

KAUNAS UNIVERSITY OF TECHNOLOGY

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**THE IMPACT OF GLOBALISATION ON A COUNTRY'S  
MANUFACTURING INDUSTRY**

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**GLOBALIZACIJOS ĮTAKA ŠALIES APDIRBAMAJAI GAMYBAI**

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## INTRODUCTION

*Relevance of the study.* Globalisation is a complex phenomenon of modern life and a unique process that does not have any alternatives. Over the last decades, the process of globalisation has covered nearly all areas of life and turned into a high-speed engine of global development. It can be stated that modern life cannot be imagined without different manifestations of globalisation. Due to the increasing pace of spread, globalisation and its impact on various areas of life have become a common object of scientific discussions. Nevertheless, evaluations of the process of globalisation are frequently performed at the theoretical level and insufficiently based on empirical data. Such practice raises the necessity to evaluate the process of globalisation, relying not only on purely subjective attitudes, but considering the results of empirical research supported with particular scientific arguments. Perception of the trends of the process of globalisation supported with empirical facts and reasoned conclusions is necessary in order to duly assess the impact of globalisation and make relevant strategic decisions. Furthermore, employment of quantitative methods in parallel with empirical proof would contribute to a more objective assessment of the nature, scopes and effects of globalisation in particular areas of economic and social life.

The process of globalisation can be observed in economic, financial, political, social, cultural, religious, environmental and other areas of a country's life. When assessing different manifestations of globalisation, specific processes and phenomena that emerge in particular areas are considered. Peculiarities of a separate area determine the directions, scopes, trends, pace, intensity and impact of globalisation. In many cases, the process of globalisation is treated as economic globalisation, which is perceived as a dynamic multidimensional process of economic integration or an increasing integration of product and service markets, financial systems, corporations, industries, technologies and competition.

Although the phenomena of economic globalisation are constantly researched, scientists have still not reached a consensus concerning the pace of globalisation and the boundaries of its expansion. In order to provide discussions with rationality, scientists employ particular statistical indicators and quantitative methods for estimating the scopes of globalisation. A quantitative analysis of the processes of globalisation discloses the key features and manifestation forms of a globalisation process, and provides the basis for a logical analysis and qualitative assessment of globalisation trends and effects. A statistical analysis of particular components of economic globalisation allows the identification of the links between the process of globalisation and the development of the researched economic sectors. Hence, it enables the assessment of the effects of globalisation.

Unequal involvement of different countries in the process of economic globalisation determines the unequal impact of globalisation on these countries. It is also the case that even the countries that are treated as active participants of globalisation are facing new globalisation-related challenges and risks. The balance between globalisation “costs” and “gains” has become one of the most topical issues in discussions on the impact of globalisation at different levels – individual, corporate, sectoral or overall economic.

The development of economic globalisation is commonly linked to the activities of multinational companies (MNCs) that are the main participants of the process of economic globalisation. Activity of MNCs is very prominent in the manufacturing industry, hence, manufacturing is extremely significant while assessing the manifestations, scopes and trends of the process of economic globalisation. In particular, MNCs that operate in manufacturing transfer their production to foreign countries that are closer to raw materials, labour resources or consumers in order to reduce production costs or find new sales markets. In this way, manufacturing MNCs “push” the process of globalisation and have a significant impact on the development of manufacturing in host countries. Considering the expansion of international production and trade, manufacturing MNCs can be treated as the key channel for the diffusion of globalisation. The processes of manufacture globalisation, in turn, directly and indirectly influence the trends of the overall economic development and globality of a country. For this reason, it is extremely important to properly assess the integration of manufacture in global economics and evaluate the impact of globalisation on the development of the manufacturing industry.

In this context, an important question could be raised as to whether there exist any tools that could allow the research and measurement of the trends of manufacture globalisation and assess the impact of globalisation on the development of the manufacturing industry. A comprehensive assessment of the scopes, impact and outcomes of the process of globalisation cannot be limited to the analysis of traditional statistical instruments, but calls for the research of additional indicators, i.e. new concepts and methods have to be considered that reflect the global processes with participation of the subjects of manufacture. Empirical proof of this type would allow the assessment of the nature and effects of globalisation in a more objective way. Correlation between the level of manufacture globalisation and indicators of economic development based on quantitative variables would serve as a more ponderable proof in comparison to purely theoretical assessments. In addition, quantitative measurements would enable the evaluation of the scope and pace of globalisation.

***Scientific problem and the level of its investigation.*** The process of globalisation, as well as its separate manifestations, have earned sufficient scientific attention. Multidimensional aspects of globalisation were researched by Brakman (2006), Held, McGrew, Goldblatt, and Perraton (2002), Hoffmann

(2002). The trends of political globalisation were investigated by Guillén (2001), Hirst, Thompson, and Bromley (2009), Steger (2005). Socio-cultural aspects of globalisation were analysed by Hurrell and Woods (1999), Sirgy, Lee, Miller, and Littlefield (2004). Environmental aspects of globalisation were studied by Bhagwati (2007), Najam, Runnalls, and Halle (2007), Sonnenfeld (2012), Wijen, Zoeteman, Pieters, and van Seters (2012). Economic aspects of globalisation were researched at different levels and dimensions. The impact of globalisation on economics was studied by Brakman (2006), Castells (2011), Dicken (2003), Helpman (2006), Hoffmann (2002), Mukherjee (2008), Rugman (2012), Sirgy et al. (2004), Soubbotina and Sheram (2000), Sumner (2004). Dreher (2007) and Kearney (2007) employed the globalisation indices for quantitative estimations of the scope of globalisation at a country's level.

The scientists who researched manifestations of the process of globalisation mainly devoted their studies to particular channels of economic globalisation diffusion. Bems, Johnson and Yi (2011), Broda, Greenfield, and Weinstein (2006), Carneiro, Salter, and Punnett (2015), Feenstra (2015), Helpman (2006), Lévy (2007), Lynch (2010), Xu (2012) investigated the processes and trends of economic globalisation ongoing by the channel of international trade; the aspects of FDI in the global context were analysed by Agosin and Machado (2005), Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004), Casi and Resmini (2012), Epstein (2003), Ford, Rork, and Elmslie (2008), Janicki and Wunnava (2004), Lipsey (2004); Moura and Forte (2010), Özkan-Günay (2011), Ozturk (2007), Vissak and Roolah (2005); the trends of MNCs' global activity were researched by Buckley (2009), Dunning (2012), Jensen (2013), Sofka, Preto, and Faria (2014), Wagner (2013); finally, the global aspects of the international dissemination of technology were studied by Keller (2004), Murtha, Lenway, and Hart (2001), Phene and Almeida (2003), Savvides and Zachariadis (2005), Veugelers and Cassiman (2004), Xu and Chiang (2005). Some scientists researched the links between several channels of globalisation diffusion: Loungani and Razin (2001), Vo (2004) combined the aspects of international trade and FDI; whereas the trends and links between all channels of economic globalisation diffusion were investigated by Bjelić (2013), Ietto-Gillies (2012), Soubbotina and Sheram (2000), Sutcliffe and Glyn (2003).

It should be noted that theoretical aspects of assessment dominate in the studies conducted by foreign authors, who highlighted the features of economic globalisation and evaluated the level of globalisation in particular industries or sectors. For instance, Gersbach (2002) and Kobrin (1991) analysed the concept of a global industry; Mets, Kaarna, and Kelli (2010), Morrison and Roth (1993), Rugman and Verbeke (2004), Sullivan (1994), Wan and Hoskisson (2003) researched the factors that promote or inhibit the processes of globalisation in single companies or industries.

The studies conducted by Lithuanian authors cover the impact of globalisation on economic development of the country (Bernatonyte & Normantiene, 2009; Čiburienė & Zaharieva, 2006; Čiegis, Gavenauskas, Petkevičiūtė, & Štreimikiene, 2008; Daugėlienė, 2007; Diskienė, Galinienė, & Marčinskas, 2008; Gylys, 2008; Grižas, 2006; Macerinskas, Matekonienė, & Pipinyte, 2003; Snieška & Bruneckienė, 2009; Šliburytė & Masteikienė, 2010; Tvaronavičienė & Kalašinskaitė, 2010; Zilinske, 2010), advancement of particular sectors (Bagdanavičius & Jodkonienė, 2008; Čepinskis & Masteika, 2010; Kersiene & Savaneviciene, 2009; Navickas & Malakauskaite, 2009) or companies (Alimienė & Kuvykaitė, 2004; Ginevičius, 2009; Juščius & Lekavičienė, 2007; Kazlauskaite & Buciuiniene, 2008; Žukauskas, 2006). The aspects of quantitative evaluation of globalisation were analysed by Juščius (2004; 2006), Mačerinskas and Pipinytė (2003), Pekarskiene and Susniene (2011), Žičkienė (2008).

