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Expediency of symptomatic diagnostics application of enterprise export-import activity in the disruption conditions of world economy sustainable development

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Abstract. The purpose of the article is to solve an important scientific problem – further development of the basics of management decisions on the implementation of export-import activities based on the results of enterprise symptomatic diagnostics in disruption conditions of sustainable development of the world economy. The essence of enterprise symptomatic diagnostics in the context of management activity is specified by the results of the critical analysis of the scientific publications. The study of the features of the symptomatic diagnostics process of enterprise export-import activity might become the basis for the development of a comprehensive approach to its implementation, which reveals the interaction of the theoretical, scientific and methodological basis and the targeted direction of managers' actions in the diagnostics process. Generalization of symptomatic complex of export-import activity of enterprises-manufacturers of BOPP films – Terichem Tervakoski, a.s. and Xpro India Ltd, helped to identify issues that are reducing its performance. A set of measures was explored in order to avoid the negative symptoms of export-import activity of Terichem Tervakoski and Xpro India Ltd. The authors revealed some dependency respecting that the more negative symptoms of export-import activity realization lead to decline the efficiency of its implementation. The results of the study might clarify the impact of symptoms on the results of the enterprise export-import performance. Symptomatic diagnostics of enterprise export-import activity is considered as the basis of a sequence of management measures in order to avoid negative symptoms of export-import activity.

1. Introduction

Sustainable development of the world economy was firstly disrupted in 2015-2016, caused by a decline in export-import activity in the XXI century, which amounted to 8.70% in 2015 and 2.24% in 2016 [1]. A general decrease in production potential, a level reduction of labor supply, deteriorating business conditions and management efficiency decrease could be considered as the reasons for the mentioned decline. Successful management of export-import activities of modern enterprises is possible under the circumstances of timely problems' diagnostics and development of preventive measures to influence the effectiveness of its implementation. In addition, it is extremely important to



use adequate methods of diagnosing export-import activities that provide not only the identification and analysis of problem situations, but also their effect preceding cause.

In order to eliminate them, it is reasonable to use the predictive management models and design customized project solutions for enterprises. Therefore, symptomatic diagnostics of enterprise export-import activity could be considered as an effective management tool, the application of which will provide the formation of the required basis for effective management decision-making taking into account certain circumstances.

2. Literature review

The problem of export-import activities by enterprises is constantly explored by researchers. Zosimova in her studies has revealed that in a market environment under the influence of globalization factors, it is important to have objective and accurate data regarding the state of foreign economic activity [2].

The importance of analytical support in the formulation of export-import activity development strategies was emphasized in the paper of S. Cooke and Malyarets [3; 4]. Kononenko has declared that in today's economy export and import activity takes complex forms, and its timely diagnostics has a positive impact on the enterprise economic efficiency [5].

Such diagnostics significantly influences the process of managerial decision-making within the study of changes in enterprise export-import activity [6]. An analysis of modern publications has shown that the etiologial and symptomatic diagnostics could be the most effective tool for conducting analysis and evaluation of export-import activities. The feasibility of using symptomatic diagnosis is determined by the complex nature of the results study through the action of multiple symptoms to facilitate the enterprise decision-making process [7].

It was proved that the dynamics and structural shifts of indicators of export and import performance have to be analyzed in the diagnostics process of export-import activity [8]. In order to increase the efficiency of export-import activities, the dynamics of financial indicators that characterize its profitability should not be underestimated [9]. Assessing the impact of internal and external factors on export-import activities, and in particular the competitiveness of the enterprise is equally important to perform enterprise symptomatic diagnostics [10-13].

Identification the level of correlation between the productive and factor indicators of export-import activity development is necessary for the enterprise managers to substantiate the choice of management decisions related to the acquisition of competitive advantages, which will provide increase of export-import volumes and profit, strengthening market position and financial status [14]. The achievement of the above objectives could be also facilitated by the implementation of export-import potential modeling [15].

The conducted analysis of the existing publications, devoted to the issues of problem diagnostics of enterprise export-import activity, indicates the lack of issues examined the symptoms identification of future problems and the determination of their cause and effect relations with the dynamics of indicators and activity goals. However, the challenges that businesses face in today's market environment require managers to respond as quickly as possible to changes caused by political, legal, socio-economic, environmental and other factors. Therefore, further development of applied principles of symptomatic diagnostics of export-import activity of enterprises should be deeply studied.

