




Article

Measuring Green Marketing: Scale Development and Validation

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Abstract: Academics and practitioners are paying increasing attention to green marketing as lesser damage to the environment and future generations become a priority in a current complex business environment. Despite the expanding studies in this field, there is still a lack of psychometrically sound scales to measure green marketing practices. To fill this gap, the research aimed to develop and evaluate a multifaceted green marketing scale. First, we draw on theoretical evidence to define and conceptualize the construct of green marketing. Then, we use a multistudy scale development process to create and validate the Green Marketing Scale (GMaS). Two groups of participants were used for the validation of the scale. Study 1 ($n = 102$), with the help of exploratory factor analysis (EFA), refined and reduced the items, proposed the factor structure. Study 2 ($n = 155$) established the validity of the construct and the reliability of the scale. The authors have tested the six-factor model against the four-factor models using confirmatory factor analysis (CFA) with a sample of marketing managers. The results of the CFA have indicated that the revised version of the four-factor model appears to be the most tenable solution, as it shows the best fit for the data. The resulting 14-item GMaS captures a variety of green marketing manifestations across organizational settings and involves the dimensions of Strategy, Internal Marketing, Product, and Marketing Communication. In general, the research confirms the validity and reliability of the GMaS scale and can be used to measure green marketing in organizational settings in the energy industry.

Keywords: green marketing scale; scale development; scale validation; internal marketing; external marketing; strategy; tactics; operations; clean technology



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1. Introduction

Under current complex business conditions, the traditional attitude towards marketing practices becomes insufficient to face serious competition, rising concerns of customers, stakeholder requirements, rapid technologic development, public regulation, and strict environmental policies [1–4]. The intense evolution of global markets raises a demand to involve the pillars of sustainability (environment, society, and economy) in marketing decisions when aiming to satisfy the needs of the digitally empowered customer [2,4,5]. Fluctuation of marketing towards the pillars of sustainability has given rise to efforts to meet customer needs with lesser damage to the environment and future generations [1,2,6]. Thus, marketers are induced to use limited resources efficiently in accordance with individual and organizational aspirations by embracing green marketing solutions. These solutions in current circumstances become imperative for organizations rather than a matter of choice in order to combat sustainable development problems.

During the past decade, green marketing has attracted extensive attention among marketing scholars and practitioners. The increasing number of academic publications on the topic is evident [1–6]. However, the measurement of green marketing is not yet well-established. Researchers have measured the performance of green marketing and

its components using various methods. In numerous studies, interviews with experts [7] or managers [8–11] were conducted. Researchers have also used direct observations of business environments [12,13], case studies of progressive companies [14,15], and customer surveys [1,2,4,6,16–19]. Although the value of these techniques comes from insights into the context of green marketing, scholars [20–25] have argued that perceptions of marketing managers offer exhaustive information about business experience. Marketers' perceptions of green marketing performance are based on their professional and experiential knowledge. There are several measures of green marketing practices in organizational settings based on marketers' perceptions. However, in most cases, measures of green marketing have not undergone essential procedures of scale development and validation (e.g., [7,20,26]). Consequently, there exists a gap of certainty related to the accuracy of the measurement, as the scales lack either construct or/and content, discriminant validity. The lack of a specific measurement scale for green marketing indicates a vital knowledge gap. It suggests the most appropriate investigation to assess the concept of green marketing in organizational settings applicable in the energy industry.

Given the absence of a valid scale to measure it, the theoretical and empirical development of green marketing could be stunted. Marketing discipline cannot advance scholarship on green marketing without solid conceptualization and well-founded measures. A valid instrument for evaluating green marketing is expected to allow scholars and practitioners to conduct a more direct and systematic examination. Hopefully, it will assess the current level of green marketing and determine the issues and risks that prevent a progressive practice in the field. Therefore, a primary goal of the present research is to develop a measure of green marketing that could be easily applied in organizational settings.

To this end, the paper is divided into several classic sections. First, we reviewed the literature on green marketing scales. Second, we explained the methodology and described the surveys that were carried out. Third, we analyzed the results intending to come up with a new validated green marketing scale. Finally, we acknowledged limitations and put forward new lines of research.

2. Literature Review

The intense interest in the problems of green marketing with a focus on clean technology and environmental problems started in the late 1980s and early 1990s [6]. At that time, green marketing was conceptualized as a combination of organizational activities to promote causes of environmental issues and suggest solutions to their counteraction, prevention, and elimination [27]. Although these ideas remain integral to the current conceptualization of green marketing, the concept has become considerably crystallized and enriched over time. Based on previous research [28], we characterize green marketing as the organization's participation in strategic, tactical, and operational marketing activities and processes that have a holistic objective of creating, communicating, and delivering products with minimal environmental impact. Therefore, we center our scale development on this definition.

The literature review on green marketing reveals some instruments developed to measure marketers' perceptions of green marketing initiatives (Table 1). Among these measures are the green marketing audit [7], the green marketing strategy scale [29], etc. Green marketing audit [7] involves the evaluation of mission/goals, global green competence, stakeholders' requirements and green marketing activities. The green marketing strategy scale [29] measures two types of green marketing: process-oriented and market-oriented. Although the scales proposed in the literature present a significant theoretical contribution, some have drawbacks that could become an obstacle to an accurate assessment of green marketing.

Table 1. Description of instruments for the measurement of green marketing.

