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# An Analysis of Social Factors Influencing Greenwashing

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**ABSTRACT**

Introduction: Greenwashing is one of the emerging social harms in industry and companies, which can be considered a form of organizational hypocrisy and dissemination of misleading information to deceive citizens; in other words, greenwashing is the instrumental use of the concept of environmental protection with the aim of gaining economic profit.

Methods: The purpose of this study is to identify and sociologically analyze the social factors influencing greenwashing, employing the Grey DEMATEL technique to determine the causal and interactive relationships among these factors. The statistical population of the study includes professors of the faculty of economics, management, and social sciences of Shiraz University. The sampling method was purposive sampling and the sample size was determined to be 12 people. Data were collected using library research methods and the questionnaire instrument.

Findings: The results of the analysis using the Grey DEMATEL technique showed that the variables of social stress, social isolation, feeling of social insecurity, and decreased social participation had the greatest impact on greenwashing. It was also found that the variables of social distrust, physical and psychological risks, environmental risks, and reduced organizational creativity received the greatest impact from the greenwashing variable. In addition, in terms of importance, the variables of social distrust with a value of 6.52, physical and psychological risks with a value of 6.38, environmental risks with a value of 6.12, decreased organizational creativity with a value of 5.97, and decreased social participation with a value of 5.80 have the most importance.

Conclusion: By reinforcing distrust and increasing social stress, greenwashing negatively affects both the mental and physical health of individuals and weakens the dynamism and efficiency of organizations, ultimately creating an obstacle to achieving sustainable development.

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## 1. Introduction and problem statement

The environment plays a vital role in human life. However, it currently faces crises such as pollution, resource depletion, and uncontrolled population growth. Industrial development and the dominance of technology have further exacerbated this situation (salehi and hemaiatkhah jahromi, 2013: 506). In today's world, sustainability is referred to the preservation of resources for future generations and the conscious manner of their utilization, resting on three main pillars: economic, social, and environmental. Sustainability can safeguard the natural environment, human health, and the ecosystem, while simultaneously guiding innovations without compromising lifestyles (okanazu & akele, 2021: 289). From a socio-economic perspective, the adoption of a green culture can contribute to achieving sustainability. Consequently, achieving green cultural practices for sustainable business management has become a significant issue (okanazu & akele, 2021: 290).

Concurrently with the increase in environmental pollution, most companies worldwide have paid considerable attention to environmental issues. As a result of growing environmental challenges, increased enthusiasm for eco-friendly products, and subsequent public awareness, many stakeholders have become more aware of environmental considerations. Stakeholders such as investors, consumers, and governments have intensified pressure on companies to disclose information regarding their environmental performance (de freitas netto et al., 2020: 4). Research has indicated that 66% of global consumers are willing to pay more for environmentally sustainable products (guo et al., 2014: 3271). When customers perceive companies as socially responsible, they may exhibit a greater willingness to purchase products from environmentally committed companies at higher prices (grimmer & bingham, 2013: 1946).

With the growth of environmental challenges and competition in today's complex and ambiguous landscape, companies are seeking various solutions to maintain and strengthen their connections with customers. Furthermore, following the intensification of environmental pollution in the 21st century, environmental protection has become a major concern for consumers (jandaghi & naderi

beni, 2023: 19). In response to the raised issues and concerns, corporate social responsibility (csr) has gained significant importance.

Corporate social responsibility encourages companies to strive for environmental improvement, reduced consumption of energy and materials, and better waste management (haji hassani et al., 2021: 253). Within this context, the phenomenon of greenwashing emerges, whereby some companies, in an effort to enhance their marketing, attempt to portray themselves as environmentally friendly. Consequently, greenwashing can be described as a contradiction between actual performance and what was advertised.

Lyon and maxwell (2011) provided a clearer explanation, stating that greenwashing refers to the selective disclosure of positive information about a company's environmental and social practices, while withholding negative information, in order to create an overly positive corporate image (lyon & maxwell, 2011: 5). Greenwashing companies, without making any improvements to their relevant practices, operate solely to gain a reputation, enhance their public image, and attract the attention and support of green consumers (environmentally conscious consumers). They also utilize unsubstantiated and undocumented environmental claims (dahl & bakalarska, 2018: 1). Instead of striving to improve their products and reduce negative environmental impacts, companies divert their efforts into marketing their products as "green", which leads to the emergence of greenwashing. Consequently, this results in increased distrust and skepticism toward innovative management and exacerbates various environmental damages (jandaghi & naderi beni, 2023: 18). Environmental categories are not one-dimensional matters; their management including encompassing consumption, transfer, and storage must take into account social, political, cultural, environmental, and security dimensions (daneshmehr et al., 2018: 2).

