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# Effective creation of ESG reporting using data from financial accounting in the food industry company

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#### ABSTRACT

Environmental, social, and governance (ESG) reports in the synergy of the accounting system of the company. In building a system for ESG reporting, it is necessary to comply with valid transnational and national levels and at the same time create a system that will be able to fulfil its tasks in the future. This study presents an analysis possibility of using the company's accounting system for the efficient creation of ESG reporting. The paper presents the focused on the investigation of factors that influence the tendency to using the financial data for effective ESG reporting. Next step of the conducted analysis was the estimation of individual model to investigate specific factors and to identify differences between selected companies of food industry in region of western Slovakia. We used Binary logit model for estimated, based on the data coming from questionary survey in selection company. In this study strongly significant variable DocFA with a positive effect on the dependent variable referred to the agreement of respondents to use documentation from financial accounting for effective ESG reporting. For instance, respondents from the selected western region of Slovakia in the field of food industry have an 82% higher chance of using this documentation for effective ESG reporting. Significant variable AccountS is strongly significant (*p*-value less than 0.01) in selected companies in western region of Slovakia in field of food industry, which has positive impact to use financial data for effective ESG reporting.

Keywords: ESG reporting, financial accounting, accounting system, binary logit model, ESG preferences

#### **INTRODUCTION**

Research on the impact of environmental reporting on financial performance tends to lead to inconsistent findings, as concepts such as managerial attitudes, regulation and governance, reporting quality and stakeholder perceptions, audit activities, and government policies are important areas to investigate more in the future [1]. While research on voluntary reporting is extensive, mandatory reporting, particularly under IAS/IFRS, is limited, so there are opportunities for further investigation [2]. There are some research opportunities in integrated reporting, such as what information stakeholders find relevant, whether this might influence their decisions, and the impact on capital costs and assurance judgments [3].

The obligation to report data related to ESG is transformed at the national level of the Slovak Republic in the Accounting Act and other related regulations.

Act no. 431/2002 Coll. on Accounting as amended, in § 20 Annual report an accounting unit must have its financial statements verified by an auditor following § 19, except for the accounting unit listed in § 17a par. 1 letter b) and a branch of a foreign securities dealer, is required to prepare an annual report. The annual report contains the financial statements for the accounting period for which the annual report is drawn up and the auditor's report on these financial statements, unless a special regulation provides otherwise and in particular information on the development of the accounting unit, the state in which it is located, and the significant risks and uncertainties to which the accounting unit is exposed; the information is provided in the form of a balanced

and comprehensive analysis of the state and development forecast and contains important financial and nonfinancial indicators, including information on the impact of the accounting unit's activities on the environment and employment, concerning the relevant data presented in the financial statements [4].

Specifically, the obligations for subjects of public interest are set out in paragraphs 9-12 [4]:

An entity of public interest, whose average calculated number of employees for the accounting period exceeded 500 employees, also includes in the annual report non-financial information on the development, proceedings, position, and the impact of the activity of the accounting unit on the environmental, social and employment areas, information on compliance with human rights and on the fight against corruption and bribery (hereinafter referred to as the "area of social responsibility, if as of the date on which the financial statements are drawn up and for the immediately preceding financial period, also meets one of the entities of public interest according to paragraph 9 shall state in the annual report in particular.

Description of the main risks of the accounting entity's impact on the area of social responsibility arising from the accounting entity's activities, which could have adverse consequences, and, if appropriate, also a description of its business relationships, products, or services that related to these impact risks, and a description of how the entity manages these risks. significant non-financial information about the activity of the accounting unit by individual activities. Specifically, it is about a reference to information on the amounts reported in the financial statements and an explanation of these amounts in terms of impacts on the area of social responsibility, if appropriate [4].

An entity of public interest may also use the framework of the European Union or another international framework that governs non-financial information when providing information according to paragraphs §9 and §10 if it specifies exactly which framework it followed [4].

From another regulation, Measure of the Ministry of Finance of the Slovak Republic of 16 December 2002 No. 23054/2002-92 on stipulation of details of accounting procedures and framework chart of accounts for entrepreneurs keeping double-entry accounting, the issue concerns the following paragraphs § 19, § 30 a § 35 [5]: • § 19 Principles of Creation and Use Provision—Provisions are related to liabilities following general legislation, executed contracts, or voluntary decisions of the accounting unit relating to third-party liabilities. For example, if based on past conduct of the accounting unit, publication of rules, or notification of recognition of

liability of the accounting unit, the third-party expects the accounting unit to meet the liability. Provisions shall be created for costs related to the elimination of environmental pollution.

