

Macroeconomic Modernization of the National Economy Regarding the Supply Chain Management of the National Economy's Competitiveness

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Abstract— The purpose of this study is to investigate the effect of supply chain management on competitive advantage and sustainability in the national economy. The national economy's competitiveness has a complex nature, ensured by sustainable economic, political and social development. In the paper the issue of the national economy's competitiveness as a complex of supply chain management of socio-economic system is researched. The author's approach to the concept of the national economy's competitiveness was formed. Key elements of the national economy's competitiveness were analyzed, among which national production, resource base, intelligence of the Nation, and national social capital. Relationships between the competitiveness of the national economy and globalization processes are determined. Practical recommendations for improving competitiveness of the developing countries in the world economic area were proposed. Problem of the national economy's competitiveness is examined from the position of the modern macroeconomic modernization, under supply chain system and institutional dynamics are one of the key factors for promoting economic progress and ensuring society's high level of well-fare.

Keywords— *national economy's competitiveness, national production, resource base, supply chain management, Macroeconomic modernization.*

1. Introduction

Today, no company can give up supply chain management and wait for survival. Recognizing and examining different supply chain actions, a better understanding of relationships and interactions between suppliers, on the other hand, achieving a competitive advantage for each organization creates a defensible position against competitors and includes capabilities that distinguish the organization from competitors. It is also worth mentioning that today the guarantee of sustainable

development of any country is subject to the preservation and optimal use of limited and irreplaceable resources, sustainable social and economic development in that country and various measures have been taken by governments to address this issue. The manufacturing process will help increase long-term profitability and access to global markets that have recently become highly sensitive to the environment and corporate social responsibility of organizations. In the face of intensifying competition between the countries, the efficient macroeconomic policy is the main strategic tool of the national economic modernization. Policy development process must be held on the basis of results of national economic potential's evaluation. But nevertheless, process of the efficient macroeconomic policy formulation is just the first step in the ensuring the competitiveness of the national economy for the long term. Scientific validation of any direction of the state economic policy cannot dispense with macroeconomic tools, which cover functional relationship between the branches of the national economy, set of the macroeconomic indexes and models, structural transformations and economic ratio, etc. Macroeconomic level of the competitiveness is characterized by the complex of the macroeconomic indexes, characterizing the effectiveness of functioning the main elements of economic system.

The main priority of any developing country is improving its economy's competitiveness, which entails economic and innovative sustainable development, enhancing the quality of life for population, improving the business environment and technical and technological upgrading of the national industrial sector. All this requires the measured for establishing basic economic conditions by means of (1) reducing inflation and stabilizing the state finances; (2)

encouraging entrepreneurship through the reducing the state tax and administrative pressure; (3) modernization and development of the infrastructure; (4) development of the national human and social capital; (5) improving the effectiveness of the public administration by reforming state services and executive authority. Thus, these are the main stages of the effective strategic transformations towards establishing the competitiveness of the national economy, which are common for all the developing countries.

2. Literature review

Increasing productivity and reducing logistics costs are an important part of production costs. So that the development and effective use of supply chain management and the use of scientific concepts in supply chain management over the past years in some countries has reduced their GDP by 5%. Issue of the competitiveness of the national economy is one of the up-to-date vital problem for all governments in the world. Thus, the issues related to the national economic competitiveness have been the research subject of the most economic theories since “The Wealth of Nations” by Smith [1], while in the scientific and political community there is still an extreme ambiguity of opinions regarding issues related to the creation and maintenance of states’ competitiveness. One of most significant contribution to the development of the theory of the national economic competitiveness was made by Porter [2,3].

It should be noted, that the most developed concepts and theories of the global competitiveness seems to be the following: Adam Smith’s concept of the invisible hand, David Riccardo’s concept of comparative advantage, Schumpeter’s theory of entrepreneurship and innovation, Porter’s theory of competitiveness and Krugman’s concept (criticism) of competitiveness. The first two explain the international trading system based on the principle of (absolute and comparative) advantage. Schumpeter’s focus is on innovation as a key determinant of competitiveness. Krugman contributed to the theory of competitiveness by not only demonstrating the relevance of productivity to the competitive advantage of countries in international trade and improving living standards, but also by examining (condemning) the meaning of the discussion about competitiveness between countries. With regard to Porter’s theory of competitiveness, a four-factor model of countries’ competitive advantage, called the diamond model, which is often used by researchers.

