

# Analytical methods and tools for business process optimization

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**Abstracts** This article is a study of the existing management structure and organizational structure of the operation department at a trucking company. The purpose of the study was to identify the uneven distribution of workload among employees and to develop an ideal business process model to optimize the work of the department. Using the methods of business process analysis, the main functions and their labor intensity were identified and the workload of the staff was calculated. After implementing the proposed changes based on the ideal business process model, there is a significant equalization of employee workload and a decrease in the total labor intensity of functions. The obtained results indicate an increase in the efficiency of the operation department and optimization of the use of enterprise resources.

## 1 Introduction

A road transport enterprise (RTE) is an organization that carries out transportation by road transport, as well as storage, maintenance and repair of rolling stock.

The main tasks of a road transportation enterprise are: organization and performance of transportation in accordance with the plan and assignments, storage, maintenance and repair of rolling stock, material and technical supply of the enterprise, maintenance and repair of buildings, structures and equipment, recruitment, placement and advanced training of personnel, organization of labor, planning and accounting of production and financial activities [1-5].

The main processes of production activity of the motor transportation enterprise are: main production, auxiliary production, service production, production management.

Road transport enterprises are formed of structural subdivisions (convoys, workshops, sites, services and departments), which are production units of the enterprise. These subdivisions do not have complete reporting and independent balance sheets, are not granted the rights of a legal entity and cannot independently dispose of production funds and circulating assets, as well as make settlements with other enterprises and organizations.

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In the overall structure of the enterprise the most important is the production structure, which is a form of organization of the production process. It characterizes the size of the enterprise as a whole, the composition and distribution of vehicles by branches and columns, the specifics of the organization of their storage, maintenance and repair, the number, composition and specific weight of shops and sites, their layout, the organization of workplaces within the shops [6, 7].

According to the type of work performed, motor transport enterprises are divided into cargo, bus, taxi, passenger (servicing institutions and organizations), mixed (cargo and passenger) and special (emergency medical care, municipal services, etc.).

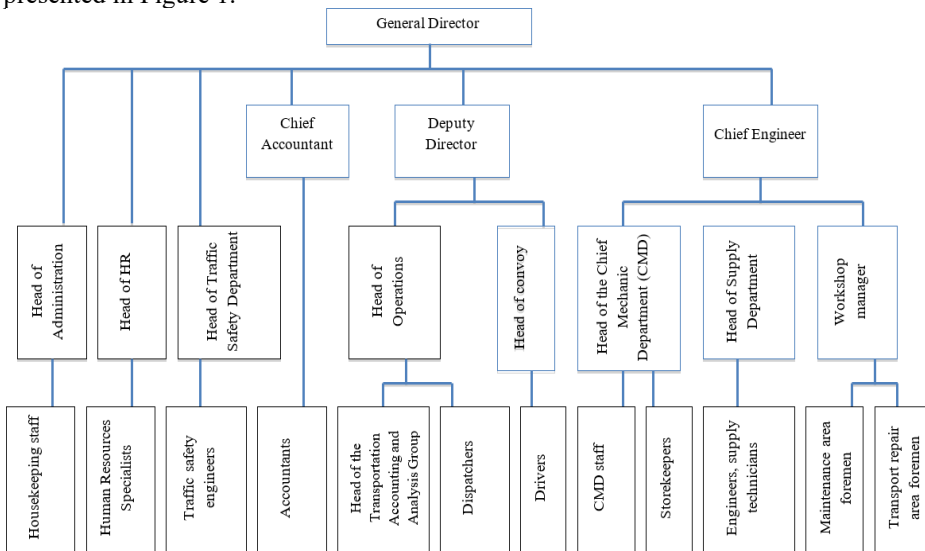
## 2 Analysis of the organizational structure of the motor transport enterprise

Building the right organizational structure is the main task of any road transport enterprise. The efficiency of the enterprise as a whole depends to a large extent on the rational composition of management units, their connection with each other and interaction with production units [8-11].

The signs of an optimal management structure are:

- a small number of subdivisions with highly qualified personnel;
- a small number of management levels;
- presence of groups of specialists in the management structure;
- orientation of the work schedule to the customer;
- quick reaction to changes;
- high productivity and low costs.

In the standard organizational management system of a road transport enterprise, three independent management units can be distinguished: operational, technical and economic, each of which reports to the respective manager. The organizational structure of the enterprise is presented in Figure 1.



