



Green campaign, governance system, and sustainability development goal performance in Indonesian MSMEs

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ABSTRACT

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This study aims to examine the impact of MSMEs' green campaigns and governance systems on their achievement of the Sustainable Development Goals (SDGs). Motivated by the significant economic contribution of macro, small, and medium enterprises (MSMEs), encouragement for digitalization, and the need to participate in the Sustainable Development Goals (SDGs) agenda. The governance system in this research utilizes operational, technological, financial, and administrative systems. Operational and technological systems in MSMEs include how MSMEs carry out preventive inspections, the level of technology used, the implementation of internet-based applications, the implementation of innovations in quality management systems, and the quality assurance implemented by the company. Using quota sampling in the East Java Province of Indonesia, this study collected data from 414 MSME manager respondents. The research predicts and finds support that green campaigns and parts of governance systems (business, management, operational, and technological systems) positively affect SDG performance. The results show that preventive inspection, technology level, implementation of internet-based applications, and innovation in the quality management system are important factors in the performance of SDG MSMEs in Indonesia. However, no evidence exists that financial and administrative systems affect SDG performance. These findings present several implications for both empirical and practical aspects regarding MSMEs' participation in achieving SDGs. The practical impact of this research is that MSMEs should prioritize the integration of environmental initiatives into their core business strategies to improve sustainability performance. MSME managers should be willing to invest in these areas to improve operational efficiency and sustainable outcomes.

Contribution/Originality: This research uniquely combines the analysis of green campaigns with various aspects of MSME governance systems, including operations, technology, finance, and administration, in the context of achieving the SDGs. This approach provides a holistic perspective that has not been explored in previous studies.

1. INTRODUCTION

Amidst cultural and geographical diversity, Micro, Small, and Medium Enterprises (MSMEs) have become one of the main pillars supporting Indonesia's economic growth. In 2023, their number reached 66 million, accounting for 99% of all businesses in Indonesia, with a growth rate of 1.52% (Coordinating Ministry for Economic Affairs of

the Republic of Indonesia, 2024; Indonesian Chamber of Commerce and Industry, 2024). MSMEs not only contribute 60.51% to the country's Gross Domestic Product (GDP), but also play a crucial role in employment, reducing economic disparities, and promoting financial inclusion (Coordinating Ministry for Economic Affairs of the Republic of Indonesia, 2024; International Labour Organization, 2019). Data from 2022 shows that Indonesia's MSME contribution to economic output ranks the highest among Asian countries (Asian Development Bank, 2023).

Despite the vast number of MSMEs across Indonesia, their growth is hindered by limited resources (Indonesian Chamber of Commerce and Industry, 2024). A key obstacle is the adoption of digital platforms to enhance competitiveness (Institute for Development of Economics and Finance (INDEF), 2024). The Ministry of Cooperatives and SMEs reported an increase in digitally integrated MSMEs from 7 million in 2020 to 24 million in 2023, with a target of 30 million by 2024 (Indonesian Chamber of Commerce and Industry, 2024). However, this figure still accounts for less than 50% of total MSMEs, underscoring the persistent challenges of digital transformation. This contrasts with Indonesia's leading position in physical infrastructure and human capital in the Global Index of Digital Entrepreneurial Systems relative to neighboring countries (Asian Development Bank, 2023). In response, the Indonesian government continues to implement policies to accelerate MSME digitalization.

Various stakeholders are involved in advancing the Sustainable Development Goals (SDGs) in Indonesia. As achieving these goals requires multi-sectoral collaboration, the contribution of MSMEs is increasingly recognized (Kementerian PPN/Bappenas, 2022). The Indonesian government, in particular, emphasizes climate change awareness and is actively preparing MSMEs to transition into green enterprises, supporting a sustainable economy in alignment with the G20 Presidency priorities (Kementerian PPN/Bappenas & UN Global Pulse, 2022). This commitment is reflected in the *Green MSME Development Business Model Study*, which serves as a strategic reference and policy recommendation for stakeholders involved in green MSME development. These efforts underscore the pivotal role expected of MSMEs in advancing Indonesia's SDG agenda.