Analysis of scientific publications [7; 14; 16] allows to clarify the essence of enterprise symptomatic diagnostics and to consider it as a method of indicators` analysis and evaluation of a certain type of the enterprise activity, aimed at identifying its key issues. The mentioned issues are based on determination their cause and effect relationships with performance dynamics and goals, taken into account the measures of possible future negative symptoms removing.

3. Materials and Methods

In this article, the statistical sample consists of enterprise, which belong to the large corporations in the world in the field of BOPP films by the leading, support high business efficiency (Terichem

Tervakoski, a.s. and Xpro India Ltd).A comprehensive approach to the implementation of symptomatic diagnostics of enterprise export-import activity reflects the interaction of theoretical and methodological basis and targeted direction of managers` actions, which might provide effective management of export-import activity (Fig. 1).

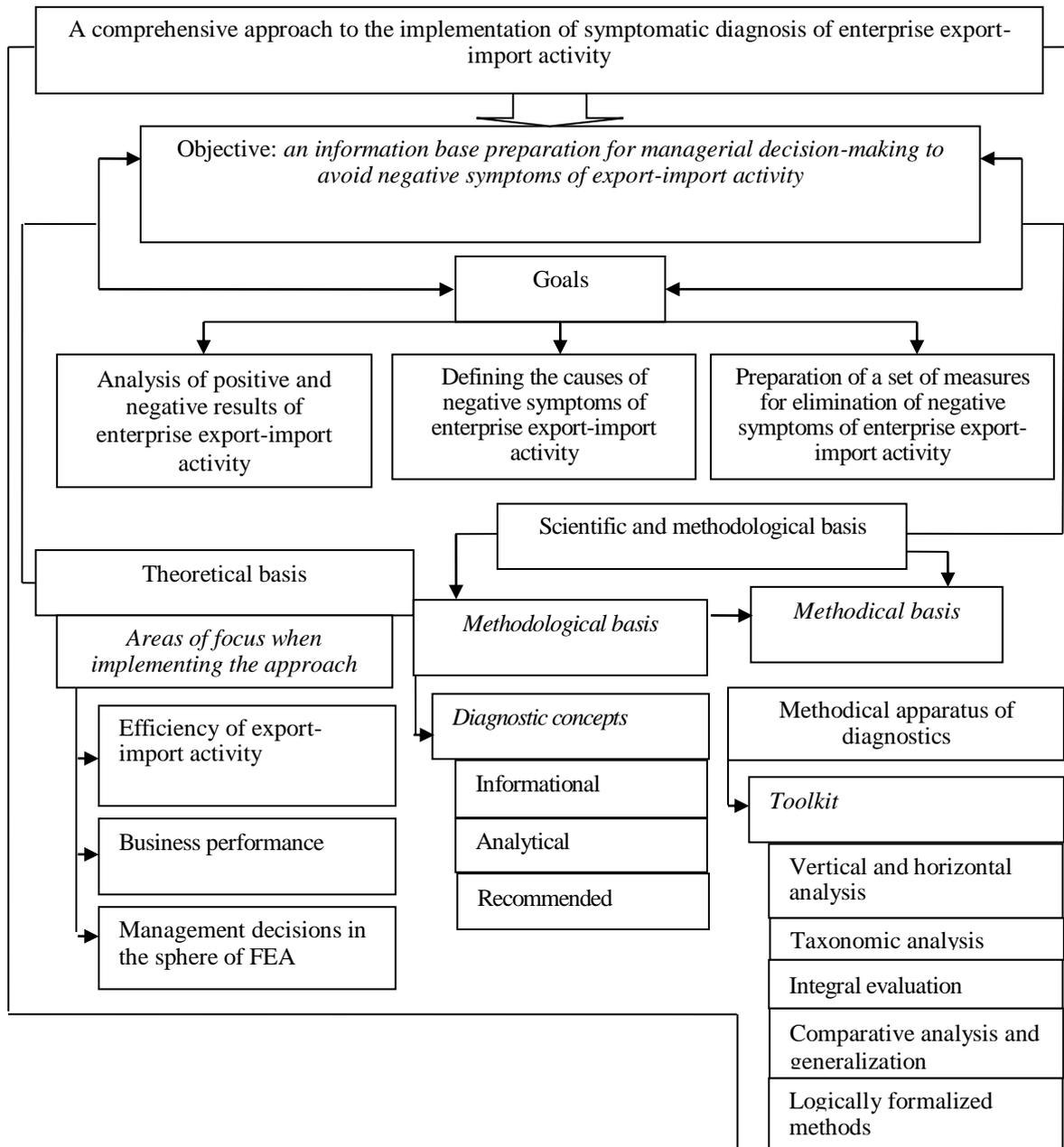


Figure 1. A comprehensive approach to the implementation of symptomatic diagnosis of enterprise export-import activity (author's design).

