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6 ASSESSMENT OF THE EFFICIENCY OF WORK CONTROL OF THE EMPLOYEES OF THE MOTOR TRANSPORT ENTERPRISE

Larysa Achkasova, Illia Dmytriiev, Inna Shevchenko

ABSTRACT

The control function is one of the main functions of management and ensures that the organization achieves its goals. This is a cost-effective function, so the question of assessing the effectiveness of control performance is relevant. The category of efficiency is complex and multifaceted, this explains the influence of many factors on the effectiveness of control. The purpose of the chapter is to develop a methodology for assessing the effectiveness of monitoring the work of the company's employees.

The system of criteria for effective control was further developed by supplementing the existing system with other criteria taking into account the basic principles of effective control. In addition, the method of assessing the effectiveness of control has been further developed, which, unlike the existing ones, has a complex nature and takes into account the specifics of the work of various groups of personnel of the motor vehicle enterprise: the personnel of the control apparatus, drivers and repair workers.

The resulting technique allows enterprises to increase the level of efficiency of their activities, profit and competitiveness due to the optimization of the control function and increase its effectiveness, to identify the weakest points in the existing control system and to develop measures for their improvement.

KEYWORDS

Control, control effectiveness, control effectiveness criteria, control principles, control effectiveness model, hierarchy analysis method, radar method, functional-cost analysis, cluster analysis.

6.1 PREREQUISITES FOR ASSESSING THE EFFECTIVENESS OF EMPLOYEE CONTROL

In modern companies, where hired personnel work, the problem of their effective and full-time work often arises. There are several reasons for this phenomenon, one of them being the inefficiency of the control of the personnel's work by managers or its absence. The control function ensures that the organization achieves its goals. In the personnel management system, it is a mechanism for ensuring the implementation of plans, preservation and development of the personnel potential of the organization, effective interaction in the system of social partnership.

Any control system is expensive, but in some cases these costs are justified, and in others – not. That is, there is a need to determine the expediency of spending on the control system. That is why there is a question in assessing the effectiveness of control.

At the present time, not only is there no perfect system for assessing the effectiveness of monitoring the work of the personnel of the motor vehicle enterprise, but there is also no substantiated system of criteria for such an assessment.

There is no comprehensive methodology for determining the criteria and the significance of each of them for assessing the effectiveness of control for different groups of workers.

Examining the definitions of different authors, it is possible to conclude that control in various scientific studies is considered in the following aspects:

– as a function of the management system [1, 2];

– as a system of observation, comparison, verification and analysis of the functioning of the managed object with the aim of detecting deviations from the accepted standards [3–5];

– as a set of measures carried out by controlling bodies to check economic transactions [6];

– as a tool for reducing various risks [5];

– as a process that ensures the organization achieves its goals [2];

– as an integral part of the regulation system [7, 8];

– as a form of feedback, with the help of which the control system receives the necessary information about the actual state of the controlled object and the execution of management decisions [8].

All these approaches are certainly correct, as the control system is distinguished by its complexity and multifaceted tasks facing it. In our opinion, the essence of control is that with its help the control system can receive information about the actual state of the control object and respond in a timely manner to negative deviations in order to achieve the organization's goals.

The purpose of control is not so much to collect information, establish norms and standards and identify deviations, but to fulfill the tasks set before the organization. For effective control, it is necessary that the goal of the organization is more important than the used control means [9]. In addition, control should correspond to the type of activity that is controlled and objectively assess what is important for the organization.

To a large extent, the effectiveness of control is determined by the development of principles, instructions, rules, as well as criteria for assessing indicators that measure individual aspects of activity. It is important to develop an algorithm for conducting control operations, training and selecting personnel capable of conducting them [10]. Therefore, in order to assess the effectiveness of control, a list of criteria that would characterize this category must be substantiated, and an approach to assessing the effectiveness of control should be developed.

6.2 JUSTIFICATION OF THE CRITERIA OF EFFECTIVE CONTROL

The substantiation of the criteria for effective control is an integral part of control at the motor transport enterprise. Criteria are requirements for assessing phenomena, objects, people, etc.

The algorithm shown in **Fig. 6.1** was used to develop criteria for effective control.

