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Designing Model of Organizational Citizenship Behavior towards the Environment

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ABSTRACT

Objective: The objective of the current research is to formulate a model that explains the environmental behavior of employees within the Madkush Steel Company, located in Hormozgan Province.

Methods: To achieve this objective, a multi-faceted approach was employed, involving an examination of the research's contextual background and the establishment of a theoretical framework. The research methodology consisted of a blend of qualitative methods. To refine the identified components, the fuzzy Delphi method was applied. The research sample encompassed university experts specializing in human resources, environmental specialists, environmental managers, production managers, as well as knowledgeable individuals affiliated with the Madkush Steel Company in Hormozgan Province. A purposive sampling technique was used, resulting in a sample size of 15 participants. Data analysis was executed using the Atlas.ti software for the qualitative portion of the research, while the localization of the identified components was performed using fuzzy Delphi in conjunction with SPSS24.

Results: The findings of the research reveal that the constructed model for understanding the environmental behavior of organizational citizens comprises five key components that contribute to organizational environmental behavior. These components encompass individual factors, organizational factors, normative factors, environmental factors, and managerial factors. Additionally, the model comprises three dimensions of organizational environmental behavior, including environmental initiatives, environmental assistance, and civic participation.

Conclusions: Consequently, it encompasses four outcomes of organizational environmental behavior, namely, sustainable performance, competitive advantage, social capital, and the development of green products.

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Introduction

One key concern for organizations in the public domain is the imperative to be accountable in environmental matters to society and the public. As a result, research on green organizations and the cultivation of a civic mindset and environmental organizational citizenship behavior has consistently garnered attention (Buryal, 2009). Indeed, the notion that employees are environmentally conscious and apply pressure on themselves and their organizations to adhere to environmentally ethical practices is on the rise (Lin et al., 2010). While numerous studies have been conducted in the field of environmental science, there has been a relatively limited examination of the behavioral aspects of employees within an organizational context, particularly regarding ethical environmental conduct (Lu et al., 2012). Emphasizing the role of citizens beyond mere consumption in a sustainable society, environmental citizenship, alongside civic citizenship, has become a prominent topic in the field of social science (Berkowitz et al., 2005). Consequently, organizations should create conditions that empower employees to transcend their formal roles and responsibilities, actively contributing to the achievement of the organization's objectives. In industries, particularly within the steel sector, concerns arise over greenhouse gas emissions, energy consumption, the depletion of mineral resources, and the utilization of heavy metals. Take, for example, the use of lead in the production of galvanized steel. Aside from its contribution to pollution, the extraction of lead also imposes damage to the environment. This issue stands out as one of the most critical aspects concerning individuals' environmental behaviors. Within this context, employees assume a pivotal role in environmental preservation. Their adoption of eco-friendly, responsible, and duty-driven behaviors can exert a significant positive impact on the environment (Zolghi, 2016). Hence, the objective of this study is to achieve a deeper understanding of the social and psychological mechanisms spontaneously engaged by individuals within organizations, which manifest in innovative ways. These behaviors are recognized as environmental citizenship behaviors (Buryal, 2009). By employing the model of organizational environmental behavior, we can gauge the level of sustainable environmental commitment among green companies. The significance of this research is rooted in the comprehensive examination of organizational environmental behavior as an integral aspect of organizational citizenship behavior. This form of behavior significantly depends on the responsible conduct of employees. Given that the steel industry stands as Iran's largest energy consumer and a significant contributor to environmental pollutants, the development of an organizational environmental citizenship behavior model within this industry carries exceptional importance. Remarkably, within the domain of identifying, presenting, and enhancing environmental organizational citizenship behavior, there has

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been a notable gap in comprehensive research efforts. Through this study, not only will we unveil the influential factors and outcomes of environmental organizational citizenship behavior within organizations, but we will also lay the foundation for advancing organizational excellence. Therefore, it is essential to emphasize that this study is dedicated to formulating the model of environmental citizenship behavior within the context of a meta-synthesis approach at Madkush Steel Company in Hormozgan Province. In this pursuit, it aims to address the following questions: What factors contribute to environmental organizational citizenship behavior in Madkush Steel Company in Hormozgan Province? What are the appropriate dimensions of environmental organizational citizenship behavior? What are the outcomes resulting from the implementation of environmental organizational citizenship behavior? In conclusion, the significance of this research lies in reinforcing individuals' environmental awareness, cultivating a commitment to environmental preservation, and ultimately fostering behavior that mirrors the actions of a citizen who comprehends and values their environment, actively striving to safeguard it. Furthermore, the presentation of this model not only advances scientific innovation but also addresses the research gap in this field. It has the potential to contribute to the enhancement of organizational environmental performance and aid organizations in effectively addressing ecological concerns. In the realm of research on organizational environmental citizenship behavior, numerous noteworthy studies have made substantial contributions by exploring various facets of this subject and providing valuable insights. These studies include investigations into the relationship between justice perception and organizational citizenship behavior (Mohammadi et al., 2021), an extensive analysis of factors influencing environmental behaviors in Iran through a comprehensive meta-analysis (Mirzaei et al., 2021), the identification of organizational citizenship behavior rooted in safety, health, and environmental concerns within the Petrochemical Complex of Chabahar (Radmehr et al., 2020), a thorough examination of the factors shaping environmental behaviors among the general population (Niazi Koomleh et al., 2020), an exploration of the determinants influencing responsible environmental behaviors (Hosseinabadi et al., 2019), an investigation into the factors driving environmental conduct within environmental organizations (Karami Darabkhani et al., 2017), and an elaboration on the concepts and dimensions of organizational citizenship behavior from an Iranian Islamic perspective (Saheh and Mohammadi Diani, 2014). Furthermore, within the scope of international research, several studies have delved into the intricate relationship between employees' social responsibility and their organizational environmental citizenship behavior. This relationship has been explored, taking into account the mediating roles of organizational identity and environmental orientation (Chima et al., 2020). Other studies have

