Current European Union Economy Development Through the Supply Chain Strategy Challenges of Ukraine

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***Abstract*—The study analyzes the national standardization and supply chain strategy system, namely, the changes that occur in connection with the economic part of the Ukraine-European Union Agreement, harmonization of the relevant regulatory framework of Ukraine with the European Union standards. It was revealed that the main obstacles to the free movement of goods and services are technical barriers rather than trade impediments. In order to coordinate EU technical regulations and the system of technical regulations in Ukraine (in the process of implementing the economic policy of European integration), the evolution of the formation of these systems was traced. The analysis of the international economic integration showed that it is most effectively and deeply implemented provided that a relatively small number of countries that have close and established trade and economic relations, as well as almost the same level of development, are united. In addition, the research described the integrity of the technical regulation system in the EU countries and its fundamental difference in terms of its perception and actual functioning in Ukraine. It has been noted that the reform of the legislation, principles, and infrastructure of the technical regulation system, standardization and supply chain strategy is aimed at improving the safety, quality and competitiveness of Ukrainian products; protecting the life and health of citizens; simplifying business climate; balancing current distortions and imbalances; introducing innovations through the application of international standards and the removal of technical barriers. However, the analysis of the basic laws of Ukraine on foreign economic activity revealed a number of problems associated with the formation of the economic policy of European integration, in particular the lack of a shared vision of the country's economic development and the formation of the concept, values, principles, and economic policy of European integration.**

Keywords*— *standardization, supply chain strategy, Ukraine-EU Agreement, European integration, technical regulation, legislative regulation of standardization.

1. Introduction

Every economy recognizes the importance of the adoption and implementation of internationally-accepted methods of standardization, accreditation and conformity assessment (supply chain strategy) for economic growth [1]. Global trade, access to the markets and export competitiveness directly depend on these measures as they help to reduce trade barriers and increase consumer confidence in product quality, health and environment safety [2]. The development of globalization does not truly stop. However, from the economic perspective, globalization processes require a new approach.

When an administrative and command economy shifts to market principles, the place and role of both the state (namely, the political system) and specific mechanisms of its influence on the economic system elements are significantly changed [3]. It should be noted that the need for state intervention in the economy is due to a number of reasons:

- to create favorable conditions for the effective functioning of the market (in particular, at the level of legislative frameworks and fiscal activities);
- to represent national interests in the international arena;
- to eliminate the negative phenomena found in a market economy (the antitrust activity of authorities aimed at ensuring equal market conditions may serve as

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an example) [4].

Standardization is the process of establishing standards for the universal and repeated use in relation to existing or potential tasks and aimed at achieving the optimal level of improvement in a particular area. Standardization ensures the compatibility and interchangeability of products and their components, the uniformity of production processes, product safety, and product quality [1].

Standardization is the object of the activity of international organizations. Standards adopted in the country should reflect the level of available technologies. There are also numerous regional standardization organizations that establish standards at the regional level [5].

Supply chain strategy is the assessment of conformity by a third party (a person who does not depend on the person providing the conformity assessment object, and on the person interested in this object as a consumer or user) that relates to products, processes, services, systems or personnel [6]. As a rule, states either approve products subjected to mandatory conformity assessment or set a requirement for mandatory conformity assessment of certain goods in a separate legislative act [7]. Such products form the so-called legislatively regulated sphere. Goods for which there are no requirements for assessing their conformity can be certified voluntarily. They form a legislatively unregulated sphere.

In order to accelerate the technological advancement and derive more benefits from trade integration with the European Union, economies in transition are increasingly adopting strategies to implement harmonized European standards and comply with international standards instead of developing their own ones [8]. The adoption of international standards is the basis for creating an accepted degree of quality and increasing the competitiveness of domestic manufacturers [7]. However, in addition to this, there is a need for the correlation and a systemic relationship with legislative changes, especially in the countries where mandatory standards should be replaced by international or regional voluntary standards [9].