The methodological basis of the study is a set of general scientific and special methods used to achieve the purpose of the study: critical analysis, synthesis, comparison – to reveal the essence of the concept of “symptomatic diagnostics of the enterprise”; synthesis and generalization – at the development of the complex approach to realization the symptomatic diagnostics of export-import

activity of the enterprise; the method of taxonomy – for studying the dynamics of export-import activity of manufacturers of BOPP films; analytical and generalization – for obtaining final conclusions.

The goals of symptomatic diagnosis of enterprise export-import activity are the following: analysis of positive and negative results of enterprises' export-import activity, causes' identification of negative phenomena, as well as development of directions of enterprises' export-import activity improvement.

The authors recommend to carry out symptomatic diagnostics of export-import activity in three stages. The key element of the first stage is the required information and data gathering regarding the enterprise export-import activity aimed at its further analysis. The sources of information collection are data from the World Bank, official financial statements of enterprises and primary documents on export-import activities.

The second stage envisages the primary identification of positive and negative symptoms of export-import activities based on usage of evaluation criteria and comparison methods. The next step is to analyze the symptom, which should reflect the time of the symptom onset (when?), the place of onset (where?), which reasons led to the onset and how to dispose it and which measures should be developed. Analysis of the symptom and the reasons caused its appearance is the last element of the second stage that should be carried out by estimating an integrated indicator of export-import activity.

At the third stage, management decisions are made based on the results of fundamental diagnostics. The main methods of this stage are the decision tree, the goal tree and the expert method as well as designing the development plan of enterprise export-import activity consisting of the tasks and the required actions, the responsible executors, terms of performance and the expected results.

4. Results and Discussion

The practice of operating businesses in the international market is mostly related to the possibility of negative symptoms, especially in their own business activities, due to the negative influence of internal and external factors.

Symptomatic diagnostics enables not only to comprehensively investigate, but also to predict the future state of conducting enterprise export-import activity of the and generates complex information for senior management to make decisions due to eliminate destructive changes or stimulate structural changes in future periods.

4.1. The analysis of export-import activity of BOPP films by the leading companies

The analysis of the status and symptoms of manufacturing enterprises export-import activity of BOPP films is up-to-date and relevant. This fact is confirmed by the existing and projected growth in demand for such products, the expansion of innovations in the market of BOPP films [17], and at the same time the rapid development of competitors, currency fluctuations. The global problem of doing business in the BOPP film market is the problem of identifying the product on the market, which is associated with the high level of counterfeiting of polypropylene film.

The current market for BOPP films is geographically divided into two regions: European and Arab-Asian. Each region is represented by powerful manufacturers of BOPP films. Terichem Tervakoski, a.s., is one of the largest manufacturers in the European market for BOPP films. (Slovakia), and in the Asian market - Xpro India Ltd (India).

To obtain information databases, a targeted sampling method based on summary statistics was used. The study period covers the period from 2015 to 2017. The explanation of the choice of such boundaries of the study period is the restructuring of activities between the subsidiaries Terichem Tervakoski, as, as well as due to the organizational and legal changes within Terichem Tervakoski Oy (Finland) and Terichem Tervakoski LLC (Ukraine).

Since export-import activity is an important part of the economic activity of the analyzed enterprises, it is relevant to analyze its dynamics (Fig. 2).