We also have to mention that the theory of the national economic competitiveness was researched by economic schools. Thus, classical theories state that: (1) each nation plays a role in the division of the labor force on the basis of absolute advantage (A. Smith) and later comparative advantage (D. Riccardo); (2) the division of labor allows for

technological differences between countries. In addition, within countries, factors of production (labor) are completely mobile in all sectors.

Neoclassical theory is based on the Heckscher-Ohlin (HO) model, also called the “factor proportion model”. The main its statements are as follows: (1) each nation has its own role in the division of labor, based on the relative ratio of factors of production. If the proportion is the same, then the trade will be useless; (2) equalization of prices of factors of production presupposes a certain degree of incomes’ convergence received from capital and labor. In a highly competitive environment, the concept of competitiveness is not sustainable over the long term.

Keynesian theory states that: (1) the state can successfully intervene every time; (2) imperfect markets allow for regional differences; (3) regional convergence can be achieved through economic policy; (4) capital intensity leads to economic growth and productivity growth. Thus, the most important positions of this theory are the effectiveness of government aid, trade liberalization, and foreign direct investment (FDI). Whereas classical economists viewed capital and labor as two independent factors of production, neoclassical theory argues that they complement each other.

One of the modern theories is the theory of development economics, which emphasizes that: (1) central regions with a productive advantage will retain their positions ahead of peripheral regions; (2) economic policy should take into account the state of development of each region; (3) economic policy should contribute to the “multiplying effect” of FDI. Its main aspect is that the accumulation of knowledge leads to an increase in income, and its implications for the concept of competitiveness are as follows: (1) improvements in technology and human capital are engines of growth; (2) free trade is a determining factor in growth and technological development; (3) investment in R&D is very important.

Modern authors research the methodology for evaluating competitiveness of the national economy, such as [4, 5]. The basis of the methodological approach to the evaluation of the national economy’s competitiveness was developed in the 1980s, starting from the scientific works about the key elements of the national economic competitiveness. In [6] insists that the level of competitiveness can be measured for any entities with different domains – product, firm, industry, nation, bloc, or the globe.

There are two different views for the issue of the national economic competitiveness: from the macroeconomic position and from the microeconomic one. Thus, [7] research microeconomic foundations of global competitiveness”. In [8] determines that “the competitiveness is the cause of both differences and structural changes in the economic sectors”.

Many economists research the factors influencing the competitiveness of the national economy, among which we can mention the publications of [9-13].

2.1. Target-Setting

But despite the large number of studies in this field, the definition and the components of the national economic competitiveness remains unresolved. Also, the issue of the economic improvement is considered slightly.

Therefore, the main goal of this paper is to analyze the issues of macroeconomic modernization of the national economy regarding the promotion of the national economy's competitiveness of the developing countries. For its achievement the following tasks were determined: (1) to determine the category of the national economy's competitiveness; (2) to structure the country's competitiveness; (3) to view and analyze the modern situation of the global competitiveness; (4) to research the macroeconomic modernization of the national economy as a promotion factor for the national economy's competitiveness on an example of the developing countries.

3. Methods and materials

With the development of information technology and economic globalization, modern competition has already become the competition among enterprises and their supply chains rather than the competition among enterprises only. A supply chain is competitive if it is able to create and deliver value for its customers and its components. This study combines economic analysis of the concept of the national economy's competitiveness. In this study complex of the general scientific and special research methods were used to achieve the goal of the study. The method of logical analysis of the literature was used. The structural analysis was used with purpose to generate the structure of the national economy's competitiveness and its key elements. Method of summarization was used to make a conclusion. Scientific works of Ukrainian and foreign leading scientists in this sphere were used as the information basis for the conducted research.