In the framework of the Ukraine-UE Association Agreement, the Technical Barriers to Trade (TBT) Agreement, Ukraine and the EU countries commited themselves to strengthen technical cooperation by improving normative legal acts; updating the institutional component that deals with metrology, standardization, market surveillance, supply chain strategy, and accreditation; promoting the development of an effective, high-quality and mutually beneficial system of standardization, metrology, accreditation, conformity assessment, as well as market surveillance in Ukraine [10]. The association agreement is becoming an important tool for modernizing the Ukrainian economy. An outdated and inefficient regulatory system inhibits the development of entrepreneurship.

The UE “New Approach” to technical regulation, the Global Approach to Supply chain strategy (required for CE marking) and the Old Approach Directives (which are still applied, for example, in pharmaceuticals and agriculture) concerning technical requirements and regulations come to the forefront of EU trade integration [6]. In addition, it is noted that the WTO accession requires updating the laws on compulsory inspection and supply chain strategy in order to bring the regulated sphere in line with the Technical Barriers to Trade (TBT) Agreement and the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) [11]. The conformity of standards and supply chain strategy procedures is recognized in these agreements. Today, it is well known that there are certain standards and technical regulations aimed at ensuring consumer safety and achieving other goals. However, technical regulations can lead to a significant increase in costs [12].

The obstacles to successful trading, free movement of goods and services are technical barriers rather than import tariffs [2] [13]. The EU technical regulation system is considered the most effective and successful tool for eliminating technical barriers to trade. Therefore, the issue of harmonizing the technical regulation system in Ukraine in accordance with the EU requirements is relevant and urgent not only in terms of removing trade barriers, but also technical modernization and increasing the competitiveness of the economy.

The studies show that Ukrainian producers cannot compete in the international arena based on the quality of their exports [14]. Alternatively, Ukrainian companies aim to compete for costs that are associated with a lower rate of added value. Competition for quality, based on international standards and supported internationally by the national quality assessment system, improves the relations with foreign buyers; this contributes to a greater cross-border transfer of knowledge and foreign direct investment, as well as the creation of new jobs [15].

Standardization and supply chain strategy in the EU are regulated in accordance with the international requirements of ISO (the International Organization for Standardization). It should be noted that ISO covers all areas of economic activity, except those related to electronic and electrical engineering, which are

regulated by the International Electrotechnical Commission (IEC). The representatives of national standardization bodies (today there are more than 160 countries that are ISO members) take part in annual ISO general assemblies; they consider the mechanisms for improving standardization and its impact on the development of international trade [6]. The participants have an opportunity to describe the events taking place in the country, to discuss the changes associated with the development of the economy, and to exchange work experience. The role of standards in energy and the environment, innovations in the development of standards, the issues of regional interaction and the involvement of young specialists in standardization were discussed in the 40th ISO General Assembly, which took place on September 20-22, 2017 in Berlin [16].

The study of the principles of standardization and supply chain strategy in the EU from the perspective of the possibility of their implementation in Ukraine revealed the fact that Ukrainian legislation aims primarily to harmonize the legal framework, and liberalization of relations is considered as the next stage of the transformation process.

Poor awareness and the lack of skills of Ukrainian manufacturers and consumers to use technical regulation as an effective tool for production planning and management, product assessment and product selection, lead to the following significant risks in the national market:

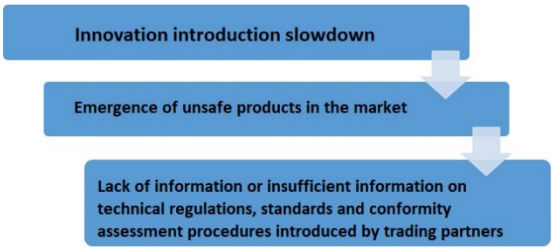

Figure 1. Risks associated with the insufficient awareness of Ukrainian manufactures and consumers

As a result, there is no timely donor support to respond quickly to the tough requirements imposed by importing countries; there are few incentives to establish international partnerships and the competitiveness of national products in the markets of developed countries is low.

Recognizing significant contribution of scientists to the development of research on the problem being discussed, we have to note that much less attention was paid to the place of the technical regulation system in the export policy of the state as a whole and the competitiveness of the Ukrainian economy in particular. The purpose of the study is to assess the conformity of the Ukrainian technical regulation system with the international and European requirements as the basis for overcoming technical barriers to the movement of goods and services, and a component of increasing the competitiveness of the Ukrainian economy.

