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SPECIFIC FEATURES OF CITY PUBLIC TRANSPORT FINANCING (KREMENCHUK CASE STUDY)

The paper offers the research results on the organizational specifics of passenger transport functioning in Kremenchuk. The authors have studied the key problems of city transportation and presented its financing scheme through launching of a joint-venture company that includes an ordering customer and a transport operator. To implement such a scheme an algorithm is suggested that provides financing for the necessary structure of the vehicle stock, allows for due diligence passenger traffic inspection, calculation of needed structure and scale of vehicle stock, and its comparison with the existing one. Also, this algorithm helps to define the total investments, stagewise cash flow generation due to amortization, leasing, and budget funding.

Keywords: *passenger automobile transport; financing; transport carrier; leasing; investment.*

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ОСОБЛИВОСТІ ФІНАНСУВАННЯ МІСЬКОГО ПАСАЖИРСЬКОГО АВТОТРАНСПОРТУ (НА ПРИКЛАДІ М. КРЕМЕНЧУК)

У статті визначено особливості організації функціонування пасажирського транспорту м. Кременчук. Досліджено основні проблеми у роботі міського транспорту, представлено схему фінансування міського пасажирського транспорту на основі створення спільного підприємства замовника і перевізника. Для її реалізації запропоновано алгоритм фінансування необхідної структури рухомого складу, яким передбачено обов'язкове обстеження пасажиропотоків, розрахунок необхідної структури і кількості рухомого складу та порівняння його з фактичним, визначення обсягів капіталовкладень, поетапне формування грошових потоків за рахунок амортизації, лізингу та бюджетного фінансування.

Ключові слова: *пасажирський автотранспорт; фінансування; перевізник; лізинг; капіталовкладення.*

Рис. 3. Табл. 1. Літ. 13.

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ОСОБЕННОСТИ ФИНАНСИРОВАНИЯ ГОРОДСКОГО ПАССАЖИРСКОГО АВТОТРАНСПОРТА (НА ПРИМЕРЕ Г. КРЕМЕНЧУГ)

В статье выявлены особенности организации функционирования пассажирского транспорта г. Кременчуг. Исследованы основные проблемы в работе транспорта, представлена схема финансирования городского пассажирского транспорта на основе создания совместного предприятия заказчика и перевозчика. Для ее реализации предложен алгоритм финансирования необходимой структуры подвижного состава, которым предусмотрено обязательное обследование пассажиропотоков, расчет необходимой структуры и количества подвижного состава и сравнение его с фактическим, определение объемов капиталовложений, поэтапное формирование денежных потоков за счет амортизации, лизинга и бюджетного финансирования.

Ключевые слова: *пассажирский автотранспорт; финансирование; перевозчик; лизинг; капиталовложения.*

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Problem statement. City public transport is one of the major factors in daily city life, which guarantees its effective functioning and combines different parts of the city into one complex organism. Passenger transport makes a vital contribution to urban industrial infrastructure. Its stable and efficient operation is a part and parcel of the development and economic growth of the city and the reconstruction of it, as well as integrality support and rising of living standards (Maslak, 2014).

One of the specific problems in the passenger transport market is the discrepancy between the existing structure of the vehicle stock and current demands, first of all it refers to the city bus type, which harms both service quality and ecological situation of the region. At the current stage of economic development in Ukraine, public transport companies face such difficulties as fleet renovation and modernization investment shortfall, inequitable operation conditions for transport companies, irrelevance of economic and organizational financing mechanism to modern conditions.

Research and literature review. Among the research results published in this area for the recent two years, we should mention the works of V.V. Braginskiy (2011), Y.B. Slobodyanik (2007), K.E. Vakylenko and V.F. Kharchenko (2012), V.N. Parakhina (2007) and others. Nevertheless, none of these works was focused on the congruence of interests of all the subjects of passenger transportation market and development of organizational and economic financial mechanisms of urban passenger transport. That is why investigation of the organizational problem of passenger transport in the city through the development of its organizational and economic financial mechanism is to harmonize national interests with the interests of ordering customer and transport carriers, which seems to be a timely and important step.

