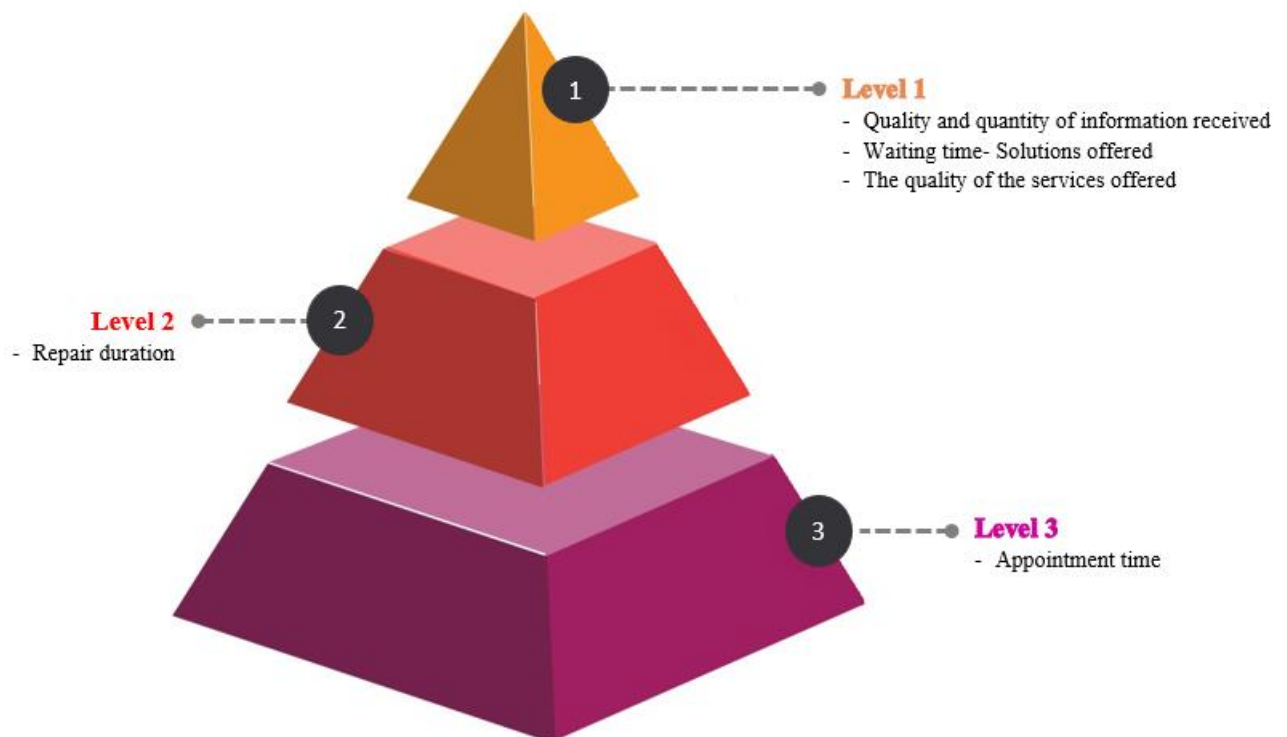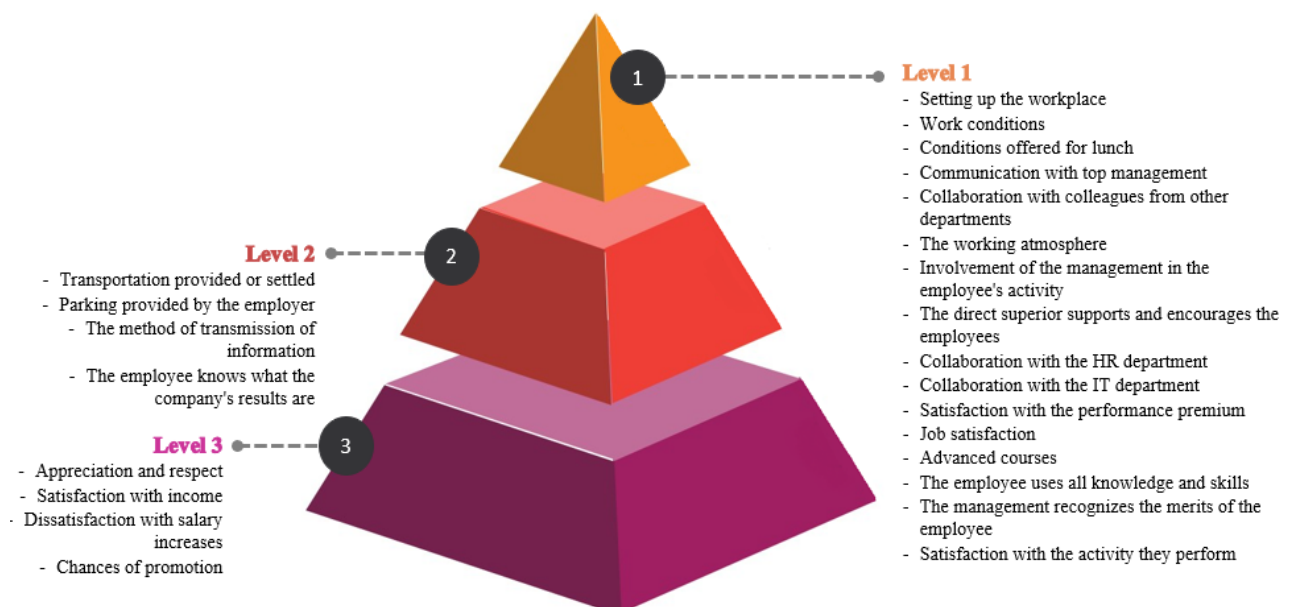

Figure 5.10. The cumulation of influence factors on employees

In the case of *managers*, the distribution of answers by levels of importance was drawn up individually, and for a clearer picture of the centralized factors, Figure 5.10 was drawn up.

Level 2
- Supporting and motivating employees
- Promoting open dialogue
- Social involvement
- Policy and strategy are reviewed periodically
- The strategy is communicated and implemented in each department
- Integrated approach to management systems
- Integrated approach to improvement mechanisms
- Maintaining the integrity of the SMI in case of changes/modifications
- Establishing employee satisfaction indicators
- Risk and accident prevention programs for customers/employees

Level 3
- Policy and strategy are reviewed periodically
- Corrective action plan for complaints
- Identifying the needs to improve the professional training of employees
- Implementation of professional development programs
- Integration and acceptance of ethnic minorities and disadvantaged people
- Reputation and image towards customers

