DESIGN TO THE CITY TRANSPORT AND LOGISTICS SYSTEM IN THE CONDITIONS OF INCREASE OF RATES OF INSTITUTIONAL AND TECHNOLOGICAL CHANGES

Gleb Savin
Ural State University of Economics, Yekaterinburg, Russia
E-mail: glebsavin@ya.ru

Sergei Bronnikov
Ural State University of Railway Transport, Yekaterinburg, Russia
E-mail: 7sigma2007@mail.ru

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Abstract

The flowing volume, economic and qualitative characteristics of logistics and transport don't allow to solve today fully and effectively problems of the growing economy. Her growth and complication of all proceeding processes causes the necessity of a research of transport and logistics systems. Urbanization, and as a result, growth of a transport and logistics system of the city as zones of concentration of resources, it is impossible without substantial increase of efficiency and quality of their design that will allow to achieve the basic high-quality changes providing increase in competitiveness of the cities and stability of their development: transition to the new vital standard, change of technological platforms of key branches of their economies, change of strategy of management, etc. Under innovative design creation of the new, more perfect city transport and logistics system based on the advanced research and development regarding methodology of modeling and design, formalization and the solution of problems of forecasting, structure of the modern organizational and economic mechanism of stimulation of logistic processes and to the corresponding new economic conditions the system of criteria of its efficiency is supposed. Today transport and logistics systems of the cities stand on a side of the current reconsideration of the directions of changes and competent rationalization at strategic and innovative design will allow them to remain competitive in the future.

Key words: urban logistics, transport and logistics system, design

1. INTRODUCTION

Upon transition to intensive, innovative socially oriented type of development any country seeks to become one of leaders of global economy and it demands adoption of adequate strategic decisions on development of a transport and logistics system for a long-term outlook.

Essential increase in dynamism of world and regional processes, complication of a social and economic and cultural situation of the cities has to lead to considerable complication of functioning of transport and logistics systems and all processes.

It is necessary to be aware that a considerable part of the population of Earth should and live in megalopolises further. This reality is motivated with feature of life of people, their work, level of the modern equipment and many other reasons.

Today rational development of a transport and logistics system of the city is based in the field of design taking into account a reserve for strategic planning period which partially considers increase in the territory of the city, the population, development of agglomerations on the basis of the cities and growth of welfare of society.

Effective functioning of a transport and logistics system of the city becomes possible only on the basis of development of the new forms, methods and principles of management increasing his flexibility. But for functioning rationalization, it is necessary to resolve an issue of design of these systems where his result is the solution of those purposes for all participants of logistic processes within the state strategy of any country for 50 years ahead and more.

Today any country is faced by a problem of creation of innovative economy in the conditions of increase of rates of institutional and technological changes, and at design of a transport and logistics system of the city it is necessary to lay the scientific foundation which will allow to reach the new level of development of difficult social and economic systems.

As aim creation of uniform model of a transport and logistics system of the city will allow to achieve zero losses, delays and inconveniences for all participants of logistic processes. And without use of the concept of logistics is a hard-hitting task.

The statement acts as a hypothesis of a research that the uniform model of a transport and logistics system will allow to spend more rationally means if to consider institutional and technical changes on prospect of 50 and more years.

2. FEATURES OF DESIGN OF THE TRANSPORT AND LOGISTICS SYSTEM OF THE CITY

2.1 A Logistics Role in Design of Transport and Logistics Systems

Improvement of quality of life in the rapidly changing world in many respects depends on successful realization of policy of sustainable development. To this purpose serves policy in the field of development of the cities and without development of logistics of the city the purpose is unattainable.

Urban logistics – a part of regional logistics (meso-logistics) – the scientific direction in logistics studying the chains of deliveries and other streams passing a city transport and logistics system.

It should be noted that now there is no uniform definition of urban logistics or as it is called in some sources, city logistics. The versatility of interpretation of the term depending on that what performance of practical functions is regarded as of paramount importance is the reason for that: optimization of material streams or

streams of material values, money, information and so forth.

It is necessary to understand as urban logistics:

– the practical organization of process of functioning of streams of materials, vehicles, people, energy, finance and information and also the organization of work of infrastructure (social, production, transport and logistic) within city agglomeration in the conditions of strengthening of barter of subjects of managing (Biryukov & Burlakova, 2014);

– a complex of logistic decisions, actions, the processes aimed at optimization of administrative decisions of administration, streams of materials, vehicles, people, knowledge, energy, finance, information within subsystems of the city and its infrastructure (Podoprigora & Samchenko, 2017);

– set of processes of management of movement of persons, freight and information in a logistics system of the city according to requirements and the purposes of his development, at observance of requirements of environmental protection taking into account that the city is a public organization which main goal to satisfy needs of the users;

– the integrated approach allowing to increase effective management of traffic flows, at the same time, reducing negative consequences.

