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The Expression of the Country's Modernisation in the Context of Economic Environmental Sustainability: The Case of Lithuania

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Abstract: In order to develop broader scientific discussions, the authors analyze a contemporary social phenomenon in the field of sustainability—the modernisation of the country in order to preserve the ecosystem, emphasizing one of the most important aspects of modernisation—the context of economic environmental sustainability. Underscoring the importance of this study, the research problem was identified by answering the questions of how the modernisation of the country manifests itself in the context of economic environmental sustainability and what are the consequences for the society. This article examines the factors behind the country's modernisation through the lens of its citizens. The purpose is to analyze the development of modernisation in Lithuania from the perspective of a sustainable economic environment and to form a complex system of indicators for the formation of an effective governance of a modern country. The paper is based on a quantitative empirical study to support the structural perspective of modernisation of the country, to justify an integrated system of indicators for the formation of a modern country following an analysis of the country's modernisation trends in terms of the economic environment. The scientific value of the study: the presents paper investigates the main determinants of economic environmental sustainability of the country (effectiveness of digitalisation, infrastructure, environment, and interoperability of natural resources); behavior in line with environmental trends of the EU and subjective factors (interest in opportunities and benefits of renewable energy) was investigated; provides a methodological framework for the methods used (descriptive statistics, factor analysis (FA) and path analysis (PA). A representative cross-sectional survey of 1015 respondents are selected as main research tool. Lithuania (Case Study) served as an empirical basis for the research.

Keywords: modernisation; economic sustainability; economic modernisation and case study analysis



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1. Introduction

National development, a form of expansion that ensures a better quality of life for present and future generations, is the ultimate goal of sustainable development. Sustainable development is based on three fundamental dimensions: economic growth, societal well-being, and environmental quality, without prioritising any one over the other. In summary, economic development will only be sustainable if it has a positive impact on the social environment and the quality of our environment. In 2015, the United Nations (UN) adopted the Sustainable Development Goals (SDGs) (17 goals and 169 targets), which cover three dimensions: social, economic, and environmental. The economic objectives are: to promote sustained, inclusive and sustainable economic growth, productive employment and decent work; to build resilient infrastructure, foster inclusive industrialisation, and promote innovation; to reduce inequalities between and within countries; and to ensure sustainable consumption and production patterns.

Upon analysis of scientific literature, it has been observed that some researchers identify the development of a country with the process of modernisation of that nation

and to assess the trajectory of economic development, they develop an index of structural modernisation, which combines the dimensions of structural change and technological catch-up [1]. Other authors describe economic modernization as ‘a directed process of economic change aimed at the achievement of certain defined goals or objectives’ and are ‘conceived as a process by which the economy’s own tendency towards dynamism is realized’ [2]. In the academic literature on modernisation processes, there is a general consensus that the driving force behind modernisation has, in any case, been economic or economic development [3].

Globalisation processes and their decisive new phenomena of social, economic, political development, cultural, scientific, and technological progress, changes in the environment of conservation of nature, as well as changes in various security areas, are extremely important, because they reflect a new global and the creation of a context that expresses the circumstances of internationality and determines the further development of society and changes in society’s life [4].

Understanding the essence and importance of the context allows defining the relevant priorities for the modernisation of society, which would reflect the tendency to respond to the new challenges of scientific and technological progress, security, economic stability determined by globalisation, and also shows the need to develop various economic crises, economic downturns, and economic conflicts, which, as well as the prevention of lack of fair competition or imitation of fair competition

In the modern conditions of social, economic, political development, cultural, scientific, and technological progress, a number of new phenomena and circumstances are emerging, which, in understanding and responding to them, inevitably lead to the need to investigate the problems of sustainable development and strive for these problems to be adequately solved in the life of society. for the new challenges that arise. The problems of sustainable development are related both to the general phenomena characteristic of the development of modern society and to the various circumstances characteristic of the economic life of the society and to the economic growth and modernisation processes.

The authors highlight that the direct correlation between the trend towards modernisation and a sustainable economic environment calls for an interdisciplinary scientific debate. The study shows that many instruments are used to assess the economic environment; however, there is no deeper complex analysis in the context of the sustainability of the economic environment, which would indicate the theoretical constructs of the country’s modernisation, as well as the empirical data. Based on this methodological position, the research questions are: How does this conceptual shift reflect changes in the country’s modernisation in the context of the sustainability of the economic environment, and what are the implications for the country?

In the conditions of globalisation, regional integration, and urbanisation, for economically small countries such as Lithuania to be economically strong, attractive, and well known, it is important to implement the principles of sustainable development in all areas; otherwise, a high quality of life, work, education, investment, business, and tourism will not be achieved. The country’s economic system is complex, complex, influences others, and depends on other economic systems, their hierarchies, and the environment. One or more economic factors and the indicators describing them can only partially reflect the country’s position in relation to other countries, so they must be assessed comprehensively.

In the scientific literature, the greatest attention is paid to large countries, but smaller ones, such as Lithuania, receive less attention and are often evaluated episodically. In the absence of a broader academic approach, it is necessary and necessary to pay more attention to the assessment of small countries, especially based on the principles of sustainable development.

The purpose of the article is to analyze the development of modernisation in Lithuania from the perspective of a sustainable economic environment and to form a complex system of indicators for the formation of a purposeful management of a modern country. Reflecting on

the purpose of the research, three main fields of analysis are distinguished, which influence the modernisation of the country in the context of a sustainable economic environment.

1. Developed network of digital efficiency, infrastructure, environment and natural resources;
2. Growing interest in the possibilities of renewable energy and its benefits;
3. Residents are more guided and apply EU ecological trends for quality of life.
4. The Section 2 presents the relevant academic literature on the aspects of a country's development, modernisation, and a sustainable economic environment. The Section 3 provides a methodological framework for the methods used. The Section 4 discusses the results, presents the contribution and limitations of the study, and offers perspectives for future research.

