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Stimulating Pro-Environmental Behavior Through Social Media Marketing in Environmental Organizations

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Abstract

Environmental organizations have increasingly utilized social media platforms to highlight issues related to climate change and environmental challenges, raise public awareness, foster engagement on environmental matters, cultivate a positive corporate image, and promote environmentally sustainable consumption practices. However, there is a lack of empirical evidence regarding the influence of these organizations' social media marketing strategies on their followers. The study aims to investigate the effect of environmental organizations' social media marketing activities on brand image, online word-of-mouth communications, and the pro-environmental behaviors of followers. A quantitative approach was used in the research, and data were gathered through online questionnaires from 529 users who actively follow ten well-known environmental organizations on Facebook, Instagram, Twitter, and LinkedIn in Türkiye. The theoretical model and hypotheses were tested with Structural Equation Modeling (SEM). The social media marketing components of environmental organizations were defined as awareness, interaction, timeliness, customization, and advertising. As a result of the analysis, it was revealed that the social media marketing components of environmental organizations' awareness, timeliness, and interaction have a positive effect on the pro-environmental behaviors of the followers. At the same time, these components have a significant effect on brand image and online word-of-mouth in environmental organizations. In addition, it has been demonstrated that brand image and online word-of-mouth in environmental organizations significantly affect on the pro-environmental behaviors of the followers. The findings suggest that social media serves as an effective platform for environmental organizations to enhance their brand image and promote pro-environmental behavior. However, these organizations face challenges regarding the effectiveness of advertisements and the personalization of communication on these platforms.

Keywords: Social Media Marketing; Brand Image; Word-of-Mouth; Pro-Environmental Behavior; Environmental Organizations.

1. Introduction

In contemporary discourse, it is widely acknowledged that environmental challenges, such as climate change, air and water pollution, soil degradation, and biodiversity loss, are anthropogenic. The causal relationship between human consumption patterns and environmental degradation has been empirically established [1], and collective consciousness has emerged owing to the concerted efforts of governments, media outlets, and both profit-driven and non-profit organizations that emphasize environmental sustainability, thereby enhancing public awareness of environmental conservation [2]. There is growing recognition among individuals regarding the sustainable utilization of natural resources [3], and the preservation of natural habitats to maintain a high quality of life has become a shared

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ideal in modern societies [4]. Nevertheless, current research indicates that observed climate changes influence numerous weather and climate extremes globally, with human activities exerting an increasing impact on these observed alterations in extreme events [5]. Consequently, initiatives undertaken by environmental organizations (EOs) to capture public attention, enhance awareness, and modify lifestyles and consumption behaviors towards pro-environmental practices are of significant importance in addressing climate change and environmental concerns.

Presently, social media platforms serve as optimal channels through which environmental organizations (EOs) can engage with individuals, potential volunteers, and donors within their target demographics. Social media facilitates the dissemination of content created by organizations or individual users, thereby promoting user interactions [6]. Through these platforms, EOs can establish brand presence within social networks comprising millions of users, provide online customer services, and execute various initiatives such as information dissemination, advertising, and promotional offers in an efficient, cost-effective, and continuous manner [7]. Social networks present unique opportunities for EOs to cultivate a distinctive brand identity, promote pro-environmental behavior (PEB), and enhance engagement with potential volunteers and donors. These platforms enable EOs to share information and compel content rapidly and economically, thus continually raising awareness of environmental issues [8]. Consequently, social media is highly effective for marketing strategies of EOs that aim to enhance communication with their stakeholders (individuals, institutions, donors, volunteers, etc.) to highlight environmental concerns and encourage pro-environmental behavior [9]. Social media plays a significant role in the marketing communications of Environmental Organizations (EOs) in two primary ways. First, social media serves as an appropriate platform for direct marketing initiatives, facilitating interactions between EOs and their stakeholders as well as supporting branding activities. As a marketing communication channel, social media enables EOs to efficiently disseminate content aimed at raising awareness, providing information, promoting projects and campaigns, advertising cost-effectively, and obtaining feedback from stakeholders [10]. Social media eliminates the time and physical barriers in the interaction of EOs with individuals and institutions that are social media users, potential volunteers, and donors [11]. Consequently, EOs can enhance and maintain their engagement with the target audience through social media marketing activities (SMMA) [12]. Increased interaction can raise people's awareness of environmental issues and encourage them to become volunteers and donors to the organization's operations [13]. Furthermore, these interactions can contribute to an institution's image and brand value by fostering a sense of trust among stakeholders.

The second aspect pertains to the impact of comments and shares on the organization's mission, activities, identity, and image among social media users, regardless of EOs. The boundaries of user-generated shares on virtual platforms remain undefined, and no EOs can intervene in this process [14]. The content shared by the EOs on social media can be evaluated, interpreted, and re-shared by other users [15]. Furthermore, this content can be independently produced by other users without EO involvement, potentially generating a wave of electronic word-of-mouth (e-WOM) among users on virtual platforms [16]. Since this e-WOM exchange between social media users is often not perceived as a marketing activity, the content may enhance users' sense of trust and have a positive influence on their PEB [17].

Existing literature includes studies that examine the role of social media marketing within non-profit organizations [18, 19]. Furthermore, some scholars advocate for the use of social media as a tool for information dissemination, education, and participation in environmental issues [15, 20]. Ballew et al. (2015) explored the influence of social media on the dissemination of pro-environmental behavior [21], while Ji et al. (2018) investigated how social media contributes to raising awareness about environmental challenges [22]. Research on social media and PEB predominantly focuses on consumers' intentions to purchase eco-friendly products [23], their consumption behaviors [3, 24], or the impact of digitalization on environmentally friendly behavior [25–27]. However, there is a significant gap in the literature regarding the use of social media as a marketing platform by environmental organizations and the effect of these marketing activities on the environmentally friendly behavior of their followers. This research is pioneering in defining the framework of social media marketing activities aimed at fostering environmentally friendly behavior change within environmental organizations. Additionally, the study addresses the uncertainty surrounding the role of social media in influencing followers' adoption of environmentally friendly behaviors. This study specifically examines the social media marketing activities (SMMA) of environmental organizations (EOs) as a factor influencing PEB. The objectives of this study are as follows:

- To examine the effect of environmental organizations' SMMA on the PEB of followers;
- To test the effect of SMMA on brand image and online word-of-mouth in environmental organizations, and
- To measure the effect of brand image and online word-of-mouth in environmental organizations on the pro-environmental organizations of followers.

The structure of the remainder of this paper is organized as follows: First, a theoretical framework for social media marketing activities within environmental protection organizations is presented. Following this, the concepts of pro-environmental behavior (PEB), brand image, and electronic word-of-mouth (e-WOM) are explained, the interrelationships among these variables are delineated, and hypotheses are formulated based on a solid theoretical

foundation. The methodology section details the population, sampling, measurement instruments, and data collection and analysis procedures. In the findings section, the results derived from the data analysis are presented. Finally, the discussion and conclusion section examine the research outcomes and offers recommendations for both researchers and practitioners.

2. Developing Conceptual Framework and Hypotheses

2.1. Social Media Marketing Activities in Environmental Organizations

Social media serves as an effective platform for Environmental Organizations (EOs) to disseminate messages to their target audience and engage with potential donors and volunteers [9]. These platforms offer opportunities for EOs to gain insights into potential volunteers and donors as well as to publicize the organization's activities, promotions, campaigns, and advertisements at minimal cost [28]. Furthermore, social media platforms function as suitable tools for EOs to enhance brand awareness, establish a positive brand image, and construct a distinctive brand identity [12]. Social media acts as a conduit for EOs to interact with their target audiences [10] and foster environmental collaboration with stakeholders [29]. However, the efficacy of EOs in establishing this connection depends on delineating the framework and defining the content of social media marketing.