The methodology of this research consists of three parts. In the first one the main definitions of the national economic competitiveness were researched, but nevertheless the authors do not answer the question, which of the proposed definitions best fit the used notions of competitiveness, but propose the own integrated one on their review. In this context, the category of the national economic competitiveness is researched from the perspective of empirical studies worldwide. In the second part the structural elements of the national economic competitiveness were proposed, based on the principles of vertical structural analysis. The category of the national economic competitiveness was applied at macro, meso and micro levels. In the third part of this research the global competitiveness rate was analyzed on the

basis of the Global Competitiveness Report [14], assessing the competitiveness of 141 countries and providing information on the drivers of countries' economic growth. The key indicators, which are used in the research, are the following: economic sectors' development, socio-economic development, country's positioning in the international economic space, national production level, resource base, human capital, social capital, institutional environment, R&D, competitive landscape. Developing countries were chosen as the research object. The procedure of macroeconomic modernization of the national economy regarding the promotion of the national economy's competitiveness were illustrated on their case.

4. Results and discussion

A supply chain is competitive if it is able to create and deliver value for its customers and its components. Competitiveness of the national economy belongs to the most complex categories, which has many aspects. Thus, according to scientists, competitiveness of the national economy is:

1) An amount of international competitiveness of national exporters. However, this approach does not reveal the conditions under which competitiveness is formed and does not establish the results of its increase for economic entities' activity and population [15].

Close in terms of this context is the attitude of other scientists, which is presented in [16]. Therefore, in their view, competitiveness of the national economy is the country's ability to produce goods and services, which meet

established international standards, in the conditions of a free market and fair distribution of the social product, and on this basis to raise the level of real income and maintain it in the long term perspective;

2) the ability of the country to create internal and external conditions that enable enterprises to produce goods and services that are competitive at the international markets, and population to increase incomes and life quality [15]. Such definition outlines goods and services as an object of the competitiveness that narrows down it considerably. The main elements here are the internal and external conditions, as competitiveness of the national economy depends on the conditions of the social production, such as controllability of power, corruption level, sustainability of commodity, financial, foreign exchange markets and legislation, understandability and predictability of the state policies and so on [17];

3) the existence of a healthy market in the country, factors of production and other characteristics, forming the potential to achieve a sustainable economic growth [18]. In our opinion, this definition is more about the conditions for competitiveness and does not reveal it main components;

4) characteristic of the state of social relations in the state to ensure a sustainable environment increase of national industrial efficiency adapted to the changes in the world market and domestic demand based on disclosure of national competitive advantages and

achieving better social and economic criterion [19]. The author focuses on the social and economic optimality, whereby positive outcomes of effective use of material, labor and organizational resources are balanced by the performance of social and others budget programs. However, in our opinion, though such a definition has a number of advantages concerning the security conditions of the competitiveness, competitive advantage and results, however, it does not take into account that competitiveness of the national economy is determined not only by efficiency of the national production, but also depends on the variety of factors, such as the availability and accessibility of the resource base, formation and development of the national intellectual potential and so on;

5) the ability to maintain a steady pace of an economic growth in a continuous competitive pressure among countries by all available means for possible markets of products, raw materials, and investments [20]. The disadvantage of this definition is a lack of disclosure of the essence of the means, used in competition, and its objects' limited nature. This definition does not take into account the fact, that the object of competition can be not only finished products, but also services, which in the conditions of global market's oversupply are a promising avenue of increase country's competitiveness;

6) accelerator of integration processes, encouraging countries to find their place in integration associations, i. e. this category is considered not only as economic, but also as the social and historical phenomenon, including geopolitical and social characteristics [21]. This definition captures the essence of the country's competitiveness regarding its consequences and results. But it is a limited approach;

7) a set of country's characteristics, reflecting its ability to maintain the national reproduction base, which is the basis for its national viability, identity and independence, as well as the capacity for sustainable retention and expansion of its foreign economic positions [22]. In this definition, the focus is made on the features of the national governments that should improve competitiveness of the national business to ensure the most stable positions for the country;

8) the ability to realize the basic goal of the national economy's functioning, namely a sustainable socio-economic development with a high life quality of population [23]. This approach to the national economy's competitiveness draws on a key role of socio-economic policy that can be successfully implemented to raise the level of population social protection. So, again we see the limited set of components;

9) the ability of the state and society to create and maintain such environment, which meets competition, rivalry between other countries in all spheres of life, provides

conditions for increasing living standards and

public welfare, being significant tool for achieving personal and companies' goals, and also a powerful tool for realizing the national interests [24]. Such approach reveals the importance of competitiveness in terms of implementation strategic state interests;

10) country's ability to substitute and hold the steady positions in certain segments of the world market due to the economic powerhouse that provides growth of economy on innovative basis; developed system of market institutions; possessing considerable intellectual capital and investment resources; flexible response to changes in the world business conditions and consequently, by diversifying production [8], thus promoting the national interests in the name of the national economic security and high living standards of the population [25]. This definition most closely captures the essence of the national economy's competitiveness, but in terms of the environment. However, the country's internal competitiveness is not taken into account, which is a major drawback.