Source	Number of Items	Dimensions	Procedures for Scale Development and Validation
Chan [20]	30	1. Green products and services 2. Green distribution 3. Green pricing 4. Green promotion	None
Chen and Yang [7]	16	1. Mission/goals 2. Global green competence 3. Stakeholders' requirements 4. Green marketing activities	None
D'Souza et al. [30]	28	1. Green environmental processes 2. Green supplier selection 3. Green research and development 4. Green resources 5. Green marketing strategy	Face validation of the scale (interviews with managers), pre-test, consultation with academics, pilot study, exploratory factor analysis, Cronbach alpha
Dzulkarnain et al. [26]	20	1. Green product 2. Green place 3. Green price 4. Green promotion 5. Green people 6. Green physical evidence 7. Green process	None
Fraj et al. [29]	14	1. Process-oriented green marketing 2. Market-oriented green marketing	EFA, Cronbach alpha
Papadas et al. [21]	21	1. Strategic green marketing 2. Tactical green marketing 3. Internal green marketing	EFA, CFA, Cronbach alpha, convergent validity, discriminant validity, nomological validity
Yadav et al. [31]	13	1. Green/eco-friendly activities 2. Corporate communication 3. Green image	EFA, Cronbach alpha, Average variance extracted (AVE)
Richey et al. [22]	21	1. Program timing 2. Resource commitment 3. Environmental strategic focus	CFA

We point out that some scales measuring green marketing were not proven to be valid measures as scholars failed to evaluate their construct, content and discriminant validity [7,20,26]. Some of them were content validated, but construct validation was missing [29,32]. Therefore, it is not clear whether the scales measure green marketing as they are supposed to. To the best of our knowledge, only one green marketing orientation measure developed by Papadas et al. [21] has undergone the diligent scale development process through 4 studies. Currently, the scale is one of the most comprehensive measures of green marketing. It is a 21-item questionnaire that comprises three subscales: strategic green marketing, tactical green marketing, and internal green marketing. Although this scale was shown to be a valid and reliable measure of green marketing orientation, the conceptualization chosen that involves a mix of three unequal components raises some issues. Strategic and tactical activities may contribute to external and internal marketing, while both external and internal marketing may feature strategic and tactical activities and operational activities. Regarding the limitations mentioned above, developing a comprehensive scale for assessing green marketing is warranted. This scale would benefit as an effective tool for assessing dominant strengths and weaknesses in organizational settings.

Although the presented instruments for evaluating green marketing (Table 1) are based on different theoretical models, they have several similar constructs. A construct common to several measures is strategic green marketing [21,22,25,26,33,34]. Strategic green marketing has been investigated using different labels such as enviropreneurial marketing [21], strategic environmental focus [22]. In one study, Mukonza and Swarts [33] found that

green marketing at the strategic level positively affects the corporate image and business performance. D'Souza et al. [30] suggest that green marketing initiatives at the strategic level positively influence the greening of organizations' products, processes, and overall behavior. These initiatives cover green environmental processes, green supplier selection, green research and development, and green resources. According Fraj et al. [29], strategic green marketing refers to transformations of products and processes that aim to improve environmental performance. Such transformations require considerable investments and support from other members of the supply chain. In addition to strategic green marketing measures, green marketing assesses tactical issues [21,29]. Several lines of research on tactical green marketing have shown that it is focused on short-term decisions related to product design, pricing, communications, etc. [2,21,29]. According to Amoako et al. [2], such decisions should clearly emphasize the ideas of sustainable development. Along with the effects of strategic and tactical green marketing, the perception of marketing activities at the operational level is also important [29].

Usually, green marketing studies concentrate on the external dimension of green marketing [6,20,22,26,32], i.e., external green marketing at the strategic, tactical or operational level that aims to reach customers, government institutions, competitors, etc. However, green marketing as a construct consists of multiple activities and should also be geared towards internal audiences [4,7,21,30]. Internal green marketing involves promoting environmental awareness within the organizational setting, employee training, and environmental leadership [21].

The identified structure of green marketing guided our efforts to develop a measurement scale. We elected to include six dimensions of green marketing orientation: (1) external green marketing at a strategic level, (2) external green marketing at a tactical level, (3) external green marketing at an operational level, (4) internal green marketing at a strategic level, (5) internal green marketing at a tactical level, (6) internal green marketing at an operational level. Although these dimensions are common in the literature on marketing [21,22,25,26,29,33,34], their combination into a single measure of green marketing orientation is unique, comprehensive and omnibus. Therefore, the coherence of six dimensions can be utilized as a yardstick for evaluating green marketing. Simultaneous evaluation of external and internal green marketing facets is essential for the complete description of the situation and increased accuracy of the evaluation leading to superior marketing decisions.

3. Materials and Methods

The purpose of the research was to develop and evaluate a multifaceted GMaS. In our research, we used a multistep process to create GMaS that was realized through two separate studies. Study 1 aimed to establish the validity of the content by testing the scale's dimensionality and further reducing the pool of items. Study 2 was designed to assess the validity of the construct, and discriminant validity. Data for both studies were collected in Lithuania in September and October 2021.

3.1. Sample

The research was directed at marketing managers of Lithuanian business entities operating in various industrial sectors. Marketing managers were chosen as the target population as these are the people who are expected to be highly involved in green marketing planning and implementation. The participant inclusion criteria for both studies were: responsibility for marketing activities in an organizational setting (1), willingness, and ability to complete the survey in Lithuanian (2).

One hundred forty-seven marketing managers filled questionnaires using SurveyMonkey in Study 1. A total of 45 participants did not complete the survey. This reduced the final sample size to 102. The literature ranges in recommendations for the minimum sample size for a reliable EFA. Although 50 is considered an absolute minimum, larger samples over 100 are preferred to obtain factor solutions [35]. The sampling procedure was

non-probabilistic and, to be more specific, it followed a judgmental criterion by selecting the managers. Accordingly, we confirm that the collected sample is satisfactory for EFA technique to yield good quality results.

In terms of demographic characteristics, 54% were women in Study 1 (Table 2). The average age of the respondents was 45 years, and the average tenure in marketing was ten years. The majority of the research participants (58%) had a master's degree. The participants all worked in various industries, including wholesale and retail, construction, education, transport, etc. A total of 155 marketing managers completed the survey for Study 2. Their demographic profile was similar. A total of 59% of the marketing managers who participated in Study 2 were women. The average age was 47 years. The average tenure in marketing was almost ten years. A total of 52% of the respondents confirmed that they had completed master's studies.