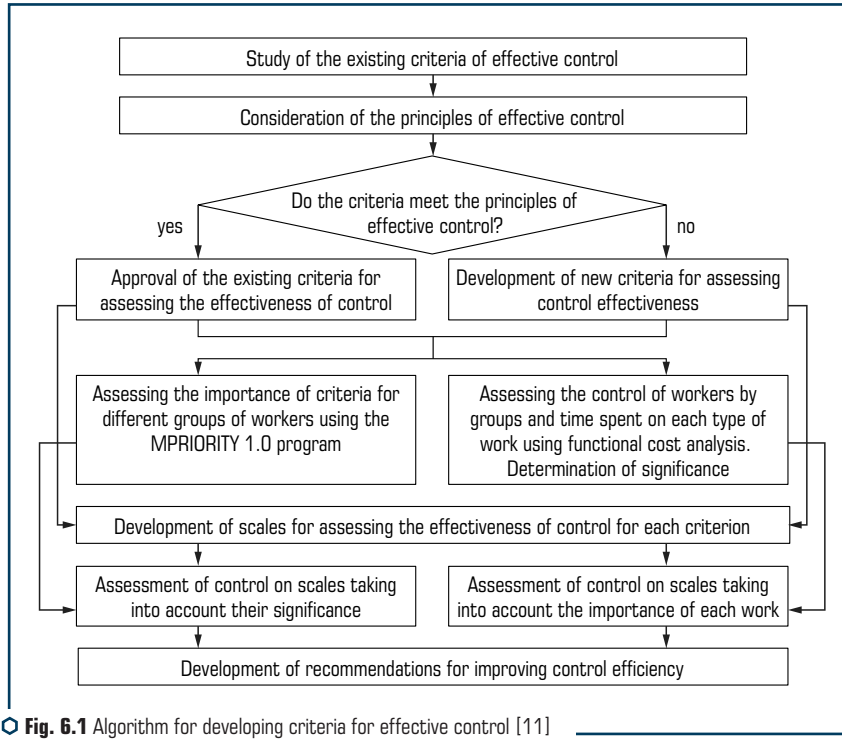


Fig. 6.1 Algorithm for developing criteria for effective control [11]
Source: author's development

The effectiveness of control involves determining the degree of expediency of its implementation, which consists in comparing the usefulness of control (avoidance of costs associated with deficiencies in the future) and costs of control (costs for material support of control and personnel, as well as costs for eliminating deviations).

Control measures affect the company's personnel in different ways. On the one hand, they stimulate the improvement of the quality of work, create a sense of satisfaction, and stimulate the acquisition of knowledge [12]. On the other hand, control measures cause demotivation of mistrust, atypical behavior of the person being checked and other negative manifestations. That is why control measures should be carried out in such a way as not to cause a defensive reaction in the persons being checked.

In order to form an effective system of control of the company's employees, it is necessary to adhere to the criteria for the organization of control processes. Which include:

– effectiveness of control;

– effect of influence on people;

– performance of control tasks;

– limits of control (limitation of control) [13].

One of the main criteria is the performance of control tasks. The results of control can be the detection of deviations and overlaps in the implementation of projects, the elimination of deviations, the correction of standards and plans, relative to the change in the conditions of the enterprise, as well as the achievement of the effect of experience based on the analysis of the causes of deficiencies [14].

Based on the fact that we are talking about monitoring the work of personnel, the development of criteria should take into account the criteria used to assess personnel (an example of such criteria is given in **Table 6.1**).

Table 6.1 Criteria used for personnel assessment

Indexes	Criterion
Quantitative indicators	Labor productivity, sales volume in pieces, kilograms, meters, etc.; revenue, the number of signed contracts, processed documents, responses to advertisements
Quality of work	The number of errors when filling out forms, information and other documents, printing papers, the number of claims (complaints) from customers, losses from poorly executed or rejected work
Individual characteristics of the employee	Personal qualities (personal maturity, sociability, emotional stability, etc.); peculiarities of work behavior (relations with clients, discipline, helping employees, etc.); business qualities (independence, responsibility, initiative, etc.)

Performance measurement criteria can be expressed as:

– by results – for example, productivity, the number of new customers, the volume of products produced, the volume of sales, services provided on time, the number of employees who have met the requirements of the work profile (competencies), etc.;

– finance – indicators such as return on invested capital, profit before deduction of interest, taxes, depreciation, gross income;

– time – for example, the time to close the vacancy, the speed of response to the received order (the time period between the receipt and execution of the order), the solution of the task within the set deadline, the period from the beginning of the development of the product to its release on the market, delivery time, etc.;

– ratio – for example, the ratio of the volume of sales to the number of personnel, the personnel turnover rate, the rate of loss of working time, etc. [15].

The concept of control effectiveness is closely related to the concept of its effectiveness, since the final result, that is, the set of objective consequences of control, is the main criterion for determining its effectiveness [16]. It is not possible to draw conclusions about the results of control without determining the consequences that affected the content of the activity of the controlled object. The effectiveness criterion is related to the control effectiveness criterion.

The latter reflects the positive impact of control on the subject of control and the ability of the subject of control to ensure full and timely implementation of instructions, recommendations and requirements by the subject of control [16, 17].

With the help of control, the economy of the activity of the motor vehicle enterprise is achieved, which is a prerequisite for the implementation of the efficiency of this activity. Achieving efficiency through the link of the control system is impossible without ensuring economy [9, 18]. In general, the conclusion regarding the effectiveness of the control system is a subjective opinion that arises as a result of the assessment of control elements and the degree of their effective functioning. Therefore, it is important to carry out the assessment with the involvement of a group of experts and taking into account the results of the assessment of individual control elements.