Thus, the approaches to determining the concept of the national economy's competitiveness vary depending on the research aim of the scientists. In so doing, the components of competitiveness appear to be either resources or position of providers at the foreign market, or a set of conditions that ensure effective functioning of national production, or a set of country's characteristics and so on.

Thereby, it must be provided the determination of the national economy's competitiveness in the situation of ambiguity and methodological uncertainty. But first of all, we need to outline the main theoretical positions that, we believe, are the key ones for understanding the essence of this category:

1) the country's place in the world, first of all, is determined by self-generated resource base, which allows to get out and win at the world market with lower specific costs, to receive competitive advantages over manufacturers from another countries;

2) the adequate resource base, in situations of widespread high technologies and transition to the innovative development path, is not a sufficient reason to say that the national economy is competitive. In this case, the country remains a raw material appendage for highly developed countries. Therefore, it is necessary to form and expend the intelligence of the nation, which is defined as a key concept of ethno-genesis, as the main factor of revival and self-affirmation of the nation [26];

3) effective functioning of the national production, which is able to increase the competitive edge of the national economy, and depends on the previous components of the competitiveness, such as resources and intelligence of the nation. It is precisely this trinity of national production, resource base and intelligence of the Nation, which is supported by a constant control from the state, is able to have a positive impact on the state of the national economy and made it a leader in the world economic space;

4) social development of the society is the state mandatory function, which level is the main indicator of the national economy's competitiveness.

Thus, the national economy's competitiveness is

defined by us as an ability to create and realize a powerful mechanism of the effective country's positioning in international economic space through interaction of resources, intelligence of the Nation, and national production, that given strong institute of political authority and stable legislative framework allows to carry out socioeconomic development of the society (see fig. 1).

Based upon a structural position, the national economy's competitiveness is considered as a result of the interaction of all subjects of economic relations in the country.

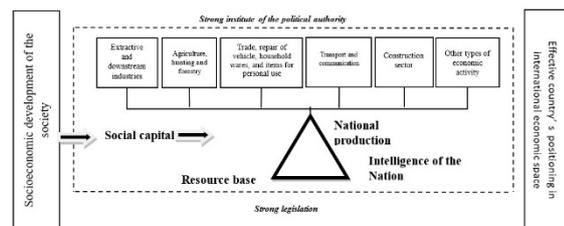


Figure 1. Structure of the country's competitiveness. (formed by authors)

We can highlight the following basic levels of competitiveness, based on the principles of vertical structural analysis. They are:

1) micro-level: at the level of goods (certain types of products and services). Competitiveness at micro-levels is a result of competitive pressures;

2) meso-level: at the level of separate enterprises, firms, their corporate associations, industries, industrial complexes. At this level there is a process of formation of goods' competitiveness related to the introduction of new technologies and the most advanced forms and methods of organization of economic processes;

3) macro-level: at the level of the national economies of certain countries. This level is the basis on which formed the competitiveness of enterprises, their associations, industrial complexes, their harmonized interaction not only among themselves, but also between state public institutes. It creates conditions for positive economic dynamics and social sustainability.

Scientists do not have a common point of view about the places, where the national economy's competitiveness arises and what determines it. In our opinion, it is not limited by the competitiveness of enterprises and goods, since its formation is possible only at the national level of natural, sociocultural, economic and legal bases, etc. It is this foundation that creates prerequisites for structural formation of the national economy and competitiveness of economic entities. There is thus such a sequence of formation competitiveness of the national economy: at the macro-level conditions for forming and enlarging competitiveness of economic entities, which directly generate competitive goods, are created. So, the macro-level indirectly affects the micro-level competitiveness. This enables to set the value of the state's economic policy in the formation

process of macro-competitiveness, which is the basis for the meso-competitiveness and micro-competitiveness.