Pomare (2018) emphasized the importance of MSMEs acting as "good corporate citizens" by integrating SDG-oriented practices, which can enhance both social impact and financial performance. Strengthening MSME performance involves increasing managerial sensitivity to the relevance and importance of the SDGs. This study aims to explore strategies to enhance such sensitivity, with a particular focus on how digitalization within MSMEs' internal operations can support a shift toward sustainability. In support of this, De Villiers, Kuruppu, and Dissanayake (2021) advocate for leveraging digital technologies to advance the achievement of the SDGs..

Almilia, Diptyana, Budisusetyo, and Nita (2013) provides evidence that MSMEs in Indonesia, particularly East Java, exhibit low levels of managerial practices in several areas, namely business and management systems, operational systems and technology, financial and administrative systems, customer and sales systems, marketing systems, and export strategies. These managerial practices are collectively referred to in this study as MSME governance systems. Based on existing literature, this study examines how the interaction between digitalization and governance systems affects MSMEs' contribution to the SDG agenda, as reflected in their SDG performance.

This study examines the impact of green campaigns and governance systems on the SDG performance of MSMEs in Indonesia. The contributions of this study are: First, the theoretical contribution: this research explores digitalization and SDG performance by MSMEs by identifying key factors that enable MSMEs to contribute to the SDG agenda through digital transformation. Second, policy contribution: this research suggests actionable strategies to promote SDG-oriented practices in MSMEs, strengthening their role as an important component of the backbone of the Indonesian economy. Third, managerial engagement: This research emphasizes the importance of involving MSME managers in SDG initiatives. Before data collection, a training was conducted to raise awareness among managers about their role in achieving SDG outcomes. Fourth, practical insights: this research shows green marketing initiatives positively influence SDG performance and the benefits of an environmentally conscious business strategy. Fifth, operational implications: the results show that improvements in preventive inspections, technological

advancements, adoption of internet-based applications, and innovations in quality management systems significantly improve MSMEs' SDG performance.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Sustainable Development Goal Performance

MSMEs can be key drivers in achieving several Sustainable Development Goals (SDGs), particularly in poverty reduction (SDG 1), welfare improvement (SDG 2), and inclusive and sustainable economic growth (SDG 8). MSMEs can enhance people's welfare and reduce poverty due to their contribution as economic drivers.

The Sustainable Development Goals (SDGs) are global initiatives endorsed by world leaders, including Indonesia, aimed at alleviating poverty, improving well-being, minimizing inequality, and protecting the environment. Comprising 17 goals and 169 targets, the SDGs are to be achieved by 2030 (United Nations, 2015). The SDGs provide a universal framework that integrates three indicators of sustainable development: environmental, social, and economic. The measurement of SDG performance in this study refers to MSMEs' engagement in benefiting from SDG-aligned practices across the three dimensions, drawing on definitions from Abdul-Rashid, Sakundarini, Raja Ghazilla, and Thurasamy (2017); Hami, Muhamad, and Ebrahim (2015) and Sezen and Cankaya (2013).

Rubio-Mozos, García-Muiña, and Fuentes-Moraleda (2019) provide evidence of the absence of a universally acceptable framework for business participation in achieving the SDGs. This research suggests that MSMEs, often considered the “fourth sector” alongside state-owned, private, and social enterprises, require transformative changes in their economic models, starting with the integration of environmental and social metrics into SDG-aligned GDP measures. Oppong (2022) provides evidence that MSMEs in developing countries, especially those with broad sustainability impacts, tend to disclose more SDG-related activities. These disclosures contribute positively to their growth and long-term viability.

2.2. Sustainable Development Goal Performance

Economic development and population health are interconnected: economic progress enhances health outcomes, while improved population health contributes to productivity and economic growth. Health is vital to the Sustainable Development Goals (SDGs), as a healthier population increases productivity and household income, thereby boosting national GDP per capita. Economic development also supports the systems and infrastructure necessary to sustain health and improve people's quality of life. The SDG program aims to preserve environmental quality, promote inclusive development, and implement governance that sustains improvements in quality of life across generations. The SDGs comprise 17 goals addressing various aspects of sustainability, including poverty alleviation, education, health, and the environment. The SDGs represent a global and national commitment to societal welfare.