Social media marketing activities encompass online transmission of written and visual content within a marketing context to interact with, inform, and persuade the target market on virtual platforms. In a seminal study on social media marketing activities (SMMA), Kim & Ko (2012) identified social media marketing components for luxury fashion brands and categorized them as entertainment, interaction, trendiness, customization, and word-of-mouth [10]. Seo & Park (2018) considered WOM in the airline industry as a behavioral response to SMMA and instead added entertainment to these components [8]. Similarly, Liu et al. (2021) argue that word-of-mouth is not a dimension but an outcome of SMMA [30]. The components of social media marketing are debated in the literature, and these components may vary according to the characteristics of different sectors [10, 31]. Bilgin & Kethüda (2022) defined SMMA for charities as awareness, interaction, timeliness, informativeness, customization, and advertisement [9]. In this research, consistent with the literature [9, 10, 32], the framework of SMMA for EOs is defined as awareness, interaction, timeliness, customization, and advertisement.

Creating awareness encompasses social media communications aimed at directing users' attention to environmental issues, generating interest in EOs and their activities, and indicating that environmental concerns are a significant aspect of their lives. Owing to the high number of users, written and visual content on environmental issues in social networks is optimal for the awareness-raising activities of EOs [33]. The interaction component refers to the way EOs communicate and exchange ideas with their followers and other stakeholders through social media [8, 34]. Social media allows EOs to establish real-time communications with the target audience, to follow their ideas, comments, and suggestions, and to facilitate cooperation with them [35]. Timeliness refers to the dissemination of the latest and up-to-date information about the activities on the social media platforms of the EOs and maintaining account activity by regularly updating posts [9]. Environmental organizations can provide their followers with up-to-date information about natural disasters (fire, flood, etc.) and environmental problems through visual content on social media. Since these real-time posts encourage followers' interaction with the organization [10], it is crucial for EOs to maintain active interaction with their followers and stimulate interest and curiosity.

Customization involves one-to-one contact between EOs and potential volunteers, donors, and other users and their individual engagement with their interests, questions, and concerns [9]. Through personalized communications, EOs can make volunteers and donors feel important and can stimulate them to support environmental activities more [8]. The advertisement component represents the social media posts of EOs that directly include the promotion, identity, and activities of the organization on social media so as to attract potential donors and volunteers. The cost of social media ads is cheaper than traditional ads, and it is easier to measure the performance of these ads [28]. EOs can advertise effectively through social media by presenting remarkable stories about how the activities impact the natural environment [36].

2.2. Environmental Organizations' SMMA and Pro-Environmental Behavior

Pro-environmental behavior can be defined as an individual's deliberate actions aimed at minimizing environmental harm, protecting the environment, and contributing to environmental sustainability [37]. Similarly, PEB is accepted as "any behavior intended by the individual to have a positive impact on the environment" [38]. Social media platforms serve as functional tools for promoting PEB through the dissemination of environmental information. Chung et al. (2020) posited that young adults utilize social media as a significant resource for obtaining information on environmental issues [39]. EOs can inform others and create a strong environmental awareness with real-time posts on many environmental issues such as pollution, fire, injured or endangered animals, and illegal garbage disposal on

social media [40]. Individuals aware of environmental hazards are more likely to act pro-environmentally [41]. Birkenholtz & Simon (2022) asserted that many current environmental crises stem from ignorance and a lack of awareness [42]. In this context, enabling social media interaction with real-time sharing can facilitate immediate awareness of environmental events and timely responses from various institutions responsible for environmental management [40, 43]. The extant literature indicates that social media encourages pro-environmental behaviors among individuals [20, 23, 44]. Consequently, the proposed research hypotheses are as follows:

H1: *Environmental organizations' SMMA has a positive effect on followers' pro-environmental behavior.*

2.3. Environmental Organizations' SMMA and Online Word-of-Mouth

Word-of-mouth refers to people's informal communication with each other, as independent from organizations, about a product or a brand [45]. Traditionally, WOM was limited to the physical environment, but in the information age, the boundaries of these communications have disappeared, and virtual platforms have made the sharing of information and experience among users continuous [46]. Furthermore, social media has eliminated the differences between users in terms of location, status, background, and interests and has offered people from all segments of society the opportunity to interact and act jointly with others [47]. Content created and shared by a user on social media reaches millions of users who cannot physically meet during the life of the user with a single click and can affect their approach to environmental issues [48]. In this context, for EOs that aim to create PEB change, social media can be an effective tool to accelerate and strengthen WOM among users [49]. Online word-of-mouth between users in social media can turn followers into voluntary marketing employees of EOs by disseminating information, sharing experiences, and making recommendations. There are findings in the literature that social media increases e-WOM in non-profit organizations [18]. Accordingly, the proposed research hypothesis is as follows:

H2: *Environmental organizations' SMMA has a positive effect on followers' online word-of-mouth.*

2.4. Social Media Marketing Activities and EOs' Brand Image

Brand image can be defined as the sum of perceptions shaped by various brand associations (such as brand attributes, brand name, benefits and attitudes, etc.) in the minds of consumers [50]. Brand image emphasizes the organization's distinctiveness in the minds of the target audience and provides an initial impression of the quality of the offered services [51]. The brand image of an EO is formed by the individual experiences of the target audience related to the activities of the organization, marketing communication, and social reactions [52]. Social media are efficacious in assisting EOs in reaching their target audience, developing individual relationships with them, and creating a positive brand image [53]. By providing followers with an online platform to exchange opinions and information about the institution's activities, environmental organizations can mitigate their followers' prejudices and misunderstandings about the environmental organization [10].

Visually compelling written and visual content shared on an organization's social media helps potential volunteers, followers, and donors to establish an emotional connection with the organization [54]. EOs can strengthen this experiential image through customized communication with volunteers and donors on social media [9]. Furthermore, organizations can expeditiously inform their followers and others of the existence and activities of an organization that is concerned about their future and strives for environmental sustainability owing to the accessibility and widespread use of social media. These posts can cultivate unique brand awareness and images of EOs within the minds of the target audience [55]. Research findings demonstrate that social media is effective in creating brand images in non-profit organizations [9]. Accordingly, the proposed research hypothesis is as follows:

H3: *Environmental organizations' SMMA has a positive effect on brand image.*

2.5. Brand Image and e-WOM in Environmental Organizations

The brand image of an environmental organization is associated with its perception of the society in which it operates, based on the knowledge and experience of volunteers, donors, and other individuals familiar with the organization. A positive brand image can assist environmental organizations in gaining appreciation from their stakeholders, community approval, volunteer engagement, and increased donations [56, 57]. Furthermore, a strong brand image effectively communicates to the target audience the value of both environmental organizations and the fundamental service that the organization provides to society [58]. As brand image conveys the promises of any environmental organization to its target audience and society, a robust brand image is crucial for attracting volunteers and donors to the organization and encouraging positive electronic word-of-mouth (e-WOM) [59].

