#### VALORIZATION OF TRAFFIC RIGHTS AND ATTRACTION OF GOODS FLOW

Miroslav Flego, email: miroslav.flego@vhzk.hr

Polytechnic Hrvatsko Zagorje Krapina, Šetalište Hrvatskog narodnog preporoda 6, Krapina, 49000, Hrvatska

Dubravko Mačečević, email: dubravko.macecevic@vvg.hr

Polytechnic Velika Gorica, Zagrebačka cesta 5, Velika Gorica, 10410, Hrvatska

**Summary:** Focusing on conditioned efficiency and effectiveness of goods flows, the purpose of this paper is to point out the importance and place of systematic study of goods flows through the process of valorisation of traffic routes. This paper seeks to investigate the impact of appropriate commodity flow processes as well as the formation, allocation and attraction of commodity flow systems on the more efficient implementation of the process of adapting, linking and integrating total traffic to international commodity exchange in the global market. The results of a holistic approach to goods flows with a special focus on the valorisation of traffic routes and the attraction of goods flows indicate the interoperability of all branches of transport on a particular corridor, assuming the mobility and rapid movement of the vehicle and cargo from one transport module to another. An important focus is on developing a methodology and concept for selecting adequate commodity flows that largely meet all set decision-making criteria in the planning process and thus directly influence the increase of goods exchange, transport safety, reduction of negative environmental impacts and increase of economic efficiency.

Keywords: transport, international exchange, commodity flows, global market

#### 1. INTRODUCTION

Recent trends have led to an increase in the complexity of legal and economic relations between participants in macroeconomic systems and their subsystems, ranging from primary to quintile industries. goods flows, as a consequence of the exchange of goods in the world through transport and trade, represent a significant indicator of the intensity and volume, structure and dynamics of world traffic, ie goods Within the transport. framework international trade and trade in goods, it is indispensable to look at the category of goods flows, especially international goods flows.

of significance, At this level comprehensive view of the process of valorisation of the traffic route and the formation and distribution of goods flows are imposed. Focusing on conditioned efficiency and effectiveness of goods flows, it is necessary to point out the importance and place of systematic study of goods flows through the process of valorisation of the traffic route and in the function of exchange of goods in international trade. It is necessary to determine the extent to which the proper processes of goods flows, as well as the formation, allocation and attraction of the system of goods flows, influence the more implementation of the process of adapting, linking and integrating the total turnover in the international exchange of goods in the global market. It also requires a holistic approach to goods flows, and a focus on valorizing traffic routes and attracting goods flows.

# 2. A HOLISTIC APPROACH TO CONSIDERING GOODS FLOWS

The fact that the design of goods flows is largely conditioned by a number of factors. It is for this reason that goods flows are not a static phenomenon in space and time, but a dynamic phenomenon whose formation, arrangement, structure and intensity are influenced by many factors. Given the significant changes in the movement, dynamics, direction of goods flows, these factors cause the inability to make accurate and lasting predictions regarding future goods flows.

The ideal transport mode should be instantaneous, free, unlimited capacity and always available. This would mean that space is rudimentary. This is clearly not the case. Space is a limitation in the construction of transport networks. Transport occurs as an economic activity different from the rest. Thus space is replaced with time, and therefore with money (Merlin, 1992). The overriding goal of transportation is to conquer space, which is bounded by various human and physical as distance, constraints such administrative divisions and topography. All these restrictions together produce resistance to movement, a commonly known term called distance friction. However, these restrictions and the friction they produce can only be partially limited. The extent to which this has been done has a cost that varies according to greater

Goods flows are flows of certain types of goods (cargo) that circulate in certain traffic routes, that is, traffic routes or corridors. goods flows, as a consequence of the exchange of goods (worldwide) carried out by means of transport and trade, represent a significant indicator of the intensity (volume), structure and dynamics of (world) traffic, ie goods transport. The components of goods flows are: (a) (passengers, demand freight information); (b) hubs (points of origin, intermediate points and destinations); and transport networks (traffic connections). The basic characteristics of goods flows in