2.3. MSMEs' Green Campaign and Sustainability Development Goal Performance

A green campaign refers to an effort to expose environmental issues to the public and also raise awareness of the ‘green’ movement within society. Green campaigns are also conducted to demonstrate that businesses care about both economic and sustainability aspects (Afum et al., 2020). In doing so, digital technology may enhance the process. Furthermore, to run a green campaign, a business should adopt green practices to communicate. It is assumed that the extent of green campaigns is linearly related to the level of green practices within the business. This notion is based on signalling theory, which suggests that businesses tend to signal information to demonstrate their activities (Spence, 1973).

The concepts of green innovation and green development have gained increasing relevance in recent years (Albort-Morant, Leal-Rodríguez, Fernández-Rodríguez, & Ariza-Montes, 2016). Prior studies emphasize the importance of green technologies in facilitating environmentally and socially responsible business practices (Galdeano-Gomez, Cespedes-Lorente, & Martinez-del-Rio, 2008). Albort-Morant et al. (2016) Identify two key

benefits of adopting environmentally friendly technologies: (1) economic advantages that foster competitive differentiation, and (2) commercial benefits through the production of green products. Moreover, environmental regulations and policies are critical drivers of green innovation within firms (De Medeiros, Ribeiro, & Cortimiglia, 2014). Companies that are environmentally conscious and committed to sustainable practices tend to reduce pollution and environmental degradation while enhancing their performance in green innovation (Chen, Lai, & Wen, 2006; Lopes, Scavarda, Hofmeister, Thomé, & Vaccaro, 2017).

A previous study found that green practices in companies have a positive impact on sustainability performance, including economic, environmental, and social performance (Pangarso, Sisilia, Setyorini, Peranginangin, & Awirya, 2022). These three performances are also referred to as SDG performances in this study. Therefore, it is predicted that the higher the green practices, which indicate a stronger green campaign, the higher the SDG performance.

Other studies also provide underlying support for this prediction. Eco-friendly innovation, as a part of green practices, is a key ecological initiative and is closely linked to social and environmental practices (Bai, Song, Jiao, & Yang, 2019; Tang, Walsh, Lerner, Fitza, & Li, 2018). Ullah, Ahmad, Rehman, and Fawad (2023) show that green innovation contributes significantly to the SDGs in terms of community development and environmental practices. The findings encourage MSMEs to focus on implementing environmentally friendly innovations to achieve the SDGs, such as using and promoting eco-friendly products and product packaging. The other form of green innovation, and thus green campaign, is the use of eco-friendly payment media that is expected to increase profits and market share of MSMEs. Overall, the first hypothesis of this study is.

H₁: Green campaign has a positive effect on MSMEs' SDG performance.

2.4. MSMEs' Governance System and Sustainability Development Goal Performance

The MSMEs' governance system in this study is adapted from Almilia et al. (2013), comprising two core components: (1) business, management, operational, and technology systems, and (2) financial and administrative systems. A well-functioning governance system is expected to enhance SDG performance, consistent with the resource-based view (RBV) theory (Barney, 1991; Khanra, Kaur, Joseph, Malik, & Dhir, 2022), which posits that internal capabilities and resources are critical for achieving sustained competitive advantage.

Specifically, business and management systems in MSMEs encompass strategic and business planning, operational decision-making, clearly defined job roles, motivation structures, and employee training. MSMEs with effective planning and managerial structures are more likely to engage in forward-looking strategies that incorporate sustainability considerations, including SDG participation, as part of long-term development goals.

Meanwhile, operational and technology systems include practices such as preventive maintenance, the adoption of appropriate technology, the utilization of internet-based applications, innovation in quality management, and adherence to quality assurance standards. Firms that implement robust environmental and quality management systems are more inclined to adopt green technologies and sustainable innovations in their operations (Cuerva, Triguero-Cano, & Córcoles, 2014). Enhanced operational quality and technological integration not only increase awareness of environmental responsibility but also promote practices such as energy conservation, reduction of hazardous materials, and minimization of waste and emissions. Over time, these improvements can lead to increased profitability, expanded market share, and asset growth for MSMEs. Digitalization implemented by MSMEs across these governance dimensions is likely to further strengthen their impact on SDG performance. Improving digital operations and better resource management can strengthen the alignment between internal governance and sustainability outcomes, the second hypothesis of this study is.

H₂: Business systems, management, operations, and technology have a positive effect on MSME SDG performance.

