AUDIT AND CERTIFICATION OF DEALER AUTO SERVICE STATIONS

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ABSTRACT

The article presents results of research on technical audit of dealer auto service stations and efficiency of their operation. The author evaluates technical and economic performance of enterprises of this kind, methods of determination of labor and resource use, professional level of employees, identification and elimination of «bottlenecks», support of promising areas for development, transfer of stations to a new technological level. The author proposes certification criteria of dealer auto service enterprises, assignment of respective categories to them, as well as developing motivational system for the short term.

ENGLISH SUMMARY

Background. *The main objective of auto service (hereinafter- AS) is timely, qualitative and full satisfaction of needs of motor vehicles owners to maintain and repair their vehicles, including at specialized dealer stations.*

Technical audit of dealer auto service stations (hereinafter- DASS) means confirmation of the existence of necessary technological equipment used for repair and maintenance of cars, evaluation of key performance indicators of enterprise production areas, checking of warehouses of spare parts and materials for the number and nomenclature, assignment of relevant certification category to stations, issue of recommendations to eliminate defects.

The ultimate goal of such an audit is elimination of causes of downtime of automotive equipment being repaired. In AS practice such reasons are, as a rule, lack of necessary spare parts, specific diagnostic and basic equipment, accessories and tools for repair, the deficit of qualified personnel and proper training of technology works.

As an example of the technical audit of production activities of AS enterprise the author invites to consider results of checking of dealer station brand «Great Wall», group of companies «IRITO» in Moscow.

Objective. *The objective of the author is to investigate the issues of technical audit of dealer auto service stations and efficiency of their operation.*

Methods. *The author applied analytical method, using certain existing dealer auto stations as an example.*

Results. *These companies carry out sale of cars, spare parts and accessories of corresponding brand, as well as all types of repairs and maintenance (pre-sale, after-sales, post-warranty). Each station has a production program that includes the implementation of technical and economic parameters shown in Table 1.*

The value of table indicators varies and depends on the production capacity of enterprises, investment resources, degree of optimization of primary and secondary processes. For clear definition of the load amount of production space and productivity of labor contribution it is more appropriate to provide an analysis of activity in terms of runs per one workshop bay and volume of spare parts.

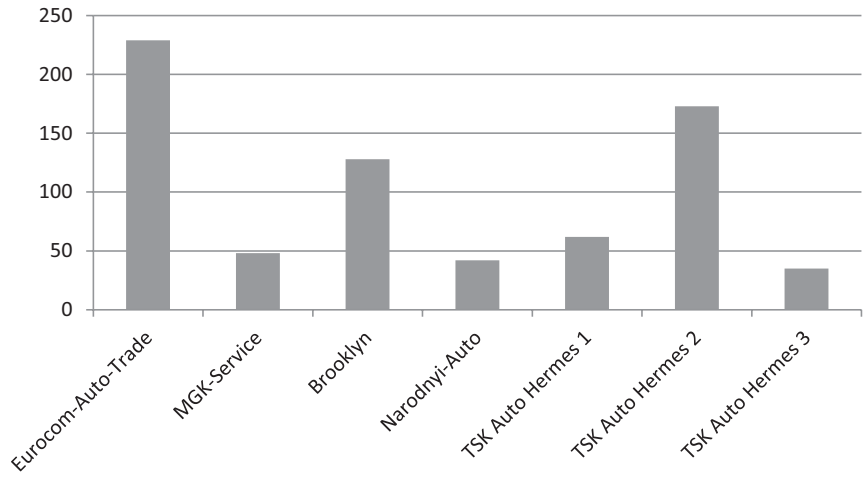
Calculation of runs per one workshop bay is done by dividing the total labor intensity of the work performed by the number of workshop bays of AS enterprise during the reporting period (month) and is calculated using the formula:

$$T_{ПР} = \sum T_{ТОиТР} \Big/ Q_{РП}, \qquad (1)$$

where $\sum T_{ТОиТР}$ *is a total labor intensity of works at dealer stations during the reporting period, s/h;*

$Q_{РП}$ *– total number of workshop bays at DASS, units.*

On the basis of the formula (1) a diagram was constructed, which indicates labor intensity on workshop bays of several AS dealer enterprises (Pic. 1).

