

RESEARCH ARTICLE

The Role of the Discipline of Social Work in Protecting the Environment from Pollution in Saudi Arabia

Aref Alsehaimi

College of Arts, University of Hail, Hail, Saudi Arabia

ARTICLE INFO

Received: Mar 11, 2023

Accepted: Jun 4, 2023

Keywords

Social work

Pollution

Environmental protection

Saudi Arabia

Investment

Corporate Environmental

Responsibility

*Corresponding Author:

ao.alsehaimi@uoh.edu.sa

ABSTRACT

Social work has gradually grown to recognize its importance in contributing to the mitigation of environmental degradation. Nonetheless, the growing concern is only seemingly at the surface level, with many facets of the discipline yet to incorporate environmental conservation considerations. This study aimed at assessing how the discipline of social work is involved in protecting the environment in the Kingdom of Saudi Arabia. The present study investigates the crucial role of the discipline of social work in safeguarding the environment from pollution in the context of Saudi Arabia. Grounded in the framework of social exchange theory, the study explores the interconnection between social work practices and participation behavior in environmental protection efforts. Utilizing SmartPLS for analysis, a quantitative research approach was adopted, involving 260 participants in data collection. The study delves into the complex relationships between latent constructs, employing partial least squares structural equation modeling (PLS-SEM) through SmartPLS. It did this by evaluating the role of social work education, research, and practice in contributing to environmental conservation in the Kingdom. It collected data from faculty members and students in several Saudi Arabian universities on their perspectives on the role of social work in environmental conservation. The study findings revealed that social work education, research, and practice in Saudi Arabia is yet to have an impactful role in preventing pollution.

INTRODUCTION

Saudi Arabia is not an exception to the difficulties presented by this crucial topic, which has emerged as a major worldwide issue Li et al. (2023). Rapid industrialization and economic expansion in the Kingdom have had a negative impact on the environment, including resource depletion, air and water pollution, and waste production. The field of social work is emerging a crucial role in preserving

the environment and promoting sustainable practices in the face of these growing environmental issues (Luo and Qu, 2023).

Social workers can increase public understanding of the harmful consequences of pollution on the environment and human health through community education and advocacy. They can educate the public about sustainable practices, waste management, and the value of environmental conservation by setting up

educational programs and campaigns (Bai and Lyu, 2023). Additionally, social workers can collaborate with politicians and government representatives to create programs that reduce pollution and support sustainable development by advocating for strong environmental protection legislation and regulations. Recently, social work has increasingly moved towards recognizing the critical impact of the environment on the discipline. Largely, this has been motivated by the progressively notable repercussions of environmental degradation on health and well-being in communities (Ammad and Qureshi, 2021). The increasing frequency of environmental catastrophes and their impacts have also made the physical environment more visible and relevant to social work (Wang et al., 2023). Nonetheless, even while environmental protection seems to have recently gained attention within the discipline of social work, Zheng and Jin (2023) highlight that environmental concerns have historically been part of social work. From as early as the 19th century, prominent social workers such as Jane Addams were engaged in practices that sought to resolve public health problems related to the environment, such as clean drinking water access (Zhou and Jin, 2023). Others, such as Mary Richmond, pushed for social workers to consider the physical environment's effects on their work (Yang, 2021). Therefore, social work has always been concerned with matters related to environmental protection. This concern always constituted part of the broader social justice issue, the core mission of social work. Additionally, social workers are crucial in getting businesses to embrace corporate social responsibility with an environmental focus. Businesses can help reduce their carbon footprints and promote eco-friendly technologies by being encouraged to adopt environmentally friendly practices (Wang et al., 2023). The decrease in pollution and its harmful effects on the environment can be considerably helped by this partnership between social workers and businesses. Social workers encourage community mobilization and involvement in environmental preservation activities in addition to working with corporations (Tian, 2020). They may guarantee that locals take an active part in campaigns to fight pollution and save their environment by setting up community meetings and fostering stakeholder participation.

Social workers contribute to fostering a sense of collective ownership and responsibility for preserving natural resources for future generations through such initiatives (Singh et al., 2022).