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focused on unraveling the impact of green transformational leadership on organizational environmental citizenship behavior (Kim et al., 2020). The nexus between social responsibility in human resource management and organizational environmental citizenship behavior has also received scholarly attention (Zhao et al., 2019). There have been investigations into the correlations between environmental organizational citizenship behavior and environmental performance (Alt and Spitzeck, 2016). Additionally, research on environmental organizational citizenship behavior itself has been undertaken (Lam et al., 2013).

Materials and Methods

This research is practical in terms of its objectives and is descriptive/non-experimental in terms of the method of data collection. The research, in terms of its objectives and the method of data collection, is descriptive/non-experimental. In this research, library study tools, web mining, field survey methods, and a qualitative meta-synthesis approach within the framework of qualitative approaches have been utilized. Subsequently, to contextualize the identified components, a fuzzy Delphi method was employed. The research population consists of academic experts in the field of human resources, environmental specialists, environmental managers, production managers, and knowledgeable experts from the Foulad Madkoush Steel Company in Hormozgan province. The sample size is 15 individuals, determined through purposeful sampling. Data analysis was carried out using the meta-synthesis approach with the assistance of Atlas.ti software. After extracting the initial research framework using this method, the identified components were contextualized using the fuzzy Delphi method with the help of SPSS24 software. Meta-synthesis requires a careful and deep reconsideration of the document under study, combining the findings of previous research studies. During this review, the dimensions and components of the current issue are better represented. Therefore, meta-synthesis aids in representing the results more comprehensively than any of the previous studies alone. The implementation stages of the meta-synthesis method in this research are based on the seven-stage pattern proposed by Sandelowski and Barros (2007) (Figure 1).

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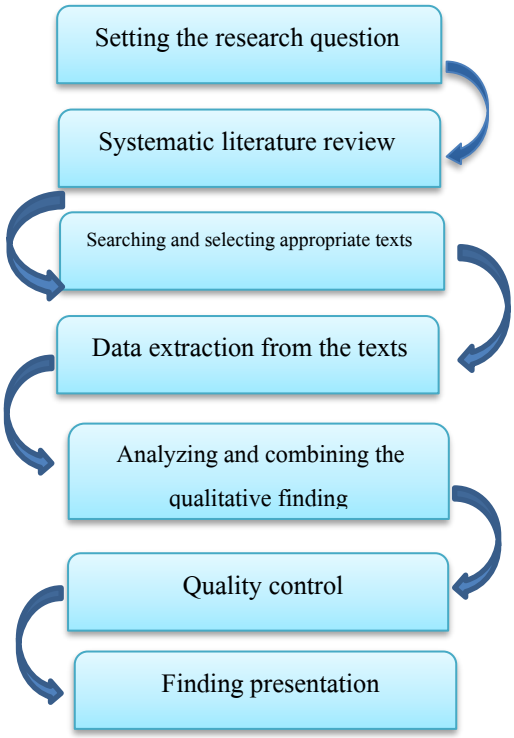


Fig. 1. Meta-synthesis steps in the research

The Delphi method is a systematic approach or research technique for extracting opinions from a group of experts regarding a specific topic or question. The goal of the Delphi method is to reach the most reliable consensus among a group of experts on a particular subject, which is achieved through the use of questionnaires and expert opinions, often iteratively based on the feedback received. The stages of fuzzy Delphi implementation in this research are based on the procedure presented in Figure 2.

