

RESEARCH

# Influence of AI-Driven Sustainable Marketing Strategies on Consumer Acceptance of Responsible Consumption

**Tareq N. Hashem**

*Professor of Marketing*

*Marketing Department, Faculty of Business, Applied Science Private University, Amman, Jordan*

Email: [t\\_hashim@asu.edu.jo](mailto:t_hashim@asu.edu.jo)

ORCID: 0000-0001-9564-931X

**Arshi Naim**

*Academic Director, London Institute of Sustainable Development, London, United Kingdom*

Email: [arshi@wasd.org.uk](mailto:arshi@wasd.org.uk)

ORCID: 0000-0003-1325-6964

**Abdalah Salameh Abualkanam**

*Associate professor*

*Allied Sciences Department, Faculty of Arts and Sciences, Al-Ahliyya Amman University, Amman, Jordan*

EMAIL: [a.abualghanam@ammanu.edu.jo](mailto:a.abualghanam@ammanu.edu.jo)

ORCID: 0000\_0001\_5423-7474

**Mohammad Mousa Isied**

*Lecturer*

*Allied Sciences Department, Faculty of Arts and Sciences, Al-Ahliyya Amman University, Amman, Jordan*

EMAIL: [m.shawawra@ammanu.edu.jo](mailto:m.shawawra@ammanu.edu.jo)

ORCID:0009-0004-8411-6349

**Saed Adnan Mustafa**

*Associate Professor*

*Marketing Department, Faculty of Business, Applied Science Private University, Amman, Jordan*

EMAIL: [said\\_es@yahoo.com](mailto:said_es@yahoo.com)

ORCID:0000-0002-3099-7230

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## ABSTRACT

**PURPOSE:** To explore the influence of AI-driven sustainable marketing strategies on consumer acceptance of responsible consumption.

**DESIGN/METHODOLOGY/APPROACH:** Quantitative methodology was employed through an online self-administered questionnaire completed by 826 consumers from the Middle East and North Africa (MENA) region.

**FINDINGS:** Artificial Intelligence (AI)-driven marketing strategies can increase consumers' responsible consumption with social proof via micro-influencers having the strongest influence. In addition, verified sustainable purchases are supported by transparent supply chain data. MENA brands can establish trust as more people use digital marketing.

**ORIGINALITY/VALUE:** The paper is the first empirical study of six dimensions that provides a framework of culturally based quantifiable findings that have not previously been considered in the literature.

**RESEARCH LIMITATIONS:** Restricted to an urban population of consumers in the MENA region and self-reported data, the results can be biased against rural or less digitally literate groups.

**PRACTICAL IMPLICATIONS:** Regulators and platforms can use an evidence-based approach to require transparency-enhancing AI tools in digital marketplaces.

**KEYWORDS:** *AI Marketing; Personalised Messaging; Sustainability; Eco-Label Verification; Price Optimisation; Micro-Influencers; MENA; Lifecycle Impact.*

## INTRODUCTION

AI transforms changed consumer behaviour by providing hyper-personalised and real-time interventions at scale. The Artificial Intelligence (AI) predictive analytical systems, sentiment monitoring, and behavioural modelling will denote the specific times of receptivity and can customise nudges (e.g., carbon-impact notices, eco-suggestions, flexible green pricing, etc.) based on personal values and habits. Nguyen *et al.* (2025) noted that emotionally intelligent chatbots, AR impact sims, and adaptive reward loyalty programmes bring sustainable decisions that are not only effortful but also natural and pleasant. The AI can minimise the intention-behaviour gap by optimising the choice architecture (default green options, social proof triggers), sustaining social norms through continual learning through micro-conversion, and integrating responsible consumption in the decision-making process, which, in contrast to conventional campaigns, results in a long-term change in behaviour (Mohamad *et al.*, 2025).