Table 2. Sample characteristics.

Characteristics		Study 1 (N = 102)		Study 2 (N = 155)	
		N	Percentage	N	Percentage
Sex	Male	46	45.1	63	40.6
	Female	55	53.9	92	59.4
	Other	1	1.0	0	0.0
Age	21–30 years	5	4.9	17	11.0
	31–40 years	34	33.3	31	20.0
	41–50 years	30	29.4	45	29.0
	51–60 years	24	23.5	37	23.9
	61 years or older	9	8.8	25	16.1
Education	High school	2	2.0	3	1.9
	Vocational Education	4	3.9	5	3.2
	Bachelor's Degree	31	30.4	57	36.8
	Master's Degree	60	58.8	80	51.6
	Ph.D. Degree	5	4.9	10	6.5
Professional experience	Up to 5 years	34	33.3	80	51.6
	6–10 years	20	19.6	18	11.6
	11–15 years	22	21.6	15	9.7
	16–20 years	15	14.7	17	11.0
	21–25 years	3	2.9	10	6.5
	26 years or more	8	7.8	15	9.7

3.2. Development of the Preliminary Version of the Instrument

We suggest that the final scale of green marketing would contain both external and internal aspects of green marketing. Specifically, we propose that the final scale would consist of three levels of green marketing that have been previously confirmed [21,22,25,26,29,33,34]. The results of the literature review allowed us to come to the list of the following dimensions: external marketing at the strategic level (1), external marketing at the tactical level (2), external marketing and operational level (3), internal marketing at the strategic level (4), internal marketing at the tactical level (5), internal marketing at the operational level (6). In order to generate an initial pool of items, we used a deductive approach. The literature review resulted in 61 initial items in a consistent order according to the presumed research constructs. The authors collectively examined the face validity of the items, improved the clarity of the items, and eliminated redundancies. Items with the best face validity and clearest formulations were chosen in case of redundant items. This process resulted in 58 items. Five experts in marketing reviewed the list of 58 items and reduced it to 55 items as the best constructed (Appendix A).

We used a 55-item self-report instrument to measure external and internal green marketing at three theoretically derived levels (strategic, tactical, and operational). To measure strategic green marketing oriented toward external audiences, we employed ten statements

proposed by Chan [20], Chen and Yang [7], Fraj et al. [29], Papadas et al. [21]. These five-point Likert scales collected propositions in which marketing managers had to indicate their degree of agreement. The scale of tactical green marketing oriented towards external audiences included 29 items that involved aspects related to 4P (product, price, place and promotion). The items were adapted from Chan [20], Chen and Yang [7], D'Souza et al. [30], Fraj et al. [29], Papadas et al. [21], Yadav et al. [32], Dzulkarnain et al. [26]. Appropriate changes were made to the statements to fit precisely the chosen constructs and the aim of the investigation. The scale of operational green marketing oriented toward external audiences refers to the degree of integration of green aspects into the operational level of green marketing. It consisted of 3 items that addressed facets relating to urging environmental awareness in operations. The items were adapted from Chen and Yang [7], Papadas et al. [21]. Strategic green marketing oriented towards internal audiences refers to the degree of internal green marketing implementation at the strategic level. The scale consisted of 7 items proposed by Chen and Yang [7], Fraj et al. [29], Papadas et al. [21], Richey et al. [22]. Tactical green marketing oriented towards internal audiences was defined within three items. They were adapted from Papadas et al. [21]. Operational green marketing oriented toward internal audiences was measured using the statements proposed by Papadas et al. [21]. This scale consisted of 3 items. The research participants were asked to respond to the items on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Reversed scoring was used for two items (I30 and I31). Averages were calculated for every subscale, with a higher score indicating a higher green marketing orientation.

3.3. Data Collection and Analysis Procedure

The survey questionnaires in SurveyMonkey (Momentive Inc., San Mateo, CA, USA) ran in September and October 2021. The data was inserted into a data matrix in SPSS 23.0 (<https://www.ibm.com/support/pages/downloading-ibm-spss-statistics-23>, accessed on 1 November 2021) software for further analysis. Initially, the data were screened for normality. Then an EFA was carried out to identify the number of factors that explain green marketing, as this technique helps to understand and clarify new scales [36]. EFA aims to reduce the scale dimensionality, pin down the subjacent dimensions, and guide the subsequent CFA. It is a transformative statistical tool to find out the underlying dimensions and convert them into new variables to use. As in performing it, some scale's variables are deleted. Therefore, it is a valuable tool to enhance the reliability of the final obtained scale [37].

The CFA using Amos 23.0 (<https://www.ibm.com/support/pages/downloading-ibm-spss-amos-23>, accessed on 5 November 2021) was then performed to validate the scales empirically. CFA is used to uphold a theory and is loosely based on the EFA since it starts with testing the obtained experimental dimensions structure [38]. For this reason, it goes beyond refining and validating the original scale [39] because it attempts to test the underlying dimensions derived from both the EFA and the supporting theories. Consequently, CFA aims to test the convergent validity of the scale inasmuch as it demonstrates that several items are rooted in the same factor. Similarly, it can indicate the discriminant validity if some things do not belong to the same element [37]. A CFA aimed at assessing construct validity, i.e., discriminant validity and convergent validity. The goodness of fit between the factor models was measured as discriminant validity. Convergent validity was tested using standardized factor loadings that indicated how acceptably latent variables explained each observed variable. The chosen combination of EFA and CFA was in agreement with Otaye-Ebede [40], who confirmed that EFA and CFA together may ensure higher accuracy and provide more robust evidence for a more valid instrument.