Researchers, whose work dealt with manufacturing, analyzed its various aspects: Laskienė and Pekarskienė (2011), Levišauskaitė and Stravinskaitė (2006), and Saboniene (2015) studied its competitiveness; Cusmano, Mancusi, and Morrison (2010), Čepinskis and Jonynas (2008), and Valodkienė, Snieška, and Gaidelys (2011) studied technology and innovation; Gudonytė and Tvaronavičienė (2012) and Onaran (2009) analyzed its importance to a country's (regions') economy and competitiveness. Other authors (Herrigel & Zeitlin, 2010; Juščius, Pukelienė, & Šneiderienė, 2009) studied the internationalization processes of manufacturing companies. Karuppiah and Karthikeyan (2013), Katz, Lawrence, and Spence (2011), Kletzer (2005), Makhija, Kim, and Williamson (1997), Pla-Barber and Puig (2009), Puig and Marques (2011), and Sutcliffe and Glyn (2003) analyzed manufacturing in the context of globalization, but the research was usually limited to one or two channels of globalization. Nevertheless, the links between the process of globalisation and manufacturing have not been comprehensively researched. Scientific literature lacks a unified methodology that would enable the establishment as to what extent manufacturing is involved in the processes on international integration and how global processes affect the development of manufacturing.

***The scientific problem*** is how to measure the level of globalisation in a country's manufacturing industry and how to assess the impact of globalisation on a country's manufacturing.

***The object of the scientific research*** is the level of globalisation in a country's manufacturing industry and its impact on manufacturing.

***The aim of the scientific research*** is to develop the model for an assessment of the impact of globalisation on a country's manufacturing industry that would integrate the determinants of the level of globalisation.



***The objectives of the scientific research:***

1. On the basis of the analysis on the theories of globalisation, to research the areas of globalisation considering its economic aspect.
2. To research and systematise the methodologies of globalisation assessment at a company's, sectoral and country's levels.
3. With reference to the concept of cause (globalisation level) and outcome (impact of globalisation) to research the main channels of economic globalisation diffusion.
4. To develop the model for an assessment of the impact of globalisation on the manufacturing industry that would integrate the formation of a globalisation index for the manufacturing industry and identification of the links between the level of globalisation and the development of manufacturing.
5. To conduct an empirical application of the proposed model by estimating the level of globalisation in Lithuanian manufacturing and assessing the impact of globalisation on this industry.

***The methods of the research include:***

- systematic and comparative analysis of the concepts and conclusions announced in scientific literature, based on the methods of comparison, classification, systematisation and generalisation;
- synthesis of the analysis results and logical generation of conclusions;
- expert evaluation, questionnaire survey;
- correlation analysis and regression analysis;
- mathematical and statistical analysis of the research results conducted by employing the software of statistical data processing, *SPSS* (v21.0) and *Microsoft Excel* (2010).

***The scientific novelty of the research:***

- *The concept of the assessment of the process of globalisation following a cause-outcome attitude has been substantiated.* Traditionally the vast majority of authors highlight the causes and drivers of globalisation, but the indicators that reflect the level and impact of globalisation in quantitative evaluations are presented in the same context without revelation of any aspects of a cause and an outcome. In this dissertation, the channels of economic globalisation diffusion are analysed, leaning on the links between causes and outcomes, and the indicators of globalisation evaluation are grouped by the features of the cause (the level of globalisation) and outcome (the impact of globalisation).
- *A globalisation index for manufacturing was developed,* which enables the quantification of the level of globalisation in manufacturing. Compared to previous scientific attempts to quantify the level of globalisation in an economic sector, the proposed

manufacturing globalisation index stands out in that it is multidimensional (i.e. it evaluates several components reflecting the channels of the spread of globalisation) and is easily applicable in practice. The tool developed for the measurement of the level of globalisation, before its practical application, is modified to take into account the development trends in the manufacturing industry of a specific country. The statistical indicators that make up the globalisation index are available in many countries, so an opportunity presents itself to compare the level of globalisation in manufacturing of different countries. The index can be used to evaluate the level of globalisation, not only in the entire manufacturing industry but also in individual economic activities and groups of economic activities in manufacturing.

- After the analysis and systematisation of the characteristics of globalisation manifestation in manufacturing, *the indicators that reflect the trends of manufacturing development have been selected*. The indicators that reflect the trends of manufacturing development have been analysed considering the aspects of each channel of globalisation diffusion and integrated into a complex set of indicators that are applied for the analysis of the links between the level of globalisation in the manufacturing industry and the development of manufacturing.
- *The model for the assessment of the impact of globalisation on manufacturing has been developed*. The model integrates the determinants of the level of globalisation and enables the assessment of the impact of these determinants on the development of manufacturing. The developed model can be applied for the assessment of the level of globalisation in manufacturing or individual manufacturing sectors in different countries. It also enables the assessment of the impact of globalisation on manufacturing or an individual manufacturing sector considering the trends of their development as well as the links with the global economy and globality variations.
- *The level of globalisation in Lithuanian manufacturing and individual manufacturing sectors has been estimated, and the links between the level of globalisation in Lithuanian manufacturing and the economic indicators of manufacturing development have been established*.

***The structure of the dissertation.*** The research work consists of three parts. Concepts of globalisation, theories and main dimensions of globalisation, as well as problematics of an assessment of globalisation, at a country's, economic sector and corporate level are discussed in the *first part* of dissertation. *The second part* consists of the analysis of the main channels of economic globalisation, selection of the indicators for evaluation of globalisation level of economic sector, identification of the economic indicators that reflect the

possible impact of globalisation on the development of the manufacturing industry, development of the globalisation index for manufacturing, and presentation of the model for an assessment of the impact of globalisation on the manufacturing industry. Analysis of the trends of Lithuanian manufacturing, the methods employed for the empirical research on the impact of globalisation on the Lithuanian manufacturing industry are presented *in the third part* of the research work. The model for evaluation of the globalisation level and assessment of the impact of globalisation was applied to Lithuanian manufacturing.

***Limitations of the research.*** In respect of the analysis on the manifestations and impact of globalisation on the development of the economic sector, the dissertation focuses on the economic aspect of the processes of globalisation, but is dissociated from political interpretations and assessments that inevitably emerge in the evaluations of globalisation at a country' level. The dissertation does not cover the aspects of globalisation in the finance markets, portfolio investment, governmental actions or the impact of electronic business. Manifestations of globalisation in the areas mentioned above can be assessed by analysing the processes of globalisation within a country, but the analysis of these areas at the level of the economic sector (i.e. the research of the level of globalisation in the manufacturing industry) is not available.

Systematic research on the evaluation of globalisation in the economic sector is limited within the subjective selection of determinants as well as employment of different components of evaluation. Practical application of particular factors that determine the level of globalisation in the economic sector is also limited, since the largest part of these factors are hard to measure quantitatively. Hence, while developing the model of evaluation of the impact of globalisation on the manufacturing industry, the author of this dissertation attempted to include those factors which can be quantitatively measured. In addition, the research on the impact of globalisation on the manufacturing industry is limited to within the availability of statistical data. In order to provide the model of evaluation of the impact of globalisation on the manufacturing sector with universality and practical applicability, only the statistical data that was available at the level of the economic sectors in different countries, i.e. the data that is accumulated following the methodologies established by the Organisation of Economic Cooperation and Development (OECD), and International Monetary Fund (IMF), were employed. The methodologies mentioned above are aligned with each other and followed by all statistics services in OECD and IMF Member-States and Candidate-States. Hence, employment of these methodologies in this dissertation has enabled the achievement of an optimal usage of the statistical data and ensure practical applicability of the index of manufacturing globalisation.

***The contents of the dissertation:*** The dissertation consists of 238 pages, 40 figures, 58 tables, 41 appendices (presented in a CD). 260 sources of scientific literature in Lithuanian, English and Russian were used as references.

***The publication of research results:*** Research results have been presented at a number of scientific conferences in Lithuania and abroad (Czech Republic, Estonia, France, Latvia and Turkey) and published in recognized Lithuanian and foreign scientific journals.

## **REVIEW OF THE DISSERTATION CONTENTS**

### **1. THE CONCEPT OF GLOBALISATION AND ITS ESTIMATION AT DIFFERENT LEVELS**

#### **1.1. Globalisation concepts, theories and dimensions**

In this section, a variety of the concepts of globalisation has been reviewed, and different concepts of globalisation developed by particular authors have been introduced. The phenomenon of globalisation is multifaceted, and scientific literature contains a large variety of its concepts. However, by scientific attitudes towards the concept, causes, drivers, influence areas and prospects of globalisation, the following three schools of globalisation researchers can be distinguished: hyperglobalists, sceptics and transformationalists. Globalisation is a process that combines multifaceted phenomena and processes ongoing in different dimensions. The main dimensions of globalisation include economics, finance, politics, social culture, technology and environment. In this dissertation, the assessment of the impact of globalisation is based on the attitude to globalisation as a historically new, but controversial, process of significant transformations.