Level 1
- Respecting its mission, vision and values
- Developing and maintaining mutually beneficial partnerships with partners
- The strategy is translated into objectives
- Policy and strategy with periodic evaluation of internal and external indicators
- Internal processes are correlated with strategic objectives
- Developing and maintaining long-term partnerships with clients
- Collecting feedback from customers
- Follow-up of received complaints
- Establishing customer satisfaction indicators
- Identification and allocation of human resources
- Establishing and evaluating employee/team objectives
- Specific objectives
- Risk management
- Business continuity plan
- Establishing business performance indicators
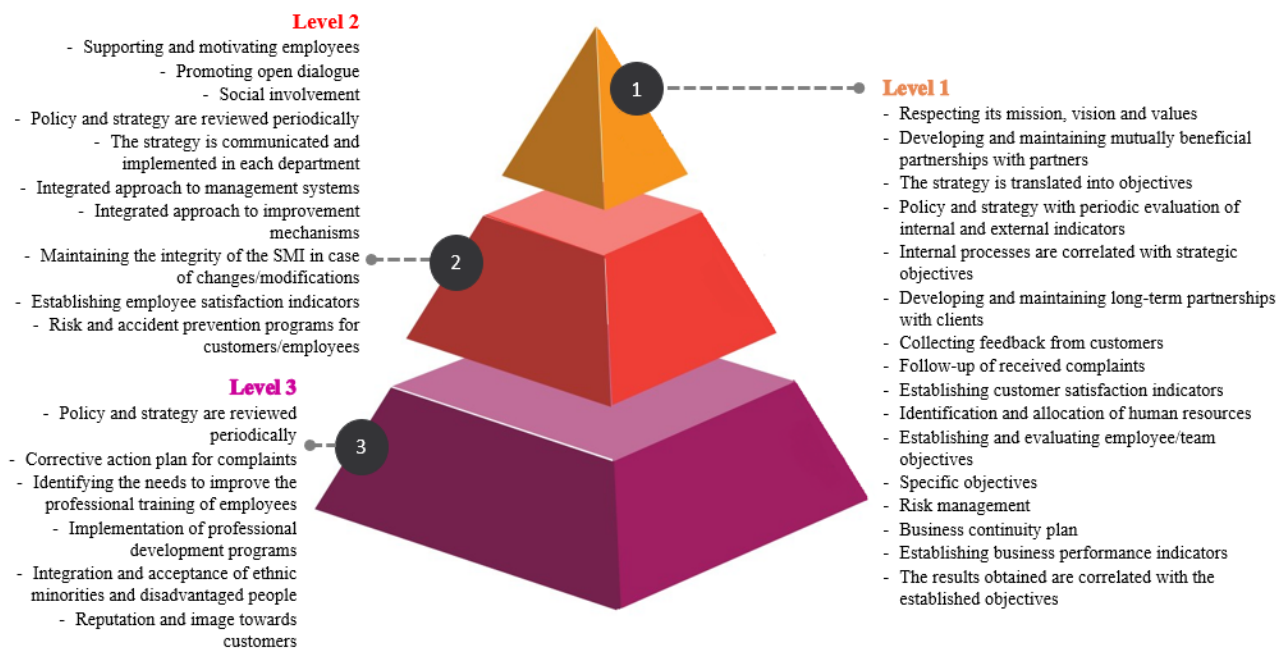- The results obtained are correlated with the established objectives

Figure 5.14. The cumulation of influence factors on managers

For a secondary purpose, the questionnaires were used to establish the interdependence between the dimensions studied in the case of customers - *appointment time, service experience, loyalty and recommendation, degree of satisfaction*, the dimensions studied in the case of employees - *working conditions, the quality of collaboration in the company, salary package, and salary advantages, professional development conditions, degree of satisfaction* and the dimensions studied in the case of managers - *management and leadership, strategies, customer management, employee management, risk management, organizational performance.*

Following the drawing up of the individual schemes of influence factors for each interested party, the drawing up of the cumulative influence factor model for customers, employees, and managers follows. Figure 5.15. presents the final model of influence factors built on the basis of responses received from customers, employees, and managers.

The model of factors influencing the performance of repair and maintenance service organizations in the automotive industry can be used as a starting point in creating the organizational performance analysis and improvement model that can be easily applied by all these organizations and that leads the business to a sustainable business. Ranking the factors resulting from the answers received from the parties directly involved (customers, employees and managers) is an important element in the approach to excellence, organizations knowing from the very beginning which elements to focus on.

	Customers	Employees	Managers
Level 1	- Quality and quantity of information received - Waiting time - Solutions offered - The quality of the services offered	- Setting up the workplace - Work conditions - Conditions offered for lunch - Communication with top management - Collaboration with colleagues from other departments - The working atmosphere - Involvement of the management in employee's activity - The direct superior supports and encourages employees - Collaboration with HR department - Collaboration with IT department - Satisfaction with the performance premium - Job satisfaction - Advanced courses - The employee uses all knowledge and skills - The management recognizes the merits of the employee - Satisfaction with activity they perform	- Developing and maintaining mutually beneficial partnerships with partners - The strategy is translated into objectives - Policy and strategy with periodic evaluation of internal and external indicators - Internal processes are correlated with strategic objectives - Developing and maintaining long-term partnerships with customers - Collecting feedback from customers - Follow-up of received complaints - Establishing customer satisfaction indicators - Identification and allocation of human resources - Establishing and evaluating employee/team objectives - Specific objectives - Risk management - Business continuity plan - Establishing business performance indicators - The results obtained are correlated with the established objectives
Level 2	- Repair duration	- Transportation provided or settled - Parking provided by employer - The method of transmission of information - The employees knows what the company's results are	- Supporting and motivating employees - Promoting open dialogue - Social involvement - Policy and strategy are reviewed periodically - Strategy is communicated and implemented in each department - Integrated approach to management systems - Integrated approach to improvement mechanisms - Maintaining the integrity of SMI in case of changes/modifications - Establishing employees satisfaction indicators - Risk and accident prevention programs for customers/employees
Level 3	- Appointment time	- Appreciation and respect - Satisfaction with income - Dissatisfaction with salary increases - Chances of promotion	- Policy and strategy are reviewed periodically - Corrective action plan for complaints - Identifying the needs to improve the professional training of employees - Implementation of professional development programs - Integration and acceptance of ethnic minorities and disadvantaged people - Reputation and image towards customers

Figure 5.15. The model of factors influencing the performance of organizations

Chapter 6. RESEARCH AND CONTRIBUTIONS ON THE DESIGN AND DEVELOPMENT OF THE PARTICULAR MODEL FOR AUTOMOTIVE SERVICES

Following the interpretation of the results obtained in the current research aimed at improving organizational performance, the opportunity to develop a specific work framework for car repair and maintenance services aligned to the new EFQM excellence model was identified. This alignment can participate in the improvement of the EFQM excellence model because the elements proposed in the ILSSA architecture (Work Tool Specific to Automobile Services) have a well-defined role and highlight the specifics of automobile repair and maintenance service organizations.