(breakage, perishability, price). Political factors that can also affect transportability are law, regulation, borders and customs. When transportability is high, activities are less constrained by distance.

alignment of factors such as the distance involved and the nature of what was transported. There should be transportation without geography geography without transportation. The goal of transport is therefore to transform the geographical attributes of cargo, passengers or information, from origin to destination, imparting added value to the process. The convenience on which this can be done transportability <sup>21</sup>- varies considerably. Transport is of particular interest to geographers for two main reasons: (1) transport infrastructure. terminals. occupy equipment and network significant place in space and constitute the basis of a complex spatial system; and (2) as geographers seek to explain spatial correlations, transport networks are of particular interest because they are the main support for these interactions. Transport geography (Rodrigue, Comtois & Slack, 2009) is a subdiscipline of geography that deals with freight, passenger information movements. It requires the connection of special constraints and attributes with the origin, destination, extent, nature and purpose of the movement.

<sup>&</sup>lt;sup>21</sup>Transportability refers to the easy movement of passengers, cargo or information. Refers to transport costs just like the attributes of the transport item

geo-traffic sense are: direction, intensity and type of goods flow. The direction of the goods flow is determined by the origin (source) and destination, the intensity of the goods flow is determined and can be quantified by the amount of goods transported in a given time unit (eg, one year). The notion of traffic flow is determined by the continuous renewal of a series of traffic services that originate at the source (origin), with a focus on the destination (destination). As the intensity of traffic flow is measured in real units such as persons, tons, vehicles, traffic flows in certain situations for the object of transport are carried by persons and in certain situations by cargo or goods. According to the definition of transport (in the narrow sense) as an activity that has the function of transporting people, goods communication between people in space (Malić, A. & Rendulić, I, 1995), traffic flows include freight (goods), people (passengers) and information in the space, using appropriate transport infrastructure and superstructure. Within traffic flows, freight flows (goods flows), passengers (passenger flows) and information (information flows) are distinguished. By analogy, the traffic goods flow is the parent term of the term goods flow, ie goods flow is a type of traffic flow that as a transport object has only goods (cargo), unlike passenger flows (whose transport object is passengers within passenger traffic) and information flows ( whose traffic object is information and news). Goods flows are flows of certain types of goods (cargo) that circulate in certain traffic routes, that is, traffic routes or corridors. goods flows, as a consequence of the exchange of goods (worldwide) carried out by means of transport and trade, represent a significant indicator of the intensity (volume), structure and dynamics of (world) traffic, ie goods transport (Malić, A. & Rendulić, I, 1995, p. 55.). In geo-traffic terms, goods flows are marked by direction (determined by origin and destination),

(determined and quantitatively expressed by the amount of goods transported in a given time unit), and type of goods flow (different according to different criteria, of which are the most significant: the territorial scope of the goods flow, the mode of transport and the type of goods in transport). In the analysis of goods flows, an important characteristic is also the dynamics of the goods flows, which implies certain movements in the intensity of the goods flows over a period of time (period). Based on the analysis of the **dynamics** of a particular type of goods flows, it is possible to draw significant conclusions about the tendency of movement of a particular goods flows over a period of time. A detailed analysis of the spatial distribution of goods flows in the world is dealt with by commercial geography. As a separate branch of commercial geography, transport geography deals with the analysis of flows of food, raw materials and industrial products. It should be emphasized that the basic area and subject of research in transport geography is related to the basic elements, such as: traffic demand, traffic junctions and transport networks. The above elements condition, enable and determine the existence and unfolding of goods flows, including at the same time commodity exchange (trade) as the basic element of goods flows initiation. In contrast, there are a number of scientific areas and areas related to transport geography, given the conditionality of transport geography, that is, goods flows as a phenomenon it studies. In other words, for example, economic sciences, natural sciences. social sciences. historical sciences, etc.