2. Literature Review

Modernisation theory states that economic development brings about significant changes in values, from material survival values to post-materialist quality of life issues [4,5]. As the economy's composition evolves from agrarian to industrial and post-industrial, citizens will increasingly embrace cosmopolitan and post-materialist values such as environmental protection, self-expression, and gender equality [5,6]. Modernisation theory emphasises not only the process of change but also the response to that change. It also considers internal dynamics regarding social and cultural structures and the application of new technologies [7].

Some of the early work covered the effects of industrialisation on wealth, urbanisation, and income inequality. After World War II, scholars began to examine the relationship between industrialisation and democracy. Starting in the 1970s, researchers studied the transition of an industrial society to a post-industrial economy and discussed the impact of this change on family structure and social values [5,6]. It is post-industrialisation that brings about changes in the fields of mass education and work and personal life and changes society's attitude towards family, government, and life priorities.

The concept of modernisation is defined differently by different scholars. Durkheim described modernisation as a transition from mechanical to organic solidarity, while Weber described this process as a transition from value-based to goal-based activity [8]. Charlton and Andras identified modernisation as a trend of adaptive growth in the complexity and efficiency of social systems [9]. In summary, it can be said that modernisation is a process during which changes are encountered in various areas, such as economic, social, political, etc. A modern interpretation of modernisation defines it as a special stage of human development, which is characterised by the transition to a new type of society that meets modern standards and requirements and provides an increase in the quality of life resulting from the development of the personal characteristics of individuals [8].

Modernisation processes affect citizenship. The concept of citizenship was studied by [10–14]. Citizenship is perceived as one of the essential components of social society to achieve common goals of public welfare [11]. The European Union defines citizenship as the legal ties between people and the state. The citizen and the state have specific duties and rights towards each other. Active citizenship connects various identities of members and allows them to participate in society's economic, social, cultural, civic, and political life [15]. In conclusion, it can be said that being an active citizen means directly contributing to changes in society. However, most community members are reluctant to join cooperative associations to protect or satisfy the public interest, not the other way around.

Regarding certain changes, it should be noted that the modern world is facing the problem of environmental degradation, which was addressed in 2015 by the 17 Sustainable Development Goals of the United Nations (UN), divided into 169 tasks and grouped into three areas: social, economic, and environmental. The article's authors rely on "A theoretical model of the development of public citizenship in a sustainable environment" [14]. To analyse the development of Lithuania's modernisation from the point of view of a

sustainable economic environment and to form a complex system of indicators for the purposeful management of a modern country.

The economy is a very complex area of society life, characterised by continuous changes and their acceleration, the multifaceted nature of these changes, the increase in scale and contradictory trends in development and expansion [16]. An essential feature that can be distinguished is a constant and unbroken tendency to change/dynamism, and it is characteristic not only of the economy as a system, but also of the development environment of the economy as a system. The concept of economic modernisation can be treated in various ways: as a reflection of ongoing changes in economic life, and as a purposeful process of progressive changes in the economy. The modernisation of the economy is a process by which the economy's tendency toward dynamism is realised. Due to the modernisation of the economy and its results, changes of various origins and types can be perceived and evaluated both quantitatively and qualitatively; for this reason, the concept of economic modernisation should be understood as reflecting a somewhat broader meaning of multiple changes [16,17]. It should be emphasised that the aforementioned process of multifaceted changes must be purposefully managed, and for this, measures must be prepared and implemented for both national and regional economic systems, individual economic sectors, and the international and global economy. Therefore, one of the most important circumstances of modernisation of the economy is the identification of the social and economic development problems relevant to the progress of society and the selection of appropriate solutions. The challenges of today in society can be very diverse. Melnikas (2020) distinguished and classified as follows:

- Challenges and requirements promoted by globalisation and internationalisation of social, economic, political, and technological progress;
- Challenges and requirements determined by the formation of a knowledge-based society and the creation and spread of new lifestyle models;
- Challenges and requirements determined by European integration.

The authors have devised a flow chart for the study of country modernisation, considering the analysis of the scientific literature [5–12] and the National Progress Plan [13] (see Figure 1).

According to Figure 1, three environments are identified: social, economic, and political. The economic environment covers three other areas: the efficiency of digitization, infrastructure, interoperability of the environment and natural resources interoperability; interest in the opportunities and benefits of renewable energy; and behaviour in line with environmental trends in the EU. The flowchart also contains three horizontal dimensions: sustainable development, innovation, and equal opportunities.

2.1. A Sustainable Economic Environment

The basic principles of sustainable development were formulated and endorsed at the 1992 World Conference on Environment and Development of the United Nations in Rio de Janeiro, Brazil. However, to date, scholars have defined sustainable development in different ways. Sustainable development is a form of development that meets the needs of today without compromising the ability of future generations to meet their own needs; a development that improves the quality of life of people while preserving the ecosystem; development that ensures the environmental, economic, and social well-being of all members of society without threatening the systems that provide that well-being; development that promotes the economic and social progress of humanity and ensures that this progress is accompanied by progress in other areas [14]. Sustainability refers to a state of dynamic equilibrium, where a long-term balance between the components of the economic environment and social well-being is sought [15]. Sustainable development is understood as the efforts of a nation to reconcile and ensure a vibrant economy, a healthy environment and ecology, social well-being, and the active and participatory participation of the urban community in all phases of city development [16]. Melnikas highlighted that the phenomena, problems and issues of sustainable development can be examined

in the following dimensions: encompassing different spatial scales (differently defined regions, individual countries or groups of countries, the world), as well as different systems (different organisations, groups of organisations, systems to be defined in different ways); incorporating into the totality of sustainable development processes different combinations of processes, phenomena, factors and circumstances of social, economic and political development, scientific and technological progress; prioritising different manifestations, consequences or circumstances of sustainable development that are social, economic, ecological, technological, as well as political in nature and otherwise characterised; taking into account the governance characteristics of the various development and progress processes and the multiplicity of the different actors and their interests involved in governance [17]. Sustainable development is a key priority in creating and improving the macroeconomic environment of organizations [18].

