

THE STRUCTURAL EQUATION MODEL IN THE ASSESSMENT OF DETERMINANTS OF SUSTAINABLE DEVELOPMENT OF MANUFACTURING ENTERPRISES IN POLAND

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Purpose: The main aim of this paper is to assess the dependence between the pillars of sustainable development of manufacturing enterprises, financial security, and macroeconomic condition in Poland in the period from 2010 to 2019.

Design/methodology/approach: This paper is both theoretical and empirical. The theoretical part discusses selected theoretical issues related to sustainable development and its determinants. The empirical part discusses the results of the research. A structural equation modeling (SEM) is used to assess the impact of internal and external determinants on the sustainable development of manufacturing enterprises.

Findings: The research results confirm that there are relationships between the pillars of sustainable development as well as internal and external conditions.

Research limitations/implications: The research is based on quantitative data, which is quite a significant limitation. This is due to the fact of analysis at the sectoral level and the lack of access to qualitative data.

Practical implications: The distinction which internal or external determinants have an impact on the sustainable development of enterprises allows for taking appropriate actions at the national level or the level of enterprise management.

Social implications: The ecological development of the company means reducing emissions of harmful substances into the environment and thus improving the conditions and quality of life of society.

Originality/value The study is a new approach to the analyzed issues. It allows drawing conclusions regarding the level of sustainable development and its determinants.

Keywords: sustainable development, transport enterprises, determinant of sustainable development.

Category of the paper: empirical research.

1. Introduction

The sustainable development of enterprise means the achievement of economic, social, and environmental goals. It is associated with the need to adapt to changing environmental conditions, continuous learning, and reorienting business goals towards increasing value for stakeholders. As economic practice shows, the implementation of the triad of sustainable goals is often associated with the need to give up part of the profits in favor of pro-social and environmental protection initiatives. Implementation of the concept of sustainable development of the enterprises, according to many researchers, allows them to gain a competitive advantage.

The components of sustainable development are closely related to each other. The research results indicate that the basis for social and environmental investments is the possession of appropriate property resources. The sustainable development of the enterprise depends on a number of internal and external factors. Financial security and favorable macroeconomic conditions are the key factors for the implementation of environmental and social investments. Recognition of determinants will allow effective decision-making by the managers of economic entities. The analyzed issues are relatively poorly recognized in the literature on the subject. Although there are attempts to identify factors that are crucial for the sustainable development of enterprises. An example can be the research conducted by Poskrobko (2009), Smith (2010), Slimane (2012), Zu (2013), Kowalska, Misztal (2020).

The main aim of this paper is to show the dependence between the pillars of sustainable development of manufacturing enterprises, financial security, and macroeconomic condition in Poland in the period from 2010 to 2019. This paper is both theoretical, and empirical. The first part discusses selected theoretical issues related to the sustainable development of enterprises. The empirical part presents the results of the research. A multi-equation model was developed and estimated using the TSLS method. The data for the analyzes were taken from the Central Statistical Office (GUS).

2. Selected problems of sustainable development of the enterprise and its determinants

The concept of "sustainable development" has an ambiguous character, it is difficult to define, concerns many aspects of socio-economic life, and environmental conditions. The most frequently cited definition comes from the Brundtland Report and indicates that it "is a development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (Report of the World Commission on Environment and Development: Our Common Future, 1987).

Sustainable development should be seen through the prism of sustainability, balancing, and self-sustainability (Brzozowski, 2010). It is "the humanitarian concept of global development, whose primary determinant improved quality of life and well-being of humanity in conditions of limited natural resources, taking into account the long-term effects of industrial development" (Adamczyk, 2009, p. 66).

The key issue here is the simultaneous implementation of economic, social, and environmental goals (Newton, Freyfogle, 2005; Slimane, 2012; Misztal, 2019). Over the years, the idea of sustainable development has evolved significantly. It should be noted that it is still flexible and open to interpretation (Prugh, Assadourian, 2003; Misztal, 2018). Some researchers equate sustainable development with ecological development (eco-development), the others emphasize that this is a broader term.