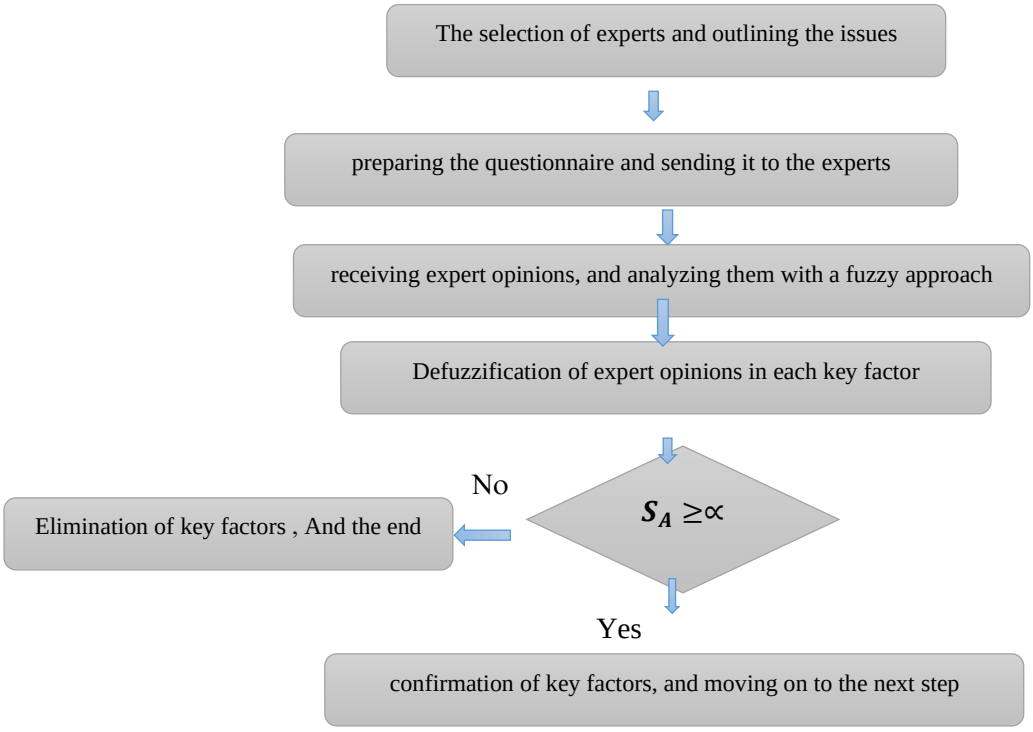


Fig. 2. Stages of fuzzy Delphi implementation in this research

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Results

In this section of the research, initially, the identification and categorization of creating factors, dimensions, and consequences arising from the establishment of organizational citizen environmental behavior have been addressed using the meta-synthesis approach. Subsequently, for their localization, the fuzzy Delphi method has been employed.

Identification and categorization of creating factors, dimensions, and consequences with a meta-synthesis approach.

Step one - Formulating the research question: This research aims to identify the creating factors, dimensions, and consequences of organizational citizen environmental behavior and consequently extract the factors and dimensions of organizational citizen environmental behavior (what). To achieve this, reputable scientific databases such as SAGE, Magiran, Noormags, Comprehensive Portal of Humanities, Google Scholar, Emerald, Springer, Taylor, and Francis have been utilized, encompassing all research in the field of organizational citizen environmental behavior (who). The timeframe for these studies spans from 2009 to 2022 (when), during which their content has been thoroughly studied for coding and identification of creating factors, consequences, and dimensions of organizational citizen environmental behavior (how).

Step Two - Systematic Literature Review: In this stage of the research, a search was conducted using key terms such as "organizational citizen environmental behavior," "sustainable organizational citizenship behavior," "green employee behavior," "environmental behavior," "sustainable citizenship behavior," "sustainable performance," and "environmental performance" in reputable databases. Approximately 130 valid articles were identified and their full texts were downloaded.

Step Three - Evaluation of Collected Articles and Selection of Suitable Articles. In this step, the researcher rejects a number of articles in each review, as illustrated in Figure (3), demonstrating the process of selecting appropriate articles for examination in the meta-synthesis process

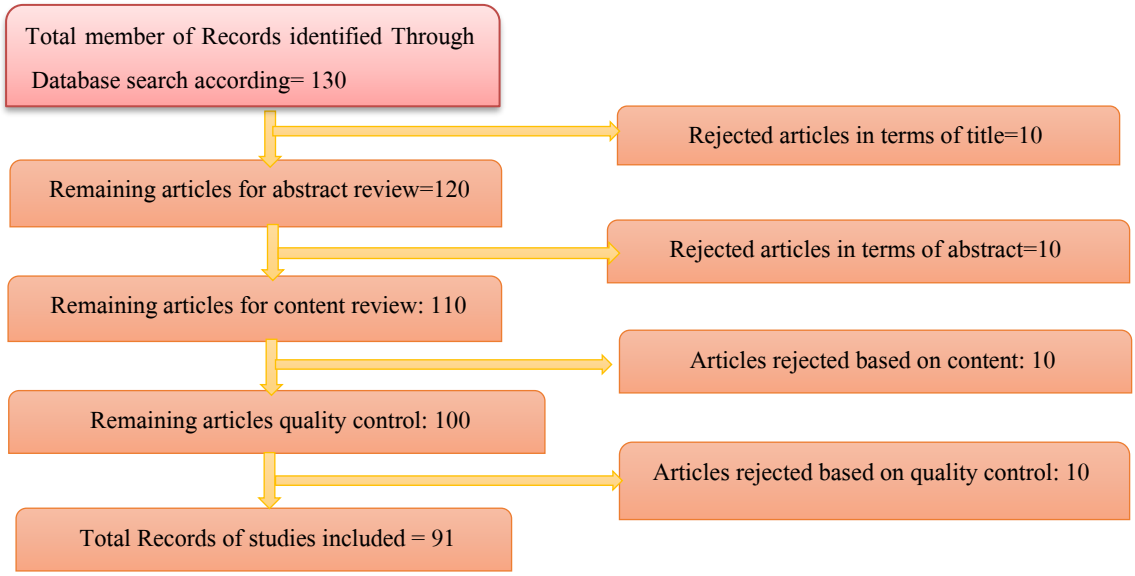


Fig. 3. Process of evaluating and selecting suitable articles

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Step Four: Results Extraction - In this research, 91 selected studies were coded using Atlas.ti software to extract concepts related to the creating factors, consequences, and dimensions of organizational citizen environmental behavior.