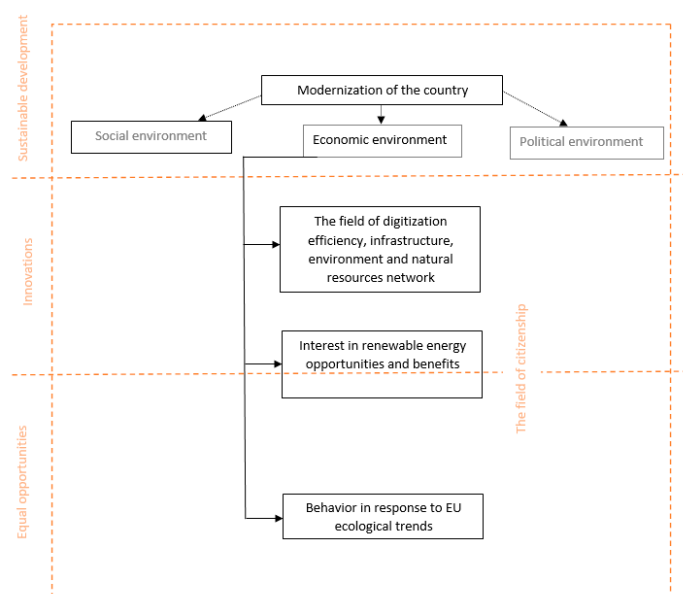


Figure 1. Flow chart for the study on the modernization of a country from the perspective of the economic environment.

Masser identified the following principles of sustainable development [19]: partnership and accountability; active participation and transparency; a system approach; a link to the future; equity and justice; ecological constraints; the link between local and global; and local relevance.

We want to note that a sustainable economic environment is a concept whose meaning should be understood broadly: it includes the expression of the economy in a sustainable ecosystem/sustainability area, i.e., exploring and answering how sustainability applies to everything from finance to environment and social structures. Economic sustainability is crucial because it describes how countries should monitor economic relations; effectively manage issues and uncertainties in the economic field; how societies can maintain their current financial structures, and what steps may be needed to improve the system for greater long-term sustainability. Economic sustainability is the concept used to identify various strategies that enable using available resources to their best advantage. The idea is to promote using those resources in a way that is both efficient and responsible and likely to provide long-term benefits [20]. The 2015 United Nations Resolution Transforming Our World: the 2030 Agenda for Sustainable Development is an action plan for people, the planet, and prosperity [21] to be implemented by all countries and stakeholders working together as partners. To achieve the goals of sustainable development, Lithuania has adopted a National Progress Plan, which identifies the axes of the smart economy: move towards sustainable economic growth based on scientific knowledge, advanced technologies, and innovations, and increase the international competitiveness of the coun-

try's international competitiveness; to improve transport, energy, and digital internal and external connectivity; to ensure a good quality of the environment and sustainability of the use of natural resources, protect biodiversity, mitigate the impact of climate change in Lithuania and increase its resistance to its effects; to ensure sustainable and balanced development of Lithuania's territory and reduce regional exclusion; to strengthen national security [13]. Competitiveness, advanced technology, and innovation are rarely used in isolation or when distinguishing from competitors. The usefulness and high potential of understanding, experimenting and learning about competitiveness at different levels, from product, company, and industry to group, city or country, especially in large emerging economies, increased [6]. Researchers have conducted studies with a different looking for a link between competitiveness and innovation [7–11].

The complexity of the concept of competitiveness stems from the fact that it is used at different levels and in numerous scientific fields. Several scholars have examined competitiveness from the perspective of the employee [22–24], the company [25–27] the village, the city, the region or the country [16,28–32], and the industry [33,34]. From an economic point of view, competitiveness can be analyzed in the context of several indicators (level of technology, capital, skills of the company's workforce, productive capacity, etc.). From an economic and managerial point of view, there are four types of competitiveness: cost competitiveness, price competitiveness, technological competitiveness, and structural competitiveness. From a strategic management perspective, competitiveness is when a company has relevant resources, i.e., employee skills, assets, cash flow, capital and investment, flexibility, balance and dynamism in the organization structure, the interaction between the organization and the environment, as well as company-specific variables (competence, product imitation capabilities, information system, value-added, and quality). Infrastructure is a key prerequisite for the development of national, regional, and urban economies and to meet their needs [12]. Physical infrastructure typically includes roads, pipelines, airports, railways, power lines, gas pipelines, sewerage/drainage systems, information technology, and telecommunications infrastructure. The majority of researchers use physical expressions of infrastructure indicators in their studies, i.e., assessing the relationship between the length of roads, the length of pipelines, the number of telecommunication lines or the number of telephone subscribers, and the impact on economic indicators. However, qualitative indicators are equally as important, because the development of an eco-social system does not depend on physical infrastructure alone. Their quality (reliability, timeliness, and ease of use) becomes an important characteristic. The scientific literature focuses on the development and security of energy networks. The energy network is the system that supplies electricity, heat and gas to a city. The dependence of energy networks on a single market presents a threat to the economic vulnerability of the city and its economic power, and to the loss of competitive advantages for companies due to increased production costs. Researchers have shown that road length per 1000 inhabitants, per capita exports, per capita education spending, and physical capital stock contribute positively to economic growth [35]. The development of road infrastructure has a positive impact on economic growth [36–38]. The primary role identified for road infrastructure is mobility, which ensures the movement of people, goods, and services. It also improves access to certain markets for goods and services. However, countries have sustainable transport targets to achieve the Sustainable Development Goals, i.e., to ensure good environmental quality and sustainable use of natural resources. Sustainable transport aims to ensure that environmental, social, and economic factors influence all decisions related to the transport system [39].

Shemme et al. investigated the role of the transport sector in the energy system and the challenges it poses. They also proposed an evaluation of an effective implementation strategy for a future, ideally non-GHG-neutral transport sector to meet the Energy Wende and Energy Roadmap 2050 targets of the European Commission [40].

The concept of economic security was introduced by US President Franklin D. Roosevelt in 1934 with the creation of the Federal Committee on Economic Security [41]. The

objects of economic security can be the state, society, citizens, companies, institutions, and organisations, territories, and individual objects. The main actor in economic security is the state, which exercises its functions in the field of economic security through the legislative, executive, and judicial branches. The economic security aspect is particularly prominent in the three groups of threats to Lithuania's national security: the eighth (economic and energy dependence, economic and economic vulnerability), the tenth (social and regional exclusion, poverty) and the eleventh (demographic crisis) [42].