Balaji (2025) stated that AI has rapidly become a key driver of environmental marketing. Real-time carbon-footprint calculators, blockchain-verified traceability, and predictive models are now power by machine learning and they help to match

consumers with sustainable products. Sentiment-aware algorithms identify green fatigue and change the tone of the message, and computer vision actively reveals the case of greenwashing.

This led us to adopt Joghee *et al.* (2025)'s statement which argued that sustainable marketing refers to designing, marketing, pricing, and delivering products/services in such a way that they are relevant to the current consumer needs, whilst causing minimal damage to the environment, social justice, and economic sustainability in the long term. Seyfi *et al.* (2025) added that sustainable marketing alters consumer behaviour shifting the appeal of guilt to the appeal of positive effortless experiences. AI-informed personalised eco-recommendations, transparent blockchain traceability, visualised real-time impact, dynamic green pricing, default sustainable options, gamified rewards, and authentic micro-influencer stories. These approaches make perceived sacrifice easier, raise the level of trust and make environmentally friendly decisions convenient, socially justified, and personally satisfying, moving habits out of intention and into consistent action and mainstreaming responsible consumption (Islam *et al.*, 2025).

Although there is an emerging body of research on the applications of AI in sustainable marketing (Nguyen *et al.*, 2025; Balaji, 2025; Joghee *et al.*, 2025; Seyfi *et al.*, 2025), there is limited empirical research on how each of these uses of AI-driven strategies (personalised messaging, education, eco-label verification, price optimisation, micro-influencer proof, and lifecycle simulation) contributes to the overall formation of sustainability.

From the argument above, this research aims to examine the influence of AI-driven sustainable marketing strategies on consumer acceptance of responsible consumption in terms of (personalised sustainability messaging, sustainability education, eco-label verification, price-sustainability optimisation, social proof via micro-influencers and lifecycle impact simulation).

### **The current study has the following objectives:**

Explore how AI-driven marketing strategies can influence consumer behaviour towards more responsible consumption.

Identify the most effective AI-driven marketing strategy in encouraging responsible consumption among the Middle East and North Africa (MENA) consumers.

## Hypotheses (H) included:

**H0:** AI-driven sustainable marketing strategies can increase consumers' acceptance of responsible consumption from the consumers' perspective.

**H1:** Personalised Sustainability messaging can increase consumers' acceptance of responsible consumption from the consumers' perspective.

**H2:** Sustainability education can increase consumers' acceptance of responsible consumption from the consumers' perspective.

**H3:** Eco-Label verification can increase consumers' acceptance of responsible consumption from the consumers' perspective.

**H4:** Price–Sustainability optimisation can increase consumers' acceptance of responsible consumption from the consumers' perspective.

**H5:** Social proof via micro-influencers can increase consumers' acceptance of responsible consumption from the consumers' perspective.

**H6:** Lifecycle impact simulation can increase consumers' acceptance of responsible consumption from the consumers' perspective.

## LITERATURE REVIEW

### Concept of Responsible Consumption

Gunawan *et al.* (2025) noted that responsible consumption, which is the core element of Sustainable Development Goals (SDGs) for Responsible Consumption and Production (SDG 12), is the conscious decision to buy, consume and use goods and services in a manner that causes the least negative impact on the environment, social justice and secures the availability of resources in the long run. Consumers exercise it by favouring long-lasting instead of disposable items, purchasing local and sustainable brands, repairing instead of disposing, and declining excessively or detrimental items. Real responsible consumption requires knowledge, readiness to pay higher costs or remain inconvenienced, and positive opposition to manipulative advertising, making personal purchases into planetary and social beneficence (Ivanov *et al.*, 2024).

Shah (2025) argued that to persuade consumers, it is necessary to change the motivational message from guilt to empowerment and reward. Such strategies as visualising the impact in real time (e.g., your choice saves 12 kg CO<sub>2</sub>), personalised AI recommendations, where green options are made natural and normal, the use of authentic storytelling (micro-influencers), and tangible rewards like green loyalty points or social proof (89% of your peers chose the sustainable option) are effective.

