ABSTRACT

The thesis is presented in 102 pages. It contains 2 appendixes and bibliography of 34 references. Twenty figures and 3 tables are given in the thesis.

Topic relevance. In carrying out the carriage of goods the special importance becomes the route, which will be transported goods. In transportation for a short distance, road transport is the most popular, since it is almost independent of weather conditions and does not require special adaptations to function and can deliver loads of different dimensions to different parts of the country, and the organization of such transportation, when there are many points of the route, is diverse cargo, human factor and so on. it is necessary to coordinate all these components as much as possible, especially the communication component and flexibility of work is important, as today time is the most valuable resource and for the effective result, this issue requires a skilled approach and innovative solutions.

Thesis connection to scientific programs, plans, and topics. The thesis was prepared according to the scientific research plan of the Applied Mathematics Department of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute."

Research goal and objectives. The purpose of the dissertation is to develop the mathematical and software system of logistics of material resources on the basis of social networks.

To accomplish this goal, the following objectives were reached:

- consider existing automated cargo transportation systems;
- consider algorithms for finding the shortest path on the graph;
- consider the basic models of customer and network interactions

Object of research is the methodology, methods, models and algorithms for the implementation of business processes logistics small-scale material resources. Models of communication between users of social networks, between users and resources of social networks and between social networks. Models of calculations of transportation costs.

Subject of research is mathematical and program of providing logistics system of small-scale material resources, on the basis of the theory of graphs, on the platforms of social networks.

Methods of research. The methods of searching the shortest paths based on the theory of graphs; methods of interaction between users and networks; methods of optimization.

Scientific contribution consists of the following:

- for the first time, the task of a practical study of the dependence of the highway dimension parameter for the query performance of some pre-processing algorithms, namely (RE, CH, HH, TN, SHARC), is posed.
- improved methods of researching the emergence of low-value highway networks, which, unlike existing ones, are focused on constructing a model that captures the properties of road network formation, providing a true explanation for the emergence of low-value networks;

Practical value of obtained results. The obtained results can be applied productively in road networks. Determination of the value of the highway was motivated by the good practical efficiency of known algorithms for finding the shortest path. It can be said that the idea of the size of the highway can help to further expand the potential of future route planning services.

Publications. Thesis results are published in 2 scientific works:

– in 2 publications in the works and theses of reports of international scientific conferences.

Keywords: logistics, transport, transportation, shortest path