2.2. Sustainable Economic Environment in Lithuania

According to a report published by the Bank of Lithuania [43], global GDP forecasts are deteriorating (a drop of 0.4 for 2022 and 0.7 for 2023 between April and July) (see Table 1). In the case of the major markets, there is a drop for 2023, i.e., USA—1.3, China—0.5, Eurozone—1.1.

Table 1. Economic forecasts of the Bank of Lithuania.

	December Forecast in 2022			September Forecast in 2022		
	2021	2022	2023	2021	2022	2023
Average annual inflation by HICP (Harmonized Consumer Price Index)	4.6	18.9	9.5	4.6	18.3	8.4
Salary	10.6	12.8	9.1	10.6	12.7	6.3
GDP	6.0	2.5	1.3	4.9	2.1	0.9
Private consumption expenditure	8.0	0.8	0.5	7.3	1.0	−0.8
Government sector consumption expenditure	0.9	0.2	0.0	0.6	0.3	0.0
Formation of common fixed capital	7.8	2.3	5.1	7.0	3.0	3.4
Export of goods and services	17.1	11.5	3.8	15.9	6.4	1.6
Import of goods and services	20.2	11.3	4.3	19.4	7.5	1.3
Unemployment rate (annual average; % vs. labor force)	7.1	6.1	6.7	7.1	6.3	7.1
Number of employed (% annual change)	1.2	4.8	−0.5	1.2	4.0	−0.6

Observing Lithuania's key monthly indicators of economic activity, two sectors are experiencing growth, i.e., market services and construction, while the rest, i.e., manufacturing, retail trade, exports of goods of Lithuanian origin, are in decline. Monitoring the unemployment rate and comparing it with the unemployment rate in Q1 to Q3 2022 and 2021, there is a decrease in the unemployment rate; however, if the unemployment rate is monitored in 2022, there is a decrease of 0.9 in Q1 to Q2 and a slight yet visible increase of 0.5 in Q3. There is also a decrease in vacancies in Q3 2022 compared to Q1 2022 by around 2.5%.

The National Industrial Digitalisation Platform Industry 4.0, established on the initiative of the Ministry of Economy and industry representatives, will contribute to the accelerated growth of the GVA generated by the industrial sector, to the promotion of the introduction of digital processes in industry, and to the improvement of the international competitiveness of Lithuanian industry and the accelerated growth of Lithuanian economy [44].

Gross income per household member in 2021 compared to 2020 has increased in all Lithuanian counties with the exception of Telsiai (a decrease of €57 per household member), with the highest growth in Marijampolė, Vilnius and Alytus counties.

The risk of poverty in 2021 has decreased compared to 2020, both in urban and rural areas. By examining the distribution of households according to the percentage of households that are well or very well off, it is clear that the share of those who are well or very well off increased by 3.3% in 2021 compared to 2020, while the share of those who are very well off decreased by 0.7% in the same period.

Expenditure on research and experimental activities increased by approximately 10% in 2021 compared to 2021.

The largest increases in passenger turnover in Q2 2022 compared to Q2 2021 are observed for inland waterway, maritime, air, and rail transport. Upon monitoring the freight turnover of all modes of transport, it is clear that there is a significant drop of more than 40% in rail freight transport in Q2 2022, while there is a slight increase in freight turnover by road, with an increase in inland waterway volumes of around 79%. The decrease in pipeline freight traffic was approximately 27% during the period under review.

Lithuania is undergoing the fourth industrial revolution, enabling the creation and shaping of a life in which virtual and material production systems interact flexibly. The most intense part of the Fourth Industrial Revolution is in the manufacturing sector. According to the breakdown of companies, small and medium companies account for 99.8% of all companies operating in Lithuania, of which 9.2% are in manufacturing [44].

The balance of international trade in goods is negative for all commodity groups except: unprocessed industrial goods n.e.c.; processed food and beverages for household consumption; transport equipment for non-industrial use; durable consumer goods n.e.c.; short-term consumer goods n.e.c.; and petrol and commodities n.e.c.

Lithuania's direct investment abroad increased by €80.87 million. If we analyze investments in the European Union, Lithuanians invest mainly in Latvia and Estonia. Foreign direct investment in Q2 2022 increased by around €450.27 million compared to Q1 2022. The main investors in Lithuania are Germany, the Netherlands, Estonia, and Sweden.

The general government deficit in 2021 is €554.8 million and the gross debt (nominal value at the end of the period) is €24,535.5 million.

Looking at monthly business trends using the Economic Assessment Indicator (the arithmetic weighted average of the five component indicators of confidence in the consumer, industry, construction, trade and services sectors (the weights in the Joint Harmonised EU Programme of Business and Consumer Surveys are 20, 40, 5, 5, 30%, respectively)) as a percentage of GDP, it can be seen that the indicator has a negative trend from March 2022 to November, increasing from −3.9 to −11.9%.

3. Methodology

3.1. Sample and Data Collection Procedure

A representative survey of the Lithuanian population was conducted between 22 November and 30 November 2022 by the Lithuanian-British market and public opinion research company "Baltijos tyrimai" (Baltic Research) according to a questionnaire agreed with the client. The survey included 1015 Lithuanians (age 18 and older).

The results of this survey apply to Lithuanians who are at least 18 years old. The survey was carried out through individual interviews. The age range of this population was chosen in line with the practice of population opinion surveys (ESOMAR) in the EU and to compare the survey results with those of previous studies on this subject.