**Fig. 1.** The organizational structure of the enterprise

The organizational structure of the majority of management is linear-functional. Linear management links are assigned the functions and rights of command and decision-making,

and functional units (e.g., planning and economic department) - methodological guidance in the preparation and implementation of decisions on planning, organization, accounting, control and analysis for all functions of production and economic activities [12-16].

This structure is characterized by the use of formal procedures and rules, rigid hierarchy of power in the organization, centralization of decision-making. Each executive reports to only one manager. The executive receives all instructions and decisions on management functions from the immediate manager. Information links of methodological and consulting nature remain between the executor and functional units. In order for a decision of a functional unit to become directive, it must be approved by the manager [17-19].

The General Director has the right to dispose of funds and property of the enterprise, conclude contracts, open accounts and dispose of them, issue orders for the enterprise, hire and fire employees, apply to them measures of encouragement and impose penalties. At the same time, the general director is responsible for the correct and efficient use of material and labor resources of the enterprise, improvement of working conditions and labor protection. In general, the general director organizes the work of the enterprise team, and is fully responsible for the state of the enterprise and its activities [20].

Operational service is primarily engaged in the scientific organization of the transport process and the effective use of vehicles. It seeks opportunities for the most rational implementation of transportation at the lowest cost. In general, the operation service, on the basis of a comprehensive study of needs, is called upon to ensure better satisfaction of customers' requirements [21].

Technical service pays the main attention to the maintenance of vehicles in a technically sound condition and the development of the production base, as well as manages the material and technical supply of the enterprise [22].

The main tasks of the technical service of the enterprise are:

- organization of proper storage of the rolling stock, ensuring its high technical readiness for work, timely release of vehicles on the line and their reception (garage service);
- development and solution of issues related to strengthening of production and technical base of the enterprise (chief engineer);
- operational planning of all types of maintenance and repair of cars and car tires, organization of performance of these works and control over their quality, technical accounting and reporting on rolling stock, car tires and other production funds (head of repair service);
- management of the totality of works on provision of normal material and technical supply of the enterprise, organization of storage, issue and accounting of fuel, spare parts and other material resources, development and implementation of measures for their more rational use (supply department);
- development and implementation of organizational and technical measures to improve production processes, the introduction of new technology, labor protection and accident prevention.

The economic service usually includes an accounting department. This department, headed by the chief accountant records the availability of funds allocated to the order, their safety and level of use, organizes the implementation of the financial plan, checks the financial condition of the enterprise, conducts extensive operational work on the organization of settlements with customers, suppliers and financial authorities, organizes the primary accounting of expenditure of material resources and cash. The chief accountant is responsible for the expediency and legality of spending, and compliance with financial discipline [23].

Thus, the optimal organizational structure is one of the conditions for its effective activity. With the increase in the level of management, the specific weight of tasks on specialty falls, and on management increases. Hence, the managers of the enterprise must have high

professional skills [24-28]. For employees of the management apparatus, the labor process is the performance of a set of functions, the main of which should include planning, organization, coordination, control, accounting, analysis, regulation [29].

### 3 Analysis of the enterprise business process system

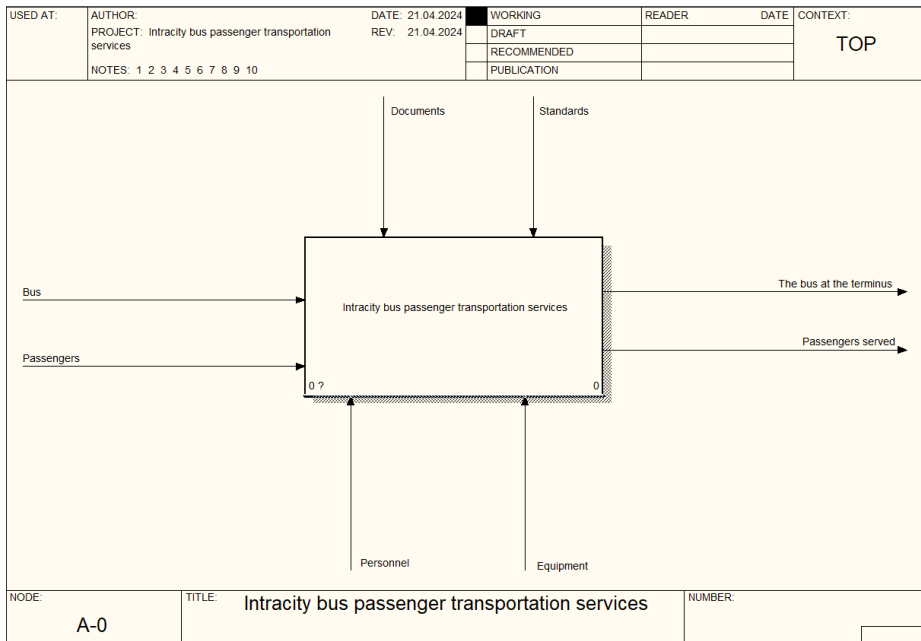
To analyze business processes, basic regulations of the department were collected: job descriptions, standards, resolutions, etc., and a survey of employees was conducted, based on which data templates on the functions of the maintenance department were filled in.

