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FEATURES OF DETERMINING THE COST
OF TRANSPORT SERVICES

Abstract. The strong competition in the logistics market enforces the service provider companies to enhance the capabilities of their management accounting systems. It is of high importance to know the real costs of transport services as well as the cost efficiency of activities contributing to the production of services. This information is needed for assessing the profitability and operation efficiency and for determining the price of services. Traditional costing methods, however, are not always able to provide the information necessary for decision support in the required quality. They may even distort service cost calculations as detailed cost driver analyses are not applied within conventional costing regimes. Thus it is worth introducing alternative cost calculation methods which improve the accuracy and reliability of service cost data [1].

To properly manage costs in transport logistics, it is necessary to optimize all stages of the transport and logistics process-from choosing the type of transport and building the supply chain to planning routes and monitoring the execution of tasks.

The article deals with determining the optimal cost of auto cargo transportation, taking into account internal and external factors of influence. The results of the research in the article show that a transport company should have different payment options for paying for a completed flight with specific brands of cars, i.e. the cost of one m^3, t, km, depending on the type of orders and the distance of transportation.

The materials consider the methodology of determining the contractual price of transport services in the Republic of Kazakhstan. In the market conditions, the main objective is the correctness and accuracy of the assessment of the actual costs of the implementation of the transport service and, as a result, the correct pricing of this service.

Keywords: motor transport, factors, analysis, trucking companies, cost, efficiency, service.

Introduction. On the importance of transportation much has been written, and little need be said to stress further the significance of the vital service rendered by transport in the intricate and interdependent economic organization of modern times. It must not be forgotten that road transport has had a long history and that it has done its full share to help on the progress of civilization [2].

Market transformations in our country are forcing regional trucking companies to increase the efficiency of using material resources and personnel [3-6]. Only the trucking company that will meet the requirements of market economy to the fullest extent will be able to operate successfully tomorrow. Therefore, their primary objective is the accuracy of the the actual cost of transport services and, as a result, the accurate assignment of rates for this service [7].

Main part: The previously used indicators - ton, t.km, toll mileage km in the new conditions do not reflect the real costs of the carrier for the implementation of transport service and the actually necessary

payment of the client for the service rendered [8]. Therefore, the "reference" of all standards (maintenance and repair, fuel consumption, calculation of carrier cost) to the mileage does not reflect the actual energy costs of the vehicle to perform the transport service and its subsequent technical condition. In view of this, it is necessary to use another indicator of the vehicle operation process, namely the mechanical work of the vehicle engine in the process of movement (and not the mileage) [9-11].

In addition, the efficiency of road transport is mainly evaluated by the value of carrier cost, which largely depends on the level of technical operation of vehicles. Maintenance of a vehicle accounts for up to 25 % of the cost [12]. Therefore, increasing the efficiency and quality of the road transport means, first of all, reduction of the carrier cost by improving the quality of vehicles released, rational organization of transportation, improving the technical operation of vehicles.

There is one more problem. If we don't set the necessary time for intermediate technological processes in the reduction of trucking, it is impossible to determine the scope of transportation of vehicles, as well as the implementation of the route plan [13]. At the same time, the quality and expedience of the intermediate technological processes depend on the level of mechanization and qualification of specialists involved in the supply chain.

The above economic indicators of trucking companies directly depend on capital compensation. Awareness of the need for efficient use of time is associated with marketing research of the road transportation market [14].

Reduction and efficiency of the road transport supply chain depend on the time spent on periodic technological trends. This dependence is expressed by the following equation:

$$K = T_{аж} / T_{ат} \cdot \tag{1}$$

where: $T_{аж}$ – time spent on transportation in order execution, hours; $T_{ат}$ – time spent on the acceptance, cargo loading/unloading, hours.