However, in order to involve country into globalization processes it needs competitive economic entities, which operate in a global environment and offer competitive products and services.

Expanding on the point of the national economy's competitiveness, we also need to consider the time factor. It enables to consider competitiveness as a dynamic category, which qualitatively changes in a result of changing the basic conditions created in economic space [27]. Indeed, in recent 15-20 years fundamentally new structure of the world has been created, namely:

1) financial globalization and establishment of the global multinational corporations;

2) growth of the capital domination above production;

3) world trade's intensification;

4) regionalization of the world economy;

5) multiple improvement of the information flows and the growth of their types;

6) expanding the influence of global oligopolies;

7) globalization of the supranational political authorities and so on;

8) the analysis of the national competitive components through the system of global indexes, as well as the measures that are aimed at increasing of the peaceful attitude within the country [28].

The aforementioned changes put the governments towards the choice of the national model of competitiveness, namely factorial or innovative.

Based on the development of factors and levels of their interaction, M. Porter defines the following stages of the country's competitiveness [3]:

- competitiveness based on factors: it is achieved only through the production factors, with limited use of own technologies and in disseminating foreign ones. Economy, providing factor competitiveness, is sensitive to external influences and vulnerable to loss of factors;

- competitiveness based on investments: it is determined by readiness and the country's ability to invest aggressively. Passive investing is changed to active improvement of existing domestic technologies. Investment growth leads to improvement of factors;

- competitiveness based on innovations: it is based on the development of national technologies. While maintaining price competition, its basis is changing, i. e. are increases in productivity. At this stage there is every reason to develop a global strategy of the competitiveness;

- competitiveness based on wealth: it takes place when the country has reached a certain abundance. The demand from rich population forms special industries, and those industries that were in the lead are starting to experience an economic downturn. Thus, competition gives way to partnership.

The first three stages characterize growth of the economy's competitiveness, the last one characterizes

its slowdown and decline.

Depending on what ensures the country's competitiveness at the international market, we can determine two roads to achieve it: (1) the top road to competitiveness is based on the acquisition of new knowledge and technologies, and (2) the lower one, which is based on attracting the foreign investment. The basis for the top road is an innovative economy focusing on the development of new products of high consumer and market value, which is not just technically complicated, but also protected by intellectual property rights. This approach can be applied by countries with economy based on knowledge.

Unfortunately, it is impossible for Ukraine. The main roads for it are: increase of volumes of extraction of natural resources, reduction of wages and costs of production. This is the reason why Ukraine, as a country with developing economy, get loose in the competition between the countries, focusing on innovative development and involvement in process of scientific and technological development.

We have to mention that the set of factors of the national economy's competitiveness is expanding. Nowadays, not just the national production, resource base and intelligence of the Nation, but also quality of the state administration and social cohesion are viewed as its main factors. The last one is determined by two main criterions: (1) reduction of the social and cultural discrimination and gap in property differentiation; (2) development of the social capital as the specific public resource, which generates the creative energy of innovative development. Thus, we have new factor such as cultural values, which compete with technologies, and in the near future could ensure the competitive victory for Asian countries, such as China and India.

Thus, we can make the conclusion, that institutional system and institutional dynamics is a determining factor for competitiveness of the modern national economies.

Nowadays, countries compete not just in industrial and technological spheres, but in the choice of institutional structure and institutional strategy for the model of the national development, which is able to promote the economic progress and to ensure the increase of welfare of population. Thus, we can define the competitiveness of the Nation in the conditions of globalization as a correspondence of the economic structure and state institutions to the tasks of the economic development within the borders of the structure of the world economy.

This approach can be illustrated on the researches of the specialists of the World Economic Forum. They define the global competitiveness as a complex of institutions and policy, determining the productivity level and population well-fare, and also the potential of the countries' economy improvement [14, 29]. In the recent years, the lead positions in this rating are occupied by the countries

with economies, based on modern technologies and innovations, highly developed business culture, highly qualified macroeconomic governance, modern infrastructure, close cooperation between leading scientific and research centers and business, high level of protecting intellectual property, efficient authority institutes and regulatory environment. Among the main three groups of competitive factors (resource, operational and strategic), the main ones for these countries are the strategic ones, related to advancing and implementing the strategic priorities of the country in the field of a long-term innovative development. This index has twelve pillars of competitiveness, i. e. institutions; appropriate infrastructure; stable macroeconomic framework; good health and primary education; higher education and training; efficient goods markets; efficient labor markets; developed financial markets; ability to harness existing technology; market size-both domestic and international; production of new and different goods using the most sophisticated production processes; innovation.