To identify the processes that support excellence, the starting point is represented by the matrix represented in Figure 6.1 in which the criteria of the EFQM2020 excellence model and the criteria for framing the elements of the model of factors that influence the performance of organizations in the automobile industry were analyzed.
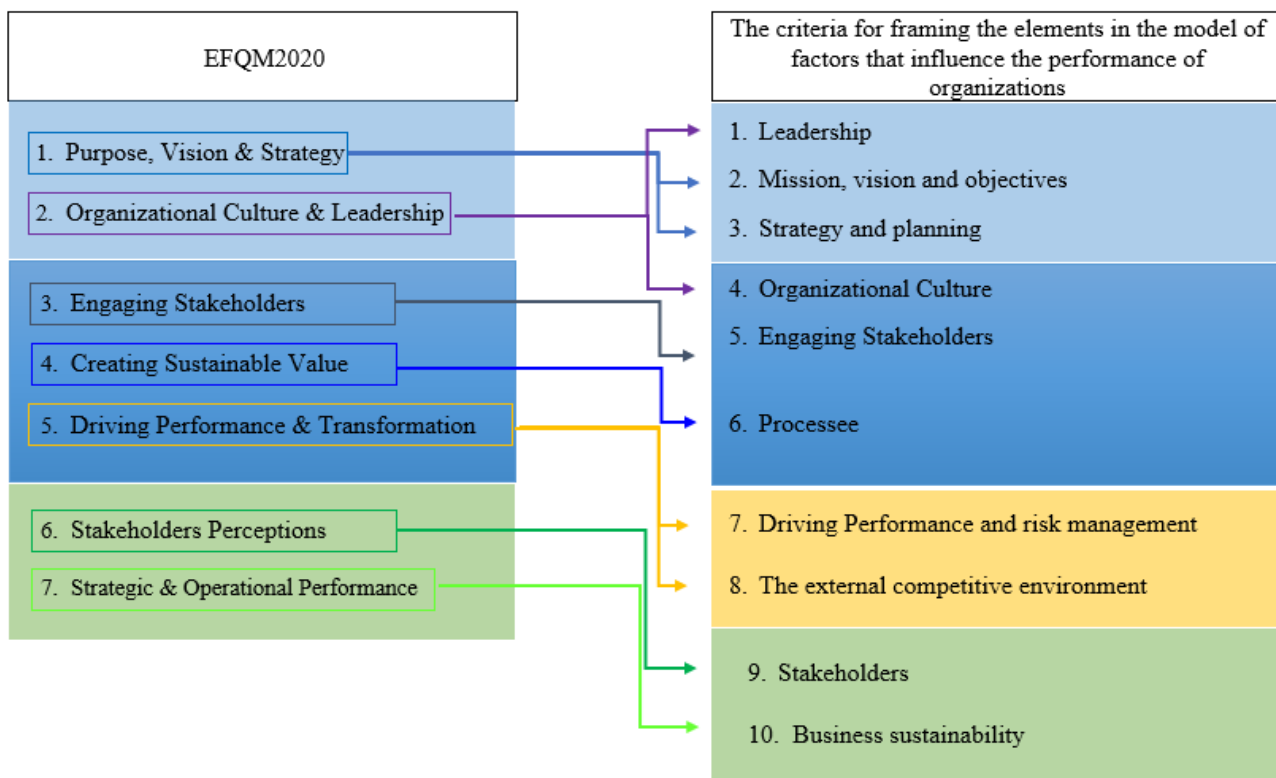
Figure 6.1. The EFQM 2020 Transformation – ILSSA [P02]

For each constituent element, evaluation criteria, an evaluation grid, and their grading conditions are defined. ILSSA represents a customized model in the industrial environment proposed by the research carried out in the EFQM 2020 academic environment [***21], [***12], [***10], [***11], [***13]], [***14] and in the industrial environment (the measurements made in the research).

The logical scheme for creating the Work Tool Specific to Automobile Services (ILSSA) is presented in Figure 6.2.

The proposed organizational performance analysis and improvement tool is based on the evaluation of 10 essential elements in achieving business excellence. To develop the meaning of

each, the 10 criteria have been divided into a number of 34 sub-criteria, and each sub-criteria is defined, explained in detail, and suggests possible areas for treatment.
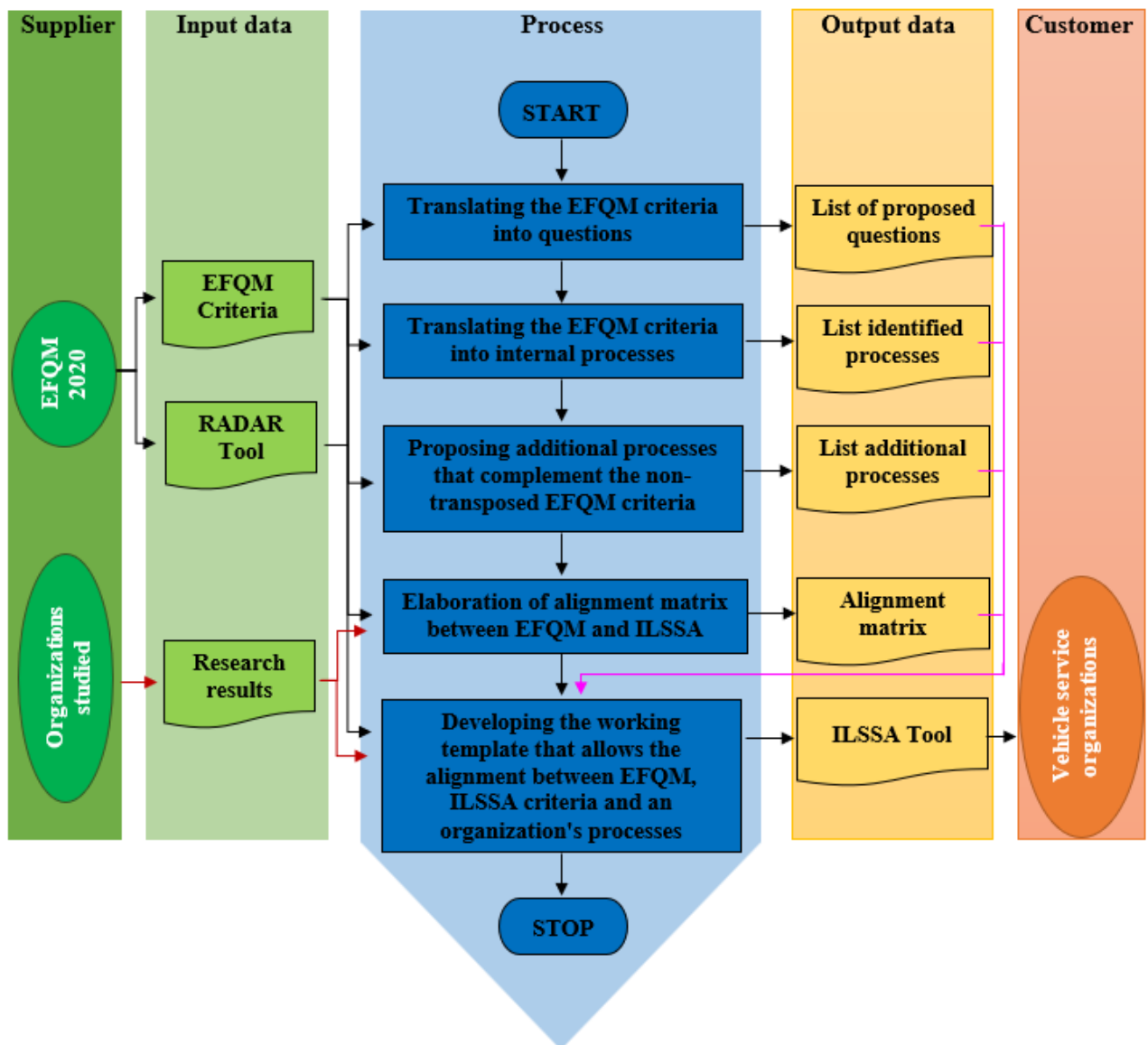
Figure 6.2. ILSSA instrument realization scheme