Given the increasing environmental damages on one hand, and the rise of greenwashing on the other, researchers seek to extract the social factors affecting greenwashing and then examine their causal relationships in terms of influencing greenwashing and being influenced by it. Sociological research in this field is of high importance, as it can analyze and elucidate the structural, institutional, and cultural dimensions of this phenomenon. Numerous social factors

contribute to the proliferation of greenwashing, including weak regulatory institutions, the dominance of capital-oriented discourse, insufficient public awareness of environmental issues, and the promotion of consumerist values. The persistence of this phenomenon can lead to extensive negative consequences for society, including: diminished public trust in economic and governmental institutions, diversion of resources from genuine environmental initiatives, and the exacerbation of environmental inequalities. Hence, conducting sociological research with a critical approach can help identify the mechanisms that reproduce greenwashing and lay the groundwork for developing effective strategies to enhance transparency, institutional accountability, and public awareness. Furthermore, based on researchers knowledge, there is scares of comprehensive sociological study on the phenomenon of greenwashing in iran to date. Consequently, due to data uncertainty and scarcity, the gray dematel method has been employed to achieve the research objectives. The primary advantage of this method is its ability to yield satisfactory results using a relatively limited amount of data.

## 2. Literature review

The term "greenwashing" was first introduced in 1986 by jay westerveld. When hotels began requesting guests to reuse their towels, westerveld posited that this was a corporate water conservation strategy with no substantial connection to meaningful environmental activities (pearson, 2010: 37). Tahir et al. (2020) examined the impact of greenwashing practices on employee green behavior, considering the mediating role of employee value orientation and green psychological climate.

With the promotion of green culture, increased public attention to green products, and the expansion of corporate green advertising coupled with growing environmental damages various forms of greenwashing have significantly increased. Consequently, individuals face difficulties in distinguishing genuine green claims. Yang et al. (2020) stated that when greenwashing occurs, despite providing significant benefits to certain stakeholders, it ultimately harms not only consumer interests but society as a whole.

De freitas netto et al. (2020) investigated the phenomenon of greenwashing through a systematic review of literature over the past decade, aiming to identify its core concepts and typology. Based on the observed literature, they ultimately proposed a classification comprising: firm-level executional claims, firm-level claims, product-level executional claims, and product-level claims.

Torelli et al. (2020) examined the impact of greenwashing on the perceptions of corporate stakeholders, including shareholders and consumers. They stated that the term greenwashing refers to various types of misleading communications aimed at fostering overly positive beliefs among stakeholders about a company's environmental practices. Within the framework of legitimacy theory and signaling theory, hypothesis testing revealed that different levels of greenwashing have distinct effects on shareholders' and consumers' perceptions of corporate environmental responsibility, as well as on shareholder reactions to environmental scandals.

Jandaghi & naderi beni (2022) investigated various aspects of greenwashing within the context of active companies in the dairy industry, identifying and explaining this phenomenon through a qualitative approach and grounded theory strategy based on emergent theories. The outcome of their research led to the development of a final model centered around the core category titled "corporate greenwashing practices model".

Chen et al (2019) found that greenwashing has a significant negative impact on green trust, which in turn was positively associated with revisit intention and participation in green practices, and negatively associated with negative word-of-mouth. Furthermore, previous experience with a green hotel moderates the relationship between green trust and the three behavioral intentions, such that these relationships are weaker for consumers with prior experience than for those without.

Salo (2020) found that greenwashing has a negative relationship with consumer trust. The collected data also indicate that while many consider sustainability and environmental compatibility as purchasing priorities, they are unaware of what greenwashing entails. Furthermore, there was an indication that many consumers who are aware of greenwashing frequently encounter it, suggesting this practice is widespread. However, since many consumers

lack sufficient awareness about greenwashing, they are unable to detect it, leading to doubts about corporate honesty.

## 3. Review of previous research

A review of the existing literature on "greenwashing" reveals that the majority of conducted studies have primarily focused on the psychological and behavioral dimensions of this phenomenon. Research such as that by chen et al. (2019), salo (2020), and torelli et al. (2020) has mainly examined consumer trust, shareholder perceptions, and organizational consequences of greenwashing. Although these approaches are valuable, they have largely remained confined to conventional theoretical frameworks such as "signaling theory" or "organizational legitimacy", with less attention paid to sociological, critical, or discourse-oriented analyses.