The ratio of the result (effect) to the costs that ensured its receipt is a definition of efficiency. It reveals the nature of the cause-and-effect relationships of production and shows at what cost the result was achieved. This explains the fact that efficiency is mainly characterized by relative indicators, which are calculated on the basis of result parameters and cost parameters.

The effect expresses the result, the consequence of certain actions. It can be measured in material, social, monetary terms. Therefore, such control is effective, the result of which corresponds to the expected while minimizing the costs of its implementation and acceptable risks.

The basis of the creation of all control systems should be the effectiveness of control, which includes: fulfillment of obligations; prevention of deficiencies; determining the expediency of control costs. At the same time, the main aspects should be: reduction of costs associated with the detection and elimination of deviations as a result of control; reduction of control costs; reduction of costs for personnel and equipment involved in the control process.

In order for control to be able to use its true task, to be effective, it must possess certain criteria, which in turn must fully comply with the principles of effective control.

Liana Skibitska and Oleksandr Skibitskiy [19] propose to highlight the following criteria for effective control: strategic orientation, which involves the analysis of key issues of the company's activity, rather than focusing on non-principled shortcomings of the work; orientation to the result consists in subordinating all controlling actions to the desired goals and expected results of the enterprise's activity; compliance with the case consists in objective measurement and assessment of what is really important and what corresponds to the type of activity of the enterprise; the timeliness of control consists in the possibility of eliminating deviations before they become significant; the flexibility and simplicity of control consists in its adaptation to the variability of the internal and external environment and the application of simple control methods; the economics of control is that the cost of control should not exceed the profit from it.

A comparison of the proposed control assessment criteria with the principles showed that not all principles are covered by this system of criteria, therefore it is proposed to include a number of criteria in the system of control effectiveness assessment criteria, this list is given in **Table 6.2**.

● **Table 6.2** Compliance of the criteria with the principles of effective control

Criteria	Principles												
	Strategic direction	Orientation on results	Relevance to the case	Timeliness and flexibility	Economic control	Compliance with qualification standards	Connection with the planning process	Dissemination of control over all personnel	Continuity and regularity	Focus on processes	Transparency	Coverage of the main areas of activity	Reward for achieving standards
Existing criteria													
Compliance with the nature of the process being controlled			+									+	
Economy					+								
Orientation on results		+											
Presence of a clear strategic direction	+						+			+			
Timeliness and flexibility				+									
The proposed criteria to enter into the existing system assessment criteria													
Engagement to monitoring of employees								+					
Continuity and regularity of implementation									+				
Reward for achieving standards													+
Degree of transparency											+		

Thus, using the **Table 6.2** a more complete list of criteria for effective control was formed, which includes 9 criteria. The resulting list of criteria for assessing the effectiveness of control will allow for a comprehensive, comprehensive and objective assessment. This will bring the company closer to achieving its goals. The resulting system of criteria requires determining the significance of each of them in the overall system, taking into account the specifics of the work of each category of the company's personnel and the development of assessment scales.

Several methods were used to assess the effectiveness of the company's personnel control based on data on the work of one of Kharkiv's motor transport companies.

Many factors affect the effectiveness of the company's personnel control, but these factors are unequal and affect the effectiveness in different ways.

With the help of the method of analysis of hierarchies, the significance of the criteria for assessing the effectiveness of control was determined: compliance with the nature of the control process; economy; result orientation; the presence of a clear strategic orientation; timeliness and flexibility; the degree of involvement in the control of employees; degree of continuity and regularity of conduct; reward for achieving standards; degree of transparency. The MPRIORITY 1.0 program was used in the calculations.

The significance of the criteria was assessed from the point of view of different categories of workers. The results of the significance of the criteria were later used to calculate the weighted scores.

Similar results were obtained for other groups of employees. Basically, the priorities of the groups differ among themselves, which is explained by the different specifics of the work.

In addition, the final result was obtained, which showed that the most important criterion in general for ATP for all categories of workers is the reward for achieving standards (0.2819), the least important is the degree of involvement in the control of employees (0.0452).

Then, using the scaling method, the appropriateness scales for each criterion were determined (the scales are shown in **Tables 6.3–6.11**).