Sak *et al.* (2025) stated that the most effective tool of mainstreaming responsible consumption is marketing strategies. However, sustainability issues are on the agenda, but without a strategic intervention, the change is low. Proper marketing can turn abstract planetary issues into personal, direct, and immediate advantages with the help of specific messaging, immediate choice architecture, believable eco-labels, and reward systems. Sustainable options are made desirable, normal and effortless instead of sacrificial through AI-based individualisation, high-traceability, social proof, and inclusive storytelling. Well-structured marketing strategies alter consumer behaviour by making products that appear more responsible with less perceived cost, effort, and social risk and more valuable and socially important, shifting consumer behaviour in mass markets towards more responsible products, and making SDG 12 a reality in actual markets (Perović *et al.*, 2025).

## AI-Driven Marketing Strategies

According to Rainy (2025), AI can be used in sustainable marketing to convert passive awareness to active responsible consumption with the help of emotionally intelligent chatbots, lifecycle impact simulations, blockchain-proven transparency, and Arabic content tailored to local culture. It removes friction, discloses the act of greenwashing, and makes eco-friendly decisions appear to be painless, cheap, and socially acceptable. The AI-based plans would continually learn and optimise unlike the traditional campaign based on general appeals and bridge the intention to behaviour gap to realise measurable and sustained changes in consumer behaviour towards sustainability and ethical consumption in the Arab region and beyond (Chen and Liu, 2025; Hashem, 2025; Al-Zagheer *et al.*, 2024).

Raj *et al.*, (2025) stated that AI-driven marketing solutions are essential in promoting responsible consumption by consumers, as the advanced technologies can be used to match sustainability-oriented messages and interventions. All the strategies, including personalised messaging and lifecycle impact simulation, are used to make environmentally friendly decisions easily and confidently by consumers. There are multiple marketing strategies that are AI-driven and organisations adopt to increase awareness among consumers. These marketing strategies are explained below.

## Personalised Sustainability Messaging

AI-based customised sustainability messages operate based on predictive analytics, behavioural profiling and real-time data to provide customised environmental appeals based on personal values, lifestyles and previous shopping. Consumers get context-

specific suggestions instead of neutral slang like “save the planet” (e.g., “Choosing this recycled dress saves 2,700 litres of water which is the equivalent of the amount of water saved by the options you have made so far”). AI customises the tone, language (formal Arabic, dialects), and religious-cultural allusions in the region (e.g., associating less waste with Islamic israf-avoidance). Personalisation by making people feel more relevant and more emotionally connected increases the willingness to engage in responsible consumption practices to a great degree, as opposed to mass sustainability campaigns (Mughtar, 2025).

### **Sustainable Education**

Sustainability education powered by AI provides small, adaptive, and bite-sized learning challenges in the form of chatbots, quizzes, and AR modules on schedule with receptivity. Machine learning recognises knowledge gaps and readiness stages (pre-contemplation to maintenance) and stages content (e.g., beginners get to know why plastic is bad for oceans; advanced users read about the circular economy models). The process of continuous micro-learning generates long-term self-efficacy and intrinsic motivation and turns passive awareness into active commitment. In contrast to traditional campaigns, which lose their momentum soon, AI-based education helps to maintain the level of engagement and gradually increase the knowledge and application of responsible consumption by consumers (Srivastava, 2025).

### **Eco-Label Verification**

Eco-label verification is an AI application that can verify sustainability claims in real time at the decision point through computer vision, blockchain, and natural-language processing. Consumers scan QR codes or browse product pages and AI compares the certifications with the global databases, identifies greenwashing, and shows the credibility score in real-time (Joudeh *et al.*, 2020). The perception of authenticity is increased radically with the perceived transparency in AI verification in markets where trust in eco-labels is frequently low because of deception in the past. The technology instils confidence in consumers by eliminating any doubt about whether the product is ethically sourced, carbon-neutral, or fairly made, which increases the likelihood of buying sustainable products compared with traditional products (Jain and Mitra, 2025).