Step Five: Qualitative Analysis and Integration of Findings - In this research, all extracted factors from the studies were initially considered as codes. Then, by considering the concept of each of these codes, they were categorized into a similar concept. This way, the researcher form's themes or topics (concepts) and creates a classification, placing similar and relevant classifications under the topic that best describes them. The logic of theme analysis in this research is based on kinship diagrams. This process continues until all codes are assigned to the corresponding themes. After analyzing the themes based on their commonality, the concepts (themes) of the research are summarized in Tables 1 and 2.

Table 1. Concepts related to the factors, dimensions and consequences of organizational citizen environmental behavior

References	Description	Sub theme	Main theme
(Abbasi et al. 2019) (Zare et al., 2020) (Barakpur & Jahanseir, 2017)	Individual Planning for Green Behavior	Green behavioral intention	**Individual factors**
(Ahmadi, et al. 2020), (Ebrahimy, 2013) (Asadi and Mehrabi, 2018), (Barakpur & Jahanseir, 2017) (Kohansal et al., 2015)	Demographic Characteristics	Age, Gender Income, Education Social class Marital status	
(Hassanpoor & Ebrahimi, 2020) (Abbasi et al. 2019) (Barakpur & Jahanseir, 2017) (Farahmand et al., 2014) (Hejazi et al., 2017)	Grob (1995) presents a model in his research where environmental awareness represents the knowledge of the environment and understanding environmental issues. Accordingly, the more people know about the environment, the more corresponding behaviors they exhibit	Environmental knowledge	
(Motamedi, ۲۰۱۵) (Deb Chowdhury, 2013)	Employees with a sense of responsibility reflect on the environmental consequences of their workplace behavior and make more efforts to participate in behavior that, in their view, is ethical. Workplace green behavior is associated with individual ethical attitudes arising from individuals' sense of responsibility	Employees' sense of responsibility	
(Zalaghi, 2015))Priyankara, 2018(	Environmental commitment is an internal motivation that manifests as emotional attachment, identification, and connection with environmental behaviors of individuals, and in other words, it can be defined as a sense of belonging and responsibility for environmental concerns in the workplace	Environmental commitment	
(Ullah et al., 2021)	Beliefs or judgments of an individual about their abilities in performing tasks and responsibilities	Self-efficacy	

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(Deb Chowdhury, 2013) (Miri et al., 2014)	The force that compels an individual to stay in the organization or feel a sense of attachment to work towards the organization's goals.	Organizational commitment	**Organizational factors**
(Damghanian, 2019))Priyankara, 2018(	It is the organizational culture that refers to the deep values, beliefs, assumptions, as well as symbols and rituals of an organization	Green psychological climate	
(Pham et al., 2018) (Deb Chowdhury, 2013) (Hassan poor & Ebrahimi, 2020)		Green organizational culture	
References	**description**	**Sub theme**	**Main theme**
(Norton et al., 2015)	Refers to the awareness and knowledge of employees about the organization's policies and strategies regarding environmental sustainability	Company's green policies and strategies	
(Malik et al., 2021) (Zhao & Zhou 2021) (Zhao et al., 2021) (Zhao & Zhou, 2019)	Human resources management commitment to improving the well-being, working conditions, and overall care of employees goes beyond even legal requirements	Social responsibilities of human resources management	
(Mi et al., 2019) (Asghar et al., 2022) (Kim et al., 2020) (Hassan poor & Ebrahimi, 2020) (Miri et al., 2014) (Khan et al., 2019)	Transformational leadership consists of four types of behaviors: idealized influence, inspirational motivation, intellectual stimulation, and individual consideration. Each of these can be employed to influence environmental sustainability in organizations. The leadership style of managers is crucial, and when top-level managers demonstrate a high level of transformational leadership, employees are motivated to increase green behavior.	Environmental transformational leadership	Leadership style
(Anser et al., 2021)	Spirituality in organizations plays a significant role in environmental behavior by providing positive influence on meeting employees' spiritual needs	Spiritual leadership	
(Luu, 2018) (Luu, 2019)	Servant leadership involves understanding and acting in a way that prioritizes the interests of others over personal inclination	Servant leadership	
(Ullah et al., 2021)	Authentic leadership, as a behavioral model, produces positive psychological aspects and a positive ethical organizational atmosphere, fostering self-awareness, internal ethical aspects, balanced information processing, and transparency in relationships with followers	Authentic leadership	
(Khan et al., 2019)	Ethical leadership can be defined as rule-based leadership and normative values that encourage and penalize ethical and unethical behaviors within the organizational context through actions, decisions, and execution methods. Ethical leadership overlaps with transformational and supportive leadership	Ethical leadership	