Data of this report (141 countries) is presented in table 1.

Table 1. Countries' rankings by the Global Competitiveness Index, 2019 [14]

Rank	Country	Score
▲1	Singapore	84.8
▼2	United States	83.7
▲3	Hong Kong	83.1
▲4	Netherlands	82.4
▼5	Switzerland	82.3
▼6	Japan	82.3
▼7	Germany	81.8
▲8	Sweden	81.2
▼9	United Kingdom	81.2
10	Denmark	81.2
11	Finland	80.2
▲12	Taiwan	80.2
▲13	South Korea	79.6
▼14	Canada	79.6
▲15	France	78.8
▼16	Australia	78.7
▼17	Norway	78.1
▲18	Luxembourg	77.0
▼19	New Zealand	76.7
20	Israel	76.7
...		
28	China	73.9
...		
43	Russia	66.7
...		
▼68	India	61.4
...		
▼85	Ukraine	57.0
...		
▼141	Chad	35.1

Thus, we observe, that the developing countries occupy the middle positions. For the improvement their national economy's competitiveness, it is necessary to intensify their governments' role in the macroeconomic modernization, which is intended to realize efficient institutional modernization; promotion of the transparent and simple business rules for all the economic entities; creation of the favorable investment climate and equal competitive conditions; formation of sustainable financial market and qualified administrative institutes.

Also, it is necessary for the developing countries to create institutional conditions for innovative activity by means of regulatory frameworks of structural modernization of economy and adequate regulatory environment, favorable for highly technological industries, developing of the intellectual property market, creating innovative infrastructure. It needs the use of administrative tools for simplifying the procedures of business registration, providing the tax benefits, accelerating the depreciation, providing block grants, ensuring the private-public partnership and so on.

Higher priority needs to be accorded to economic branches, related to development of the human capital, first of all, health care and educational sectors.

In this regard, we have to notice that the macroeconomic modernization of the national economy regarding the promotion of the national economy's competition is a complex task of industrial, administrative and institutional transformation.

5. Conclusions

Since the goal of supply chain management is to minimize organizational costs by creating temporal and spatial desirability for goods, methods such as lean logistics, outsourcing, virtual logistics, reverse logistics, integrated supply chain management, seek to create a competitive advantage for the organization. Nowadays, any country in the world could be isolated from up-to-date globalization processes. So, there is a need for ensuring a dignified position in the world space. Which way of positioning the country will choose, depends on the technology of its state policy's realization. If the country sufficiently integrated into the world economy and globalization processes, it will have an opportunity to achieve its strategic supply chain goals. Otherwise, it will constantly adjust to development standards of "mega states" and function according to their rules. To prevent such a situation, it is necessary to solve the following tasks for developing countries:

- 1) to ensure state financial strength: defense capabilities and achieving the quality of live and living standards for all citizens of the country, which meet minimum international standards;
- 2) to conduct an efficient industrial policy

(intensive development of knowledge-intensive industries and engineering);

3) to involve international financial resources in delicately balanced way for the country's development while maintaining national interests;

4) to create a state system able to accumulate all the nation achievements and return them for the benefit of society; to systematize the state innovation policy;

5) to enhance interaction with other countries;

6) to ensure increasing the rates of the international exchange of goods, services, and capital;

7) to adjust the national development model to global standards;

8) to minimize and block unfavorable external factors at the national social development system;

9) to adjust the role of the state accordingly to the world development system;

10) to develop the modern national foreign political strategy of the development;

11) to ensure the competitiveness of the state at all levels;

12) to modernize technically the production sphere as the means for state competitiveness in the world;

13) to strength the role of the national humanitarian and technical elite;

14) to institutionalize and mobilize the humanitarian and technical potential of the Nation;

15) to develop the transport system and international transport corridors.

Thus, the core element of the macro modernization of the national economy in supply chain management procedure has to be the adequate socioeconomic policy, which promotes the national economy's competitiveness.

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