Limited qualitative studies, such as the research by jandaghi & naderi beni (2022), while attempting to delve into deeper layers of the phenomenon, have still focused their attention on corporate behavior and modeling their practices, neglecting semantic and cultural analyses of greenwashing at the societal level. Furthermore, studies like de freitas netto et al. (2020), which have systematically classified dimensions of greenwashing, have often remained at a conceptual level and have not engaged with the social, local, and structural contexts of this phenomenon in different societies, particularly in developing countries.

On the other hand, the majority of previous studies have paid little attention to public perception, people's beliefs, and the formation of social interpretations of environmental claims. This is while a critical analysis and understanding of the hidden layers of greenwashing discourse necessitates examining media narratives and how local communities engage with such discourses particularly in countries with specific cultural contexts like iran. The main gaps in existing research can be summarized along the following axes:

- Absence of sociological, critical, and discourse-oriented approaches in analyzing the greenwashing phenomenon.

- Insufficient attention to local and cultural contexts in developing countries, particularly iran, and neglect of public perceptions and reactions to environmental claims.
- Overemphasis on behavioral outcomes (such as trust or purchase intention) and neglect of structural, institutional, and cultural analyses.
- Ignoring the role of media and social networks in shaping public perceptions of greenwashing.
- Lack of interdisciplinary conceptual frameworks that can integrate perspectives from psychology, sociology, environmental science, and communication studies.

## 4. Theoretical foundations

On earth day 1990, millions of people worldwide gathered to protest the declining health of our planet, compelling corporations to recognize that even the general public had developed a concern for environmental well-being. Predictably, the level of "greenwashing" has increased significantly since that eventful earth day (gallicano, 2011: 17). The term "greenwashing" was first coined by jay westerveld in 1986. Subsequently, a limited number of authors addressed greenwashing, and the term gained acceptance in 1996 with the publication of a book on environmental marketing. From this point onward, the literature related to greenwashing have significantly expanded (yang et al., 2020: 1488). The concept of greenwashing emerged from a critical perspective on corporate environmental responsibility and focuses on why people should be skeptical of corporate green claims (gallicano, 2011: 11). The oxford english dictionary defines greenwashing as "disinformation disseminated by an organization so as to present an environmentally responsible public image" (wang & sarkis, 2017: 595). Public usage of this term, and even academic discourse surrounding it, appears broad and ambiguous. International researchers and experts have identified varying definitions of greenwashing across different contexts.

Delmas and burbano (2010) have attributed the term greenwashing to poor environmental performance in the context of ecological practices. This definition considers that a company's environmental performance can be summarized and classified as either negative or positive (delmas & burbano, 2010: 580). Walker and wan (2012) have conceptualized greenwashing as a gap between "symbolic" and "substantive" corporate social actions. Researchers have long

positioned various forms of corporate social actions alongside each other, noting that in response to institutional pressure, companies can either fundamentally adhere to imposed norms or pretend to do so. In academic circles, the definition provided by greenpeace has been employed to define greenwashing, describing it as "the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service" (walker & wan, 2012: 230).

Mitchell and ramey (2011) have emphasized that the act of greenwashing must be intentional. Consequently, greenwashing constitutes a deliberate deception (mitchell & ramey, 2011: 41). Greenwashing is "the act of misleading consumers regarding a company's environmental practices or the environmental benefits of a product or service." The term greenwashing developed when people identified inconsistencies between companies' actual behavior and their claims of being green (gallicano, 2011: 12).

Corporate greenwashing behavior can take various forms. The multidimensional nature of greenwashing stems from its definition, which focuses on the discrepancy between corporate communications and a company's actual performance regarding environmental issues. This refers to the multiple dimensions of actively supporting environmental causes and the various ways a company may disclose its environmental concerns. Bowen's (2014) review of numerous greenwashing definitions concluded that the core elements of the greenwashing domain can be summarized as a phenomenon that (1) involves disclosure decisions and (2) constitutes an intentional strategy, (3) is described as a corporate phenomenon that (4) benefits companies by exployting social and environmental issues while simultaneously harming the environment and society (bernini et al., 2023: 5). In other words, they used greenwashing to shape positive, environmentally friendly images. Furthermore, companies operating in controversial or highly polluting industries such as tobacco, metal smelting, petrochemicals, and food services consistently promote their green images while simultaneously depleting resources carelessly and polluting the environment. The general public, having grown wary of the contradictions between image and reality, has begun to doubt claims of "going green" (du, 2015: 551).

According to rawlins (2009), companies have three commitments to transparency. First, companies must provide accurate, fundamental, and useful information. Second, companies must listen to stakeholders to identify the information they require. Third, companies must provide objective and balanced information regarding their activities and policies (gallicano, 2011: 13).