Globalization, climate change, increasing environmental awareness, and market competitiveness have an impact on the development of the idea of sustainable development (Kowalska, Misztal, 2020). The effectiveness of implementing the concept of sustainable development requires commitment from all sides of socio-economic life, including institutions, organizations, enterprises, and ordinary people (Pezzey, Toman, 2002; Majewski, 2008).

Business activities are crucial for sustainable development, due to their role in the economy, and the negative impact of economic activity on the environment. The sustainable development of the enterprise means achieving economic, social, and environmental goals. In the literature on the subject, the sustainable development of enterprises is defined in various ways. It can be defined as a decision-making process (permanent, self-supporting development) involving the common value (Porter, Kramer, 2007; Poskrobko, 2009). Sustainable development is related to reducing the negative impact on the natural environment and society (Hyršlová, 2009; Drljača, 2012; Murphy, 2013). In economic practice, it means using environmentally friendly production methods, implementing eco-innovations in order to preserve natural resources for future generations (Zu, 2013; Oželienė, 2017; Andryashina et al., 2020).

Sustainable development of enterprises is traditionally associated with three basic factors (McIntyre, et al., 2009):

- economic, in which the need to improve the financial and property situation comes to the fore (the goal is to maximize profit);
- social, related to such aspects as taking care of employees' health and development, their support, care for local communities;
- environmental, based on taking action to protect the environment, reduce emissions of harmful substances, implement environmentally friendly solutions (eco-innovation).

It should be emphasized that in economic practice the implementation of all three objectives is complicated, difficult, and involves the necessity of incurring specific financial outlays (Misztal, 2018). It requires the ability to constantly learn, adapt to changes, reorienting company goals towards increasing value for stakeholders, multi-dimensional management,

implementation of effective sustainable business models and strategies (Burchell, 2008, pp. 111-118; Grudzewski et al., 2010, p. 27).

The implementation of sustainable development goals strengthens the enterprise competitive position on the market (Mazur-Wierzbicka, 2005, p. 37; Faleye, Trahan, 2011; Gadomska-Lila, Wasilewicz, 2016, p. 304). It depends on several factors, which can be divided into two groups (Misztal, 2019, p. 37):

- external: macroeconomic conditions, development directions of environmental policy, support from funds, level of research development, outlays for innovative activities;
- internal, related to the awareness of the management, financial possibilities of the company, and the adopted development strategy.

The macroeconomic conditions are important because they affect not only the enterprise but also its stakeholders. The body of the research on the topic has shown that GDP, low inflation, and low unemployment rate increase confidence and improve the economic, social, and sustainable development of the enterprises. A good macroeconomic situation is important for ecological and social investments (Smith, 2010; Krajnakova et al., 2018; Misztal, 2019). A significant number of researchers emphasize that financial security (an appropriate level of financial liquidity, profitability, and low level of debt) is the basis for the implementation of ecological investments (Carter, Rogers, 2008; Oberhofer, Fürst, 2013; Kowalska, Misztal, 2020).

3. Research methodology

The main aim of the research is to assess the relationship between the components of sustainable development of manufacturing enterprises, the financial security, and the macroeconomic condition in Poland in the period from 2010 to 2019. The research period covers the time of the economic slowdown and the slow recovery from the crisis. The results obtained for Polish enterprises, due to the similar state and structure of the economy, can be compared to other countries in the region.

In connection with this, the main hypothesis is formulated as follows: "Macroeconomic condition and financial security of enterprises have a statistically significant impact on the pillars of the sustainable development of manufacturing enterprises in Poland in the period from 2010 to 2019".

The research involved three stages. First, it is created the indicators of economic development (E_{DME}), social development (SOC_{DME}), environmental development (ENV_{DME}), the indicator of sustainable development of manufacturing enterprises (S_{DME}), financial security indicator (F_S), and the macroeconomic condition indicator (M_C) (an assumption: all analytical indicators have an equal impact on synthetic indicators) (Table 1).

