

EcoConnect: Guiding environmental awareness via digital marketing approaches**Mohammad Khalaf Daoud^{a*}, Sawsan Taha^b, Marzouq Al-Qeed^b, Yousef Alsafadi^c, Ahmad Y. A. Bani Ahmad^d and Mahmoud Allahham^e**^aMarketing Department, Faculty of Business, Applied Science Private University, Amman 11937, Jordan^bCollege of Communication and Media, Al Ain University, Al Ain 112612, United Arab Emirates^cBusiness Department, Faculty of Business, Zarqa University, Zarqa 132222, Jordan^dDepartment of Accounting and Finance, Faculty of Business, Middle East University, Amman 11831, Jordan^eDepartment of Supply Chain and Logistics, College of Business, Luminus Technical University College, Amman 11831 Jordan**CHRONICLE****ABSTRACT***Article history:*

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This study investigates the impact of sustainability initiatives, choice of content, and engagement with environmental content on environmental awareness. Employing a sample of 435 respondents and utilizing Partial Least Squares (PLS) analysis, the research provides valuable insights into the role of digital marketing strategies in fostering environmental consciousness. The findings of this study highlight the substantial influence that digital marketing techniques can have on shaping individuals' awareness and attitudes towards environmental concerns. The confirmed hypotheses underscore the effectiveness of these strategies in promoting environmental awareness among diverse audiences. As the digital landscape continues to evolve, the research contributes to the growing synergy between digital marketing and environmental advocacy, encouraging further exploration and practical applications for a more sustainable future.

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1. Introduction

The rise of globalization has led to the increased accessibility of information due to the extensive utilization of local societies by individuals (Severo et al. 2019). This accessibility forms the foundation for addressing ecological concerns that have both global repercussions and implications for societal vulnerabilities. The awareness cultivated within local contexts promotes the adoption of socially responsible consumption patterns and behaviors expanding the scope, social responsibility transcends individual actions to encompass larger entities, particularly industrial companies that exert a direct influence on the surrounding environment (Flammer, 2013). In the academic realm, literature extensively examines the adoption of sustainable approaches to business management and the associated benefits. Numerous entities have engaged in environmental management initiatives, resulting in improved environmental performance and additional advantages such as reduced costs and liability risks. However, challenges exist that hinder the transition towards becoming ecologically conscious organizations. These challenges are rooted in aspects like organizational culture and the management of change. Overcoming these barriers necessitates a comprehensive understanding of an organization's environmental impacts and policies. This understanding can be cultivated through participation in environmental awareness training, imparting knowledge and fostering lasting dedication among employees. This knowledge equips employees to recognize the reciprocal relationship between their decisions, responsibilities, and the environment (Perron et al. 2006). Insufficient comprehension of responsibility exacerbates the intricacies of modern life, particularly pronounced in industries and institutions wielding significant environmental influence. In the context of Corporate Social Responsibility (CSR), historical perspectives highlight the substantial obligations universities hold towards their environments across various spheres. This obligation stems from the fundamental idea that utilizing natural

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and societal resources creates an ethical responsibility. Consequently, this utilization should be reciprocated in some manner to society. Corporations are called upon to extend their role beyond mere economic generation, actively safeguarding the well-being of their operating communities (Nejati, et al. 2011). Modern marketing landscapes feature digital strategies that are seamlessly accessible through mobile marketing, social media, blogging, website content, and influencer engagement. These strategies have integrated into users' daily lives and emotional states, underscoring the importance of utilizing them to enhance environmental awareness and evaluate the efficacy of awareness-raising campaigns (Jones.,2010).

2. Literature review

2.1 Overview of Environmental Awareness

In the context of the study, it is evident that young individuals exhibit a distinct inclination towards scientific pursuits. However, their level of environmental awareness does not attain a commensurate level of advancement. This discrepancy may arise from their limited exposure to scientific literature during their formative years. Consequently, they may face challenges in acclimating to the more abstract and complex scientific concepts encountered at higher educational stages (Daoud et al., 2023). Concurrently, the escalating recognition of the adverse consequences stemming from environmental issues has catalyzed a heightened concern for the environment. Consequently, there has been a broader adoption of behaviors that prioritize ecological well-being. One significant aspect of this trend is environmentally conscious consumption. This involves not only the reduction of environmental harm but also the deliberate contemplation of the environmental implications associated with consumption, spanning all stages. Environmentally conscious consumption forms a crucial subset of a larger tapestry of environmentally friendly behaviors. Within the spectrum of environmentally friendly behaviors, environmentally conscious consumption stands out prominently. It encompasses practices such as making choices in favor of ecologically sustainable and recyclable products, steering clear of excessive consumption, lending support to environmentally responsible businesses, championing environmental initiatives, and actively participating in the production of eco-friendly goods (Helvaci & Helvaci, 2019).