● **Table 6.3** Scale of compliance with the nature of the control process (*K*1)

Characteristics of the criterion	Rating
It clearly corresponds to the nature of the controlling process	5
Mostly corresponds, but there are minor inconsistencies	4
Levels of conformity and non-conformity coincide	3
Inconsistencies in the nature of the controlling process are much more numerous than those of the nature of the control process	2
It does not correspond to the nature of the controlling process at all	1

● **Table 6.4** Scale of compliance with the "economical" criterion (*K*2)

The value of the profitability indicator, %	Rating
81–100	5
61–80	4
46–60	3
21–45	2
0–20	1

● **Table 6.5** Scale of compliance with the "result orientation" criterion (*K*3)

The value of the income indicator in thousand hryvnias/year	**Rating**
More than 10,000 thousand UAH	5
From 3,000 to 10,000 thousand UAH	4
From 1,000 to 3,000 thousand UAH	3
From 500 to 1,000 thousand UAH	2
Up to 500 thousand UAH	1

● **Table 6.6** Scale of compliance with the criterion "the presence of a clear strategic orientation" (*K*4)

Characteristics of the criterion	**Rating**
There is a clear strategic orientation	5
The strategic orientation is not entirely clear	4
The strategic orientation is poorly and vaguely defined	3
There is almost no strategic orientation	2
There is no strategic direction at all	1

● **Table 6.7** Scale of compliance with the criterion "timeliness and flexibility" (*K*5)

Characteristics of the criterion	**Rating**
Control is simple, and the assessment process adequately corresponds to the phenomenon under control	5
Control is simple, but assessments are not quite timely	4
Control of medium difficulty, assessment is not quite on time	3
Control of medium difficulty, assessment is not regulated	2
Control is very difficult, assessments are not regulated	1

● **Table 6.8** Scale of compliance with the criterion "degree of involvement in employee control" (*K*6)

Characteristics of the criterion	**Rating**
The level of engagement is very high	5
The degree of engagement is above average	4
The degree of involvement is average	3
The degree of engagement is below average	2
The degree of engagement is very low	1

● **Table 6.9** Scale of compliance with the criterion "degree of continuity and regularity of conduct" (*K*7)

Characteristics of the criterion	Rating
The scheduled time of return and the signature in the dispatch log match	5
The driver was no more than 5–10 minutes late	4
The driver was 10–15 minutes late	3
The driver was 15–30 minutes late	2
The driver returned very late: more than 30 minutes	1

The criterion "reward for achieving standards" is proposed to be calculated as the ratio of the number of bonuses issued to the number of workers whose work results are subject to bonuses in percentage.

● **Table 6.10** Scale of compliance with the criterion "reward for achieving the standard" (*K*8)

Criterion value %	Rating
81–100	5
61–80	4
46–60	3
21–45	2
0–20	1

● **Table 6.11** Scale of compliance with the "degree of transparency" criterion (*K*9)

Characteristics of the criterion	Rating
Information on all results of control measures is fully available	5
Information about the results of the work is partially classified	4
About 50 % of information about performance is available	3
Information on the results of control measures for an individual employee (department) is partially available	2
Information about the results of control measures is closed	1

Of the nine criteria, the value of three can be obtained with the help of calculations and, using the appropriate scale, determine the rating. These are the criteria of economy, orientation to the result and reward for achievements. The rest of the criteria need to be assessed by experts (managers and other experienced workers of the enterprise). Such an assessment was carried out and the average score for each criterion was determined.

The next step is to determine the weighted assessment, which takes into account the importance of the criteria for each group of employees. The result of the calculation is given in **Table 6.12**.

Table 6.12 Results of assessment of criteria for each group of workers

Criterion	Score in points			Significance			Final assessment		
	Y	D	R	Y	D	R	Y	D	R
Compliance with the nature of the control process (*K*1)	4.7	5	3.7	0.075	0.069	0.133	0.353	0.345	0.492
Economy (*K*2)	4	4	4	0.092	0.134	0.096	0.368	0.536	0.384
Orientation to the result (*K*3)	5	5	5	0.146	0.212	0.085	0.73	1.06	0.425
Presence of a clear strategic orientation (*K*4)	4	4.3	3.7	0.152	0.12	0.079	0.608	0.516	0.292
Timeliness and flexibility (*K*5)	4	4.3	4	0.053	0.042	0.1	0.212	0.181	0.4
The degree of involvement in the control of employees (*K*6)	3.7	4.3	3.7	0.044	0.017	0.062	0.163	0.073	0.299
Degree of continuity and regularity of conduct (*K*7)	4.3	4	4	0.111	0.045	0.051	0.477	0.18	0.204
Reward for achieving standards (*K*8)	3	3	3	0.259	0.276	0.331	0.777	0.828	0.993
Degree of transparency (*K*9)	3	3	3.7	0.067	0.086	0.062	0.201	0.258	0.229
Result	–	–	–	–	–	–	3.889	3.977	3.718

Note: A – employees of the management apparatus of the enterprise; D – drivers; R – repair workers

Using the radar method, control efficiency models for each group of employees were built (**Fig. 6.2–6.4**).