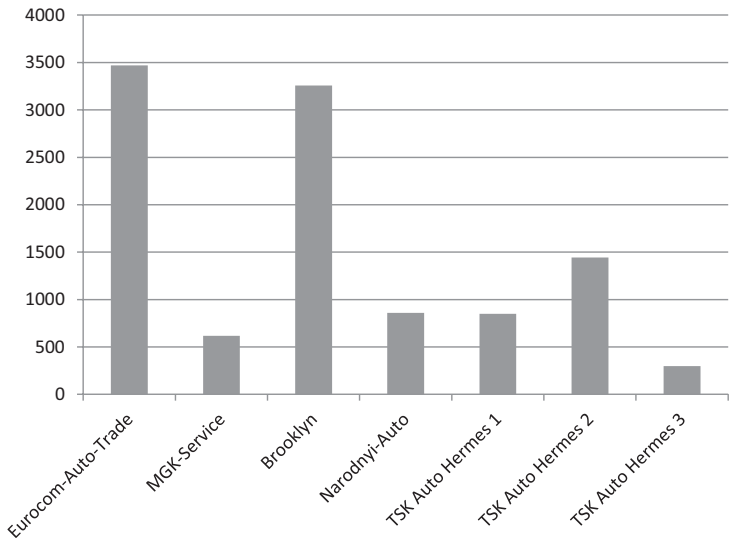


Pic. 1. Diagram on runs of standard hours on DASS workshop bays.

Table 1

Statistical data on technical – economic indicators of DASS

Name of DASS/ Indicators	Eurocom-Auto-Trade	MGK-Service	Brooklyn	Narodnyi-Auto	TSK AUTO HERMES 1	TSK AUTO HERMES 2	TSK AUTO HERMES 3
Number of workshop bays, units.	10	7	5	4	3	5	17
Number of mechanics, pers.	16	44	8	5	6	7	30
Daily working hours, h.	12	12	11	11	12	12	12
Standard hours	1250	274	555	169	188	865	600
Receipt from rendered works (services), rub.	1500000	288032	568488	214486	210385	2283420	662400
Receipt from sales of spare parts, rub.	915061	221883	347623	200215	132209	1216672	677020
Warehouse stocks, rub.	3469532	498513	3257000	850000	23656	1443550	296600
TOTAL:	2415061	509915	916111	414701	342594	3500092	1339420



Pic.2. Diagram of warehouse stocks value at DASS.

As it can be seen from Pic. 1, labor intensity of workshop bays varies and ranges from 30 to 235 s / h. These figures indicate a low load of workshop bays. For example, a workshop bay with load of 30 s / h is effective only during three work shifts, and a workshop bay with 235 s / h – 23 shifts per month, respectively.

Other evaluation indicator of the effectiveness of DASS is availability of spare parts in the number and nomenclature, fixed in their residual value. Pic. 2 shows levels of warehouse stocks in the studied DASS.

When analyzing data presented in Pic. 1 and 2, we can see proportional dependence of runs of standard hours on workshop bays from the value of warehouse stocks. Car owners refuse maintenance and repair due to lack of spare parts. As a consequence, naturally the number of applications for maintenance falls and production program decreases.

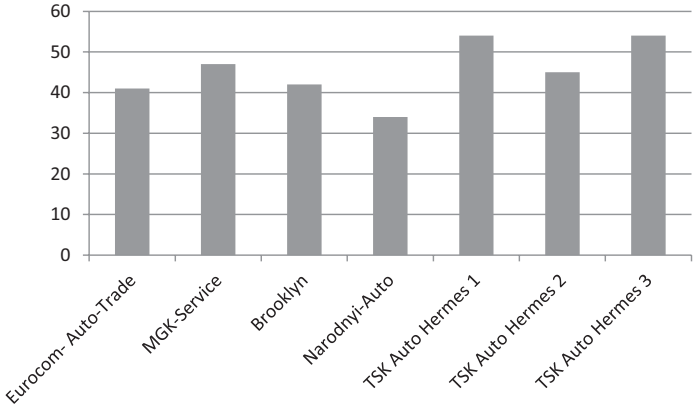
An additional indicator of DASS efficiency is availability of technological and diagnostic equipment used for maintenance and repair. To study the equipment of dealer stations with technological equipment a certain list was created, aimed at holding all main and auxiliary operations. It includes 58 items. Inventory results are shown in Pic. 3.