Propelled by mounting environmental concerns, numerous national civil society organizations have intensified their efforts to exert pressure on policymakers and administrators. This concerted action is coupled with an increasing awareness among consumers. This combined force has prompted numerous businesses to embark on a trajectory of producing environmentally friendly products. This shift is not only geared towards reducing environmental pollution but also toward mitigating or eradicating hazardous waste. Simultaneously, it aligns with the evolving preferences and expectations of consumers (Ari et al., 2017). Running parallel to these trends, the trajectory of technological progress and economic development has been instrumental in raising living standards. However, this trajectory has come at the expense of imposing a heightened environmental burden. This dual effect has spurred a worldwide focus on environmental governance. This phenomenon has generated a shared apprehension across nations regarding the pressing need to address the challenges posed by the coexisting phenomena of technological advancement, economic prosperity, and environmental consequences (Niu et al., 2022).

In summation, the threads of these discussions interweave to elucidate a nuanced nexus. This nexus underscores the intricate interplay between the inclinations of the younger generation, patterns of conscious consumption, societal pressure, corporate responses, and the overarching significance of robust environmental governance. Within this interconnected context, the urgency of individual awareness, choices in consumption, industrial responsibility, and global environmental concerns come to the forefront. Thus, it underscores the imperativeness of collaborative efforts spanning various sectors and societies in steering forth meaningful and sustainable transformations at a global scale.

2.2 Overview of Digital Marketing Approaches

Due to educational and training initiatives conducted through platforms like social media, television programs, schools, and public education centers, efforts to enhance environmental awareness have gained momentum (Guruprasad et al., 2022). In recent times, there has been a noticeable surge in societal consciousness and a heightened fascination with environmentally friendly products. The growing consumer attraction towards organic items can be attributed to the notion that such products are not only healthier and more flavorful but also arise from concerns about environmental well-being, food safety, and animal health. Additionally, this inclination stems from a desire to bolster the local economy and uphold traditional culinary practices (Çelik, 2013). The objective of this study is to examine how consumers perceive and respond to green products on social media platforms. It aims to investigate the connections between social media marketing, consumers' perception of effectiveness, understanding of the product, personal beliefs, perceived control, price sensitivity, and their overall attitudes towards and intentions to buy environmentally friendly products (Joudeh et al., 2022).

This research focuses on the interaction of factors such as customer value, corporate social responsibility (CSR), and sustainable performance. The study's primary objective was to examine the role of social media marketing in moderating the relationship between CSR efforts and the sustainable performance of companies (Abbas et al., 2019). Regarding organizational performance, the utilization of social media marketing applications has gained prominence in contemporary times. The amalgamation of technological advancements, web-based technologies, and the digital landscape has become a prevalent strategy across various sectors, encompassing service firms, educational institutions, businesses, and other key

stakeholders. The potency and capabilities of business networks play a pivotal role in influencing the longevity and achievements of a firm's endeavors (Cowling et al., 2014). Such networks offer valuable benefits like enhanced credibility, up-to-date information, heightened awareness, and relationship-building through social media marketing applications. Additionally, business networks empower companies and entrepreneurs by granting access to a plethora of indispensable opportunities and resources that are integral contributors to a firm's growth and the attainment of sustainable performance (Dobni, 2010). Commonly, social media platforms play a pivotal role in establishing and nurturing business connections, facilitating the growth of business networks, and fostering engagement in social events, conferences, and business gatherings. Drawing from previous research and the fundamental principles associated with social media applications, it is acknowledged that companies leverage business networking relationships and connections to stimulate and augment economic opportunities, thereby contributing to heightened profits and the realization of sustainable performance goals.

3. Theoretical framework

3.1 Bedny's theoretical perspective of activity theory

This section will outline the theoretical framework for the current study, which is rooted in Bedny's theoretical perspective of activity theory. will introduce essential definitions and assumptions to provide a foundational understanding (Fig. 2).