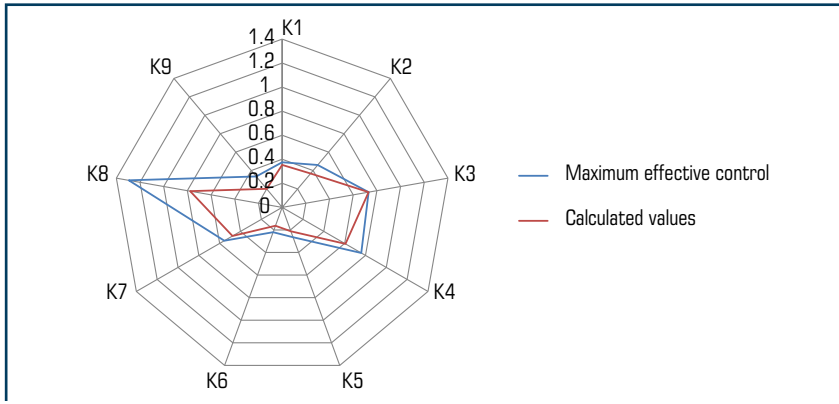


Fig. 6.2 Model of the effectiveness of control over the "employees of the management apparatus" group
Source: author's development

Fig. 6.2 shows that the values of criteria *K*1 and *K*3 correspond to the maximum value of control efficiency, criteria *K*2, *K*5 and *K*6 are very close to the maximum value. The remaining criteria

require appropriate improvement of the control system for workers of the management apparatus. Particular attention should be paid to criterion *K*8 – reward for achieving standards.

The control effectiveness model for the group of "driver" employees is shown in **Fig. 6.3**.

Fig. 6.3 shows that criteria *K*1, *K*3, *K*5, *K*6 and *K*7 correspond to the maximum value of control efficiency, criterion *K*4 is located closest to the maximum value, and criteria *K*2, *K*8 and *K*9 need improvement in the existing control system of workers of the "drivers" group. Particular attention should be paid to criterion *K*8.

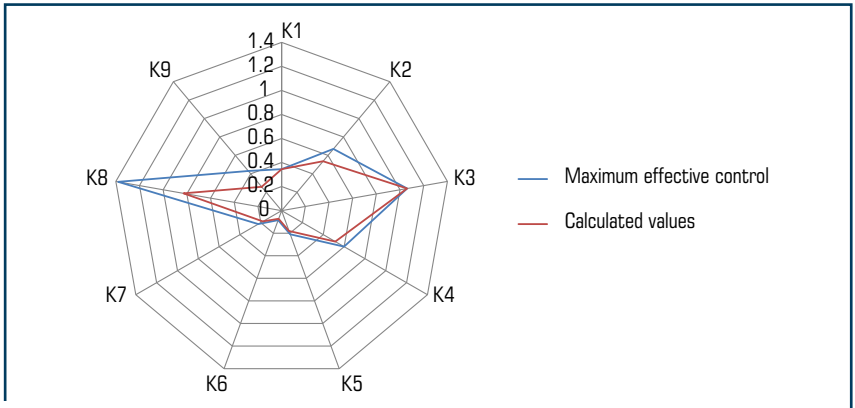


Fig. 6.3 Model of the effectiveness of control over the "drivers" group
Source: author's development

The control effectiveness model for the group of workers "repair workers" is shown in **Fig. 6.4**.

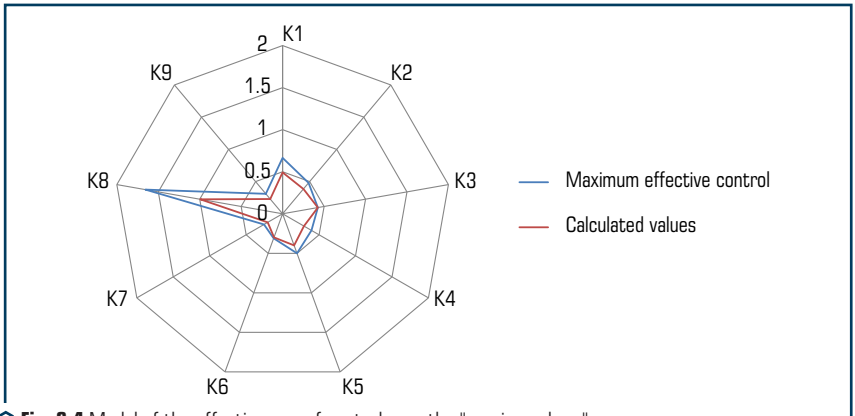


Fig. 6.4 Model of the effectiveness of control over the "repair workers" group
Source: author's development

In this model, criteria *K*3, *K*6 and *K*7 correspond to the maximum value. The model needs improvement due to the remaining criteria.

In order to make a final conclusion about the effectiveness of the control systems of workers of different groups of the enterprise, it is possible to build a comparative table (**Table 6.13**) and develop recommendations.