#### **Geo-traffic factors**

All phenomena, processes and characteristics in space and factors affecting traffic are classified under the heading of geo-traffic factors. Geo-traffic factors, as conditions of traffic

development, always act simultaneously on traffic as a group of different factors. They are characterized by variability in space and time. The influence of geo-traffic factors on the development and daily flow of traffic is of great importance, and the following is a common division of geo-traffic factors (Bilen, 2001): (1) general geo-traffic factors, and (2) natural predispositions.

Each of these groups of factors plays an extremely important role in the development and development of traffic, and by its influence it promotes the development and increase of trade in goods. General geo-traffic factors, given their distinct geographical character, form the basis of understanding traffic in space and can further be divided into:

- of the location arises from the proper placement of the subject space in relation to the various large geographical units. In particular, it depends on the position between the various production and consumer areas, on the development of trade, the transport system of services, and the locations of intellectual centers of world power.
- The attractiveness of some traffic space is an essential feature of geotraffic position. Affordability is best expressed through a pronounced centrality that is best reflected through the concentration of traffic flows towards a particular space.
- In this case, these are significant traffic intersections, that is, the points of intersection of various naturally favorable roads, waterways, land and air.
- size, shape and boundaries of space
  the size of space plays an important role in the development of volumes, routes and forms of traffic. Traffic for successful development requires large, open spaces because small and closed

- spaces provide little opportunity for traffic development. In addition to size, an important segment is the shape of space, which influences the formation of the transport network by analogy to the shape, shape and appearance of the country.
- State borders are often drawn in accordance with the natural characteristics of the area and thus represent a significant obstacle to the free flow of traffic. Natural and artificial constraints are a barrier to traffic flow, with slower traffic. For the integration reason. processes of world life are very important, and the best example is the European Union.
- time zones are the result of different positions of individual surface parts of the earth's according to the sun, depending on the rotation of the Earth. The advent of global world life also leads to the emergence of time zones, whose knowledge is very important in the course of modern world traffic. Good knowledge of time zones when traveling over long distances is essential. Accordingly, time zones have a special role to play in telecommunications and air, maritime transport.

Natural predispositions encompass characteristics, states. numerous phenomena and processes in space, and arise as a result of the action of the natural laws of Earth's development. Natural characteristics objective are factors "independent" of man, although man has the ability to understand, accept and exploit them. Natural factors give a certain predisposition, that is, they represent a possible natural basis for the development of transport and are variable under the influence of the development of human society. Natural predispositions play a significant role in the development and development of transport, with stressed natural elements and characteristics of natural straits. water. sea reliefs. composition and structure of the Earth, climate and weather, soil and vegetation and mineral resources. Through work, knowledge and available technological solutions, man and human society can transform the natural environment, that is, to intervene in order, for example, to make a certain natural "unpredictability" a "predisposition". Consequently, traffic and the flow of commodity flows are becoming less dependent and conditioned by natural conditions, and it is justified to give relevant geo-traffic factors (specifically predispositions) relevant natural importance in the formation of commodity flows, ie. consider them a relative component, relative to some other factors that have an absolute impact on the formation and arrangement of commodity flows.

#### **Economic factors**

Depending on the human and material conditions of production and the social relations that are created in the production process, economic development of a region or country occurs. When evaluating the natural and social factors of development, it is not good to overestimate one and neglect the other preconditions, but rather to determine their interdependence. Natural factors are very important factors of production and exchange, especially in countries with lower levels of socio economic development. In contrast, in countries with higher levels of socio economic and technological development, natural factors do not have such a large impact, but they largely participate in determining the basic orientation and conception of the development and production of material goods, locating traffic and other economic and social activities. Natural conditions are important precondition for economic

development, but today, social conditions, that is, the population and the community, are playing an increasing role. Accordingly, the distribution of the population on Earth and the socio-economic development are of utmost importance, which directly affects the routes of goods traffic throughout the world. Social factors emerge as the primary transport operator and directly influence the occurrence and development of traffic. There are numerous social factors that influence the development of transport, and the most important are the population, its structure and location and the economic development of a particular area.