The respondents of the population survey were chosen using multistage stratified random sampling. 1015 Lithuanians who were at least 18 years of age participated in the survey. The maximum margin of error allowed by this sample is $\pm 3.1\%$. Multiple steps were followed in the selection of respondents:

- Determining the proportion of respondents in the districts. All counties are included in this study. The percentage of those surveyed in each county in the overall sample corresponds to the percentage of Lithuania's population over the age of 18 that reside in that county;
- Determining the proportion of respondents in different size areas in each county. The categories of settlements used in this study are: Vilnius, large cities (over 50,000 inhabitants), towns (2000 to 50,000 inhabitants), rural areas (up to 2000 inhabitants). The number of respondents in the different sizes of each county corresponds to the proportion of the population aged 18 years and over living among the total population of that age in the county;

- The selection of particular settlements for the survey is made in the next stage. The areas to be surveyed are chosen at random from the list of settlements in each category (by population size) in each county;
- Purposive sampling is used to select respondents. A path is created in each community by altering a certain step in the choice of the residence where the survey is conducted. The nearest birthday rule is used to determine which household responder will be selected. There may be up to 3 attempts (visits) per interview. This method of choosing respondents guarantees the greatest amount of random sampling and the same participation probability.
- The survey was carried out between 22 November and 30 November 2022 at 111 sampling points (31 towns and 49 villages). The demographic and social characteristics of the respondents (a total of 1015 respondents aged 18 years and older) are presented in Table 2.

Table 2. Sample profile.

Variables	Sample Data	Census Data	Chi-Square Test Results
Gender			$\chi^2 = 0.66; p < 0.001$
Males	462	46%	
Females	553	54%	
Age			$\chi^2 = 216.16; p < 0.001$
18–29	155	15%	
30–49	333	33%	
50+	529	52%	
Nationality			$\chi^2 = 2138.62; p < 0.001$
Lithuanians	905	89%	
Russians	49	5%	
Poles	51	5%	
Other nationalities	10	1%	
Family income per month			$\chi^2 = 7852.36; p < 0.001$
Less than 1000 EUR	253	25%	
1001–1800 EUR	246	24%	
Above 1800 EUR	284	28%	
DK/NO	232	23%	
Education			$\chi^2 = 665.28; p < 0.001$
Graduate, postgraduate	48	5%	
Undergraduate University High	120	12%	
Undergraduate Non-university Higher (College)	100	10%	
Higher (Technical)	200	20%	
Professional Qualification	297	29%	
Upper Secondary	180	18%	
Lower Secondary, incomplete Upper Secondary, primary	65	6%	
Type of settlement			$\chi^2 = 583.12; p < 0.001$
Big cities			
(Vilnius, Kaunas, Klaipėda, Šiauliai, Panevėžys)	427	42%	
Other towns	264	26%	
Villages, towns with up to 2000 inhabitants	324	32%	
Counties			$\chi^2 = 911.01; p < 0.001$
Alytus County	41	4.0%	
Kaunas County	202	19.9%	
Klaipėda County	114	11.2%	
Marijampolė County	59	5.8%	
Panevėžys County	74	7.3%	
Šiauliai County	91	9.0%	
Taurine County	37	3.7%	
Telšiai County	49	4.8%	
Utena County	55	5.4%	
Vilnius County	293	28.9%	

Important sociodemographic characteristics of the survey data are compared (age, sex, income groups, type of settlement, social status, and education). With a response rate of 50% and a confidence level of 0.95, the error margin for the survey results cannot be greater than 3.1%. (see Table A1). With a 95% confidence level, the margin of error is calculated for a given sample size and response rate.

3.2. Data Analysis Methodology

Nineteen survey questions (statements) were created based on analysis of the literature [13,45–50] (see Table A2). Questions in the survey's questionnaire are rated on a 5-point Likert scale, from strongly disagreeing to strongly agreeing. Internal consistency of questionnaire, which was examined by Cronbach's alpha, is 0.879.

First, a factor analysis (FA) was performed to assess the latent factors (constructs) and variables on the data set of 1015 participants. Second, path analysis (PA) is used for a causal modelling approach to explore the correlations within a defined network of these factors. Goodness of fit index (GFI), Chi-square value (CMIN), normed fit index (NFI), relative fit index (RFI), incremental fit index (IFI), Tucker-Lewis index (TLI), comparative fit index (CFI) and approximation root mean square error (RMSEA) were used to evaluate the goodness of fit of the network (model) [51,52]. Then, multiple group analysis (MGA) was applied to examine differences in the structure of how variables are related between groups [53].

The Windows statistical package SPSS 28.0 and SPSS Amos 26 were used for descriptive statistics, factor analysis and path analysis.

4. Results

4.1. Preliminary Data Analysis

The representation of the sample of a population was first summarized using descriptive statistics. Between the means and medians of the variables, there are no significant variances (see Table A3).

38.7% (30.4 and 8.3 cumulative frequency in percent) of respondents believe that they often use the latest technologies, and 48.1% noted that the implementation of new technologies in trade or service supply companies and elsewhere does not bother them, and they are happy to try innovations.

26.3% (21.8 and 4.5 cumulative frequency in percent) of the respondents agree that they are interested in the latest EU ecological trends, and 33.3%—neither agree nor disagree.

27.4% (24.9 and 2.5 cumulative frequency in percent) of the respondents agree that they have all the opportunities to participate in public activities in Lithuania, 40.5%—neither agree nor disagree. Respondents' participation in some kind of civic activities in the last few years: 30.9% of respondents donated money, things to charity or otherwise supported individuals, public organizations or civic initiatives, 13.1%—participated in environmental management taluks, 3.8—participated in local community activities.

45.7% (38.8 and 6.9 cumulative frequency in percent) of the respondents agree that they feel safe in Lithuania, 37.4%—neither agree nor disagree. 44.4% (35.3 and 9.1 cumulative frequency per percent) of the respondents agree that they feel completely safe because Lithuania is a member of NATO, 37.1%—neither agree nor disagree. 34.8% (30.7 and 4.1 cumulative frequency per percent) of the respondents agree that they feel completely safe because they believe that the Lithuanian army is adequately prepared, 42.2%—neither agree nor disagree. 23.6% (22.4 and 1.2 cumulative frequency in percent) of the respondents agree that they know how to act in case of mobilization, 37.4%—neither agree nor disagree.