The urban logistics is aimed at improvement of logistic processes in a city transport and logistics system. Her main objective is the effective management of streams in the territory of the city between her subsystems realized according to the principles of uniform development so that to satisfy at the certain level of need of city users. For achievement of these purposes various actions concerning movement of persons and freights and also the actions aimed at the integrated management of traffic flow in the city are taken.

The purpose of urban logistics is a rationalization and optimization of all stream processes happening in a city transport and logistics system to increase the level of vital convenience and availability, without contradicting and/or without detaining social, ecological, economic or financial development of the city (Shiryaev et al, 2016).

We concretize this purpose by analogy (Larionov, 2014). – zero losses, delays and inconveniences in a transport and logistics system at the solution of the following tasks:

– development of uniform legal bases in the field of management of a transport and logistics system in the city;

– coordination of development of infrastructure and different types of transport;

– development of uniform transport city space and management of him;

– competition regulation.

Modern approach in the field of urban logistics relies on scientific developments of the western countries where city distribution centers were formed last century and the intellectual transport systems developed.

The first approach assumes placement of city distribution centers within agglomeration which allows to coordinate all freights sent to city borders. Unfortunately, such approach isn't completely effective for the cities with the population from 1 million persons. Also considers only freights, but not a human

stream.

The second approach assumes automation of management of difficult systems which the movement of city traffic flow and a city transport and logistics system allow to consider can is brought into the mode of normal functioning.

But for this approach it is necessary to develop a new conceptual view on priorities in functioning and design of transport and logistics systems.

Considering the combined approach, we will allocate a basic provision of the concept of urban logistics in the largest city – the systemacity in the field of restrictions, motives and alternatives of the choice in the field of the organization of the movement of city traffic flow which has to is under construction in the following areas:

– maintenance and development of infrastructure and development of priorities in town planning;

– improvement of work of public transport, traffic control and cargo handling.

Modern experience assumes use of the following logistic approaches in respect of logistics systems:

– coordination and cooperation – change of a ratio between different types of transport: development of interaction between different types of transport, intermodal transportations (Albekov et al., 2016);

– design – elimination of natural obstacles (barriers) having an adverse effect on development of transportations due to development of the high-level transport network and improvement of traffic control on her; financing of development of transport infrastructure (Rykalina, 2014; Szołtysek, 2009).

The purpose of all approaches – pressure decrease on the existing transport infrastructure due to introduction of new means of transport and control systems of traffic flows, increase in transport availability, improvement of an ecological situation.

In general all directions have to lead to synchronization of the predicted stream processes, i.e. to their high-quality transformation within the fixed time interval.

In general, it is possible to come to the following paradigm of the concept of urban logistics – a CRM where act as clients: consumers, the organizations (logistic chains) and the power, which have the not interconnected purposes.

The concept of urban logistics is interconnected with transport, logistics in the field of the organization of transport and design. In the field of logistics the technological component prevails and traffic flow is mediated with a material stream in the conditions of the urban environment. In other words traffic flow acts as technical providing a material and human stream.

In general, in the cities there are two main types of streams – the movement of persons and freights (goods) and also information accompanying them. This traffic necessary for the correct functioning and development of the city leads to excessive load of a city transport and logistics system that increases the competition of consumers of the called streams for access to system in the conditions of limited capacity (Kanke, 2013).

In literature allocate kinds of the concept of urban logistics for:

– public city passenger transport (Shiryaev, 2016; Nerush, 2016; Tkachenko, 2013; Kameneva, 2013);

- individual passenger transport (Biryukov & Burlakova, 2014);
- cargo city transport (Goryainov & Alpeeva, 2008; Szołtysek, 2009);
- special transport (Ivanov, 2010);
- air, water and railway transport (Zyryanov et al., 2005);
- alternative means of transport (Guzenko, 2016).

But, according to the author, the integrated approach considering the whole, indivisible, equilibrium transport and logistics system is the most optimum.

2.2 Factors of Formation of Transport and Logistics Systems of the Cities

In our opinion, the transport and logistics system of the city is an equilibrium system which consists of corridors and knots of different level, an intellectual information system, human resources, transport network, the regulating normative documents and the coordinating body and which pursues the aim of achievement of zero losses, delays and inconveniences, and which an exit for a framework of administrative-territorial borders.

We will note that transportation (movement) is now key transport and logistic function which represents set organizationally and technologically interconnected actions and operations which are carried out by the enterprises or independently by preparation, implementation and completion of transportation of goods and people.

Today in public authorities and local government in the large cities the imperfection of system of strategic design in the field of development of transport and logistics systems is peculiar. This factor promotes aggravation of environmental problems, congestion of transport network of the city, growth of intracity transport and logistic expenses and so forth.