The obtained data were used to formalize the management structure of the maintenance department at the road transport enterprise and identify its shortcomings, as well as to create a tree of functions of the maintenance department [30].

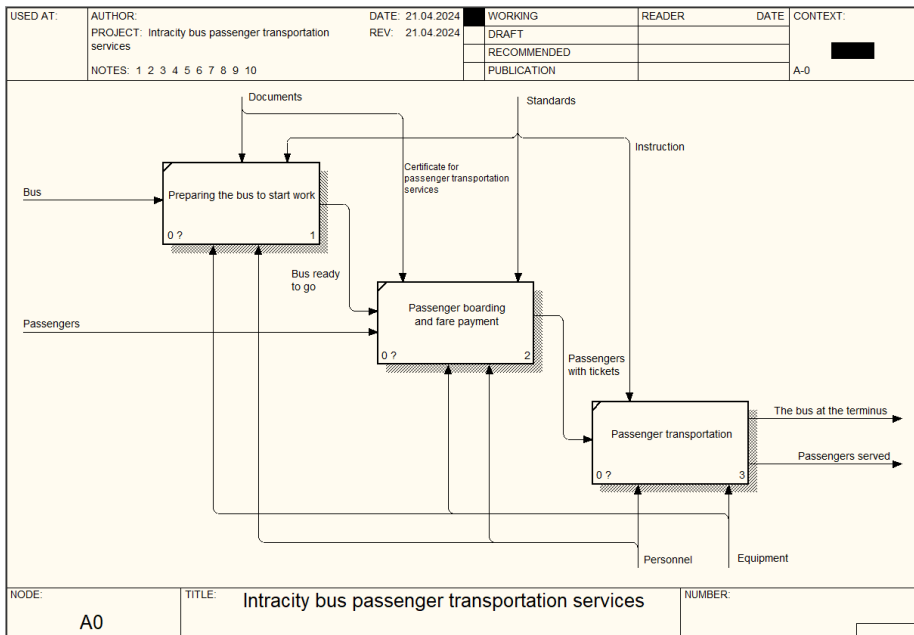
The context diagram of the business process reflects the main outputs, inputs, mechanisms (personnel, equipment) and management (documents, regulations) of the business process [31-33].

By decomposition of the context diagram in IDEF0 standard the parent diagram is built, according to which the real activity of the operation department is represented by three main directions: preparation of the bus to start work, boarding and calculation of passengers, and distribution of passengers [34].

By decomposing the parent diagram in IDEF0 standard, context diagrams were built (Fig. 2, 3).



**Fig. 2.** Context diagram



**Fig. 3.** Diagram decomposition

Having analyzed the functions of the operational department, namely the functions of the chief, mechanic, dispatcher, cashier, driver, conductor and medical worker, we have identified the main functions of the road transport enterprise (Table 1).

**Table 1.** Functions of the road transportation company of the operation department

№ of functions	Unit function
1	Ensure rational use of rolling stock on the line
2	Organize the work of the driving staff
3	Organize briefings for bus drivers on the rules and conditions of transportation of people
4	Organize the work of the dispatching service and control the work of buses on the line
5	Establish duties for the operation service personnel
6	Suspend from work service employees who have not passed medical examination in accordance with the established procedure, etc.
7	Issue orders in all areas of operation service activities
8	Analyze the operational performance of buses, expenditures of operating materials and tires
9	Participate in providing technical assistance to buses on the line
10	Carry out technical supervision over the condition of the fleet of buses on the line and in standstill
11	Participate in the acceptance of new rolling stock, as well as in the decommissioning of buses and the handing over of units
12	To carry out operational control over the progress of the motor transportation company's activities
13	Identify the reserves of the company to establish the most rational modes of operation of the fleet of buses
14	To control observance of schedules of release on line and movement of buses on routes