Research objective. The research is aimed to improve organization of passenger transport in the city, that implies fleet renovation, enhance work efficiency of the companies as well as transport service quality.

Key research findings. The world practice reveals that in most countries authorities pay close and continued attention to the problems of functional organization of urban passenger transport, its funding and investment. While budget funds are limited, procurement of private capital may become an effective way to solve a wide range of urgent problems. Private funds can be raised due to combined efforts of municipal and private companies and their business relations with local authorities in the form of public-private partnership with the government share from 10 to 100%.

Today Ukraine has enabling environment within the passenger transport market for the functioning of transport carriers who are private entities, and strongly adverse conditions for large scale companies, forcing them to leave the market gradually. As a natural consequence, government looses control over service quantity and quality, technical conditions of vehicle stock of transport companies, and another disadvantage is that private carriers block free transport service for welfare beneficiaries.

These circumstances heavily complicate the way government authorities use their administrative influence on transport nowadays. Government should create real significant opportunities for transport companies and accommodate the interests of all transport participants – both carriers and passengers (Sergienko, 2007).

Municipal passenger transport in Kremenchuk is organized to involve private-owned midibuses, light city buses, and minibuses for major transportation. Bus and trolleybus are the key type of transport there.

Great number of minibuses, including the private-owned ones, in transport is a compulsory measure as the large-sized bus fleet has not been reequipped for many years. This is a natural result of shortfall of companies using large-sized buses for passenger transportation in usual traffic conditions. There are 3 major financial sources for the transport complex funding: local budget, own income of transport enterprises, and subventions.

Figure 1 shows that the number of lightbuses and minibuses raised dramatically in 2002, and up to 2006 they drove out almost all large-sized buses.

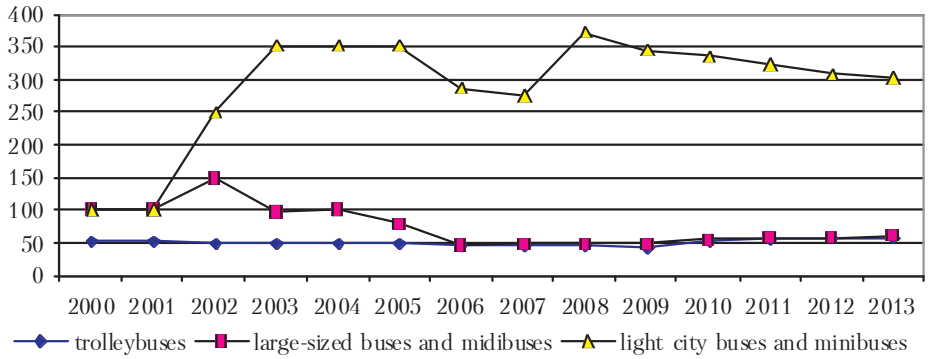

Figure 1. **The vehicle stock structure dynamics in Kremenchuk, 2000–2013** (Kremenchuk official site)

In 2013, in Kremenchuk there were 27 bus services and 6 trolleybus services running correspondingly 301 buses as fixed-route taxis, with 61 buses in usual transportation mode among them, and 58 trolleybuses.

In 2013 close attention was paid to support of the city's electric transport as an environmentally sound and socially vital type of transportation. "The Programme of municipal electric transport development in Kremenchuk for 2013–2015" was developed and approved, according to which in 2013 new trolleybuses were purchased to meet all comfort and safety requirements (Kremenchuk official site).

At present, 11 companies provide passenger transport service in Kremenchuk, among them there is a municipal enterprise, Kremenchuk Trolleybus Department, and a private company. And only 3 carriers provide compensatory financed transportation of welfare beneficiary citizens in Kremenchuk. For other city transport carriers there is no compensation in this case, though they must have an obligatory preferential seat in every bus.

Organization and tax form currently existing at private carriers make an obstacle for them to have a subvention for welfare beneficiaries' transportation. To apply for governmental compensation, it is important to find new organizational forms of enterprises' economic activity that give the way to prepare submissions to obtain this compensation.