The proposed analysis and improvement tool covers the full range of needs of small and medium-sized repair and maintenance service organizations in the automotive industry and aims to define a framework for assessing their capabilities to create even greater performance commitment and excellence. Likewise, the proposed model can also be used for evaluations within organizations in other fields, in which case, the methodology is to be applied only to the extent that it is relevant. The criteria proposed in this tool are:

- C1 – Leadership – it concerns the conduct of the persons in charge of the organization;
- C2 – Mission, vision, and objectives – refers to the context and objectives of automotive repair and maintenance service organizations;
- C3 – Strategy, and planning – aims to define the direction the organization wants to follow for the implementation of the mission and vision in order to achieve the established objectives;

- C4 – Organizational culture - aims to define the mix of common values agreed at the level of the entire organization, values that guide employees every day;

- C5 – Engaging Stakeholders – addresses the need for organizations to understand the needs and expectations of relevant stakeholders by involving them in strategy and planning;

- C6 – Processes – aims to identify the key processes in the organization, processes that have an indisputable role in achieving the organization's mission and strategy;

- C7 – Driving Performance and risk management – addresses how the organization manages potential risks and uses the performance management system to improve key processes;

- C8 – The external competitive environment – refers to the ways in which the organization has diagnosed and evaluated the market in which it operates;

- C9 – Stakeholders – targets results based on feedback from key stakeholders, perceptions, and experiences in dealing with the organization;

- C10 – Business sustainability – refers to outcomes related to the performance of the organization in terms of profit, population, and the planet.

The proposed work tool does not offer any kind of certification or award, its adoption being purely voluntary and without an associated cost. The evaluation methodology has the concrete purpose of presenting the activity evaluation model, which, based on the evaluation results, will lead organizations on the path to excellence, competitiveness, performance, and improvement. The evaluation through the proposed tool will be carried out annually and can be carried out by both external and internal evaluators. The first assessment will have a higher significance as it ensures the existing level of compliance, while subsequent assessments by making incremental improvements will help to align with the best practices in the field.

The self-evaluation procedure is a checklist type, monitors the degree of achievement of the requirements of each criterion, and is based on the evaluation scales presented in Annex 15, Annex 16, Annex 17, and Annex 18. Each evaluation grid will be accompanied by evidence regarding to the evaluator's notation: documents, photos, and notes from the interviews with each person involved. The path of the pattern is that indicated by the current number of the criterion and sub-criterion. After completing each sub-criterion with the related score, the average score for the criterion will be calculated, and the average evaluation score for each category constitutes the arithmetic mean at the criteria level.

The interpretation of the results will be related to the grid of the evaluation of the results, consisting of five levels to reduce as much as possible the subjectivity of choosing a median mark that would not lead to a firm evaluation. Through this conception, middle judgments will be avoided, from which organizations would not be able to conclude in a real way. The rating scale is numerical and ranges from 0 points (not stated/does not meet expectations) to 100 points (learns and improves/is an example to others). The rule for assigning a certain score assumes that all the requirements described in the corresponding rating level are met. In the situation where all the requirements are not met, it will be appreciated the immediately lower the evaluation level.

The work tool essentially proposes a complex and systematic mechanism for evaluating all activities within the organization. The method developed for the application of the ILSSA follows nine steps (marked with "E"), as follows:

- E1. Identification of the need for evaluation – requires the completion of the evaluation framework sheet (Appendix 4).

- E2. Identification of the organization's processes and evaluation planning – requires the completion of the *Evaluation Plan* and the *Evaluation Agenda* (Annex 5 and Annex 6).

- E3. Establishing the correspondence between the organization's processes and the work tool.

- E4. Development of the evaluation plan and preparation of the evaluation process – requires the preparation of the Evaluation Plan.
- E5. The assessment itself – requires the completion of the verification forms (Annex 7, Annex 8, Annex 9, and Annex 10).
- E6. Conciliation – meeting between the management of the organization and the working group.
- E7. Final Report and Development Plan – requires completion of the Evaluation Report and the Development Plan (Annex 11 and Annex 12).
- E8. Completion of the evaluation – requires the dissemination of the Evaluation Report and the Development Plan.
- E9. Monitoring – requires monitoring of the measures established in the Development Plan (Annex 12).

The ILLSA begins with the identification of the evaluation foundations and is completed with the issuance of the evaluation report, and the graphic representation of the work method is detailed in Figure 6.3.

It can be concluded that the proposed tool is a feasible, realistic tool adapted to vehicle repair and maintenance service organizations. So:

- the requirements of the model are clear, easy to understand, and allow an easy and synthetic evaluation;
- The evaluation report and the Development Plan allow quick identification of the weak points and the strong points of the business;
- the indicators in the model are relevant, being recognized as important factors in aligning with the best practices in the field;

In this chapter, conceptual and methodological contributions were made to define a new organizational performance analysis and improvement tool adapted to the needs of small and medium-sized repair and maintenance service organizations in the automotive industry. Knowledge from several disciplines was integrated and corroborated: engineering, strategic management, operational, and financial management, as well as elements from over 7 years of experience in the automotive field.

The new tool will enable service organizations in the automotive industry to adopt a fully tailored performance appraisal model, thus eliminating the losses caused by implementing a model with a low degree of applicability, creating increased engagement among employees and being able to differentiate themselves from of competitors.