15	Ensure uninterrupted operation of the cash register, regularly inviting specialists for preventive inspection.
16	Ensure that the cash book is maintained in an error-free manner by entering information on receipts and disbursements in a timely manner.
17	Be vigilant and cautious, informing the chief accountant of suspicious or alarming factors in a timely manner
18	Check the technical condition and acceptance of the vehicle before going on the line.
19	Draw up travel documents
20	Refuel and refuel the vehicle with fuel and coolant
21	Check the availability of tickets, travel passes, documents presented for free travel in public transportation
22	Record the top numbers of the travel ticket book on a per-trip basis
23	To control the state of health of drivers
24	Conduct pre-trip medical examinations before the start of the working shift
25	Make decisions on drivers' authorization to work

Further, a responsibility matrix was developed for the operation department with the definition of symbolic expression of the main functions (Table 2):

- I – sole decision and personal responsibility for a particular task (with signature);
- ! – personal responsibility for solving this or that task in the collegial form of decision-making (with signature);
- R – participation in the collegial decision of a given task without the right to sign;
- P – planning;
- O – organization;
- K – control;
- X – coordination of joint efforts of the process participants;
- A – activation;
- C – harmonization;
- T – execution.

**Table 2.** Basic responsibility matrix of a real business model

№	Unit function	Symbols of the conversion function by positions of function participants						
		General director	Mechanic	Dispatcher	Cashier	Driver	Bus conductor	Medical Worker
1	Ensure rational use of rolling stock on the line	IPOKC	AT	-	-	T	-	-
2	Organize the work of the driving staff	IPOKC	-	-	-	AT	-	-
3	Organize briefings for bus drivers on the rules and conditions of transportation of people	IPOKA	-	-	-	AT	T	-
4	Organize the work of the dispatching service and control over the work of buses on the line	IPOKA	-	AT	-	-	-	-
5	Establish duties for the operation service personnel	IPOKA	T	T	T	T	T	T
6	Suspend from work service employees who have not passed medical examination	!P	-	-	-	-	-	RATO
7	Issue orders in all areas of operation service activities	IPOKA	T	T	T	T	T	T
8	Analyze the operational performance of buses,	K	IPOAT	-	-	-	-	-

	expenditures of operating materials and tires							
9	Participate in providing technical assistance to buses on the line	CK	IPOAT	-	-	X	-	-
10	Carry out technical supervision over the condition of the fleet of buses on the line and in standstill	CK	IPOAT	X	-	T	-	-
11	Participate in the acceptance of new rolling stock, as well as in the decommissioning of buses and the handing over of units.	CAK	IPOTX	-	AT	-	-	-
12	To carry out operational control over the progress of the motor transportation company's activities	IPOKA	AT	AT	-	AT	T	T
13	Identify the reserves of the company to establish the most rational modes of operation of the fleet of buses	IC	C	M	OCTA	-	-	-
14	To control observance of schedules of release on line and movement of buses on routes	RK	-	!ATC	-	T	T	T
15	Ensure uninterrupted operation of the cash register, regularly inviting specialists for preventive inspection.	K	-	-	IPOA	-	-	-
16	Ensure that the cash book is maintained in an error-free manner by entering information on receipts and disbursements in a timely manner.	CK	-	-	IPOAC	-	-	-
17	Be vigilant and cautious, informing the chief accountant of suspicious	K	-	-	IKCT	-	-	-
18	Check the technical condition and acceptance of the vehicle before going on the line.	CK	IPOAT	-	-	T	-	-
19	Draw up travel documents	K	TA	CT	IPOC	T	-	-
20	Refuel and refuel the vehicle with fuel and coolant	K	POXC	-	-	IPOACT	-	-
21	Check the availability of tickets, travel passes, documents presented for free travel in public transportation	K	-	-	-	-	IPOAT	-
22	Record the top numbers of the travel ticket book on a per-trip basis	K					IPOACT	
23	To control the state of health of drivers	K	-	-	-	-	-	IPOACT
24	Conduct pre-trip medical examinations before the start of the working shift	K	-	-	-	-	-	IPOAC
25	Make decisions on drivers' authorization to work	K	-	-	-	-	-	IPOAC

This matrix reflects the real activity of the operation department of the motor transportation enterprise, the participants of business processes of which are the chief, mechanic, dispatcher, cashier, driver, conductor, medical worker, performing a total of 25 functions.