#### **1.2. Estimation of the scopes of globalisation at a country's level**

In this section, scientific attempts to estimate the scopes of globalisation at a country's level have been analysed. Employment of a wide variety of indicators and the methodologies developed for the calculation of indices determine differences in the scopes of globalization derived by individual scientists. Estimations of globalization indices may differ in the number of the researched countries, the number of indicators, weights of indicators in particular indices, time periods, data sources, etc. Application of different estimation methodologies generates unequal results, which are also to a large extent influenced by political attitudes of the researchers. A.T. Kearney globalisation index and Dreher (KOF) globalisation index are the most widely applied while researching the scopes of globalisation at a country's level. They enable the estimation of globalization scope and development pace, rank countries by the level of globalization, and establish the links between the level of globalization in a country and economic, political and social characteristics of this country.

Although globalization indices at a country's level are estimated by considering the same – economic, political and social aspects, application of different index development methodologies (i.e. different numbers of indicators and indicator blocks) determine the differences in research results.

### **1.3. Evaluation of globalisation at the level of economic sector**

In this section, the factors that promote and inhibit globalisation of the economic sector have been analysed, and scientific attempts to quantitatively estimate the level of globalisation in the economic sector have been reviewed. In this respect, significant scientific attempts include the estimation of the Morrison and Roth index of the scope of transnational relations and Gersbach globalisation index, which covers FDI indicators. However, this index is highly complicated, and its practical application is limited within large quantities of data required for the research.

### **1.4. Evaluation of globalisation at a corporate level**

Multinational companies (MNCs) are the main participants of the process of economic globalisation. Hence, the analysis of the methods and measures of the level of corporate globalisation may enable researchers to develop a methodological background for the evaluation of the level of globalisation in the economic sector. In the absence of a clear separation between the company's globalization and internationalization processes, assessing levels of globalisation at corporate level indicators reflecting the internationalization of the company are commonly used. In this section, internal and external motives that promote companies to enter international markets, the stages of corporate internationalisation, and scientific attempts to evaluate the level of corporate internationalisation have been analysed. Although internationalisation indices at a corporate level differ in the number of variables and the aspects that are employed to reflect corporate activities, all the indicators included in the indices refer to a share of the company's foreign operations.

## 2. DEVELOPMENT OF THE MODEL FOR ASSESSMENT OF THE IMPACT OF GLOBALISATION ON THE MANUFACTURING INDUSTRY

### 2.1. The analysis of the channels of globalisation based on the concept of cause and outcome

In this section, on the basis of the scientific analysis, the main channels of economic globalisation, i.e. international trade, FDI, activity of MNCs, and international dissemination of technologies, have been established. Each channel of globalisation has been analysed following the concept of cause-outcome accepted in this dissertation. In further subsections, the analysis of each channel of globalisation is based on the following aspects:

- 1) manifestations of economic globalisation and their variation trends;
- 2) the indicators that would be applicable to estimate the level of globalisation in the manufacturing industry; selection of the indicators that reflect the causal aspect of globalisation for the development of an index of manufacturing globalisation;
- 3) the impact of a globalisation on manufacturing sectors through a particular channel; identification of the economic indicators that reflect the possible impact of globalisation on the development of the manufacturing industry (outcome aspect of globalisation).

### 2.2. The stages of the development of the model for assessment of the impact of globalisation on manufacturing industry

In order to assess the impact of globalisation on the manufacturing industry, at first, the level of globalisation in the entire manufacturing industry, as well as separate manufacturing sectors, needs to be measured. For this reason, the developed model of the impact of globalisation on the manufacturing industry was developed in two stages. *In the first stage*, the tool that enables the assessment of the level of globalisation of the manufacturing industry – a globalisation index – was developed. *In the second stage*, the impact of globalisation on the manufacturing industry was assessed by analysing correlations between the level of globalisation in the manufacturing industry and the indicators of economic development.

The index of manufacturing globalisation  $GI_{AG}$  is composed of four components (subindices) that reflect particular channels of economic globalisation. It is estimated by the following formula:

$$GI_{AG} = w_1 \times GI_{TP} + w_2 \times GI_{TUI} + w_3 \times GI_{MNC} + w_4 \times GI_{TTS}; \quad (1)$$

here  $GI_{TP}$  – a subindex of international trade;  $GI_{TUI}$  – a subindex of FDI;  $GI_{MNC}$  – a subindex of MNCs activity;  $GI_{TTS}$  – a subindex of international technology

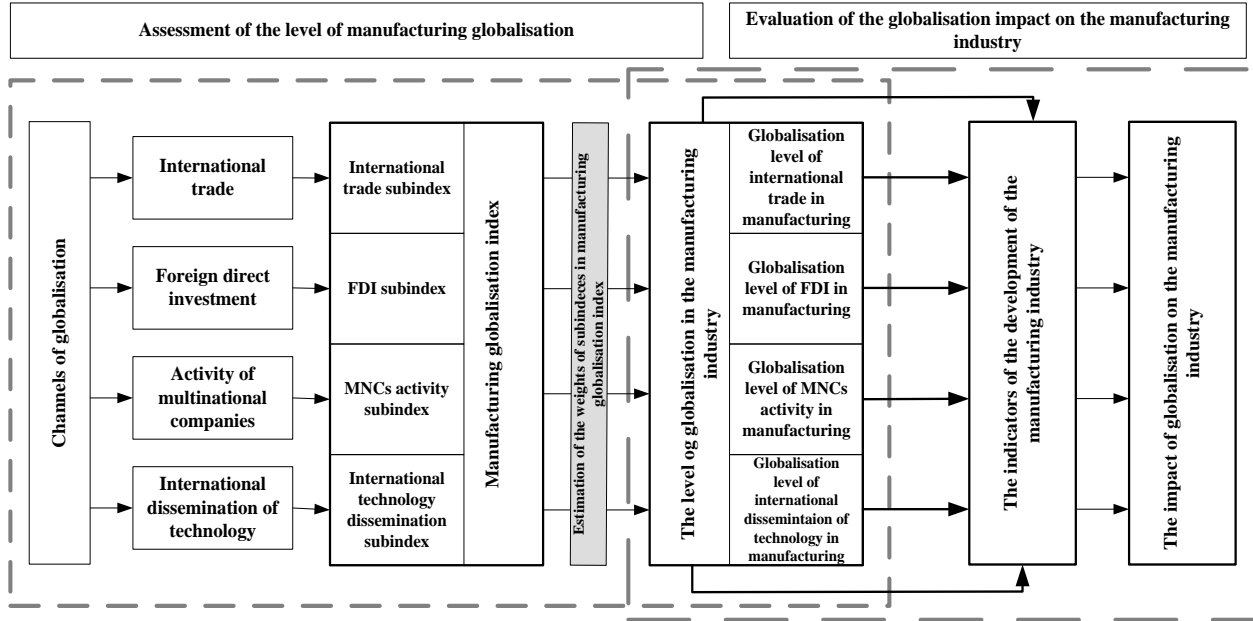
dissemination;  $w_1 \dots w_4$  – the weights of the components in the index of manufacturing globalisation, total amount of which is equal to one.

Each component (subindex) of the index of manufacturing globalisation is estimated as an independent complex index. The weights of the components (subindices) in the index of manufacturing globalisation are estimated by applying a qualitative method of expert evaluation. The index of manufacturing globalisation may include the values from zero (completely non-globalised economic sector) to one (completely globalised economic sector), i.e. the values of the index of manufacturing globalisation closer to one indicate that the level of manufacturing globalisation is higher. The values of the subindices are interpreted in the same way.

The indicators that reflect the development of the manufacturing industry were selected considering the possible impact of each channel of globalisation on the development of the manufacturing industry. While estimating the level of globalisation, particular indicators that reflect the strength of the impact of each of the channels of globalisation can be identified, however the overall impact of globalisation on the manufacturing industry will be disclosed via the general indicators of the development of the manufacturing industry. Hence, this dissertation covers a set of the indicators of manufacturing development, which is used for correlation and regression analysis.

### **2.3. The model of the impact of globalisation on the manufacturing industry**

The model for assessment of the impact of globalisation on the manufacturing industry, developed in this dissertation, is composed of two structural parts (see Figure 1). The first part of the model has been developed for the formation of the index of manufacturing globalisation. The second part of the model has been developed for assessment of the impact of globalisation on the development of the manufacturing industry. The impact of globalisation on the manufacturing industry is assessed by analysing correlations between the level of globalisation in the manufacturing industry and the indicators of economic development. The impact of particular channels of globalisation is assessed by analysing correlational links between particular index components (subindices) and the indicators that reflect the development of the manufacturing industry. The model of the impact of globalisation on the manufacturing industry provides a complex insight into the level of globalisation in this industry. In addition, it reflects different manifestations of economic globalisation and the channels of its dispersion, and is easily modified in accordance with the peculiarities of the manufacturing industry in the researched country and availability of statistical data.