• § 30 Accounting Procedures Related to Construction Contract—also includes Provision of services directly related to the creation of the asset pursuant, services of the project manager or architect(s), and Reconstruction, liquidation of the asset pursuant, or rehabilitation of the environment after liquidation of the asset pursuant.

§ 35 Accounting for procurement of long-term tangible assets:

On account 042 – Acquisition of long-term tangible assets, acquired long-term tangible assets and their technical valorisation until the time the assets are put into use including acquisition-related costs shall be accounted for, especially the cost of Reimbursement for forced limitation of real estate use and reimbursement for pecuniary injury provided to the real estate owner according to specific regulations and payments for ecologic injury related to construction [5].

The required data result (Figure 1) from the company's activities, from which it is possible to obtain an overview of the impact on the state and development of ESG [6]:

#### Environmental

- •Climate changes
- •Water pollution
- •Air pollution
- •Solid waste
- •Nature loss
- •Resource availability

#### Social

- •Health and well being
- •Future skills
- •Equality and dignity
- •Innovation of better products and services
- •Emploqment and wealth generation

#### Governance

- •Governing purpose
- •Quality of governing body
- •Risk and opportunity oversight
- •Ethical behaviour
- •Stakeholder engagement

Figure 1 The company's activities necessary for the ESG report.

#### **Scientific Hypothesis**

The paper presents focuses on the investigation of factors that influence the tendency to use financial data for effective ESG reporting. According to the results of the model estimated from data collected in 68 selected companies in the region of western Slovakia, the most important factors are individual support for environmental protection awareness, agreement with the statement that companies should also use the financial data from financial accounting for effective ESG reporting, which would have an impact on environmental protection. The next step of the conducted analysis was the estimation of individual models of companies to investigate specific factors and to identify differences between the selected western regions of Slovakia in the field of the food industry.

#### MATERIAL AND METHODOLOGY

The survey database includes information about 690 managers, financial directors, and accountants who responded to the questionnaire survey. During the analyzed period, 68 companies in the Slovak Republic's food industry were included in the survey.

#### Samples

Our sample consisted of respondents from selected companies in western Slovakia. The structure of the respondents was:

- Total number of respondents: 690
- Man: 65%
- Woman: 35%
- The age categories:
- 18 30: 14%
- 31 40: 29%
- 41 50: 33%
- 51-64:20%
- 65 and >: 4%

Education:

- Basic (primary school): 0%
- Secondary (high school): 36%
- Higher education (university): 64%

Questionnaire preparation: In creating the questionnaire, we relied on the investigation of factors that influence the tendency to use financial data for effective ESG reporting. Respondents were allowed to answer the questions yes or no. All questions were mandatory. Number of questions analysed: 8

1. Is it possible to use the company's accounting system for the efficient creation of ESG reporting? (yes, no)

- 2. Do you agree with increasing awareness about ESG to protect the environment? (yes, no)
- 3. Do you think accounting documents are a sufficient source for ESG reporting? (yes, no)
- 4. Do you think the accounting system in your company is efficient in ESG reporting? (yes, no)

5. Should the government decrease environmental pollution without decreasing the company's income? (yes, no)

- 6. Do you have children? (yes, no)
- 7. Do you trust your government? (yes, no)

8. Do you trust Environmental Organizations? (yes, no)

Conducting a questionnaire survey: The questionnaire survey was conducted via selected companies in the field of the food industry of the Slovak Republic. The questionnaire was prepared by Google Form and consequently shared with managers in selected companies. Only one person from the research team had access to the collected raw data. We prevented any manipulation of these data.

We complied with the requirements of the GDPR legislation of the European Union. Data collection was anonymous. Each participant could complete the questionnaire only once. The survey took place in the period: 10<sup>th</sup> of January 2024 to 31<sup>st</sup> January 2024.

Number of answers: The total number of processed answers was 5 520.

Creating a dataset: We processed the raw data. The database was corrected from discrepancies and outliers The structure of the dataset was adapted to further statistical processing.

#### **Statistical Analysis**

For econometrics analyses was used statistical system Gretl. If a binary response variable Y is equal to 1 when the attribute is present and 0 if it is not present in observation. If x=(x1,x2,x3...xk) is a set of explanatory variables which can be discrete, continuous or a combination. The binary dependent variable was preferFA (1 if the

respondent agreed that it is possible to use the company's accounting system for the efficient creation of ESG reporting; otherwise, 0). Other factors described above were considered explanatory variables.