Williams & Buttle (2013) asserted that e-WOM in non-profit organizations is influenced by the organization's image and affects donors' views and behaviors [60]. Social media serves as a platform frequently utilized by users to gather information about an environmental organization, pose questions to others, and benefit from their experiences [49]. Online word-of-mouth disseminated on social media through users' liking, re-sharing, and

commenting on posts influences the image of the environmental organization in the minds of others and directs their attitudes and behaviors towards the organization [48]. Positive or negative WOM reflects individuals' experiences with the environmental organization and the image they perceive. While the likes, comments, and recommendations of individuals with a positive image of environmental organizations attract volunteers and donors to the organization, the opposite effect drives them away from the organization [58]. Accordingly, the proposed research hypothesis is as follows:

H4: *Brand image of the environmental organizations has a positive effect on followers' online word-of-mouth.*

2.6. Brand Image and Pro-Environmental Behavior

The primary objective of environmental organizations (EOs) is to effect lasting behavioral changes regarding environmental sustainability across all societal stakeholders, encompassing both individuals and organizations. To achieve this, it is crucial for an EO's brand image to effectively represent its donors and volunteers while gaining acceptance from society [57]. The strength of an EO's brand image is positively correlated with the target audience's trust in the organization and the organization's influence on their pro-environmental behavior (PEB) [21, 61]. A robust environmental organizational image enhances the target audience's awareness of environmental issues and ensures greater consideration of the organization's activities. Furthermore, a strong brand image alerts individuals to mitigate the environmental impact of their consumption habits, motivates volunteers and donors to intensify their efforts against environmental issues, and promotes PEB among the target audience. Consequently, the proposed research hypothesis is as follows:

H5: *Brand image of the environmental organizations has a positive effect on followers' pro-environmental behavior.*

2.7. Online Word-of-Mouth and Pro-environmental Behavior

Word-of-Mouth in social media occurs when users disseminate interesting content to others through viewing, liking, commenting, or sharing online [62]. As users' actions regarding content are visible to their connections on the timeline [63], the shared content reaches a broader audience as users' reactions to the posts increase, thus propagating through electronic Word-of-Mouth. Content produced by environmental organizations or other users about the environment, along with the corresponding reactions (likes, shares, and comments), draws users' attention to environmental issues more effectively [64]. Consequently, individuals who acquire knowledge about the environment and interact with others attribute greater importance to pro-environmental behavior in their daily lives because of increased familiarity with environmental problems. User-generated content and interactions concerning environmental issues on social media are conducive to alerting and informing others and disseminating visual evidence [8].

In the manifestation of word-of-mouth on social media to pro-environmental behavior, it is crucial to present events or situations that evoke emotions regarding environmental issues with visual evidence [65]. While an individual's eco-friendly behavior may have a limited environmental impact, the fact that word-of-mouth on social media encourages millions of users to engage in similar behaviors independently can have a significant environmental impact [48]. Xiao et al. (2022) determined that WOM positively affects PEB by facilitating information gathering on social media and encouraging participation in environmental campaigns [66]. When a user endeavors to inform, warn, and raise awareness about environmental issues, it can enhance their environmental sensitivity and motivate them further towards pro-environmental behavior in their daily lives [67]. Accordingly, the proposed research hypothesis is as follows:

H6: *Online Word-of-mouth communication has a positive effect on pro-environmental behavior.*

3. Research Methodology

The research model proposed for the effect of environmental organizations' social media marketing activities on followers' pro-environmental behavior is presented in Figure 1. The target population of the present study comprises individuals who actively follow ten environmental organizations (EOs) leading operations to protect nature and the environment in Türkiye and possess the highest number of followers on Facebook, Instagram, Twitter, and LinkedIn. These environmental organizations are the organizations with the highest number of followers on the designated social media platforms. These EOs were TEMA, ÇEKÜL, WWF-Türkiye, Greenpeace, Doğa Association, Türkiye Nature Conservation Association-TTKD, TÜRÇEK, TURMEPA, Environmental Defense Fund, and ÇEVKO. Information on the characteristics of followers of the media platforms of environmental organizations is limited to user profiles. Consequently, convenience sampling, a non-probabilistic sampling method, was employed in this study.

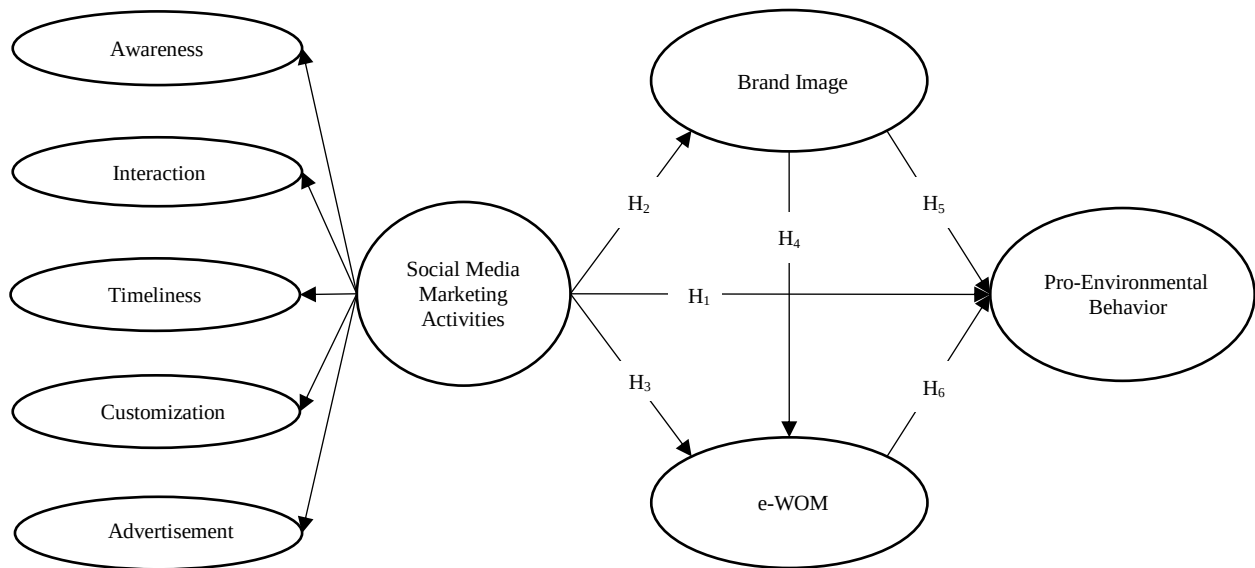


Figure 1. Proposed Research Model

A survey methodology was employed to collect data. The survey comprised four distinct sections. The first section consisted of eight closed-ended statements regarding the demographic characteristics of the participants, their membership in EOs, and their social media usage. The second section contained 15 statements concerning the SMMA of EOs. These statements have been adapted from [9]. In the third section, three statements to assess the brand image of EOs were adapted from [9], and three statements were adapted from [8] to evaluate e-WOM. The fourth section of the survey included five statements to examine the PEB of the followers, of which PEB1 and PEB2 were adapted from [68], PEB3 from [69], PEB4 and PEB5 from [70]. Participants were asked to indicate their level of agreement with each statement on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Two marketing experts were consulted to assess the construct and content validity of the measurement tool. Their evaluations confirmed the absence of structural issues and validated the appropriateness of the wording, format, and question order. To verify the internal consistency and reliability of the measurement tool, the research questionnaire was distributed via direct message to 200 users who had interacted with content published by environmental organizations, inviting them to participate. The measurement model was then pre-tested on 71 users who follow environmental organizations on social media. Reliability analysis of the collected data revealed a Cronbach's alpha of 0.780, confirming the reliability of the scale. After pre-test data were collected through social media communication channels and online surveys between April and September, 2024. The survey link was distributed via direct messages to over 2500 users who had interacted with the most recent posts by EOs (likes, dislikes, shares, or comments). In total, 821 responses were obtained. However, the responses of 265 participants contained a significant amount of missing data. Additionally, the response time of the 27 participants was less than 1 min. Therefore, 292 responses were excluded from the final dataset. Ultimately, a sufficient sample size for SEM analysis was achieved, and data from 529 participants were used for further analysis [71]. SPSS 18.0 was employed for descriptive statistics, and AMOS 24.0 was utilized to test the hypotheses.