## 5. Research Methodology

This research is classified as a theoretical-applied study in terms of its purpose and uses a mixed (qualitative-quantitative) approach in terms of methodology. The main goal of the research is to identify and analyze the critical influencing and affected factors related to the greenwashing phenomenon. Accordingly, this study aims to answer the following research questions:

1. What are the main and influential social variables affecting the phenomenon of greenwashing?
2. What relationships exist among the variables extracted in the first question?

To address the research questions, a combination of quantitative and qualitative approaches has been adopted. Specifically, the research is divided into two main phases: in the first phase, to extract the main and significant social variables related to the greenwashing phenomenon, relevant literature was collected from valid databases through reputable articles. Subsequently, 20 social variables associated with greenwashing were extracted. Following this, by consulting experts in the field, 8 primary and important social variables were identified (table 1). In the second phase, in consultation with experts, it was decided to employ the gray dematel technique to address the second research question. The statistical population of this study consists of faculty members from the faculty of economics, management, and social sciences at shiraz university. A purposive sampling method was used to select participants from this population, and according to the research topic and the gray dematel technique, a sample size of 12 individuals was determined. A researcher-developed questionnaire based on the DEMATEL method was distributed among the statistical population, and the collected data were analyzed using the gray dematel technique.

The Grey DEMATEL method helps clarify relationships by establishing a mutual (cause-and-effect) structure instead of a unidirectional one (shojaei et al., 2023: 34).

### 5-1. Grey DEMATEL

The Grey DEMATEL method is used for precise and improved planning in various subjects. This method can be considered a type of decision-making method for performance and a way to help visualize the structure of complex causal relationships using diagrams and matrices. These matrices or diagrams visually represent the relationships between system components and quantitatively depict the strength of these relationships (tahmasbi & hami, 2019).

**Step 1: formation of the experts' judgment matrix**

In this step, experts are asked to express the degree of influence of each criterion on other criteria based on a linguistic scale (e.g., no influence, low, medium, high, very high). These evaluations are converted into gray numbers, represented as intervals between a lower and upper limit, to account for uncertainty in judgment.

(1): z_ij^(k) = [l_ij^(k), u_ij^(k)]

**Step 2: aggregation of expert opinions**

Multiple experts may provide different opinions. To achieve a collective perspective, the average of the lower limits and upper limits of the experts' opinions is calculated for each criterion pair, resulting in a unified gray matrix.

(2): z_ij = [ (1/k) * σ_{k=1}^k l_ij^(k), (1/k) * σ_{k=1}^k u_ij^(k) ]

**Step 3: normalization of the gray matrix**

To ensure data scalability and comparability, the gray matrix obtained from the previous step is normalized. This normalization is based on the maximum upper value (u_ij) in the matrix.

(3): x_ij = [l_ij / m, u_ij / m] ,  m = max(u_ij)

**Step 4: conversion of gray numbers to crisp values (defuzzification)**

In this step, interval values are converted into crisp values. This is done by averaging the lower and upper limits of each gray number to obtain a direct influence matrix with crisp values.

(4): z_ij = (l_ij + u_ij) / 2

**Step 5: calculation of the total influence matrix**

The total influence matrix combines both the direct and indirect influences of each criterion on other criteria. Using the mathematical relation t=z(i−z)−1t = z(i - z)^{-1}t=z(i−z)−1 , indirect effects are also accounted for. This matrix provides a comprehensive view of the causal relationships among the criteria.

(5): t = z + z^2 + z^3 + ... = z * (i - z)^(-1)

**Step 6: calculation of cause-and-effect indices**

For each criterion, the sum of the rows in matrix t*t* is calculated as influence degree (d), and the sum of the columns is calculated as influenced degree (r). These two indices form the basis for analyzing the relationships among the criteria.

(6): d_i = σ_{j=1}^{n} t_ij

(7): r_i = σ_{j=1}^{n} t_ji

**Step 7: analysis of relationships and determination of criterion types**

Using the two indices d and r, cause-and-effect relationships can be analyzed:

- R + d: represents the degree of interaction between the criterion and other criteria (overall role).
- R - d**:** if positive, the criterion plays a cause role; if negative, it plays an effect role.

D_i + r_i ← Degree of interaction

D_i - r_i ← Cause or effect role of the interaction

Linguistic criteria are converted into numerical intervals according to table (3) and will be used in the quantitative calculations of Grey DEMATEL.

**Table 1. Linguistic criteria for pairwise comparisons**

| *Linguistic term* | *Gray value* |
|---|---|
| No influence | (0, 0) |
| Very low influence | (0, 0.25) |
| Low influence | (0.25, 0.5) |
| High influence | (0.5, 0.75) |
| Very high influence | (0.75, 1) |

## 6. Findings

This section presents the analysis of the collected data and information. In the initial step, social factors related to greenwashing were examined. As shown in table 2, drawing on the literature and theoretical background of the research and through a review of the latest scientific articles related to the research topic, relevant social factors of greenwashing were identified and presented. Initially, 20 variables were extracted, which were then reduced to 8 variables through consultation with experts.

