Country's green brand: the core drivers

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Abstract: In the view of rushing globalization development dissolving the national and cultural frontiers in favor of global brands, countries face the urgency to design their own unique and positive image on the international stage. A strong country's brand is considered to be one of the triggers for attracting foreign investments and tourists, increasing economic and social prosperity. On the other hand, adverse climate changes raise environmental concerns and require decisive action to mitigate and overcome their consequences. Thus, the global mainstreams are green consciousness, environmental protection, rational energy and natural resources consumption, minimizing the environmental burden from business activity and sustaining the environment for future generations. Therefore, green positioning is a competitive advantage and an essential element of the country's brand that increases its reputation and global engagement. However, the systematization of scientific treatises showed that scholars mainly focus on green brand's investigation at the corporate level, while analysis of green brands at the national level is in the initial stage. This study aims to identify and estimate the main drivers of a country's green brand elements. To achieve the study aim, this research involved data for 28 countries (EU members and Ukraine as a potential candidate for joining the EU) from 2010 to 2020. The data were retrieved from the statistical databases of Eurostat, World Bank Open Data, and OECD.Stat. The empirical study estimates the contribution of the country's green brand factors using the principal component analysis. The estimation procedures employed were the correlation analysis, Kaiser-Meyer-Olkin Test, Bartlett's Test of Sphericity and the orthogonal Varimax rotation. All calculations were conducted using the SPSS software tools. The obtained results showed that the factors most contributing to a country's green brand are the export of goods and services, real GDP per capita, secure Internet servers, renewable energy consumption, forest and organic agricultural land. The findings could improve the strategy for promoting a country's green brand and determining its position in the world.

Keywords: green brand, country reputation, brand model, country's brand, green development, green promotion.

JEL: Q01, O01, O05

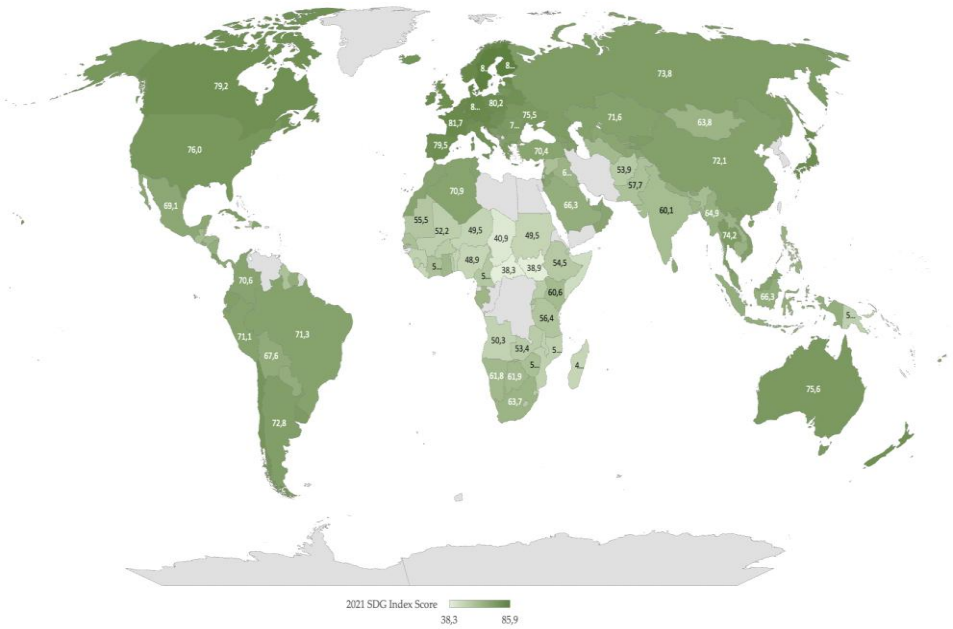
Introduction

Amid global competition, the countries of the world are putting more focus on their brand positioning on the international scene. Political and economic relations involve objective, as well as subjective, psychological and information factors. A country's image is considered to be an essential determinant of international policy, which attracts tourists,

investors, business partners, etc. The country should present an original, identifiable, reliable and positive image for inviting investments. Indeed, a strong country image is a competitive advantage. It influences the political and economic opportunities, international status, ability to influence other countries, etc. Noteworthy here, a country brand has a special meaning for emerging countries breaking into the world market, as well as for the developed countries to get an advantage under the vibrant competition.