4. Analysis and Results

4.1. Demographic Characteristics of Participants

The study included 529 participants, of whom 312 were female and 215 were male. Participants aged 26-40 years constituted 43.1% of the sample. Among the participants, 61.1% held bachelor's degrees, and 45.2% reported an income range of \$1001-2000. Instagram was identified as the platform on which participants most actively followed the environmental organization (39.7%). Notably, 82% of the participants were not affiliated with any environmental organization. Moreover, 81.1% of the respondents reported no history of donations or volunteer work for environmental organizations. The majority of participants (65.8%) reported spending an average of more than 3 hours daily on social media platforms. Table 1 presents the demographic characteristics.

Table 1. Demographic characteristics of the respondents

		Frequency	Percent %
Gender	Women	312	59.0
	Man	215	40.6
	Not specified	2	0.4
Age	25 years and under	132	25.0
	26-40 years	228	43.1
	41-55 years	124	23.4
	56 and above	45	8.5
Education	High school or below	30	5.7
	Associate's degree	114	21.6
	Bachelor's degree	323	61.1
	Master	62	11.7
Income (monthly)	1000 \$ and lower	145	27.4
	1001 - 2000 \$	239	45.2
	2001- 3000 \$	73	13.8
	3000 \$ and more	72	13.6
The most actively used social media channel to follow the EOs	Facebook	98	18.5
	Twitter	134	25.3
	Instagram	210	39.7
	LinkedIn	87	16.4
Status of Membership	Yes	95	18.0
	No	434	82.0
Status of being a donor or volunteer	Yes	100	18.9
	No	429	81.1
Average daily usage time of social media platforms	Less than one hour	42	7.9
	1-3 hours	139	26.3
	3-5 hours	200	37.8
	5 hours or more	148	28.0
Total		529	100,0

4.2. Measurement Model

Confirmatory Factor Analysis (CFA) was used to validate the measurement model consisting of four latent variables and 26 observed variables. Since SMMA in EOs includes five dimensions, second-level confirmatory factor analysis was applied for all 11 observed variables and 15 observed variables representing five latent variables. The CFA results for each latent variable in the measurement model are presented in Table 2. In DFA, the chi-square ratio (Sig. 0.000) is less than three according to the degrees of freedom (CMIN/DF: $365.409/271 = 1.348$). In addition, IFI (0.983), CFI (0.983), NFI (0.937), GFI (0.949), AGFI (0.934), and RMSEA (0.026) are above standard thresholds. These values confirm the goodness of fit of the measurement model.

Table 2. Confirmatory Factor Analysis Results

Construct/Indicator		Loadings	<i>α</i>	CR	AVE
Social Media Marketing Activities					
Awareness					
SMMA1	The social media posts of the X organization make me realize environmental problems.	0.706			
SMMA2	The social media posts of the X organization increase my sense of responsibility towards the environment.	0.917	0.834	0.842	0.643
SMMA3	X organization's social media posts help me understand the importance of the natural environment.	0.769			
Interaction					
SMMA4	The social media account of the X organization allows sharing information with others.	0.625			
SMMA5	It is possible to exchange ideas/opinions with others using the social media account of the X organization.	0.897	0.792	0.806	0.586
SMMA6	I can easily express my opinions on the social media of the X organization.	0.751			
Timeliness					
SMMA7	The contents shared on the social media of the X organization contain the latest information.	0.733			
SMMA8	The information shared on the social media of the X organization is related to current environmental issues and problems.	0.860	0.826	0.828	0.617
SMMA9	It is possible to follow the current activities of the X organization on social media.	0.759			
Customization					
SMMA10	I can find the information I need about the X organization on the organization's own social media account.	0.824			
SMMA11	The X organization provides information on subjects that I am interested in or want to learn through its social media account.	0.907	0.870	0.871	0.695
SMMA12	It is possible to see how the donations made affect the natural environment and the lives of living things in the social media account of the organization.	0.764			
Advertisement					
SMMA13	X environmental organization's social media posts have emotional impact.	0.925			
SMMA14	The social media account of X organization gives a good account of the organization's current achievements.	0.681	0.785	0.802	0.581
SMMA15	X organization's social media posts effectively express what the organization wants to achieve in the future.	0.651			
Brand Image					
BI1	This environmental organization is a leader among non-governmental organizations.	0.855			
BI2	I have good memories of the activities carried out by this environmental organization.	0.625	0.781	0.791	0.663
BI3	I think that this environmental organization meets the expectations of its volunteers and donors with its activities.	0.783			
e-WOM					
WOM1	I share the contents on the social media of this environmental organization with my friends.	0.627			
WOM2	I upload content from this organization's social media to my profile or microblog.	0.868	0.795	0.801	0.578
WOM3	When I see a review or comment about this organization on social media, I express my positive thoughts.	0.737			
Pro-Environmental Behavior					
PEB1	When throwing out the garbage, I pay attention to the separation of waste or recycling of resources.	0.711			
PEB2	I take care not to waste food and drinks, if any, I put the leftovers in a separate container to deliver to stray animals.	0.805			
PEB3	I turn off unused lights/fans/electrical appliances in my living space.	0.812	0.853	0.855	0.554
PEB4	It is important to me how a product I buy will affect the natural environment.	0.631			
PEB5	I am ready to change my behavior to change the state of the environment.	0.715			

Notes: α = Cronbach's Alpha, CR= Composite reliability, AVE= Average Variance Extracted

In the DFA server, factor loads of all expressions in the measurement model are greater than 0.60, and the t-value is significant. In addition, the constructs' composite reliability (CR) scores are greater than 0.79, and the AVE values are above the 0.50 recommended by Hair et al. [72]. Moreover, since the square root of the AVE values of each construct in the measurement model is greater than the constructs' correlations, the Fornell-Larcker criterion is approved [73]. Thus, the data for discriminant validity supported the measurement model, and the validity and reliability of the constructs in the model were verified. Table 3 shows the results for discriminant validity.

Table 3. Discriminant Validity Results

Construct/Variables	1	2	3	4	5	6	7	8
1. Awareness	0.892							
2. Interaction	0.393***	0.870						
3. Timeliness	0.172***	0.169**	0.885					
4. Customization	0.198***	0.125**	0.107**	0.911				
5. Advertisement	0.183***	0.203***	0.020 ^{ns}	0.061 ^{ns}	0.867			
6. e-WOM	0.484***	0.352***	0.212***	0.185***	0.194***	0.981		
7. Brand Image	0.284***	0.196***	0.246***	0.186***	0.151**	0.463***	0.868	
8. Pro-Env. Behavior	0.350***	0.195***	0.216***	0.122***	0.150**	0.508***	0.425***	0.857

Note: *** <0.001, **<0.05, ns: not supported

4.3. Structural Model

Covariance-based structural equation modeling, AMOS 24.0, was utilized to test the structural model. In the path analysis performed to test the structural model, chi-square is significant ($p=0.000$), and its ratio to degrees of freedom is less than three ($CMIN/DF = 380.243/288 = 1.320$). In addition, the fit indices considered to evaluate the model fit indicate that the structural model has a good fit. Model fit indices above the standard thresholds are as follows: IFI (0.984), CFI (0.984), NFI (0.937), AGFI (0.936), GFI (0.947), and RMSEA (0.025). Table 4 presents the structural model (path analysis) results regarding the direct effects of SMMA on brand image, WOM, and PEB in EO.