Table 1.
Diagnostic variables used in the model

Indicators	Type of variable	Description of the variables
ED _{DME}	Stimulants	Total revenues, net financial result, assets turnover inventories, short-term receivables, short-term investments value of production
	Destimulants	Long-term, and short-term liabilities
SOC _{DME}	Stimulants	Number of employees, average monthly salary, employment of women
	Destimulants	Injured in accidents at work
ENV _{DME}	Destimulants	Emissions of carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, sulphur dioxides, ammonia, PM10
F _S	Stimulants	Current financial liquidity, quick liquidity, return on sales (ROS), return on assets (ROA), return on equity (ROE), payables turnover in days (payables cycle), total assets turnover, share of equity in financing assets (self-financing), coverage of liabilities with tangible fixed assets, asset structure, overall financial situation
	Destimulants	Inventory rotation in days (inventory cycle), receivables rotation in days (receivables cycle), operating cycle in days, level of operating costs, general debt, Debt to equity – financial leverage, Long-term debt
M _c	Stimulants	Average life expectancy (year), number of live births, average monthly disposable income per person in the household (PLN), number of flats completed, density of expressways and motorways per 1000 km ² (km), number of broadband connections per 100 inhabitants, the percentage of households with broadband Internet access at home (percentage), the number of doctors (with the right to practice a medical profession) per 10000 population, the number of university graduates, expenditure on R&D (mill. PLN), number of beds in general hospitals, sold production, of industry (mill. PLN), export (mill. PLN), number of SMEs per 10000 inhabitants, gross fixed capital formation (mill. PLN), GDP (mill. PLN)
	Destimulants	Total greenhouse gas emissions (ton), the unemployed (thous.), average monthly expenses per person in a household (PLN), HICP (percentage), import (mill. PLN)

Source: own study on the basis of GUS, <https://stat.gov.pl>, 10.07.2020.

Second, it is transformed the explanatory variables to unify their measuring scales using the following formulas:

– for the stimulants:

$$z_{ij} = \frac{x_{ij}}{\max\{x_{ij}\}}, z_{ij} \in < 0; 1 >; \quad (1)$$

– for the destimulants:

$$z_{ij} = \frac{\min\{x_{ij}\}}{x_{ij}}, z_{ij} \in < 0; 1 >. \quad (2)$$

where:

z_{ij} stands for the normalized value of the j -th variable in the i -th year;

x_{ij} is the value of the j -th variable,

x_{ij} – value of the i -th measure for the j -th year,

$\max x_{ij}$ – maximum value of the i -th measure for the j -th year.

The economic, social, and environmental indicators are created based on the formula:

$$S_j = \frac{\sum_{i=1}^n S_{ij}}{n}, \quad (3)$$

where:

S_j – aggregate metric for j -th year,

n – number of indicators used in the model.

The structural form of the model has been described by the formula:

$$BY + AX = \xi_t, \quad (4)$$

where:

y – endogenous variable vector;

X – vector of delayed and exogenous and endogenous variables;

B, A – parameter matrices for the corresponding vectors.

$$\begin{bmatrix} 1 & -\beta_{12} & -\beta_{13} \\ -\beta_{21} & 1 & -\beta_{23} \\ -\beta_{31} & -\beta_{32} & 1 \end{bmatrix} \begin{bmatrix} y_{1t} \\ y_{2t} \\ y_{3t} \end{bmatrix} + \begin{bmatrix} -\alpha_{10} & -\alpha_{11} & -\alpha_{12} & \dots & -\alpha_{1k} \\ -\alpha_{20} & -\alpha_{21} & -\alpha_{22} & \dots & -\alpha_{2k} \\ -\alpha_{30} & -\alpha_{31} & -\alpha_{32} & \dots & -\alpha_{3k} \end{bmatrix} \begin{bmatrix} 1 \\ x_{1t} \\ x_{2t} \\ \cdot \\ \cdot \\ x_{kt} \end{bmatrix} = \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \end{bmatrix} \quad (5)$$