The social justice framework, which the discipline of social work is based on, makes it especially well-positioned to meet the pollution challenge. Juo and Wang (2022) outline that environmental sustainability issues interlink with social justice in three ways primarily to apply to the discipline of social work. First, economic vulnerability and minority community status tend to predispose individuals to the impacts of unsustainable practices disproportionately (Duan, 2022). Second, the same economic, social, and political systems that propagate ecologically unfriendly practices also reflect the power differences that subdue the voices of local communities (Juo and Wang, 2022). Third, the available options for promoting environmental sustainability can have effects beyond environmental conservation, improving the quality of life for entire communities (Juo and Wang, 2022). Through the environmental justice framework, social work can promote a more just sharing of the benefits and risks to the environment while representing the marginalized. As a profession dedicated to advancing social justice, improving community well-being, and empowering individuals, social work has special tools and methods that can help reduce environmental pollution. The diverse role that social work plays in Saudi Arabia's attempts to protect the environment from pollution is examined in this essay. It explores how social workers can take part in community engagement, serve as facilitators for investments in environmental protection, and work with businesses to improve corporate environmental responsibility (Cheng et al., 2022).

Therefore, social work has an integral role in promoting environmental conservation and preventing pollution. Through education, research, and practice, the discipline could contribute immensely to curbing the existing issues related to the degradation of the environment. Its grounding in social justice positions the discipline as a potential avenue for addressing the impacts of environmental degradation (Lavuri, 2022). Moreover, social work can leverage its extensive

group mobilization and facilitation capacities at the community level to support social work initiatives targeting environmental conservation (Mo et al., 2022). Given the acknowledgment that social work can play an integral role in mitigating environmental degradation, this research will look to evaluate the role of the discipline in protecting the environment from pollution in Saudi Arabia. It will do this by collecting views from faculty members and students of social work departments across several Saudi Arabian universities on the role of social work education, research, and practice in preserving the environment in the Kingdom (Peng and Wan, 2021; Peng and Wei, 2018).

The present study determines the role of the discipline of social work in protecting the environment from pollution in Saudi Arabia. According to Holbrook and Hobday (2019), human-induced climate change, largely driven by pollution, is a prominent social work issue. However, social work as a discipline has taken its time in responding to the growing need for its involvement in mitigating pollution (Ammad and Qureshi, 2021). Holbrook and Hobday (2019) nonetheless, discusses this issue within the context of the social work profession in America. However, America boasts the most prominent professional social workers membership organization globally, known as the National Association of Social Workers (Bai and Meng, 2022). Therefore, it can only be reasonably deduced that social work systems in other regions of the world, such as Saudi Arabia, lag further in contributing to addressing the ramifications of environmental degradation. Bai and Lyu (2023) examining the prominence given to pollution in social work undergraduate curricula in the UK, Germany, Switzerland, and Greece, the author concluded that matters of sustainability and the environment had not found a place in them. In America, social work students, workers, and educators are conscious of their preparedness to address issues affecting the environment (Duan, 2022). When these factors compound with the fact that there are no studies examining the environmental aspect of social work in Saudi Arabia, a significant need to look into the role of social work in environmental protection in Saudi Arabia emerges. The primary objective of the study is to understand them;

- To comprehend the role of Social work significantly impact participation behavior.
- To understand the role of social work significantly impacts environmental protection investment.
- To understand the role of social work significantly impacts corporate environmental responsibility.
- To explore the environmental protection investment mediates the relationship between Social work and participation behavior.
- To examine the corporate environmental responsibility mediates the relationship between Social work and participation behavior.

LITERATURE REVIEW

The present study determines the role of the discipline of social work in protecting the environment from pollution in Saudi Arabia, as well as the social exchange theory involved.

Social exchange theory

A social psychological perspective known as "social exchange theory" aims to explain social interactions and human behavior in terms of resource exchange and self-interest (Kao, 2017). It is predicated on the idea that people connect and form relationships with others in order to increase benefits and decrease costs. In Saudi Arabia, social workers are essential in supporting and carrying out environmental preservation programs. Their efforts could result in benefits including improved public health, cleaner air and water, increased biodiversity, and a more prosperous community (Lucas and Noordewier, 2016). Additionally, effective environmental protection initiatives can improve the standing of the organizations involved, increasing public support and trust. Social workers and other stakeholders may incur expenses as a result of participating in environmental protection efforts (Peng and Wei, 2018). These expenses can include monetary outlays for environmentally friendly technologies, initiatives to alter current procedures, and potential opposition from sectors of the economy or communities that would be impacted by the changes. According to social exchange theory, people judge outcomes according to their comparison level, which they use to determine if their efforts and investments