Table 4. Results of the Structural Model

Dependent variables	Independent variables	Standardized estimates	Standard error	Critical ratio	p
Brand Image	SMMA	0.445	0.070	5.633	***
e-WOM	SMMA	0.595	0.100	6.328	***
PEB	SMMA	0.199	0.104	2.052	**
e-WOM	Brand Image	0.198	0.074	3.203	***
PEB	e-WOM	0.276	0.084	3.321	***
PEB	Brand Image	0.209	0.069	3.668	***

*** $p < 0.001$, ** $p < 0.05$

Path analysis results show that SMMA in EOs has a significant effect on followers' PEB. In addition, SMMA in EO has a strong positive effect on environmental organizations' brand image and followers' e-WOM. Therefore, as a result of the path analysis, hypotheses H1, H2, and H3 are supported. In addition, in EOs, brand image has a significant effect on followers' e-WOM and PEB. Accordingly, hypotheses H4 and H5 are supported. Finally, path analysis results show that e-WOM has a significant and positive effect on followers' PEB. Therefore, hypothesis H6 is supported.

In order to better understand the extent to which brand image and e-WOM mediate the effect of SMMA on PEB in EO, the structural model was run without mediating variables as suggested by Baron & Kenny [74]. According to the analysis results, SMMA in EO positively affects the PEB of the followers. This result demonstrates that EOs' brand image and online word of mouth as a whole partially mediate the effect of EOs' SMMA on followers' PEB. Bootstrap approximation ($p < 0.05$, two-tailed) shows that the mediating effect of e-WOM and brand image on followers' PEB is significant. Table 5 presents the direct and indirect effects of SMMA on internal variables in EOs.

Table 5. Standardized indirect, direct and total effects

Dependent Variables	Indirect Effect		Direct Effect			Total Effect		
	SMMA	Image	SMMA	Image	e-WOM	SMMA	Image	e-WOM
Brand image	---	---	0.445	---	---	0.445	---	---
e-WOM	0.088	---	0.595	0.198	---	0.683	0.198	---
Pro-Environmental Behavior	0.281	0.055	0.199	0.209	0.276	0.480	0.263	0.276

The findings support the theoretical model as a whole. However, the effect of the dimensions that make up the SMMA in the EOs on the variables is analyzed. For this reason, the path analysis results do not explain the extent to which each dimension of SMMA in EO has an effect on the brand image, e-WOM, and followers' PEB. In order to reveal this, in the structural model, each of the SMMA in EO is redefined as exogenous, and other latent variables are redefined as endogenous. Table 6 shows the specific effect of SMMA on dependent variables in EOs.

Path analysis results show that awareness and timeliness from SMMA are the components that most strongly affect the brand image of EOs. Advertisement and interaction components have a limited effect on the brand image of EOs, while the customization component ($p > 0.05$) has no significant effect on the brand image of EOs. The social media marketing component that most affects followers' e-WOM is awareness. Other social media marketing components that have a positive effect on followers' e-WOM are customization, timeliness, and interaction. The advertisement component, on the other hand, does not have a significant effect on the e-WOM of the followers.

Table 6. Standardized regression weights of dimensions of SMM

Endogenous variables	Exogenous variables	Standardized Estimate	Standard Error	Critical Ratio	P
Brand image	Awareness	0.224	0.031	4.370	***
	Timeliness	0.208	0.034	3.984	***
	Advertisement	0.124	0.050	2.277	**
	Interaction	0.104	0.040	2.123	**
e-WOM	Awareness	0.415	0.037	8.299	***
	Customization	0.173	0.046	3.657	***
	Timeliness	0.138	0.045	2.874	**
	Interaction	0.106	0.054	2.286	**
Pro-Environmental Behavior	Awareness	0.314	0.037	6.201	***
	Timeliness	0.175	0.040	3.547	***
	Interaction	0.096	0.047	2.022	**

Note: *** = $p < 0.001$, ** = $p < 0.05$

Once and for all, the results of path analysis demonstrate that awareness, one dimension of social media marketing components in EO, has a positive effect on followers' PEB. Additionally, timeliness and interaction, which are social media marketing components, have a significant effect on followers' PEB. On the other hand, the results of the analysis indicated that the components of advertisement and customization do not have a significant effect on the PEB of the followers.

5. Discussion and Conclusion

Aligned with their mission to address climate change and environmental challenges, environmental organizations (EOs) are exerting substantial efforts to enhance public awareness of environmental issues and establish enduring behavioral modifications regarding environmental sustainability. In the current information era, social media platforms present an optimal medium for communicating with individuals, donors, and volunteers within the target EO markets, cultivating a distinctive brand image, and promoting pro-environmental behavior (PEB). Environmental organizations utilize social media to efficiently and rapidly disseminate content pertaining to current environmental issues and problems to millions of users with the objective of increasing user engagement. However, empirical evidence regarding the impact of social media posts by EOs on users and the optimal utilization of social media as a marketing tool remains limited. Consequently, the present research contributes to expanding the nascent literature on the application of social media as a marketing tool in EOs, and addresses the significant gap in the content of social media marketing activities (SMMA) for EOs.

Firstly, a comprehensive conceptual framework for social media marketing activities in environmental organizations was developed as part of the research. In this context, social media marketing activities for EOs are defined as awareness, interaction, timeliness, customization, and advertising. Subsequently, the effect of SMMA in EOs on environmental organizational image, e-WOM, and followers' PEB was empirically tested. The empirical findings of this study revealed two significant findings and contributions. The first highlights the functionality of SMMA in EOs as a direct marketing platform to strengthen brand image and promote followers' PEB. This finding aligns with the results of Chung et al. (2020) and Rezaei et al. (2021), which indicate that social media influences users' environmentally friendly behaviors [20, 39]. In addition, this research determined that SMMA has a substantial effect on the brand image of EOs. There are findings in the literature that SMMA positively affects brand image in non-profit organizations [9, 53]. Additionally, research has determined that SMMA in EOs has a positive effect on the PEB of followers. In other words, SMMA in EOs directly encourages followers' PEB. The research identified that the social media marketing component that has the most impact on the PEB of followers of EOs is awareness. Timeliness and interaction are other social media marketing components that affect followers' PEB. This result emphasizes the importance of EOs content shared on social media being current and oriented toward increasing followers' awareness to encourage PEB.

The second significant finding pertains to the word-of-mouth communication wave generated by SMMA among followers and other users in EOs and its impact on followers' PEB. Social media expedites the dissemination of content created by social media, EOs, or users, as well as responses to this content to other users. Each user's interaction (like, comment, and sharing) with environmental content draws increased attention to environmental issues. Consequently, these interactions create a word-of-mouth wave that promotes PEB among users of social media. The research findings indicate that the SMMA of EOs significantly influences their followers' e-WOM. This outcome aligns with the findings obtained from other non-profit organizations [18, 75].

The research findings indicate that Social Media Marketing Activities (SMMA) significantly influence the electronic word-of-mouth (e-WOM) of followers in the following descending order of impact: awareness, customization, timeliness, and interaction. Conversely, the advertising component does not exhibit a significant effect on users' e-WOM. Furthermore, the advertisement component does not demonstrate a significant influence on behavior (PEB) of followers. This outcome is potentially attributable to the non-profit nature of Environmental Organizations (EOs). Social media advertisements typically encompass the promotion of EOs and are designed to achieve specific objectives. These promotional materials, designed to inform and attract donors and volunteers, may not be perceived by followers as directly related to environmental issues and may not align with their conceptualization of EOs' missions. Consequently, EOs should consider integrating social media advertisements with content that emphasizes environmental concerns.