## Price–Sustainability Optimisation

AI-based price-sustainability optimisation uses dynamic pricing algorithms that temporarily reduce sustainable product prices when a consumer is price sensitive or there is an element of price abandonment. Machine learning estimates the best discounting points and size, and environmentally friendly choices become the cost-effective option at the point of decisions where there is no permanent loss of margins. This eliminates the biggest behavioural barrier in price-conscious markets where premium pricing has long been a barrier to green adoption. Responsible choices are seen as rational and affordable by consumers instead of sacrificial (Abdullah *et al.*, 2025).

## Social Proof via Micro-Influencers

AI uses these micro-influencers who belong to the personal communities of culture, geography, or interest of consumers and publish sincere sustainability narratives. Algorithms can assess interaction patterns, value similarity and dialect to pair consumers with familiar voices. In contrast to celebrity endorsements, the content of micro-influencers is perceived as authentic and accessible and quickly becomes a social standard of responsible consumption. Community opinion holds a crucial role in the behaviour of the people of collectivist societies, and AI-amplified micro-influencer content generates strong bandwagon effects, which can boost the level of adoption of eco-friendly products and practices among peer networks by a significant percentage (Shukla *et al.*, 2025).

## Lifecycle Impact Simulation

The AI-based simulation of impact across the lifecycle is developed with the help of augmented reality (AR) and real-time data representation in the form of visualisation, which allows consumers to observe the complete environmental and social footprint of their prospective purchase in comparison to those of alternatives in real-time. A scan of a product causes an overlay to be displayed in an immersive manner indicating water utilisation, carbon dioxide emissions, working conditions and the end-of-life destination. Simulations in markets are included with local settings (e.g., in Jordan, water scarcity, in the Gulf countries, marine pollution).

## RESEARCH METHODOLOGY

We have adopted the quantitative methodology to collect primary data from a larger sample size. A questionnaire was uploaded online and self-administered by consumers within the MENA region. A total of (826) individuals responded to the online questionnaire. Statistical Package for the Social Sciences (SPSS) was employed to deal with the collected primary data including multiple regression, Cronbach's alpha ( $\alpha$ ) and percentages. Table 1 indicated that Cronbach's alpha is higher than 0.70 which is statistically accepted. Ethical consent was received from respondents. Google Forms was used to obtain informed consent electronically. Participation was voluntary and anonymous, with no identifiers being obtained. Data were employed for the research only without any violation of confidentiality and the Declaration of Helsinki.

**Table 1: Cronbach's alpha**

Variable	$\alpha$
Personalised Sustainability Messaging	0.903
Sustainability Education	0.934
Eco-Label Verification	0.942
Price–Sustainability Optimisation	0.917
Social Proof via Micro-Influencers	0.878
Lifecycle Impact Simulation	0.958
Acceptance of Responsible Consumption	0.821

Source: Measured by authors using SPSS

## RESULTS

### Demographic Profiling

Calculating demographic responses indicated that gender was male dominated with 60.0% (496 respondents) male and 40.0% (330) female, indicating the possibility of male skew in the sample, possibly because there is more online interaction between men in certain MENA regions. The level of education shows a high presence of higher-educated groups: 59.4% have a BA (491), 24.7% have postgraduate or higher education (204), 15.9% a diploma or less (131), which means the sample is predisposed to having informed consumers who will be responsive to AI-oriented sustainability messages. The income distribution is polarised but wealthy with 40.9% above 2000 income (338), 36.1% above 1500-1999 (298), and the lower levels at 12.0% below 1000 and 11.0% between 1001-1499 (99). This distribution is consistent with the increasing middle-

to-upper population of MENA and especially in Gulf countries where incomes are positively related to AI marketing exposure through e-commerce and social platforms.

## Questionnaire Results

In Table 3, mean ( $\mu$ ) and standard deviation ( $\sigma$ ) were calculated for each statement on scale of 5. All variables in the questionnaire received ratings exceeding the mean of 3.00 on the scale, indicating a generally positive attitude among respondents. The data in the table above presents the mean and standard deviation for the various variables within the questionnaire.