The model of the relationship between the pillars of sustainable development (E_{DME} , SOC_{DME} , ENV_{DME}), financial security (F_S) and macroeconomic conditions (M_C) is based on the formula:

$$\begin{aligned} E_{DME} &= const + SOC_{DME} + ENV_{DME(t-1)} + F_S + M_C \\ SOC_{DME} &= const + E_{DME} + M_C \\ ENV_{DME} &= const + ENV_{DME(t-1)} + F_{S(t-1)} \end{aligned} \quad (6)$$

The exogenous variables include: financial security indicator (F_S) and macroeconomic condition indicator (M_C). The analytical record presented, after conversion to the matrix record, gives a model of the form:

$$\begin{bmatrix} 1 & -\beta_{12} & 0 \\ -\beta_{21} & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} E_{DME} \\ SOC_{DME} \\ ENV_{DME} \end{bmatrix} + \begin{bmatrix} -\alpha_{10} & -\alpha_{11} & -\alpha_{12} & -\alpha_{13} & 0 \\ -\alpha_{20} & 0 & 0 & -\alpha_{23} & 0 \\ -\alpha_{30} & -\alpha_{31} & 0 & 0 & -\alpha_{34} \end{bmatrix} \begin{bmatrix} 1 \\ ENV_{DME(t-1)} \\ F_S \\ M_C \\ F_{S(t-1)} \end{bmatrix} = \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \end{bmatrix} \quad (7)$$

Reduced form of the equation was obtained by transforming the structural form of the model according to the following formula:

$$BY + AX = \xi_t, Y = -B^{-1}AX + B^{-1} \xi_t, Y = \pi X + V \quad (8)$$

The reduced form of the model took the form:

$$\begin{cases} \hat{E}_{DME} = \pi_{10} + \pi_{11}ENV_{DME(t-1)} + \pi_{12}F_S + \pi_{13}M_C + \pi_{14}F_{S(t-1)} \\ \widehat{SOC}_{DME} = \pi_{10} + \pi_{11}ENV_{DME(t-1)} + \pi_{12}F_S + \pi_{13}M_C + \pi_{14}F_{S(t-1)} \\ \widehat{ENV}_{DME} = \pi_{10} + \pi_{11}ENV_{DME(t-1)} + \pi_{12}F_S + \pi_{13}M_C + \pi_{14}F_{S(t-1)} \end{cases} \quad (9)$$

Two-Stage least squares (2SLS/ TSLS) regression analysis is used in the analysis of structural equations. The linear TSLS objective function is given by:

$$(\beta) = (y - X\beta)'Z(Z'Z)^{-1}Z'(y - X\beta), \quad (10)$$

where:

Z – matrix of instruments;

y – dependent variable;

x – explanatory variable.

The coefficients computed in the TSLS are given by:

$$b_{TSLS} = (X'Z(Z'Z)^{-1}Z'X)^{-1}X'Z(Z'Z)^{-1}Z'y \quad (11)$$

and the standard estimated covariance matrix of these coefficients may be computed using:

$$\Sigma_{TSLS}^{\wedge} = S^2(X'Z(Z'Z)^{-1}Z'X)^{-1}, \quad (12)$$

where: S^2 is the estimated residual variance.

4. The results and discussion of the research

The research is based on manufacturing enterprises operating in Poland in the period from 2010 to 2019. In 2010, there were 7280 manufacturing enterprises, and in 2019: 7216 (manufacturing enterprises comprise 40,7% of total enterprises) (Figure 1).