This chapter presents the most important contributions of the author within the research approach.
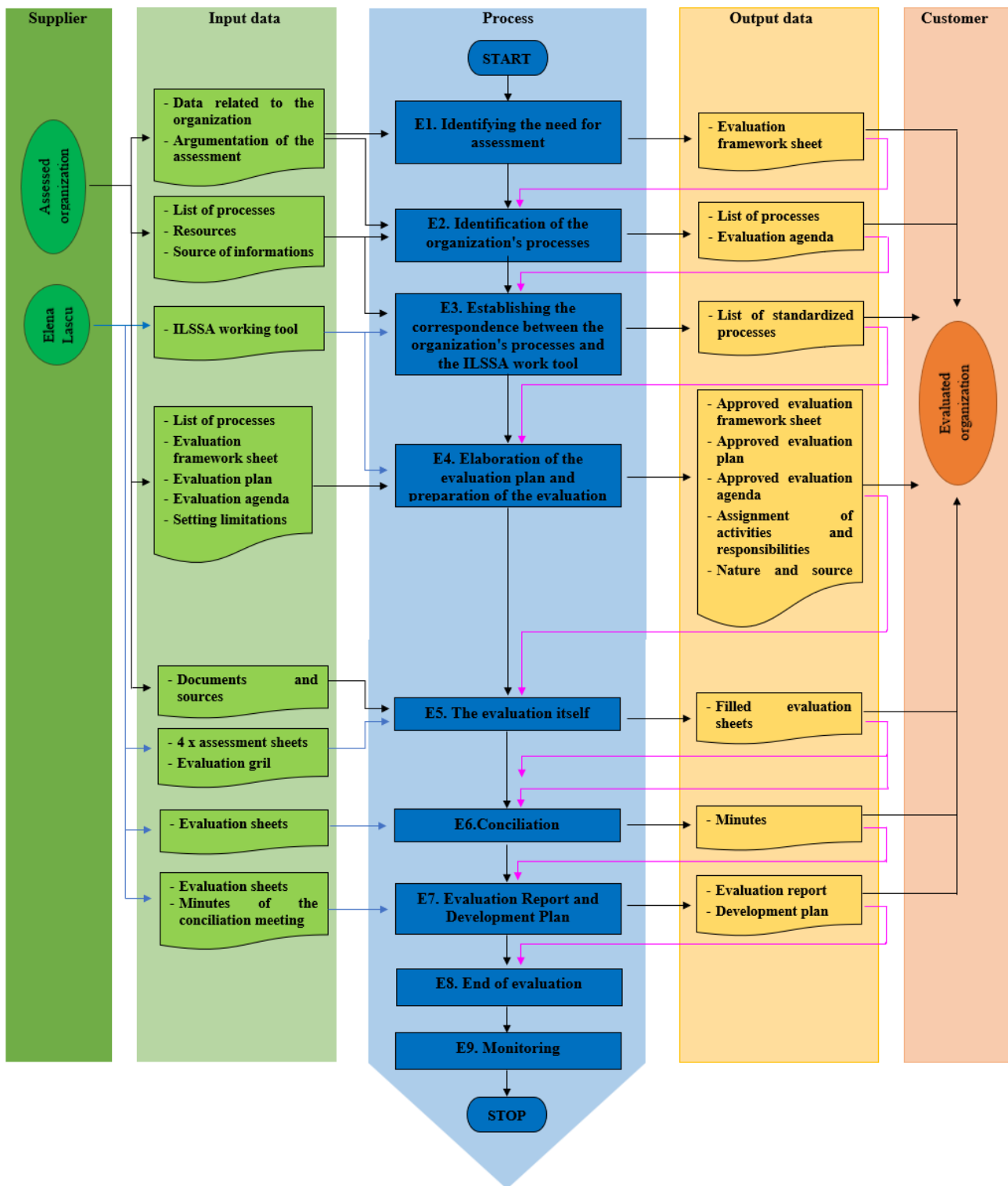
Figure 6.3. ILSSA evaluation mechanism

Chapter 7. VALIDATION OF THE ANALYSIS TOOL - CASE STUDY APPLIED IN THE ORGANIZATION

The methodology developed in chapter 6 is concretized in this chapter by validating the proposed tool through a case study in an organization providing repair and maintenance services in the automotive industry. The Auro Services Specific Work Tool can serve to improve the performance of organizations in the studied field by providing directions to follow, but in order to fulfill this role, the tool requires technical-operational validation in the field. The case study, through the contribution brought by the quantitative and qualitative methods used, has the role of contributing to the confirmation of the chosen criteria and the methodology developed within the ILSSA.

The validation of the proposed tool was carried out by conducting a case study applied in the organization with the best results from the initial sample participating in the research. For reasons of confidentiality, the organization selected for the validation of the tool will be generically named "SC Service Auto SRL", and the car manufacturer it represents will be generically named "Constructor Auto". Thus, the problems highlighted by the application of the work tool will be identified and analyzed, rendering the step-by-step process of the ILSSA application scheme presented in Figure 6.3, as well as the results obtained. In order to validate the tool, the four evaluation forms (Appendices 7, 8, 9, and 10) were transposed into a single questionnaire, the questionnaire is composed of 10 criteria, 34 general factors, respectively 139 specific factors.

SC Service Auto SRL is an organization with more than 20 years of activity that is part of the more than 800 authorized representatives owned by Constructor Auto worldwide. The policy in the field of quality within SC Service Auto SRL has the main objective of *fully satisfying the customer, offering him products that meet his demands and needs in terms of performance, quality, and reliability of services*.

Starting from the results of the questionnaire presented in Table 3.25, the activities of the organization were scanned for the review of the problems already known by the organization, and the situation regarding these problems was drawn up in order to know the initial situation, as follows:

- the image of the organization;
- customer complaints and complaints;
- level of commitment and deadlines for performing the non-respected services;
- low enthusiasm and motivation among employees;
- low level of involvement of front-office advisors;
- poor internal communication - the internal target audience is heterogeneous (from managers and staff with higher education to unskilled workers), and the organization faces communication problems, the staff is varied in terms of education and professional training. There are elements characteristic of a bureaucratic culture with a strict hierarchy, highlighted by methodologies (employees need signatures and approvals within the activities carried out).

The processing of the data collected following the application of the tool is presented in the radar graph in Figure 7.2.
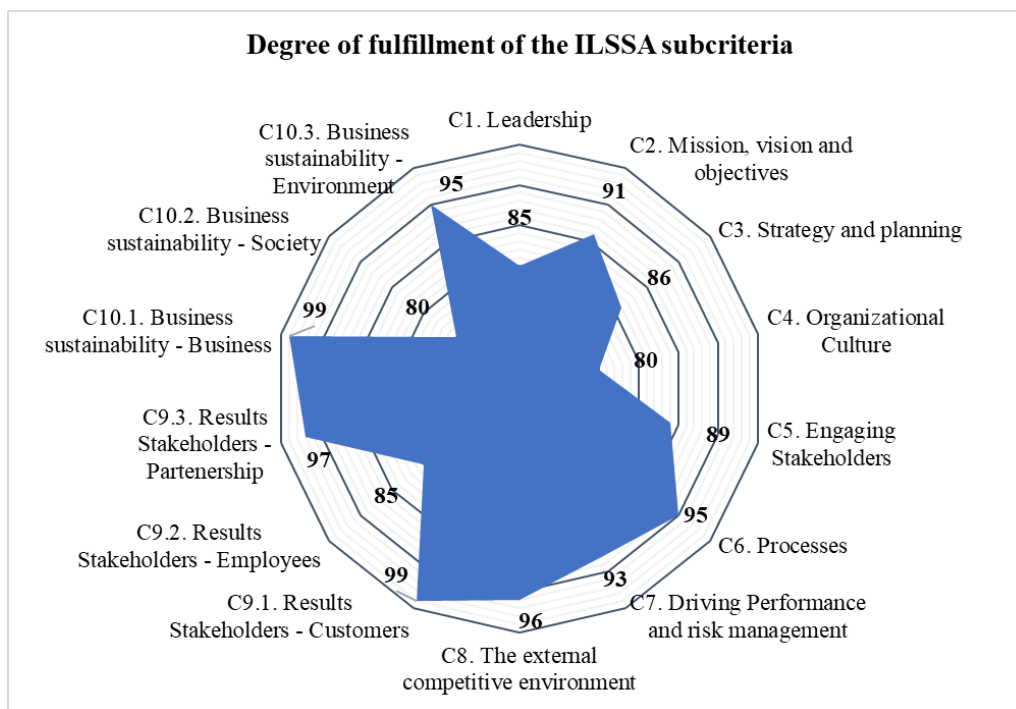
Figure 7.2. Degree of the fulfillment of the ILSA criteria

The final scores for each ILSSA criterion are interpreted according to the results evaluation grid that is explained in Table 6.17. The results of the analysis are presented in Table 7.7.