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References	Description	Sub theme	Main theme
(Barakpur & Jahanseir, 2017) **(Hejazi et al., 2017)**	Managers' knowledge of the importance of environmental sustainability and protective behaviors	Managers' awareness level	**Managerial factors**
(Khan et al., 2019) **(Pham et al., 2018)** **(Liu et al., 2020)** **(Anwar et al., 2020)** **(Tahir et al., 2020)** **(Mohammad et al., 2020)** **(Niyomdecha & Yahya, 2019)** **(Malik et al., 2021)**	includes methods for developing green competencies, increasing green motivation, and fostering employee green participation. This involves green hiring and selection, green training, green rewards, and green performance evaluation.	Green human resource management practices	
(Daily et al., 2009) **(Motamedi, ۲۰۱۵)** **)Priyankara, 2018)** **(Paillé et al., 2013)** **(Raineri & Paillé, 2016)** **(Hassanpoor & Ebrahimi, 2020)**	Managerial support acts as an approval for fostering green behavior in the workplace. This support needs to be established by senior managers in the organization. When employees receive sufficient support from their superiors, there is a higher likelihood that they will feel a sense of responsibility towards environmental sustainability initiatives	Management support for environmental behavior	
(Ahmadi, et al. 2020) **(Hassanpoor & Ebrahimi, 2020)** **(Abbasi et al. 2019)** **(Hejazi et al., 2017)** **(Damghanian, 2019)**	Environmental attitudes significantly predict environmental behaviors. Baar and Gyles (2009) assert that environmentalists have a positive, enthusiastic, and responsible attitude toward environmental protection.	Environmental attitude	Normative agents
(Ahmadi, et al. 2020) **(Abbasi et al. 2019)**	Environmental awareness of the consequences of environmental destruction and efforts towards environmental sustainability is termed as environmental concern.	Environmental concern	
(Zalaghi, 2015) **(Anwar et al., 2020)**	Environmental beliefs of employees imply that environmental behaviors exhibited by employees align with their beliefs and convictions. These behaviors are voluntary and not coerced or forced.	Employees' environmental beliefs	

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(Boiral et al., 201°) (Liu et al., 2020).	Environmental values refer to beliefs and orientations related to the environment that influence our behavior towards the environment	Environmental values	
(Wang et al., 2018)	Formal and informal pressures exerted on organizations by other organizations that they are dependent on, as well as pressures that cultural expectations in society impose on organizational performance (coercive pressures).	Institutional pressures (coercive pressures and normative pressures)	
	Normative pressures arise from social commitments and generally take the form of established rules and standard operational procedures. Normative pressures encourage organizations to adopt environmental practices, thereby being perceived as legitimately authorized entities in the environmental activity's domain (normative pressures)		
(Tosti-Kharas et al., 2017) (Cheema et al., 2020) (Liu et al., 2020).	Organizational identification with respect to adhering to and respecting environmental standards in production. Organizational green identity is a framework related to environmental management that gives meaning to the behaviors of organization members	Organizational green identity	
(Barakpur & Jahanseir, 2017)	Environmental policies of the community in which the organization operates.	Political-Legal	**Environmental (external) factors**
(Barakpur & Jahanseir, 2017)	Cultural values and imperatives of society regarding environmental sustainability.	Socio-Cultural	
	The growth and upbringing of individuals in nature, which is related to early stages of life	Connection with nature in childhood	
		Family participation	

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Table 2. Concepts Related to Factors Creating, Dimensions, and Consequences of Organizational Environmental Behavior

References	Definition	Code	
(Boiral& Paillé, 2012) (Boiral et al., 2018)) Ghasemi, 2016(	Environmental creativity by employees is a crucial resource for solving environmental issues for companies. Companies seeking creative ways to improve environmental performance need to establish efficient systems to support their employees' activities.	Environmental Innovations	Relevant Dimensions of Organizational Environmental Behavior
(Boiral& Paillé, 2012) (Boiral et al., 2018) (Mi et al., 2019)	Voluntary participation in environmental programs and activities within the organization	Environmental Civic Engagement	
(Boiral& Paillé, 2012) (Boiral et al., 2018) (Mi et al., 2019)	Voluntary assistance to colleagues for better integration of environmental considerations in the workplace	Environmental Assistance	
(Malik et al., 2021) (Deb Chowdhury, 2013)	Sustainable performance primarily focuses on the environmental, social, and economic aspects of sustainable development.	Sustainable Performance	Consequences of Organizational Environmental Behavior
(Norton et al., 2015)	Competitive advantage defines the values a company offers to customers in a way that these values outweigh customer costs.	Competitive Advantage	
(Norton et al., 2015)	Saving in Energy, water, waste reduction, etc.	Cost Savings	
)Taghizadeh, 2018( ) Zare et al., 2020(	Social capital includes organizational characteristics such as norms, social networks, and mutual trust that facilitate individuals' participation in achieving common benefits. Social capital is the ability to create trust-based relationships and collaboration among employees in the organization. In fact, organizational citizenship behavior shapes social capital.	Social Capital	
(Chang et al., 2019)	The term 'green' is applied to a product when its environmental and social performance in production, use, and disposal is significantly improved compared to other competitive products. In other words, a green product is one that creates fewer environmental impacts.	Green Product Development Performance	

Step Six: Quality Control: In order to assess the reliability of the meta-synthesis, a selected document was provided to one of the experts. After evaluating the Kappa coefficient (0.669), this value indicates the appropriate reliability of the research. Table 3 examines the Kappa coefficient, and a significance level less than 0.05 suggests the existence of a relationship between the coding of the two reviewed documents.