In many cases, especially in the provision of cargo for production, movement of private apartment owners, transportation of goods to retail facilities, the likelihood of increase in the time of intermediate technological processes ($T_{ат}$) is higher than the movement time of the main vehicles ($T_{аж}$) [15]. Therefore, depending on the contract features, before cargo transportation, the driver must receive from the dispatching staff full information about his physical, transportation characteristics and transport characteristics, he must know the transportation route and the road condition, have a waybill.

Loading and unloading of goods is carried out by consignor or consignee, thus the costs of intermediate technological processes, wages are determined beforehand by bilateral agreement of the parties. However, the reduction and efficiency of the road transport chain includes not only the movement of vehicles of intermediate technological processes, but also the documentation of the movement of goods: the goods to be transported must be labeled; placed so that the labeling of the goods is visible; loading-unloading points and the volume of goods must be indicated. This will improve the acceptance of containers and goods, accelerate the verification of its quality, determine the accuracy of the price [15-17].

The reduction of the transportation chain is measured by the time spent on the execution of orders, for this reason, it is necessary to rationally place the goods: in the event of simultaneous transportation of heavy and light cargo, the heavy load must be placed below, on the top – light load. In the warehouses there should be places for the selection, grouping and packing of goods, as well as production facilities intended for storage in containers, repair of containers, places for loading-unloading mechanisms, functional, domestic and consulting areas. Therefore, taking into account the solvency of consumers, various methods are recommended to determine the cost of the transport services rendered, depending on the form and types of orders [18].

However, when determining the contractual price of transport services, the following components must be taken into account: expenses for operation and restoration of vehicles; driver's salary; overhead costs of transport companies.

The first group of observations was carried out for low-capacity Gazelle trucks, i.e. with a loading capacity up to 2.0 tons for transportation of goods around the city. In addition, loading and unloading are performed by the customer.

Results of the study are presented in diagrams. After order acceptance, the first vehicle drives to the place of loading, and loading is arranged in two places and unloaded in one place, i.e. in the store warehouse. The time taken to complete the first order is 3 hours 45 minutes and the total mileage is 60 km. The second vehicle is loaded in two places and unloaded in one place, the time for order execution is 3 hours 36 minutes, mileage – 70 km. It took 5 hours 45 minutes to complete the fifth order, the total mileage – 100 km (table 1).

Table 1 – Calculation of the time spent on transportation of goods by a vehicle with a capacity of up to 2.0 tons.

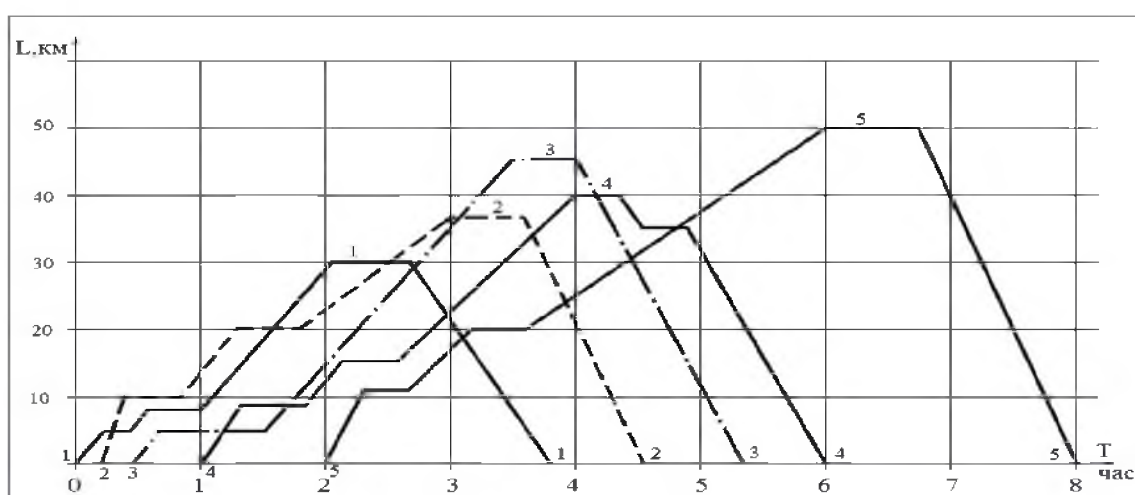| Vehicle ordinal number	Arrival time, min.	Cargo acceptance and loading time, min.	Duration of the trip to the place of unloading, hour	Unloading time, min.	Driving time to trucking company, hour
1	15,0	35,0	1,50	25,0	1,0
2	17,0	40,0	1,20	27,0	1,0
3	14,0	36,0	2,00	20,0	1,2
4	16,0	50,0	1,20	30,0	1,0
5	13,0	45,0	2,50	35,0	1,7
Average value	15,0	41,5	1,68(100,8)	27,4	1,18 (70,8)