Table 7.7. Interpretation of the final scores according to the Evaluation Grid

ID	Criteria and sub-criteria	Results evaluation grid				
		Very unsatisfactory	Unsatisfactory	Medium	Satisfactory	Excellent
		0	1-30	31-70	71-90	91-100
C1	Leadership				85%	
C2	Mission, vision and objectives					91%
C3	Strategy and planning				86%	
Score DIRECTION:		**88%**				
C4	Organizational culture				80%	
C5	Engaging Stakeholders				89%	
C6	Processes					95%
Score EXECUTION:		**88%**				
C7	Driving performance and risk management					93%
C8	The external competitive environment					96%

	Punctaj SUPPORT:	94%					
C9.1	Results Stakeholders - Customers						99%
C9.2	Results Stakeholders - Employees					85%	
C9.3	Results Stakeholders - Partnerships						97%
C10.1	Sustenabilitatea afacerii - Business						99%
C10.2	Sustenabilitatea afacerii - Society					80%	
C10.3	Sustenabilitatea afacerii - Environment						95%
	Score RESULTS	93%					

Along with the testing of the ILSSA within the organization, the evaluation of its usefulness was also carried out. Thus, a questionnaire consisting of 10 questions was sent to identify the perception of managers within the analyzed organization. The questionnaire was completed by the eight employees with an execution function within the studied organization by giving marks from 1 to 10. The centralization of the global marks given by the managers is presented in Table 7.8

The final score of the ILSSA evaluation questionnaire is 8.8 points out of a maximum of 10 points, which means that the working tool is practical and effective, but requires minor adjustments according to the results of the evaluation.

Table 7.8. Results of the ILSSA tool evaluation

ID	Criterii de evaluare	Average marks awarded
1	The ILSSA tool has a clear design, is easy to navigate and understand	8.8
2	The ILSSA tool is intuitive and easy to apply	8.2
3	The ILSSA tool is adapted to the specifics of car services	8.7
4	The ILSSA tool is useful for an in-depth examination of the level of performance	9.6
5	The ILSSA tool is useful in identifying and flagging possible performance problem areas	9.2
6	The ILSSA tool is useful in analyzing options and setting priorities	9.8
7	The ILSSA tool is useful in assessing the competitive position	7.8
8	The ILSSA tool helps to improve trust and image	8
9	The ILSSA tool helps in effective budget planning and employee motivation	8.2
10	The ILSSA tool helps the organization improve performance and achieve excellence	9.8
	Final evaluation score	8.81

Chapter 8. FINAL CONCLUSIONS. PERSONAL CONTRIBUTIONS. LIMITATIONS OF THE RESEARCH. PERSPECTIVES AND DIRECTIONS ON THE FIELD OF RESEARCH

8.1. Final conclusions

The formulation of this doctoral thesis started from the analysis of the concerns currently existing both among organizations in the service sector, in particular for car services, as well as in the national and international specialized literature about the evaluation of global performance and methods of improvement Hers. This highlights the fact that organizations must consider those strategies, practices, and systems of performance indicators relevant and adapted to their needs, to maximize the achievement of objectives, because the business environment is highly competitive and constantly changing. This thesis integrates both research and contributions from the fields of engineering, management, and statistics.

This chapter, structured in three distinct parts, reflects the synthesis of the entire scientific research and, last but not least, highlights the core of the achievements undertaken throughout the five years of research, as follows:

- Formulation of general conclusions by highlighting the most significant aspects related to the proposed theme;
- Reviewing the main personal contributions marked in this doctoral thesis: theoretical contributions, contributions related to data collection, empirical contributions, methodological contributions, and contributions in favor of the Romanian business environment;
- Description of the main limitations of the research;
- Highlighting future research opportunities related to the development of the research field presented in the doctoral thesis.

The development framework and content of the doctoral thesis, as well as the author's theoretical and practical contributions, supported the development of original and relevant scientific research in relation to the constraints of this scientific endeavor. The general objective of the doctoral thesis consists in the development of a working tool specific to management systems in the automotive industry for identifying the best solutions to improve the organizational performance of automotive repair and maintenance services and was achieved by designing and achieving the success of the secondary objectives established for each chapter of the work.

The thesis is structured in two parts, one theoretical and one applied, as follows:

- Part I entitled *The current stage of research on organizational performance in the service industry* was dedicated to the knowledge of the researched field by studying the specialized literature and covering Chapters 1 and 2.

The current stage of the research has allowed the correlation of the contributions of the best-known authors of specialized literature, foreign and Romanian, with the author's own applied research in relation to this scientific approach within the national, small, and medium-sized organizations in the city of Bucharest. Therefore, based on the bibliography studied, in the chapters related to this part of the research, aspects related to the researched field were clarified to broaden the scope of the Performance Management approach.

The performance of service organizations in the automotive industry and its impact on society represented the starting point of this scientific approach and the identification of research opportunities. The current state of research on organizational performance has shown that organizations that operate in the sphere of services provided to the population face well-known challenges, such as the development of the global market, the rapid pace of change, changing customer preferences or fierce competition, and are forced to constantly adapt for the future according to these challenges. Although they are characterized by a specific way of organization and operation, organizations providing services to the population are among the organizations that directly contribute to the prosperity of contemporary society. In this context, organizations must understand the extent of the transformations in the new society and, in order to prosper in the future, must integrate in a unitary framework a series of practices and strategies essential to successful strategic management. Thus, carrying out diagnostic studies of current performance by integrating as many models and tools as possible is a major advantage in managing performance in order to improve it. The current stage has identified the fact that although the global performance of organizations is discussed, in reality, performance is aimed at economic, social, and environmental aspects and the ability of the organization to adapt to new market requirements.

In other words, service organizations in the automotive industry need a customized performance measurement tool that supports their analysis and comparison with other organizations, both from the point of view of the performance of internal processes and from the point of view of key stakeholders, which existing models of excellence do not achieve individually.

This aspect provided the research direction, namely the development of a performance analysis and improvement model specific to management systems in the automotive industry for which the factors that influence the performance of organizations were identified and analyzed in the following chapters.

- Part II, entitled *Contributions regarding the development of a model for improving organizational performance in the field of services in the automobile industry*, was dedicated to the author's practical contributions by presenting the research results of the sampled organizations, by highlighting the factors that influence the performance of organizations in a model conceptually, through the statistical validation of the applied questionnaires, through the design and development of the customized model for car repair and maintenance services, through the validation in the business environment of the customized tool and through highlighting the final conclusions, personal contributions, research limitations and opportunities of future research.

The second part of the Ph.D. thesis starts with the presentation of the results of the documentary research and the results of the distribution of the three questionnaires to a sample of 10 car repair and maintenance services in Bucharest. The key factors identified following the processing of the questionnaire results were ranked according to the number of occurrences, on three levels of importance: Level 1, Level 2, and Level 3, in order to be able to reflect the extent to which these factors influence the performance of the studied organizations. This classification made it possible to identify the aspects that distinguish the 10 organizations, even if they have the same specifics.