The main problems in transport operations are the lack of large-sized and midibuses and low renovation of the fleet.

Economic and legislative conditions in the region have conduced raise of small businesses, growth of the vehicle fleet while its types reduced. The investigation con-

ducted by the authors has revealed that the existing structure of the fleet does not correspond to the city's needs, first of all, as for city bus type, which takes its toll for public transportation service quality and environment of the region. There is no centralized traffic and organization control of transport carriers, which results in work efficiency impairing for each of them (Amosha and Filippova, 2010).

Private-owned passenger transportation, on one hand, heavily complicates arrangement and control of urban passenger transport, and on the other, indicates that public transport becomes an investment-attractive industry due to the availability of full rate of passenger-fare and quick money. These factors are to be noted when public transport is improving. The primary task to be solved by municipal authorities in the case they involve private companies is to provide high quality and effective transportation. The conveyance terms for private-owned carriers must be flexible and accounting for social character of transportation (Grabelnikov, 2012).

Nowadays transportation in the city has the following arrangement scheme: Kremenchuk Municipal Council represented by the City Transport Complex Department is the customer. Transport carrier is the enterprise that operates on a part of the city routes. This company can run its own fleet, which is on its own balance, or engage private traders who are the vehicle owners or have them on lease. In its turn, the trader may work as a driver himself or hire employees (Velichko, 2010).

As practice of functioning of city public transport shows, its current interaction pattern ends in that functions of local authorities are mainly reduced to carriage procedure arrangement only: organization of competitive tenders and making contracts. Monitoring and control of transportation companies reveal their inefficiency resulted from such interaction pattern where local authorities have scant influence on private carriers and, thus, lose control of transportation process itself (Dolia, 2011; Dusek, 2011).

Public transport organizational system does not allow solving the major strategic concern of quality enhancement and passenger transportation safety. Therefore, transport organization system must be improved to guarantee funds accumulation for development and renovation of vehicle fleet for it to work more effectively. In this context, it is necessary to create an optimal organizational model of urban passenger transport functioning. The model's implementation is based on the proposed financing scheme of urban passenger transport (Figure 2). This scheme is based on the interaction between customers and a transport carrier who are supposed to establish a joint-venture company providing public transportation service in the city.

Nowadays reality makes it difficult to have the whole scale financing for both private carriers and local authorities. For that matter, old bus fleet is suggested to be renovated gradually.

Firstly, we should compare the bus fleet available with its needed structure, then we leave a fixed number of buses that becomes the vehicle stock and the first part of structuring is required. Secondly, amortization of the remaining vehicle stock should earn a profit to purchase new large-sized and midibuses.

It is also suggested to purchase new buses of a required size type at the cost of private carriers under leasing agreements. For this, the funds released via a tax relief scheme should be applied. These buses become the third part of the sought structure.

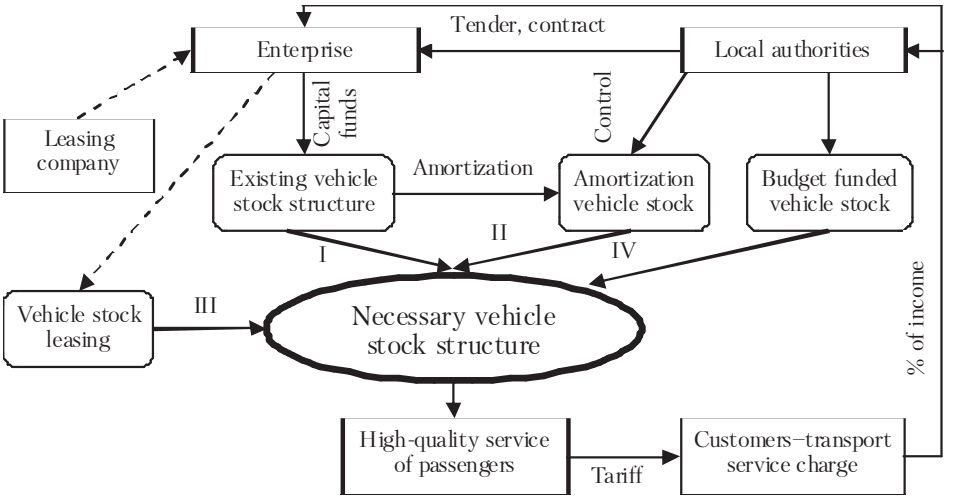

Figure 2. **The model of urban public transport financing,** *made by the authors*