Table 3. Inter-coder agreement test between the researcher and one of the experts on one of the texts

Indicator	Value	SD	T value	Sig
Kappa Value	0.669	0.048	13.52	0.001
Number of Valid Cases	91			

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Step Seven: Presentation of Findings: Based on the study of previous research and the extracted codes, a comprehensive model of environmental behavior has been developed. However, considering the achievement of the research goal and based on the research process, the next step involves indigenizing the components using the Delphi method with a fuzzy approach. Ultimately, the conceptual model of the research is presented based on the output of the meta-synthesis in this step and the fuzzy Delphi method.

Data Analysis in the Fuzzy Delphi Section

In this section, for indigenizing the creating factors, dimensions, and outcomes of organizational environmental citizenship behavior and identifying their indicators and other components that were not mentioned in the integrative section but are considered important by experts, the fuzzy Delphi method has been used for data analysis. To ensure sufficient consensus in the opinions received after two rounds of questionnaire distribution and collection, experts' opinions regarding the creating factors, dimensions, and outcomes of organizational environmental citizenship behavior were gathered. The condition for the consensus and stopping process was that the difference in the averages of the components in the two calculation rounds, and if the difference is less than 0.2, the process has been stopped. Experts' opinions about the creating factors of organizational environmental citizenship behavior are presented in Table 4, experts' opinions about the dimensions of organizational environmental citizenship behavior in Table 5, and about the outcomes of organizational environmental citizenship behavior in Table 6.

Table 5. Expert Opinions on the Creating Factors of Organizational Environmental Citizenship Behavior

Creating Factors of Organizational Environmental Citizenship Behavior	Fuzzy values of indicators in the first round (L,M,U)	Defuzzication values of indicators in the first round	Fuzzy values of indicators in the second round (L,M,U)	Defuzzication values of indicators in the second round	Result
Green Behavioral Intention (Research Background)	(1, 2.67, 4)	2.55	-----	-----	Reject
Psychological Ownership (Research Background and Expert Opinions)	(2, 2.68, 5)	3.22	(1, 3.25, 5)	3.08	Accept
Psychological Empowerment (Research Background)	(۱ ،۱/۹۶ ،۴)	۲/۳۲	---------	---	Reject
Environmental Commitment (Intrinsic Motivation) (Research Background)	(3, 4, 5)	4	(3, 4.5, 5)	4.11	Accept
Environmental Knowledge (Research Background)	(3, 3.71, 5)	3.90	(3, 3.99, 5)	3.99	Accept

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Employee Sense of Responsibility (Research Background)	(1, 3.84, 5)	3.28	(1, 3.50, 5)	3.16	Accept
Self-Efficacy (Research Background)	(3, 3.74, 5)	3.91	(4, 2.38, 5)	3.79	Accept
Organizational Environmental Commitment (Research Background and Expert Opinions)	(2, 4.01, 5)	3.67	(3, 3.49, 5)	3.83	Accept
Psychological Green Atmosphere (Research Background)	(2, 3.94, 5)	3.64	(2, 3.66, 5)	3.55	Accept
Organizational Green Culture (Research Background)	(2, 3.89, 5)	3.63	(2, 3.90, 5)	3.63	Accept
Factors Creating Organizational Environmental Citizenship Behavior	Fuzzy values of indicators in the first round	Defuzzication values of indicators in the first round	Fuzzy values of indicators in the second round	Defuzzication values of indicators in the second round	Result
Company Green Policies and Strategies (Research Background and Expert Opinions)	(2, 3.80, 5)	3.60	(2, 4.28, 5)	3.76	Accept
Leadership Style (Research Background)	(2, 3.77, 5)	3.59	(2, 3.95, 5)	3.65	Accept
Managers' Awareness Level (Research Background)	(2, 3.93, 5)	3.64	(2, 4.38, 5)	3.79	Accept
Green HRMP, including Green Hiring (Research Background), Green Training (Research Background and Expert Opinions), Performance Appraisal (Research Background), Rewards (Expert Opinions and Research Background)	(2, 3.78, 5)	3.59	(2, 3.95, 5)	3.65	Accept
Management Support for Environmental Behaviors (Research Background and Expert Opinions)	(2, 3.75, 5)	3.58	(2, 4.17, 5)	3.72	Accept
Corporate Social Responsibility (Research Background)	(2, 3.90, 5)	3.63	(2, 4.15, 5)	3.71	Accept
Environmental Attitude (Research Background)	(2, 3.67, 5)	3.89	(2, 4.25, 5)	3.75	Accept
Environmental Concern (Research Background)	(2, 3.76, 5)	3.58	(2, 3.67, 5)	3.55	Accept
Employees' Environmental Beliefs (Research Background)	(2, 3.65, 5)	3.55	(2, 3.84, 5)	3.61	Accept
Individual (Mental) Norms (Research Background)	(2, 3.61, 5)	3.53	(2, 3.85, 5)	3.61	Accept
Environmental Identity (Research Background)	(2, 3.67, 5)	3.55	(2, 3.83, 5)	3.61	Accept
Environmental Values (Research Background)	(2, 3.67, 5)	3.55	(2, 3.95, 5)	3.65	Accept
Institutional Pressures (Research Background)	(3, 3.38, 5)	3.79	(2, 4.15, 5)	3.71	Accept
Political-Legal (Research Background and Expert Opinions)	(2, 3.67, 5)	3.55	(2, 4.01, 5)	3.67	Accept
Socio-Cultural	(2, 3.55, 5)	3.51	(2, 3.83, 5)	3.61	Accept
Nature Connection in Childhood (Research Background and Expert Opinions)	(2, 3.89, 5)	3.63	(2, 4.01, 5)	3.67	Accept
Family Participation (Expert Opinions)	(2, 3.93, 5)	3.64	(2, 4.31, 5)	3.77	Accept
Environmental Innovations (Creativity) (Research Background)	(2, 3.43, 5)	3.47	(2, 3.49, 5)	3.48	Accept