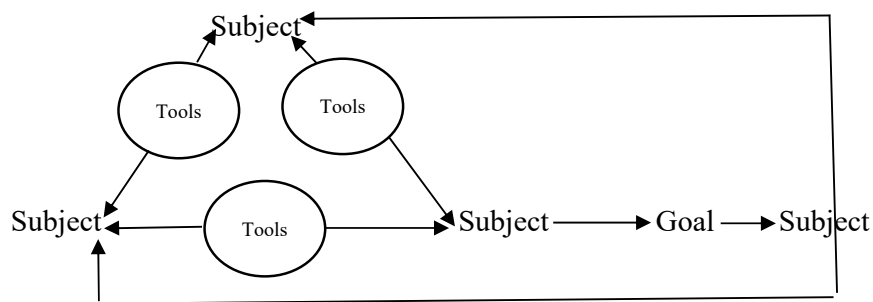


Fig. 1. Conceptual framework-BEDNY's representation of activity theory (adopted from Bedny et al., 2003)

1. Activity: An activity refers to a purposeful action directed towards a specific object. In the context of this theory, activities serve as the fundamental unit of analysis and are inherently linked with the concept of motive.
2. Subject: The subject represents an individual or a group engaged in an activity. They act upon an object with the objective of achieving a predetermined goal. During the activity, subjects utilize tools to shape the process, resulting in an outcome that may not always perfectly align with the intended goal.
3. Object of an Activity: The object of an activity is the entity that undergoes modification and exploration by the subject in alignment with the activity's goal. These objects can encompass tangible items as well as intangibles, such as the "consciousness of central issues."
4. Tool: Tools can take on physical or mental forms and are employed by the subject to facilitate the activity, thereby influencing its progression and outcomes.
5. Goal: The goal of an activity is closely intertwined with the concept of motive. It guides the subject's actions and serves as the target they aim to achieve through the activity.
6. Result: The result refers to the outcome of the activity, which may not always directly satisfy the initially intended goal. This outcome establishes a feedback loop with the subject or subjects involved in the activity.

Understanding Bedny's theoretical perspective of activity theory serves as a behavioristic framework to inform the study's approach of Guiding Environmental Awareness via Digital Marketing Strategies. This theoretical foundation will steer both data collection and analysis, aiding in comprehending the intricate dynamics between human behavior, activities, and the utilization of digital marketing methods to promote environmental consciousness.

3.2 Research methodology

This research employs an ex post facto survey method, integrating both qualitative and quantitative data collection techniques (Kregar & Antonci, 2014). The literature review was conducted utilizing the research objectives' variables. This process involved an exploration of prior research, academic journals, textbooks, and an examination of the websites of twenty-one Jordanian private universities by current university students. To obtain a sample of 580 respondents, a methodology similar to that proposed by Wilson (2006) was utilized. Additionally, a snowball sampling approach was employed to identify participants. The distribution of questionnaires was facilitated through Google Forms, and the survey was administered to a selected. The implementation of the snowball sampling method obviated the necessity for researchers to physically visit universities for data collection. As participants were already connected, the snowball technique effectively facilitated their identification. Ultimately, a total of 435 questionnaires were accurately completed and submitted.

The collected data underwent thorough analysis employing pertinent statistical techniques, such as regression analysis, to assess the null hypothesis. This analytical process was instrumental in investigating the relationships and patterns within the data to draw meaningful conclusions regarding the research objectives.

3.3 Research model

Assessment of Environmental Awareness Questionnaire. A pivotal element in valuable research, a research tool plays a significant role in securing sound data that leads to accurate conclusions about the ongoing problem or study. Ultimately, this process aids in identifying appropriate solutions for the concerned issue. The selection and utilization of tools can be approached in two distinct manners. The initial approach involves an investigator independently devising a tool tailored for their study. This approach, however, presents numerous challenges. Developing and standardizing an ideal tool constitutes a considerable endeavor, akin to a doctoral study in its own right. An alternative is the construction of proprietary tools by researchers themselves as (Alhawamdeh et al., 2023; Daoud et al., 2023).

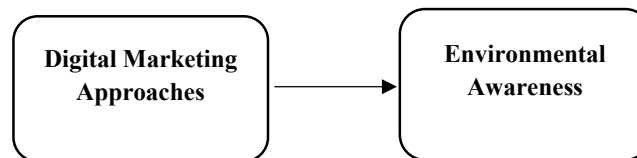


Fig. 2. Research model (prepared by author)

H₁: *There is a significant impact of sustainability initiatives on environmental awareness.*

H₂: *There is a significant impact of choice of content on environmental awareness.*

H₃: *There is a significant impact of engagement with environmental content on environmental awareness.*

4. Analysis and results

Table 1

Profile of respondents (N=435)

Variable	Category	Frequency	Percent (100%)
Gender	Male	230	53
	Female	205	47
Age	18-27	102	23
	28-37	89	20
	38-47	100	23
	48-57	58	13
	58-67	47	11
	68-over	39	10
Educational Level	High school	59	13
	Diploma	84	19
	Bachelor	194	45
	Master	60	13
	PH. D	38	10

4.2 Multicollinearity Test

Table 2 demonstrates that the researcher employed two distinct tests to evaluate the presence of multicollinearity among the variables: the tolerance value and the variance inflation factor (VIF), using SPSS version 25. Based on the data presented in Table 2 from the multiple regression analysis, the study's findings revealed a tolerance value of 0.890 for the independent variable, along with a variance inflation factor (VIF) value of 1.094. Since the tolerance value significantly exceeds 0.10 and the VIF value is below 10, it can be inferred that multicollinearity among the variables is not a concern.