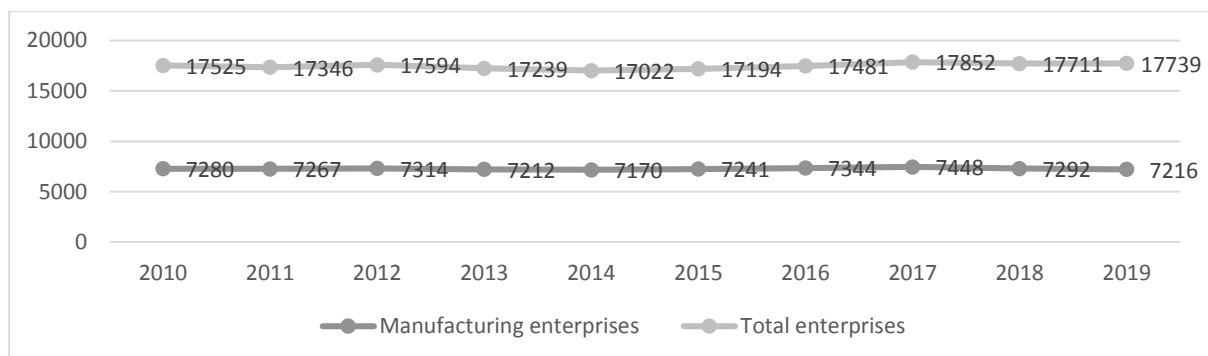


Figure 1. Research sample. Source: own study on the basis of GUS, <https://stat.gov.pl>, 10.07.2020.

The average value of the indicator of economic development of manufacturing enterprises in the period from 2010 to 2019 (E_{DME}) is 0.8, the indicator of social development (SOC_{DME}) is 0.91, the indicator of environmental development (ENV_{DME}) is 0.89, and the indicator of sustainable development (SUS_{DME}) is 0.87. The highest value of indicators is 1 (SOC_{DME} in 2019), the lowest value is 0.7 (E_{DME} in 2010). The obtained results indicate a positive trend of sustainable development indicators, which should be assessed positively. This is due to the introduction of more restrictive legal norms in the field of environmental protection and the increased environmental awareness of the managers (Table 2).

Table 2.

The sustainable development indicators for manufacturing enterprises in Poland (2010-2020)

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Max	Min	Mean
E_{DME}	0.70	0.73	0.74	0.76	0.76	0.80	0.84	0.88	0.89	0.91	0.91	0.70	0.80
SOC_{DME}	0.83	0.83	0.85	0.88	0.90	0.92	0.94	0.96	0.98	1.00	1.00	0.83	0.91
ENV_{DME}	0.93	0.87	0.87	0.89	0.89	0.89	0.91	0.90	0.90	0.91	0.93	0.87	0.89
SUS_{DME}	0.82	0.81	0.82	0.84	0.85	0.87	0.89	0.91	0.92	0.94	0.94	0.81	0.87

Source: own calculation based on GUS, <https://stat.gov.pl>, 10.07.2020.

The indicator of financial security of manufacturing enterprises (F_S) increases in the period from 2010 to 2019. The average value of F_S indicator is 0.94, the maximum value is 0.98 (2019), and the minimum is 0.89 (2011). In the analyzed period, the indicator of macroeconomic condition (M_C) increases from 0.37 (2010) to 0.76 (2019). The results indicate that the improvement in the macroeconomic situation has a positive effect on the increase in financial security of enterprises (Table 3).

Table 3.

The financial security indicators for manufacturing enterprises (F_S), and the macroeconomic condition indicators (M_C) in Poland (2010-2020)

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Max	Min	Mean
F_S	0.91	0.89	0.91	0.93	0.92	0.95	0.96	0.96	0.97	0.98	0.98	0.89	0.94
M_C	0.37	0.38	0.43	0.55	0.62	0.69	0.72	0.76	0.76	0.87	0.87	0.37	0.62

Source: own calculation based on GUS, <https://stat.gov.pl>, 10.07.2020.

The trend line of SUS_{DME} is described by the equation $y = 0.015x + 0.7847$, the trend line of $F_S = 0.0103x + 0.9207$, and the trend line of $M_C = 0.0429x + 0.5867$. The highest increase is noted in macroeconomic condition indicator (0.0429), the lowest in financial security indicator (F_S) (0.0103) (Figure 2).

