

Environmental management and green brand for sustainable entrepreneurship

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Abstract. The increasing competitiveness at the global market and reinforcing the ecological issues contribute the reorientation from the traditional to the sustainable business model. In this case, the business should develop the green brand of the company, which required the implementation of environmental management. The hypothesis of the paper is checking the linking between environmental management and green brand at the company. The results of bibliometrics analysis on the selected theme confirmed the increasing numbers of papers which focused on analysing the relationships between the efficiency of environmental management and green brand at the company. In the paper, the authors used the VosViewer with the purpose to visualise the main scientific patterns on the selected theme. At the second stage, the authors identified the relationships between green brand and environmental management at the company using the ANOVA model. The data for analysis was obtained from the questionnaires among companies management (which promote as green companies) and companies' financial statements. The two indicators described the green brand: loyalty to the green brand (frequency of searching company's brand in Google); net profit. The findings proved that companies with effective environmental management had a higher net profit and loyalty to the green brand.

1 Introduction

The current trend of strengthening the ecological issues, promoting of Sustainable Development Goal 2030, increasing of global competitiveness provokes from the company the appropriate adaptations and changes considering the new trends. Thus, if companies wish to fix a stable position in the worldwide market, higher management should develop and implement the sustainable entrepreneurship model. It means that management should implement an environmentally responsible policy considering the main principles of sustainable development. Besides, the world-leading companies refused to work with the none ecological responsible companies which functioning without environmental management. Thus, the companies should reorient from eco destructive to sustainable entrepreneurship model. The findings proved that most investigations of the green brand and environmental management focused on the qualitative analysis without empirical confirmation.

2 Literature Review

The finding of the bibliometric analysis showed the increasing numbers of papers in Scopus which analysed

sustainable entrepreneurship, green brand and environmental management from the 1991 year. The authors of the most cited paper [1] in Scopus (404 citations) confirmed that the marketing instruments to promote green brand had a positive effect on implementing the greener patterns of consumptions and productions. At the same time, the scientists in the paper [2–8, 9] confirmed the hypothesis that sustainable entrepreneurship could not be realised without developing the green brand, effective environmental management, implementation of green innovations. The authors in the papers [10, 11] confirmed the hypothesis that an effective system of environmental management could increase the company's performance.

Besides, the authors proved that sustainable entrepreneurship model allowed to increase the company's profit. The co-citation analysis allowed allocating of four clusters of scientist which analysed the selected issues (Fig. 1). The results showed that scientists from the United Kingdom, the United States of America and China published the vast numbers of the documents on the chosen theme (Fig. 2).

The findings proved that developing sustainable entrepreneurship relates to the range of factors: leadership [12, 13]; communications with stakeholders [14, 15]; institutional development and green innovation technologies [16–22]; developing of bank sector [23–27];

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innovations. These indicators become the basis of the questionnaires and measured by the 5-point Likert scale.

The authors estimated the green brand by two parameters: net profit (financial statements of the company); loyalty to the company's brand (frequency of searching the company's brand in Google). Three groups classified all companies relate on the scale (quantity of the workers and income): small; middle; large. The testing of the significant impact of environmental management on a green brand was done by using the ANOVA model. It technique allowed identifying the most significant variable among the analysis parameters.

4 Results

At the first step, the comparison of the companies scale for environmental management and the green brand was made. The results of the analysis showed in Table 1.

Table 1. Comparison of companies scale for Environmental management and Green Brand

Variables	Mean for		
	small	medium	large
Environmental management			
environmental management and auditing system (EMAS)	2.344	4.543	3.499
corporate social responsibility (CSR)	3.212*	4.332	4.855
green technologies and innovations (GTI)	4.445	4.765	4.785
Green Brand			
Net profit (NP)	4.345	45.432	55.526
Loyalty to the company's brand (L)	1323.12	1432.22	1987.34

* significances of < 0.05.

Considering the finding, the non-significance variables were corporate social responsibility for small companies. Besides, on environmental management, the highest value for small companies were green technologies, for medium - green technologies and innovations, for large - corporate social responsibilities. At the next stage, the authors provided the ANOVA test (Table 2).

ANOVA test allowed identifying the significant factors which influenced the measures of the green brand. The findings confirmed the differences between the selected group of indicators for all analysed companies. It allowed concluding that analysed companies with environmental management have the highest net profit and loyalty to the green brand.

The statistically significant difference between analysed groups for large, medium and small companies for all findings were 0.01m level. Besides, the corporate social responsibility (CSR) had significant differences in net profit at level 0.10 for large companies and significant for loyalty to the company's brand at level 0.10 for medium and small companies.

Table 2. The findings of the ANOVA test

Variables		F-value	p-value
Dependent	Test		
SMALL	EMAS	5.03	0,004*
	CSR	4.52	0,001*
	GTI	8.42	0,000*
	ISO	3.54	0,000*
	EMAS	2.36	0,000*
	CSR	8.37	0,035**
MEDIUM	GTI	3.45	0,000*
	EMAS	5.	0,001*
	CSR	4.46	0,000*
	GTI	2.36	0,003*
	ISO	4.56	0,000*
	EMAS	2.45	0,000*
LARGE	CSR	3.47	0,045**
	GTI	3.36	0,000*
	EMAS	4.56	0,000*
	CSR	2.24	0,066**
	GTI	4.46	0,000*
	EMAS	3.44	0,000*
LARGE	CSR	4.56	0,001*
	GTI	2.45	0,000*

*,** – statistically significant at 0.01 and 0.10 significance level corresponding.

5 Conclusions

The findings of bibliometrics analysis proved the increasing interests on the investigation of relationships between green brand and environmental management as the core elements of the sustainable entrepreneurship. The result allowed identifying the scientific patterns (environmental management; green economy; green brand and marketing instruments) on investigating the issues as mentioned above. The scientists from the United Kingdom, United States and Chine made a significant impact in the investigation on sustainable entrepreneurship from different points of views.

The results of the ANOVA test confirmed statistically significant differences between analysed groups of the parameters. It allowed confirming the hypothesis that environmental management had a statistically significant impact on the green brand.

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