Looking at the overall, social factors can be divided into the following:

- population structure and movement - the impact of the population in the transport industry is expressed through the total number and spatial distribution of the population and through migration with movements and seasonal tourist movements. The larger population, the more the population becomes the object of transport activity, that is, the more significant consumer area for certain types of goods, which is reflected in the existence of a certain correlation between the number of inhabitants and the volume of traffic.
- economic development the link between economy and transport stems from the fact that the more developed the economy, the more developed the traffic will be. Developing countries, compared to the industrialized countries of the West, have a much less developed economy and therefore developed transport. Increasing industrial production leads increased traffic needs and demands for the shipment of finished products to different places of consumption, ie markets.
- socio-political factors the greatest

influence is exercised by the state, which organizes the construction of roads and which regulates the development of traffic by certain legal norms. Closeness or openness of national borders and economic transport development significantly affect the volume and orientation of goods flows in the world. Large economic groups, which encourage international exchanges between member countries of the same grouping, also have a great influence on the formation of commodity flows.

- technique, technology and science all having a significant impact on the development of transport, the size and directions of world goods flows. Production development has a major impact on the development of traffic. Mass production requires increasing storage, processing and transportation capacity. The widespread application of technical advances is mandatory in the exploitation of oil and ores, as well as in their transportation to the processing site.
- impact of settlements the size, appearance and function of settlements affect the volume and development of traffic. Larger urban settlements are characterized by more developed and complex traffic. Today, the formation of conurbations is a growing influence on traffic the concentration of a number of interconnected urban settlements in the suburbs and metropolitan areas with a number of smaller towns.

## 3. CONNECTION OF TRAFFIC VALORIZATION AND GOODS FLOW

The valuation of each traffic route is conditioned by the market conditions of

supply, demand and environment. The supply elements refer to the transport capacities and services of all those entities involved in the production of transport services, the elements of demand to the size and value of the area where the need for transport services arises, and the scope and structure of those needs, and the elements of the environment to the presence of competition and other constellation in the transport market. In relation to various economic, political and other factors that are difficult to predict, current commodity flows are the most reliable starting point for analyzing and forecasting freight demand on the transport route. In this way, the directions and dynamics of goods flows are also a basic indicator of the position and competitiveness of the traffic route in the market of transport services. (Poletan Jugović, 2008) Since goods flows are by definition movement of goods in the world through transport and trade, and maritime goods flows dominate the total world traffic, analysis of world foreign trade by regions and countries is a valid indicator of intensity and major directions in the formation of maritime goods flows.

The transport valorisation of a country in transition is determined by the historical overview of transport policy, transport potentials (transport-geographical location and transport infrastructure), the degree of convergence of national transport to Euroand integration, transport economic development of the transition country, and the structure and dynamics of transport in it. In particular, the quantity of goods flows on a certain traffic route is a relevant indicator of the competitiveness of the traffic route in the market of transport services, ie it is an indicator of its traffic valorization. Many authors have addressed the problem of the competitiveness of the traffic route and the factors that determine it, as well as the methods for determining the optimal traffic route. Therefore, it is of particular importance to analyze the

existing methods, criteria and other determinants of choosing the optimal traffic route, including the analysis of the preference structure of the criteria defined by the service users. a path for valorizing the traffic route and attracting goods flows. national Considering the economy, European goods flows and transport routes are of particular importance as they are increasing, dynamic and therefore attractive, especially given the relatively high degree of technological convergence of the countries in transition.

The excellent structural development of the transport network is a significant reason why transition countries (SEE-South East Europe) should be connected to the Trans European Transport Network TEN-T, which consists of 89 511 km of road network; 93 741 km of railway network; 330 airports; 270 seaports; and 210 river ports. One of the more significant routes of possible connection are: (a) SSS - Short Sea Shipping; and (b) MoS - Motorways of the Sea. Furthermore, Corridor V consists of five branches, namely: (1) Main Branch: Venice - Trieste - Koper - Ljubljana -Maribor - Budapest - Uzhgorod - Lvov -Kiev; (2) Branch A: Bratislava - Zilina -Kosice - Uzhhorod; (3) Branch B: Rijeka -Zagreb - Croatian-Hungarian border -Budapest; (4) Branch C: Slabs - Sarajevo -Osijek - Budapest; and (5) PETrC V extends over about 1,600 km of roads and railways. Theoretical estimates of goods flows between Italy and countries linking pan-European corridors Republic, Slovakia, Croatia, Bosnia and Herzegovina, Hungary, Serbia. Montenegro, Romania, Bulgaria, Russia, Ukraine, Belarus, Moldova indicate annual turnover that could be directed to Copper -Chioggia and Ploče - Pescara has between 300,000 and 400,000 trucks a year. The expectations for the direction of Ploče -Pescara are realistic: (A) until the completion of Vc, a minimum of 20 trucks per day, or a maximum of 40 trucks per day;