However, the long-term economic development aimed at profit-maximization and cost minimization provokes a strong degradation of the natural and social environments. It has resulted in aggravating the environmental challenges, global climate change, social and gender inequity, etc. Therefore, the world community has recognized the importance of sustainable development, emphasizing economic growth, social responsibility, and ecological balance. In 2015, all UN member states commited to 17 Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development. Generally, the achievement of SDGs would allow enhancing the life quality of the living and future generations.

Figure 1. 2021 SDG Index Score



Sources: own work based on The Sustainable Competitiveness Report, 2021.

Figure 1 demonstrates that the high-income European countries have made considerable progress in achieving the SDGs. Thus, the top 10 countries with the highest SDG

Index Score are Finland (85.9), Sweden (85.6), Denmark (84.9), Germany (82.5), Belgium (82.2), Austria (82.1), Norway (82.0), France (81.7), Slovenia (81.6) and Estonia (81.6). Following the European standards of life and values, Ukraine has occupied the 36th position with a 75.5 SDG Index Score.

The 2030 Agenda for Sustainable Development emphasizes the social, economic, and ecological responsibilities at the national level. Sustainable development and a green economy are embodied in the guiding principle of the national development strategy for many countries. Thus, in 2019, the European Commission presented the European Green Deal (EGD) as a roadmap to transform Europe into a climate-neutral continent by 2050 with a sustainable and competitive economy. Thus, the climate and ecological challenges transform into opportunities in all spheres and policies. The green transformation contributes to economic development, as well as gains in health and quality of life. Since green transformation covers a wide range of directions, it influences trade and economic cooperation at the international level.

The above demonstrates that a robust country green brand could provide particular competitive advantages in global engagement. Therefore, this article aims to determine the contribution of a country's green brand drivers.

In order to accomplish this aim, this paper presents the results of the main literature systematization devoted to the country's brand assessment; provides the data and methods applied in the study; provides the empirical results; presents the conclusions and some suggestions for further research.

Theoretical premises

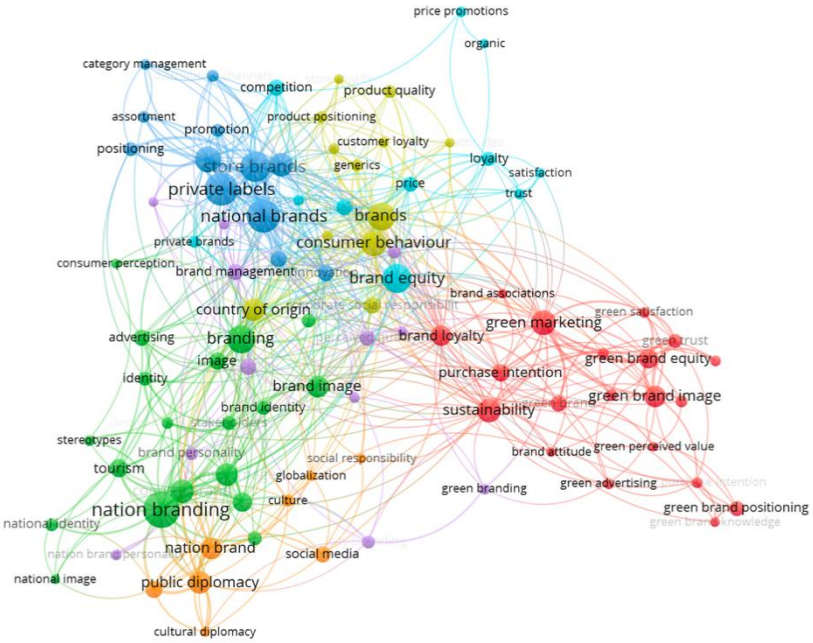
Given growing environmental concerns and climate change, green issues have become a priority worldwide. Even though past studies pay more attention to green brands at the corporate or regional levels, a country's green brand is a practical research field perspective. This study section employed bibliometric analysis techniques to identify the main research directions in the literature addressing country brand and green brand relationship. The search for the relevant articles was conducted applying two sets of key phrases combinations: 1) 'country brand', 'nation brand' and 'national brand' (780 documents); and 2) 'green brand', 'sustainable brand', 'environmental brand' and 'eco-

friendly brand' (242 documents). The boolean operator' 'OR' was used to include one or more terms in the query. Appropriate terms were searched in article titles, keywords and abstracts. The main limitation criteria for the search were:

- time of publications: from 2000 until 2021;
- subject areas: Business, Management and Accounting; Social Sciences; Economics, Econometrics and Finance;
- document type: articles.

The obtained keyword co-occurrence network map consists of 94 items interconnected by 582 links with total link strength of 957. The total number of clusters is seven (Figure 2).

Figure 2. Network map of keyword co-occurrence (2000-2021)



Source: own work based on Scopus (2022) data.

The first (red) cluster demonstrates the scholars' interest in developing the green brand concept covering sustainability issues. Thus, this cluster combines 20 items addressing the issues of green advertising, green brand equity, green brand image, green brand knowledge, green brand loyalty, green brand positioning, green perceived value, greenwashing and green trust, etc. Under this research direction, it is appropriate to mention that most previous studies have paid great attention to the green brand concept

at the industrial level (Kakalejcik et al., 2021; Husetnov, 2021; Chygryn et al., 202; Yang et al., 2021; Chygryn et al., 2018). Thus, Chen (2010) applied the questionnaire survey method to confirm that green trust, green satisfaction and green brand image are the main drivers of green brand equity. Addressing the electronics industry in South Korea, Kang and Hur (2012) found that eco-friendly attributes grab the positive emotional response of consumers and strengthen their loyalty to the green brand. In the study (Ng et al., 2014), the procedure of structural equation modeling was employed to confirm that promotion of green brand image increases the perceived quality and credibility of the green brand that has a significant positive impact on green brand equity.

The second (green) cluster is formed with 19 items related to nation branding. In this line, the studies considered the issues of brand equity, brand image, country image, destination branding, identity, image, stereotypes, supply chain management, tourism, advertising, etc. It is essential to mention the study by Fan (2006) that considered the main difference between nation branding, country brand and product brand. The scholar determined that nation brand attributes are difficult to define while its image is complicated and multiple. Generally, nation branding aims to direct its image and message at political, economic and social benefits to create competitive advantages internationally.

A large stream of literature proposes to assess a country's brand based on the subjective survey data. The Anholt Nation Brands Index is the first analytical index for nation brand assessment grounded on the Nation Brand Hexagon, covering a nation's competence in tourism, exports, people, culture and heritage, investment and immigration as well as governance. Anholt (2006) surveyed 10,000 people from 10 countries to determine their perception of political, human, commercial and cultural assets, tourism appeal and investment potential. The results allowed determining the strengths and weaknesses of a nation's brand based on the global opinion regarding the image, character and personality of the nation's brand.

In turn, Lahrech et al. (2020) applied the data on export, governance, investment and immigration, culture, people, and tourism to measure a nation's brand. The scholars noted that a country brand differs from a nation brand, since it should be considered in the supply and demand of the country brand. Thus, the nation brand focuses more on the country's economic performance, while the country brand emphasizes the country's intangible assets,

country's image and reputation. Therefore, for assessing a country's brand, Lahrech et al. (2020) applied the data on quality of life, value system, heritage and culture, suitability for business and tourism.

On the other hand, Fetscherin (2010) employed the company-based brand equity approach to estimate the country brand index based on objective secondary data. In the study, Fetscherin (2010) remarked that the strengths of a country's brand depend on the development of in-country export, tourism arrivals, foreign direct investments, immigration and the government environment. Rojas-Méndez (2013) developed the nation brand molecule consisting of seven dimensions: tourism, economy, culture and heritage, science and technology, society, government, as well as geography and nature.