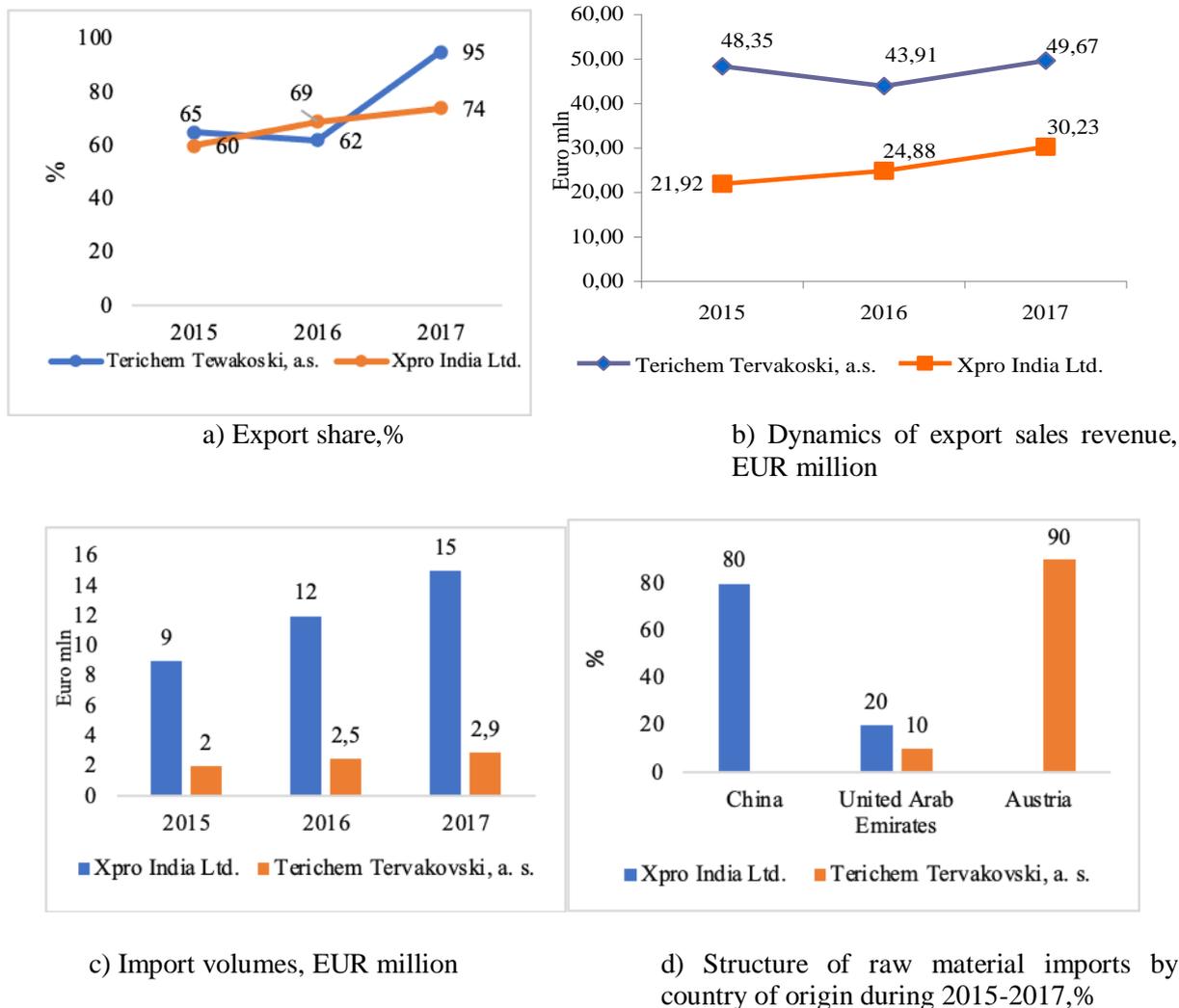


Figure 2. Dynamics of key indicators of export-import activity Terichem Tervakoski, a.s. and Xpro India Ltd.

Source: formed on the basis of [18; 19]

Terichem Tervakoski, a.s. mainly distributes their products to Finland, India, China, Brazil, Turkey. At that time, Xpro India Ltd exports its products to China, Japan, Germany, Turkey.

4.2. The main aspects of Symptomatic complex and diagnostics

Despite the decline in net sales revenue of Terichem Tervakoski, a.s. it managed to increase its export earnings, mainly due to the sale of the condenser film, which is the most expensive among the BOPP films. In the enterprise export structure, the capacitor film during 2015-2016 occupied a leading position and in 2017 became the main sales product, which is caused by the policy of senior management aimed at facilitating business in one direction. In the export structure of Xpro India Ltd during 2015-2017, the leading position is occupied by a capacitor film. At that time, the proportion of packaging and tobacco films decreased during the analyzed period.

The results of symptomatic diagnosis of the studied companies are presented in table 1.