**Table 2: Questionnaire Analysis**

Statement	$\mu$	$\sigma$
I get attractive messages about carbon footprint.	3.800	1.069
Most of the messages I get rhyme with my values.	3.937	1.058
Most of the messages match my lifestyle.	3.715	1.084
I get notifications in the time I need them.	3.982	1.038
I get notifications directed according to my own values.	3.804	1.054
<b>Personalised Sustainability Messaging</b>	<b>3.848</b>	<b>.900</b>
There are chatbots that deliver the information precisely for me.	4.132	.969
I always reach sustainability knowledge when I seek it.	3.910	1.076
Chatbots can inform me regarding the best ways to control my consumption.	4.098	.898
Most of suggestions are doable and makes sense to me.	4.081	1.000
I feel I am more responsible towards sustainability due to chatbots.	3.959	.887
<b>Sustainable Education</b>	<b>4.036</b>	<b>.861</b>
I get geared to all eco-friendly products all the time.	4.139	.875
I can reach tips on how to consume less.	4.155	.885
All brands I know are labelled and authenticated as eco-friendly.	4.029	.822
After AI, my trust in sustainability got higher.	4.162	.932
I always look for ideas to be a better consumer.	3.874	.994
<b>Eco-Label Verification</b>	<b>4.072</b>	<b>.814</b>
The green pricing makes it easier for me to become a sustainable consumer.	4.236	.870
Most prices are optimised to my financial abilities.	3.993	.991
I can check the prices before I make the purchase decision.	3.950	1.011
Discounts are available most of the time which is encouraging.	3.932	.847
I get many price tips and cheats on how to be sustainable consumer.	4.232	.806

Statement	$\mu$	$\sigma$
<b>Price–Sustainability Optimisation</b>	<b>4.069</b>	<b>.788</b>
I get tips from cultural groups all the time.	3.834	.842
The algorithm brings influencers who are interested in sustainable consumption.	4.016	.968
I get to know more norms regarding sustainability now.	4.137	.983
Influencers are effective when they are stick to the algorithm.	4.151	.871
AI is beneficial to direct my intentions towards sustainability tips.	3.815	1.096
<b>Social Proof via Micro-Influencers</b>	<b>3.991</b>	<b>.783</b>
I can imagine the exact influence of sustainable behaviour on the environment.	3.993	1.114
I now map my consumption according to sustainability needs.	3.921	1.137
AR/VR give me many alternative products for more sustainable consumption.	4.005	1.084
I get discounts on alternative products all the time.	3.926	1.113
It is more essential to follow AI suggestions for better consumption.	4.079	1.107
<b>Lifecycle Impact Simulation</b>	<b>3.985</b>	<b>1.028</b>
I am willing to spend more on products with environmental or ethical certifications.	3.805	.931
I try to buy from brands that show they care about sustainability and social responsibility.	3.987	1.038
Over the past year, I have cut back on using disposable plastics and things that cannot be recycled.	4.093	1.084
I often pick environmentally friendly or fair-trade items, even if it is easier to get regular ones.	4.113	.964
I feel good about buying things that do not hurt the environment or society.	3.904	1.068
I plan to keep up or increase my sustainable buying habits, like buying local, cutting waste, and choosing green products, in the future.	4.130	1.062
<b>Acceptance of Responsible Consumption</b>	<b>4.005</b>	<b>.745</b>

Source: Measured by authors using SPSS

### Multicollinearity Test

To evaluate multicollinearity, Variance Inflation Factor (VIF) and Tolerance metrics were computed for the independent variables as shown in Table 3. All VIF values in the referenced table are below 10, and all Tolerance values surpass 0.10, indicating the absence of multicollinearity within the data. The statistical abbreviations used in this paper are given below:

- B = Unstandardised Effect
- $\beta$  (Beta) = Standardised effect (used to compare predictors)
- t: t-value (t-statistic)
- Sig.: Significance Level (p-value)
- F: F-statistic
- R: Multiple Correlation Coefficient