Based on expert assessments, a matrix of pairwise comparisons of labor intensity of functions was filled in (Table 3).

**Table 3.** Matrix of pairwise comparisons of tasks

№	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
1	1	1	1	0	1	0	1	1	0	0	1	1	1	2	1	1	0	0	2	1	2	1	0	1	1	
2	1	1	1	2	0	0	1	0	2	0	1	1	0	1	1	2	1	0	1	1	2	1	0	1	0	
3	1	1	1	1	1	0	1	0	1	1	1	0	1	1	1	1	1	1	2	2	1	1	1	0	1	
4	2	0	1	1	0	1	1	1	2	1	2	1	1	0	2	1	1	1	1	0	1	2	1	0	1	
5	1	2	1	2	1	1	1	1	1	0	0	1	0	1	0	1	0	0	2	2	1	1	1	1	1	
6	2	2	2	1	1	1	2	1	2	1	0	0	1	1	2	1	1	1	2	1	1	1	1	1	1	
7	1	1	1	1	1	0	1	0	1	0	2	2	1	1	1	1	1	0	0	1	1	2	1	2	0	
8	1	2	2	1	1	1	2	1	1	0	1	1	1	0	2	1	2	1	1	1	2	1	0	1	1	
9	2	0	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1	0	2	1	1	1	0	1	1	
10	2	2	1	1	2	1	2	2	1	1	2	0	1	1	2	1	2	1	1	2	1	1	1	0	1	
11	1	1	1	1	0	2	2	0	1	1	0	1	0	1	1	2	1	0	1	1	0	1	1	0	1	
12	1	1	2	1	1	1	0	1	1	2	2	1	1	0	2	1	0	0	0	1	1	1	0	1	1	
13	1	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	0	0	
14	0	1	1	2	1	1	1	2	2	1	1	2	1	1	2	2	1	1	1	0	2	0	1	0	0	
15	1	1	1	0	2	1	1	0	1	0	0	0	1	0	1	1	1	0	0	1	1	0	1	0	1	
16	1	0	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	1	1	
17	2	1	1	1	2	1	1	0	1	0	2	2	1	1	1	1	1	0	1	1	1	1	1	1	0	
18	2	2	1	1	2	1	2	1	2	1	1	2	1	1	2	1	2	1	1	1	1	1	2	1	1	0
19	0	1	0	1	0	1	2	1	0	1	1	2	2	1	2	2	1	1	1	1	1	1	0	0	0	
20	1	1	0	2	0	0	1	1	1	0	2	1	1	2	1	1	1	1	1	1	1	1	0	1	1	
21	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	0	0	1	1
22	1	1	1	0	1	1	0	1	1	1	1	1	1	2	2	2	1	1	0	1	1	2	1	0	1	1
23	2	2	2	1	1	1	1	2	2	1	2	2	1	1	1	2	1	1	2	2	2	2	2	1	0	1
24	1	1	2	2	1	1	0	1	1	2	1	1	2	2	2	1	1	1	2	1	1	1	2	1	1	
25	1	2	1	1	1	1	2	1	1	1	2	1	2	2	1	1	2	2	2	1	1	1	1	1	1	1

The largest share of labor intensity of functions is occupied by the functions: "Carry out control over drivers' health condition" (5.59), "Perform technical condition check and vehicle acceptance before going to the line." (5.27), "Make decisions on drivers' admission to work" (5.27), "Carry out technical supervision over the condition of the fleet of buses on the line and at idle, identifies the causes of malfunctions and takes measures to eliminate them" (5.11), "Conduct pre-trip medical examinations before the beginning of the working shift" (5.11).

The smallest share of labor intensity of functions is occupied by the function "Ensure smooth operation of the cash register, regularly inviting specialists for preventive inspection" (2.55), "Ensure error-free maintenance of the cash book, timely entering information about incoming and outgoing documents" (3.03), "Participate in the acceptance of new rolling stock, as well as in the write-off of buses and handing over of units." (3.19), "Ensure rational use of rolling stock on the line" (3.35), "Organize the work of the driving staff" (3.35) (Table 3).

Similarly, a matrix of pairwise comparisons of the labor intensity of the symbols based on importance and labor intensity was formed (Table 4).