Growth of import costs for Terichem Tervakoski, a.s. and Xpro India Ltd should be considered as a negative symptom in the period 2016-2017, and without proper decision-making will lead to a decrease in export sales, and therefore requires a high level of expeditious measures.

Table 1. Symptomatic complex of enterprises` export-import activity (authors` design).

Symptoms of export-import activity	When?	Where?	What led to it?	What is the level of neutralization measures efficiency?
Increase in export expenditures	2016–2017	Terichem Tervakoski, a.s. ; Xpro India Ltd	growing logistics costs; rising costs of promoting goods in foreign markets.	Terichem Tervakoski, a.s. - average; Xpro India Ltd. - High
Increase in import costs	2016–2017	Terichem Tervakoski, a.s. ; Xpro India Ltd	increase in the cost of raw materials; currency fluctuations.	High
Decrease in market share	2016-2017	Xpro India Ltd	aggravation of competition.	High
Growth in Import Conditions	2017	Terichem Tervakoski, a.s. ; Xpro India Ltd	increase in the cost of raw materials; dependence of production on the quality of raw materials; lack of alternative sources of raw material supply.	Average
Decreasing Export Conditions	2017	Terichem Tervakoski, a.s.	increasing logistics costs; rising costs of promoting goods in foreign markets.	Average
Decrease in Gross Profit on Enterprise Export	2016	Terichem Tervakoski, a.s.	reduction of sales volumes; concentration in one market; increase in the cost of sales.	Low
Decrease in the overall export efficiency of the company	2016	Terichem Tervakoski, a.s.	decrease in profit from export of the enterprise.	Low
Decreasing Export Conditions	2016	Xpro India Ltd.	increase in transport costs; decrease in market share.	Low
Decrease of profitability of enterprise export	2016	Terichem Tervakoski, a.s.	decrease in profit from export of the enterprise.	Low
Decrease of the export income of the enterprise	2016	Terichem Tervakoski, a.s.	reduction of sales volumes.	Low

A symptom of a decrease in market share was observed by Xpro India Ltd during 2016-2017. The appearance of this symptom for the enterprise is a risk to its presence in sales of the foreign market and requires a high level of promptness of measures for disposal.

An increase in export costs was a symptom of Terichem Tervakoski in 2017, and of Xpro India Ltd during 2016–2017. Therefore, the level of expeditious measures should be high for the Indian

company and medium for the Slovak manufacturer. A symptom of an increase in terms of imports was detected o at the average level of expediting measures for Terichem Tervakoski, a.s. and Xpro India Ltd.

Such symptoms as declining gross export earnings, overall export efficiency and export profitability are typical for Terichem Tervakoski, a.s. but their implications did not occur in 2016, and in 2017. That is this company has a low level of expeditious measures.

4.3. Results Taxonomic analysis in Symptomatic diagnostics

The integrated assessment of export-import activity of world enterprises-producers of BOPP films by the method of taxonomic analysis allow to identify the following changes in the index of efficiency of such activity (Fig. 3).

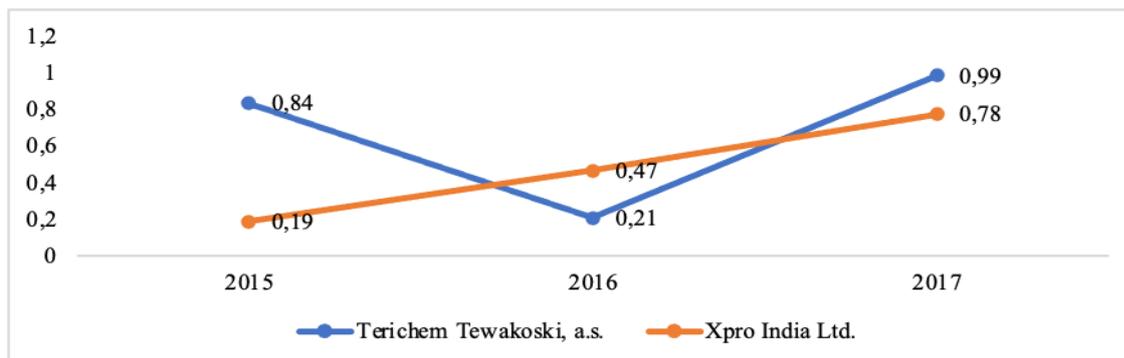


Figure 3. Integral indicator of export-import activity of Terichem Tervakoski, a.s. and Xpro India Ltd (authors` design).