Today the transport and logistics systems (TLS) of the cities are powerful transport hubs, but with underdeveloped infrastructure. The scheme of the organization of processes of transportation, an overload (change) – one of the main city-forming aspects forming TLS of the largest cities, including their zones of production and consumption.

Experience of the developed foreign countries shows (Shiryaev et al., 2016) that the market relations in economy assume creation of the developed and effective system of multilevel and multilateral state regulation of functioning by a city transport and logistics system.

In general the ideas of creation of comfortable conditions of transportation in these cities, i.e. design of cargo and passenger streams are supported by much professional and public organizations.

Design is considered as effective motivated approach to management of TLS of the cities for the purpose of decrease in expenses. This concept is assumed as a basis economic strategy when the logistics is used as the tool and is considered as administrative logic for realization of planning, placement and control over material, financial resources and labor force.

Formation of TLS of the cities can develop in the following directions: improvement of coordination in logistic chains of deliveries, development of public transport, synchronization of streams and so forth.

As the solution of questions of the legislative base and construction of new

outcomes doesn't solve all current problems of TLS of these cities, concentration on the most priority directions of design of TLS of the city will allow to solve these problems in the context of production cycles.

According to forecasts of scientists by 2060 there will be following changes influencing transport and logistics systems of the cities:

- autonomous cars;
- new technologies of high-speed movement;
- development of elements of artificial intelligence;
- virtualization of the environment of functioning and consumption;
- decline in mortality and increase in life expectancy;
- universal robotization and automation and so forth.

In transport and logistics systems there will be a change of structure of consumption and development of cyberphysical systems that will allow to come to the new level of coordination in logistic chains, to transportation, change and so forth, i.e. habitual "classical" approach of functioning of the person will change that also the TLS transformation of these cities will demand.

Some functions of the person in TLS of the city will be beyond this system, and will concentrate on knowledge of the cognitive system and ways of management of her. It will allow to lead transport and logistics systems to controlled synergetrics.

The current problem of transport and logistics systems of the cities is a high density of a stream which in the future without participation of the person and at the coordinated stream speed (taking into account dispersal and braking) will reduce transportation time in the city.

Other problem in the same area – processing of a material and commodity stream where the cities are the large centers of consumption and production which is solved robotization and automation in logistic chains of deliveries and will allow to come for synchronization of all processes from purchase before distribution and consumption, to reduce stocks, to increase the speed of transportation and turnover, at the same time development of coordination of processes of a warehouse and transport with use of CALS, STEP, a cloud computing is an initial stage of achievement of their synchronization.

Artificial intelligence at development the multi-agent systems will allow to control the lanes in the city and also entering and the proceeding streams.

High-speed technologies in the cities and between them will accelerate internal migration that with a growth of life expectancy will increase intensity of movement in the city and out of.

Virtualization of the environment of functioning and consumption will redefine accent of shopping, entertainments and work in virtual space, there will be a reconsideration of work of collective in the organizations in the virtual environment at large volumes of data that will reduce cyclic movements in TLS of these cities.

We will allocate conceptual model of design of a transport and logistics system of the city (Figure 1), which allows to consider the uniform approach considering the current and future technological changes.

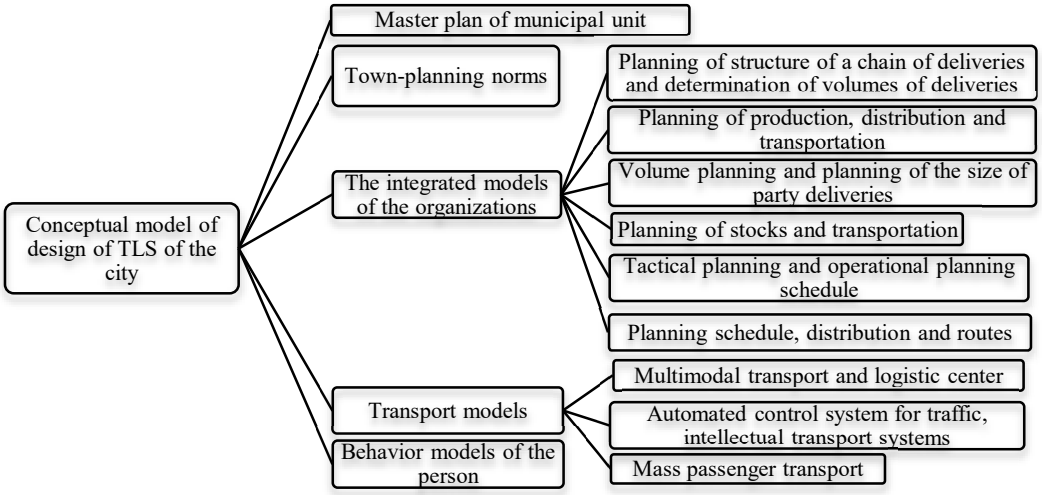
Today, "consumer economy" prevails in all spheres of our life, and city TLS as the basis of functioning of the market will be seeks for expansion in agglomerations and regions. In this regard, design of city transport and communication corridors as

element of future transport and logistics systems, is represented very necessary and expedient.