This research examines how MSMEs' SDG performance is affected by the quality of their financial and administrative systems. The Resource-Based View (RBV) theory states that strong internal systems are critical to

maintaining a competitive advantage and improving organizational outcomes. Financial and administrative capacity play a significant role in supporting daily operations and long-term strategic initiatives. MSMEs with effective financial systems are better positioned to allocate resources toward sustainability initiatives, including budgeting for SDG-related activities to be implemented by MSMEs. Simultaneously, good administrative systems enable accurate documentation, monitoring, and reporting of sustainability practices, which are critical for demonstrating and evaluating SDG contributions. SDG performance may not be achieved if financial and administrative infrastructures are weak, as both factors can hinder SDG-related planning, implementation, and measurement of outcomes. Based on the above arguments, the third hypothesis of this study is:

H₃: Financial and administrative systems have a positive effect on MSMEs' SDG performance.

3. RESEARCH METHODS

3.1. Research Design

This study used a structured questionnaire to collect primary data. Before data collection, a training program was conducted for MSME managers in East Java Province. After completing the training, questionnaires were distributed to the participating MSME managers.

The sampling technique used was quota sampling, which was applied to ensure representativeness. This method involves selecting a predetermined number of respondents from different categories of areas based on certain characteristics, thus ensuring a proportional and balanced distribution of samples across different groups (Yang & Banamah, 2014).

3.2. Research Subject

The research subjects are MSMEs in East Java, which are characterized by diverse businesses based on industry and scale. Due to their contribution to the economy, MSMEs in East Java are declared an influential economic resource relative to other provinces in Indonesia. These businesses contributed 57.81% to the Gross Regional Domestic Product (GRDP) in 2021 and increased to 58.36% in 2022 (Cooperatives and Small and Medium Enterprises Office of East Java Province, 2022).

MSMEs in East Java are defined as micro, small, and medium-sized business units that operate in the East Java Province area and meet the criteria set by the government. According to the Indonesian Government (2021), MSMEs are categorized based on their criteria as follows.

1. Micro business, if the equity is no more than IDR 1 billion and annual sales are no more than IDR 2 billion.
2. Small business, if the equity is between IDR 1-5 billion and annual sales are between IDR 2-15 billion.
3. Medium-sized business, if the equity is between IDR 5-10 billion and annual sales are between IDR 15-50 billion.

3.3. Operational Definition and Variable Measurement

SDG performance refers to the extent to which the economic, environmental, and social performances of MSMEs are achieved. This study adopts the measurement of this variable from three studies on sustainability performance (Abdul-Rashid et al., 2017; Hami et al., 2015; Sezen & Cankaya, 2013). SDG performance will be the sum of three measures: economic performance, environmental performance, and social performance. Each indicator is measured by a 5-point Likert scale with 1 "strongly disagree" and 5 "strongly agree".

The green campaign refers to the extent to which MSMEs share and promote their green practices through social media, including green marketing, packaging, manufacturing, and environmental initiatives. The measurement of the green campaign is adapted from a prior study, Afum et al. (2020), which focuses more on green practices. The instrument uses a 5-point Likert scale from 1 "strongly disagree" to 5 "strongly agree".

The MSME governance systems refer to the daily operational systems that determine the effectiveness of MSME activities. This variable encompasses several aspects, including business, management, operational, technological, financial, and administrative systems. This study uses the instrument from a previous study (Almilia et al., 2013) and measures with a 5-point Likert scale, ranging from 1 “strongly disagree” to 5 “strongly agree”.

4. RESEARCH RESULTS

4.1. Descriptive Statistics

The data collection process obtained 414 completed questionnaires from seven representative areas in East Java: Bojonegoro, Gresik, Mojokerto, Ponorogo, Sumenep, Surabaya, and Tuban. Table 1 the text presents demographic data for the respondents. MSME female managers are more numerous than male managers, comprising 369 (89.13%) and 45 (10.87%) respondents, respectively. The majority of respondents have attained the highest education level of senior high school, represented by 234 people (56.52%), while those with a bachelor's degree number 110 (26.57%). Based on industry, the largest business sectors are culinary/food with 334 (75.74%) MSMEs, followed by creative products with 44 (10.71%) MSMEs, and fashion with 20 (4.83%) MSMEs. This indicates that in East Java, the business interests of SME managers are primarily in the culinary/food sector, considering the market demand for basic needs.