**Table 4.** Matrix of pairwise comparisons of symbols

Symbol	I	!	R	P	O	K	X	A	C	T	M	Sum	Significance
I	1	1	2	1	2	1	2	1	2	1	1	15	12,39
!	1	1	2	2	1	1	2	1	1	0	2	14	11,57
R	0	0	1	1	0	1	0	1	0	1	2	7	5,78



<b>P</b>	1	0	1	1	1	2	0	1	1	0	1	9	7,43
<b>O</b>	0	1	2	1	1	1	1	0	1	1	2	11	9,09
<b>K</b>	1	1	1	0	1	1	1	2	1	1	2	12	9,91
<b>X</b>	0	0	2	2	1	1	1	1	0	0	1	9	7,43
<b>A</b>	1	1	1	1	2	0	1	1	1	1	2	12	9,91
<b>C</b>	0	1	2	1	1	1	2	1	1	0	0	10	8,26
<b>T</b>	1	2	1	2	1	1	2	1	2	1	1	15	12,39
<b>M</b>	1	0	0	1	0	0	1	0	2	1	1	7	5,78
<b>Sum</b>	7	8	15	13	11	10	13	10	12	7	15	121	100

The total labor intensity of functions (Table 6) of the maintenance department employees was determined by adding the labor intensity of functions of each of the business process participants. As a result, the final matrix of labor intensity of functions of the maintenance department employees was obtained. According to the data of the table, it can be seen that higher labor intensity indicators belong to the supervisor (2273.65), mechanic (1568.92) and medical worker (1190.16).

**Table 5.** Final matrix of labor intensity of tasks of the real model of business processes of the enterprise

№	Unit function	Symbols of the conversion function by positions of function participants						
		General director	Mechanic	Dispatcher	Cashier	Driver	Bus conductor	Medical Worker
1	Ensure rational use of rolling stock on the line	158.02	74.85			41.58		
2	Organize the work of the driving staff	158.02				74.85		
3	Organize briefings for bus drivers on the rules and conditions of transportation of people	179.15				81.982	45.54	
4	Organize the work of the dispatching service and control over the work of buses on the line	194.72		89.11				
5	Establish duties for the operation service personnel	179.15	45.54	45.54	45.54	45.54	45.54	45.54
6	Suspend from work service employees who have not passed medical examination	91.09						178.22
7	Issue orders in all areas of operation service activities	179.15	45.54	45.54	45.54	45.54	45.54	45.54
8	Analyze the operational performance of buses, expenditures of operating materials and tires	44.35	229.18					
9	Participate in providing technical assistance to buses on the line	60.99	171.89			24.95		
10	Carry out technical supervision over the condition of the fleet	92.94	261.92	38.02		63.36		

	of buses on the line and in standstill							
11	Participate in the acceptance of new rolling stock, as well as in the decommissioning of buses and the handing over of units.	89.77	155.78		71.29			
12	To carry out operational control over the progress of the motor transportation company's activities	179.15	81.98	81.98		81.98	45.54	45.54
13	Identify the reserves of the company to establish the most rational modes of operation of the fleet of buses	79.21	31.68	22.17	152.08			
14	To control observance of schedules of release on line and movement of buses on routes	67.72		181.79		53.46	53.46	53.46
15	Ensure uninterrupted operation of the cash register, regularly inviting specialists for preventive inspection.	25.34			99.27			
16	Ensure that the cash book is maintained in an error-free manner by entering information on receipts and disbursements in a timely manner.	55.18			142.97			
17	Be vigilant and cautious, informing the chief accountant of suspicious	39.60			171.62			
18	Check the technical condition and acceptance of the vehicle before going on the line.	95.84	270.11			65.34		
19	Draw up travel documents	36.43	81.98	75.91	136.64	45.54		
20	Refuel and refuel the vehicle with fuel and coolant	36.43	118.42			218.62		
21	Check the availability of tickets, travel passes, documents presented for free travel in public transportation	33.26					171.89	
22	Record the top numbers of the travel ticket book on a per-trip basis	39.60					237.63	
23	To control the state of health of drivers	55.44						332.69
24	Conduct pre-trip medical examinations before the start of the working shift	50.69						240.80
25	Make decisions on drivers' authorization to work	52.27						248.32

The analysis of the total labor intensity of functions shows that at the same employment of employees of the operation department the functions performed by them are different. It is obvious that the dispatcher, cashier, driver and conductor have comparable labor intensity, while the supervisor's labor intensity is three times higher, the mechanic's labor intensity is twice as high and the medical worker's labor intensity is one and a half times higher. In order to normalize the workload of the staff, it would be necessary to redistribute the powers of employees, to transfer the powers of one employee to another. On this basis, the problem of the exploitation department is the uneven distribution of staff workload.