Table 2

Multicollinearity Test

Variable	Collinearity Statistics	
	Tolerance	VIF
Digital Marketing Approaches	.910	1.094

4.3 Measurement model assessment

Table 3 presents the summary of the internal consistency reliability analysis. Table 3 reveals that the objective of examining construct validity is to determine how closely the outcomes derived from using a measurement align with the theories upon which the test is founded. In more precise terms, construct validity aims to answer the question: does the adapted instrument

accurately measure what it is theorized to measure? To conduct a thorough validity analysis, the researcher subjected the measurement scales to three rigorous validity tests, which encompass validity, convergent validity, and discriminant validity. Content validity gauges the extent to which the indicators or scale items faithfully represent the domain of the concepts being studied.

Table 3

Internal consistency reliability analysis

Dimension	Cronbach's Alpha	CR	AVE
Digital Marketing Approaches	0.780	0.802	0.300
Sustainability Initiatives	0.900	0.931	0.801
Choice of Content	0.920	0.932	0.785
Engagement with Environmental Content	0.890	0.913	0.775
Environmental Awareness	0.868	0.904	0.782

4.4 Measurement Model Assessment

4.4.1 Convergent validity

To establish convergent validity, conventional practice mandates the evaluation of factor loading, average variance extracted (AVE), and composite reliability (CR). Factor loadings, composite reliability, and average variance extracted (AVE) form the trio of key evaluative components for ascertaining convergence validity. Following the confirmation of convergence validity by meeting satisfactory criteria for item loadings, AVE, and composite reliability, it becomes possible to deduce that the items effectively represent their corresponding constructs, thus solidifying their convergence validity. AVE denotes the shared average variance between a construct and its accompanying measures. It is generally advised that the AVE value should be 0.5 or greater. The study presented results illustrate AVE coefficients spanning from 0.780 to 0.924. This definitively establishes the realization of convergence validity across all constructs. Additionally, the table furnishes evidence of composite reliability, showcasing values ranging from 0.916 to 0.900, likewise.

4.4.2 Discriminant validity

To evaluate the discriminant validity within this study, a comparative analysis was conducted between indicator loadings and cross-loadings with other variables. This assessment aimed to determine whether the indicator loadings exceeded their cross-loadings with reflective indicators. All available indicators displayed higher values than their cross-loadings, suggesting the fulfillment of the discriminant validity requirement. Furthermore, the correlations between latent constructs remain below the square roots of the corresponding Average Variance Extracted (AVE) values, positioned in diagonal cells, with correlations situated beneath this threshold. Likewise, as demonstrated in Table 4, the HTMT criterion falls below the threshold of 0.85, confirming the successful establishment of discriminant validity.

Table 4

Discriminant validity based on HTMT ratio of correlations

	Heterotrait-Monotrait Ratio (HTMT)	
	Digital Marketing Approaches	Environmental Awareness
Digital Marketing Approaches		
Environmental Awareness	0.391	

4.5 Structural model assessment

The R^2 value indicates the proportion of variation in dependent variables that can be accounted for by independent variables. In this study, the SmartPLS algorithm is employed to derive these values, while the SmartPLS bootstrapping function is utilized to generate t-statistics.

Table 5R-Square (R^2)

Endogenous Variable	R^2	Predictive Relevance
Environmental Awareness	0.663	

This assessment can be conducted using a cross-validated redundancy measure obtained through the PLS blindfolding technique applied to all endogenous constructs. As a general guideline, the cross-validated redundancy value should be above zero, as is the case in this study, as evidenced in Table 6. Through the implementation of the blindfolding exercise in SmartPLS, Table 6 showcases the predictive quality strength of the model in this research.

Table 6The Q² values for the endogenous latent variables

Endogenous Variable	SSO	SSE	Q ² (1-SSE/SSO)
Environmental Awareness	8017.000	7613.179	0.256

Table 7Effect sizes (f²) of the latent variables

Variable	Endogenous Variable	f ²	Effect Size Rating
Digital Marketing Approaches	Environmental Awareness	0.383	Large

To compute the f², the researcher needs to construct two PLS path models—one with the inclusion of the latent variable and another without it. Following a rule of thumb, effect size values can help determine the impact of omitted constructs for specific endogenous constructs. These effect sizes are typically set at 0.02, 0.15, and 0.35 to represent small, medium, and large effects, respectively. This approach helps illustrate the predictive strength of the model in this research. Table 8 summarizes the results of testing the hypotheses of the survey.