2.3 Design and Modeling of a Transport and Logistics System of the City in the Conditions of Uncertainty

Effective, high-speed and continuous communication of the central part of the city with other districts of the city, is one of the priority directions of the transport and logistics system where the central business region of any city ("a city kernel") is characterized by the highest level of load of city transport network that significantly limits the capacity of highways and highways of the city.

Figure 1. Conceptual model of design of TLS of the city



Source: authors

To optimize structure and to rationalize the directions of material and passenger streams, to master new technologies, to construct new, to expand to reconstruct the available transport lines and also to provide development not only transport, but also warehouse infrastructure, to create more powerful transport potential on the basis of modern vehicles and technologies, huge resources and also coordination of efforts of all interested parties are necessary (the states, the organizations and the population).

In this regard, today the state approach assumes accounting of needs for mass and local transportations of various type of freights and passengers and also assessment of economic efficiency of the vehicles raised for this purpose that is expressed in the solution of the following perspective tasks:

– the correct definition of opportunities of expansion and improvement of the operating thoroughfares;
– improvement of the existing transport and logistics systems and auxiliary infrastructure;
– creation of new means of communication;
– optimum combination and development of different types of transport, etc.

But the problem of design of TLS of the city as one of processes of improvement

of these systems is insufficiently studied today and local governments don't pay her necessary attention.

In these conditions design of the model establishing accurate quantitative ratios between various processes of transportation can be either impossible, or too expensive which assumes uncertainty consideration as one of factors which needs to be studied.

Originally, to avoid mistakes at design of TLS of the city it is necessary to define dependences taking into account city transport and communication corridors:

– in the plane of logistic chains: how many warehouses, an arrangement, the maximum stream of freights from each warehouse, technology of cargo handling and so forth.

– in the plane of mass and passenger transport: zones of consumption and resettlement.

Division of a transport and logistics system into compound processes, determination of nature of their interrelation and degree of uncertainty (Table 1) also is important.

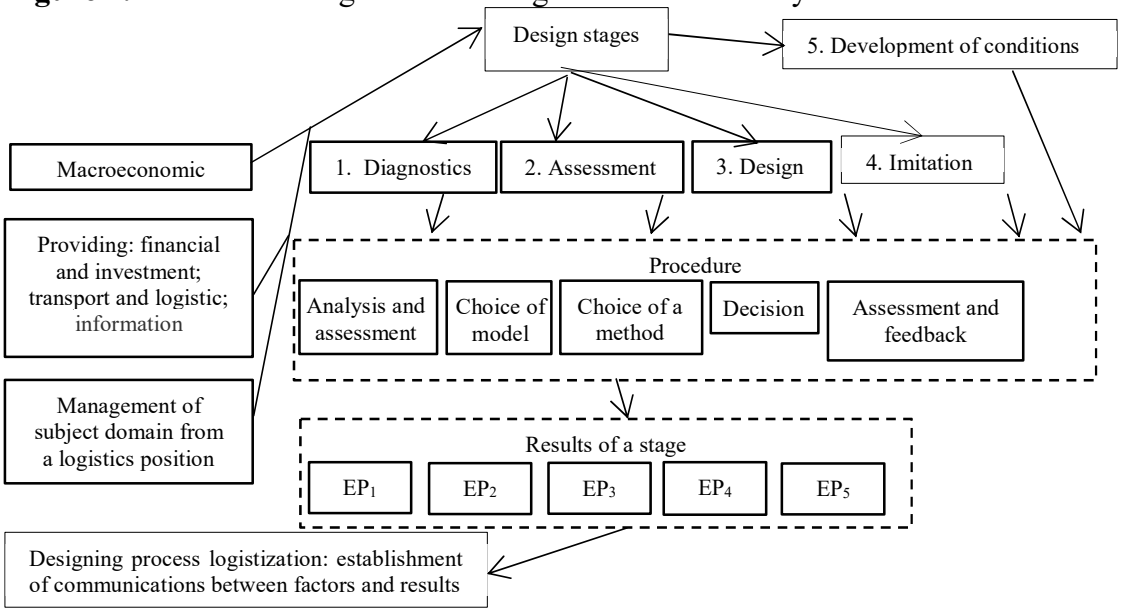
Table 1. Degree of definiteness of processes in a transport and logistics system

Processes	Degree of definiteness		
	High	Middle	Low
Transportation	Mass passenger transport (MPT)	Chains of deliveries (CD)	Individual passenger transport (IPT)
Overload (change, stop)	Chains of deliveries	Mass passenger transport	

Source: authors

When the preparatory stage is made, the designing process begins. We will offer the following model of management of design of TLS of the city (Figure 2).