4. Results

4.1. Results of Study 1

First, we used a data set collected from 102 marketing managers (Study 1). The endorsement rates and variance were checked for each item. According to the scaling metric,

the ideal values for the means are between two and four, while for standard deviation (SD), it is ≥ 0.80 [41]. Needless to say, while means describe the concentration of responses, standard deviation shows how dispersed they are. Each item fits into the suggested intervals, thus assuring an appropriate distribution. The normality check resulted in an absolute value of univariate skewness between -0.895 and 0.672 , which fits the standards for absolute skewness below two [42]. Univariate kurtosis was between -0.990 and 2.099 . It means that no item exhibited a severe deviation from a normal distribution. Therefore, no items were removed after this initial check. The Kaiser–Meyer–Olkin measure of sampling adequacy (0.872) greater than 0.6 and the Bartlett test of sphericity (5112.456 [$df = 1326$], $p < 0.001$) that was less than 0.05 [43] indicated that the application of factor analysis was appropriate.

We have examined the data matrix for underlying factors applying EFA with principal axis factoring and Promax rotation. The first EFA analysis resulted in a 12-factor solution that explained 78.03% of the variance. Aiming for a more meaningful solution, we have deleted the items if the load was equally heavy on more than one factor. Considering the relatively small sample size, the loadings smaller than 0.55 were deleted [44]. After every removal of items, we have rerun factor analysis and reestimated coefficients until we have received a satisfactory result. Revisions continued until every item remained factor loaded onto one factor with a loading value greater than 0.55 . After deletions, the number of items was reduced to 29 (Table 3).

Table 3. Results of the exploratory factor analysis (EFA) for the retained Green Marketing Scale (GMaS) items (Study 1).

Item	Strategy	Internal marketing	Product	Marketing Communication	Digitalization	Price	Resources
I46—We try to promote environmental preservation as a major goal across all departments	0.950	−0.087	−0.068	0.009	0.049	0.102	0.029
I48—Our employees believe in the environmental values of our organization	0.910	0.029	−0.073	0.118	−0.220	0.129	0.013
I47—At our company, we make a concerted effort to make every employee understand the importance of environmental preservation	0.873	0.099	−0.123	0.116	−0.071	0.071	−0.016
I45—Our company culture makes green marketing easier for us	0.811	0.027	0.079	0.004	−0.082	0.005	0.131
I40—We have a clear statement urging environmental awareness in all areas of operations	0.799	0.014	−0.165	0.237	0.067	0.022	−0.015
I43—Environmental issues are very relevant to the major functioning of the company	0.732	−0.048	−0.079	−0.213	0.108	0.191	0.180
I3—We form collaboration agreements with government agencies	0.700	−0.051	0.344	−0.242	0.054	−0.233	−0.201
I44—Our company has a clear policy statement that calls for environmental awareness in all areas of operations	0.621	0.053	0.134	0.076	0.035	−0.079	0.182
I2—We engage in dialogue with our stakeholders about environmental aspects of our organization	0.613	0.072	0.335	−0.174	0.048	−0.150	−0.050
I28—We promote green environmental components of the product	0.593	−0.055	0.092	0.324	0.042	0.085	−0.062
I52—We have created internal environmental prize competitions that promote eco-friendly behavior	−0.152	1.065	0.027	−0.014	−0.010	0.027	−0.034

Table 3. Cont.

Item	Strategy	Internal marketing	Product	Marketing Communication	Digitalization	Price	Resources
I54—We form environmental committees for implementing internal audits of environmental performance	0.132	0.876	−0.144	0.023	−0.013	0.065	−0.197
I51—Exemplary environmental behavior is acknowledged and rewarded	−0.056	0.864	0.107	0.021	−0.085	−0.027	0.179
I53—We organize presentations for our employees to inform them about the green marketing strategy	0.128	0.796	−0.075	0.055	−0.012	0.052	0.038
I50—Environmental activities by candidates are a bonus in our recruitment process	0.268	0.504	0.029	−0.092	0.062	0.112	0.177
I15—Raw materials are safe for the environment and health	0.104	0.056	0.912	−0.039	−0.240	−0.040	0.048
I16—Organization provides environmentally friendly products	−0.157	−0.062	0.847	0.051	−0.091	0.200	0.140
I17—We use ecological and clean materials for packaging	−0.255	0.027	0.747	0.202	0.119	0.234	0.037
I14—We use recycled or reusable materials in our products	0.110	−0.020	0.730	−0.013	0.147	−0.033	−0.114
I13—The company seeks to bring innovative green products and services to the market	0.300	−0.112	0.569	0.145	−0.057	0.077	−0.027
I36—The company uses eco-labels on packaging	0.096	−0.038	0.082	0.910	0.005	−0.081	0.017
I37—The company shows eco-labels on the corporate website	0.016	0.105	0.065	0.874	0.082	−0.182	−0.060
I33—We prefer digital communication methods for promoting our products because it is more eco-friendly	0.018	−0.086	−0.181	−0.019	0.895	0.068	0.117
I25—We encourage the use of e-commerce because it is more eco-friendly	−0.138	−0.053	0.049	0.129	0.709	0.231	0.031
I5—We implement market research to detect green needs in the marketplace	0.139	0.266	0.083	0.049	0.563	−0.219	−0.089
I21—Customers agree to pay higher green prices when part of the amount is donated to green activities	0.120	0.144	0.066	−0.099	0.029	0.836	−0.139
I20—Customers who are more receptive to environmental goods and services are willing to pay more for environmentally friendly products	0.121	−0.026	0.180	−0.166	0.131	0.830	−0.104
I42—We apply a paperless policy in our procurement where possible	0.072	0.033	0.053	−0.092	0.162	−0.103	0.837
I55—We apply a paperless policy in our personnel management where possible	0.115	−0.041	0.014	0.038	−0.013	−0.154	0.831
Variance explained (total = 75.834)	0.950	−0.087	−0.068	0.009	0.049	0.102	0.029

A clear seven-factor structure with an eigenvalue of more than one has been supported. Every item clearly loaded onto one factor. We have examined all factors to find interpretations of their conceptual meanings. The factors were labeled as follows: Strategy, Internal Marketing, Product, Marketing Communication, Digitalization, Price, and Resources (Table 3). After the eliminations and modifications of items, a 29-item pool was used in the following study. After the exploratory analysis, we proceeded to run a confirmatory factorial analysis to check the scale's convergent validity.