The third (blue) cluster covers the stream of literature concerning the relationship between national brands and their origin. The blue cluster identifies the studies covering the issues of innovation, positioning, pricing, private labels, promotion, retailing, distribution channels, category management, assortment, etc. It is appropriate to remark the study by Zhu et al. (2021) applied the exogenous pricing approach to measure the influence of promotional and cooperative advertisement and product quality on the outcomes of the national brands. In the study on private labels, Li (2021) developed a game-theoretic model to determine the influence of private labels' sourcing strategies on the relationship between the national brand manufacturer and retailer in different distribution channels. Ghosh et al. (2021) proved that consumers choose national brands considering their reputation. Moreover, this study emphasized that in the case of young consumers, the focus should be on the brand image and its repositioning rather than price gaps.

The fourth (yellow) cluster shows the scholars' interest in brands in the view of consumer attitudes and behavior, customer loyalty, perception, corporate social responsibility, etc. In this research direction, Hwang et al. (2021) found out that satisfaction, cost, perceived quality and trust are the main factors of customer loyalty. Furthermore, the scholars identified the different influences of customer loyalty on private and national brands.

The fifth (lilac) cluster showed close links between the studies addressing green branding in brand awareness and management, marketing, perceived quality, etc. The sixth (cyan) cluster covers the studies focused on competition, loyalty, price, quality, etc. In

contrast, the seventh (orange) cluster indicates the researchers' interest in investigating nation brands focusing on culture, cultural and public diplomacy, social responsibility and soft power.

Methodology

To determine the factors strengthening a country's green brand, this study employed the panel data for 28 European countries for 2010-2020, derived from the statistical databases of Eurostat, World Bank Open Data, and OECD.Stat. All calculations were conducted using the SPSS software tools.

Based on the analysis of the theoretical background on a country's brand formation and the international indexes on the green growth estimation, this study applied the following variables which could drive a country's green brand:

- GDP – Real GDP per capita (US Dollar, 2015);
- EXP – Exports of goods and services (% of GDP);
- BEDI – Business extent of disclosure index (units);
- REC – Renewable energy consumption (% of total final energy consumption);
- ERT – Development of environment-related technologies (% all technologies);
- NEEP – National expenditure on environmental protection (percentage of GDP);
- FORE – Forest area (% of land area);
- ORG – Organic agricultural land (% of land area);
- SIS – Secure Internet servers (per 1 million people);
- ITA – International tourism (number of arrivals);
- Foreign direct investment, net inflows (% of GDP).

Table 1 visualizes the findings of descriptive statistics of all employed variables as of 2020 for countries involved in this study. The presented dataset is balanced, since the number of observations is 28 for all variables.

Table 1. The findings of descriptive statistics (2020)

Variable	Description	Mean	Min → Max
GDP	Real GDP per capita (US Dollar, 2015)	39814.58	10686.44 → 104591.3
EXP	Exports of goods and services (% of GDP)	65.939	27.874 → 204.691
BEDI	Business extent of disclosure index (units)	6.345	2.000 → 10.000
REC	Renewable energy consumption (% of total final energy consumption)	22.843	6.137 → 55.951
ERT	Development of environment-related technologies (% all technologies)	10.311	1.716 → 25.03
NEEP	National expenditure on environmental protection (percentage of GDP)	1.639	0.314 → 3.000
FORE	Forest area (% of land area)	34.279	1.438 → 73.733
ORG	Organic agricultural land (% of land area)	3.364	0.161 → 8.037
SIS	Secure Internet servers (per 1 million people)	51637.27	8893.62 → 277081.8
ITA	International tourism (number of arrivals)	35736885	1119133 → 214274306
FDI	Foreign direct investment, net inflows (% of GDP)	6.022	34,66 → 0.01

Sources: own calculations.

Following the methodology proposed by Fetscherin (2010), the simplified model of a country's green brand could be designed as follows:

(1) CGBit=f(GDP it,EXP it,BEDI it, REC it, ERT it,NEEP it,FORE it,ORG it,SIS it,ITA it)

where *i* –country, *t* – year.