Research findings indicate that electronic word-of-mouth (e-WOM) among social media users, irrespective of environmental organizations (EOs), promotes pro-environmental behavior (PEB). Furthermore, e-WOM mediates the impact of social media marketing activities (SMMA) of EOs on followers' PEB. Additionally, the results demonstrate that the brand image of an EO plays a significant role in enhancing the e-WOM of followers. In the literature, evidence suggests that brand image increases e-WOM in non-profit organizations [76]. Moreover, EOs' brand image positively influences followers' PEB. Specifically, the brand image of EO is crucial for influencing the target market, establishing trust, gaining societal acceptance, and fostering environmental awareness. In this regard, the analysis results highlight the importance of awareness-raising activities as social media components that directly affect the brand image of EO, as well as the timeliness of shared content. This outcome corroborates the effect of brand image on the target market in non-profit organizations, supporting the findings of other researchers [61, 77].

5.1. Managerial Implications

The findings of this study underscore the effectiveness of social media marketing activities (SMMA) in fostering pro-environmental behavior (PEB) within environmental organizations (EOs). To further promote PEB, EOs should continue to raise awareness about environmental issues through their SMMA, ensuring that timely content is consistently shared across social media platforms. The observed influence of brand image on PEB emphasizes the importance of cultivating a strong brand image for EOs. Given the significant role of advertising in shaping brand image, it is recommended that EOs prioritize advertising—a key component of social media marketing—to strengthen their brand presence. As non-profit organizations, EOs can leverage diverse advertising content on social media that aligns with their mission, such as promoting environmental protection and sustainable products, rather than focusing solely on content that advertises the organization itself. The data for this research were obtained from users who actively followed the social media accounts of Environmental Organizations (EOs). However, 82% of the participants were not currently members of any EO, and 81.1% had never donated to any EO or volunteered in their operations. Consequently, EOs should utilize social media more effectively to encourage environmentally conscious individuals to donate to or participate in their activities. In this regard, it is recommended that EOs employ customized content and communications more extensively, which enhances their electronic word-of-mouth (e-WOM) and demonstrates the outcomes achieved through donations or participation on social media platforms, where the majority of participants spend an average of more than three hours daily.

5.2. Limitations and Suggestions

Several limitations should be considered regarding the generalizability of this study's results. First, the data were collected from followers of ten Environmental Organizations (EOs) with the highest number of followers on Facebook, Instagram, Twitter, and LinkedIn in Türkiye. This focus on followers already familiar with EOs represents a key limitation, as content produced or shared by other users on social media could influence the electronic word-of-mouth (e-WOM) and pro-environmental behavior (PEB) of individuals who do not follow these EOs. Therefore, future research could explore how and to what extent content related to environmental issues, independent of EOs, affects users' PEB and e-WOM. Additionally, it would be valuable to investigate whether followers' reactions to the social media marketing activities (SMMA) of EOs lead to sustained changes in PEB over time. Another limitation of this study is that it did not account for cultural differences in assessing the impact of social media marketing on followers' environmentally friendly behaviors. Future research could address this gap through comparative studies that incorporate geographical and cultural variations. Furthermore, social media marketing activities may vary according to

the characteristics of diverse nonprofit organizations. In this study, social media marketing activities for environmental organizations were defined as encompassing awareness, interaction, timeliness, customization, and advertising. Future research could explore additional components, such as entertainment [10, 31], perceived risk [8], and informativeness [32], which may also influence followers' pro-environmental behaviors. Consequently, the SMMA should be reevaluated in subsequent research to account for the distinct attributes of other non-profit entities. Additionally, while this study evaluated the brand image of environmental organizations Holistically, incorporating sub-components such as distinctiveness, reliability, and transparency into the assessment could provide more comprehensive and actionable insights for these organizations.

6. Declarations

6.1. Author Contributions

Conceptualization, Y.B. and A.Ç.; methodology, Y.B.; software, Y.B.; validation, A.Ç.; formal analysis, Y.B.; investigation, A.Ç.; resources, Y.B.; data curation, A.Ç.; writing—original draft preparation, Y.B.; writing—review and editing, A.Ç.; visualization, A.Ç.; supervision, Y.B.; project administration, Y.B. All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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The authors received no financial support for the research, authorship, and/or publication of this article.

6.4. Institutional Review Board Statement

Not applicable.

6.5. Informed Consent Statement

Not applicable.

6.6. Declaration of Competing Interest

The authors declare that there are no conflicts of interest concerning the publication of this manuscript. Furthermore, all ethical considerations, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

7. References

- [1] Gomes, S., & Lopes, J. M. (2024). Unlocking the potential of circular consumption: The influence of circular habits, environmental concerns and the search for pro-sustainable information on circular consumption. *Business Strategy and Development*, 7(1), 1–16. doi:10.1002/bsd2.327.
- [2] Onel, N., & Mukherjee, A. (2016). Consumer knowledge in pro-environmental behavior. *World Journal of Science, Technology and Sustainable Development*, 13(4), 328–352. doi:10.1108/wjtsd-01-2016-0004.
- [3] Quoquab, F., Mohammad, J., & Shahrin, R. (2020). Pro-environmental behavior in nutricosmetics product purchase context: Scale development and validation. *International Journal of Pharmaceutical and Healthcare Marketing*, 14(2), 217–250. doi:10.1108/IJPHM-04-2019-0033.
- [4] Nguyen-Viet, B. (2022). Understanding the Influence of Eco-label, and Green Advertising on Green Purchase Intention: The Mediating Role of Green Brand Equity. *Journal of Food Products Marketing*, 28(2), 87–103. doi:10.1080/10454446.2022.2043212.
- [5] Eyring, V., & Gillett, N. (2021). Chapter 3: Human influence on the climate system. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, United Kingdom.
- [6] Sun, Y., Zhou, X., Jeyaraj, A., Shang, R. A., & Hu, F. (2019). The impact of enterprise social media platforms on knowledge sharing: An affordance lens perspective. *Journal of Enterprise Information Management*, 32(2), 233–250. doi:10.1108/JEIM-10-2018-0232.
- [7] Tsimonis, G., & Dimitriadis, S. (2014). Brand strategies in social media. *Marketing Intelligence and Planning*, 32(3), 328–344. doi:10.1108/MIP-04-2013-0056.
- [8] Seo, E. J., & Park, J. W. (2018). A study on the effects of social media marketing activities on brand equity and customer response in the airline industry. *Journal of Air Transport Management*, 66, 36–41. doi:10.1016/j.jairtraman.2017.09.014.