Figure 2. Model of management of design of TLS of the city



Source: authors

We will note that indicators of efficiency differ at each design stage that allows to diagnose at first them (EP_1), then to modify them (EP_2), in the subsequent to improve at a design stage (EP_3) and also in the context of imitation to allocate most perspective (EP_4) and under the set conditions to choose most effective (EP_5).

Design of TLS of the city in the system of city transport and communication corridors and cycles allows to define models depending on frequency and variability of cycles and to develop methodological features of process of modeling.

TLS of the city is a cyclic system, and as a result, it is possible to allocate inherent only to her on duration cycles (Table 2).

Table 2. Cycles TLS of system of the city

Criterion of classification	Types of cycles
Depending on the nature	− economic (life cycle of goods, organization, production and so forth); − demographic; − technological.
Depending on duration of a business cycle	− short-term (2-4 years); − medium-term (7-25 years); − long-term (40 and more years).
Depending on duration	− daily allowance; − week; − seasonal.

Source: authors

Life cycle of goods depends on his consumer, technological characteristics, consumer habits, operation terms and so forth.

Cycle of the organization and production are characterized individually, depending on specifics of the country, the region and the enterprise.

Introduction of modern technologies in coordination, cooperation, design and so forth will allow to increase the pace of the 5th technological way, but of course, it is originally necessary to systematize standard and legal base.

The demographic cycle is welded on generation length. He is influenced by two types of factors: structural and behavioural. Migration as a behavior factor for the large cities also characteristic phenomenon. Generally is a pendular migration which is characterized by increase in the population of the city in the period of a daily cycle and also seasonal migration.

It should be noted that chains of deliveries, are also characterized by the cycles where a dilemma "to store or sell" is one of key. Accumulation of stocks complicates processes of TLS in the city, however transportation acceleration as one their research problems allows to coordinate process of "purchase and sale".

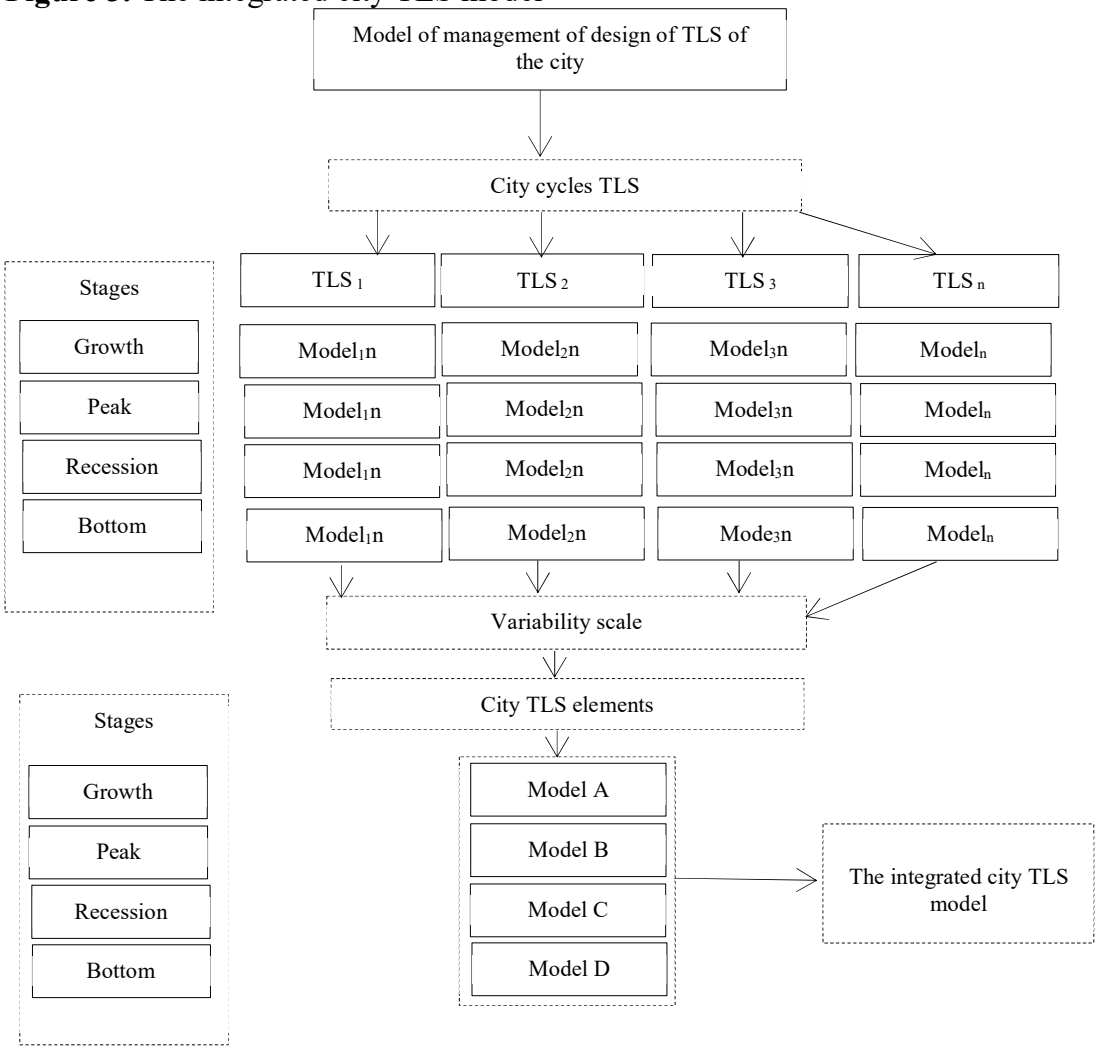
The theory of an environment differentiates irreversible and reversible processes (cycles), which allow to allocate rates of development of the general tendency and also to define processes in a big time interval, which differ in quality of the proceeding processes. Proceeding their it, we will allocate stages of cycles TLS of the city (rise, peak, recession and a bottom), and we will offer the generalized city TLS model (Figure 3).