**Table 2: social factors related to greenwashing**

| Row | Variable | Code (symbol) |
|---|---|---|
| 1 | Social distrust | C1 |
| 2 | Social stress | C2 |
| 3 | Social isolation | C3 |
| 4 | Feeling of social insecurity | C4 |
| 5 | Decreased social participation | C5 |
| 6 | Physical and psychological risks | C6 |
| 7 | Environmental risks | C7 |
| 8 | Decreased organizational creativity | C8 |

To examine the social effects of greenwashing, the extracted social variables were presented to experts in the form of a gray dematel questionnaire. The experts specified the influence of each factor using linguistic variables on a scale ranging from "no influence" to "very high influence." following the collection of the questionnaires and data extraction, a pairwise comparison matrix with linguistic variables was formed, which is presented in table 3.

**Table 3: gray values resulting from expert consensus**

| | C1 | | C2 | | C3 | | C4 | | C5 | | C6 | | C7 | | C8 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 0 | 0 | 0/5 | 0/75 | 0/25 | 0/5 | 0/25 | 0/5 | 0 | 0/25 | 0/75 | 1 | 0/75 | 1 | 0/75 | 1 |
| C2 | 0/5 | 0/75 | 0 | 0 | 0/75 | 1 | 0/5 | 0/75 | 0 | 0/25 | 0/75 | 1 | 0/75 | 1 | 0/75 | 1 |
| C3 | 0/75 | 1 | 0/5 | 0/75 | 0 | 0 | 0/25 | 0/5 | 0 | 0/25 | 0/5 | 0/75 | 0/75 | 1 | 0/75 | 1 |
| C4 | 0/5 | 0/75 | 0/25 | 0/5 | 0/25 | 0/5 | 0 | 0 | 0 | 0/25 | 0/5 | 0/75 | 0/5 | 0/75 | 0/5 | 0/75 |
| C5 | 0/25 | 0/5 | 0/5 | 0/75 | 0/75 | 1 | 0/5 | 0/75 | 0 | 0 | 0/5 | 0/75 | 0/25 | 0/5 | 0/25 | 0/5 |
| C6 | 0/75 | 1 | 0/5 | 0/75 | 0/5 | 0/75 | 0 | 0/25 | 0 | 0/25 | 0 | 0 | 0/5 | 0/75 | 0/5 | 0/75 |
| C7 | 0/5 | 0/75 | 0/25 | 0/5 | 0 | 0/25 | 0 | 0/25 | 0 | 0/25 | 0/5 | 0/75 | 0 | 0 | 0/75 | 1 |
| C8 | 0/25 | 0/5 | 0 | 0/25 | 0/25 | 0/5 | 0 | 0/25 | 0 | 0/25 | 0/25 | 0/5 | 0/75 | 1 | 0 | 0 |

According to the scientific procedures of the gray dematel method, at this stage of the research, the gray values obtained from the experts' responses have been converted into crisp values using the gray dematel formulas. These values are presented in table 4 (formulas 1, 2, and 3).

**Table 4: conversion of gray numbers to crisp values**

| | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 |
|---|---|---|---|---|---|---|---|---|
| C1 | 0 | 0/796875 | 0/6875 | 0/515625 | 0/078125 | 1/4375 | 1/4375 | 1/4375 |
| C2 | 1/0625 | 0 | 1/4375 | 0/796875 | 0/078125 | 1/4375 | 1/4375 | 1/4375 |
| C3 | 1/4375 | 0/796875 | 0 | 0/515625 | 0/078125 | 1/0625 | 1/4375 | 1/4375 |
| C4 | 1/0625 | 0/515625 | 0/6875 | 0 | 0/078125 | 1/0625 | 1/0625 | 1/0625 |
| C5 | 0/6875 | 0/796875 | 1/4375 | 0/796875 | 0 | 1/0625 | 0/6875 | 0/6875 |
| C6 | 1/4375 | 0/796875 | 1/0625 | 0/234375 | 0/078125 | 0 | 1/0625 | 1/0625 |
| C7 | 1/0625 | 0/515625 | 0/3125 | 0/234375 | 0/078125 | 1/0625 | 0 | 1/4375 |
| C8 | 0/6875 | 0/234375 | 0/6875 | 0/234375 | 0/078125 | 0/6875 | 1/4375 | 0 |

In table 5, after converting the gray numbers to crisp values, the total relation matrix between greenwashing and social factors has been calculated (formula 4).