Figure 1 - Movement table of vehicles with a capacity of no more than 2 tons, depending on the type of orders

The average execution of one conditional order is 4.26 hours, of which 3.11 hours are on the road or in transit. The travel factor is 0.73. If the execution of these types of orders will be paid according to distance traveled or the mileage, the trucking company receives less for the transport services rendered. Therefore, in this case, the contractual price or the cost of transport services should be determined by time.

If the order will be fulfilled within the settlements, the conditional vehicle speed is 40 km/h, the consumer orders a vehicle for 5 hours. Then the cost of transport services is recommended to be determined by the following method. In five hours a vehicle will travel 200 km, the vehicle consumption rate is 17 liters/100 km or the estimated fuel consumption is 34 liters at the price of 110 tenge, the total cost is 3740 tenge. For accounting of other operating costs of the vehicle, this price is increased by 30 %, and then the operational cost of the vehicle for five hours will be 4862 tenge. The driver's salary is determined at the rate of 500 tenge/hour, for 5 hours – 2500 tenge.

For accounting of overhead costs of trucking companies, taking into account the estimated profit, the total amount is increased by another 30 %, thus (4862 + 2500) x1.3 = 9570.6 tenge, or 1914.12 tenge per hour of operation of this type of vehicle.

The second group of observations was carried out for trucks with a capacity of 3.5-5.0 tons. The results obtained are presented in diagrams, and the average costs of intermediate technological processes in the supply chain are presented in table 2.

Table 2 – Calculation of the time spent on cargo transportation with a capacity of 3.5-5.0 tons

Vehicle ordinal number	Arrival time, min.	Cargo acceptance and loading time, min.	Duration of the trip to the place of unloading, hour	Unloading time, min.	Driving time to trucking company, hour
1	25,0	85,0	2,0	45,0	1,3
2	33,0	105,0	3,20	67,0	2,5
3	34,0	90,0	3,50	60,0	3,2
4	15,0	85,0	3,20	35,0	2,6
5	18,0	80,0	4,00	40,0	2,7
Average value	25,0	89,0	3,18 (190,8)	49,4	2,46 (147,6)

As you can see in the diagram, the average execution of specific orders is 8 hours 21 minutes, while the total mileage of vehicles does not exceed 100 km.
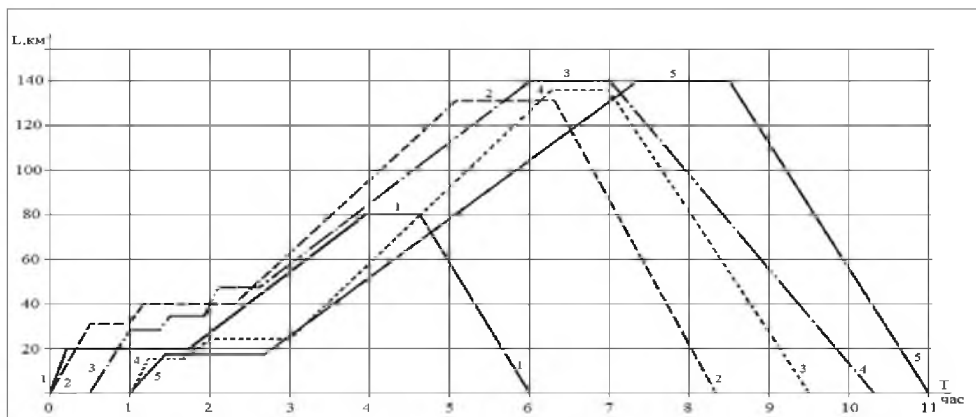