The logistic regression model presents conditional probabilities through the linear function of the predictors expressed as:

$$\ln\left(\frac{P(y_i=1)}{P(y_i=0)}\right) = \beta_0 + x_i^T \beta = I_i$$
(1)

Where:

 $\boldsymbol{\beta} = (\boldsymbol{\beta}_1, \boldsymbol{\beta}_2, \dots, \boldsymbol{\beta}_k)^T$  is the estimated vector of k predictor coefficients. The vector of parameters  $\beta^{\wedge}$  is estimated using the maximum likelihood method. The following likelihood function is maximized:

$$\ln[L(\beta)] = \sum_{i=1}^{n} \left\{ y_i \ln\left[\frac{exp(I_i)}{1 + exp(I_i)}\right] + (1 - y_i) \ln\left[\frac{1}{1 + exp(I_i)}\right] \right\} = \sum_{i=1}^{n} \langle y_i I_i - \ln[1 + exp(I_i)] \rangle$$
(2)

Then predicted probability can be expressed as follows:

$$F_{l}(I_{i}) = P(y_{i} = 1) = \frac{\exp(I_{i})}{1 + \exp(I_{i})}$$
(3)

It is difficult to relate estimated parameter values only to the outcome. A better way to explain the influence of explanatory variables on the outcome is to interpret the odds ratio. It is better than the estimated parameters of logistic regression. The odds ratio is the Euler number raised to the value of the estimated coefficient of logistic regression.

$$Odds Ratio_i = e^{B_j} \tag{4}$$

If the odds ratio of the explanatory variable is higher than 1, it means that increasing the value of the explanatory variable will also increase the odds in favour of a positive outcome. On the other hand, if the odds ratio is smaller than 1, increasing the value of an explanatory variable will decrease the chance of a positive outcome.

In logistic regression, it is no longer necessary to hold the assumptions of a classical linear econometric model based on ordinary least squares. Linear relationships between dependent and independent variables, explained variables, and error terms do not need to be normally distributed. Logistic regression also does not need variances to be homoscedastic and can handle nominal or ordinal data as explanatory variables.

#### **RESULTS AND DISCUSSION**

The binary logit model was estimated based on data from a questionnaire survey in the selection company's region. McFadden R-Squared and the number of correct predictions were the basic indicators of model quality. Due to the nature of the dependent variables, was McFadden pseudo-R-square value 0.24 which means excellent model fit (The interpretation of McFadden R-square is different from the classical R-square known from OLS; in this case, lower values are expected due to the nature of the dependent variable).

The model's accuracy measured by correct predictions was 95.1%, which also suggests the model's good prediction ability. The model was evaluated as significant and appropriate to describe the suggested relationship among variables. That means that most of the estimated model parameters are significantly different from zero (p-value 0.0000). Table 1 shows the factors that significantly affect respondents' tendency to financial accounting for the efficient creation of ESG reporting.

From all the explanatory variables in Table 1, the following factors were evaluated as significant the following: InfESG, DocFA, AccountS, and Trust in EU. It means that people who agree with increasing awareness about ESG and also support financial accounting system for the efficient creation of ESG reporting. The strength of their conviction correlates with their tendency to use financial accounting, which is necessary for ESG reporting. This variable was evaluated as the most significant, it means that respondents who agree with ESG would probably use more data from the financial accounting for ESG reporting.

Table 1 Estimated logit model.						
Variable	Estimation of logit model					
	<i>p</i> -value	slope at mean	odds ratio	significance		
Intercept	< 0.0001		1.46	***		
InfESG	< 0.0001	0.38	1.35	***		
DocFA	< 0.0001	0.22	0.82	***		
AccountS	0.03	0.09	0.88	***		
Government	0.31	-0.08	1.64			
Children	0.82	-0.11	1.32			
Age	0.33	0.10	1.34	*		
Trust Gov	0.45	0.05	0.58			
Trust EU	0.04	0.02	0.36	**		

Significant factor DocFA represents the impact of accounting documents as a sufficient source for ESG reporting. Respondents prefer using documentation from financial accounting, and the favour of using this documentation for efficient ESG reporting will increase by 82%. Another significant factor is AccountS; for efficient ESG reporting, it is necessary to map the data from the accounting system, and the favour of using this system will increase by 88%.

The last significant factor was Trust in the EU. Respondents who trust in the EU will be more likely to use financial data from accounting for ESG reporting. If the level of trust in the EU increases by one odd in favour of using data from financial accounting, it will increase by 36%. All the other indicators included in the model were evaluated as insignificant.