**Table 5: total relation matrix of factors affecting greenwashing**

| | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 |
|---|---|---|---|---|---|---|---|---|
| C1 | 0/392673 | 0/289531 | 0/336766 | 0/18349 | 0/037913 | 0/528437 | 0/559309 | 0/559309 |
| C2 | 0/56433 | 0/246362 | 0/450896 | 0/234439 | 0/042865 | 0/594093 | 0/631555 | 0/631555 |
| C3 | 0/549696 | 0/300952 | 0/278807 | 0/191703 | 0/039425 | 0/516379 | 0/582751 | 0/582751 |
| C4 | 0/441199 | 0/234437 | 0/298065 | 0/112857 | 0/033752 | 0/440138 | 0/466441 | 0/466441 |
| C5 | 0/431025 | 0/278154 | 0/39338 | 0/208062 | 0/027053 | 0/463397 | 0/456238 | 0/456238 |
| C6 | 0/509911 | 0/280225 | 0/356772 | 0/15209 | 0/03628 | 0/372387 | 0/505216 | 0/505216 |
| C7 | 0/398053 | 0/210798 | 0/23617 | 0/123959 | 0/030642 | 0/39824 | 0/31889 | 0/454984 |
| C8 | 0/351872 | 0/176459 | 0/255571 | 0/117545 | 0/029464 | 0/350109 | 0/437669 | 0/301574 |

After obtaining the total social factors matrix of greenwashing, the sum of rows (r) and columns (d) of the stabilized factors matrix was formed, and in table 6, the influencing and influenced factors of greenwashing were calculated (formula 5).

**Table 6: calculation of r, d, r-d and r+d**

| Symbol | R | D | R+d | R-d | Cause/effect |
|---|---|---|---|---|---|
| C1 | 2/88 | 3/63 | 6/52 | -0/75 | Effect |
| C2 | 3/39 | 2/01 | 5/41 | 1/37 | Cause |
| C3 | 3/04 | 2/60 | 5/64 | 0/43 | Cause |
| C4 | 2/49 | 1/32 | 3/81 | 1/16 | Cause |
| C5 | 3/70 | 2/1 | 5/80 | 1/60 | Cause |
| C6 | 2/71 | 3/66 | 6/38 | -0/94 | Effect |
| C7 | 2/17 | 3/95 | 6/12 | -1/78 | Effect |
| C8 | 2/02 | 3/95 | 5/97 | -1/93 | Effect |

Based on the theoretical foundations of the Grey DEMATEL method, the greater the value of r+d, the more important the variable. Therefore, the social variables of greenwashing in order of importance are: c1 with a value of 6.52, c6 with 6.38, c7 with 6.12, c8 with 5.97, c5 with 5.80, c3

with 5.64, c2 with 5.41, and c4 with 3.81. Furthermore, if the value of r–d is positive, the variable is an influencing variable (cause). Thus, the variables c5 (1.60), c2 (1.37), c4 (1.16), and c3 (0.43) have the highest influence, respectively (table 8). Finally, if the value of r–d is negative, the variable is an influenced variable (effect). Therefore, it can be stated that c8 (–1.93), c7 (–1.78), c6 (–0.94), and c1 (–0.75) are the influenced variables in this research (formula 6 and formula 7) (table 6).