**Table 2: Questionnaire Mean and Standard Deviation**

Variable	Tolerance	VIF
Personalised Sustainability Messaging	0.424	2.357
Sustainability Education	0.396	2.527
Eco-Label Verification	0.272	3.673
Price–Sustainability Optimisation	0.429	2.333
Social Proof via Micro-Influencers	0.574	1.742
Lifecycle Impact Simulation	0.567	1.764

Source: Measured by authors using SPSS

## Hypotheses Testing

Multiple regression analysis was utilised to assess the hypotheses, with R value of 0.867 signifying a strong correlation between the independent and dependent variables. The independent variables accounted for 75.1% of the variation in the dependent variable. Furthermore, the F value was statistically significant at the 0.05 level, indicating that AI-driven sustainable marketing strategies can increase consumers' acceptance of responsible consumption from the consumers' perspective.

Regarding sub-hypotheses, it was seen that the t value for each variable is significant at 0.05 level. This gives the following inferences for the current study.

Personalised Sustainability Messaging can increase consumers' acceptance of responsible consumption from the consumers' perspective.

Sustainability Education can increase consumers' acceptance of responsible consumption from the consumers' perspective.

Eco-Label Verification can increase consumers' acceptance of responsible consumption from the consumers' perspective.

Price–Sustainability Optimisation can increase consumers' acceptance of responsible consumption from the consumers' perspective.

Social Proof via Micro-Influencers can increase consumers’ acceptance of responsible consumption from the consumers’ perspective.

Lifecycle Impact Simulation can increase consumers’ acceptance of responsible consumption from the consumers’ perspective.

**Table 4: Multiple Regression of Hypotheses**

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.	R	R <sup>2</sup>	F- value
		B	Std. Error	Beta (β)					
1	(Constant)	.209	.080		2.631	.009	.867	.751	411.446
	Personalised Sustainability Messaging	.112	.022	.135	5.049	.000			
	Sustainability Education	.123	.024	.142	5.135	.000			
	Eco-Label Verification	.152	.031	.166	4.965	.000			
	Price– Sustainability Optimisation	.105	.025	.111	4.162	.000			
	Social Proof via Micro-Influencers	.299	.022	.314	13.648	.000			
	Lifecycle Impact Simulation	.158	.017	.218	9.431	.000			

Source: Measured by authors using SPSS

## DISCUSSION

The current study aimed to explore how AI-driven marketing strategies can drive consumers’ responsible consumption from perspective of consumers in the MENA region. Utilising a questionnaire and SPSS to analyse primary data, results of (826) responses to the questionnaire indicated that AI-driven marketing strategies can increase consumers’ responsible consumption. Among the chosen variables, it was noticed that social proof via micro-influencers with B = 0.299 was the highest in influence. The concept of social proof with the help of micro-influencers implies the fact that AI finds influential people in niche communities, who can really endorse sustainable lifestyles. AI assists brands to work alongside these micro-influencers to disseminate credible,

relatable sustainable messages on social media, which is easily influenced by peers. Shukla *et al.* (2025) agreed and added that the appearance of trusted people in the promotion of sustainable products boosts consumer desires to do the same and leads the responsible consumption trend.

In the second rank, the variable “lifecycle impact simulation” appeared with  $B = 0.158$ . Lifecycle impact simulation is an example of AI that uses visualisation and communication of products to understand the environmental impact of products during the entire lifecycle, i.e., starting with raw material extraction and ending with disposal. These simulations assist consumers to be aware of the unseen cost of their decisions and encourage them to be aware of durability, recyclability and sustainability in general. Jain and Mitra (2025) agreed and stated that by giving people a three-dimensional and clear picture of the impacts of products, AI encourages consumers to choose products that have lower environmental footprints and take longer perspectives.