With this classification in mind, a model of the factors influencing the performance of organizations was developed. The most profound differences were seen in employee-oriented practices, strategies, and overall results achieved. In Chapter 4, the data collected in the research were subjected to statistical processing, thus rendering the validity of the previously administered questionnaires. The SPSS software used in the statistical processing helped to test the 17 working hypotheses (four hypotheses referring to customers, five hypotheses referring to employees, eight

hypotheses referring to internal processes), of which eight hypotheses are confirmed by statistical testing, and respectively nine are rejected.

The correlations between the factors that make up the working hypotheses were calculated using the Pearson "r_P" (for continuous variables) and Spearman "r_S" (for ordinal level data) correlation coefficients, among which the following associations can be noted:

- key factors from customer surveys:
  - high predictive power: repair duration, the satisfaction of needs, staff attitude;
- key factors from employee surveys:
  - high predictive power: collaboration with top management, collaboration with other departments, work atmosphere, the responsiveness of top management, degree of manager involvement in the activity performed by the employee, respect with which the employee is treated, salary increases, and occasional material rewards, recognition of merits;
- key factors from managers' surveys:
  - perfect predictive power of 0.9919: supporting and motivating employees, mutually beneficial partnerships, implementing strategy at the level of each department, evaluating internal and external indicators, and business continuity plan;
  - high predictive power: periodic assessment of risks, company reputation, and image, reassessment of indicators associated with specific objectives, integration of vulnerable people, support and motivation of employees, open dialogue regarding employee rights and responsibilities, social involvement, identification of employee training needs, establishing employee professional development programs, measuring employee satisfaction, measuring customer satisfaction, collecting customer feedback, corrective action plan for complaints, financial results.

Determining the overall performance of repair and maintenance service organizations in the automotive industry is particularly important to key stakeholders as they have significant attributions in changing outcomes.

As a result of the inconsistency identified between the existing models of excellence and the research results of the sampled organizations in the automotive industry, it proved necessary to design and develop a tool for improving performance and achieving excellence, customized for vehicle repair and maintenance services. This customized tool represents the essential contribution of the doctoral thesis. Through its conceptual framework that integrates elements specific to the EFQM 2020 model and elements specific to car services, ILSSA allows the identification of risk areas and the undertaking of actions to reduce or even eliminate risks, with a fundamental role in increasing performance. ILSSA is a tool developed taking into account 10 performance criteria, grouped into four dimensions: direction, execution, support, and results.

Through this organization of criteria, ILSSA facilitates the visualization of the degree of fulfillment of each individual criterion, at the same time contributing to the provision of action directions for the smooth functioning of the business. ILLSA offers automotive services that aim to become leaders in the vehicle repair and maintenance services sector the opportunity to self-assess, challenging these organizations to make changes where necessary to meet the demands of excellence, directing them to new dimensions of performance.

The last part of the research proposes the validation of the ILSSA within the studied business environment by applying the evaluation mechanism developed in Chapter 6. The validation results demonstrate that the proposed tool (ILLSA) is valid and can be used by the studied organizations.

8.2. Personal contributions

The implementation of the tool by organizations in the vehicle maintenance and repair sector could be a first stimulus in channelling efforts to transform these organizations into sustainable, socially and future-oriented organizations. By adopting the tool proposed in this thesis, organisations can not only improve their organisational performance but moreover, prepare themselves for future transformations that will come from the external environment.

Thus, through this doctoral research, the author makes a series of important personal contributions to the field of research, both at a theoretical, methodological, and practical level. The results of this scientific approach are relevant both for organizations in the vehicle maintenance and repair services sector, as well as for scientific researchers. In this sense, the personal contributions marked in this doctoral thesis can be presented as follows:

1. Theoretical contributions:

o C1 – The research problem was identified and a framework for analyzing the performance of small and medium-sized organizations in the automotive after-sales service sector was proposed by highlighting the context and research objectives;

o C2 – A bibliographic research was carried out to clarify the concepts of organization, organizational performance, and the performance management of small and medium-sized organizations in the after-sales service sector of the automobile industry by presenting specific aspects related to the performance of national organizations under the conditions of globalization and the evolution over time of the role of organizational diagnosis;

o C3 – A bibliographic research was carried out with the aim of creating an overall synthesis of the most used performance measurement models by detailing in chronological order the main methods of evaluating the performance of organizations (indicators, tools, and models of excellence);

o C4 – A secondary research was carried out in order to x-ray the Romanian business environment by identifying the types of organizations active in Romania and presenting the most important aspects related to services for the population;

2. Contributions regarding data collection:

o C5 – Three questionnaires were compiled, each based on a set of performance criteria and relevant profile criteria within car service organizations, the foundations of their elaboration being the specialized literature, the author's knowledge, and skills;

o C6 – The stages of documentation and substantiation of the performance criteria, the design stage of the questionnaires, and the stages of organization and development of the data collection were carried out, which are entirely the contribution of the author;

o C7 – Each element of the three questionnaires applied in car service organizations was interpreted and analyzed, the questionnaires were validated using SPSS, which is entirely the author's contribution;

o C8 –Relevant information for future studies was obtained.

3. Empirical contributions:

o C9 – Research directions were determined regarding the development of the work tool specific to management systems in the automotive industry, based on the current state of the field;

o C10 – Approaches related to global performance evaluation were analyzed and the main strategies and practices of the surveyed organizations in the population services industry were identified;

o C11 - Three multi-criteria conceptual models (questionnaires) were designed in order to identify the most important aspects that can influence the overall performance of small and medium-sized organizations in the after-sales service sector in the automotive industry;

o C12 – The designed questionnaires were applied in order to identify basic information related to the general level of satisfaction of non-management employees and customers, as well as other information related to the researched subject within the sampled organizations;

o C13 – The results of the survey based on questionnaires from small and medium-sized organizations in the after-sales service sector of the Romanian automobile industry were mapped, analyzed, and graphically represented;

o C14 – A statistical analysis of the questionnaires was materialized from the point of view of feasibility, reliability, validity, and acceptability of the questionnaires using the SPSS statistical method by establishing the correlations between the studied variables and by detailing the correlation levels;

o C15 – A conceptual model of the factors that influence the performance of organizations was designed by identifying and ranking the predominant specific factors within the sampled organizations that influence the overall performance;

o C16 – An own conceptual tool customized for automobile services (ILSSA) was designed and developed that synthesizes the specific internal characteristics of management systems in the automobile industry through which the performance of these types of organizations in the Bucharest region is analyzed and evaluated;

o C17 – The customized tool for automotive services (ILSSA) was simulated and validated within the sampled organizations in the automotive industry;

o C18 – The results obtained after the validation by highlighting the risk areas were analyzed and interpreted;

4. *Methodological contributions:*

o C19 – An approach methodology was chosen that was fully applied throughout the research period and that allowed the collection of relevant information to achieve the research goal;

o C20 – A comparative analysis was carried out from the point of view of global performances and strategies related to Performance Management of the first 10 most representative organizations active in the automotive industry in Bucharest;

o C21 – A new customized tool for automotive services (ILSSA) was developed to evaluate and improve the global performance of these organizations;

o C22 – A detailed description of each criterion of the new tool developed on the basis of the specialized literature research was drawn up;

o C23 – Guidelines for future research on evaluating and improving the performance of service organizations in the automotive industry have been developed;

5. *Contributions in favor of the Romanian business environment:*

o C24 – The proposed work tool (ILSSA) and the results of its validation allowed the development of a set of recommendations for improving the management systems and global performances of the organizations providing services intended for the population by identifying the existing strategies and research directions in the specialized literature.