**Diagram 1: complete prominence and net effect diagram of social factors related to greenwashing**

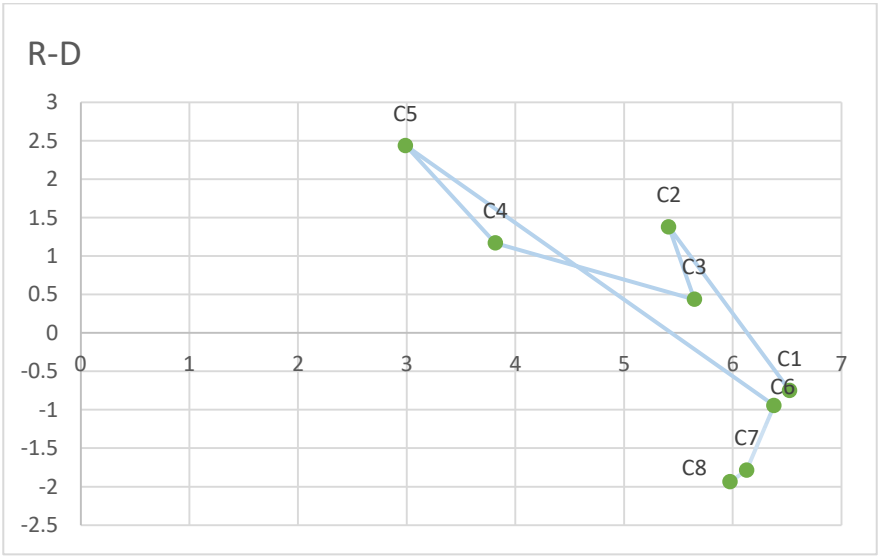


Diagram 1 illustrates the results of examining the causal and critical factors in this study. The calculations of (r, d) have led to the formation of four quadrants within a complete square. The factors located in the upper-right quadrant—namely variables c2, c3, c4, and c5—are the main and influential factors. The variables in the lower-right quadrant—namely c8, c7, c6, and c1—are the influenced factors.

## 6. Discussion and conclusion

The proliferation of greenwashing has grown significantly in recent years, with an increasing number of companies manipulating their environmental performance to mislead citizens.

Greenwashing (gw) is a complex, dynamic, interdisciplinary, multidimensional, and multifaceted phenomenon. It occurs when a discrepancy is observed between a company's environmental claims and its actual environmental performance. Most previous research has focused only on the environmental and economic effects of greenwashing, while its social impacts have been overlooked. The aim of the present study is to enhance the existing knowledge in the field of greenwashing. According to the research objectives, first, through a systematic study and review of the literature, and in consultation with experts, eight key social variables were extracted, including: social distrust, social stress, social isolation, feeling of social insecurity, decreased social participation, physical and psychological risks, environmental risks, and decreased organizational creativity. These were then finalized through content validity assessment.

The results of data analysis (table 6) indicate that, based on the theoretical foundations of the gray dematel method, the greater the value of r+d, the more important the variable. Therefore, among the social variables of greenwashing, social distrust with a value of 6.52 has the highest importance. The social distrust variable plays a key role in analyzing the greenwashing phenomenon, as it reflects the gap between corporate environmental claims and public belief. This variable influences consumers' perception of organizational honesty and can lead to a decline in public trust in sustainability policies. Consequently, understanding and measuring social distrust is essential for evaluating the effectiveness of corporate social responsibility strategies.

The second most important variable in examining the greenwashing phenomenon is physical and psychological risks with a value of 6.38. The physical and psychological health variable plays a prominent role in studying greenwashing, as consumers' misperception of corporate environmental claims can lead to chronic concerns, anxiety, and environmental stress, which in turn affect their physical and psychological functioning. When consumers experience a sense of being deceived, their psychological stress levels increase, and the likelihood of physical health problems also rises.

Environmental risks with a value of 6.12 represent the third most significant variable in the study of greenwashing. The "environmental risks" variable is considered one of the key factors in analyzing the greenwashing phenomenon, as greenwashing, by creating a false image of corporate environmental performance, can lead to the continuation or intensification of environmentally destructive activities. When consumers and regulatory bodies are influenced by misleading advertisements, the likelihood of neglecting actual hazards—such as water resource pollution, habitat destruction, increased greenhouse gas emissions, and species extinction—increases. Therefore, analyzing greenwashing without considering environmental risks provides an incomplete assessment of the consequences of this phenomenon and may undermine genuine efforts toward sustainable development and environmental protection.

The next significant variable is decreased organizational creativity with a value of 5.97. The "decreased organizational creativity" variable plays an important role in examining the greenwashing phenomenon, as greenwashing is typically based on superficial and promotional strategies that focus on deceiving the public rather than fostering genuine innovation in sustainability. When organizations allocate resources to constructing a false environmental image, their motivation and capacity to invest in green innovations and real sustainable solutions diminish. This approach not only hinders the advancement of environmental technologies but can also disrupt healthy competition for sustainable development. Therefore, analyzing the impact of greenwashing on reduced organizational creativity is essential for a deeper understanding of the consequences of this phenomenon.

Social isolation with a value of 5.80 ranks fifth in terms of importance. The "social isolation" variable holds significant importance in analyzing the greenwashing phenomenon, as when consumers or social groups recognize corporate dishonesty in environmental claims, their feelings of distrust and alienation toward economic and social institutions are reinforced. This distrust can lead to withdrawal from social participation, reduced engagement in collective environmental activities, and weakened motivation for activism in the field of sustainability. In other words, greenwashing not only undermines public trust but also intensifies feelings of

exclusion and social isolation among environmentally conscious and concerned citizens. Consequently, examining the link between greenwashing and social isolation is crucial for a deeper understanding of the social ramifications of this phenomenon.

