Materials Research Proceedings 34 (2023) 422-429 https://doi.org/10.21741/9781644902691-49

Factors Determining the Perception of OHS by Socially Responsible Entrepreneurs

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Keywords: CSR, OHS, Econometric Models

Abstract. The study identifies the factors which determine the perception of occupational health and safety by socially responsible entrepreneurs. The research task set was carried out on the basis of an analysis of the literature on the subject and the results of surveys conducted in the third quarter of 2021, conducted among 164 entrepreneurs. In the empirical analysis workshop, logit models were estimated, in which determinants belonging to 5 categories were considered. On this basis, using the Gretl software, 8 logit models (4 full and 4 reduced) were built, indicating the relationships between the studied variables.

Introduction

Occupational health and safety (OSH) is a commonly used term for a set of rules for safe and hygienic performance of work, as well as a separate field of knowledge dealing with shaping appropriate working conditions [1]. In recent years, many researchers have focused on OSH issues in various business sectors, due to the fact that they are related to working conditions and the potential impact on business continuity and financial situation of the company [2]. According to Väyrynen et al. [3] most OSH management systems focus on three key pillars: legal compliance, adoption of appropriate standards, and the implementation of good practices. Fisscher [4] is of the opinion that health and safety is considered to be one of the main elements of company ethics, which are closely related to the idea of social responsibility (CSR). This is because a properly implemented and conducted health and safety policy introduces business values to the CSR action programme. In the above context, the identification of factors determining the perception of occupational health and safety by socially responsible entrepreneurs deserves special attention.

Social Responsibility in the Context of Health and Safety

In response to a wide set of interests and expectations of stakeholders, corporate social responsibility (CSR) reflects the extent to which a modern enterprise is actively involved in social initiatives, activities and processes [5, 6]. It is generally accepted that corporations bear three types of responsibility: economic towards their shareholders, social and environmental towards the communities in which they operate [7]. Currently, the concept of CSR is usually assigned three main tasks, i.e. [8]: fulfilling obligations towards various stakeholder groups, responding to social needs and expectations, and using the concept as a company management tool. Considering the role of employees in the overall performance of the organization and its market success, it can be considered that they are its key stakeholders. They not only determine the quality of the product/service that customers receive, but above all they affect efficiency, commitment and job satisfaction. It can be said that they are both drivers of CSR and its beneficiaries [9,10]. In this sense, shaping increasingly safe and hygienic working conditions is becoming increasingly important. The high (safe) standard of workplaces significantly affects the satisfaction of employees, and therefore is the cause of increased work efficiency and higher quality of services. According to M. Pęciłło [11] OSH is an important value of CSR, and the relationship between

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OSH and CSR is multifaceted, covering: safety and public health, human resources, work-life balance, basic employee rights, environmental protection, profitability and productivity.

And so, the values of occupational health and safety, which are particularly taken care of by socially responsible entrepreneurs, are manifested mainly in [12]:

- establishing a health and safety system based on employee participation,
- taking into account the specific conditions and needs of various working groups in the assessment and mitigation of risks to safety and health,
- analyzing health and safety problems reported by employees,
- anticipating new risks to safety and health at work,
- adapting workspaces to the psychophysical capabilities of employees, including taking into account the needs of the elderly and people with specific health problems,
- enabling retraining for employees who have suffered accidents,
- identifying psychosocial risks in the workplace and introducing actions to eliminate or reduce them.

Methodological Aspects of the Research

Due to the nature of the data obtained (qualitative-binary data), econometric modeling instruments in the form of binomial models (logit and probit) were used to verify the purpose of the study [13]. In models of this class, the probability of the occurrence of the analyzed phenomenon (explanatory variable) in a given group of respondents (explanatory variable - in comparison with the reference group) is determined. These relationships are reflected in the odds ratio [14]. In other words, models of this class show the relationships that occur between exogenous explanatory variables that describe the characteristics of possible alternatives and the probability of choosing one of the two possible variants (conventionally marked as 0 / 1; yes / no, good / bad). In this sense, this variable takes the value of 1 when the desired event occurs, and the value of 0 when such an event does not occur. In binomial models, it is assumed that the probability is a function of the vector of exogenous variables and the vector of parameters β in the form [15]:

$$P_i = P(y_i = 1) = F x_i \beta \tag{1}$$

where:

$x_i \beta$ - index specifying the i-th observation unit (linear combination of variable and parameter values)

F - is an increasing function of this index

Taking into account the above models of this class, they take the form of [15]:

- logit model:

$$y_i^* = ln\frac{P_i}{1-P_i} = \beta_0 + \sum_{j=1}^{k} \beta_j x_{ij} + u_i \tag{2}$$

where:

y_i^* - what is called a logit

P_i - is determined by the probability of the dependent variable, determined on the basis of the logistic distribution from the following equation:

$$P_i = \frac{P_i}{1-P_i} = e^{y_i^*} = e^{\beta_0 + \sum_{j=1}^{k} \beta_j x_{ij} + u_i}, P_i = \frac{P_i}{1-P_i} = \frac{P_i}{1+e^{-(\beta_0 + \sum_{j=1}^{k} \beta_j x_{ij}}} \tag{3}$$

If:

$y_i^* \to \infty$, then $P_i \to 1$

$y_i^* \to -\infty$, then $P_i \to 0$

$y_i^* = 0$, then $P_i = 0{,}5$

- probit model:

$$P_i = F\left(\beta_0 + \sum_{j=1}^{k} \beta_j x_{ij}\right) = \int_{-\infty}^{\beta_0 + \sum_{j=1}^{k} \beta_j x_{ij}} \frac{1}{\sqrt{2\pi}} e^{\left(-\frac{t^2}{2}\right)} dt \quad (4)$$

It should be emphasized that in the above models the following relation exists between the β parameters::

$$\beta_{logit} = 1.6\beta_{probit} \quad (5)$$

Considering the above, both the logit and probit models are quite similar. For this reason, the lignite model was chosen when assessing the probability of the occurrence of a given factor. Specific statistical measures are used while assessing the quality of logit models, including:

- Likelihood Ratio Test:

$LR = -2(I_n\widehat{L_R} - I_n\widehat{L_{UR}})$ (6)

where:

$\widehat{L_R}$ - the maximum value of the likelihood function log for a model containing only the intercept

$\widehat{L_{UR}}$ - the value of the likelihood function for the full model.

- McFadden's R-squared:

$R^2_{McFadden} = 1 - \frac{I_n L_{UR}}{I_n L_R}$ (7)

- Akaike Information Criterion*:

$AIC = -2lnL\left(\hat{0}\right) + 2K$ (8)

- Bayesian Information Criterion*:

$BIC = -2lnL\left(\hat{0}\right) + K\ln(n)$ (9)

- Hannan-Quinn Information Criterion*:

$HQC = -2lnL\left(\hat{0}\right) + 2K\ln(\ln n)$ (10)

where * (for AIC, BIC and HQC):

$l(\widehat{0})$ – the log of the likelihood function for the estimated vector

K - number of model parameters,

N – number of observations

- Number of cases of 'correct prediction', by counting the appropriate numbers, on this basis the predicted value of the dependent variable (0) or (1) can be calculated. The cut-off point is 0.5 by default

The input set of independent variables included variables characterizing entrepreneurs (Table 1). As can be seen, the set of explanatory variables (x) includes 5 categories, containing 15 explanatory variables, on the basis of which the research sample can be characterized. Thus, the

sample consists of 51.3% of women and 48.7% of men (reference group). In terms of age, the dominant group of respondents are people aged 25-34 (45.7%), followed by people aged 35-44 (25% of respondents). The reference group in this category are people up to 24 years of age. Most of the respondents were regular employees (81.1% of the respondents), persons holding managerial positions were selected as the reference group (19.9% of the respondents). The respondents are people working mainly in the SME sector, most of them in small companies, i.e. employing from 10 to 49 employees (48.1% of respondents), then in micro-enterprises employing up to 9 employees (28.2% of respondents) and medium-sized (17.38), employing from 50 to 249 employees. In this category, people working in large companies were selected as a reference group. The last category of variables concerned work experience. The dominant group in this category are people with work experience of 1-10 years (53.4%), followed by people working for more than 10 years (30.9% of indications). The smallest group is made up of newly hired people whose work experience does not exceed 12 months - 15.7% of indications (reference group). Taking into account the explained variables (y), they were coded on the basis of respondents' answers to four research problems presented in Table 2.