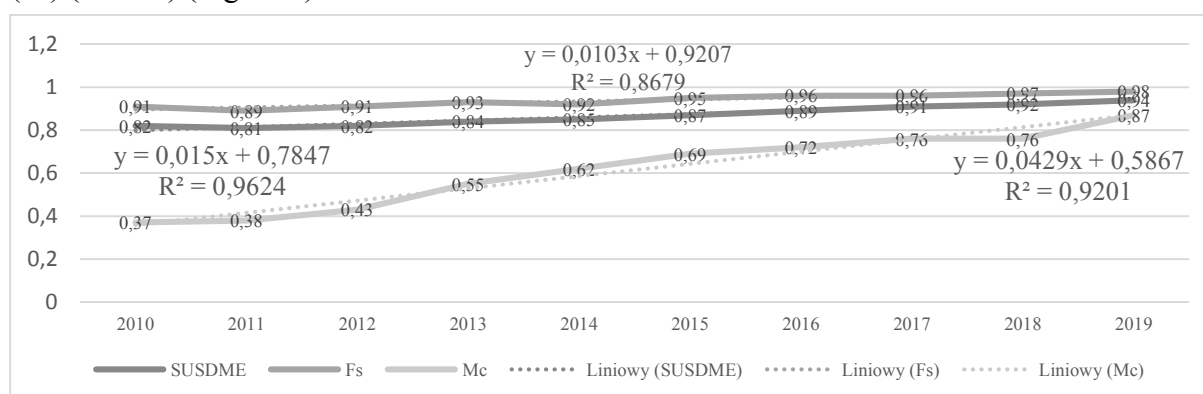


Figure 2. The indicators of SUS_{DME} , F_S , M_C . Source: own study on the basis of GUS, <https://stat.gov.pl>, 10.07.2020.

The results of the TSLS regression are presented in Table 4. The explanatory variables used in each of the three estimations have a statistically significant impact on the explained variable. The variables affecting the economic development indicator (E_{DME}) are the social indicator (SOC_{DME}), environmental indicator from the (t-1) period ($ENV_{DME(t-1)}$), financial security indicator (F_S), and the macroeconomic condition indicator (M_C). The economic indicator (E_{DME}) and the macroeconomic condition indicator (M_C) have an impact on the social indicator

(SOC_{DME}). The indicator of environmental development (ENV_{DME}) depends on the indicator of environmental development of the previous period (ENV_{DME(t-1)}) and the indicator of financial security from the t-1 period F_{S(t-1)}.

The research results for Polish enterprises are very similar to the results obtained in other countries of the European Union. Similar results were obtained in the studies conducted by Drljača (2012), Oželienė (2017), Kowalska, Misztal (2020). However, it should be emphasized that the situation differs depending on the section, size and scope of operation of enterprises (Misztal, 2018).

Table 4.

Results of TSLS regressions (instruments: ENV_{DME(t-1)}, F_S, M_C, F_{S(t-1)}) (2010-2020)

Dep. var.	Coefficient	Factor	SD	T-Student	P-value	R ²
EDME	Const	-2.19621	0.359181	-6.114	0.003 ***	0.995930
	SOC _{DME}	1.53976	0.492663	3.125	0.0353 **	
	ENV _{DME(t-1)}	0.796616	0.211391	3.768	0.0196 **	
	F _S	1.18736	0.518418	2.290	0.0838 *	
	M _C	-0.359906	0.114785	-3.135	0.0350 **	
SOC _{DME}	Const	0.513040	0.0484038	10.60	0.0000 ***	0.993042
	EDME	0.317603	0.0859427	3.696	0.0101 **	
	M _C	0.226079	0.0365263	6.189	0.0008 ***	
ENV _{DME}	Const	0.752439	0.0744236	10.11	0.0000 ***	0.935706
	ENV _{DME(t-1)}	-0.334392	0.0860276	-3.887	0.0081 ***	
	F _{S(t-1)}	0.468819	0.0502751	9.325	0.0000 ***	

Source: own calculation based on GUS, <https://stat.gov.pl>, 10.07.2020.