#### 4 Calculation of labor intensity of functions of the "ideal" model in the enterprise

We calculated the labor intensity of the functions of the ideal model of business processes of the operation department and then recalculated the labor intensity of the functions of the employees of the operation department taking into account the proposed measures for their improvement (Tables 6, 7, 8).

In Table 6 responsibility matrix after the improvement, we observe changes in the functions of the employees of the exploitation department. The implementation of such an activity as staff development led to the unloaded work of the supervisor in this department and the workload of other employees, namely the driver and the dispatcher [35]. The second activity was the hiring of two new employees, namely a mechanic assistant and a medical assistant. Thus, we have seen the unloading of such employees as the mechanic and the medical worker.

**Table 6.** Responsibility matrix after improvement

№	Unit function	Symbols of the conversion function by positions of function participants								
		General director	Mechanic 1	Mechanic 2	Dispatcher	Cashier	Driver	Bus conductor	Medical Worker 1	Medical Worker 2
1	Ensure rational use of rolling stock on the line	IPOKC	A	T	-	-	T	-	-	-
2	Organize the work of the driving staff	OK	-	-	-	-	IPCAT	-	-	-
3	Organize briefings for bus drivers on the rules and conditions of transportation of people	IPOKA	-	-	-	-	AT	T	-	-
4	Organize the work of the dispatching service and control over the work of buses on the line	OK	-	-	IAC	-	-	-	-	-
5	Establish duties for the operation service personnel	IPOKA	T	T	T	T	T	T	T	T
6	Suspend from work service employees who have not passed	!P	-	-	-	-	-	-	RATO	RTO

	medical examination									
7	Issue orders in all areas of operation service activities	IPOKA	T	T	T	T	T	T	T	T
8	Analyze the operational performance of buses, expenditures of operating materials and tires	K	!PO	RAT	-	-	-	-	-	-
9	Participate in providing technical assistance to buses on the line	CK	!PO	RAT	-	-	X	-	-	-
10	Carry out technical supervision over the condition of the fleet of buses on the line and in standstill	CK	!PO	RAT	X	-	T	-	-	-
11	Participate in the acceptance of new rolling stock, as well as in the decommissioning of buses and the handing over of units.	CAK	!PO	RTX	-	AT	-	-	-	-
12	To carry out operational control over the progress of the motor transportation company's activities	OK	AT	T	IPOAT	-	AT	T	T	T
13	Identify the reserves of the company to establish the most rational modes of operation of the fleet of buses	RK	C	-	!M	OCTA	-	-	-	-
14	To control observance of schedules of release on line and movement of buses on routes	RK	-	-	!ATC	-	T	T	T	T
15	Ensure uninterrupted operation of the cash register, regularly inviting specialists for preventive inspection.	K	-	-	-	IPOA	-	-	-	-

16	Ensure that the cash book is maintained in an error-free manner by entering information on receipts and disbursements in a timely manner.	CK	-	-	-	IPOAC	-	-	-	-
17	Be vigilant and cautious, informing the chief accountant of suspicious	K	-	-	-	IKCT	-	-	-	-
18	Check the technical condition and acceptance of the vehicle before going on the line.	CK	IPO	RAT	-	-	T	-	-	-
19	Draw up travel documents	K	TA	T	CT	IPOC	T	-	-	-
20	Refuel and refuel the vehicle with fuel and coolant	K	PO	XC	-	-	IPOACT	-	-	-
21	Check the availability of tickets, travel passes, documents presented for free travel in public transportation	K	-	-	-	-	-	IPOAT	-	-
22	Record the top numbers of the travel ticket book on a per-trip basis	K	-	-	-	-	-	IPOACT	-	-
23	To control the state of health of drivers	K	-	-	-	-	-	-	!PA	ROCT
24	Conduct pre-trip medical examinations before the start of the working shift	K	-	-	-	-	-	-	!PA	ROC
25	Make decisions on drivers' authorization to work	K	-	-	-	-	-	-	!PA	ROC