are producing the desired effects (Yousef, 2019). Stakeholders in environmental protection may contrast the existing state of the environment with their objectives or expectations. They are likely to regard their efforts favorably and continue to be dedicated to taking additional environmental protection measures if the results are at or above their comparison level. Social workers can help the many parties involved in environmental preservation have productive conversations. To guarantee that investments and efforts in environmental protection are fair and balanced, they can assist in resolving disputes and finding common ground (Yang et al., 2019). Applying social exchange theory to corporate environmental responsibility, the researcher can see how companies may see their investments in environmental programs as a way to improve their reputation among stakeholders, public perception, and brand recognition. Social workers can work with businesses to promote environmentally friendly practices by emphasizing the benefits of favorable public opinion and consumer loyalty (Zhao et al., 2022; Zheng and Jin, 2023).

Social work and participation behaviour

To address social challenges and bring about constructive social change, social work frequently emphasizes and supports the active involvement and participation of individuals, communities, and other stakeholders (Li et al., 2023). The willingness and active involvement of people or groups in social, economic, or political activities that have an impact on their life and the larger community is referred to as participation behavior (Wu and Yu, 2023). Participation behavior is crucial in the field of social work for empowering clients, fostering community growth, and improving the overall efficacy of social treatments. The foundation of social work is the idea of community and individual empowerment. Social workers make an effort to assist clients in identifying their assets, capacities, and capacity for change (Li et al., 2020). Social workers urge their clients to actively participate in decision-making processes and take responsibility for their objectives and activities by promoting a sense of empowerment. Social workers are important participants in community development projects. They work together with residents to determine their

needs, assets, and goals (Yousef, 2019). Social workers include community members in the planning and execution of initiatives that solve local challenges, ranging from environmental protection to healthcare and education, using participatory methodologies (Zhao et al., 2022). Social justice advocacy initiatives in social work are heavily reliant on participation behavior. Social workers fight for the rights and welfare of vulnerable and marginalized groups. They help these people advocate for themselves, ensuring that their opinions are heard during the processes of formulating policies and providing services (Kao, 2017). Social work is a strengths-based approach, which focuses on identifying and utilizing the resources and strengths of both individuals and communities. This strategy relies heavily on encouraging involvement since it makes sure that clients are active participants in creating solutions that make the most of their abilities (Shah et al., 2021). Social workers place a strong emphasis on cultural sensitivity and inclusion in their daily work. Social workers may ensure that varied populations' viewpoints and preferences are respected and taken into account when developing interventions by encouraging engagement behavior (Li et al., 2020). This fosters a feeling of ownership and belonging. Social workers involve their clients in the decision-making process by working with them to define goals, weigh their options, and decide on the best course of action (Wu and Yu, 2023). The possibility of successful outcomes is increased thanks to this cooperative method, which also guarantees that services are personalized for each client. Social work interventions have an impact that is more long-lasting and durable when participants actively participate (Tian, 2020). People and communities are more likely to take ownership of the results and continue working towards their long-term goals when they are actively involved in the change process, even after the formal intervention is over (Yang, 2021). The use of participatory methods by social workers in community development initiatives has been the subject of several studies. Involving community members in identifying and resolving local issues has many advantages, which are explored in these studies along with the effectiveness of community participation and the impact of participatory decision-

making procedures (Appiah et al., 2020). This field of study focuses on how social workers actively engage clients in their own care and decision-making processes. Studies have looked at how client involvement affects the effectiveness of therapy, client satisfaction, and therapeutic alliance. Researchers have looked into how social workers incorporate participation behavior into their routine job (Cheng et al., 2022). Examining the difficulties and enablers of encouraging involvement, the function of social workers as enablers of client and community engagement, and the moral issues surrounding including clients in decision-making are all included in this (Duan, 2022). Thus we hypothesized that;

H1: Social work significantly impacts participation behavior.