The model above (1) requires modifications to transform data into relative values to make meaningful calculations, interpretations, and comparisons for different countries. Therefore, following Lachrech et al. (2020), to compare countries while avoiding biased rankings for the less populated countries, the factors of a country's green brand model were divided by its country maximum. Therefore, the modified model is as follows:

(2) CGBit=f(GDP itmaxtGDPn,EXP itmaxtEXPn,BEDI itmaxtBEDIn,REC itmaxtRECn,ERT itmaxtERTn,NEEP itmaxtNEEPn, FORE itmaxtFOREn,ORG itmaxtORGn,SIS itmaxt(SISn),ITA itmaxt(ITAn), FDI itmaxt(FDIn)

where n –number of countries.

Although Fetscherin (2010) offered to use equal weights of factors to design the model, this study employed an unequal factor analysis method (Lachrech et al., 2020).

(3) CGBit=W1GDP itmaxtGDPn+W2EXP itmaxtEXPn+W3BEDI itmaxtBEDIn+W4REC itmaxtRECn+W5ERT itmaxtERTn+W6NEEP itmaxtNEEPn+W7 FORE itmaxtFOREn+W8ORG itmaxtORGn+W9SIS itmaxt(SISn)+W10ITA itmaxt(ITAn)+W10FDI itmaxt(FDIn))

where W – weight coefficients.

Following the approach proposed by Arbolino et al. (2018), this study applied the principal component analysis (PCA) to identify the contributions of the country's green brand factors derived from the eigenvalues of the covariance matrix. This methodology allows to determine the weights of factors used for further calculation. Noteworthy here, PCA is a dimensionality reduction method. It allows to determine the minimum number of factors that accounts for the maximum variance in the data relying on the correlation matrix. The eigenvectors and the corresponding eigenvalues of the covariance matrix should be found to derive the components. The first principal component represents the largest corresponding eigenvalue that captures most of the data variability. What is more, the first principal component shows the rotation of the original data along an axis describing the largest spread. Then, the rest of the components with the following largest variance ascertain residual variability uncorrelated to the first principal component.

Moreover, before running the PCA, it is essential to estimate the correlation between the components. Thus, this study applied the correlation analysis by Pearson's coefficient (R) (Busu, 2019) to determine the highly correlated variables under equation (4) as specified below:

(4) $$R= E(X-EXY-EY)varXvar(Y)$$

where *E(X)* and *E(Y)* – the depended and independent variables, respectively; *var(X)* and *var(Y)* – the variance of *X* and *Y*, respectively.

Then, this study employed the Kaiser-Meyer-Olkin Test (KMO) to determine the adequacy of the data sample for each model variable and complete model. According to Li et al. (2019), the KMO test findings prove that the set of variables is suitable for PCA if the KMO test value exceeds 0.5.

The formula for the KMO test is as follows (5):

(5) $$KMOj=i\neq jrij2i\neq jrij2+i\neq ju$$

where rij – the correlation matrix; uij – the partial covariance matrix.

In the next stage, the study used the Varimax rotation to calculate the loadings for each variable (Arbolino et al., 2018).

Results

At the first stage of the empirical calculation, the study provides the correlation analysis of the involved variable. Table 2 presents the correlation matrix. According to the obtained results, GDP per capita has a moderate correlation with the export of goods and services (EXP) (R = 0.561) and secure Internet servers (R = 0.530). At the same time, there is a low negative correlation with the rest of the variables. Besides, the correlation matrix reveals a moderate correlation between renewable energy consumption (REC) and forest area (FORE) (R = 0.683).

Table 2. Correlation Matrix

	GDP	EXP	BEDI	REC	ERT	NEEP	FORE	ORG	SIS	ITA	FDI
GDP	1.000										
EXP	.561	1.000									
BEDI	-.181	-.355	1.000								
REC	-.070	-.399	.238	1.000							
ERT	-.140	-.022	-.055	.080	1.000						
NEEP	-.040	-.078	-.133	.155	-.027	1.000					
FORE	-.038	-.257	.193	.683	-.068	.189	1.000				
ORG	.085	-.215	-.111	.208	-.076	.415	.299	1.000			
SIS	.530	.330	-.301	-.022	-.083	.156	-.228	.019	1.000		
ITA	-.054	-.409	.072	-.145	.003	.037	-.060	.205	-.195	1.000	
FDI	.099	.308	-.039	-.303	.046	-.176	-.359	-.309	.158	-.169	1.000

Sources: own calculations.