(B) upon completion of Vc, a minimum of 100 trucks per day, or a maximum of 200 trucks per day.

### 3.1. Existing methods and criteria for choosing the optimal traffic route

Traffic routes or corridors imply certain directions for the movement of people and goods by roads, railways, waterways, (...), which bring multiple benefits to the spaces they cross. The framework of action and influence of a particular direction on the flow of international traffic is determined by the increasing international competition. In other words, there are competitive and less competitive routes in the transport services market. Since the competitiveness of the traffic route is a fundamental factor in its valorisation in the market for transport services, the question arises which determines the stated competitiveness and conditionality. Based on the basic market determinations of competitiveness, it can be concluded that the competitiveness of the traffic route is determined by its supply and demand. Accordingly, it is possible to talk about supply and demand in relation to the conditions and the specifics of the road traffic route, railway traffic route, maritime transport route, inland waterway, (...). It is also possible to talk about the conditions and the specifics of the supply and demand of integrated transport service, which at the same time may include different transport branches (traffic routes), transport hubs, port terminals, land terminals and other elements and participants (international freight forwarders, agents, operators, warehousers, pastors, ...) in the production of transport services on the traffic route. The supply and demand of a traffic route is determined by the characteristics of all the above elements and entities in technical, technological, organizational, economic, legal, political, environmental and other circumstances. The demand for a traffic route service can be analyzed, evaluated and expressed: the

quantity and dynamics of movement of goods on the traffic route, the orientation and amount of foreign trade, etc. A significant indicator of demand, and thus the competitiveness of the traffic route, is the so-called the area of gravity, that is, the area that gravitates to the use of a particular traffic route in competition with alternative traffic routes. The boundaries of the hinterland, ie the gravitational area of the traffic route, are formed according to the offer and various other circumstances, and narrowed or widened depending on the interests of the users of transport services. The notion of geographical hinterland has lost its meaning in the area where the port or traffic route closest to it has absolute Specifically, dominance. geographical distance may not be the deciding factor in directing goods flows to specific traffic routes. In today's transport market, geographical position as one of the factors relevant to the operation and development of the port loses importance, while numerous logistical factors such as: technical equipment, development of land roads, the facade of the port, economic strength of the hinterland, tariffs and tariff policy, etc. ., they become much more important. They increasingly act to make physically different distances equal or even show the advantage of a longer path.

As the general definition of the notion of competitiveness of the traffic route and methods for determining competitiveness of the traffic has not been observed in general, the concept of port's gravitational area is further defined, as well as factors, methods and other theoretical assumptions in determining the size of the port's gravitational area as a basic indicator of port competitiveness. In accordance with the importance of the port as a reference point of each transit traffic route, the theoretical port-related theoretical assumptions can be applied analogously to the traffic route, taking into account not only the ports but also all other elements

affecting its valorisation. In defining the concept of the gravitational region of the port, it should be noted that the authors define the term in different ways, although the vast majority of authors nevertheless agree. Thus, according to some authors (Tomasić, 1975), to determine and define the gravitational area of a port means to determine the size and boundary of an area in the hinterland of a port (Kesić, 1992) for the production of goods intended for overseas export or for goods imported by sea for consumption in that area, a specific port represents the most favorable point between land and sea transport. (Prikril, 1968) According to other authors, the gravitational zone of a port is defined as an economically organized and developed land area in the hinterland of a port, which is connected to the port by roads, and which exports and imports goods through that port. (Strazicic, 1984) Although, in practice and in theory, the distinction between the notions of the port hinterland and the gravitational zone and the notion of the gravitational port zone is not usually distinguished, the terminology related to the gravitational area of the port should distinguish the following:

- gravity port area represents a subset of the port's gravity area, meaning that the gravity area is made up of a number of gravity port areas, which can be segmented in many ways and according to different criteria;
- port gravity area represents the summarized areas of actual demand for port services (a set of port gravity zones) and is also a subset of the port hinterland;
- port hinterland (port area of interest) is a term superior to the notion of gravity and represents a real potential source of traffic for a port; the difference in the spatial coverage of the gravitational area and the hinterland is, in theory, a space for the development of

competition between ports.

The terrestrial hinterland that gravitates to a particular port, that is, which prefers a given traffic route over a port, can be divided into three zones (Kesić, 1992, p. 35): immediate hinterland. national hinterland and transit hinterland. Some authors point out as factors influencing the gravity port zones: the nature of the goods (mass, general cargo), the mechanism of maritime transport (number of lines, mechanization) and the influence of political relations. However, other authors disagree, stating that citing only these factors underestimates the importance of other vital factors, such as the development of inland transport, agriculture, industry and cities inland or overseas. There are a number of other opinions on factors that are crucial for determining the gravitational area of a port, and therefore the traffic route as a whole, and it can be concluded that the competitiveness of the port and the traffic route can be determined by (simultaneous) consideration of manv factors. connection with this, various methods of determining the size of the gravitational area of a port are highlighted, such as geographical-geometric 2003): (Kesić, method, land-tariff method, the method of real cost of land transportation, the method based on the total cost of transport and the methods of estimating logistic elements. following disadvantages The objectively stated for the above methods:

- the advantages of a shorter geographical distance can be nullified by other logistical elements;
- taking into account solely the land transport tariff does not take into account the importance of maritime freight, port costs and other logistical factors;
- the cost of the cost of land transportation (especially in transit) does not have its source in real costs but reflects the policy of each country, market or rail;

 taking into account the total cost of transport, the influence of the qualitative elements of the transport service on the choice of route, the impact of intervention and dumping tariffs are ignored.

The only method that does not highlight the disadvantages is the method of evaluating logistics elements, which includes a number of logistics elements in the analysis. This further confirms the fact that determining the area that gravitates to the use of a particular port or traffic route is a complex size that is conditioned by the simultaneous influence of many factors. At a time when service prices are becoming more uniform or uniform, the quality of customer service is crucial in ensuring that a job in the transport market is secured, so many authors are adopting the idea that the competitiveness of the traffic route is determined primarily by price qualitative elements. transport services (Quality-Price Ratio). That the price and quality of service are one of the most important factors in the valorisation of the traffic route in the market of transport services and in the choice of the optimal transport route, transport technology and means of transport, (...) is the view shared by many experts. Their divergence of opinion is mainly about defining the criteria themselves and their meaning. Differences and the inability to define qualitative criteria uniformly in the valorisation of traffic are justified for several reasons. Some of the reasons that can be most easily justified are, for example:

- different types of freight prefer different modes of transport;
- characteristics of transport infrastructure, supra-structures, organization of transport, its planning possibilities, transport effects (...), are specific depending on the transport branch;
- each mode of transport has its specific advantages and disadvantages;

 Each traffic service user may have different priorities and requirements, (...).

On this basis, it is difficult to determine what are the aspects from which it is optimal to analyze the weight of individual competitiveness criteria and the quality of transport services, and it is often a dilemma whether the competitiveness criteria determine:

- market requirements or customer service requirements,
- cargo or transport substrate requirements,
- the presence of competition, etc.

As the traffic route is built primarily to serve its inland hinterland, and the economic strength of the hinterland is a basic precondition for the development of a modern transport route, it can be stated that competitiveness and development of the traffic route are directly conditioned and reflect its hinterland limited by the so-called hinterland. gravity zones.