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Environmental Civic Participation (Research Background and Expert Opinions)	(2, 3.55, 5)	3.51	(2, 3.67, 5)	3.55	Accept
Environmental Assistance (Research Background)	2, 3.83,5)	3.61	2, 3.95, 5)	3.65	Accept

Table 6. Expert Opinions on the Outcomes of Organizational Environmental Citizenship Behavior

Outcomes of Organizational Environmental Citizenship Behavior	Fuzzy values of indicators in the first round (L,M,U)	Defuzzication values of indicators in the first round	Fuzzy values of indicators in the second round (L,M,U)	Defuzzication values of indicators in the second round	
Sustainable Performance (Environmental Dimension (Research Background), Economic Dimension (Research Background and Expert Opinions), Social Dimension (Research Background))	(3, 4.06, 5)	4.02	(3, 4.35, 5)	4.11	Accept
Competitive Advantage (Research Background)	(3, 3.75, 5)	3.91	(3, 3.99, 5)	3.99	Accept
Social Capital (Theoretical Foundations and Research Background)	(2, 3.89, 5)	3.63	(2, 3.95, 5)	3.65	Accept
Performance in Green Product Development	(3, 4.03, 5)	4.01	(3, 4.27, 5)	4.09	Accept

Finally, based on the analyses conducted using the Integrative Approach and Fuzzy Delphi, the conceptual model of the research is presented in Figure 5.

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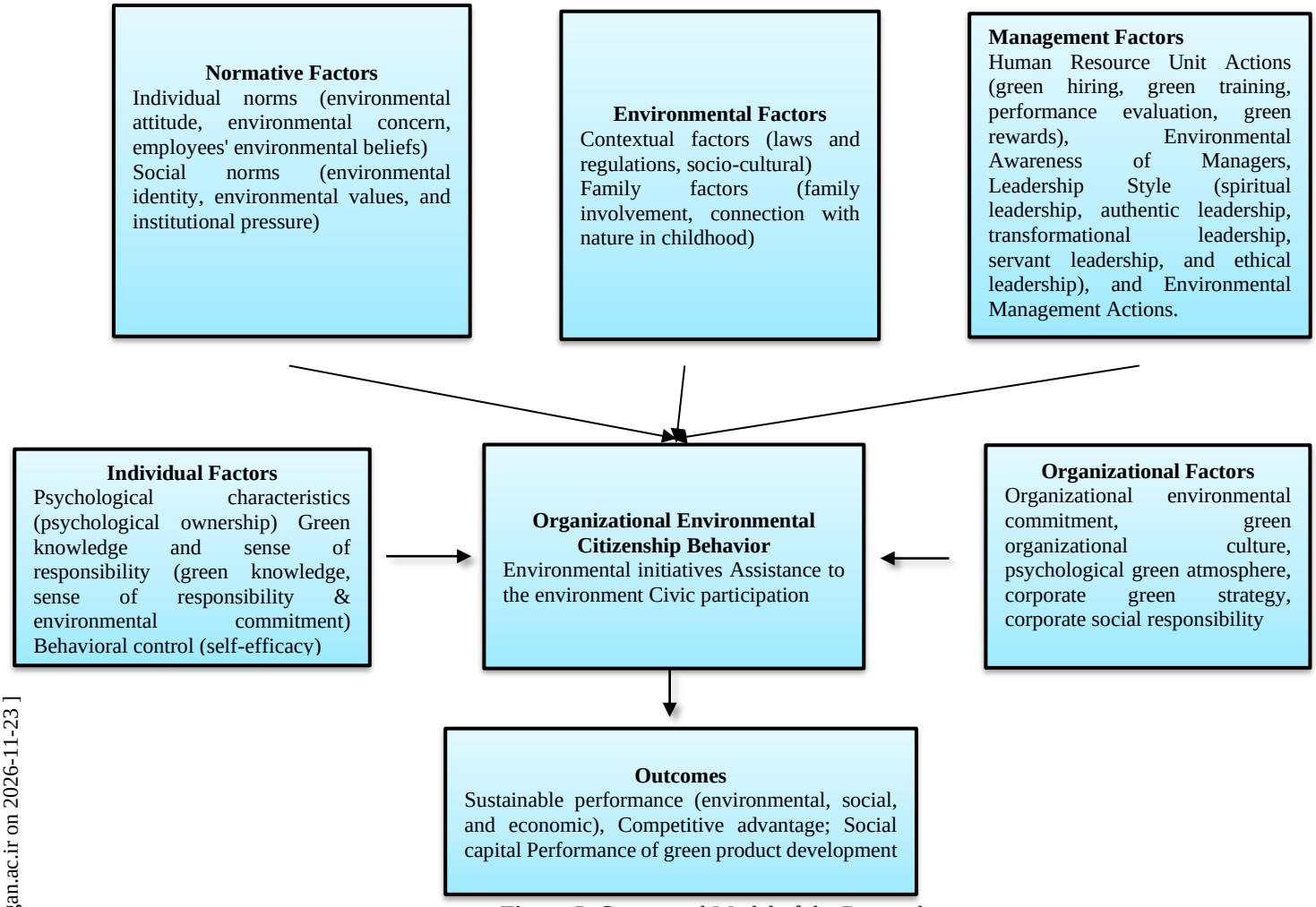