The KMO value of 0.523 in Table 3 indicates the sampling data is adequate. Bartlett's Test of Sphericity is 1000.825 with less than a 0.001 p-value. Therefore, these findings show the intercorrelations of variables while the correlation matrix isn't the identity matrix. Thus, it could be easily extracted for further factor analysis to compute eigenvalues (Yap et al., 2019).

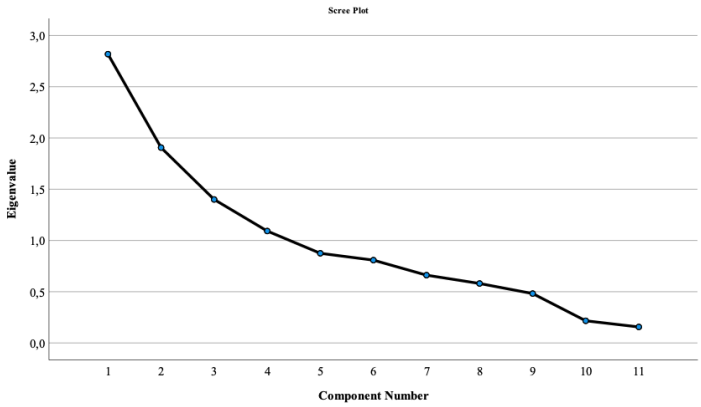
Table 3. KMO and Bartlett's Test

Test		**Value**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.523
Bartlett's Test of Sphericity	Approx. Chi-Square	1000.825
	df	55
	Sig.	<.001

Sources: own calculations.

According to the approach proposed by Nicoletti et al. (2000), to select the significant factors, three conditions must be satisfied: 1) the eigenvalues exceed 1; the factor explains more than 10% of the variance; 3) the set of factors explains more than 60% of the total variance.

Figure 3. The Factors' Scree Plot



Sources: own work.

Table 4 shows four latent factors that could be selected. These factors explain 65.6% of total variance that exceeds 60% needed for satisfactory construct validity. The first factor accounts for 25.63% of the total variation, the second factor – 17.33%, the third factor – 12.73%, and the fourth factor – 9.93%. It stands to note that despite Factor 3 explaining less than 10% of the variance, its eigenvalue exceeds 1. Figure 3 demonstrates the scree plot of 11 factors.

Table 4. Total Variance Explained

Factors	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
GDP	2.819	25.625	25.625	2.331	21.190	21.190
EXP	1.907	17.333	42.958	1.936	17.600	38.790
BEDI	1.400	12.731	55.689	1.840	16.724	55.514
REC	1.093	9.932	65.621	1.112	10.107	65.621
ERT	.875	7.956	73.577			
NEEP	.808	7.350	80.927			
FORE	.662	6.018	86.945			
ORG	.581	5.278	92.223			
SIS	.482	4.385	96.608			
ITA	.217	1.969	98.577			
FDI	.157	1.423	100.000			

Note: Extraction Method is Principal Component Analysis.

Sources: own calculations.

Table 5 presents the final rotated component matrix developed using the orthogonal rotation method Varimax with Kaiser normalization. Noteworthy here, according to Hair et al. (2010), the practically significant factors should have loading values exceeding 0.50. The values characterizing each factor most are highlighted with bold font. Therefore, Factor 1 consists of GDP, EXP, and SIS; Factor 2 – REC and FORE; Factor 3 – NEEP and ORG. Figure 4 visualizes the factors' plot in rotated space.