**Fig. 1.** The model for assessment of the impact of globalisation on the manufacturing industry



### **3. EMPIRICAL RESEARCH OF THE IMPACT OF GLOBALISATION ON THE MANUFACTURING INDUSTRY BY EXAMPLE OF LITHUANIAN MANUFACTURING**

#### **3.1. The analysis of the trends of the development of the Lithuanian manufacturing industry**

Empirical research of the model of the impact of globalisation on the manufacturing industry is conducted on the example of Lithuanian manufacturing. For this reason, this section covers the review of the main trends of Lithuanian manufacturing development in the context of globalisation. The manufacturing industry is a very important industry in Lithuanian economics: it generates nearly 80 percent of the value added in the entire Lithuanian industry, and 20 percent of the value added in all economics of the country; the Lithuanian manufacturing industry employs 14 percent of the country's labour force, and 88 percent of the workers in Lithuanian industry; Lithuanian manufacturing absorbs nearly 30 percent of the overall FDI inflows, and makes 17 percent of Lithuanian FDI abroad; in addition, the share of the Lithuanian manufacturing industry's exports versus total exports of the country amounts to 90 percent.

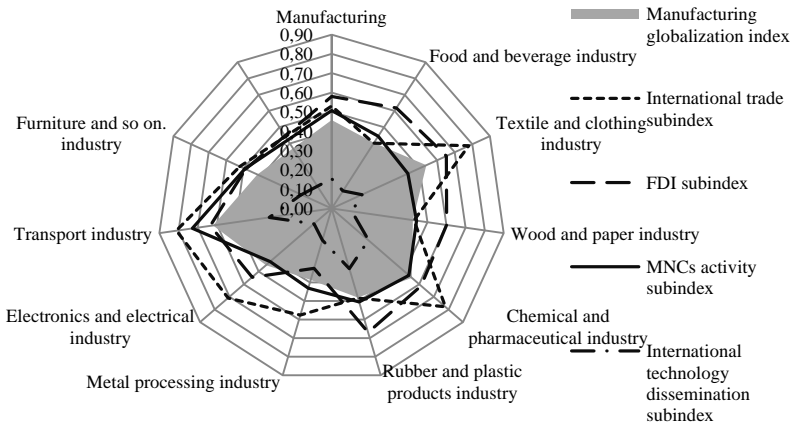
The researched indicators of the development of the Lithuanian manufacturing industry, as well as variation trends of these indicators, propose that the Lithuanian manufacturing industry is getting increasingly linked to global manufacturing and international markets.

#### **3.2. The methodology of the empirical research on the impact of globalisation on the Lithuanian manufacturing industry**

In this section, logical sequence of the empirical research on the impact of globalisation on the Lithuanian manufacturing industry has been presented and the methods employed for the research have been described. The weights of the components in the index of manufacturing globalisation were estimated by applying the qualitative method of expert evaluation. In order to verify applicability of the survey questionnaire and compatibility of the expert evaluations, mathematical-statistical methods – hypothesis verification for sample average parity, *Cronbach alpha* and *Kendall's* coefficients of concordance – were employed. For the assessment of the impact of the level of globalisation on the development of the Lithuanian manufacturing industry and its individual sectors, the methods of correlation and regression analysis were employed.

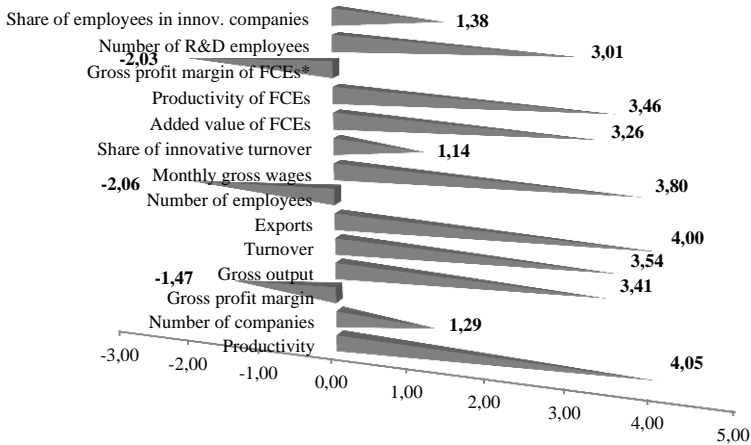
### 3.3. The results of the empirical research on the impact of globalisation on the Lithuanian manufacturing industry.

The results of globalisation index, estimated during the research, have revealed that the Lithuanian manufacturing industry is of a medium level of globalisation – over the period 2003–2013, the level of globalization in Lithuanian manufacturing fluctuated round the average value of 0.46 with a slight trend of increase. Transport, chemical and pharmaceutical, and textile and apparel industries show the highest level of globalization, while the metalworking industry is the least globalized. The results of the correlation analysis between the subindices and indicators of development have disclosed that globalization dispersion in all the sectors of Lithuanian manufacturing manifests via the channels of international trade and FDI to the largest extent, and to the smallest extent – via the channel of international dissemination of technologies (see Figure 2).



**Fig. 2.** Average globalization indices of manufacturing and individual manufacturing sectors in year 2003–2013.

The results of the correlation and regression analysis between the index of Lithuanian manufacturing globalisation and the indicators of economic development of this industry have revealed that an increasing overall level of globalisation makes a more positive than negative impact on the Lithuanian manufacturing industry. Positive impact is made on a larger part of the indicators of economic development, whereas higher values of the average elasticity coefficients show that the overall positive impact is stronger (see Figure 3).



\*FCEs – foreign controlled enterprises

**Fig. 3.** Average elasticity coefficients of manufacturing globalisation index and development indicators

In addition, the results of the correlation and regression analysis between the indices of globalisation estimated for particular Lithuanian manufacturing sectors and the indicators of economic development of these sectors have revealed that globalisation makes different impact on individual sectors of Lithuanian manufacturing in terms of direction and strength of the impact. The analysis of the significance of particular channels of globalisation while transmitting the impact of globalisation has shown that the MNC channel dominates almost in all the sectors of Lithuanian manufacturing, but the channels of FDI and international trade are significant to individual sectors.

## CONCLUSIONS

1. The analysis of the concepts and theories of globalisation has revealed that globalisation is a complex, multifaceted process that has still not been clearly and accurately defined. Hence, interpretation of globalisation much depends on an author's attitude, research field and aims. Representatives of three basic schools (hyperglobalists, sceptics and transformationalists) differently perceive and explain the causes, drivers, development trends and impact of globalisation. Hyperglobalists treat the process of globalisation as an absolute, attributing the key role to global markets and institutions, and underestimating the importance of national states and economies; sceptics, on the contrary, deny an unprecedented interconnection of economies and emphasize the role of national governments in regulation of international

economic activities; transformationalists interpret globalisation as a controversial historic process that causes particular changes in social, economic and political areas, and reforms powers, functions and authorities of national states. The analysis of different globalisation theories allows the treating of globalisation as a historically new, controversial process of significant transformations.

Depending on the specificity of the area where the features of the process of globalisation are exposed, the following main dimensions of globalisation are distinguished: economic, financial, political, social, cultural, technological and environmental. Each area of globalisation is assessed by employing specific indicators that reflect different aspects of globalisation: political globalisation is assessed by the number of interstate agreements and commitments, as well as by the indicators of internal political and international bureaucratic relations, participation in international organisations, and military activities; global processes in a financial market are measured by indicators of portfolio investment, loans, and financial transfers; socio-cultural globalisation is assessed by such indicators as ethnicity, international telephone and electronic communications, usage of foreign languages, flows of cultural products (import of a foreign culture products, export of a domestic culture products), the rate between foreign culture products and domestic culture products, the share of media and communication controlled by foreign corporations, etc.; globalisation of technology is measured by such indicators as the number of internet users, domains and safe servers, international trade in technologies and high-technology products, the number of R&D projects; environmental dimension of globalisation is assessed leaning on the indicators that show to which extent a country contributes to the negative impact on the environment, and what effects of environmental threats are observed in this country. Economic globalisation is evaluated by employing the quantitative indicators of international trade, capital flows, FDI, activities of MNCs, international dissemination of technologies, etc. In this dissertation, the attitude towards economic globalisation as to the increase of the volumes, strength and intensity in the links among the economic processes ongoing in different countries – movement of goods, services and capital, diffusion of communications and technologies, and expansion of the value creation chain – has been presented.

2. Estimation of the level of globalisation *at a country's level* covers a number of indicators and a wide spectrum of their values. Calculations of a country's globalisation indices may involve the variety of data volumes, indicators, time periods, data sources, etc. Application of different methodologies generates unequal results. Hence, the scope of a country's global integration is, to a large extent, determined by the methodology

applied. Globalisation indices of different countries measure the scope and development pace of globalisation, allows the ranking of the countries by the level of globalisation, and disclose the links between the level of globalisation and economic, political and social characteristics of a country. However, globalisation indices estimated at a country's level have some disadvantages: a small number of index constituents, a rather limited number of indicators, imbalanced number of indicators in particular blocks, equal comparative weight of non-homogeneous indicators in the indices, and inclusion of unequally significant indicators in the index blocks. Practical application of the indices is limited by the lack of the reliability of statistical data sources and data collection methods as well as by employment of complicated estimation methodologies.