4.2. Results of Study 2

Another dataset ($n = 155$) was used to confirm the dimensionality of the GMaS. The CFA was conducted with AMOS 23 software. We ran CFA for four models (Figures 1–4). Model 1 consisted of the initial pool of items structured into six factors based on the level and dimension of green marketing (Figure 1). Even though such a structure does not match the results of the EFA, the authors decided to check the model just for the sake of the

interest of its goodness of fit. Table 4 shows that the CFA result indicated that Model 1 fits poorly with the collected data.

The theoretical model with six latent factors did not show an acceptable fit to the data. The measurement model did not fit satisfactorily with TLI = 0.673 and CFI = 0.688). The RMSEA value determined by Model 1 was not considered acceptable, as it did not range between 0.05 and 0.08 as recommended in the literature [45].

Table 4. Fit indices for the models.

Fit Indices	Obtained Values				Norms ¹
	Model 1	Model 2	Model 3	Model 4	
χ^2	3625.33	571.073	309.4	116.006	N/A
df	1416	224	163	83	N/A
$\Delta\chi^2$	—	−3054.257	−261.673	−193.394	N/A
Δdf	—	−1192	−61	−80	N/A
Scaled χ^2/df	2.560	2.549	1.898	1.398	1–3
Tucker–Lewis index (TLI)	0.673	0.844	0.917	0.958	>0.90
Comparative fit index (CFI)	0.688	0.862	0.928	0.967	>0.90
Root Mean Square Approximation Method (RMSEA)	0.101	0.100	0.076	0.064	0.05–0.08

¹ Sources for norms: [45,46].

Then we ran Model 2 (Figure 2) that consisted of the four factors determined by the EFA. SPSS AMOS requires a factor to have at least three items. Therefore, the factors of marketing communication, price, and resources were eliminated from the dataset. The goodness of fit of Model 2 appeared to be insufficient (TLI = 0.844, CFI = 0.862, RMSEA = 0.100). Therefore, we aimed at ensuring the appropriateness of Model 2 by inspecting factor loadings, modification indices, and cross-loadings. We achieved a better fit by removing three items (Figure 3). We tested this four-factor model (Model 3), which returned a much better data fit (TLI = 0.917, CFI = 0.928, RMSEA = 0.076).

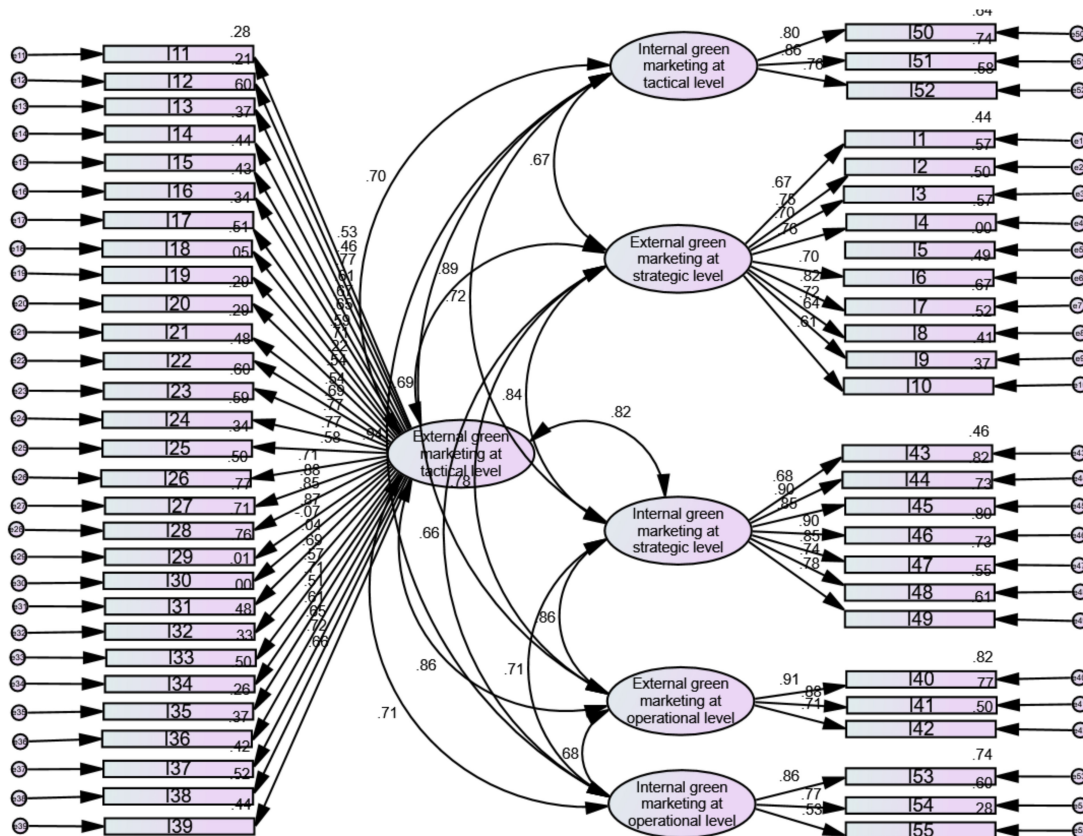


Figure 1. Model 1. The initial confirmatory factor analysis (CFA) model of the Green Marketing Scale (GMaS).