Social work and environmental protection investment

At its core, social work refers to the dedication to the cause of social justice, which according to Ammad and Qureshi (2021), is the heart of social work. The social justice function of social work is also emphasized by the education policy and accreditation standards set by the Council on Social Work Education, America's association overseeing social work education (Bai and Meng, 2022). Nevertheless, the definition and practical applications of social justice are generally poorly defined. There is little guidance on what constitutes social justice, and scholars, researchers, and educators disagree on a uniform definition. However, social justice can be thought of through the lens of guaranteeing human rights and ensuring that the rights serve their social and political functions (Chaaben et al., 2022). Within the current study context, these efforts are directed toward ensuring a cleaner environment in Saudi Arabia, free of pollution. An important component of corporate environmental, social, and governance (ESG) investments is environmental protection. It is an investment in national economic and social growth and has three unique characteristics (Duan, 2022). First, businesses are the biggest investors in environmental protection projects. Second, those who are the subjects of environmental protection investment do not have exclusive access to the advantages of such investment (Holbrook and Hobday, 2019). Finally, the advantages of investing in environmental protection are extensive

and show themselves in social, economic, and environmental facets. The market frequently gives enterprises with poor environmental management more attention, and environmental performance and investment are rarely perceived as opportunities but rather as risks (Juo and Wang, 2022). According to popular wisdom, spending on waste management and pollution control drains a company's resources and requires it to employ useless operating funds (Lavuri, 2022). Various studies document the nature and extent of environmental pollution in Saudi Arabia. Studying the soil palm fields in Northwest Riyadh, Appiah et al. (2020) reported the presence of contamination by toxic elements, primarily mercury (Hg) and uranium (U). These heavy metals were found in proportions that were more than average relative to the amounts in worldwide soils. Nonetheless, Hg contamination was more significant. Li et al. (2023) highlighted the soil pollution issue affecting the soils in Khulais, where a man-made sewage lake has developed due to decades of dumping. Liao et al. (2021) reports that around 100 tanker trucks dump over 5,000 m³ of wastewater into this lake daily. The result is that three heavy metals, Copper (Cu) and Nickel (Ni), show the highest concentrations in the nearby soils out of the 12 the study detected. In the most contaminated sites, Peng and Wan (2021) highlights that these three metals constituted about 87% of the contaminants, while Cu contamination was up to 73% of the total heavy metal contamination. Social workers run educational campaigns to inform the general population of the value of protecting the environment and the advantages of utilizing sustainable practices (Rustam et al., 2020). Communities are made aware of the benefits of investing in environmental protection, which increases demand for such programs. Social workers frequently involve communities in decision-making procedures involving investments in environmental protection. They make certain that initiatives are in line with the needs and objectives of the community by involving local individuals in the conception and execution of programs (Shah et al., 2021). The function of social workers in promoting corporate environmental responsibility has been the subject of certain research. Peng and Wei (2018) suggested that how social workers cooperate with businesses to

promote sustainable practices and promote private sector investments in environmental protection (Rustam et al., 2020). Research has looked at how social work practice and environmental justice interact. Studies have looked at how social workers deal with environmental injustices and promote funding for underserved populations that suffer disproportionately from environmental problems. Studies have examined how much emphasis is placed on environmental sustainability and environmental preservation in social work education (Lucas and Noordewier, 2016; Peng and Wei, 2018; Rustam et al., 2020; Singh et al., 2022). To prepare future social workers to face environmental concerns, research in this area has looked at how social work programs include environmental content in the curriculum and field instruction.

H2: Social work significantly impacts environmental protection investment.

Social work and corporate environmental responsibility

Corporate environmental responsibility is the behavior that businesses adopt to comply with environmental ethics and legal requirements in order to achieve the sustainable development of the environment (Shah et al., 2021). This behavior partially reflects how actively businesses respond to stakeholder demands and actively engage in social initiatives (Peng and Wei, 2018; Tian, 2020). Stakeholders have steadily advanced more urgent and precise demands for firms' environmental obligations and transferred such demands to enterprises in the form of legitimacy pressure as the construction of ecological civilization has progressed. In order to respond, businesses must raise their investments in environmental protection and actively take part in environmental management (Wang et al., 2022; Yang, 2021). Numerous studies investigating the impact of management traits on corporate decision-making have surfaced in recent years (Yang et al., 2019; Zhao et al., 2022). The primary hypothesis to describe how management characteristics affect organizational outcomes is the upper echelon theory, which has been widely applied in management (Wu et al., 2022). According to the upper echelon theory, senior managers, who make up the majority of corporate strategic decisions, will interpret those