Table 6.13 Comparative table of conformity of control efficiency criteria to the maximum value

Criterion	Groups of workers			Result
	Y	D	R	
Compliance with the nature of the control process (*K*1)	+	+	+, –	Very good
Economy (*K*2)	+, –	–	+, –	Satisfactorily
Orientation to the result (*K*3)	+	+	+	Perfectly
Presence of a clear strategic orientation (*K*4)	–	+, –	+, –	Satisfactorily
Timeliness and flexibility (*K*5)	+, –	+	+, –	Fine
Degree of involvement in the control of employees (*K*6)	+, –	+	+	Very good
Degree of continuity and regularity of conduct (*K*7)	–	+	+	Satisfactorily
Reward for achieving standards (*K*8)	–, –	–, –	–, –	Unsatisfactorily
Degree of transparency (*K*9)	–	–	+, –	Badly

As the **Table 6.13** shows, the primary task of the enterprise's control system is to improve the material incentive systems of all groups of enterprise employees. Considerable weight should be given to ensuring the transparency of control results with the help of an informational component. Such aspects of the control system as cost-effectiveness, the presence of a clear strategic direction, and the degree of continuity and regularity of control also require improvement.

In order to assess the time spent on the work, the work instructions of the workers were used to determine the list of works that are performed in one or another position. 3 categories of the company's personnel were taken into account: specialists (manager of the operation department), drivers and repair workers. Next, for each work, the essence of the previous, current and final control was determined, and with the help of an expert survey, the time spent was determined.

A fragment of the received data for the personnel of the technical and operational department of the motor vehicle enterprise is given in **Table 6.14**.

The relevant list of control works by its types and possible time expenditure is compiled for other categories of personnel.

The main sources of cost reduction are: elimination of unnecessary work; elimination of harmful works; combination of auxiliary works; finding solutions in which the same material medium of work would perform several works; reduction of excess consumer properties for which there is no real need.

● **Table 6.14** Composition of works by types of control and time spent on their execution

Work in progress	Preliminary control	Current control	Final control	Spending time		
1.1 Development of rational systems and planning of transportation, organization of movement of rolling stock	1.1.1 Study of the quantity and frequency of the quality of orders for the previous 3 years. Study of rolling stock of ATP and their transport capacities	1.1.2 Development of route sheets. Checking the availability of: transportation planning systems; timetables and traffic schedules. Verification of compliance of the fact with the plan	1.1.3 Checking customer satisfaction using a telephone survey. Verification of compliance with the route specified in the route sheet	7 days	2 days every week	2 days
1.2 Ensuring the implementation and functioning of advanced systems of dispatching control of car traffic	1.2.1 Checking the availability of advanced dispatch control systems and personnel who could manage them at the ATP	1.2.2 Checking the functioning of dispatching equipment	1.2.3 Checking the effectiveness of the dispatch control system	3 days	1 day every week	1 day
1.3 Full, timely, comfortable and safe transportation of passengers and cargo	1.3.1 Market demand analysis. Determining customer wishes (using questionnaires)	1.3.2 Checking the technical condition of cars. Checking the conditions of transportation	1.3.3 Conducting customer satisfaction surveys	4 days	1 day every week	1 day
1.4 Organization of effective use of rolling stock and its profitable operation	1.4.1 Verification of compliance of rolling stock, type of cargo and customer wishes, analysis of operating conditions, justification of choice	1.4.2 Checking the compliance of the actual use of rolling stock with the planned	1.4.3 Comparison of all costs and profits from the use of PC at the end of each month	10 days	2 days every week	2 days
1.5 Creation of conditions for highly productive work of maintenance service employees	1.5.1 Studying the wishes of workers with the help of a survey. Comparison of the existing conditions with the desired ones and recognition of correspondences. Checking the availability of the conditions creation plan	1.5.2 Checking compliance with conditions	1.5.3 Checking the quality of work performance by comparing the obtained results with the planned ones	1 day	1 day every week	2 days
1.6 Generalization of advanced driving methods and advanced work experiences	1.6.1 Checking the availability of specialists at the enterprise who have advanced work methods. Checking the availability of professional development plans	1.6.2 Verification of the implementation of employee training plans	1.6.3 Review of all costs and benefits of implementing best practices for work and driving at the end of each month	2 days	2 days every week	1 day
1.7 Systematic implementation of educational work with drivers and dispatchers	1.7.1 Checking the availability of the educational work schedule	1.7.2 Carrying out educational work and checking the attendance of workers at meetings	1.7.3 Checking whether all the prescribed points have been met by means of accident reporting	1 day	4 days	1 day

Next, using the **Table 6.14**, the time needed to perform each function per year was calculated, assuming that there are 23 working days of 8 hours per month.

Another important point in FCA is determining the significance of works. For this, a survey of experts from among the company's employees was conducted. The results of the significance of works by types of control are given in **Table 6.15**.