As result the given models A, B, C, D shouldn't establish accurate quantitative

ratios between various processes of transportation, and offer a criteria range of formation of synchronous city traffic flow in which participation of the person will be every year is minimized.

As the TLS difficult system of the city can be in different states or her separate elements. Time of stay in everyone – the changeable size, which various factors influence. And also the probability of each standing is also changeable.

Figure 3. The integrated city TLS model



Source: authors

In this situation the TLS model of the city has to be nonlinear in which temporary intervals are reflected, to include a set of the equations characterizing her behavior. Such model can be characterized by variability of cycles in system the multi-agent of systems (MAS).

In literature under variability accept the range, which along with economic feasibility assumes also negative consequences, i.e. at each decision there is an imbalance. And, as the tool, she allows to define what TLS model of the city of time at present is main also what structure of subordination.

Modern integrative approach assumes options of preferences and assumptions.

He will represent the sequence of steps which lead to accumulation of information partially necessary and partially used, but since multi-agent of systems as the TLS elements of the city has to form independently decisions depending on a cycle, stages and hierarchies of model. There is an effect of a quasiorder, considering reflexivity, transitivity and anti-symmetry of this system.

As a result, for effective functioning of the integrated TLS model of the city it is necessary to create the following blocks: functional, regulation and control.

The functional block assumes design and coordination and is one of main, which is still formed today. There is a partial informatization, but unfortunately, partial coordination in the TLS local areas of the city.

Today occurs collecting a part of necessary information within the multimodal transport and logistic centers, the intellectual transport systems, automated control systems for traffic, but there is no development the multi-agent of models within "city contours of an MAS".

Blocks of regulation and control assume identification of deviations in key indicators of TLS of the city and their adjustment, but today are poorly realized. All this is expressed in growth of automobilization of the cities, lack of the strategy of development TLS for the city, lack of alternatives and motives in transportation and an overload in borders municipal educations.

Till 2060 in the modern world there will be institutional and technological changes, and today creation of the integrated city TLS model is important.

2.4 Assessment of Efficiency of a Transport and Logistics System of the City

Today the cities perform as difficult transport and logistics systems with the structure of traffic flows.

There are common features of TLS of the city to is the developed trade activity (network shops in the system of a distribution center, large shopping centers and the organizations and so forth) where cyclic deliveries in borders of municipal unit and out of which load city TLS are organized. In addition, also work of mass passenger transport is cyclic.

In conditions when the transport and logistics system is characterized by plurality of functioning (centralization and self-organization) and there is a set of stochastic factors of impact on all objects of logistic processes: on individual (and mass passenger transport, logistic chains of deliveries, there is a question of assessment of efficiency of this system.

The system effectiveness is estimated in process of completeness and quality of the solution of objectives, performance by the system of the mission (Ivleva G.Yu. 2006).

Today the efficiency of TLS can indirectly be estimated on a gross regional product, costs of transport infrastructure and its service. However, such approach is incorrect since it doesn't consider expenses of all participants of traffic flow in the city.