2. Methods

The study analyzes the interdependence of the elements of the technical regulation system and systematization of the standards for industrial products. The comparison method is used to compare the transformation processes of standardization and supply chain strategy in the EU and Ukraine. In addition, in order to identify legal challenges, there was a need for a systematic structural analysis of the economic processes and phenomena when systematizing the state policy criteria and factors, as well as administrative and legal regulation of standardization and supply chain strategy of industrial products in Ukraine. In addition, a quantitative and qualitative comparison was used to thoroughly study the possible directions of state regulation of standardization and supply chain strategy of products in accordance with the economic part of the Ukraine-European Union Agreement.

The study is based on a wide range of domestic and foreign scientific sources, laws and regulations of Ukraine and the European Union, official materials of the Ministry of Economic Development and Trade of Ukraine, Ukrainian Agency of Standardization, State Statistics Service of Ukraine, texts of state standards of Ukraine, official publications of international institutions (European Product Safety Control System, International Organization for Standardization, European Committee for Standardization, the European Telecommunications Standards Institute, European Committee for Electrotechnical Standardization, etc.), as well as online publications.

The object of the study is the state regulation of standardization and supply chain strategy of industrial products in Ukraine in the context of the European integration changes. A comprehensive study of the strategic approaches to the improvement of the technical regulation of industrial products in Ukraine based on the real experience of the EU countries will deepen the scientific argument in the choice of standardization and supply chain strategy management methods, as well as significantly contribute to export of Ukrainian products to the EU countries.

3. Results

Supply chains are comprised of events that link the product or service from conception, different phases of production, to final delivery to the consumers. In this regard, global supply chains economics is concerned with the effects on the host economy due to presence of global supply chains as well as the importance of global supply chains for exports, or more specifically, the value added from exports. The fulfillment of the European tasks and requirements for approaching European standards greatly depends on the state's progress in ensuring economic growth, bridging the gap in GDP per capita, reducing the stratification of the population in terms of security and access to profitable sectors [3].

In order to increase the domestic economy competitiveness, it is necessary not only to legislatively harmonize, adopt and implement European technical, technological, phytosanitary, and environmental norms and standards. The adoption and harmonization of the system of technical regulation, standardization, and supply chain strategy should become not only an important provision of the Ukraine-EU Association Agreement, but also new technical standards of life: an energy-saving economy from the state to households; environmental requirements and standards, which should become a new routine; higher technological requirements for the whole range of products that are produced by Ukrainian enterprises, both for the domestic market and for export. These standards should be of an identical high level of quality, and this, in turn, will contribute to consumer insistence on the quality of imported goods; the same requirements should found in the service sector [16].

The reform of the technical regulation system in Ukraine began in 2001. When the country entered the World Trade Organization (WTO) in 2008, the Ukrainian government accepted a number of obligations related to further reform of the technical regulation system, which implied and required the establishment of preferential trade relations based on the totality of relevant norms and rules; the formation of a new philosophy to assess quality, compliance with technical standards, supply chain strategy procedures, changes in the standardization system, as well as the level of its effectiveness and international recognition [17]. The main elements of a technical regulation system include standardization; conformity assessment (supply chain strategy of goods, works, services), accreditation of conformity assessment bodies, testing and calibration laboratories, as well as metrology [18].

In Ukraine, the government is responsible for standardization: the standards are mandatory and defined. In contrast, in the EU, all interested parties (mainly manufacturers and entrepreneurs) participate in the development of standards, which are generally voluntary, and the state determines fundamental safety parameters that should be followed.

The institutional basis of the national standardization mechanism in Ukraine is formed by the following fundamental structural, legal and administrative (government) factors:

- The Law of Ukraine On Standardization (dated 05.06.2014 No. 1315-VII, which took effect on 01/03/2015);
- The Government of Ukraine represented by the Ministry of Economic Development and Trade of Ukraine;
- Ukrainian Agency for Standardization (the state enterprise "UkrNDNTS").