Table 6.15 Significance of works by types of control

No. of works	Significance by types of controls		
	Previous	Current	Final
1.1	0.3	0.45	0.25
1.2	0.25	0.3	0.45
1.3	0.4	0.35	0.3
1.4	0.25	0.35	0.4
1.5	0.5	0.2	0.3
1.6	0.3	0.35	0.35
1.7	0.2	0.55	0.25
2.1	0.25	0.45	0.3
2.2	0.2	0.55	0.25
2.3	0.25	0.5	0.25
2.4	0.35	0.4	0.25
2.5	0.15	0.6	0.25
2.6	0.2	0.5	0.3
2.7	0.25	0.45	0.3
2.8	0.35	0.35	0.3
2.9	0.25	0.35	0.4
2.10	0.25	0.45	0.3
2.11	0.3	0.35	0.35
3.1	0.25	0.35	0.4
3.2	0.33	0.33	0.34
3.3	0.2	0.4	0.4
3.4	0.35	0.4	0.25
3.5	0.2	0.35	0.45
3.6	0.45	–	0.55
3.7	0.25	0.4	0.35

Works are listed by numbers. Works starting with the number 1 correspond to control works for employees of the technical and operational department of the enterprise. Works starting with the number 2 – for drivers, and with the number 3 – for repair workers.

Using the **Table 6.15** it was determined which of the works are the most important, for this three different experts assessed the works using a 5-point scale, which is presented in **Table 6.16**, a fragment of the calculation results will be presented in the form of a **Table 6.17**.

Table 6.16 Assessment scale of performed works

Points	Value
5	Work is necessary
4	Work is important, but not always
3	Work is important, but sometimes it is not necessary at all
2	Work is not very important
1	The work is almost not important, you cannot do it

Table 6.17 The results of assessment of works by experts

No. of works	Assessments			Significance	Importance with regard to significance
	Expert 1	Expert 2	Expert 3		
1.1.1	5	5	5	0.3	4.5
1.1.2	5	5	5	0.45	6.75
1.1.3	5	4	4	0.25	3.25
1.2.1	4	3	4	0.25	2.75
1.2.2	4	3	4	0.3	3.3
1.2.3	4	4	4	0.45	5.4
1.3.1	5	5	5	0.4	6
1.3.2	5	5	5	0.35	5.25
1.3.3	4	4	5	0.3	3.9
1.4.1	5	5	5	0.25	3.75
1.4.1	4	3	4	0.35	3.85
1.4.3	4	4	5	0.4	5.2
1.5.1	5	5	5	0.5	7.5
1.5.2	5	5	5	0.2	3
1.5.3	5	5	5	0.3	4.5
1.6.1	4	4	4	0.3	3.6
1.6.2	4	5	4	0.35	4.55
1.6.3	4	3	3	0.35	3.5
1.7.1	3	3	4	0.2	2
1.7.2	3	3	3	0.55	4.95
1.7.3	3	2	3	0.25	2

This is more clearly presented in **Fig. 6.5**.

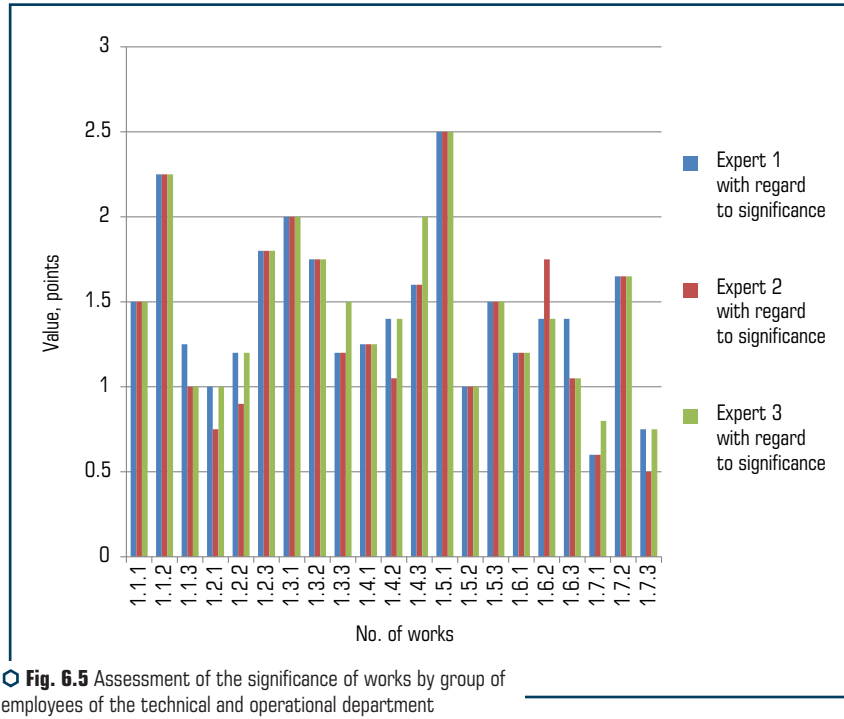


Fig. 6.5 Assessment of the significance of works by group of employees of the technical and operational department
Source: author's development

In **Fig. 6.5**, it can be seen that the least important works of the technical and operational department are: checking the quality of the schedule of educational works (1.7.1) and checking whether all the prescribed points have been fulfilled by means of accident reporting (1.7.3).