The results interpreted above come from an econometric model estimated using the data from the questionnaire survey. It provides general information about factors that influence the ESG preferences of respondents in the analyzed companies.

#### The estimation of individual models for each analysed country

Analogous models were estimated for the selected company's region of western Slovakia, which uses the same explained and explanatory variables as in the case of the pooled model. All individual models were significant with the joint significance of the estimated coefficients was less than 0.05. The significance of individual variables was different. This was mainly influenced by specific socio-economic and cultural conditions in each analysed company. Odds indicators offer better information than estimated coefficients, because of direct connection with the modeled phenomenon. An odds ratio greater than 1 indicates that the variable supports respondents to use financial data for effective ESG reporting, and an odds ratio less than 1 indicates a factor that reduces the chance that respondents use this data for effective ESG reporting, which would lead to protecting the environment.

In all the company's studied, InfESG was the most significant variable, which is consistent with the general model. The reason of this is the strong correlation of this question with the dependent variable.

Variable	Estimated odd ratios of each selected company's region				
	Bratislava	Nitra	Trnava	Trencin	
Intercept	0.924***	1.286**	1.743***	1.876**	
InfESG	1.668***	0.938***	1.248***	1.562***	
DocFA	0.882**	0.741**	0.853**	0.821**	
AccountS	0.623***	1.104***	0.721***	1.086***	
Government	1.737	1.458	1.893	1.489	
Children	1.369	1.239	1.225	1.433	
Age	1.535	1.552**	0.438	1.834	
Trust Gov	0.685	0.633	0.423	0.566	
Trust EU	0.358**	0.365**	0.495***	0.232**	

**Table 2** Estimated odd ratios in individual models for each selected company's region.

The variable InfESG referred to agreement with increasing awareness about ESG to protect environment, was evaluated as significant in the general model with a positive effect on the dependent variable. In the case of individual models for all selected regions of companies, the parameter of this variable was strongly significant (p-value less than 0.01).

The strongly significant variable DocFA with a positive effect on the dependent variable referred to the agreement of respondents to use documentation from financial accounting for effective ESG reporting. Strongly significant (*p*-value less than 0.01) was in the selected western regions of Slovakia, which are Bratislava, Nitra, Trnava, and Trenčín in the field of food industry. For instance, respondents from region Bratislava have an 88% higher chance of using this documentation for effective ESG reporting. Nitra only has a 74% higher chance of using this documentation for ESG.

The significant variable AccountS is strongly significant (p-value less than 0.01) in all of the selected regions in the food industry. Region Trnava has a 72% higher chance of preferring using an accounting system that has effective ESG reporting, which has a positive impact on using financial data for effective ESG reporting.

Age was a factor specific only for region Nitra. According to the estimated model, respondents who were 31-40 years old had 55% higher odds than others to support using the data from financial accounts for effective ESG reporting.

The last factor included in the estimated models is the variable Trust EU. This variable was significant (*p*-value less than 0.05) in all regions without Trnava. In region Trnava was a strongly significant variable Trust EU and respondents who trust the European Union have a 55% higher chance to use financial data from accounting systems for effective ESG reporting. Bratislava region has 36%, Nitra region has 37% and Trenčín has a 23% chance to do effective ESG reporting using data from financial accounting.

Growing interest in social and environmental issues has resulted in an increase in academic publications, which have adopted different perspectives. Most of the research focuses on analyzing social and environmental reports (SER) and searching for the theoretical statements that justify these practices [7].

Concern for taking care of the environment is increasing as is interest in accounting for the environment [8]. The response from the business community has been to gather and report more information about environmental activities to stakeholders [9].

In recent years, the company's sustainability disclosure has attracted the attention of investors, researchers and policymakers [10]. Environmental, social and governance (ESG) disclosure levels have increased significantly over the years [11]. A more transparent ESG disclosure could provide relevant information for effective portfolio management and sustainable financial policy proposals. Therefore, level of company's ESG disclosure is expected to be closely related to a country's involvement in sustainable development [12].