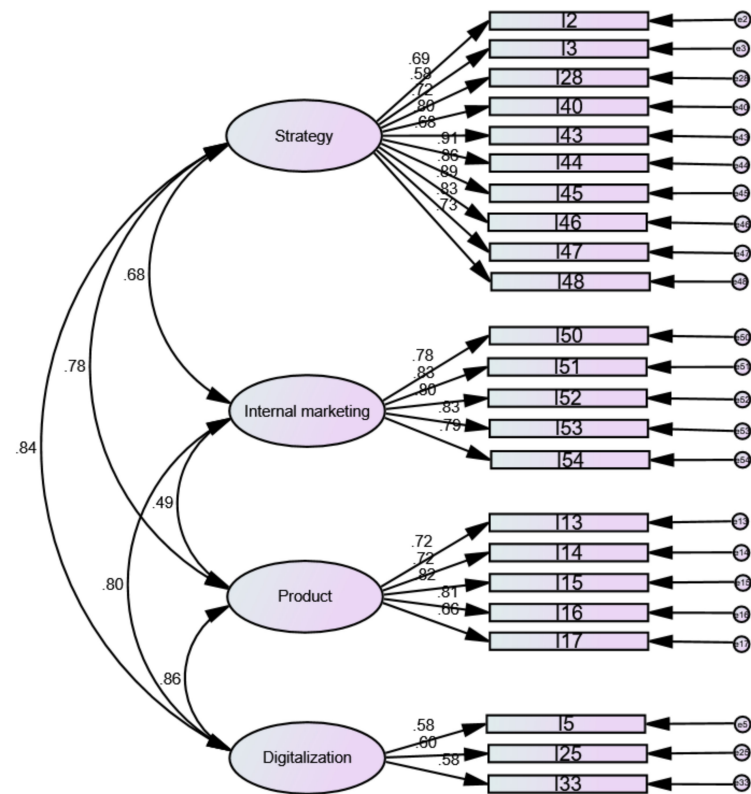


Figure 2. Model 2. The four-factor, 23 item confirmatory factor analysis (CFA) model of the Green Marketing Scale (GMaS).

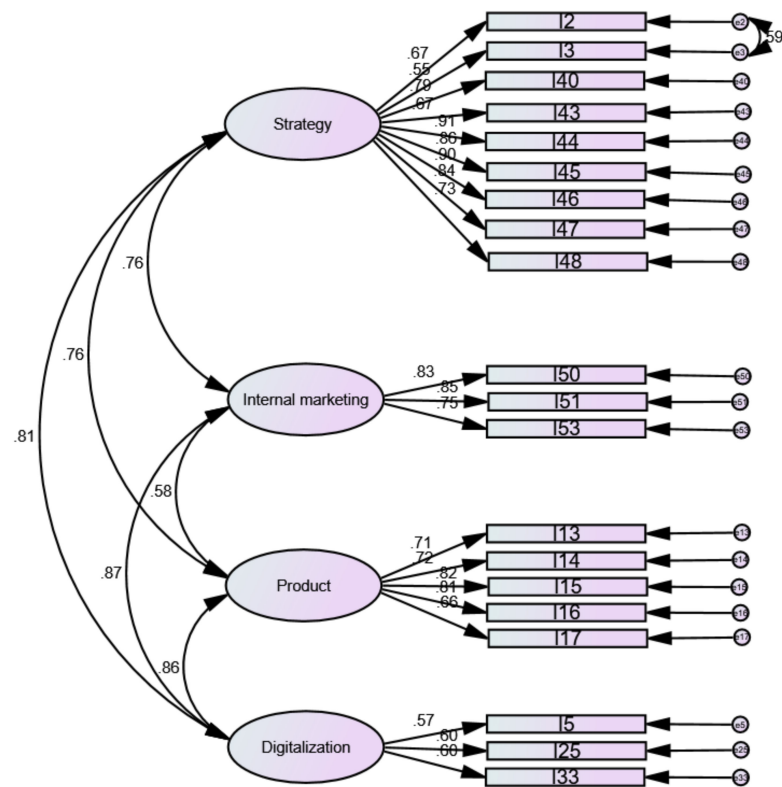


Figure 3. Model 3. The four-factor, 20 item confirmatory factor analysis (CFA) model of the Green Marketing Scale (GMaS).

Despite a good fit of Model 3, one of the scales (namely, digitalization) demonstrated insufficient internal consistency ($\alpha = 0.666$). This deficiency of the model led us to slight modifications of the factor structure. Digitalization factor items were infused into marketing communication. Thus, items belonging to the factor of marketing communication were restored and merged with items of the digitalization factor (Model 4). After inspecting factor loadings and cross-loadings, fit statistics were not adequate. However, the configurations of some items improved the model fit (Figure 4).