Table 1. Respondent demographics statistics.

Details	n	Percentage
Respondent's gender		
Male	45	10.87%
Female	369	89.13%
Total	414	100.00%
Respondent's education		
Master	8	1.93%
Bachelor	110	26.57%
Diploma	36	8.70%
Senior high school	234	56.52%
Under the senior high school	26	6.28%
Total	414	100.00%
MSME age		
1 to 3 years	136	32.85%
>3 to 5 years	108	26.09%
>5 to 10 years	117	28.26%
>10 to 15 years	37	8.94%
>15 years	16	3.86%
Total	414	100.00%
MSME region		
Bojonegoro regency	44	10.63%
Gresik regency	49	11.84%
Mojokerto city	65	15.70%
Ponorogo regency	49	11.84%
Sumenep regency	39	9.42%
Surabaya city	125	30.19%
Tuban regency	43	10.39%
Total	414	100.00%
Industry		
Fashion	20	4.83%
Culinary/Food and beverage	335	80.92%
Creative products	44	10.63%
Other	15	3.62%
Total	414	100.00%

4.2. Analysis

This study utilized PLS-SEM to test the outer and inner models. Table 2 presents the results of the outer model tests, which include validity and reliability.

Table 2. Outer model test results.

Code	Details	Loading factor	Loading factor after elimination	α	CR	AVE
SDG performance						
SDG1	Increase in profit	0.709	0.809	0.776	0.741	0.529
SDG2	Increase in market share	0.656	0.753			
SDG3	Increase in assets	0.685	0.756			
SDG4	Decrease in electricity usage	0.147	-			
SDG5	A decrease in the use of environmentally unfriendly materials	0.256	-			
SDG6	Reduction in odorous waste and oil waste	0.507	-			
SDG7	Improvement in workplace safety	0.566	-			
SDG8	Support for the surrounding community	0.526	-			
SDG9	Solid work environment	0.663	0.644			
SDG10	Improved relationships with the community and clients	0.677	0.662			
Digitalized green campaign						
GC1	Utilization of tools to promote eco-friendly products	0.773	0.719	0.308	0.848	0.590
GC2	Utilization of tools to promote eco-friendly product packaging	0.553	-			
GC3	Utilization of tools to support eco-friendly payments	0.726	0.814			
GC4	Digitalization in product design	0.293	-			
GC5	Digitalization in supplier certification for ISO 14000	0.200	-			
GC6	Digitalization in the use of eco-friendly products by owners and/or employees	0.255	-			
Business, management, operational, and technology systems						
BMOTS1	Strategic and business planning	0.492	-	0.527	0.758	0.512
BMOTS2	Daily operational decisions	0.269	-			
BMOTS3	Job description	0.472	-			
BMOTS4	Motivation system within the company	0.623	0.644			
BMOTS5	Employee training	-0.168	-			
BMOTS6	Preventive inspection	0.408	-			
BMOTS7	Technology level	0.703	0.794			
BMOTS8	Implementation of Internet-based applications	0.553	-			
BMOTS9	Implementation of innovation in quality management systems	0.570	0.701			
BMOTS10	Perception of quality assurance	0.280	-			
Financial and administrative systems						
FAS1	Use of an information technology-based accounting system	0.322	-	0.533	0.801	0.671
FAS2	Efficiency in applying a budgeting system	0.513	-			
FAS3	Efficiency in the cost calculation system	0.863	0.911			
FAS4	Liquidity analysis	0.299	-			
FAS5	Selection of suppliers	0.770	0.715			

Table 2 presents the results of convergent validity, discriminant validity, Cronbach's alpha, and composite reliability. Using a threshold of 0.50 for factor loadings, several items were identified as invalid and subsequently removed. Following item elimination, the remaining indicators demonstrated acceptable convergent validity.

Discriminant validity was assessed through cross-loading values, with all indicators exceeding the 0.70 threshold, indicating no concerns regarding discriminant validity and confirming that all constructs are empirically distinct.