In Ukraine, all activities related to standardization are carried out in accordance with the provisions prescribed by the aforementioned Law. Although this is a structural document, it outlines only the main aspects of both expertise and procedures. The law provides the legal and organizational basis for standardization in Ukraine, indicates the procedures for resolving the key issues of the state policy in the field of standardization, envisages that the activities of the responsible executives determine the objects of standardization and the property aspects, regulates the interaction of stakeholders and their relations regarding the activities in the field of standardization and implementation of the results of these activities.

It is noteworthy that the Law does not take into account sanitary activities related to the safety of food, veterinary and phytosanitary activities, construction norms, medicines, standards of medical care, accounting standards, the assessment of property, education and other social standards foreseen by the legislation of Ukraine. It is also noteworthy that the legislation of Ukraine in the field of standardization consists of the mentioned Law, relevant international treaties with Ukraine as a party and other normative and legal acts regulating the relations in standardization.

Ukraine is an active member of international and European organizations involved in the formation and implementation of a technical regulation system; it also takes action to fulfill the EU requirements to obtain full membership in European standardization organizations. In this regard, in accordance with the Resolution of the Cabinet of Ministers of Ukraine of August 19, 2015 No. 844-p, the country created a Strategy of development of technical regulation system for the period until 2020.

Accordingly, the political impact of the Ukraine-EU

Agreement on the implementation of European standards and the development of the national standardization system is significant. The Strategy mentions that the importance of further reforming the technical regulation system is largely due to the following interconnected factors:

- elimination of technical barriers to trade between Ukraine and the European Union;
- WTO commitments taken by Ukraine;
- the need to modernize the economy by increasing the number of investments and the level of compatibility of domestic products in the world market.

Ukraine introduces and uses predominantly international (ISO) and European (EN) standards as national. The standards are identical.

Despite the fact that international standards and state standards of Ukraine (DSTU) are different, international standards have significant advantages both for consumers and the economic development of the country. New standards allow producing a wider range of products that will have more predictable quality indicators [7]. Ukrainian manufacturers can participate in national and international tenders on a par with foreign manufacturers. Moreover, they reduce energy consumption and improve the environmental situation in the country.

However, most international and European standards are applied to assess product quality. There are several product standards that are generally one level below the directives [18]. Thus, they are a presumption of the conformity with EU regulations and directives. Therefore, in order to fully adopt international and European standards as national, Ukraine should first accelerate the process of harmonization of national legislation.

The relevance of the convergence of the Ukrainian economic development model with European economic structures has increased due to the EU enlargement to 27 countries and an increase in the number of the European monetary system members, mixed effects on the economies of 10 countries that became EU members in 2004, events in Ukraine after 2014 [14].

Arguably, Ukraine has made significant progress in cooperation with the EU in the political, trade, economic, legal and humanitarian spheres; in particular, there has been some success in terms of trade facilitation between Ukraine and the EU. Thus, Ukraine has harmonized about 64% of technical standards with the European Union, joined the Agreement on Conformity Assessment and Acceptance of Industrial Goods (ACAA), which will ensure the mandatory recognition of mutual conformity with the European standards [16].

Basic organizational and institutional foundations, principles and methodological approaches of the European technical regulation system were laid down in the 1980s as part of the establishment of a “single economic space” to ensure free movement of goods, services, labor, and information in the EU. There are two basic approaches to the implementation of these goals: the “New Approach” to standardization and technical harmonization (adopted by the Council of Europe on 7 May, 1985) and the “Global Approach” to conformity assessment (adopted by the Council of Europe on 21 December, 1989), which complement each other. They limit the administrative intervention of the state in important production issues, and, at the same time, provide the manufacturer with quite a wide range of ways to fulfill their obligations to society [6].

According to the “New Approach”, the EU directives set general safety requirements for products that must be followed and establish specific safety characteristics that are applied voluntarily (these are the results to be achieved or the results that eliminate risks, but do not specify and determine the technical tools and methods for their solution); manufacturers independently choose the way to ensure conformity with the established requirements; products manufactured in accordance with the European standards, harmonized with the EU directives, are recognized as meeting the requirements of the EU Law (the presumption of conformity principle); products can enter the markets of the EU member states only after being certified; market surveillance is carried out by special authorities that control product safety.