43.0% of the respondents would not do anything if an economic crisis erupted in Lithuania and the standard of living deteriorated significantly, while 16.3% would participate in demonstrations and other protest actions. 30.8% of the respondents would stay in Lithuania and do nothing if a hostile state attacks Lithuania or there is a real threat of attack, 25.2% would stay in Lithuania and contribute to the defense of the country by other means (e.g., work in a hospital, contribute to the dissemination of information).

4.2. Results of the Factor Analysis and Path Analysis

First, according to the flow chart for the study on the modernisation of a country from the perspective of the economic environment, the statements of the survey were grouped into four factors using a factor analysis (FA) technique [54]. Furthermore, variables with factor loadings less than 0.708 were excluded from the further analysis [55].

Second, the reliability of internal consistency is measured by the Cronbach alpha coefficient. All values of the Cronbach alpha coefficients are greater than 0.7 and lower than 0.9, which is the acceptable range [56,57]. To accommodate the validity of the discriminant, the extracted average variance (AVE) and composite reliability (CR) indices are also evaluated. As seen in Table 3, their values are greater than 0.5 and 0.7, respectively, which means that items (factors) are considered in agreement with the survey statements [58].

Table 3. Factor structure and its loadings with reliability indicators.

Factors and Variables	Factor Loadings	Cronbach's Alpha	AVE	CR
Efficiency of digitisation, infrastructure, environment and interoperability of natural resources interoperability		0.720	0.532	0.887
I often use the latest technology	0.899			
The implementation of new technologies in trade or service supply companies and elsewhere does not bother me	0.709			
Currently, there is a bad connection between Lithuania and other EU countries	0.731			
The infrastructure of airports in Lithuania lags far behind the EU average	0.710			
Digital infrastructure is underdeveloped in Lithuania	0.736			
Interest in the opportunities and benefits of renewable energy		0.735	0.546	0.706
Alternative fuels for cars are used too little in Lithuania	0.713			
I used the government social assistance in the past 5 years	0.764			
Behaviour in line with the EU's environmental trends		0.732	0.584	0.737
I follow the principles of healthy lifestyle	0.709			
I am interested in the latest EU ecological trends	0.816			
Citizenship		0.779	0.516	0.900
I have all the opportunities to participate in public activities in Lithuania	0.855			
I feel completely safe even if an economic crisis erupted in Lithuania and the standard of living deteriorated significantly	0.711			
I feel completely safe even if a hostile state would attack Lithuania or there would a real threat of attack	0.708			
I feel safe in Lithuania	0.829			
I feel completely safe because Lithuania is a member of NATO	0.801			
I feel completely safe because I believe the Lithuanian army is properly prepared	0.741			

The factors in our research can be attributed to two distinct groups: 'soft' and 'hard'. The soft determinants, which according to [59] refer to various attitudes, perceptions, behaviour patterns, in our study are represented by behaviour in line with the EU's environmental trends and partially by the interest in the opportunities and benefits of renewable energy 'hard' determinants, which typically represent infrastructure, machinery, etc. is represented by the efficiency of digitisation, infrastructure, environment and interoperability of natural resources [60]. After factor analysis is completed, the path analysis (PA) is then performed. The result of the chi-square goodness-of-fit test indicates an exact-fitting model, $\chi^2 = 249.12$, $p < 0.001$. The indicators of at least an acceptable model fit [61]: NFI is equal to 0.936, RFI is equal to 0.907, IFI is equal to 0.954, TLI is equal to 0.933, CFI is equal to 0.953. RMSEA is considered an 'absolute fit index' and is equal to 0.49, and less than 0.05,

so the network (model) is generally considered indicative of a close fit model [62,63]. The four-factor network is presented in Figure 2.

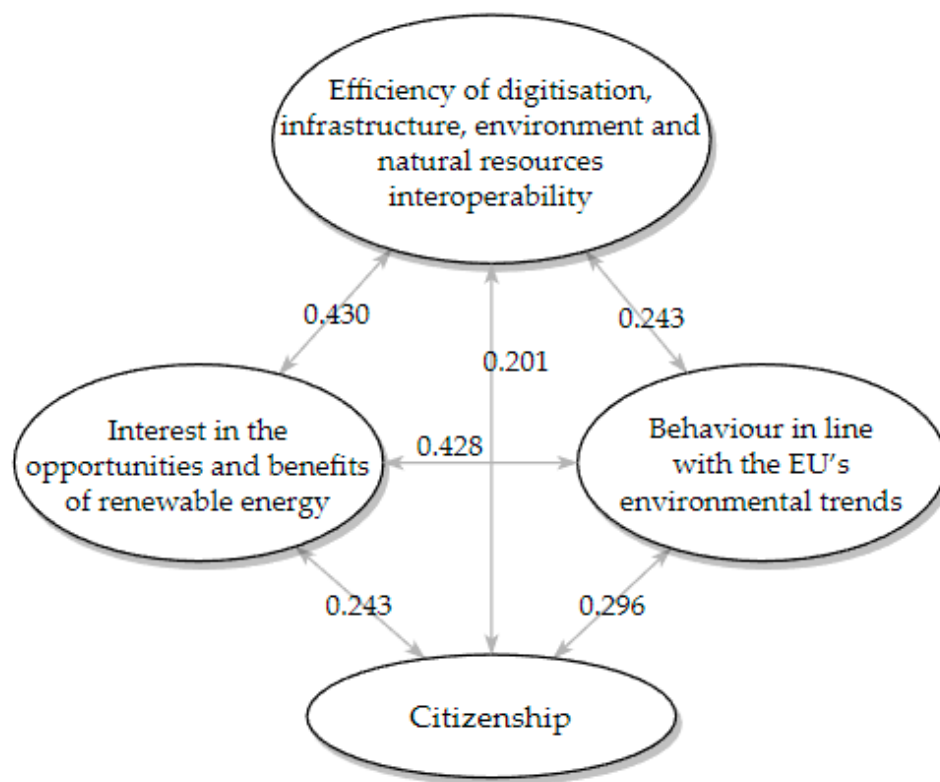


Figure 2. Four-factor network for an economic environment.