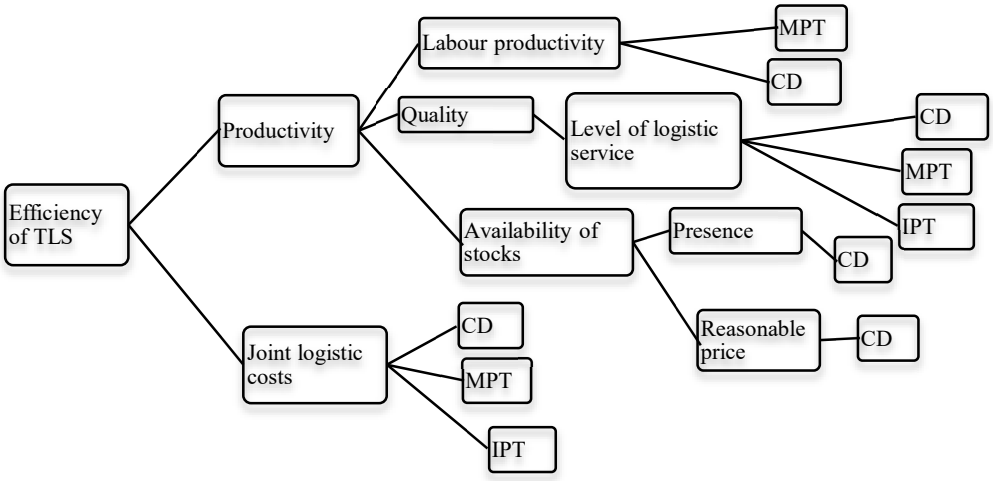
From the author's point of view, efficiency the effectiveness of TLS of the city at a certain level of logistic costs (Figure 4) acts.

The effectiveness of TLS of the city is a complex indicator, which reflects

productivity of difficult system, which can be determined by a conditional and natural method taking into account a passenger turnover and goods turnover.

Quality as an indicator it is expressed in the level of logistic service, which reflects the following parameters: reliability, availability and functionality. At the same time it should be noted division of basic level of service and services with value added.

Figure 4. Approach to assessment of efficiency of a transport and logistics system of the city



Source: authors

Key indicator which influences functionality is time, i.e. compliance to certain standards of work: mass passenger transport – performance of an interval of the movement, for logistic chains of deliveries – compliance of speed and uninterrupted operation of deliveries, for individual passenger transport – compliance of speed and time.

Reliability allows to minimize probability of failures of the set intervals of the movement, and development of additional services expands functionality. In this regard, it is necessary to carry out assessment of expediency of these changes since preferences are non-uniform, and with development of technologies can cardinally change.

For development of logistic service maintenance of certain standards of work long time also is priority that allows to sustain the corresponding balance between the level of logistic service and costs of him. And complex monitoring is necessary for these purposes.

Many enterprises seeking to provide an uninterrupted production cycle buy too large number of stocks (Podoprigora, I.V. & Samchenko, A.D., 2017).

At the correct approach the necessary stock rate and its structure is defined on the basis of production cycles of the enterprises, turnover, information on income and preferences of the population and also features of the organizations which has chosen the corresponding logistic strategy:

- maximizing profit;
- maximizing market value;

- ensuring competitive advantages;
- minimization of transaction expenses;
- maximizing rates of steady growth and so forth.

The necessary stock rate at reasonable price depends on development of warehouse logistics, technologies of processing of goods and materials and automation of warehouse and transport and warehouse operations.

The purpose of any logistics system is rationalization of logistic expenses, for TLS is characteristic to achieve this objective at balance of level of service, productivity, availability of stocks and the corresponding logistic expenses.

Decrease in joint costs of TLS of the city will allow for:

- CD – to increase profitability all chains and for all her links;
- MPT – to increase updating of the rolling stock and, if necessary, level of logistic service;
- IPT – to lower expenses of households.

Process of rendering transport services is connected with emergence of various expenses – on fuel acquisition, maintenance, the salary, administrative expenses and other, influencing cost of transportation.

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There are many more or less important occasions in which it is necessary to exercise control over TLS of the cities for coordination and regulation of macrologistic and social and economic processes.

In many cases functioning of MPT and CD is expressed through activity of certain structures which have to carry out strictly certain duties, norms and also some other the aspects defining a state and the prospects of development of TLS of the city.

Cumulative costs of functioning of TLS of the city are very big and subject to increase therefore there is a need to carry out some forms of government on macroeconomic and mesolevel for the purpose of maintenance of their (expenses) reasonably.

It should be noted that the following factors render on expenses:

- macroeconomic (inflation, price of energy resources and so forth);
- administrative (excises, taxes and so forth);
- interval of possession of the vehicle;
- warranty period for the vehicle and its elements
- quality of materials and spare parts;
- energy saving technologies and so forth.

The system of assessment of TLS of the city is a complex algorithm of calculation of efficiency of all elements, dependences, models, the systems of the predicted stochastic factors at variability of communications and ranges of development. Without understanding of dynamics of elements and structure of communications it is impossible to create the system of assessment of TLS of the city.