Figure 2 - Movement table of vehicles with a capacity of no more than 5 tons, depending on the type of orders

The total execution of orders was 8.21 hours, of which 6.0 hours on the road, i.e. the travel factor of a vehicle is 0.72. In this case, it is recommended to determine the cost or contractual price of the transport services rendered by time, according to the above method. We take the average fuel consumption as equal to 25 liters per 100 km, the cost is 110 tenge/L. We accept all the parameters as in the previous one. (50 L x 110) x 1.3 = 7150 tenge. The driver's salary is 2500 tenge. For accounting of overhead costs of trucking companies, taking into account the estimated profit, the total amount is increased by another 30 %, thus (7150 + 2500) x1.3 = 12 545.0 tenge, or 2509 tenge per hour of operation of this type of vehicle.

For the third option, transportation of goods by a vehicle with a capacity of more than 10 tons is considered. The results obtained are presented in diagrams and table 3.
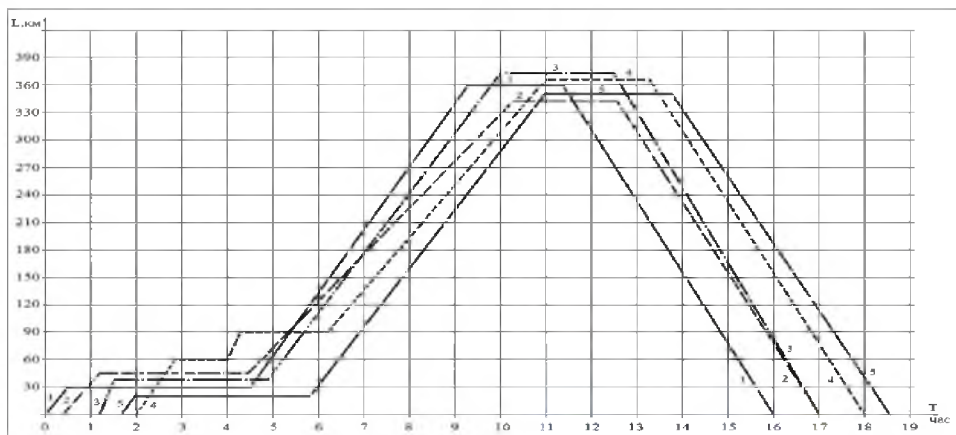

Figure 3 - Movement table of trucks depending on the type of orders

The figure shows that loading is possible in different places, and as practice shows, unloading of goods is mainly centralized, i.e. in one place. This is a key question, since heavy trucks with other numbers and series are highly questionable and cause strong interest on the part of regulatory authorities of other regions, therefore unloading in one place is desirable for both parties.

Table 3 – Calculation of the time for cargo transportation with a capacity of more than 10 tons

Vehicle ordinal number	Arrival time, min.	Cargo acceptance and loading time, min.	Duration of the trip to the place of unloading, hour	Unloading time, min.	Driving time to trucking company, hour
1	45,0	260,0	5,0	120,0	4,3
2	50,0	180,0	5,20	150,0	4,5
3	30,0	180,0	5,50	140,0	4,2
4	55,0	220,0	5,20	130,0	4,6
5	60,0	240,0	5,00	140,0	4,7
Average value	48,0	216,0	5,18 (310,8)	136,0	4,46 (267,6)

The total time for order execution is 16.31 hours, of which 10.44 hours are on the road, and the travel factor is 0.64. Now let's determine the cost of transport services acceptable for both parties. According to the above methodology, the cost of one hour for this type of vehicle will be: fuel consumption 40 liters/100 km, fuel price 102 tenge, driver's salary – 700 tenge/hour. The order is executed outside settlements, the average speed is 70 km/h. The calculation is based on 5 hours. (350 km x 0.4 x 102) = = 14280 tenge fuel cost, operating cost – 18564 tenge, driver's salary – 5x700 = 3500 tenge, the total cost of work will be (18564 +3500) x 1.3 = 28 683.20 tenge or 5 736.64 tenge/hour. Then the consumer must pay 93 564.60 tenge to trucking company for 16.31 hours.