decisions in highly personalized ways based on their organizational contexts and adopt strategic behaviors with unique traits based on their cognition, values, and experience. In other words, corporate decisions will be clear examples of the "manager effect" (Zhou and Jin, 2023). There is, however, a dearth of work that examines managerial personality factors about attitude and influence on corporate environmental responsibility. Numerous research has shown that management's personality characteristics have a considerable impact on the commercial choices made by organizations (Tian, 2020; Wu et al., 2022; Yang, 2021). Zahoor and Gerged (2021) report the seawater in the Al- Khafji coastal area to be mainly affected by pollution from oil-related activities, Zahoor and Gerged (2021) highlight that sources mainly pollute groundwater in Saudi Arabia. However, anthropogenic sources contribute significantly to groundwater pollution, mainly through industrial effluent discharge (Zhou and Jin, 2023). Zahoor and Gerged (2021) presented evidence for air pollution in Saudi Arabia, correlating it to the expansion of urbanization, which contributes to increased carbon dioxide (CO₂) emissions. Air pollution in Saudi Arabia is also highlighted by Zahoor and Gerged (2021), who attributed the increase in particulate matter concentrations in Dammam to anthropogenic sources such as traffic and aerosol use. Overall, environmental pollution affecting the soils, water, and air is present in the Kingdom, mainly from anthropogenic sources. The necessity of preserving and enhancing the environment has recently gained recognition as a result of the globalization and internationalization of environmental challenges. Environmental protection has gotten the full attention of all societal segments, and associated research on corporate environmental responsibility, particularly on its impact, has drawn more attention (Tian, 2020). After investigating how corporate environmental responsibility influences financial performance, corporate value, cost of capital, investment efficiency, corporate risks, etc., Singh et al. (2022) discovered that organizational slack has a negative moderating effect on corporate environmental responsibility performance's beneficial impact on financial performance. According to Wang et al. (2022), corporate environmental responsibility has a

detrimental effect on company value when businesses start implementing environmental requirements. But once it reaches a certain point, corporate environmental responsibility starts to raise the value of the company. Peng and Wei (2018) investigated at manufacturing firms in 30 different nations and discovered that a high corporate environmental responsibility equates to a low cost of equity capital. Through their investigation of Korean businesses, Liu and Gao (2022) discovered that these firms can lower their excessive investments through corporate environmental responsibility activities and that the level of market rivalry can exacerbate such a problematic relationship. According to Mo et al. (2022), the manufacturing sector is the key example of how a company's corporate environmental responsibility performance can result in corporate hazards. Studies have explored how social workers engage in advocacy efforts to promote corporate environmental responsibility. They advocate for businesses to adopt environmentally responsible practices, reduce their ecological footprint, and invest in eco-friendly technologies (Luo and Qu, 2023; Peng et al., 2023; Purwanto et al., 2021). Liu and Gao (2022) examined the strategies used by social workers to influence corporate behavior and the impact of their advocacy on corporate policies and practices. Some studies have focused on social workers' role as environmental consultants for businesses (Peng and Wei, 2018; Shah et al., 2021). They provide guidance and support to companies on adopting sustainable practices, developing green initiatives, and integrating environmental responsibility into their business operations.

H3: Social work significantly impacts corporate environmental responsibility.

Mediating role of environmental protection investment

The conventional wisdom that investments in pollution prevention and related initiatives offer some economic advantages, on the other hand, is being challenged by an increasing number of academics (Peng et al., 2023). First, businesses use specific environmental resources to accomplish their production and operation activities, and the waste, wastewater, and exhaust gases produced during production become the major contributors