According to data from the Political Participation Index [64], the activity or passivity of political participation can be partially described by demographic characteristics: more politically active persons are more educated, have higher incomes, have prestigious professions, and are more interested in politics. The earlier study [20] identified several factors, including family income per month, as relevant for citizenship activities. For example, the higher the family income of the respondents per month, the more active the participation of the respondents in citizenship activities. For this reason, the difference between the sample comprised of respondents whose family income per month is above 1800 EUR (the first group) and the sample comprised of respondents whose family income per month is less than 1000 EUR (the second group) could be examined using multigroup path analysis to distinguish the archived results of the four-factor network for economic environment.

5. Discussion and Conclusions

Our research showed that the most important construct in shaping civil society modernisation is the efficiency of digitisation, infrastructure, environment, and natural resources interoperability, as it has a direct impact on all other constructs investigated, namely: Interest in the opportunities and benefits of renewable energy, behaviour in line with the environmental trends of the EU, citizenship. Therefore, our findings contribute to the theoretical proof that states that ‘hard’ determinants rather than ‘soft’ determinants are the focal point in deciding the paths of development of the country and its civil society. These arguments reveal an interesting fact. In the scientific literature, there is consensus that ‘hard’ determinants are more important for the least or developing countries to rule their modernisation trajectories [65]. It is widely accepted that when the country reaches the level of a developed nation, the ‘soft’ determinants begin to prevail in driving the country’s modernisation further. Lithuania is considered a developed country [66] with a high-income economy [67]. Although, as our investigation shows, its modernization

is still driven mainly by 'hard' factors. This finding not only adds scientific novelty to modernization theory [68], showing that modernization in the developed country can still be shaped by 'hard' factors, but also indicates a new and prospective scientific avenue. It would be scientifically sound to investigate why modernisation in some developed countries is driven by 'hard' and some by 'soft' factors. What are the reasons for determining this difference?

We also show that the increase in citizenship is affected by all three other constructs investigated. Environmental awareness of society, which is considered one of the indicators of modern society [69], was divided into two distinct constructs, namely interest in the opportunities and benefits of renewable energy and behaviour in line with environmental trends in the EU. It was done intentionally in an attempt to reveal what is more important in the formation of modern society—the forcefully imposed rules which are being followed by very transparent and strict retribution (behaviour in line with the EU's environmental trends—'hard' determinant) or 'soft' determinants—Interest in the opportunities and benefits of renewable energy. Once again, the 'hard' determinant showed a stronger influence on civil society modernization compared to the 'soft' one (correlation coefficients 0.296 vs. 0.243). Although the differences in coefficients are not very hard, it once again confirms [70] arguments about the importance of strict rules in achieving the desired attitudes or behavior in post-Soviet countries. Therefore, our findings confirm the statements of [71] on the role of cultural legacy in shaping the country's development in the coming decades. It is worth noting that the correlation coefficients between behavior according to the environmental trends of the EU and interest in the opportunities and benefits of renewable energy are rather lower, which means that these constructs are not influenced by each other but are driven by different factors. The identification and further investigation of factors behind the above-mentioned constructs could also be a prospective research idea in the area of society modernization studies.

Discussion on the impact of research policy: the analysis of the presented research results once again substantiates the applicability of our research and demonstrates the impact on public policy makers who shape the unified ecosystem of the country's development, modernization and sustainability. Our results indicated, that the most important factors in shaping the modernisation of the country through the lens of economic environmental sustainability are three main fields: developed network of digital efficiency, infrastructure, environment and natural resources; growing interest in the possibilities of renewable energy and its benefits; residents are more guided and apply EU ecological trends for quality of life. The obvious relative negligence of Lithuanians towards the integration of the disabled is one of the factors that hinders the continuous social and economic modernisation of the country. Another factor that hinders the modernisation of Lithuania is the low participation of the public in solving the issues of the country's economy and participation in considering the issues of public policy. Our findings directly reflect the further development of scientific discussions in the context of the economic sustainability of the country and guided by the goals of Sustainable Development, according to the tasks set for the UN economic environment: promote sustainable, inclusive economic growth, productive employment and decent work; build resilient infrastructure, promote inclusive industrialization and innovation; reduce inequality between countries and within countries; ensure sustainable patterns of consumption and production. It also has conceptual and applied value in generating ideas for the preparation of other strategic documents of our country (e.g., National Progress Plan: for a new period), highlighting the directions of a smart economy: moving to sustainable economic development based on scientific knowledge, advanced technologies, innovation and increasing the country's international completeness. In the same way, these research results are valuable for the business environment, i.e., for entrepreneurs who, following the country's modernisation strategic guidelines, prepare significant business projects and implement them in different segments of the economy.

One of the possible limitations of our study lay in the methodology applied. We researched the modernization of the country through the lens of its main component, the

perspective of the citizens. Although we agree that the modernization of the country is a very complicated and multifaceted process and its thorough investigation may require the involvement of some experts who could evaluate some sophisticated processes in the society emerging during the development of modernization. This could also be a valuable future research idea.

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Appendix A

Table A1. Calculation Table of Answers Errors.