With  $B = 0.152$ , eco-label verification appeared in the third rank of influence. Eco-label verification uses the potential of AI to authenticate and validate sustainability certifications and claims on products, helping to reduce misinformation and greenwashing. AI systems are used to scan product data, certifications and supply chain information, to determine the eco-label authenticity. Jain and Mitra (2025) added that this check establishes a consumer trust in sustainable product consumption and holds companies responsible in the process and thus affirms responsible buying habits.

The fourth rank was scored by sustainable education with  $B = 0.123$ . AI-powered sustainable education empowers consumers with information that is more interesting and context-driven to reduce the complexity of sustainability issues. AI platforms can provide interactive and customised educational information, e.g., information about lowering carbon footprints, product lifecycle data, or principles of the circular economy. This represents focused education, as described by Srivastava (2025), in which consumers make informed decisions and become active stakeholders in sustainability rather than passive ones.

Personalised sustainability messaging scored  $B = 0.112$ , placing it in the fifth rank. Personalised sustainability messages involve AI algorithms that understand the behaviour and preferences of consumers and send them a message that highlights the advantages and ethical features of products for the environment. This approach will result in increased interaction with consumers since the content of the information delivered to them is location-specific and customised, ensuring that people learn how their decisions affect the environment, promoting the adoption of conscious

consumption practices. Muchtar (2025) agreed and added that trust is also developed by personalisation where there is transparency on the reasons why certain messages are displayed and this enhances acceptance and adoption of sustainable behaviour.

In the final and least influential rank came price–sustainability optimisation, with  $B = 0.105$ . Price–sustainability optimisation uses AI to find the optimal balance between product price and sustainability characteristics. By analysing market data, consumer preferences, and production costs, AI models can recommend pricing strategies that ensure products remain both affordable and sustainable without compromising profitability. This approach, as according to Abdullah *et al.* (2025) deals with one of the obstacles to responsible consumption affordability, which will motivate more consumers to use environmentally friendly products.

## RECOMMENDATIONS

Based on the study's results, discussion, and conclusions, the following recommendations are presented: There is a need to focus more on social proof through micro-influencers, as this has the highest influence. MENA brands should leverage AI to identify and collaborate with micro-influencers who promote sustainable lifestyles. Additionally, regional social commerce trends on platforms such as Instagram and TikTok should be exploited, as authentic interactions and responsible consumption are often driven by peer recommendations, as demonstrated by Gulf influencer strategies. There is also a need to educate affluent consumers in sustainability-focused MENA markets about product durability and recyclability, enhancing the effectiveness of AI personalisation. Finally, further studies should longitudinally track actual purchase behaviour and include underrepresented Arab countries, such as Yemen and Sudan.

## CONCLUSIONS

This paper has shown that AI-driven marketing approaches play a significant role in consumers' responsible consumption behaviour in the MENA region. The analysis of 826 questionnaire responses revealed a strong positive relationship. Among the dimensions examined, social proof using micro-influencers was the most significant ( $B = 0.299$ ), highlighting the effectiveness of relatable and niche endorsements in promoting sustainable lifestyles. AI's ability to identify and engage real micro-influencers allows brands to communicate credible messages through peers, which are highly influential and, consequently, encourage green decisions.

The second most influential dimension was lifecycle impact simulation ( $B = 0.158$ ), emphasising the importance of AI-generated visualisation of a product's environmental footprint across its entire lifecycle as a means of raising awareness and encouraging long-term thinking. The third most important aspect was eco-label verification ( $B = 0.152$ ), which builds trust by validating sustainability claims and helps combat greenwashing. Informed decision-making and emotional engagement were also supported through sustainability education ( $B = 0.123$ ) and personalised sustainability messaging ( $B = 0.112$ ). Price–sustainability optimisation ( $B = 0.105$ ) addressed the practical challenge of affordability.

Taken together, these results demonstrate that AI can enhance transparency and education, as well as leverage social dynamics and personalisation to facilitate responsible consumption. The strategic deployment of these AI capabilities provides brands operating in the MENA region with a clear pathway to establish consumer confidence, minimise environmental impacts, and align business objectives with sustainability goals. Future studies could examine these strategies further by investigating longitudinal effects and cross-cultural differences.