Equipment was chosen so as to ensure the mechanization of production processes that require low-skilled and manual labor, as well as to improve the quality of maintenance and repair of vehicles. «List of main technological equipment recommended to equip companies that perform services (works) for maintenance and repair of motor vehicles» was used. Nomenclature and number of certain types of equipment can be adjusted with account of specifics of the company (the methods adopted in the organization of work,

Table 2

Criteria of DASS certification

№	Indicators	Requirements	Certification points
1.	Presence of production area of tool and bench repair	Own	10
		Subcontracting	3
2.	Presence of production area of paint and body repair	Own	10
		Subcontracting	3
3.	Level of technical equipment	List of recommended equipment	5
4.	Production space (sq.m.)	Minimum 140 sq.m	1
		From 200 to 600 sq.m	2
		Over 600 sq. m.	3
5.	Actual cost of spare parts warehouse, rub.	From 1 to 2,5 mln. rub.	1
		From 2,5 to 5 mln. rub.	2
		Over 5 mln. rub.	3
6.	Presence of a tow truck	Under the lease contract (work and labor contract)	1
		Own tow truck	2
7.	Qualification of personnel (availability of diplomas and certificates of training completion)		3
8.	Presence of washing post		2
TOTAL	Category 3: from 17 to 26 points	Category 2: from 27 to 34 points	Category 1: 35 points



Pic. 3. Quantitative evaluation on equipment of DASS with technological equipment.

number of workshop bays, working conditions on certain sections, etc.).

The results of technical audit with respect to equipment level of dealer stations showed different levels. At a minimum, DASS «Naradnyi-Auto» is equipped. Leading positions have TSK Auto Hermes 1 and 3 (see Pic. 3).

Intraproductive performance indicator of DASS is qualification of technical personnel. This indicator influences quality of performed works [1, 3], and often the confidence of owners of cars in dealer stations. Repeated repairs and reclamation for unskilled repair lead to material and labor losses, create conflicts because of the claims of car owners. Control criteria here are certificates of DASS employees, who completed specialized training.

Based on the assessment of technical and economic indicators, new criteria for certification of DASS have been developed. In certification, the company gains a certain amount of points, giving the right to assign an appropriate category for it (Table 2). Depending on this category the organization is reimbursed for warranty repair at different tariffs (from 400 to 800 rubles for s/h), as well as it gets an opportunity to have an additional discount on the purchase of spare parts. Weight of indicators in points depends on the importance of factors that is determined experimentally- statistically using the method of «black box». [3]

This method generates not only the weighting coefficients – certification points for a station, but if necessary, enables to determine their values without building a model.

Results of DASS certification are presented in Table 3.

Conclusions. *Studies have shown a rather low utilization of capacity due to the shortage of spare parts, high cost of maintenance, violations of its frequency, incomplete set of technological equipment and tools, unskilled repair, because of inadequate*

Table 3

DASS certification results

DASS name	Points	Category
Eurocom- Auto- Trade	33	2
MGK-Service	30	2
Brooklyn	34	2
Narodnyi- Auto	9	0
TSK Auto Hermes 1	34	2
TSK Auto Hermes 2	30	2
TSK Auto Hermes 3	34	2

training of personnel on the subject of diagnosis and repair technology.

In order to resolve identified problems and improve the certification categories of AS enterprises it is necessary to adjust activity of each DASS, increase the amount of warehouse stocks, reduce cost of maintenance and repair, buy missing equipment and tools, establish training of personnel, primarily on problematic topics. And it should be noted: with respect to staff any training efforts will not be effective until the end, if the idea of creating a developing motivational system, typical for dealer stations, is not implemented. Its meaning is in combination with financial incentives and personal professional growth.

Keywords: automobile transport, automobile service, dealer stations, technical audit, certification criteria, efficiency.

REFERENCES

1. Razgovorov, C. I. Methods of development of educational programs in the system of dealer auto service enterprises [*Metodika razrabotki uchebnyh programm v sisteme dilerskih predprijatij avtotehobsluzhivanija*] *Transport, nauka, tehnika, upravlenie*, 2010, Iss. 4., p. 48–50.

2. Sarbaev, V.I., Razgovorov, C. I. Management of dealer auto service enterprises [*Upravlenie dilerskimi predprijatijami avtotehobsluzhivanija*]. New materials and technologies in mechanical engineering: Materials of the XII International Scientific and Technical Internet conference. Bryansk, 2010, p. 98–102.

3. Razgovorov, C. I. Scientific basis for improving the effectiveness of the control system of dealer auto service enterprises: Monograph [*Nauchnye osnovy povyshenija effektivnosti upravlenija sistemoj dilerskih predprijatij avtotehobsluzhivanija: Monografija*]. Vladimir, 2011, 173 p.

4. Razgovorov, C. I., Amirseyidov, S. A. Additional Works I Scheduled Maintenance of Motor Vehicles [*Dopolnitelnye raboty v reglamentnom TO avtomobiley*]. *Mir transporta* [World of Transport and Transportation] *Journal*, 2013, Vol. 49, Iss. 5, pp. 44–47.

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