Research on the evaluation of globalisation *in the economic sector* is limited by a rather subjective selection of evaluation factors, as well as by employment of different evaluation components. Although competition, product standardization and market interaction are considered to be the main determinants of globalisation in the economic sector, they are occasionally employed for practical studies; since the largest part of these determinants can hardly be measured quantitatively. The analysis of the theoretical attempts to evaluate the level of globalisation in the economic sector has revealed that practical application of the determinants mentioned above poses particular difficulties due to the limited availability of statistical data and complex calculation methodology.

Evaluations of the level of globalisation *at a corporate level* vary in the number of variables, as well as in relevance to reflect the overall operation of a company. Nevertheless, all of them are formed at a corporate (micro) level and have the same methodological background – all the indicators reflect a share of a company's foreign operations. In the absence of a clear separation between the company's globalization and internationalization processes, assessing levels of globalisation at corporate level indicators, reflecting the internationalization of the company are commonly used. Corporate internationalization indices are developed leaning on the relative ratios of turnover (sales), asset volumes, R&D, profit, etc., i.e. they reflect the ratio of a company's foreign operations to its overall operations.

Scientific literature does not contain any single method or instrument that would enable the evaluation of the level of internationalisation in business companies, economic sectors or countries – the selection of a particular method or an instrument depends on personal attitudes, the aspects of the research, the significance of the selected variables, and the relevance of these variables to reflect the researched dimensions.

3. While researching *the causal* aspect of globalisation, four main channels of globalisation and indicators reflecting the spread of globalisation through a particular channel have been identified:

- *International trade* is one of the most fundamental activities in global economics, as well as the main element of international co-operation among national economies. International trade has made preconditions to dispersion of globalisation, which in turn have opened additional opportunities for the development of international trade. The level of globalisation in the economic sector in respect of international trade are assessed by such indicators as; share of sales in foreign markets, share of imports in the overall purchase volumes, and the ratio of international trade balance to the volumes of international trade.

- *Foreign direct investment* has been one of the main elements of the rapid process of globalisation and one of the key features of global economics over the last few decades. The trends of FDI volumes reveal the intensity of the process of globalisation, while geographical development of FDI reveals the scope of this process. The level of globalisation in the economic sector in terms of FDI are disclosed by such indicators as; share of foreign capital in the overall corporate capital and geographical dispersion of FDI at the end of the year.

- *Multinational companies (MNCs)* are a key driver that initiates, supports and promotes the process of globalisation. To estimate the level of globalisation in terms of MNCs, the indicators have been employed: share of Foreign Controlled Enterprises (FCE), share of employees in FCEs, share of FCEs' turnover, exports and imports, geographical dispersion of FCEs' turnover and employees by countries of origin.

- *International dissemination of technologies* is one of the key drivers of the process of globalisation that promotes rapid development of the other processes of economic globalisation. International operation of MNCs enables the transfer of R&D activities, increase the volumes of trade in high-technology products and promote the dispersion of non-material technologies. To estimate the level of globalisation in the economic sector in terms of international dissemination of technologies, the indicators have been employed: share of R&D expenditure from abroad, share of FCE's expenditure for patents and licenses; share of innovative FCE's in the total number of innovative enterprises.

While researching *the outcome* (impact) aspect of globalisation, a set of general economic development indicators is composed, since the impact of globalisation has passed through different channels/manifests via the general indicators of the economic sector development. The indicators that reflect the impact (outcome aspect) of economic globalisation are selected considering

the availability of statistical data, so as to provide the model with universality and practical applicability.

4. In order to assess the impact of globalisation on manufacturing, firstly, the level of globalisation in the entire manufacturing industry as well as individual manufacturing sectors is measured. For this reason, the developed model of the impact of globalisation on the manufacturing industry consists of two structural parts. *The first part of the model* has been developed for the formation of the index of manufacturing globalisation, i.e. a tool that would enable the estimation of the level of globalisation in the manufacturing industry. The index of manufacturing globalisation consists of four components (subindices) which reflect particular channels of economic globalisation. With a view to considering the dynamics of the process of globalisation, as well as specificity of manufacturing industry (or a particular manufacturing sector), the weights of the components (subindices) in the globalisation index have been established with reference to the opinions of scientists and professionals of the trends of manufacturing (or a particular manufacturing sector's) development. For this purpose, the expert survey is conducted. Establishment of the weights of the components in the index of manufacturing globalisation obtained by applying the qualitative method of expert evaluation provides the index of manufacturing globalisation with flexibility, universality and practical applicability. *The second part of the model* has been developed for assessment of the impact of globalisation on the manufacturing industry. The impact of globalisation is assessed by analysing correlations between the level of globalisation in the manufacturing industry and the indicators of economic development. The indicators that reflect the development of the manufacturing industry have been selected considering the possible impact of each of the channels of globalisation on the development of the manufacturing industry, as well as the availability of statistical data.

The model for evaluation of the impact of globalisation on the manufacturing industry is universal and can be applied for the research of not only the manufacturing industry in general but for the research of individual manufacturing sectors as well. The results of the research of the impact of globalisation on the whole manufacturing present the overall effect, while analysing every individual manufacturing sector the impact of globalisation is investigated in a structurely detailed way.

5. The results of the research on the level of globalisation in the Lithuanian manufacturing industry and separate manufacturing sectors have revealed that Lithuanian manufacturing is of medium level of globalisation – the average index of globalisation for the period 2003-2013 amounted to 0.46. Manufacturing sectors with the highest level of globalisation include transport (0.62), chemical and pharmaceutical (0.55), and textile and apparel

(0.54) industries, while the lowest level of globalisation is characterised to the metalworking industry (0.39). Over the researched period, the general trend of the increase in the level of globalisation could be observed in all the sectors of Lithuanian manufacturing (with the exception of the textile and apparel industry). The analysis of the channels of globalisation dispersion has revealed that the Lithuanian manufacturing industry, as well as its individual sectors, are highly globalized in terms of international trade and FDI, while in terms of international dispersion of technologies, the level of globalisation is lowest in all the sectors of Lithuanian manufacturing.

6. Correlation and regression analysis of the level of globalisation in the Lithuanian manufacturing industry and the indicators of economic development of the manufacturing industry has disclosed that globalisation makes a multidirectional impact on the Lithuanian manufacturing industry. The positive impact of globalisation was confirmed for the number of companies, total production, turnover, exports of Lithuanian manufacturing, turnover of innovative companies, the number of employees in innovative companies, the number of R&D employees, monthly gross wages, labour productivity in FCEs and companies across manufacturing, and value added generated by FCEs. The level of globalisation makes a negative impact on the overall profitability of FCEs and companies across manufacturing, as well as the number of employees in the companies of the manufacturing industry. According to the results of empirical research, the level of globalisation has a positive impact on a larger number of the economic development indicators of Lithuanian manufacturing, the average values of elasticity coefficients estimated for these indicators are higher, therefore it can be concluded that the impact of globalisation on the Lithuanian manufacturing industry is more positive than negative.

The impact of globalisation on the indicators of economic development of individual manufacturing sectors is rather dissimilar. The research disclosed that globalisation makes only a positive impact on rubber and plastic, wood and paper, and furniture and related product industries; more positive than negative impact is made on chemical and pharmaceutical, as well as the electricity and electronics industries. The impact of the level of globalisation on the metalworking industry, as well as the industry of food and beverages, is contradictory and it is difficult to unambiguously assess which – positive or negative – impact is stronger. The research has also disclosed that the impact of the level of globalisation on the transport industry is negative. The impact of the overall level of globalisation on textile and apparel manufacturing has not been established, but correlation analysis between the separate channels of globalisation and the indicators of economic development of this sector has revealed that the impact of globalisation on this sector is significant, although very contradictory.



Correlation analysis between particular components (subindices) of the globalisation index and indicators of economic development of the manufacturing industry has shown that the impact of globalisation via the MNC activity channel is significant to all the sectors of the manufacturing industry. Globalisation via the FDI channel is significant to the textile and apparel industry, chemical and pharmaceutical industry, metalworking industry, transport industry, and furniture and related product industry. The impact of globalisation is significant to food and beverages industry, wood and paper industry, and metalworking industry disperses via the channel of international trade, while the channel of international dissemination of technologies transmits the significant impact of globalisation only to two manufacturing sectors – the rubber and plastic industry, and the electricity and electronics industry. The research disclosed, that the main channels of globalisation, above all, are MNC activities, FDI and international trade.