- [9] Bilgin, Y., & Kethüda, Ö. (2022). Charity Social Media Marketing and Its Influence on Charity Brand Image, Brand Trust, and Donation Intention. *Voluntas*, 33(5), 1091–1102. doi:10.1007/s11266-021-00426-7.
- [10] Kim, A. J., & Ko, E. (2012). Do social media marketing activities enhance customer equity? An empirical study of luxury fashion brand. *Journal of Business Research*, 65(10), 1480–1486. doi:10.1016/j.jbusres.2011.10.014.
- [11] Bennett, R. (2009). Impulsive donation decisions during online browsing of charity websites. *Journal of Consumer Behaviour*, 8(2–3), 116–134. doi:10.1002/cb.277.
- [12] Bennett, R. (2017). Relevance of Fundraising Charities' Content-Marketing Objectives: Perceptions of Donors, Fundraisers, and Their Consultants. *Journal of Nonprofit and Public Sector Marketing*, 29(1), 39–63. doi:10.1080/10495142.2017.1293584.
- [13] Gregory, G., Ngo, L., & Miller, R. (2020). Branding for non-profits: explaining new donor decision-making in the charity sector. *Journal of Product and Brand Management*, 29(5), 583–600. doi:10.1108/JPBM-09-2018-2011.
- [14] Kohli, C., Suri, R., & Kapoor, A. (2015). Will social media kill branding? *Business Horizons*, 58(1), 35–44. doi:10.1016/j.bushor.2014.08.004.
- [15] Büssing, A. G., Thielking, A., & Menzel, S. (2019). Can a like save the planet? Comparing antecedents of and correlations between environmental liking on social media, money donation, and volunteering. *Frontiers in Psychology*, 10, 01989. doi:10.3389/fpsyg.2019.01989.
- [16] Sashi, C. M. (2012). Customer engagement, buyer-seller relationships, and social media. *Management Decision*, 50(2), 253–272. doi:10.1108/00251741211203551.
- [17] Thornhill, M., Xie, K., & Lee, Y. J. (2017). Social media advertising in a competitive market: Effects of earned and owned exposures on brand purchase. *Journal of Hospitality and Tourism Technology*, 8(1), 87–100. doi:10.1108/JHTT-10-2016-0068.
- [18] Feng, Y., Du, L., & Ling, Q. (2017). How social media strategies of nonprofit organizations affect consumer donation intention and word-of-mouth. *Social Behavior and Personality*, 45(11), 1775–1786. doi:10.2224/sbp.4412.
- [19] Tian, F., Labban, A., Shearer, R., & Gai, Q. (2021). The Impact of Social Media Activity on Nonprofit Donations in China. *Voluntas*, 32(2), 488–497. doi:10.1007/s11266-019-00168-7.
- [20] Rezaei, A., Ahmadi, S., & Karimi, H. (2022). The role of online social networks in university students' environmentally responsible behavior. *International Journal of Sustainability in Higher Education*, 23(5), 1045–1069. doi:10.1108/IJSHE-05-2020-0168.
- [21] Ballew, M. T., Omoto, A. M., & Winter, P. L. (2015). Using web 2.0 and social media technologies to foster pro-environmental action. *Sustainability (Switzerland)*, 7(8), 10620–10648. doi:10.3390/su70810620.
- [22] Ji, Q., Harlow, S., Cui, D., & Wang, Z. (2018). Discussing environmental issues in Chinese social media: An analysis of Greenpeace China's Weibo posts and audience responses. *The Journal of Social Media in Society*, 7(1), 37–60.
- [23] Wu, M., & Long, R. (2024). How does green communication promote the green consumption intention of social media users? *Environmental Impact Assessment Review*, 106(107481). doi:10.1016/j.eiar.2024.107481.
- [24] Hou, C., & Sarigöllü, E. (2022). Is bigger better? How the scale effect influences green purchase intention: The case of washing machine. *Journal of Retailing and Consumer Services*, 65. doi:10.1016/j.jretconser.2021.102894.
- [25] Palmieri, N., Boccia, F., & Covino, D. (2024). Digital and Green Behaviour: An Exploratory Study on Italian Consumers. *Sustainability (Switzerland)*, 16(8), 3459. doi:10.3390/su16083459.
- [26] Chen, D., Xu, T., Qiao, D., & Liu, Z. (2024). Exploring the Impact of Digital Literacy and Policy Cognition on Rural Residents' Eco-friendly Behaviors. *Environmental Management*, 1-16. doi:10.1007/s00267-024-02065-2.
- [27] Lu, S., Sun, Z., & Huang, M. (2024). The impact of digital literacy on farmers' pro-environmental behavior: an analysis with the Theory of Planned Behavior. *Frontiers in Sustainable Food Systems*, 8. doi:10.3389/fsufs.2024.1432184.
- [28] Hamouda, M. (2018). Understanding social media advertising effect on consumers' responses: An empirical investigation of tourism advertising on Facebook. *Journal of Enterprise Information Management*, 31(3), 426–445. doi:10.1108/JEIM-07-2017-0101.
- [29] Syed, M. W., Song, H., & Junaid, M. (2024). Impact of social media technologies on environmental collaboration and green innovation: a mediation-moderation model. *Kybernetes*, 53(1), 123–151. doi:10.1108/K-05-2022-0737.
- [30] Liu, X., Shin, H., & Burns, A. C. (2021). Examining the impact of luxury brand's social media marketing on customer engagement: Using big data analytics and natural language processing. *Journal of Business Research*, 125, 815–826. doi:10.1016/j.jbusres.2019.04.042.
- [31] Ebrahimi, P., Khajeheian, D., & Fekete-Farkas, M. (2021). A SEM-NCA approach towards social networks marketing: Evaluating consumers' sustainable purchase behavior with the moderating role of eco-friendly attitude. *International Journal of Environmental Research and Public Health*, 18(24), 13276. doi:10.3390/ijerph182413276.

- [32] Yadav, M., & Rahman, Z. (2017). Measuring consumer perception of social media marketing activities in e-commerce industry: Scale development & validation. *Telematics and Informatics*, 34(7), 1294–1307. doi:10.1016/j.tele.2017.06.001.
- [33] So, K. K. F., King, C., Hudson, S., & Meng, F. (2017). The missing link in building customer brand identification: The role of brand attractiveness. *Tourism Management*, 59, 640–651. doi:10.1016/j.tourman.2016.09.013.
- [34] Salleh, R., Nordin, S. M., Moughal, W., Abbasi, H. A., Ching, P. W., & Adnan, N. A. B. (2025). The Role of Social Environmental Networks in Influencing Environmental Knowledge and Environmental Awareness towards Education for Sustainable Development in Malaysia and Japan. *Higher Education Quarterly*, 79(1), e70009. doi:10.1111/hequ.70009.
- [35] Wang, H. (2012). Six P's of youth social media from a young consumer's perspective. *Young Consumers*, 13(3), 303–317. doi:10.1108/17473611211261674.
- [36] Freriksen, D. K. (2014). Creating trust through charity advertisement: Focusing on charity successes or future goals, by using statistical or anecdotal evidence? Master's thesis, University of Twente, Twente, Netherlands.
- [37] Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, 29(3), 309–317. doi:10.1016/j.jenvp.2008.10.004.
- [38] Alisat, S., & Riemer, M. (2015). The environmental action scale: Development and psychometric evaluation. *Journal of Environmental Psychology*, 43, 13–23. doi:10.1016/j.jenvp.2015.05.006.
- [39] Chung, C. H., Chiu, D. K. W., Ho, K. K. W., & Au, C. H. (2020). Applying social media to environmental education: is it more impactful than traditional media? *Information Discovery and Delivery*, 48(4), 255–266. doi:10.1108/IDD-04-2020-0047.
- [40] Roshandel Arbatani, T., Labafi, S., & Robati, M. (2016). Effects of social media on the environmental protection behaviour of the public (Case study: Protecting Zayandeh-rood river environment). *International Journal of Environmental Research*, 10(2), 237–244.
- [41] Clayton, S., & Myers, G. (2015). *Conservation Psychology: Understanding and Promoting Human Care for Nature*. John Wiley & Sons, New Jersey, United States.
- [42] Birkenholtz, T., & Simon, G. (2022). Introduction to themed issue: Ignorance and uncertainty in environmental decision-making. *Geoforum*, 132, 154–161. doi:10.1016/j.geoforum.2021.12.003.
- [43] Quesada Baena, L., Binder, A., Neureiter, A., Saumer, M., & Matthes, J. (2024). “Do you practice what you preach?” The effects of celebrities' pro-environmental messages on social media on young adults' pro-environmental behavior. *Young Consumers*, 26(7), 1-16. doi:10.1108/YC-01-2024-1966.
- [44] Zhang, B., Hu, X., & Gu, M. (2022). Promote pro-environmental behaviour through social media: An empirical study based on Ant Forest. *Environmental Science and Policy*, 137, 216–227. doi:10.1016/j.envsci.2022.08.020.
- [45] Lee, W. I., Cheng, S. Y., & Shih, Y. T. (2017). Effects among product attributes, involvement, word-of-mouth, and purchase intention in online shopping. *Asia Pacific Management Review*, 22(4), 223–229. doi:10.1016/j.apmr.2017.07.007.
- [46] Liao, C. H. (2024). Exploring social media determinants in fostering pro-environmental behavior: insights from social impact theory and the theory of planned behavior. *Frontiers in Psychology*, 15, 1–19. doi:10.3389/fpsyg.2024.1445549.
- [47] Colliander, J., & Wien, A. H. (2013). Trash talk rebuffed: Consumers' defense of companies criticized in online communities. *European Journal of Marketing*, 47(10), 1733–1757. doi:10.1108/EJM-04-2011-0191.
- [48] Ryu, S., & Park, J. K. (2020). The effects of benefit-driven commitment on usage of social media for shopping and positive word-of-mouth. *Journal of Retailing and Consumer Services*, 55, 102094. doi:10.1016/j.jretconser.2020.102094.
- [49] Mangold, W. G., & Faulds, D. J. (2009). Social media: The new hybrid element of the promotion mix. *Business Horizons*, 52(4), 357–365. doi:10.1016/j.bushor.2009.03.002.
- [50] Keller, K. L. (2009). Building strong brands in a modern marketing communications environment. *Journal of Marketing Communications*, 15(2–3), 139–155. doi:10.1080/13527260902757530.
- [51] Cretu, A. E., & Brodie, R. J. (2007). The influence of brand image and company reputation where manufacturers market to small firms: A customer value perspective. *Industrial Marketing Management*, 36(2), 230–240. doi:10.1016/j.indmarman.2005.08.013.
- [52] Frandsen, S. (2017). Organizational Image. *The international Encyclopedia of Organizational Communication*, 4(1), 1795–1804.
- [53] Khan, I. (2022). Do brands' social media marketing activities matter? A moderation analysis. *Journal of Retailing and Consumer Services*, 64, 102794. doi:10.1016/j.jretconser.2021.102794.
- [54] Zhou, H., & Ye, S. (2019). Legitimacy, Worthiness, and Social Network: An Empirical Study of the key Factors Influencing Crowdfunding Outcomes for Nonprofit Projects. *Voluntas*, 30(4), 849–864. doi:10.1007/s11266-018-0004-0.