Table 1. *List of explanatory variables* (x) *[own study]*

Independent variable	Group	%	Reference group
GENDER			
F	Female	51.3%	
M	Male	48.7%	*
AGE			
W24	up to 24 y/o	15.8%	*
W2534	25-34 y/o	45.7%	
W3544	35-44 y/o	25%	
W45	over 45 y/o	13.4%	
POSITION			
RW	regular worker	81.1%	
M	managerial	19.9%	*
COMPANY SIZE			
L	Large	15.24%	*
M	Medium	17.38%	
S	Small	48.1%	
MI	Micro	28.2%	
WORK EXPERIENCE			
D12	Under a year	15.7%	*
110	Between 1 and 10 years	53.4%	
D12	Under a year	15.7%	*

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Table 2. *List of explained variables [own study]*

Research area	Percentage structure of responses	
	Yes	No
high (safe) standard of workplaces affects employee satisfaction, thus increasing work efficiency	64.63%	35.36%
the implementation of CSR standards in OHS management has a positive impact on the quality of life of employees	80.48%	19.52%
creating a friendly atmosphere at work, indirectly contributes to counteracting stress at work, including health protection	65.85%	34.15%
actions aimed at improving work-life balance	49.39%	50.61%

Respondents are more likely to report that socially responsible activities have a positive impact on employee satisfaction than allowing employees to choose the forms of working time organization, in particular practices that eliminate the extension of working time beyond the required standard. Respondents equally highly value the creation of a friendly atmosphere, in particular the health of employees and occupational health and safety, which are values that socially responsible entrepreneurs especially care about.

Research Results

Table 3 presents the results of the estimated eight logit models relating to the perception of aspects of selected OHS aspects by socially responsible entrepreneurs.

Table 3. *Results of estimation of logit models for the studied variables [own study]*

* used observations 1-164

Variable	Coefficient	Standard deviation	z	p-value	Marginal effect
MODEL 1 (pełny)					
const	0.615518	0.206884	2.975	0.0029***	
F	−0.194582	0.123142	−1.580	0.1141	−0.129134
W2534	0.201604	0.121405	1.661	0.0968*	0.129607
W3544	0.0514710	0.144569	0.3560	0.7218	0.0251765
W45	0.112786	0.170513	0.6614	0.5083	0.0670370
RW	−0.0245213	0.148507	−0.1651	0.8689	−0.0182528
M	−0.171972	0.165282	−1.040	0.2981	−0.119822
S	0.0875952	0.115143	0.7607	0.4468	0.0642525
VMI	−0.0765942	0.131822	−0.5810	0.5612	−0.0534703
v18	−0.0809166	0.123327	−0.6561	0.5118	−0.0540757
P10	−0.142286	0.132353	−1.075	0.2824	−0.0935790
MODEL 2 (reduced)					
const	0.403463	0.0966557	4.174	2.99e-05 ***	
W2534	0.208464	0.113508	1.837	0.0663 *	0.135730
MODEL 3 (full)					
const	0.999920	0.141292	7.077	<0.0001	
F	0.0461066	0.0935131	0.4930	0.6220	0.0440357
W2534	−0.356775	0.101922	−3.500	0.0005***	−0.271013
W3544	0.0183353	0.114679	0.1599	0.8730	0.00902923
W45	−0.00851556	0.117795	−0.07229	0.9424	0.00318509

Variable	Coefficient	Standard deviation	z	p-value	Marginal effect
RW	−0.208661	0.0944851	−2.208	0.0272**	−0.170172
M	0.0839683	0.114144	0.7356	0.4620	0.0552888
S	−0.263303	0.0940294	−2.800	0.0051***	−0.201588
VMI	0.0634702	0.0929940	0.6825	0.4949	0.0524804
v18	0.0385344	0.0833341	0.4624	0.6438	0.0552032
P10	0.999920	0.141292	7.077	<0.0001	0.0594076
MODEL 4 (reduced)					
const	1.12281	0.0762324	14.73	<0.0001***	
W2534	−0.366564	0.0909338	−4.031	<0.0001 ***	−0.277178
RW	−0.233255	0.0827381	−2.819	0.0048***	−0.181642
S	−0.241331	0.0919075	−2.626	0.0086***	−0.185119
MODEL 5 (full)					
const	0.483342	0.181885	2.657	0.0079	
F	−0.176431	0.114969	−1.535	0.1249	−0.128261
W2534	0.0821319	0.121381	0.6766	0.4986	0.0535896
W3544	−0.227091	0.189420	−1.199	0.2306	−0.162029
W45	0.0552112	0.146905	0.3758	0.7070	0.0332424
RW	−0.0110799	0.153772	−0.07205	0.9426	−0.0130352
M	−0.0246941	0.112465	−0.2196	0.8262	−0.0161415
S	−0.0931364	0.126634	−0.7355	0.4620	−0.0668347
VMI	0.252865	0.115806	2.184	0.0290	−0.0161415
v18	0.0425340	0.134153	0.3171	0.7512**	0.173735
P10	0.483342	0.181885	2.657	0.0079	0.0274256
MODEL 6 (reduced)					
const	0.403882	0.0990021	4.080	4.51e-05 ***	
110	0.233910	0.111830	2.092	0.0365 **	0.154693
MODEL 7 (full)					
const	0.234774	0.296198	0.7926	0.4280	
F	0.201896	0.167760	1.203	0.2288	0.104847
W2534	−0.142024	0.169960	−0.8356	0.4034	−0.0754381
W3544	−0.0284131	0.192808	−0.1474	0.8828	−0.00636709
W45	−0.0435426	0.251035	−0.1735	0.8623	−0.0189384
RW	0.0261844	0.209216	0.1252	0.9004	0.0156395
M	−0.355439	0.220203	−1.614	0.1065	−0.172035
S	0.0447506	0.163526	0.2737	0.7843	0.0210942
VMI	−0.408033	0.191024	−2.136	0.0327**	−0.198706
v18	−0.0335791	0.167785	−0.2001	0.8414	−0.0210654
P10	0.0867281	0.180267	0.4811	0.6304	0.0456833
MODEL 8 (reduced)					
const	0.248117	0.111277	2.230	0.0258 **	
VMI	−0.363896	0.186943	−1.947	0.0516 *	−0.172808