Table 8

Hypothesis Test

No.	Hypotheses	Beta	SE	T-Value	P-Value	Decision
H1	SI → EA	0.330	0.078	6.547	0.000	Supported***
H2	CC → EA	0.280	0.060	5.248	0.000	Supported***
H3	EEC → EA	0.401	0.058	6.875	0.000	Supported***

5. Findings

Guiding Environmental Awareness via Digital Marketing Approaches has shed light on the significant influence that digital marketing strategies can exert in fostering environmental awareness. Through an exploration of sustainability initiatives, content choices, and engagement with environmental content, the research has substantiated the pivotal role that digital platforms play in shaping individuals' awareness and attitudes towards environmental concerns. The confirmed hypotheses underscore the effectiveness of employing digital marketing techniques as catalysts for promoting environmental consciousness among diverse audiences. As the digital landscape continues to evolve, this study's findings contribute valuable insights to the growing synergy between digital marketing and environmental advocacy, encouraging further research and practical applications aimed at a more sustainable future.

6. Recommendations

Based on the findings of the research study several recommendations emerge to enhance the effectiveness of digital marketing in promoting environmental consciousness:

- Personalized Content Strategies:** Tailor digital marketing content to individual preferences and demographics. Utilize data analytics to understand audience interests and craft messaging that resonates with their specific concerns about the environment.
- Collaborative Partnerships:** Foster collaborations between environmental organizations, businesses, and digital marketers to create impactful campaigns. Joint efforts can amplify the reach and influence of environmental messages.
- Innovative Engagement Techniques:** Leverage interactive formats such as virtual reality, augmented reality, and gamification to immerse users in environmental experiences. This approach can evoke emotional connections and heighten environmental awareness.
- Educational Initiatives:** Develop informative and engaging educational content that explains the implications of environmental issues and offers actionable steps for individuals to contribute to sustainability efforts.
- Leverage social media:** Utilize various social media platforms to disseminate environmental messages effectively. Implement hashtag campaigns, challenges, and user-generated content to encourage active participation and viral sharing.
- Measurement and Feedback:** Continuously monitor and assess the impact of digital marketing campaigns on environmental awareness. Collect feedback from the audience to refine strategies and improve messaging effectiveness.
- Mobile Optimization:** Recognize the significance of mobile devices in accessing digital content. Ensure that all marketing materials are mobile-friendly to engage users on the go.
- Collate Data for Impact Analysis:** Gather and analyze data on the actual impact of digital marketing efforts on environmental awareness and behavioral changes. This information can guide future strategies and demonstrate the effectiveness of these approaches.

7. Suggestions and future studies

The research study provides a foundation for future investigations in the realm of digital marketing and environmental consciousness. Here are some suggestions for further studies that can expand upon the insights gained from this research: **Cross-Cultural Analysis:** Conduct a comparative study across different cultural and geographic contexts to examine how digital marketing strategies influence environmental awareness and behavior in various regions. Investigate cultural nuances and differences in response to environmental messaging. **Long-Term Behavior Change:** Explore the long-term impact of digital marketing campaigns on individuals' environmental behavior. Examine whether sustained exposure to digital initiatives leads to lasting changes in habits and practices related to sustainability. **Multi-Channel Approach:** Investigate the combined effect of integrating various digital marketing channels, such as social media, email campaigns, influencer collaborations, and mobile apps, on enhancing environmental awareness and engagement. **Effectiveness of Gamification:** Delve into the use of gamification in digital marketing to encourage pro-environmental behavior. Examine how game-like elements can enhance user engagement, knowledge retention, and behavior change. **Influence of Social Networks:** Study the role of social networks and peer influence in digital marketing efforts for promoting environmental awareness. Analyze how social connections impact the spread of environmental messages and adoption of sustainable practices. **Impact on Younger Generations:** Investigate the effectiveness of digital marketing approaches in targeting and engaging younger generations. Explore strategies to educate and empower the youth to become advocates for environmental sustainability.

Corporate Social Responsibility (CSR): Study how corporations can effectively integrate digital marketing into their CSR initiatives to enhance their environmental impact. Analyze how transparent and genuine CSR efforts can resonate with consumers. **Behavioral Economics and Nudging:** Explore the application of behavioral economics principles and nudging techniques in designing digital marketing campaigns that encourage environmentally friendly behaviors.

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