Voluntary disclosure theory proposes that sharing private information with investors can improve the efficiency of resource allocation and reduce information asymmetry [13]. The existing literature theoretically suggests and empirically finds that analysts can estimate earnings more accurately if they have better quality information through voluntary disclosure [14]. Financial analysts are intermediaries between companies and investors who collect, process and analyze financial information. When analysts' forecasts are more accurate, investors can allocate their capital more efficiently, which benefits the capital market. The utility of voluntary disclosure for financial analysts can be assessed by examining the relationships between the choice of reporting framework and the accuracy of financial analysts' forecasts [15]. The findings raise questions about how we evaluate environmental accounting interventions and about the role of research in helping environmental movement adherents on the inside of organizations to stay engaged [16]. The growing importance of sustainable behavior in the economy has paved the way for increased corporate reporting of information related to ESG companies in the last decade [17]. Based on disclosure guidelines from market regulators such as the Securities and Exchange Commission (SEC) and authorities and information demand from market participants, most companies worldwide pay special attention to reporting on life policies and activities. environment, social affairs, and governance areas [18].

For investment management purposes, the framework implemented in this study could serve as a management tool for companies to optimize their communication with investors regarding ESG information reporting [19], thus improving the delivery of the intended meaning of messages to recipients through qualitative information disclosure. In addition, determining the ESG words with the most negative impact on share prices could help companies identify critical aspects of sustainability for investors and adjust their business strategy accordingly [20]. Identifying the most important ESG topics could improve the work of regulatory agencies such as the SEC in developing new ESG disclosure regulations for companies, as in the case of the upcoming climate disclosure rules, which cover both material risks and direct and indirect emissions from company activities [21].

Among the financial trends that have emerged after COVID-19, green and sustainable finance is most likely the strongest, following the first ESG-related regulation after years of a complete lack of standardization and laws

for environmental and social disclosures [22]. Policymakers identify finance as a key driver of economic transformation [23], while ESG integration is further supported by corporate and retail demand [24]. Many global public and corporate entities use automated financial tools and services in their sustainable transition [25]. Technology is key to creating a green and inclusive framework to address ESG market challenges.

Sustainability accounting and related terms are more often used in academic conferences and business practice. This raises the question of the relationship between accounting and sustainability, the role of accounting for sustainability, and what might be understood by sustainability accounting [26].

Social accounting scholars have suggested social and environmental disclosure practices as a mechanism by which accountability obligations can be met because they can inform a wide range of stakeholders about companies' social and environmental impacts [27]. However, to be held accountable, these disclosures must demonstrate the company's acceptance of corporate social and environmental responsibility [28]. This acceptance can be demonstrated by a clear statement of values with relevant objectives and quantified targets with expected achievement dates against which the company must report its progress [29]. "Sustainability accounting" and related terms are more often used in academic conferences and in business practice. This raises the question of the relationship between accounting and sustainability and the role of accounting for sustainability, as well as what might be understood by sustainability accounting. The paper examines the literature on sustainability accounting from an information management perspective and distinguishes between different interpretations of sustainability accounting firms' environmental management accounting (EMA) has emerged as an important approach to transforming firms' environmental strategies into firm performance [30]. The information provided by EMA is of two types: financial information related to costs, revenues, etc., and physical resource and impact information. Such information can help control environmental costs, support the realization of environmental returns and profits, and generally improve business performance [31].

#### CONCLUSION

Companies think about ESG in the context of economic profitability and ecology. It is, therefore, a logical consequence that the return on invested funds is decisive when creating the concept of ESG monitoring and reporting. In building a system for ESG reporting, it is necessary to comply with valid transnational and national levels and at the same time create a system that will be able to fulfil its tasks in the future. We can discuss the need to create an ESG strategy in the food industry. We see the need to create ESG strategies in individual companies. Therefore, the paper focuses on investigating factors that influence the tendency to use financial data for effective ESG reporting. According to the results of the model estimated from data collected in 68 companies in the food industry, the most important factors are individual support for environmental protection awareness, agreement with the statement that companies should also use the financial data from financial accounting for effective ESG reporting, which would have an impact on environmental protection. Based on the analysis of preferences, we consider it necessary to use data from financial accounting for ESG reporting. We found a positive influence in the monitored variables on the usability of data from financial accounting. The next step of the conducted analysis was the estimation of individual models for each analyzed western region of selected companies to investigate specific factors and to identify differences between these western regions. We found trust in the European Union to be a significant variable, which also has the impact of supporting environmental factors. Despite expectations, variable Education, Children and Trust in Government were insignificant in any selected region. The results in most of the monitored regions were similar, it concerns the variables InfESG, DocFA, AccountS, and Trust EU. Only one variable, Age, was significant in the Nitra region, which means that respondents aged 31-40 years old have 55% higher odds than others to support using the data from financial accounts for effective ESG reporting.

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