The equations of relationships between the components of sustainable development, the financial security of enterprises and macroeconomic conditions can be determined using the formula:

$$\begin{cases} E_{DME} = -2.19621 \text{ const} + 1.53976 \text{ SOC}_{DME} + 0.796616 \text{ ENV}_{DME(t-1)} + 1.18736 \text{ F}_S - 0.359906 \text{ M}_c \\ \text{SOC}_{DME} = 0.513040 \text{ const} + 0.317603 \text{ E}_{DME} + 0.226079 \text{ M}_c \\ \text{ENV}_{DME} = 0.752439 \text{ const} - 0.334392 \text{ ENV}_{DME(t-1)} + 0.468819 \text{ F}_{S(t-1)} \end{cases}$$

Sustainable development is based on the objective to achieve the best economic performance while respecting the environment and social development. The pillars of sustainable development are interdependent. The results of the research show that economic development depends on social and environmental development from the previous period. Social development depends on economic development. Environmental development depends on environmental development from the previous period. Macroeconomic conditions affect the economic and social development of enterprises. Financial security is crucial for economic and environmental development (in this case, financial security from an earlier period has an impact).

Most researchers believe that decisions to implement eco-innovations depend on financial considerations. Good financial and property condition is conducive to undertaking ecological investments (Adamczyk, 2009; Gadomska-Lila, Wasilewicz, 2016; Krajnakova et. al, 2018; Kowalska, Misztal, 2020). It seems that the basis for sustainable development are good economic foundations, therefore the managers of enterprises should make decisions conducive

to the improvement of their financial condition, which is crucial for the implementation of projects friendly to society and the natural environment.

The results of the study do not allow for an unambiguous adoption of the research hypothesis. It should be emphasized, that the relationships between the variables are visible. The results show that economic development depends on the largest number of factors. In turn, economic development determines social development, and environmental development is determined by the financial security of enterprises.

The results confirm that sustainable development depends on a number of determinants and their proper definition is of key importance for the development of enterprises. Sustainable development of enterprises is, therefore, the result of management skills, their ecological awareness, and conditions resulting from the external environment.

5. Conclusions

The sustainable development of the enterprise is an interesting and relatively new research issue. It includes three key pillars: economic, social, and environmental, and means an improvement in the financial situation of the entity, employee development, improvement of working conditions, and undertaking actions for the protection of natural resources. Sustainable development of enterprises depends on many determinants, both internal and external. Their correct determination is an opportunity for the expansion of enterprises. Research indicates that sustainable development is determined by such factors as the financial situation, environmental awareness of managers, macroeconomic conditions, legal regulations, and financial support.

In the period from 2010 to 2019, there was an increase in the sustainable development indicator of manufacturing enterprises in Poland. The financial security of enterprises, and macroeconomic conditions are also improving.

There is a relationship between the pillars of the sustainable development of manufacturing enterprises. The structural equations modeling indicates that the indicator of economic development is affected by the indicator of social development ($\alpha = 1.53$), the indicator of the environmental development ($\alpha = 0.797$), the indicator of financial security ($\alpha = 1.187$), and the indicator of macroeconomic condition ($\alpha = -0.36$, this is a negative impact, which can indicate that macroeconomic conditions are crucial for social development firstly). The indicator of social development is dependent on the indicator of economic development ($\alpha = 0.318$), and the indicator of the macroeconomic condition. The indicator of environmental development is dependent on environmental development in the previous period ($\alpha = -0.33$, negative correlation may result from the fact that environmental development is the result of previous

investments. This, in turn, may reduce financial resources for ecological investments in the current period), and the indicator of financial security ($\alpha = 0.469$).

The research results confirm that there are relationships between the pillars of sustainable development as well as internal and external conditions. It should be emphasized, that the results are determined by the selection of variables for the model. A serious limitation of the model is taking into account quantitative variables and not taking into account qualitative variables. This is due to the research sample and the lack of access to qualitative data.

To implement the idea of sustainable development of enterprises, it is necessary to take measures to increase ecological awareness and social sensitivity. In business practice, the implementation of the triad of goals is associated with the need to give up current profits for the benefit of the future. The economic situation and stability of environmental regulations, as well as, financial and research support from external institutions and organizations are also important for the sustainable development of enterprises. Undoubtedly, tax breaks and support programs for ecological investments would be an important solution.

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