Figure 5. Conceptual Model of the Research

Discussion

The main objective of the present research was to develop and evaluate the model of organizational citizen environmental behavior within the framework of the meta-synthesis approach in the Foulad Madkoush Steel Company in Hormozgan province. To achieve this goal, after reviewing the background and preparing the theoretical framework of the research, a qualitative research method was used to collect the required data. The data were collected in two stages from experts and stakeholders in the steel industry. Using the Delphi method, a questionnaire was initially distributed to 15 selected experts and stakeholders. In the two stages of qualitative data analysis, 5 components were identified as the elements contributing to organizational citizen environmental behavior, including individual factors (consistent with research by Hassanpour and Ebrahimi

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(2019), Motamedi (2015), Zolghai and colleagues (2020), Pariankara and colleagues (2018), and Elah and colleagues (2021), organizational factors (consistent with research by Damghanian (2019), Pariankara and colleagues (2018), Fam and colleagues (2018), Hassanpour and Ebrahimi (2019), Dab Chadori (2013), Norton and colleagues (2015)), normative factors (consistent with research by Liu and colleagues (2020), Tosti-Kharas and colleagues (2017), Chima and colleagues (2020), Boyral and colleagues (2015), Liu and colleagues (2020), Salehi and Karimzadeh (2014), Anwar and colleagues (2020)), environmental factors (consistent with research by Barkpour and Jahanseir (2016)), and managerial factors (consistent with research by May and colleagues (2019), Hassanpour and Ebrahimi (2019), Asghar and colleagues (2022), Khan and colleagues (2021), Kim and colleagues (2020), Anser and colleagues (2021), Elah and colleagues (2021), Reiner and Pailley (2016), Pariankara and colleagues (2018)). Three dimensions were identified as the dimensions of organizational citizen environmental behavior (environmental initiatives, environmental support, and civic participation) consistent with research by Boyral and Pailley (2012), Boyral and colleagues (2018), May and colleagues (2019), and Qasemi (2016)). Additionally, four consequences were identified as the outcomes of organizational citizen environmental behavior (sustainable performance, competitive advantage, social capital, and green product development performance) consistent with research by Maleki and colleagues (2021), Dab Chadori (2013), Norton and colleagues (2015), Chang and colleagues (2019), Niazi Komleh and colleagues (2019). Based on the defined procedure in the research and the obtained results, the proposed practical recommendations include: Presenting specific policies and programs to stakeholders to inform them about the developed plans and coordinated actions. Providing training through various methods to increase awareness and learning with modern approaches in this field. Demonstrating desirable behaviors or undesirable consequences using media and virtual spaces to promote a cultural shift. Defining financial and non-financial incentives for individuals with creative ideas to operationalize environmental behavior indicators, considering constraints and challenges. Developing written content or organizing national and international conferences on the subject. Involving all organization members, from senior managers to frontline staff, in creating a coordinated and unified approach to establish a defined framework in this regard. Regarding the research recommendations, it is suggested that future researchers investigate this research approach at different time intervals and in various geographical locations. This approach can be

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explored in different time frames and diverse geographical contexts to provide a more in-depth analysis through comparative studies on the examined topic. Additionally, it is recommended to utilize other qualitative methods to understand individuals' mental frameworks and their perceptions, aiming to generate theories in this regard. The use of operations research techniques, particularly soft operations research, is also recommended to examine the effectiveness and susceptibility of the causal factors in the research conceptual model. Applying operations research techniques can be highly impactful in practical execution. Ultimately, based on the research model, exploring the relationships and impacts of the identified factors with other variables can lead to a comprehensive understanding of the research topic by investigating various hypotheses. Regarding the limitations of the research, it should be noted that this study was conducted as a case study, and the extracted model for organizational citizen environmental behavior is specific to Madkoush Steel Company. Therefore, for application in other industrial sectors in the country, the model needs modification and localization. Additionally, some members of the expert community may not have been fully cooperative in the research process, indicating limited collaboration from these individuals.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of University of Hormozgan. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection and analysis and contributed to the article and approved the submitted version.

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