7. The research on the impact of globalisation on the Lithuanian manufacturing industry has revealed that the model developed for the evaluation of the impact of globalisation on the manufacturing industry is easily modified and can be applied for the research of manufacturing industries or particular manufacturing sectors in different countries. Since the model was verified by employing the data of a single country, the results of the research are not subject to broader generalisations.

The empirical research on the impact of globalisation on the Lithuanian manufacturing industry has confirmed the urgency of the limited availability of statistical data as the key problem impeding quantitative evaluation of the processes of globalisation, which was emphasised by most scientists who have conducted studies in this area. Considering the efforts of international organisations to accumulate and process increasing quantities of globalisation-related data at both national and global levels, the ability of developing methods for the quantitative assessment of globalisation process will increase.

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## REZIUMĖ

**Temos aktualumas.** Globalizacija – kompleksiškas šiuolaikinio gyvenimo raidos fenomenas, unikalus procesas, kuriam nėra alternatyvų. Pastaraisiais dešimtmečiais globalizacijos procesas apėmė visas gyvenimo sritis, tapo greitaeigiu pasaulio varikliu, be globalizacijos šiandieninis gyvenimas neįsivaizduojamas. Globalizacija ir jos įtaka įvairioms gyvenimo sritims yra dažnas mokslinių diskusijų objektas, tačiau globalizacijos vertinimai dažnai atliekami teoriniu lygmeniu, mažai pagrįsti empiriniais duomenimis. Kyla poreikis įvertinti globalizacijos procesą remiantis ne subjektyvia nuomone, bet empiriniais tyrimais, pagrįstais moksliniais argumentais. Globalizacijos procesų tendencijų suvokimas, paremtas empiriniais faktais ir jų pagrindu suformuluotomis išvadomis, būtinas, kad būtų galima įvertinti globalizacijos įtaką ir priimti strateginius sprendimus. O pasitelkus kiekybinius metodus ir empirinius įrodymus atsirastų galimybė objektyviau vertinti globalizacijos proceso esmę, apimtį ir įtaką atskiroms ekonominio ir socialinio gyvenimo sritims.

Globalizacijos procesas reiškiasi visose gyvenimo sferose – ekonominėje, finansinėje, politinėje, socialinėje, kultūrinėje, religinėje, aplinkosaugos ir t. t. Vertinant globalizacijos raišką (angl. *manifestation*), atsižvelgiama į specifinius procesus ir reiškinius, vykstančius atskirose gyvenimo srityse. Kiekvienos atskiros srities ypatumai nulemia ir globalizacijos plėtos kryptis, apimtis, tendencijas, spartą, intensyvumą ir poveikį. Dažniausiai globalizacijos procesas tapatinamas su ekonomine globalizacija, kuri suvokiama kaip dinamiškas ir daugiadimensinis ekonominės integracijos procesas, kaip didėjanti prekių ir paslaugų rinkų, finansų sistemos, korporacijų, pramonės, technologijų ir konkurencijos integracija.

Ekonominės globalizacijos reiškiniai nuolat tiriami, tačiau nėra bendros nuomonės apie globalizacijos proceso sklaidos spartą bei plėtimosi ribas. Mokslininkai, siekdami suteikti diskusijoms racionalumo, globalizacijos mastams vertinti pasitelkia į pagalbą statistinius rodiklius ir kiekybinius metodus. Kiekybinė globalizacijos procesų analizė išryškina pagrindines globalizacijos proceso savybes ir raiškos formas bei suteikia pagrindą loginei analizei ir kokybiniam globalizacijos tendencijų ir poveikio vertinimui. Atskirų ekonominės globalizacijos dedamųjų statistinė analizė suteikia galimybę identifikuoti globalizacijos proceso sąsajas su tiriamų ekonomikos sektorių plėtos tendencijomis ir įvertinti globalizacijos poveikį.

Ne visos šalys vienodai įsitraukę į ekonominės globalizacijos procesą ir dėl to patiria nevienodą globalizacijos poveikį. O ir aktyviai globalizacijos procese dalyvaujančios šalys, patirdamos globalizacijos teikiamą naudą, susiduria su vis naujais iššūkiais ir rizikomis. Globalizacijos „kaštų“ ir „naudos“ balansas – viena aštriausių temų, diskutuojant apie globalizacijos įtaką visais lygmenimis: individo, įmonės, ekonomikos sektoriaus ar viso šalies ūkio mastu.

Dažniausiai ekonominės globalizacijos plėtra siejama su multinacionalinių kompanijų (MNK) veikla, kurios yra pagrindiniai ekonominės globalizacijos proceso dalyviai. MNK veikla itin aktyvi apdirbamojoje gamyboje, todėl vertinant ekonominės globalizacijos proceso raiškos ir plėtros apimtis bei tendencijas, apdirbamosios gamybos sektorius yra ypač svarbus. Būtent apdirbamosios gamybos MNK, siekdamos sumažinti gamybos kaštus ar ieškodamos naujų produkcijos realizavimo rinkų, perkelia gamybą į užsienio šalis, arčiau žaliavų, darbo išteklių ar vartotojų. Tokiu būdu apdirbamosios gamybos MNK „stumia“ globalizacijos procesą ir daro reikšmingą įtaką priimančių šalių apdirbamosios gamybos plėtrai. Apdirbamosios gamybos MNK, vystydamos tarptautinę gamybą ir tarptautinę prekybą, yra vienas pagrindinių globalizacijos proceso sklaidos kanalų. Savo ruožtu, apdirbamosios gamybos globalizacijos procesai tiesiogiai ir netiesiogiai lemia visos šalies ekonomikos plėtros ir globalumo tendencijas. Todėl labai svarbu tinkamai įvertinti apdirbamosios gamybos integraciją į globalią ekonomiką ir globalizacijos įtaką apdirbamosios gamybos plėtrai.

Šiame kontekste kyla reikšmingas klausimas, ar egzistuoja įrankiai, kuriais būtų galima ištirti ir išmatuoti apdirbamosios gamybos globalizacijos tendencijas bei įvertinti globalizacijos poveikį apdirbamosios gamybos plėtrai. Siekiant įvairiapusiškai įvertinti globalizacijos proceso aprėptis, reikšmę ir pasekmes, nebeužtenka tradicinių statistikos instrumentų, reikalingi papildomi rodikliai. Reikia identifikuoti, ištirti ir įvertinti naujas koncepcijas ir metodus, atspindinčius globalius procesus, kuriuose dalyvauja apdirbamosios gamybos subjektai ir kurių jie yra veikiami. Empiriniai įrodymai leistų objektyviau vertinti globalizacijos esmę ir jos įtaką. Kiekybiniais rodikliais pagrįsti koreliaciniai ryšiai tarp apdirbamosios gamybos globalizacijos lygio ir ekonominės plėtros rodiklių tarnautų svaresniais įrodymais nei vien teoriniai vertinimai. Kiekybiniai matavimai leistų įvertinti globalizacijos mastą bei sklaidos spartą.

***Mokslinė problema ir jos ištyrimo lygis.*** Įvairūs mokslininkai yra nagrinėję globalizacijos procesą ir jo atskiras raiškas: daugiadimensinius globalizacijos aspektus (Brakman, 2006; Held, McGrew, Goldblatt ir Perraton, 2002; Hoffmann, 2002); politinės globalizacijos tendencijas (Guillén, 2001; Hirst, Thompson ir Bromley, 2009; Hurrell, Woods, 1999; Steger, 2005); socialinius-kultūrinius aspektus (Hurrell, Woods, 1999; Sirgy, Lee, Miller ir Littlefield, 2004); aplinkosaugos aspektus (Bhagwati, 2007; Lofdahl, 2002; Najam, Runnalls ir Halle, 2007; Sonnenfeld, 2012; Wijen, Zoeteman, Pieters ir van Seters, 2012). Ekonominės globalizacijos raišką mokslininkai tyrė įvairiais aspektais ir lygmenimis: išsamiai tirta globalizacijos įtaka ekonomikai (Brakman, 2006; Castells, 2011; Cho, 2003; Dicken, 2003; Helpman, 2006; Hoffmann, 2002; Mukherjee, 2008; Rugman, 2012; Sirgy ir kt., 2004; Soubbotina, Sheram, 2000; Sumner, 2004); gana plačiai žinomi bandymai

kiekybiškai vertinti globalizacijos procesų apimtį šalies lygmeniu (Dreher, 2006; Kearney, 2007).