In order to reduce time spent, it is recommended to exclude or combine these works with others (depending on whether the company needs them).

Having considered all the works performed at the enterprise, the task is to group them, thereby reducing the time spent on their implementation. For this, let's use cluster analysis.

Cluster analysis allows to classify observations or objects into homogeneous groups called clusters.

Classification is carried out with the help of numerous computational procedures on the research objects. As a result of calculations, groups of very similar objects are formed. This type of analysis allows classifying objects by several features at the same time. By objects, let's understand the work performed at the enterprise by the technical and operational department, drivers and repair workers, without assigning them to three types of control: preliminary, current and final.

Works in clusters will be grouped according to two features: duration and importance. The combination of indicators will be carried out for similar tasks and for closer values of these indicators.

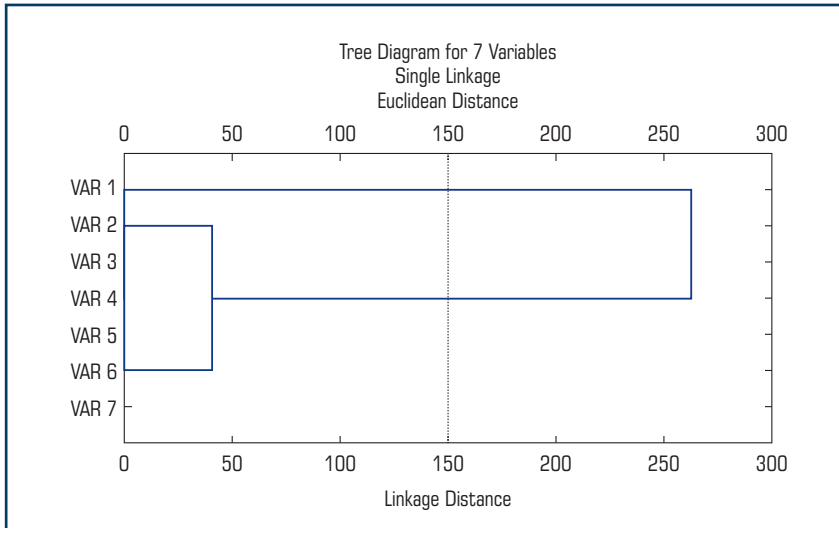
To build clusters, let's consider the work performed by different groups of workers (**Table 6.18**).

STATISTIKA program was used to build clusters (**Fig. 6.6**).

Fig. 6.6 shows that two clusters were formed for the group of employees of the technical and operational department, the first cluster included the following works: 1.2, 1.3, 1.4, 1.5, 1.6. Later, work 1.1 was combined with it. The cluster analysis showed that work 1.7 (systematically conducts educational work with drivers and the dispatcher) is not included in the clusters, so it is suggested to combine it with work 1.6 (generalization of advanced driving methods and advanced work practices).

● **Table 6.18** Criteria for the group of employees of the technical and operational department

Work number	Duration hours	Importance
1.1	136	14.5
1.2	64	11.45
1.3	72	15.15
1.4	160	12.8
1.5	56	15.0
1.6	88	11.65
1.7	48	8.95



⬡ **Fig. 6.6** Horizontal tree diagram by group of employees of the technical and operational department
Source: author's development

Thus, the proposed method makes it possible to identify reserves, with the help of which it is necessary to prove the expediency of these costs or to find specific solutions for their elimination or reduction.

6.3 DISCUSSION OF THE RESULTS AND ASSESSMENT OF THE EFFECTIVENESS OF THE CONTROL OF THE MOTOR VEHICLE ENTERPRISE EMPLOYEES

Competitive struggle requires an established control system from the enterprise. Control of the company's personnel is the most important task [20]. It helps ensure the achievement of goals due to discipline, accumulation of efforts, revealing the potential of employees and timely detection of deviations from norms and standards. The proposed method of assessing the effectiveness of the control of the personnel of the motor vehicle enterprise helps to identify the weakest points in the existing control system. This technique takes into account the peculiarities of control for different groups of employees and the importance of assessment criteria. It is complex in nature and helps to find ways to improve the company's control system. In addition, the proposed method of assessing costs for the implementation of the company's personnel control function helps to identify the least significant works in the existing control system and thereby contributes to the simplification of the system itself, reducing the costs of its support and increasing the efficiency of the company's activities.

It is also worth noting that the road and transport complex includes a large number of components. In the following sections, attention will be focused on the development of railway transport.

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