8.3. Limitations of the research

Despite the essential contributions that this research reflects, there are some limitations that suggest an avenue for future research. The main limitations of the research can be grouped into the following aspects:

- *Extremely insufficient research in the national literature:* Although the performance of service organizations is a common topic in research in the international specialized literature (see Table 2.2) and the after-sales service sector, especially vehicle repair and maintenance services - they found out in continuous expansion in the last 30 years in Romania, the research related to measuring the performance of this sector is extremely insufficient in the national literature;

- *Difficult process of obtaining information*: Since it was impossible to obtain information about the performance strategies used by car service organizations in Romania, questionnaires represented the main source of information collection, and documentary research and social survey as secondary sources. The reluctance of employees and managers to provide information was linked to the invocation of confidentiality clauses;

- *Hesitation of organizations in providing information*: The skepticism of Romanian organizations related to the provision of any information associated with the activities carried out or the results achieved generated a relatively low response rate to the questionnaires sent by e-mail for the collection of information (see Table 4.45);

- *Research sample size*: the small sample is limited to 10 car service organizations in Bucharest, 200 employees, and 80 customers, and provides insufficient data to guarantee reliable results at the national level or in other sectors or industries in Romania ;

- *The proposed instrument is incomplete*: the Working Instrument Specific to Automobile Services (ILSSA) is not exhaustive. At the current stage, the development of the tool aims at diversifying strategies related to Performance Management and targeting only three (customers, employees, shareholders) out of all key stakeholders. Thus, the tool can be developed and refined by studying all stakeholders.

8.4. Perspectives and directions regarding the research field

Considering the limitations of the research, important future activities related to the development of the research field can be highlighted. The issue of performance measurement among service providers in the Romanian automotive industry is a complex, meticulous and continuous activity. Regarding the new perspectives related to the research carried out in this doctoral thesis, the following can be noted:

- *Widening the research sample*: the sample can be widened by including in the research a larger representative number of car repair and maintenance service organizations belonging to the same car manufacturers and expanding the research at the national level;

- *Improving the ILSSA:* the expansion of the research sample will contribute to the improvement of the Working Tool Specific to Car Services by collecting additional data that will lead to the inclusion of more specific dimensions as well as the re-evaluation of the practices used within car service organizations in the Romanian industry. All the methodology can be customized for other industries as well, the ILSSA template providing points of orientation with an important contribution in tracking and improving the organizational performance of the business environment in Romania. The application of the ILSSA by service organizations could create an impetus that leads to simultaneously focus on quality, sustainability and the future. Services intended for people (health, education, beauty, hotels, restaurants, transportation of people), services intended for goods (repair and maintenance of industrial and household equipment, cleaners, transport of goods, post and telecommunications), services intended for processing information (financial, accounting, legal,

banking) etc. they are the basis of the development of the Romanian society. By improving performance, organizations that provide these services can prepare for future transformations in the internal and external environments of the organization and can contribute beneficially to the development of society.

- ***Promotion of ILSSA:*** promotion of the tool at the level of organizations providing vehicle maintenance and repair services in Romania;

- ***Extending the ILSSA approach to other industries:*** extending the application of the tool proposed in this thesis, in areas of activity similar to that of vehicle repairs and maintenance or in other branches of the industry, will allow the customization of the tool according to the specifics of the respective activity or industry;

- ***Reiteration of the research***: the re-examination of the organizations participating in the research after an interval of 1 year will allow comparative analysis and the evaluation of how the analyzed organizations have improved their practices related to Performance Management so as to achieve the expected results.

In the future, Romanian specialists together with service researchers can contribute to the creation and development of a solid theoretical framework that supports the identification and improvement of strategies in order to achieve efficiency and increase the performance of organizations that provide vehicle repair and maintenance services. The scientific approach that will be carried out in this regard involves the development of timely and relevant solutions that allow the expansion of the research area, the deepening of new practical and theoretical aspects, and the exploitation of new opportunities.

The proposed research theme, as well as the methodology followed, are of particular importance in the realization of this scientific approach, in that the dissemination of the results in the studied field, as well as their acceptance by the business environment, could cultivate the use of healthy and positive strategies related to the measurement and improving the performance of car service type organizations, directing these organizations towards the knowledge of new dimensions of performance, much more professional compared to the usual empirical approaches, and why not, supporting the efforts in organizing excellence awards in Romania.

Although increasing the performance of automotive service organizations is a difficult and complex action, based on the results obtained in this research, recommendations can be developed that could be useful for the vehicle maintenance and repair services sector:

- for the evaluation of the external condition, the organization must apply at least two evaluation methods and compare the results with those of competitors;

- the comparison with competitors should be a comparison based on several criteria (not just one), with the assignment of a reference value for each indicator;

- the indicators should be selected by involving the managers at the level of each department.

The practical approach to collecting data from managers was difficult, but the results indicated an insufficient degree of rigor in the current procedures for assessing performance in automotive service and repair establishments, a sector with a specific culture within the automotive industry.

LIST OF PUBLISHED WORKS

Following is presented the list of scientific papers published in national and international scientific events, reflecting both the scientific concerns during the doctoral studies and the dissemination of research results during this period. Thus, up to this moment, the following works have been published:

[1] **Lascu, E**., Severin, I., Lascu, F.D., Gudana, R.A., Nălbitoru, G., Ignat, N.D. (2021). Framework on Performance Management in Automotive Industry: A Case Study, Journal of Risk and Financial Management (JRFM), IF 0.95 Q2, Vol. 14, Iss. 10, paper 480, DOI: 10.3390/jrfm14100480, ISSN: 1911-8066, WOS: 000733905300001, Doc. Type: Article. Quoted in:

- Di Luozzo, S., Keegan, R., Liolli, R., Schiraldi, M.M. (2022). Key activity indicators: critical review and proposal of implementation criteria, International Journal of Productivity and Performance Management (IJPPM), IF 0.7 Q2, Vol. ahead-of-print, No. ahead-of-print, DOI: 10.1108/IJPPM-01-2022-0023, ISSN: 1741-0401, WOS: 000838698900001, Doc. Type: Review; Early Access;

- Hakim, I.M., Singgih, M.L, Gunarta, I.K. (2023). Critical Success Factors for Internet of Things (IoT). Implementation in Automotive Companies, Indonesia, Journal of Sustainability, IF 3.889 Q2, Vol. 15, Iss. 4, paper 2909, DOI: 10.3390/su15042909, eISSN 2071-1050

[2] **Lascu, E**., Lascu, F.D., Stînga, F., Severin, I. (2020). Process Redesign to reduce Stoks of Obsolete Parts in Automotive Industry, Quality Acces to Success, IF 0.21 Q4, Vol. 21, Iss. 178, pp. 43-49, ISSN: 1582-2559, WOS: 000582952100008, Document Type: Article. Quoted in:

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