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## BIOGRAPHY



**Professor Tareq N. Hashem** is a full Professor at Applied Science Private University in Jordan and a member of the Dissertation Committee at Westcliff University, USA. His academic career includes positions as Assistant and Associate Professor at Philadelphia University, followed by appointments as Associate Professor, Head of the Marketing Department, and Full Professor at Isra University. His teaching and research interests cover management, digital marketing and marketing information systems across a range of industries. He contributes actively to academia as an author, editor and reviewer for scholarly journals and editorial boards. Alongside his academic work, Prof. Hashem has extensive professional experience, having served as a credit officer at the Islamic International Arab Bank and as a marketing manager in the hotel furnishings industry.



**Professor Arshi Naim**, a Top 2% Scientist (Stanford and Elsevier, 2024 and 2025), is a distinguished academic with over 22 years' experience in business management, digital marketing and higher education. She has published more than 100 Scopus-indexed articles and has authored books with leading international publishers. She holds a PhD in Business Management and has extensive global teaching and leadership experience. For 14 years, she led accreditation and quality assurance initiatives at King Khalid University, Saudi Arabia. She currently serves as Professor of Business Management and Sustainability at the London Institute of Sustainable Development, UK, Professor of Business and Economics, Al-Quds University, Jerusalem, Palestine and as a Research Supervisor at INTI University, Malaysia. A certified QM Master Reviewer, Dr Arshi also holds professional and executive education credentials from Oxford, Harvard and Accenture. She actively collaborates with institutions worldwide to promote academic excellence, research impact and innovation.



**Dr Abdalah Salameh Abualkanam** is a Jordanian academic and researcher. He obtained his PhD in History from the University of Bucharest, Romania, in 2012, where his research focused on international transformations and their impact on local and regional communities. He currently serves as an Associate Professor at Al-Ahliyya Amman University, contributing to the development of teaching and research in the fields of international relations and social studies. In addition to his academic role, he is a writer and publisher with a particular interest in analysing political and social phenomena.

He has published several studies and articles aimed at enhancing understanding of contemporary issues in the region and worldwide. He is also actively engaged in community work, organising training workshops and voluntary lectures to raise awareness and support young people and others interested in the social sciences and international relations. His work reflects a strong commitment to linking theoretical knowledge with practical action in the service of society.



**Mohammad Mousa Isied** is a Jordanian researcher and academic. He obtained a bachelor's degree in Archaeology from Yarmouk University in 2012 and a master's degree in History from Al al-Bayt University in 2024. He currently works as a Lecturer in Social and Human Sciences at Al-Ahliyya Amman University, where he contributes to the development of the teaching and research environment in the field of social studies. In addition, he has conducted several studies in history, archaeology and social studies, and has published several specialised research papers in history. His work seeks to link historical studies with contemporary issues to reach clear and well-defined conclusions. He also collaborates with voluntary organisations by participating in and delivering training courses related to history.



**Dr Saed Mustafa** is an Associate Professor at Applied Science Private University. He obtained his bachelor's degree from Al al-Bayt University and completed his master's and PhD in Management and Marketing at University Utara Malaysia. With more than 13 years of academic experience, he has worked in Malaysia, Bahrain, Oman and Iraq, holding a range of academic and administrative leadership positions. Dr Mustafa's expertise includes strategic planning, quality assurance, operational action planning and recruitment. His research interests include corporate social responsibility, marketing strategy, human resource management, entrepreneurship, green marketing and technology-driven marketing. He has published extensively and served as a reviewer for international journals and conferences. He has also contributed to institutional and programme accreditation processes, including NECHE, AACSB and EACBE. In addition, he has served as a Programme External Examiner for MBA programmes in Bahrain, a Non-Academic Programme Internal Examiner at the American University of Kurdistan, and an Examiner for the Oman Research Council.