to pollutant emissions. These items frequently come about as a result of wasteful consumption and improper resource and energy utilization (Zheng and Jin, 2023). Researchers can successfully boost the efficiency of resource and energy consumption by investing in green manufacturing methods, technology, and equipment, which will enable businesses to lower their production and running costs and raise their value (Yang et al., 2019). Second, pollution control and the related redesign of a company's production processes can present opportunities for businesses to alter their production processes in ways like the reuse of recyclable materials, targeted retrofitting of outdated machinery, and research and development of production processes Wang et al. (2023), which supports ongoing technological innovation and ostensibly boosts the efficiency of the company's production operations. The danger of corporate noncompliance and environmental expenses is also decreased by environmental investment. Better environmental records for a company imply fewer compliance costs, which makes them more desirable investment targets for the capital market (Yang, 2021). With the introduction of emission fees on direct pollutant discharges in July 2003, the Environmental Protection Law in 2016, and the Environmental Protection Tax Law in 2018, which "transformed emission fees into environmental protection taxes", China has progressively stricter environmental regulations that reflect the environmental risks and expenses that businesses must bear (Peng et al., 2023; Tian, 2020; Yang et al., 2019). To a certain extent, businesses can contribute to environmental protection by making up-front investments to minimize pollutant emissions, adhere to pertinent national standards, lessen their environmental responsibilities, such as environmental protection taxes, and stay out of trouble with the environment. According to Wu et al. (2022), the recipient firms would be encouraged to expand green innovation investment, introduce, and develop green technologies as a result of suitable investments in environmental protection. This would create incentives for innovation compensation impact or leverage effect. The rise in marginal return brought about by technological advancement can only balance the loss in marginal return on investment

in environmental protection when the investment in environmental protection is high enough (Lavuri, 2022). Green innovation will, however, be a burden on businesses' regular operations given the low level of investment in environmental protection. Enterprises frequently lack innovation initiatives at the moment Yang (2021), suggesting that the time may be right to invest in environmental protection.

H4: Environmental protection investment mediates the relationship between Social work and participation behavior.

Mediating role of corporate environmental responsibility

The prior history of corporate environmental responsibility performance has, however, only been examined in a small number of investigations. These research's pre-influencing elements primarily center on three categories: formal system factors (such as rules and regulations), external pressure (such as stakeholder, market, and societal pressure), and firm- and managerial-specific factors. According to Bai and Meng (2022), corporate environmental responsibility performance in common law regions is noticeably worse than in civil law regions. According to Bai and Lyu (2023), organizations develop pro-environmental initiatives in response to pressure from customers and competitors, and this relationship is tempered by organizational culture. According to Cheng et al. (2022), product market rivalry tends to discourage businesses from addressing environmental issues, but under that same market competition, managerial skills contribute to the advancement of corporate environmental practices. Gender diversity on the board of directors will boost corporate environmental responsibility, particularly when female board members hold positions of authority, according to Duan (2022). The creation of a sustainability committee, according to Li et al. (2023), can increase the efficacy of CSR efforts and allow businesses to improve their environmental performance. Although some researchers looked at environmental stewardship and green practices from the standpoint of the supply chain, their findings lacked any empirical support (Liao et al., 2021; Liu and Gao, 2022). Additionally, the majority of corporate environmental responsibility studies currently in existence are based on Western theories, which

are founded in developed countries' open markets. As a result, they might not be entirely applicable to poor nations and emerging economies, where corresponding legal structures are typically lacking and market mechanisms are frequently ineffective (Mo et al., 2022). China is a wonderful case study for extending related research because it is the largest developing nation and one of the largest global carbon emitters. Interestingly, using Chinese companies as examples, several academics have observed the effect of customer concentration Shah et al. (2021) on CSR performance, which served as the inspiration for this article's research. Given that corporate environmental responsibility is not the same as CSR, supply chain-related research into the pre-factors of corporate environmental responsibility performance is necessary (Tian, 2020).

Studies might investigate how social workers collaborate with corporations to design and implement environmental initiatives that involve and empower communities (Wu and Yu, 2023). These initiatives may foster a sense of ownership and participation in environmental protection efforts among community members. Research could explore how social workers leverage corporate environmental responsibility initiatives of businesses to enhance their interventions (Zhou and Jin, 2023). For instance, social workers may build partnerships with environmentally responsible corporations to support community projects that promote sustainability. Studies may examine how corporate environmental responsibility initiatives influence employee engagement and participation in environmental and social activities (Yang et al., 2019). Social workers may play a role in facilitating employee involvement and support within corporations' CSR programs. Research might focus on how social work interventions promote environmental awareness among communities and how corporate involvement in environmental responsibility efforts contributes to increasing public consciousness and knowledge about environmental issues (Tian, 2020). Studies could investigate how social workers advocate for corporate accountability in addressing environmental justice concerns (Peng and Wei, 2018). This may involve urging businesses to consider the needs and perspectives of marginalized

communities affected by environmental problems. Luo and Qu (2023) investigated how social work interventions, supported by corporations' environmental responsibility efforts, contribute to sustainable community development and promote active participation in environmental conservation

projects.