The sixth most important variable in examining greenwashing is the social stress variable with a value of 5.64. The "social stress" variable plays a fundamental role in analyzing the impacts of the greenwashing phenomenon, as deceiving consumers through false environmental claims can lead to feelings of frustration, anger, and distrust toward economic and managerial institutions. When individuals realize that their green efforts and choices have been exploited by companies, their sense of inadequacy in influencing their surrounding environment increases, and the psychological pressure arising from the contradiction between personal values and social realities intensifies. This situation not only raises individual stress levels but also, at a macro level, leads to increased social tension and undermines public participation in environmental issues. Therefore, incorporating social stress into analytical frameworks of the greenwashing phenomenon is essential for explaining its psychological and social consequences.

Ranking seventh in importance is the variable of feeling of social insecurity with a value of 5.41. The "feeling of social insecurity" variable is a significant dimension in examining the greenwashing phenomenon, as companies' false claims about their environmental performance can undermine public trust in economic, regulatory, and even scientific institutions. When individuals realize that the provided environmental information is incorrect or exaggerated, they feel they are living in an environment where transparency, honesty, and accountability are disregarded. This not only fosters a sense of instability and insecurity in society but may also lead to defensive behaviors, social withdrawal, and a decline in social capital.

Therefore, examining the feeling of social insecurity within the framework of the greenwashing phenomenon can lead to a deeper understanding of the long-term consequences of such deceptive behaviors on social relations and collective cohesion. Decreased social participation with a value of 3.81 is the final variable. The "decreased social participation" variable plays an important role in analyzing the consequences of the greenwashing phenomenon, as when individuals perceive

that organizations are using false or deceptive environmental claims to gain public trust, their motivation and willingness to actively participate in social, environmental, and civic activities diminishes.

Greenwashing erodes public trust in economic institutions and even environmental initiatives, and this distrust can lead to a form of social passivity. Consequently, processes such as collective action, support for sustainable policies, and social cooperation are weakened. Examining this variable can offer new perspectives on the psychological and social effects of greenwashing and provide strategies for rebuilding public trust and enhancing social capital in the face of this phenomenon. The results of this section of the research align with the findings of studies by de freitas neto et al. (2020), ruiz-blanco et al. (2022), correa et al. (2017), bernini & rose (2024), grauel & tutberg (2014), braga et al. (2019), mo & li (2023), and polycarpo et al. (2023).

According to the Grey DEMATEL method, if the value of r–d is positive, the variable is an influencing factor. Therefore, the variables decreased social participation (1.60), social stress (1.37), feeling of insecurity (1.16), and social isolation (0.43) have the highest influence on the greenwashing phenomenon, respectively (table 6). On the other hand, if the value of r–d is negative, the variable is an influenced factor.

Consequently, it can be stated that the variables decreased organizational creativity (–1.93), environmental risks (–1.78), physical and psychological risks (–0.94), and social distrust (–0.75) are influenced by greenwashing, and greenwashing has a significant impact on them (table 6).

Izzyk et al. (2024) found that the deceptive practice of greenwashing reduces trust. Tetreva et al. (2025) concluded that trust and distrust can act as important mediators in the relationships between greenwashing and other factors. Liu and zhang's (2025) analysis revealed that public participation leads to stricter environmental regulations, thereby reducing greenwashing practices. Pinheiro et al. (2025) demonstrated that greenwashing practices negatively affect firms' innovation capacity. Sun and shi (2022) found that consumers' perception of greenwashing negatively influences their green purchase intention. Consumers' sense of environmental

responsibility strengthens the negative effect of greenwashing perception on green purchase intention.

On one hand, competition among organizations is intensifying daily, and organizations have struggled to effectively protect the environment. This has increased pressure from governments and the public to accelerate the search for ways to reduce environmental impacts, making the development of an operational plan for effectively managing this issue a complex and emerging challenge. Despite the existence of numerous environmental programs and extensive research on greenwashing which has reported key influencing factors such as governmental regulatory pressure, improving employee health and wellness, reducing the high costs of end-of-pipe pollution control, and countering competitors' green initiatives, there is a lack of studies which has yet examined the social factors. Therefore, this research is the first to investigate the social factors affecting greenwashing in organizations. Furthermore, a review of both domestic and international literature on factors influencing greenwashing reveals that these factors have primarily been studied quantitatively, often through surveys focused at the product level. Social factors such as social distrust, social stress, social isolation, social insecurity, social participation, physical and psychological risks, environmental risks, and organizational creativity have not been systematically examined. Studies that analyze the relationships among these variables and rank them offer a more comprehensive perspective. By adopting a localized approach and considering iran’s specific cultural and social context, this study adds significant value and can serve as a guide for future researchers in this field.

**Declaration of Competing Interest**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. This research was conducted independently without any external funding or institutional conflict.

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