Dažniausiai mokslininkai, tyrinėjantys ekonominės globalizacijos proceso raišką, analizuoja vieno iš ekonominės globalizacijos sklaidos kanalų aspektus: tarptautinės prekybos kanalu vykstančius ekonominės globalizacijos procesus ir tendencijas (Bems, Johnson ir Yi, 2011; Broda, Greenfield ir Weinstein, 2006; Carneiro, Salter ir Punnett, 2015; Feenstra, 2015; Helpman, 2006; Lévy, 2007; Lynch, 2010; Xu, 2012); TUI aspektus globaliame kontekste (Agosin, Machado, 2005; Alfaro, Chanda, Kalemli-Ozcan ir Sayek, 2004; Assanie, Singleton, 2002; Bora, 2002; Casi, Resmini, 2012; Cho, 2003; Epstein, 2003; Ford, Rork ir Elmslie, 2008; Gersbach, 2002; Janicki, Wunnava, 2004; Jansen, Stokman, 2004; Lipsey, 2001; 2004; Moura, Forte, 2010; Osinubi, Amaghionyeodiwe, 2010; Özkan-Günay, 2011; Ozturk, 2007; Prasad, Rajan ir Subramanian, 2007; Vetter (2014), Vissak, Roolaht, 2005); globalios MNK veiklos tendencijas (Buckley, 2009; Dunning, 2012; Jensen, 2013; Sofka, Preto ir Faria, 2014; Wagner, 2013); tarptautinę technologijų sklaidą globalios integracijos kontekste (Keller, 2004; Murtha, Lenway ir Hart, 2001; Phene, Almeida, 2003; Savvides, Zachariadis, 2005; Veugelers, Cassiman, 2004; Xu, Chiang, 2005).

Kai kurie mokslininkai analizavo kelių globalizacijos sklaidos kanalų sąsajas ir sujungė tarptautinės prekybos ir TUI aspektus (De Mello, 1999; Loungani, Razin, 2001; Vo, 2004) ar analizavo visų ekonominės globalizacijos sklaidos kanalų tendencijas ir sąsajas (Bjelić, 2013; Grøgaard, Gioia ir Benito, 2013; Hausmann, Fernandez-Arias, 2000; Ietto-Gillies, 1998; 2003; 2012; Soubbotina, Sheram, 2000; Sutcliffe, Glyn, 2003).

Užsienio autorių, pabrėžusių ekonominius globalizacijos aspektus ir vertinusių atskirų ūkio sektorių globalizacijos lygį, darbuose dominuoja teoriniai vertinimo aspektai: analizuojama globalios šakos samprata (Gersbach, 2002; Kobrin, 1991); tiriama veiksniai, kurie skatina ar slopina ūkio šakų ar pavienių įmonių globalizacijos procesus (Benito, Larimo, Narula ir Pedersen, 2002; Grøgaard ir kt., 2005; Mets, Kaarna ir Kelli, 2010; Morrison, Roth, 1992; 1993; Rugman, Verbeke, 2004; Sullivan, 1994; Wan, Hoskisson, 2003).

Lietuvių autoriai savo darbuose vertina globalizacijos įtaką šalies ekonomikos plėtrai (Bernatonytė, Normantienė, 2009; Čiburienė, Zaharieva, 2006; Čiegis, Gavenauskas, Petkevičiūtė ir Štreimikienė, 2008; Daugėlienė, 2007; Diskienė, Galinienė ir Marčinskas, 2008; Gylys, 2008; Grižas, 2006; Mačerinskas, Matekonienė ir Pipinytė, 2003; Martinkus, Lukaševičius, 2008; Snieška, Bruneckienė, 2009; Šliburytė, Masteikienė, 2010; Tvaronavičienė, Kalašinskaitė, 2010; Žilinskė, 2010), atskirų ekonomikos sektorių plėtrai (Bagdavičius, Jodkonienė, 2008; Čepinskis, Masteika, 2010; Keršienė, Savanevičienė, 2009; Navickas, Malakauskaitė, 2009) bei kompanijų veiklai (Alimienė, Kuvykaitė, 2004; Ginevičius, 2009; Juščius, Lekavičienė, 2007; Kazlauskaitė, Bučiūnienė, 2008; Navickas, 2003; Žukauskas, 2006).

Globalizacijos kiekybinio vertinimo aspektus tyrė Juščius (2004; 2006), Mačerinskas ir Pipinytė (2003), Pekarskienė ir Susnienė (2011), Žičkienė (2008).

Mokslininkai, savo darbuose nagrinėję apdirbamąją gamybą, analizavo įvairius jos aspektus: Laskienė ir Pekarskienė (2011), Levišauskaitė ir Stravinskaitė (2006), Sabonienė (2015) tyrė konkurencingumą; Cusmano, Mancusi ir Morrison (2010), Čepinskis ir Jonynas (2008), Valodkienė, Snieška ir Gaidelys (2011) tyrė technologijų ir inovacijų diegimą; Gudonytė ir Tvaronavičienė (2012), Onaran (2009) analizavo svarbą šalies (regionų) ekonomikai ir konkurencingumui. Kiti autoriai (Herrigel, Zeitlin, 2010; Juščius, Pukelienė ir Šneiderienė, 2009) tyrė apdirbamosios gamybos įmonių internacionalizacijos procesus. Grupė autorių (Karuppiyah, Karthikeyan, 2013; Katz, Lawrence ir Spence, 2011; Kletzer, 2005; Makhija ir kt., 1997; Pla-Barber, Puig, 2009; Puig, Marques, 2011; Sutcliffe, Glyn, 2003) apdirbamąją gamybą analizavo globalizacijos aspektu, tačiau tyrimai dažniausiai apsiribodavo vienu ar dviem globalizacijos kanalais. Globalizacijos proceso ir apdirbamosios gamybos sąsajos mokslinėje literatūroje nėra pakankamai išsamiai išanalizuotos, nėra sukurtos bendros metodologijos, kuri padėtų nustatyti, koku lygiu apdirbamoji gamyba įsitraukia į globalizacijos procesus ir kaip globalūs procesai veikia apdirbamosios gamybos plėtrą.

**Mokslinė problema** – kaip išmatuoti šalies apdirbamosios gamybos globalizacijos lygį ir įvertinti globalizacijos įtaką apdirbamajai gamybai.

**Mokslinio tyrimo objektas** – šalies apdirbamosios gamybos globalizacijos lygis ir jo įtaka apdirbamajai gamybai.

**Mokslinio tyrimo tikslas** – sudaryti globalizacijos įtakos šalies apdirbamajai gamybai vertinimo modelį, integruojantį globalizacijos lygį lemiančius veiksnius.

**Mokslinio tyrimo uždaviniai:**

1. Atlikti globalizacijos teorijų analizę ir iširti globalizacijos raiškos sritis, akcentuojant ekonominį globalizacijos aspektą.
2. Iširti ir susisteminti globalizacijos vertinimo metodikas šalies, ekonomikos sektoriaus ir įmonės lygmeniu.
3. Vadovaujantis priežasties (globalizacijos lygio) ir pasekmės (globalizacijos įtakos) išskyrimo koncepcija, iširti pagrindinius globalizacijos sklaidos kanalus.
4. Parengti globalizacijos įtakos apdirbamajai gamybai vertinimo modelį, jungiantį apdirbamosios gamybos globalizacijos indekso formavimą ir ryšių tarp globalizacijos lygio ir apdirbamosios gamybos plėtros nustatymą.
5. Empiriškai pritaikyti pasiūlytą modelį, nustatant Lietuvos apdirbamosios gamybos globalizacijos lygį ir įvertinant globalizacijos įtaką Lietuvos apdirbamajai gamybai.

### ***Tyrimo metodai:***

- sisteminė ir lyginamoji mokslinėje literatūroje paskelbtų koncepcijų ir išvadų analizė, grindžiama lyginamuoju, klasifikavimo, sisteminimo ir apibendrinimo metodais;
- analizės rezultatų sintezė bei loginis išvadų generavimas;
- ekspertinis vertinimas, anketinė apklausa;
- koreliacinė ir regresinė analizė;
- tyrimo rezultatų matematinė ir statistinė analizė, naudojant statistines duomenų apdorojimo programas *SPSS* (v21.0) ir *Microsoft Excel* (2010).

Teorinėje disertacijos dalyje, analizuojant mokslininkų globalizacijos sampratas, globalizacijos teorijų mokyklų teiginius, tiriant globalizacijos raiškos sritis ir nagrinėjant įvairių autorių globalizacijos vertinimo įvairiais lygmenimis teorinius ir empirinius tyrimus, buvo naudojama sisteminė ir lyginamoji mokslinėje literatūroje paskelbtų koncepcijų ir išvadų analizė, grindžiama lyginamuoju, klasifikavimo, sisteminimo ir apibendrinimo metodais. Loginės indukcijos ir dedukcijos metodais buvo generuojamos mokslinės išvados.

Nustatant pagrindinius globalizacijos sklaidos kanalus ir juos analizuojant priežasties ir pasekmės požiūriu, sudarant apdirbamosios gamybos globalizacijos indekso metodiką, identifikuojant globalizacijos indeksą sudarančias dedamąsias, atrenkant apdirbamosios gamybos globalizacijos lygį bei apdirbamosios gamybos plėtrą atspindinčius rodiklius, formuojant globalizacijos įtakos šalies apdirbamajai gamybai vertinimo modelį, pasitelkti lyginamasis, klasifikavimo, sisteminimo ir apibendrinimo metodai, analizės rezultatų sintezė bei loginis išvadų generavimas.