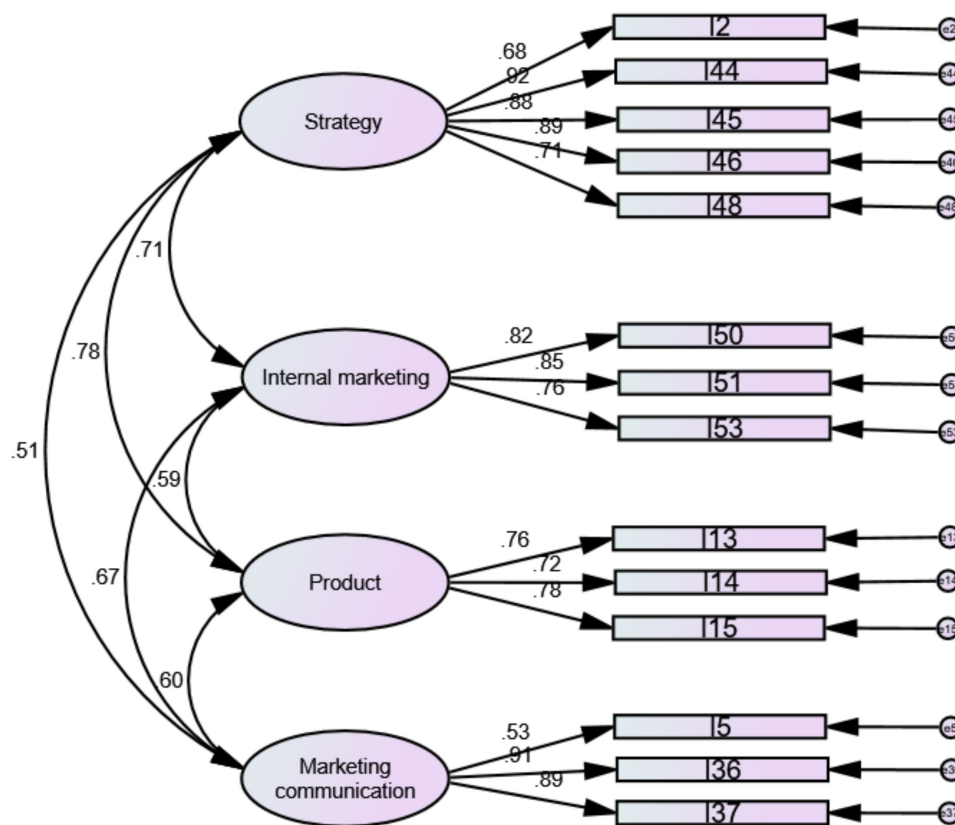


Figure 4. The final four-factor, 14 item confirmatory factor analysis (CFA) model of the Green Marketing Scale (GMaS).

Model 4 showed the best fit (TLI = 0.958, CFI = 0.967, RMSEA = 0.0064). The p is greater than 0.05. Therefore, we conclude that the fit of the model is close. We finally conclude that Model 4 reasonably fits the data. In the final validated 14 GMaS, the Strategy subscale consists of five items (Table 5). The Strategy involves items related to dialogue with stakeholders, policy statements, culture, major goals, and beliefs. The Internal Marketing subscale consists of items about environmental activities of potential employees, rewards for environmental behavior of employees, and employee informing about green marketing. The Product factor reveals the innovation of the product, recyclability, reusability, and safety of the materials. Finally, Marketing Communication covers marketing research as a precondition for efficient communication and eco-labeling. The Cronbach alphas of the four subscales (0.908, 0.843, 0.794, and 0.801, respectively) indicated sufficient internal consistency between the items of every scale.

Table 5. The items in the Green Marketing Scale (GMaS).

Measures	Items
Strategy (5 items)	I2—We engage in dialogue with our stakeholders about environmental aspects of our organization
	I44—Our company has a clear policy statement that calls for environmental awareness in all areas of operations
	I45—Our company culture makes green marketing easier for us
	I46—We try to promote environmental preservation as a major goal across all departments
	I48—Our employees believe in the environmental values of our organization
Internal Marketing (3 items)	I50—Environmental activities by candidates are a bonus in our recruitment process
	I51—Exemplary environmental behavior is acknowledged and rewarded
	I53—We organize presentations for our employees to inform them about the green marketing strategy
Product (3 items)	I13—The company seeks to bring innovative green products and services to the market
	I14—We use recycled or reusable materials in our products
	I15—Raw materials are safe for the environment and health
Marketing Communication (3 items)	I5—We implement market research to detect green needs in the marketplace
	I36—The company uses eco-labels on packaging
	I37—The company shows eco-labels on the corporate website

To study the reliability, we run an analysis of compound reliability (CR) and AVE that can be seen in Table 6. In the light of the results obtained, as all the indicators are above the recommended threshold, that is, above 0.7 for CR and 0.5 for the AVE, we can confirm the reliability of the scale.

Table 6. Compound reliability (CR) and average variance extracted (AVE) of the measures.

Measures	CR	AVE
Strategy	0.909	0.669
Internal Marketing	0.831	0.621
Product	0.785	0.550
Marketing Communication	0.773	0.543

Lastly, to check the measuring instrument's discriminatory validity, we made a correlation analysis whose Pearson's Coefficient (r) is far below one (Table 7). Similarly, we checked that the square values of the extracted variance are greater (Strategy: 0.82; Internal Marketing: 0.79; Product: 0.74; Marketing communication: 0.74) than the correlation values and, hence, the discriminant validity is approved [47]. Therefore, we assert that the GMaS measures different dimensions such as Strategy, Internal Marketing, Product, and Marketing Communication.

Table 7. Correlation matrix.

Measures		Strategy	Internal Marketing	Product	Marketing Communication
Strategy	Pearson Correlation	1	0.631 **	0.669 **	0.517 **
	Sig. (2-tailed)		0.000	0.000	0.000
	N	155	155	155	155
Internal Marketing	Pearson Correlation	0.631 **	1	0.478 **	0.618 **
	Sig. (2-tailed)	0.000		0.000	0.000
	N	155	155	155	155
Product	Pearson Correlation	0.669 **	0.478 **	1	0.547 **
	Sig. (2-tailed)	0.000	0.000		0.000
	N	155	155	155	155
Marketing Communication	Pearson Correlation	0.517 **	0.618 **	0.547 **	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	155	155	155	155

** Correlation is significant at the 0.01 level (2-tailed).

5. Discussion

Green marketing is a key factor for the successful operation of businesses. It relates not only to commercial benefits (such as stronger relationships with customers, increased

profit, competitive advantage, etc.) but also to environmental and social benefits due to cleaner production, increased flexibility to choose green energy. This benefit leads to improvement of the natural ecosystem and increased quality of life [2,4,23,33,48–50]. Therefore, academicians and practitioners have an increasing interest in this construct and its measurement.

The literature review has shown that former green marketing scales had a limited scope and potential to evaluate green marketing in its entirety. Specifically, previous scales focused too heavily on the tactical components of green marketing [51], sometimes on strategic components [33,34], passing over operational components of the construct. It is an issue that prevents the clarification of processes of green marketing not only at the external dimension but also at the internal dimension. Therefore, the current study attempted to develop a scale that evaluated external and internal dimensions of green marketing at strategic, tactical, and operational levels. To do this, we completed a literature review to develop an initial item pool containing recycled items from previous scales. The authors created additional items to evaluate both the external and internal facets of the green marketing construct.

In two studies, we developed the GMaS. The subscales of the final GMaS were not consistent with the suggested domains. Rather than supporting six latent variables, EFA (Study 1) discovered seven interpretable factors that were reduced to four after CFA. Some factors are consistent with the literature [20,21,26,30,48,51].