Reliability was evaluated using Cronbach's alpha and composite reliability. While Cronbach's alpha values for three constructs, *green campaign*, *business, management, operational and technology systems*, and *financial and administrative systems*, fell below the recommended threshold of 0.70, composite reliability scores for all variables exceeded 0.70, suggesting that the constructs demonstrate acceptable internal consistency overall.

Table 3. Research results.

Details	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	t-statistics (O/STDEV)	p-values	Conclusion
Green campaign → SDG performance	0.193	0.196	0.053	3.650	0.000	Supported
Business, management, operational, and Technology systems → SDG performance	0.219	0.228	0.053	4.154	0.000	Supported
Financial and administrative systems → SDG performance	-0.015	0.002	0.050	0.309	0.758	Not supported

The overall model shows the adjusted R^2 of 8.50% (untabulated results). Further, Table 3 presents the results of the inner model as part of hypothesis testing. The results indicate support for H₁, a green campaign that is predicted to positively affect SDG performance ($t=3.650$; $p=0.000$). The test of H₂ also confirms the prediction that business, management, operational, and technology systems positively affect SDG performance ($t=4.154$; $p=0.000$). In contrast, the results found no support for H₃, which expects the positive effect of financial and administrative systems on SDG performance ($t=0.309$; $p=0.758$).

5. DISCUSSIONS

Hypothesis testing supports that green campaigns and business, management, operational, and technology systems have positive effects on SDG performance. However, the prediction of a positive relationship between financial and administrative systems and SDG performance is not supported.

The results of the first hypothesis regarding the positive impact of the green campaign on SDG performance are consistent with previous literature (Bai et al., 2019; Pangarso et al., 2022; Tang et al., 2018; Ullah et al., 2023). This indicates that the green campaign represents the extent to which MSMEs implement green practices. More green practices lead to a larger green campaign, as more green stories are shared with society, increasing the likelihood that MSMEs perform better in economic, environmental, and social aspects. This result is also relevant to signaling theory, which states that businesses tend to provide information to the public for signaling purposes to demonstrate their activities. In this context, a green campaign is the mechanism for sharing information, while green practices constitute the information itself.

Furthermore, the test of the second hypothesis that business, management, operational, and technology systems positively affect SDG performance is consistent with the resource-based view theory, which states that the internal resources of a business determine its competitive advantage. In this regard, SDG performance serves as a competitive advantage for MSMEs, since green initiatives have not yet become a common and comprehensive practice for all

MSMEs. This finding extends Almilia et al. (2013) study by showing that components of MSME governance systems determine the level of SDG performance.

In contrast, the results of the third hypothesis do not support the effect of financial and administrative systems on SDG performance. This finding indicates that SDG performance does not depend on the quality of financial and administrative systems. Other factors, such as innovation-oriented learning and collaboration, may be more influential (De Medeiros et al., 2014) and tend to be more impactful in boosting green practices. Constraints in the financial and administrative aspects do not limit the possibility and capability to perform well in social and environmental aspects.

6. CONCLUSIONS

The objective of this study is to examine the effects of green campaigns and governance systems on the SDG performance of MSMEs. The findings reveal that both green campaigns and aspects of governance systems, specifically business, management, operational, and technology systems, positively influence SDG performance. However, financial and administrative systems show no significant correlation with SDG performance.

These findings yield several key implications: First, the results suggest that green campaigns may serve as indicators of an MSME's level of commitment to SDG practices. In line with signaling theory, the extent and quality of green campaigns likely reflect the depth of actual green practices and awareness of the SDG agenda.

Second, the study highlights the importance of strengthening internal governance systems, particularly in business planning, operations, and technology use. Enhancing these components can provide MSMEs with the strategic and technical capabilities needed to support sustainable practices.

Third, the lack of association between financial and administrative systems and SDG performance implies that MSME engagement in SDG-related activities may rely more on intentional, innovation-driven initiatives than on financial capacity or formal administrative structures. This suggests that MSMEs can still contribute meaningfully to the SDGs through low-cost, proactive measures.

This study acknowledges several limitations. First, certain constructs exhibit reliability concerns and convergent validity issues, necessitating the removal of invalid items. Nonetheless, the large sample size ensures sufficient statistical power. Second, the model's adjusted R^2 remains modest, indicating the need for future research to explore additional factors influencing MSMEs' contributions to the SDGs.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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