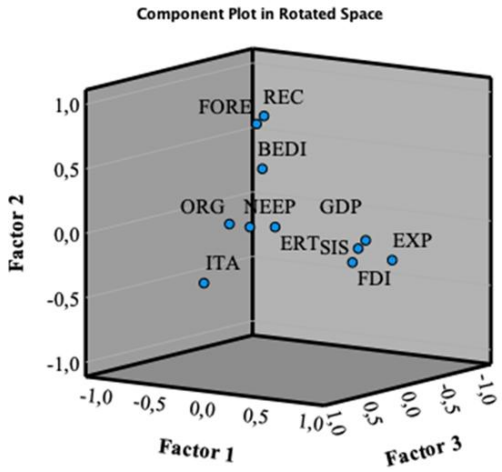
Table 5. Varimax Rotation Factor Matrix

Variables	Factors			
	1	2	3	4
GDP	**.755**	-.019	.047	.355
EXP	**.776**	-.217	-.276	-.066
BEDI	-.480	.354	-.342	.346
REC	-.107	**.876**	.170	-.066
ERT	-.137	-.016	-.021	-.823
NEEP	.132	.115	**.698**	-.184
FORE	-.124	**.823**	.244	.102
ORG	.008	.140	**.794**	.118
SIS	**.747**	-.070	.135	.044
ITA	-.494	-.423	.418	.316
FDI	.252	-.320	-.495	-.139

Sources: own calculations.

According to Table 5, a strong correlation exists between Factor 1 and real GDP per capita (GDP), exports of goods and services (EXP), as well as secure Internet servers (SIS). This integrated factor could be interpreted as macroeconomic. Factor 2 is strongly correlated with renewable energy consumption (REC) and the areas covered by forests (FORE). Thus, this factor could be interpreted as renewable energy sources. Factor 3 is highly correlated with national expenditure on environmental protection (NEEP) and organic agricultural land (ORG). This factor could be interpreted as environmental conservation.

Figure 4. The Factors' Plot in Rotated Space



Sources: own work.

Therefore, based on the obtained results, it is possible to conclude that a country's green brand mostly relies on macroeconomic stability, renewable energy sources, and environmental conservation.

Table 6. Results of factors weights

Factors	Squared rotated factor	Weight of respective factor	Resulting weight	Resulting weight scaled to sum to 1
GDP	0.755	0.212	0.160	0.132
EXP	0.776	0.212	0.165	0.136
BEDI	0.354	0.176	0.062	0.051
REC	0.876	0.176	0.154	0.127
ERT	-0.016	0.176	-0.003	-0.002
NEEP	0.698	0.167	0.117	0.096
FORE	0.823	0.176	0.145	0.119
ORG	0.794	0.167	0.133	0.109
SIS	0.747	0.212	0.158	0.130
ITA	0.418	0.167	0.070	0.058
FDI	0.252	0.212	0.053	0.044

Sources: own calculations.

To calculate the weights of factors, the squared rotated factors from Table 5 were multiplied by the percentage of the variance of the appropriate factor. Table 6 demonstrates the weights of factors designing the CGB model. Therefore, the obtained results show that the export of goods and services has the highest weight in the model of CGB (W_{EXP} = 0.136) followed by real GDP per capita (W_{GDP} = 0.132), secure Internet servers per 1 million people

(W_{SIS} = 0.130), renewable energy consumption (W_{REC} = 0.127), forest areas (W_{FORE} = 0.119), and the land devoted to organic agriculture (W_{ORG} = 0.109).

Conclusions

The theoretical results of this study showed that scientists pay profound interest in green branding at the corporate level. However, because of the growing concern about adverse climate changes and snowballing globalization processes, the world scientific community considers countries' green brand to be a prospective area for research. Therefore, this study aimed to elaborate on the methodology to assess the factors that mostly contributed to a country's green brand.

The empirical part of this paper involved the principal component analysis methodology to identify the contributions of a country's green brand factors. The obtained results determined four practically significant factors in the proposed model of a country's green brand, such as macroeconomic stability, renewable energy sources, and environmental conservation.

The results of the calculation of the weights of the factors designing a country's green brand model showed that export of goods and services has the highest weight in the model (0.136), followed by real GDP per capita (0.132), secure Internet servers per 1 million people (0.130), renewable energy consumption (0.127), forest areas (0.119) and the land devoted to organic agriculture (0.109).

This study has theoretical and practical value. The findings could be beneficial for academic researchers addressing a country's green brand assessment. The proposed methodology could be used to mostly determine the factors that contribute to a country's green brand. Policymakers might find the study results helpful in making decisions concerning strengthening their country's green branding.

The main limitation of this study is the lack of open data to estimate a country's green brand more comprehensively. Therefore, this work could be a starting point for future investigation of country's green brand, which should involve more dimensions of the proposed country's green brand model.

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