The newly developed GMaS provides a measure of an important variable in a sustainable era. GMaS is a 14-item measure of four distinct components (Strategy, Internal Marketing, Product, Marketing Communication) that demonstrated adequate factorial validity and reliability. The scale consists of Strategy, which describes values, culture, policies as the basement of green marketing, Internal Marketing that involves green marketing arousal from the side of employees, Product that involves safety, recyclability, reusability, innovativeness of green products, and Marketing Communication, which terms communication based on eco-labeling and market researches. By developing a concise scale to measure green marketing in organizational settings, we hope to advance relevant theory and research on green marketing, its contents, and consequences.

5.1. Future Research

The most significant contribution of this study is the solid measure developed for the evaluation of green marketing. Although there have been previous attempts to measure green marketing through various combinations of variables, GMaS now presents a much-needed instrument for the direct measurement of green marketing. Researchers and practitioners will be able to apply it and expand the empirical knowledge of green marketing. Using GMaS, future research can better elucidate various aspects of green marketing necessary for the successful management of sustainability issues in organizational settings and strengthen organizational manifestations of green marketing that are environmentally and morally acceptable. In addition, researchers may use GMaS to find the impact of green marketing on business performance indicators. GMaS can also be applied to research to see the effect of the professional characteristics of marketers on green marketing in organizational settings. Toward this end, we expect that the upcoming research employing GMaS will contribute in meaningful ways to pursuing green marketing as a new normal for businesses and avoiding greenwashing in attracting more green-conscious customers.

5.2. Limitations

The results of this research should be considered in light of limitations. First of all, the data was collected using convenience samples. As a result, a certain level of caution may be required in generalizing the study results to a larger-scale population. Future studies may adopt a more systematic sampling approach in order to increase the validity of the scale. Second, this research includes marketing professionals working only in Lithuanian organizations. Future research may valuably validate the instrument among marketers

working in other countries. Irrespective of the limitations mentioned above, we suppose that the GMaS is a valuable instrument that might be of good use to green marketing. This field demonstrates growing importance in the energy industry.

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Appendix A

Table A1. The initial version of the Green Marketing Scale.

Level	Element	Item	Source	
Strategic level	–	I1—Green is a central corporate value in our company	[7,20,21,29]	
		I2—We engage in dialogue with our stakeholders about environmental aspects of our organization		
		I3—We form collaboration agreements with government agencies		
		I4—We cooperate with environmentally friendly partners		
		I5—We implement market research to detect green needs in the marketplace		
		I6—Amongst other target markets, we also target to environmentally—conscious customers		
		I7—We make efforts to use renewable energy sources for our products		
		I8—We invest in low—carbon technologies for our production processes		
		I9—We invest in R&D programs to create environmentally friendly products		
		I10—We have created a separate department/unit specializing in environmental issues for our organization		
External green marketing	Product	I11—Green marketing in the organization should begin with green product design	[20,21,26,29,32]	
		I12—Green products may provide an opportunity for differentiation		
		I13—The company seeks to bring innovative green products and services to the market		
		I14—We use recycled or reusable materials in our products		
		I15—Raw materials are safe for the environment and health		
		I16—Organization provides environmentally friendly products		
	Tactical level	Price	I17—We use ecological and clean materials for packaging	[20,29]
			I18—The company’s green products are desired by the customers	
			I19—Green products and services are almost always priced at a premium over conventional offerings	
			I20—Customers who are more receptive to environmental products are willing to pay more for environmentally friendly products	
			I21—Customers agree to pay higher green prices when part of the amount is donated to green activities	
			I22—We consider environmental aspects within the price policy	
	Tactical level	Place	I23—We consider environmental issues in the distribution	[21,29]
			I24—The organization tries to convince customers to be environmentally friendly during direct sales	
			I25—We encourage the use of e-commerce because it is more eco-friendly	
			I26—We select cleaner transportation systems	

Table A1. Cont.

Level	Element	Item	Source
	Promotion	I27—Our marketing communication aims to reflect the company’s commitment to the environment I28—We promote green environmental components of the product I29—We employ green arguments in marketing communication I30—Company’s customers are suspicious of environmental advertising and claims (reversed) I31—Environmental claims in advertisements are often met with criticism from competitors, consumer organizations, etc. (reversed) I32—The company uses promotional media that is environmentally friendly I33—We prefer digital communication methods for promoting our products because it is more eco-friendly I34—The company collaborates with environmental groups to promote the “green image” effectively I35—Environmental labeling is an effective promotional tool for our company I36—The company uses eco-labels on packaging I37—The company shows eco-labels on the corporate website I38—We inform consumers about environmental management in the company I39—We provide sponsorship or patronage for environmental groups or events	[20,21,26,29,30]
	Operational level	I40—We have a clear statement urging environmental awareness in all areas of operations I41—Daily marketing operations purposefully lead to the green image I42—We apply a paperless policy in our procurement where possible	[7,21]
Internal green marketing	Strategic level	I43—Environmental issues are very relevant to the major functioning of the company I44—Our company has a clear policy statement that calls for environmental awareness in all areas of operations I45—Our company culture makes green marketing easier for us I46—We try to promote environmental preservation as a major goal across all departments I47—At our company, we make a concerted effort to make every employee understand the importance of environmental preservation I48—Our employees believe in the environmental values of our organization I49—We encourage our employees to use eco-friendly products and services	[7,21,22,29]
	Tactical level	I50—Environmental activities by candidates are a bonus in our recruitment process I51—Exemplary environmental behavior is acknowledged and rewarded I52—We have created internal environmental prize competitions that promote eco-friendly behavior	[21]
	Operational level	I53—We organize presentations for our employees to inform them about the green marketing strategy I54—We form environmental committees for implementing internal audits of environmental performance I55—We apply a paperless policy in our personnel management where possible	[21]

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