The increase in the value of goods depending on the volume and weight of goods should also be considered. If this customer used the full volume of the body without trailer, which is usually 26-50 m^3 (KamAZ, MAZ), then the transportion cost of 1 m3 is 3568.64 or 1871.30 tenge. For transportation of goods over a distance of no more than 500 km, this price is considered lower than the market price and very acceptable. The use of heavy trucks may depend on the volume and weight of the goods, as well as on the delivery time. In any case, the consumer compares his ability and counts the amount of expected profit from the sale of particular goods, taking into account the cost of transportation. If the contractual product sales price depends on the delivery time, the customer obviously chooses the increase of future profit from the product sale and uses an incomplete body or carrying capacity of a particular vehicle, pays by time or for a full body. Therefore, the trucking company must have different options for calculation of the payment for the route with specific brands of vehicles, i.e. the cost of one m3, ton, km, depending on the type of orders and the transportation distance [19-20].

Table 3 – Calculation of the cost of works of Tulpar LLP

Vehicle class by carrying capacity, ton	Quantity, units	Technical availability	Annual scope of work in service, hour	Annual amount of performance, thousand tenge
Before 2,0	12	0,7	(2400x12) 28 800	55 126,656
Before 5,0	7	0,7	(2400x5) 12 000	30 108,00
Above 10	15	0,7	(2400x15) 36 000	206 519,04
TOTAL	34	0,7	64 800	291 753,69

Thus, the total expenses will be:
- overhead costs – 87 526,107 thousand tenge, including estimated profit – 26 257,832;
- salary of drivers – 20 400,00 thousand tenge;
- operating costs of vehicles – 227,59 thousand tenge (291 753,69-20 400,00-87 526,107);
- estimated cost of consumed fuel – 159,313 thousand tenge (227,59 x 0,7);
- repair pool – 68,277 thousand tenge (227,59 – 159,313).

In view of the foregoing, for small and medium-sized trucking companies as well as private entrepreneurs, we can recommend the following methodology to determine the cost of transport services rendered.

$$C_{тр} = (g_{л/час} \times C \text{ гсм} \times K_{экс} + 3_{вод}) \times K_{атп} \qquad (2)$$

where: $C_{тр}$ – the cost of transport service for one hour of operation of a particular vehicle, tenge; $g_{л/час}$ – fuel consumption for one hour of vehicle operation, L/hour; C гсм - cost of one liter of fuel, tenge; $K_{экс}$ – coefficient taking into account all the operating costs for one hour of vehicle operation, usually equal to 1.3; $3_{вод}$ –driver's salary for one hour of work depending on the order complexity and the vehicle brand, tenge/hour; $K_{атп}$ – overhead costs of trucking company or private entrepreneur, usually equal to 1.3.

Conclusion. Market transformations in our country are forcing regional trucking companies to increase the efficiency of using material resources and personnel. Only the trucking company that will meet the requirements of market economy to the fullest extent will be able to operate successfully tomorrow. Therefore, their primary objective is the accuracy of the the actual cost of transport services and, as a result, the accurate assignment of rates for this service.

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КӨЛІК ҚЫЗМЕТТЕРІНІҢ ҚҰНЫН АЙҚЫНДАУ ЕРЕКШЕЛІКТЕРІ

Аннотация. Қазақстан Республикасында көлік саласы көліктің алты негізгі түрімен ұсынылған: автомобиль, темір жол, ішкі су жолы, теңіз, әуе және құбыр желісі. Алайда Қазақстанда көлік жүйесінің негізі автомобиль көлігі болып табылады. Ол 70%-дан астам жүк тасымалын қамтамасыз етеді, елдегі халық шаруашылығының барлық салаларында көлік міндеттерін шешуге қатысады.