- [55] Gartner, J., Fink, M., Floh, A., & Eggers, F. (2021). Service quality in social media communication of NPOs: The moderating effect of channel choice. *Journal of Business Research*, 137, 579–587. doi:10.1016/j.jbusres.2021.08.026.
- [56] Sargeant, A., Ford, J. B., & Hudson, J. (2008). Charity brand personality: The relationship with giving behavior. *Nonprofit and Voluntary Sector Quarterly*, 37(3), 468–491. doi:10.1177/0899764007310732.
- [57] Shehu, E., Becker, J. U., Langmaack, A. C., & Clement, M. (2016). The Brand Personality of Nonprofit Organizations and the Influence of Monetary Incentives. *Journal of Business Ethics*, 138(3), 589–600. doi:10.1007/s10551-015-2595-3.
- [58] Jalilvand, M. R., & Samiei, N. (2012). The effect of electronic word of mouth on brand image and purchase intention: An empirical study in the automobile industry in Iran. *Marketing Intelligence and Planning*, 30(4), 460–476. doi:10.1108/02634501211231946.
- [59] Anwar, A., & Jalees, T. (2020). Brand Orientation and WOM: Mediating Roles of Brand Love. *Journal of Management Sciences*, 7(1), 14–30. doi:10.20547/jms.2014.2007102.
- [60] Williams, M., & Buttle, F. (2013). Managing Word-of-Mouth: A Nonprofit Case Study. *Journal of Nonprofit and Public Sector Marketing*, 25(3), 284–308. doi:10.1080/10495142.2013.816191.
- [61] Chen, Y. S. (2010). The drivers of green brand equity: Green brand image, green satisfaction, and green trust. *Journal of Business Ethics*, 93(2), 307–319. doi:10.1007/s10551-009-0223-9.
- [62] Coelho, A., Bairrada, C., & Peres, F. (2019). Brand communities' relational outcomes, through brand love. *Journal of Product and Brand Management*, 28(2), 154–165. doi:10.1108/JPBM-09-2017-1593.
- [63] Jeon, J. O., & Baeck, S. (2016). The effect of the valence of word-of-mouth on consumers' attitudes toward co-brands: The moderating roles of brand characteristics. *Journal of Global Scholars of Marketing Science: Bridging Asia and the World*, 26(1), 89–108. doi:10.1080/21639159.2015.1116781.
- [64] Allgaier, J. (2019). Science and Environmental Communication on YouTube: Strategically Distorted Communications in Online Videos on Climate Change and Climate Engineering. *Frontiers in Communication*, 4, 1–15. doi:10.3389/fcomm.2019.00036.
- [65] Hornik, J., Shaanan Satchi, R., & Rachamim, M. (2019). The joy of pain: A gloating account of negative electronic word-of-mouth communication following an organizational setback. *Internet Research*, 29(1), 82–103. doi:10.1108/IntR-11-2017-0415.
- [66] Xiao, Y., Liu, X., & Ren, T. (2022). Internet use and pro-environmental behavior: Evidence from China. *PLoS ONE*, 17(1 January), 1–27. doi:10.1371/journal.pone.0262644.
- [67] Li, F. (2025). Effects of consumers' engagement in pro-environment activities on social media on green consumption behaviour. *Asia Pacific Journal of Marketing and Logistics*, 37(2), 403–421. doi:10.1108/APJML-09-2023-0862.
- [68] Wut, T. M., Ng, P., Kan, H. K. M., & Fong, C. S. (2021). Does gender matter? Attitude towards waste charging policy and pro-environmental behaviours. *Social Responsibility Journal*, 17(8), 1100–1115. doi:10.1108/SRJ-03-2020-0102.
- [69] El-Deeb, S., Correia, M., & Richter, C. (2020). A fuzzy set analysis of the determinants of intention to adapt and pro-environmental behaviour. *International Journal of Sociology and Social Policy*, 41(7–8), 786–804. doi:10.1108/IJSSP-03-2020-0058.
- [70] Ramayah, T., Lee, J. W. C., & Mohamad, O. (2010). Green product purchase intention: Some insights from a developing country. *Resources, Conservation and Recycling*, 54(12), 1419–1427. doi:10.1016/j.resconrec.2010.06.007.
- [71] Hair, J. F., Sharma, P. N., Sarstedt, M., Ringle, C. M., & Liengaard, B. D. (2024). The shortcomings of equal weights estimation and the composite equivalence index in PLS-SEM. *European Journal of Marketing*, 58(13), 30–55. doi:10.1108/EJM-04-2023-0307.
- [72] Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. doi:10.1108/EBR-11-2018-0203.
- [73] Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2), 106–121. doi:10.1108/EBR-10-2013-0128.
- [74] Baron, R. M., & Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research. Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. doi:10.1037/0022-3514.51.6.1173.
- [75] Kimmel, A. J., & Kitchen, P. J. (2014). WOM and social media: Presaging future directions for research and practice. *Journal of Marketing Communications*, 20(1–2), 5–20. doi:10.1080/13527266.2013.797730.
- [76] Ruge, C. O., Le, N. Q., & Supphellen, M. (2021). When and why employees of non-profits promote their organizations: Determinants of positive staff word-of-mouth. *Journal of Philanthropy and Marketing*, 26(4), e1704. doi:10.1002/nvsm.1704.
- [77] Bendapudi, N., Singh, S. N., & Bendapudi, V. (1996). Enhancing Helping Behavior: An Integrative Framework for Promotion Planning. *Journal of Marketing*, 60(3), 33–49. doi:10.1177/002224299606000303.