At the final stage municipal authorities can acquire the rest of the needed buses at budget expense, taking them on the balance of a municipal enterprise. This is the fourth part. By this means we can get the whole sought structure of the vehicle stock. All the parts when summarized must amount to 100% in total. For the offered scheme of urban public transport financial organization to be implemented, the authors have worked out an algorithm of accumulating funding for the needed structure of fleet (Figure 3).

The algorithm presented implies regulatory monitoring of passenger flows, calculation of necessary structure and number of vehicles, and comparing it to the real situation. Also, the algorithm includes defining the total of investments and progressive cash flows generation by means of amortization, leasing and budget funding.

The calculation results are shown in Table 1. As they indicate, to purchase the bus fleet needed for Kremenchuk and so to meet the standards of quality transport service, the time span of the required funding is up to 4 years. According to the functions imposed on both parties, private owners guarantee the major finance and management aspects of the enterprise, and local authorities, in return, guarantee enabling environment for public transportation organization and work of transport companies.

Private carriers charge a passenger fare and vehicle maintenance service fee. Government executive bodies are to provide control of the carriers for them to abide by the terms of agreement and have the right for its termination, if non-compliance occurs. In such a fashion, high quality control over the intended use of amortization charges is achieved. Such an organizational form allows companies take tax concessions; released funds, in turn, can be used for material and technical base renovation.

Terms for material and technical base renovation are specified by the Tax Code for single tax payer enterprises. Hence, according to clauses 154.6 and 154, zero tax rate can be provided, if the monetary amount that was not transferred to the budget under zero tax rate is used for the rehabilitation of material and technical bases (Tax Code of Ukraine).