Trečiojoje disertacijos dalyje empirinio tyrimo metu apdirbamosios gamybos globalizacijos indekso dedamųjų svoriai buvo nustatomi pasitelkiant ekspertinio vertinimo metodą ir atliekant anketinę apklausą. Vertinant globalizacijos įtaką Lietuvos apdirbamosios gamybos ir atskirų apdirbamosios gamybos sektorių plėtrai, buvo naudojami koreliacinės ir regresinės analizės metodai. Gautų rezultatų analizei buvo naudojama matematinė, statistinė ir grafinė analizė (duomenų rinkimas, apdorojimas, sisteminimas, statistinių rodiklių skaičiavimas), naudojant statistines duomenų apdorojimo programas *SPSS* (v21.0) ir *Microsoft Excel* (2010).

### ***Mokslinis naujumas:***

- *disertacijoje pagrįsta globalizacijos proceso vertinimo priežasties-pasekmės požiūriu koncepcija.* Tradiciškai mokslininkų, nagrinėjančių globalizacijos procesus, darbuose išskiriamos globalizacijos priežastys ir varomosios jėgos, tačiau kiekybiniuose globalizacijos vertinimuose globalizacijos lygį ir globalizacijos įtaką atspindintys rodikliai pateikiami tame pačiame kontekste ir nėra išskiriami jų priežastiniai ir pasekminiai aspektai. Disertacijoje ekonominės globalizacijos sklaidos

kanalai analizuojami remiantis priežasties ir pasekmės sąryšiais ir globalizacijos vertinimo rodikliai išskiriami pagal priežasties (globalizacijos lygio) ir pasekmės (globalizacijos poveikio) požymius.

- *suformuotas apdirbamosios gamybos globalizacijos indeksas*, įgalinantis kiekybiškai išmatuoti apdirbamosios gamybos globalizacijos lygį. Lyginant su ankstesniais mokslininkų bandymais kiekybiškai vertinti ekonomikos sektoriaus globalizacijos lygį, pasiūlytas apdirbamosios gamybos globalizacijos indeksas išsiskiria tuo, kad yra kompleksinis (t. y. vertina kelias dedamąsias, atspindinčias globalizacijos sklaidos kanalus) ir yra lengvai taikomas praktiškai. Suformuotas globalizacijos lygio matavimo įrankis, prieš taikant praktiškai, yra adaptuojamas, atsižvelgiant į konkrečios šalies apdirbamosios gamybos plėtros tendencijas. Globalizacijos indeksą sudarantys statistiniai rodikliai prieinami daugelyje šalių ir tai suteikia galimybę palyginti atskirų šalių apdirbamosios gamybos globalizacijos lygį. Indeksą galima naudoti ne tik visos apdirbamosios gamybos, bet ir atskirų apdirbamosios gamybos ekonominės veiklos rūšių ir apdirbamosios gamybos ekonominės veiklos rūšių grupių globalizacijos lygiui vertinti.
- išanalizavus ir susisteminus globalizacijos raiškos apdirbamojoje gamyboje charakteristikas, *atrinkti apdirbamosios gamybos plėtros vertinimo rodikliai*. Apdirbamosios gamybos plėtrą atspindintys rodikliai išanalizuoti kiekvieno globalizacijos sklaidos kanalo aspektu ir sujungti į vieną kompleksinį rodiklių rinkinį, kuris naudojamas apdirbamosios gamybos globalizacijos lygio ir apdirbamosios gamybos plėtros sąryšio analizei.
- *pateiktas globalizacijos įtakos apdirbamajai gamybai vertinimo modelis, jungiantis apdirbamosios gamybos globalizacijos lygį lemiančius veiksnius*. Suformuotas modelis gali būti taikomas skirtingų šalių apdirbamosios gamybos, atskirų apdirbamosios gamybos ekonominės veiklos rūšių ar ekonominės veiklos rūšių grupių (apdirbamosios gamybos sektorių) globalizacijos lygiui nustatyti ir įvertinti globalizacijos įtaką apdirbamajai gamybai ar atskiram apdirbamosios gamybos sektoriui, atsižvelgiant į tiriamo sektoriaus plėtros aspektus, sąsajas su pasauline ekonomika ir globalumo tendencijas.
- *nustatytas Lietuvos apdirbamosios gamybos ir atskirų apdirbamosios gamybos sektorių globalizacijos lygis bei nustatyti sąryšiai tarp Lietuvos apdirbamosios gamybos globalizacijos lygio bei apdirbamosios gamybos plėtros rodiklių*.

**Disertacijos struktūra.** Disertaciją sudaro trys dalys. *Pirmojoje dalyje* analizuojama globalizacijos samprata, globalizacijos teorijos, globalizacijos

raiškos sritys ir globalizacijos vertinimo problematika šalies, ekonomikos sektoriaus ir įmonės lygmeniu. *Antrojoje dalyje* išanalizuoti pagrindiniai ekonominės globalizacijos sklaidos kanalai, atrinkti rodikliai, atspindintys ekonomikos sektoriaus globalizacijos lygį, bei ekonominės plėtros rodikliai, atspindintys galimą globalizacijos įtaką, suformuotas apdirbamosios gamybos globalizacijos indeksas ir pateiktas globalizacijos įtakos apdirbamajai gamybai vertinimo modelis. *Trečiojoje dalyje* atlikta Lietuvos apdirbamosios gamybos tendencijų analizė, pateikta globalizacijos įtakos Lietuvos apdirbamajai gamybai empirinio tyrimo metodika, globalizacijos įtakos apdirbamajai gamybai vertinimo modelis pritaikytas Lietuvos apdirbamosios gamybos lygiui nustatyti ir globalizacijos įtakai Lietuvos apdirbamajai gamybai vertinti.

**Tyrimo apribojimai.** Analizuojant globalizacijos raišką ir poveikį ekonomikos sektoriaus plėtrai, disertacijoje susitelkiama į ekonominį globalizacijos procesų aspektą ir atsiribojama nuo politinių interpretacijų ir vertinimų, kurie neišvengiamai atsispindi globalizacijos tyrimuose šalies lygmeniu. Disertacijoje neanalizuojami finansų rinkų globalizacijos aspektai, portfelinės investicijos, vyriausybės veiksmai ar elektroninio verslo įtaka. Globalizacijos raišką šiose srityse galima vertinti, analizuojant ekonominės globalizacijos procesus šalies mastu, tačiau ekonomikos sektoriaus lygmeniu (tiriant apdirbamosios gamybos globalizacijos lygį) išskirti ir analizuoti šiuos aspektus nėra galimybės.

Ekonomikos sektoriaus globalizacijos vertinimo tyrimus riboja subjektyvus skirtingų veiksnių parinkimas ir skirtingų indeksų dedamųjų naudojimas. Kai kurie ekonomikos sektoriaus globalizacijos lygį lemiantys veiksniai praktiniuose tyrimuose gali būti naudojami labai ribotai, nes yra kiekybiškai sunkiai išmatuojami. Todėl sudarant globalizacijos įtakos apdirbamajai gamybai vertinimo modelį, buvo siekiama įtraukti tuos veiksnius, kurie yra kiekybiškai išmatuojami. Be to, globalizacijos įtakos apdirbamajai gamybai tyrimą riboja statistinių duomenų prieinamumas. Siekiant suteikti modeliui universalumo ir praktinio pritaikimumo, buvo orientuojamasi į statistinę informaciją, kuri būtų prieinama atskirų šalių ekonomikos sektorių lygmeniu, t. y. statistiniai duomenys būtų renkami pagal Tarptautinės ekonominio bendradarbiavimo ir plėtros organizacijos (EBPO) bei Tarptautinio valiutos fondo (TVF) statistikos duomenų rinkimo metodikas. Šios metodikos yra suderintos tarpusavyje, jomis vadovaujasi visos EBPO ir TVF organizacijoms priklausančių šalių ir šalių-kandidačių statistikos tarnybos. Šių nuostatų ir laikomasi disertacijoje, siekiant optimalaus statistinių duomenų panaudojimo ir suteikiant realią galimybę apdirbamosios gamybos globalizacijos indeksą taikyti praktikoje.

**Disertacijos apimtis.** Disertaciją sudaro 238 puslapiai 40 paveikslų, 58 lentelės, 41 priedas (priedai pateikti kompaktiniame diske). Panaudota 260 mokslinės literatūros šaltinių lietuvių, anglų ir rusų kalbomis.



***Disertacijos mokslinių rezultatų publikavimas.*** Disertacijos tyrimų rezultatai pristatyti Lietuvos ir tarptautinėse mokslinėse konferencijose ir paskelbti pripažintuose Lietuvos bei užsienio mokslo leidiniuose. Tyrimo rezultatai paskelbti septyniose mokslinėse publikacijose.

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