Explanation: The level of significance of the parameters: *** $\alpha = 0.01$, ** $\alpha = 0.05$, * $\alpha = 0.1$

Looking at the obtained results of logit model estimation, it can be seen that gender is not significant from the point of view of impact on the probability of reporting the analyzed OHS

aspects. Taking into account age, statistical significance at the level of α=0.1 can be observed in the case of an increase in employee satisfaction (full and reduced models), and at the level of α=0.01 the implementation of CSR standards in OHS management has a positive impact on the quality of life of employees (full and reduced models). The size of the enterprise turned out to be the factor that most strongly determined the phenomena in model 3 and the reduced model 4, as well as 7 and 8.

Table 4. *Data fit measures for the estimation of logit models [own study]*

	MODEL 1	**MODEL 3**	**MODEL 5**	**MODEL 7**
FULL MODELS				
Likelihood Ratio Test	9.30318 [0.5036]	29.01 [0.0012]	10.6992 [0.2969]	9.60148 [0.4761]
McFadden's R-squared	-0.060782	0.037806	-0.045099	-0.05523
Hannan-Quinn Information Criterion	235.3793	192.1986	228.0675	250.6691
Number of cases of 'correct prediction'	106 (65.4%)	(77.2%)	109 (67.3%)	96 (59.3%)
	MODEL 2	**MODEL 4**	**MODEL 6**	**MODEL 8**
REDUCED MODELS				
Likelihood Ratio Test	3.31271 [0.0687]	27.1154 [0.0000]	4.38702 [0.0362]	3.99103 [0.0457]
McFadden's R-squared	-0.003225	0.102435	0.001838	-0.000039
Hannan-Quinn Information Criterion	216.2999	172.5291	212.7063	229.8537
Number of cases of 'correct prediction'	106 (64.6%)	127 (77.4%)	108 (65.9%)	93 (56.7%)

The position held is of similar importance, both in models 3 and 4 this factor determined the occurrence of the anbalized phenomenon (creating a friendly atmosphere at work, indirectly contributes to counteracting stress at work, including health protection). In the case of the work experience category, this factor, similarly to the position held, was the strongest determinant of the analyzed variable.

Due to the fact that the data fit measures of the obtained models are similar, the likelihood ratio test, McFadden's R-squared, Hannan-Quinn Information Criterion and Number of cases of 'correct prediction' were selected for the evaluation quality analysis.

Analyzing the measures of data fit to logistic models presented in Table 4, it can be concluded that all the estimated models showed statistical correctness. As a result of the modeling, a high test statistic x^2 was obtained (in all the estimated models). Comparing the number of cases of correct prediction, all models are at a similar level, except that models 4 and 2 are characterized by the highest probability of occurrence.

Conclusion

The work examined selected health and safety issues implemented by socially responsible entrepreneurs. For many employees, one of the most important areas of CSR activities is improving the quality of employees' work, which translates into their greater efficiency. Moreover, the observance of human rights, as well as good relations in the workplace and work in a human-friendly environment also translate into the efficiency and innovation of a modern enterprise, and this also leads to benefits in terms of added value.

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