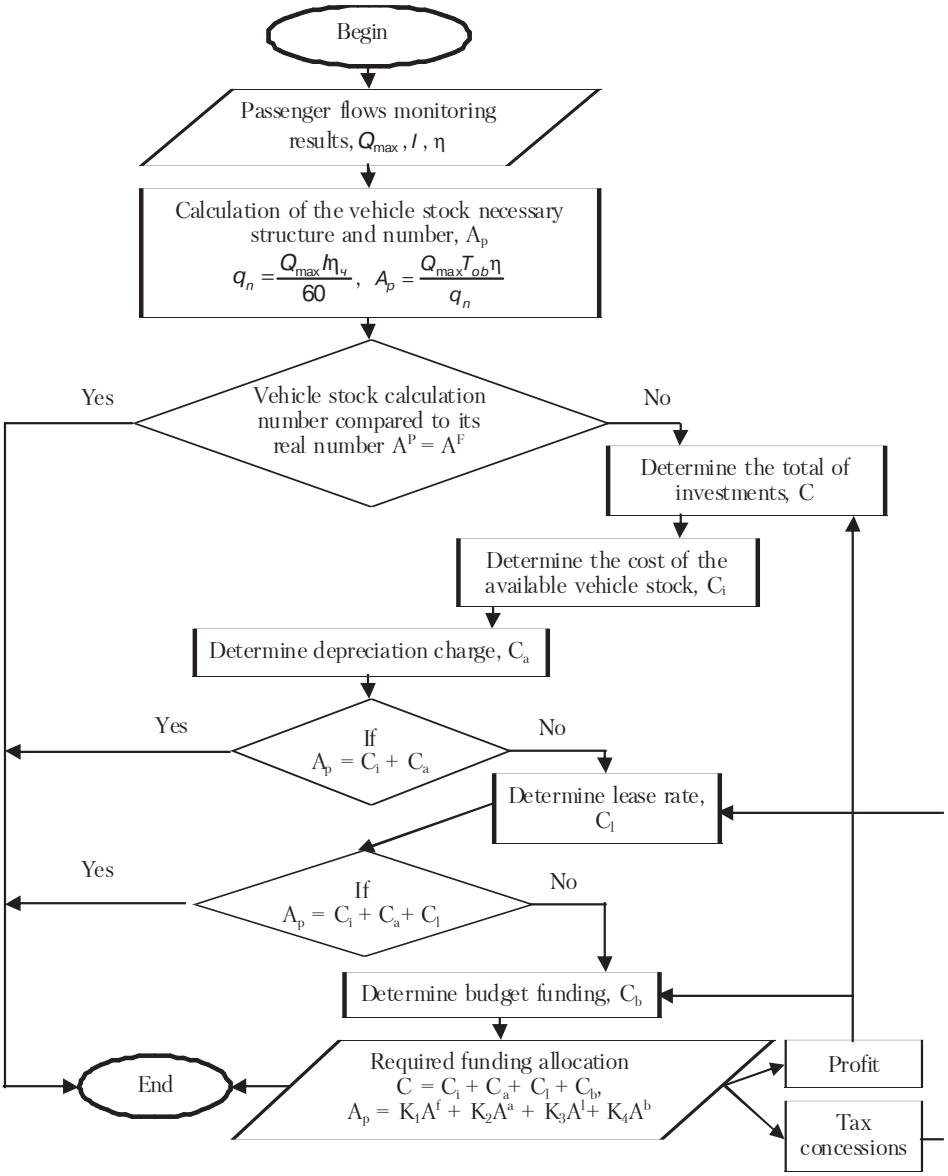

Figure 3. **The algorithm of funds accumulation for the necessary structure of the vehicle fleet,** *made by the authors*

In this case, as a result of available tax concessions, the annual supplementary funds expected to acquire city buses are equal to 1078803 UAH.

Transportation organization based on this model of city public transport company financing allows more effective work of transport carrying enterprises under the conditions of variable tax legislation. Tax concessions give the opportunity to release funds for the vehicle stock renovation as such release does not affect cost value and,

consequently, fee rates. Alongside, it conduces to accumulation and redistribution of amortization charges to purchase large-sized buses and midibuses.

Table1. **Generalized method and calculation results of funding allocation to urban public transport,** *made by the authors*

Criteria	Calculation formula	Conventional signs
Determination of funding components		
Calculation of necessary structure and the number of vehicles	According to the data of passenger flows monitoring	–
Investments	$K = \Sigma C$ x Q_a; K = 45230930 UAH	K – total investments, UAH; C – price of a bus of specified model, UAH; Q_a – number of buses of specified model, UAH
Cost of the fleet available	$C = C_{пер} - З$; C = 40902000 UAH	C – depreciated cost, UAH; $C_{пер}$ – initial cost, UAH; $З$ – bus depreciation, UAH
Cost of the fleet up to quality standards	Comparison data $C_з$ = 8694000 UAH	$C_з$ – cost of the vehicle fleet
Amortization	$A = \frac{C \times H_a}{100}$ A = 8180400	A – annual depreciation, UAH; H_a – depreciation charge, 20%
Lease payments based on tax deduction	$L = \left(P - S\frac{1}{(1+i)^n}\right)\left(\frac{i}{1-(1+i)^{-n}}\right)$ L = 1078803	L – lease payment, UAH; P – initial cost of a leasing object, UAH; S – residual (cash surrender) value of leasing object, UAH; n – number of periods; i – interest rate for the period
Budget funding	$C_b = K - A - L$	
Determination of funding volumes and time scale		
Funding amount	$Q_f = A + L + C_b$ Q_f= 8697920 UAH	Q_f– annual amount of funding, UAH
Time horizon	$П = \frac{K - C_з}{Q_f}$ $П$ = 4 years	$П$ – full funding period, years

Conclusions. Having analyzed the research results obtained, we can summarize that the suggested model of the city public transport organization allows supporting funding of necessary transport fleet structure and a number of city buses. Old vehicle stock can be renovated gradually, during 4 years. New vehicle fleet will meet passenger demands in Kremenchuk providing high quality of public transport service under economic feasibility.

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