The main technical regulation principle in the EU countries is an integrated approach to the mutual recognition of supply chain strategy results. Considering that man-made hazard disaster risk management requires responsibility and competence, all stakeholders with an appropriate level of knowledge and practice, regardless of their positions in governmental or non-governmental organizations, join their efforts in the field of standardization, namely, within the framework of professional associations, international and national standardization organizations, as well as keep internal libraries and research materials, which substantiate subsequent implementation of standards [19].

Some standards are published while others are implemented as a market product. The members of specialized technical committees have access to all new draft international and national standards.

Unlike Acts or Regulations, which are directly applicable, Directives are introduced through the laws of a particular country. They oblige the EU countries to take the necessary measures within a certain period of time to achieve the requirements established by the directive [2].

Although derictives should describe the provisions of treaties, they also have supremacy over the national law. European Union directives establish the essential requirements that products supplied to the domestic market of the EU countries must certainly comply with [9].

The way the requirements are defined in each directive makes them applicable to a wide range of equipment that falls within its scope. The essential requirements can identify possible risks that are associated with the use of products. Manufacturers have to prove that the risks related to their products are minimized or completely eliminated [7]. Thus, the essential requirements determine the expected result without specifying the ways to achieve it, which gives the manufacturer some flexibility in making a technical decision.

Standardization contributes to the economic benefits of unification and economies of scale at the international, regional, including at the European or national levels [9]. The development of standards and technical regulation ensure the opening of new markets for competitive Ukrainian products with an additional value chain. In addition, the markets often put forward new requirements and contribute to the emergence of new standards based on technological leadership, market transactions, and market dominants [15]. In the next decade, the EU aims to develop a single system of standards for all EU member states. This is an ambitious plan in the context of rapid technological changes in production and toughening greening requirements and IT challenges.

Rational and coordinated trade between the two countries will be beneficial to both parties. Based on this principle, free trade should bring advantages to all market participants. Today, this does not work anymore; social and political influence comes to the forefront, and politicians hamper trade relations. Ukraine has to take this fact into account now.

It is becoming more and more obvious that in the future it will be impossible to solve global problems based on an industrial mode of production focused on a raw material resource and destruction of the environment. Technological forecasting, based on a perfect scientific basis and effective tools which allow predicting technological changes in the next 20-30 years [6], is now gaining special importance. In particular, this concerns the main sectors of techno-globalism: the information sector, IT-technologies, artificial intelligence, etc.

4. Discussion

The adaptation of technical regulations and the introduction of harmonized European standards in Ukraine will ensure the European level of the requirements for the quality and safety of industrial products, increase the competitiveness of Ukrainian products, open new export markets, and contribute to the innovative development of the industry.

In the context of the Sanitary and phytosanitary (SPS) measures, Ukraine has already adopted a number of legislative acts that lay a solid foundation for reforming the food safety system based on the introduction of basic European principles and practices [20]. In particular, the Law of Ukraine “On basic principles and requirements safety and quality of food products” provides for the introduction of a European model of food safety and quality system based on the “field to table” principle and traceability requirements (according to the Regulation (EU) 178/2002). It also ensures a gradual transition of market operators to the mandatory use of HACCP principles (Hazard Analysis and Critical Control Point). In addition, the laws on the identification and registration of farm livestock, handling products of animal origin that are not intended for human consumption, harmonizing the system for assessing the conformity of planting material and seeds with the EU requirements have also been passed.

In most EU countries, there is a line between the functions of standardization, supply chain strategy, metrology, market surveillance, accreditation and consumer protection [3]. There are separate standardization organizations (associations, independent supply chain strategy bodies, state metrology institutions, developed private calibration service companies, state or private accreditation service companies). Market surveillance is carried out by market surveillance authorities by sector or industrial product safety surveillance authorities, and food safety surveillance authorities [21]. In some countries, there are state consumer protection agencies, while in others, the independent public organizations are involved in this issue [13].

The existing systems for assessing the conformity of products and their quality consist of two sub-systems: mandatory and voluntary. The mandatory sub-system is applicable to all goods supplied to the single market by the member countries or third countries. It aims to ensure circulation of products that are safe for humans and the environment [19]. The CE marking is the symbol of the conformity of the product with the standards specified in the EU directives. The CE mark on imported or domestic products indicates that the manufacturer has assessed the product and can sell it in the EU market. The mark is

affixed directly to the product, packaging or accompanying documentation [22]. In Ukraine, these functions have been separated in accordance with the Law "On State Market Supervision and Control of Non-Food Products", which defines the competence of standardization, conformity assessment and consumer protection authorities.