Автомобиль көлігі – байланыстырушы тізбек, басқа көлік түрлерімен өзара тығыз әрекеттеседі, қысқа қашықтықтарда жүк тасымалдары бойынша монополиялық құқыққа ие деуге болады. Нарықтық экономиканың заманауи жағдайында автомобиль көлігінің оңтайлы қызмет етуінің маңызды факторларының бірі – қаржы-экономикалық басқарудың тиімділігін қамтамасыз ету. Ол үшін автокөлік саласы қызметінің экономикалық негіздерін білу, қаржы-экономикалық көрсеткіштерді пайдалана білу және талдай білу, автокөліктің қаржы-экономикалық қызметін талдау нәтижелерін тәжірибеде қолдана білу қажет.

Қазіргі күні нарықтық қатынастардың қалыптасу, экономикадағы түрлену процестері, өткір бәсекелестік көлік кәсіпорындарының іс жүргізуде, соның ішінде баға қалыптастыру және баға белгілеу процесінде жаңа тәсілдерді іздеуді талап етеді. Көлік кәсіпорындары басшылығы күн сайын қандай тариф түрлерін қолдану керек, қандай жағдайда баға белгілеудің қан әдістерін қолданған дұрыс және т.б. сияқты мәселелерді шешуіне тура келеді. Бұл мән-жайлар ҚР-да көлік қызметтеріне баға белгіленуін зерттеудің мәнін арттырады.

Тасымалдаулардың өзіндік құны көрсеткіш ретінде автокөлік қызметін бағалауда үлкен мәнге ие, себебі тасымалдаушының қаржылық жай-күйіне шешуші әсерін тигізеді: өзіндік құн қаншалықты төмен болса, жүк тасымалдауды жүзеге асыратын кәсіпорынның немесе жеке кәсінкердің қаржылық ахуалы соншалықты жақсы. Тасымалдаулардың өзіндік құнын дұрыс айқындау өнімнің өзіндік құны көлік қызметтері өндірісіне жанды және қоғамдық еңбектің шығынын көрсететін қорытынды көрсеткіш болып табылатыны себебінен ғана емес, оның деңгейінің көлік қызметтері тиімділігінің басты көрсеткіштерінің бірі болуы себепті маңызды.

Елімізде жүріп жатқан нарықтық өзгерістер өңірлік автокөлік компанияларын материалдық ресурстар мен қызметкерлерді пайдаланудың тиімділігін көтерін отыруға мәжбүрлейді. Ертеңгі күні нарықтық экономиканың талаптарына барынша жоғары дәрежеде сәйкес келетін атокөлік компаниясы ғана табыспен жұмыс істей алады. Сондықтан да көлік қызметін орындауға нақты шығындарды бағалаудың дұрыстығы мен дәлдігі және осының салдары ретінде осы қызмет үшін баға тағайындаудың дұрыстығы негізгі міндеттердің бірі болады.

Қазақстандық автокөлік кәсіпорындары көрсетілетін көлік қызметтерінің өзіндік құнын есептеудің әртүрлі нұсқаларына ие болуы тиіс. Бүгінгі таңда автокөлік қызметтеріне шығындарды оңтайландыру мәселесі әлі де өзекті. Көлік логистикасында шығындарды сауатты басқару үшін көлік түрін таңдау және

жеткізулер тізбегін құрудан бастап, бағыттарды жоспарлау және тапсырмалар орындалуын бақылауға дейінгі көлік-логистикалық процестің барлық кезеңдерін оңтайландыру қажет.