#### 4. CONCLUSION

The linkage with appropriate goods flows is very important and is the basis for a better economy, cultural and scientific integration and for the overall development of the area. This is especially important because of the need for a systematic approach to considering all influential factors, detecting regional specificities, ie levels of traffic development from an infrastructural. technical. technological, institutional. administrative and economic point of view, but also due to taking into account specific requirements in the integrated transport network planning system. emphasizing the inclusive adequacy of commodity flows. A detailed analysis of the spatial distribution of commodity flows in the world deals with commercial geography, within which, as a separate branch of commercial geography, transport geography deals with the analysis of the main characteristics of food flows, raw materials and industrial products - the three basic groups of commodity flows. The basic area and subject of research is traffic geography related to the basic elements, such as: traffic demand, traffic junctions and transport networks. These elements condition, enable and determine the existence and unfolding of commodity flows, including at the same time commodity exchange as a basic element of commodity flow initiation. The flow and flow of commodity flows is less and less dependent on natural conditions, and it is justified to give particular geo-traffic relevant importance factors formation of commodity flows, ie to consider them as a relative component, compared to some other factors that have an absolute impact on the formation and arrangement of commodity flows. . The valuation of each traffic route conditioned by the market conditions of supply, demand and environment. The supply elements refer to the transport capacities and services of all those entities involved in the production of transport services, the elements of demand to the size and value of the area where the need for transport services arises, and the scope and structure of those needs, and the elements of the environment to the presence of competition and other constellation in the transport market. New world tendencies require interoperability of all branches of transport on a particular corridor, assuming mobility and rapid movement of the vehicle and cargo from one transport module to another to avoid traffic congestion and adverse environmental impact. In doing so, it is important to focus on developing a methodology and concept for the selection of adequate commodity flows that largely meet all set decision-making criteria in the planning process, thereby directly affecting the increase of goods exchange, transport safety, reduction of negative environmental and increase of economic impacts efficiency.

#### **LITERATURE**

- [1] Bilen, M. (2001). *Product and service markets*. Zagreb: Mikrorad d.o.o.
- [2] Brajkovič, N. (2005).Development trends in container shipping. master's thesis. Faculty of Economics and Business, University of Maribor, Maribor.
- [3] Cordeau, J.-F. et al. (2007). "The service allocation problem at Gioia Tauro Maritime Terminal". European Journal of Operational Research, 176, pp. 1167-1184.
- [4] Cullinane & Khanna. (2000). "Economies of scale in large containerships: optimal size and geographical implications". *Journal of Transport Geography*, 8, pp. 181-195.
- [5] Kesić, B. (1992). Organization and economics of port systems. Rijeka: Faculty of Maritime Studies and Transport Rijeka.
- [6] Kesić, B. (2003). Port economics. Rijeka: Faculty of Maritime Studies Rijeka.
- [7] Malić, A. & Rendulić, I. (1995). Geoprometna obilježja svijeta. Zagreb: Dr. Feletar.
- [8] Mankiw, N. G. (2006). Osnove ekonomije. Zagreb: Mate, d.o.o.
- [9] Marković, I. (1990). *Integralni* transportni sustavi i robni tokovi. Zagreb: Sveučilište u Zagrebu, FPZ.
- [10] Merlin, P. (1992). "Géographie des Transports, Que sais-je?". Paris: Presses Universitaires de France.
- [11] Poletan Jugović, T. (2008). Analysis of relevant indicators of commodity flow formation on the pan-European VC corridor. *Maritime Affairs*, 2, p. 185-208.
- [12] Prikril, B. P. (1968). *Plan razvoja riječke luke, definiranje gravitacijskog područja Rijeke*. Rijeka: Ekonomski institut.
- [13] Rodrigue, Comtois & Slack. (2009). The geography of transport systems. New York: Routledge.

- [14] Stražičić, N. (1984). *Pomorska* geografija svijeta. Zagreb: Školska knjiga.
- [15] Tomasić, Ž. (1975). *Ekonomika luka*. Rijeka: Viša pomorska škola.