Thus, international experience in ensuring product quality indicates the need for legislative consolidation of relevant requirements for its safety. Legislative consolidation takes place in special legislation; in technical regulation, it is based on the "New Approach" and "Global Approach" Directives, and is supplemented by the so-called triad of Directives on liability for defective products, general product safety and a modular approach to conformity assessment and CE marking, which together can be considered a generalized European model of a technical regulation system [13]. The development of the internal European Union market occurs when the international economic integration takes place; it is characterized by the introduction of new legislative initiatives to regulate economic and political issues and tough economic regulators to achieve stability of the European single market [23].

Although the partnership between civil society organizations, educational and scientific institutions, business representatives, state and local authorities, and the national standardization body can make a significant contribution to the implementation of European standards, it is not being fully implemented.

In the EU and OECD countries [18], [24], the development of standards is completely voluntary and based on the consensus among stakeholders in the manufacturing sector, consumer groups, academia and government. This guarantees that the standards are adopted taking into account the national technological environment while ensuring that the products and processes meet the needs of all stakeholders [4].

Despite the fact that in the technical regulations of the EU and OECD countries there is a tendency to determine the final result (for example, to ensure that the product is safe under certain terms of use), there is no detailed information on how this is achieved; in Ukraine, products should comply with the list of detailed technical requirements (for example, the use of certain materials and their quantities) [16].

Ukraine should start to adopt voluntary European standards, especially those related to the New Approach, as it aims for greater trade integration with the EU and other international partners. The directives based on the New Approach can become a flexible alternative to the existing technical regulations in Ukraine. Although Ukraine offers comparative advantages, such as tax incentives, productive capacity, natural resources, and strategic geographic location [20], the current burdensome regulatory environment creates obstacles. If a country seeks to create a more favorable business environment, that is, to accelerate business development and attract foreign direct investment, promoting the spread of voluntary standards and eliminating obsolete technical regulations will help to increase technological innovation and production efficiency, as well as facilitate trade.

5. Conclusions

For many firms there is a big need to update supply-chain strategies, bring greater flexibility to their operations, and build new structural agility into their organisations. Pioneering companies in the UK and internationally are already adopting those approaches to deliver real improvements—including revenue increases of at least 3 percent and capex reductions of around 5 percent. Technical regulation is one of the key elements to eliminate the obstacles to the free movement of goods and services; it is a tool to balance the asymmetries between the products of Ukrainian and European manufacturers in terms of quality, safety, compliance with phytosanitary standards, etc.

In Ukraine, a new system of technical regulation, standardization and supply chain strategy is being formed. The reform of the legislation, principles and infrastructure of this system is aimed at improving the safety, quality and competitiveness of Ukrainian products, protecting the life and health of citizens, simplifying the conditions for doing business, eliminating imbalances, introducing innovations by applying international standards, removing technical barriers.

Undoubtedly, harmonization of international and European standards will allow domestic manufacturers to improve the quality of their goods to meet international requirements, to ensure the modernization of their production, and to facilitate access to the international market. However, it should be remembered that careless harmonization will lead to the fact that any change in the use of European Union law will become a technical barrier and completely change the content of the document (EU document).

The research results suggest that the institutions of the national quality infrastructure recognize that a well-implemented reform program and an effective national quality system consistent with internationally accepted and required practices will have a significant impact on the Ukrainian economy, especially in terms of expanding

trade and access to markets, as well as overall competitiveness. The assessment also emphasizes the impractical use of prescribed standards and excessive mandatory supply chain strategy, especially with regard to increasing production costs for manufacturers.

The analysis of the transformational changes in the supply chain system of Ukraine, as well as the revealed system advantages and disadvantages, allow us to conclude that it is necessary to distinguish between the ways to improve standardization and supply chain strategy based on their scope. The features of standardization and supply chain strategy systems in Ukraine can only be considered along with environmental factors (political, legislative, economic). The transformation of technical regulation should be based on specific measures to reform the legislation of Ukraine.

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