Responses (%)	Sample Size (n)																
	10	40	75	100	150	200	250	300	350	400	450	500	600	700	800	900	1000
0.1	1.96	0.98	0.72	0.62	0.51	0.44	0.39	0.36	0.33	0.31	0.29	0.28	0.25	0.23	0.22	0.21	0.20
0.5	4.37	2.19	1.60	1.38	1.13	0.98	0.87	0.80	0.74	0.69	0.65	0.62	0.56	0.52	0.49	0.46	0.44
1.0	6.17	3.08	2.25	1.95	1.59	1.38	1.23	1.13	1.04	0.98	0.92	0.87	0.80	0.74	0.69	0.65	0.62
2.0	8.68	4.34	3.17	2.74	2.24	1.94	1.74	1.58	1.47	1.37	1.29	1.23	1.12	1.04	0.97	0.91	0.87
3.0	10.57	5.29	3.86	3.34	2.73	2.36	2.11	1.93	1.79	1.67	1.58	1.50	1.36	1.26	1.18	1.11	1.06
4.0	12.15	6.07	4.43	3.84	3.14	2.72	2.43	2.22	2.05	1.92	1.81	1.72	1.57	1.45	1.36	1.28	1.21
5.0	13.51	6.75	4.93	4.27	3.49	3.02	2.70	2.47	2.28	2.14	2.01	1.91	1.74	1.61	1.51	1.42	1.35
6.0	14.72	7.36	5.37	4.65	3.80	3.29	2.94	2.69	2.49	2.33	2.19	2.08	1.90	1.76	1.65	1.55	1.47
7.0	15.81	7.91	5.77	5.00	4.08	3.54	3.16	2.89	2.67	2.50	2.36	2.24	2.04	1.89	1.77	1.67	1.58
8.0	16.81	8.41	6.14	5.32	4.34	3.76	3.36	3.07	2.84	2.66	2.51	2.38	2.17	2.01	1.88	1.77	1.68
9.0	17.74	8/87	6.48	5.61	4.58	3.97	3.55	3.24	3.00	2.80	2.64	2.51	2.29	2.12	1.98	1.87	1.77
10.0	18.59	9.30	6.79	5.88	4.80	4.16	3.72	3.39	3.14	2.94	2.77	2.63	2.40	2.22	2.08	1.96	1.86
15.0	22.13	11.07	8.08	7.00	5.71	4.95	4.43	4.04	3.74	3.50	3.30	3.13	2.26	2.65	2.47	2.33	2.12
20.0	24.79	12.40	9.05	7.84	6.40	5.54	4.96	4.53	4.19	3.92	3.70	3.51	3.20	2.96	2.77	2.61	2.48
25.0	26.84	13.42	9.80	8.49	6.93	6.00	5.37	4.90	4.54	4.24	4.00	3.80	3.46	3.21	3.00	2.83	2.68
30.0	28.40	14.20	10.37	8.98	7.33	6.35	5.68	5.19	4.80	4.49	4.23	4.02	3.67	3.39	3.18	2.99	2.84
35.0	29.56	14.78	10.79	9.35	7.63	6.61	5.91	5.40	5.00	4.67	4.41	4.18	3.82	3.56	3.31	3.12	2.96
40.0	30.36	15.18	11.09	9.60	7.84	6.79	6.07	5.54	5.13	4.80	4.53	4.29	3.92	3.63	3.39	3.20	3.04
45.0	30.83	15.42	11.26	9.75	6.89	6.89	6.17	5.63	5.21	4.88	4.60	4.36	3.98	3.69	3.45	3.25	3.08
50.0	30.99	15.50	11.32	9.80	8.00	6.93	6.20	5.66	5.24	4.90	4.62	4.38	4.00	3.70	3.46	3.27	3.10

Table A2. Items of the Questionnaire and their Frequency Analysis.

Items	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1. I often use the latest technology	12.4	19.3	29.6	30.4	8.3
2. The implementation of new technologies in trade or service supply companies and elsewhere does not bother me	5.1	23.6	18.7	48.1	4.5
3. Currently, there is a bad connection between Lithuania and other EU countries	6.7	36.2	41.1	14.7	1.3
4. The infrastructure of airports in Lithuania lags far behind the EU average	2.2	17.3	46.4	29.4	4.7
5. Digital infrastructure is underdeveloped in Lithuania	3.1	10.0	58.6	25.2	3.1
6. Income disparities in different regions of the country are large	1.1	1.6	14.5	52.3	30.5
7. Alternative fuels for cars are used too little in Lithuania	2.1	13.3	54.7	25.6	4.3
8. I used the government social assistance in the past 5 years	78.4	6.1	10.3	4.0	1.2
9. Services provided by the public sector fully meet the expectations of Lithuanian residents	6.9	27.0	47.0	17.1	2.0
10. I follow the principles of healthy lifestyle	4.3	17.9	47.3	26.7	3.8
11. I am interested in the latest EU ecological trends	11.3	26.5	33.3	21.8	4.5
12. Too little attention is paid to road traffic safety in Lithuania	3.0	26.7	35.0	29.3	6.0
13. I have all the opportunities to participate in public activities in Lithuania	5.0	21.9	40.5	24.9	2.5
14. I feel completely safe even if an economic crisis erupted in Lithuania and the standard of living deteriorated significantly	11.7	20.4	20.2	43.0	4.7
15. I feel completely safe even if a hostile state would attack Lithuania or there would a real threat of attack	16.8	24.9	25.2	30.8	2.3
16. I feel safe in Lithuania	2.5	13.7	37.4	38.8	6.9
17. I feel completely safe because Lithuania is a member of NATO	2.4	14.9	37.1	35.3	9.1
18. I feel completely safe because I believe the Lithuanian army is properly prepared	4.0	16.8	42.2	30.7	4.1
19. I know what to do in case of mobilization	6.1	30.0	40.3	22.4	1.2

Table A3. The descriptive statistics of the researched variables.

Variable	Min	Max	Mean	Std Deviation
I often use the latest technology	1	5	3.21	1.158
The implementation of new technologies in trade or service supply companies and elsewhere does not bother me	1	5	3.24	0.784
Currently, there is a bad connection between Lithuania and other EU countries	1	5	2.68	0.852
The infrastructure of airports in Lithuania lags far behind the EU average	1	5	3.17	0.846
Digital infrastructure is underdeveloped in Lithuania	1	5	3.15	0.760
Alternative fuels for cars are used too little in Lithuania	1	5	3.16	0.787
I used the government social assistance in the past 5 years	1	5	2.15	0.854
I have all the opportunities to participate in public activities in Lithuania	1	5	3.37	0.877
I feel completely safe even if an economic crisis erupted in Lithuania and the standard of living deteriorated significantly	1	5	3.02	0.785
I feel completely safe even if a hostile state would attack Lithuania or there would a real threat of attack	1	5	3.24	0.774
I feel safe in Lithuania	1	5	3.34	0.885
I feel completely safe because Lithuania is a member of NATO	1	5	3.34	0.920
I feel completely safe because I believe the Lithuanian army is properly prepared	1	5	3.14	0.883

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