Мақалада әсер етудің ішкі және сыртқы факторларын ескеру мен жүкті авто тасымалдаудың оңтайлы құнын айқындау қаралады. Мақаладағы зерттеу нәтижелері автокөлік кәсіпорнының нақты автомобиль маркалары орындаған сапар үшін төлем ретінде есептесудің әртүрлі нұсқаларына ие болуы тиіс, яғни тапсырыс түрі мен тасымал қашықтығына қарай бір м3, т., км құны.

Түйін сөздер: автомобиль көлігі, факторлар, талдау, автокөлік компаниялары, құн, тиімділік, сервис.

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ОСОБЕННОСТИ ОПРЕДЕЛЕНИЯ СТОИМОСТИ ТРАНСПОРТНЫХ УСЛУГ

Аннотация. Транспортная отрасль в Республике Казахстан представлена шестью основными видами транспорта: автомобильным, железнодорожным, внутренним водным, морским, воздушным и трубопроводным. Однако основой транспортной системы в РК является автомобильный транспорт. Он обеспечивает перевозку более 70% грузов, участвует в решении транспортных задач во всех отраслях народного хозяйства страны.

Автомобильный транспорт является связующим звеном и тесно взаимодействует с другими видами транспорта, а на коротких расстояниях фактически обладает монопольным правом по перевозкам грузов. В современных условиях рыночной экономики одним из важнейших факторов оптимального функционирования автомобильного транспорта является обеспечение эффективности финансово-экономического управления. Для этого необходимо знать экономические основы деятельности автотранспортной отрасли, уметь использовать и анализировать финансово-экономические показатели, результаты анализа финансово-хозяйственной деятельности автотранспорта применять на практике.

В настоящее время процесс формирования рыночных отношений, преобразования в экономике, острая конкуренция требуют от транспортных предприятий поиска новых подходов к ведению дел, в том числе к процессу формирования цен и ценообразованию. Каждый день руководству транспортных предприятий приходится решать: какие виды тарифов применять, какие методы ценообразования более предпочтительны в тех или иных условиях и т.д. Эти обстоятельства повышают значимость изучения ценообразования на транспортные услуги в РК.

Себестоимость перевозок как показатель имеет большое значение при оценке автотранспортной деятельности, поскольку оказывает решающее влияние на финансовое состояние перевозчика: чем ниже себестоимость, тем лучше финансовое состояние предприятия или индивидуального предпринимателя, осуществляющих перевозки грузов. Правильное определение себестоимости перевозок важно не только потому, что себестоимость продукции является итоговым показателем, отражающим затраты живого и общественного труда на производство транспортных услуг, но и потому, что её уровень является одним из главных показателей эффективности транспортных услуг.

Рыночные преобразования, идущие в нашей стране, заставляют региональные автотранспортные компании повышать эффективность использования материальных ресурсов и персонала. Успешно работать завтра сможет только та автотранспортная компания, которая будет в наибольшей степени соответствовать требованиям рыночной экономики. Поэтому основной из задач является правильность и точность оценки фактических затрат на выполнение транспортной услуги и, как следствие, правильность назначения цены за эту услугу.

Казахстанские автотранспортные предприятия должны иметь разные варианты расчета себестоимости оказываемых транспортных услуг. Актуальным на сегодняшний день остается вопрос оптимизации затрат на автотранспортные услуги. Для грамотного управления затратами в транспортной логистике необходимо оптимизировать все этапы транспортно-логистического процесса – от выбора вида транспорта и построения цепи поставок до планирования маршрутов и контроля выполнения заданий.

В статье рассматривается определение оптимальной стоимости автоперевозки грузов с учетом внутренних и внешних факторов влияния. Результаты исследования в статье показывают, что автотранспортное предприятие должно иметь разные варианты расчеты для оплаты за выполненный рейс с конкретными марками автомобили, т.е. стоимость одного м3, т, км в зависимости от вида заказов и расстояния перевозки.

Ключевые слова: автомобильный транспорт, факторы, анализ, автотранспортные компании, стоимость, эффективность, сервис.

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