**Table 7.** Final matrix of labor intensity of functions of the "ideal" model

№	Unit function	Symbols of the conversion function by positions of function participants								
		General director	Mechanic 1	Mechanic 2	Dispatcher	Cashier	Driver	Bus conductor	Medical Worker 1	Medical Worker 2
1	Ensure rational use of rolling stock on the line	158.02	33.26	41.58	-	-	41.58	-	-	-
2	Organize the work of the driving staff	63.76	-	-	-	-	169.11	-	-	-
3	Organize briefings for bus drivers on the rules and	179.15	-	-	-	-	81.98	45.54	-	-

	conditions of transportation of people									
4	Organize the work of the dispatching service and control over the work of buses on the line	75.91	-	-	122.11	-	-	-	-	-
5	Establish duties for the operation service personnel	179.15	45.54	45.54	45.54	45.54	45.54	45.54	45.54	45,54
6	Suspend from work service employees who have not passed medical examination	91.09	-	-	-	-	-	-	178.22	130,69
7	Issue orders in all areas of operation service activities	179.15	45.54	45.54	45.54	45.54	45.54	45.54	45.54	-
8	Analyze the operational performance of buses, expenditures of operating materials and tires	44.35	125.68	125.68	-	-	-	-	-	-
9	Participate in providing technical assistance to buses on the line	60.99	113.66	94.26	-	-	24.95	-	-	-
10	Carry out technical supervision over the condition of the fleet of buses on the line and in standstill	92.94	143.63	143.63	38.02	-	63.36	-	-	-
11	Participate in the acceptance of new rolling stock, as well as in the decommissioning of buses and the handing over of units.	89.77	89.77	81.85	-	71.29	-	-	-	-
12	To carry out operational control over the progress of the motor transportation company's activities	69.83	81.98	45.54	188.26	-	81.98	45.54	45.54	45,54
13	Identify the reserves of the company to establish the most rational modes of operation of the fleet of buses	60.20	31.68		66.53	152.08	-	-	-	-
14	To control observance of schedules of release on line	67.72	-		181.79	-	53.46	53.46	53.46	53,46

	and movement of buses on routes									
15	Ensure uninterrupted operation of the cash register, regularly inviting specialists for preventive inspection.	25.34	-	-	-	99.27	-	-	-	-
16	Ensure that the cash book is maintained in an error-free manner by entering information on receipts and disbursements in a timely manner.	55.18	-	-	-	142.97	-	-	-	-
17	Be vigilant and cautious, informing the chief accountant of suspicious	39.61	-	-	-	171.62	-	-	-	-
18	Check the technical condition and acceptance of the vehicle before going on the line.	95.84	148.12	148.12	-	-	65.34	-	-	-
19	Draw up travel documents	36.43	81.98	45.54	75.91	136.64	45.54	-	-	-
20	Refuel and refuel the vehicle with fuel and coolant	36.43	60.72	57.69	-	-	218.62	-	-	-
21	Check the availability of tickets, travel passes, documents presented for free travel in public transportation	33.26	-	-	-	-	-	171.89	-	-
22	Record the top numbers of the travel ticket book on a per-trip basis	39.61	-	-	-	-	-	237.63	-	-
23	To control the state of health of drivers	55.44	-	-	-	-	-	-	161.72	198,69
24	Conduct pre-trip medical examinations before the start of the working shift	50.69	-	-	-	-	-	-	147.86	118,29
25	Make decisions on drivers' authorization to work	52.27	-	-	-	-	-	-	152.48	121,98

**Table 8.** Comparative matrix of labor intensity of functions of "real" and "ideal" models.

Position	Real	Ideal
General director	2273.65	1932.24

Mechanic 1	1568.92	1001.63
Mechanic 2	-	875.02
Dispatcher	580.09	763.73
Cashier	864.99	864.99
Driver	842.81	937.07
Bus conductor	645.18	645.18
Medical Worker 1	1190.16	830.41
Medical Worker 2	-	714.22

From the data in Table 8, we can conclude that the resulting data shows that the workload of the operation department staff has leveled out, i.e. that one of the main objectives of the work has been achieved [36].

## 5 Conclusion

In conclusion, we can emphasize the importance of the conducted research for improving the efficiency of business processes [37].

The analysis of current management structures, creation of IDEF0-model of business processes and assessment of labor intensity of personnel functions allowed to identify problematic points and propose measures for their improvement [38, 39]. The development of an ideal model of business processes represents an important step in the direction of optimizing resources and improving the efficiency of the enterprise. In general, the results of the study emphasized the need to improve the management structure to maximize productivity and improve the quality of services provided [40].

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