An integrated assessment of the export-import activity of the world enterprises-producers of BOPP films by taxonomic analysis has revealed that Xpro India Ltd in the period 2016-2017 has an average level of efficiency of export-import activity, associated with the symptoms of increasing export and import costs. and a decrease in the market share of the enterprise, which generally requires a medium priority of management decision making.

At the same time, the value of the integral indicator for Terichem Tervakoski, a.s. 2016 experienced a low efficiency level of export-import activity and was caused by the following symptoms: increased costs of exports and imports; reduction of gross profit from exports; decrease in overall export efficiency and profitability of export of the enterprise in particular. The priority of making the managerial decisions for this period is the highest.

4.4. Measures to eliminate negative symptoms of export-import activity

In order to eliminate the negative symptoms of enterprises` export-import activity, it is necessary to make effective decisions that will lead to improvement of their position in the international markets.

Therefore, it is relevant to develop measures that will meet the set of tactical goals, correspondent them to the operational goals regarding removing the negative symptoms of export-import activities of the analyzed enterprises (Table 2).

The authors` approach on order to eliminate negative symptoms of export-import activities at Terichem Tervakoski, a.s., presupposes to implement a set of measures aimed at cost optimization on enterprise export and import, as well as to increase the enterprise export income. For Xpro India Ltd, the main directions are to increase the company's market share and optimize the cost of export-import activities.

Further feasibility of implementation and improvement of activity efficiency is justified in the project decisions, which could be reliable instrument in order to optimize export-import costs, increase profits and market share of the analyzed enterprises, and the results of their implementation will avoid negative symptoms of export-import activities.

Table 2. Measures to eliminate negative symptoms of export-import activity of world enterprises-producers of BOPP films [6].

Terichem Tervakoski, a.s.	Xpro India Ltd
<i>Reduction of overhead expenditures by the importing company</i>	<i>Reducing the cost of raw material imports</i>
Review of contracts with suppliers in the raw material pricing sector. Independent production of materials. Introduction of resource-saving technologies.	Reduction of BOPP film waste in the production process. Procurement of materials together with other buyers from one supplier.
<i>Increase in production of the enterprise</i>	<i>Winning consumer loyalty</i>
Purchase of additional pieces of equipment. Expanding the range of BOPP films	Sales promotion due to lower prices. Investment in improving product quality. Formation of a strong brand.
<i>Reducing the cost of export</i>	
Improving the organization of production and labor. Development of new workshops, production units and productions. Increasing the technical level of production.	Implementation of the “just in time” system. Changing the structure of production. Increasing the technical level of production.
<i>Search for new markets</i>	
Identification of optimal markets for entry. Entry into the North American market of BOPP films. Extension of cooperation with General Electric. Expansion of representative offices and points of sale.	
<i>Reduction of overhead expenditures by the exporting company</i>	
Review the terms of supply in accordance with Incoterms 2010.	
<i>Search for alternative sources of raw materials supply</i>	
Purchase of domestic raw materials instead of imported raw materials.	

To achieve the mentioned goals, Terichem Tervakoski, a.s. should apply above mentioned solutions, aimed at expanding the BOPP film range and increasing its export volume by manufacturing separator films on lithium-ion batteries. To reduce the cost of importing raw materials from Xpro India Ltd through the non-waste production of BOPP films, it is proposed to install a waste processing line in polypropylene granular.

5 Conclusions

As a result of the research, the mentioned problem can be solved by further development of managerial decisions regarding the implementation of export-import activities based on the results of enterprise symptomatic diagnostics.

Symptomatic diagnostics of the enterprise, in our opinion, is intended to become an effective tool for preparing the information base for making management decisions to eliminate the negative symptoms of export-import activity. Its implementation on the basis of a comprehensive approach allows to conduct more effective analysis of the positive and negative symptoms of export-import activities, identify the causes of negative symptoms and design measures to eliminate the negative symptoms of export-import activities of the enterprise. This is achieved through the interaction of theoretical basis, scientific and methodological substantiation and goal orientation of managers` actions in the diagnostics process.

Further exploration in the context of symptomatic diagnostics application of enterprise export-import activity should be directed to studying the possibilities of specified software usage in the process of diagnosing problems, in order to accelerate final results obtaining and information base preparation for making management decisions.

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