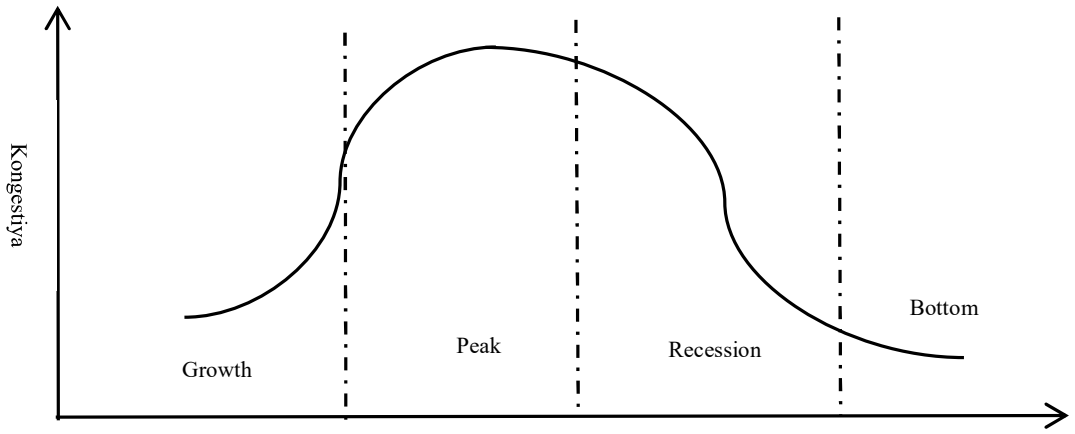
We will note that design is not improvement of the current system, but creation new the progressive, creating basis for innovative development where a main objective is zero losses, delays and inconveniences in city TLS.

Development of the TLS model of the city is impossible without design of

models of objects of logistic processes in the city.

We will give models of objects of logistic processes depending on a cycle stage in which it is necessary to reduce volatility (Figure 5).

Figure 5. Models of objects of logistic processes in city cycles TLS



Models			
$MPT_{(\ Growth)n}$	$MPT_{(\ Peak)n}$	$MPT_{(\ Recession)n}$	$MPT_{(\ Bottom)n}$
$CD_{(\ Growth)n}$	$CD_{(\ Peak)n}$	$CD_{(\ Recession)n}$	$CD_{(\ Bottom)n}$
$IPT_{(\ Growth)n}$	$IPT_{(\ Peak)n}$	$IPT_{(\ Recession)n}$	$IPT_{(\ Bottom)n}$

Source: authors make it

We will note that coordination of traffic flow in stages of growth and recession is possible since the entered indicator will be not in a peak state, and it is possible, there will be an opportunity to observe balance between systematically repeating and the kongestiya resulting from casual events, and without development of modern technologies, and changes of a vector of design and achievement by objects of logistic processes of the purposes the balance is hard-hitting for a peak stage now.

Creation of models will allow: first, to carry out classification for all objects of logistic processes to city TLS, secondly, to define features of functioning of all system, thirdly, to reveal relationships of cause and effect between all processes. And as a result, will allow to create and estimate city transport and logistics system models.

We will note that a relevant method of assessment of expenses is the direct-costing, which allows to allocate constant and variable expenses, and from a position of logistic approach to develop options of their decrease.

At the same time, among indispensable conditions there have to be not only an observance of requirements for implementation of the expected forecasts connected with transportation of goods and passengers, achievement of the goals to objects of logistic processes, but also effective use of the allocated investments and resources.

3. CONCLUSION

The present stage of development of a logistics system is characterized by the

overloaded streams that is expressed in the unprecedented growth of automobilization, lag of rates of development of infrastructure, complexity of development of a technique of design of TLS of the city at the mesolevel and discrepancy of the regulatory base. The important role in the solution of this problem is occupied by development of the concept of logistics at design of a transport and logistics system of the largest city.

And according to the author, the urban logistics as the concept of logistics is underestimated now and is at the first stage of her formation. Today in the conditions of localization, informatization and rapid development of technologies it is necessary to order and direct city traffic flows using logistic approach.

Today there is a problem of strategic and innovative design of these systems taking into account formation of key factors of their development.

Development of a transport and logistics system of the cities can develop in the direction of synchronization of city traffic flows and taking into account institutional and technological changes for 50 years ahead and more. We will note that allocation of city transport and communication corridors as element of all system is a paramount task.

In TLS the cities a part of traffic flows have probabilistic indicators, others – expected. In this situation a part of streams can be considered as a part of agents to whom cumulative properties and behavior, which are a part of system are inherent and function within own cycles and dependences.

And it is expedient to make the choice of the scheme of the organization of a transport and logistics system of the city on the basis of the economic-mathematical model considering various versions of schemes of the organization of system where key criterion of functioning is time, and acts as criteria of efficiency of this system, from the point of view of the author, minimization of expenses at appropriate level of logistic service and productivity.

The integrated city transport and logistics system model considering institutional and technological changes, new approach to infrastructure, behavior of agents of traffic flow will allow to achieve synchronization and as result, zero losses, delays and inconveniences and also to come to the set level of economic efficiency for all its participants.

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