H5: Corporate environmental responsibility mediates the relationship between Social work and participation behavior.

Conceptual framework

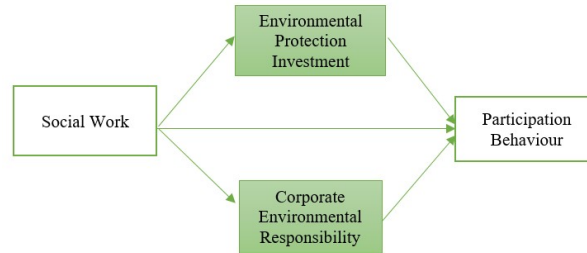


Figure 1: Conceptual framework

METHODOLOGY

Method

The present study took a descriptive-analytical approach that looked to offer a more detailed description of the role that social work plays in protecting the environment from pollution in Saudi Arabia. It described how much various social work discipline variables, including education, research, and practice, contribute to environmental conservation efforts in the region. The study adopted a social survey approach to gather data from a sample of personnel in the field of social work, specifically social work department members and students in several Saudi Arabian higher learning institutions. Descriptive analysis was used to identify the relationships between social work education, research and practice, and environmental conservation from pollution in Saudi Arabia. An online survey that was carried out in Saudi Arabian

countries provided the information for the current study. A straightforward sampling process was used to select 260 participants at random from among the volunteers. Every participant signed a written consent form before beginning the study. A 20-minute in-person survey was conducted between June 12 and July 12, 2023.

Study population and sample

The study population considered in this study included faculty members and students from higher learning institutions. This sample population was selected for its in-depth insights into the discipline of social work, with many participating in social work research and education and social work practice at the grassroots level. A random sample of individuals in the social work discipline (n = 260), comprising faculty members (n = 45) and students (n = 215) from social work departments of seven Saudi universities, participated in the study. Table (1) offers a more detailed breakdown of the sampled population.

Table 1: Sample population breakdown

Variable	Frequency	%
Professor	11	4.2
Associate Professor	14	5.4
Assistant Professor	13	5.0
Lecturer	7	2.7
Postgraduate students	20	7.7
University students	195	75.0
Total	260	100

Study Tools

The primary tool used for data collection in the study was a questionnaire. Data was collected using a three-point Likert scale questionnaire, whose objective was to assess the overall role of social work in environmental protection in the Kingdom. The questionnaire included three axes; the role of social work education, research, and practice. The questionnaire's apparent validity was gauged by eight arbitrators in different Saudi universities, who went through it and offered their opinions. Their insights then offered a basis for the notes of the researcher that were used to revise the preliminary questionnaire to its final form. Its reliability was then tested by a pilot sample (n = 15), and Cronbach's alpha coefficient was established to be 0.97.

The questionnaire included two parts and was the outcome of a thorough review of the literature. The first one examined the demographic information of the individuals. The latter featured four measures with response choices on a five-point Likert scale that went from 1 (strongly disagree) to 5 (strongly agree). The social work scale was taken from Kao (2017), and Li et al. (2020) took the participant behaviors. Similar to how investments in environmental protection were

accepted Wu et al. (2022), corporate environmental responsibility was adopted by Peng and Wei (2018). Since the data collection was carried out in Saudi Arabia, the questions were written in English to ensure that everyone could understand them.

RESULTS

The present study determines the role of the discipline of social work in protecting the environment from pollution in Saudi Arabia, as well as the social exchange theory involved.

Demographics

Based on an initial examination of respondent data, Table 1 provides demographic information and descriptive statistics for the sample for the current study (N=260). The measurement and structural models were evaluated using SmartPLS3. In the current study, the effects of Saudi Arabia on social work, environmental investment protection, corporate environmental responsibility, participant behavior, and social exchange theory were examined. The age, gender, marital status, and experience models for university faculty and staff are adequate, as shown in table 2.

Table 2: Demographic profile

Demographic	Description	No. of responses	%
Gender	Male	150	58
	Female	110	42
Age	22-33	90	35
	33-55	110	42
	Above 55	60	23
Education	Master/MS	120	46
	PhD	140	54
Experience	2-3 Years	110	42
	3-5 Years	70	27
	More than 5 Years	80	31
Marital Status	Single	80	31
	Married	110	42
	Divorced	70	27

In the University staff of Saudi Arabia, males were 58%, and females were 42%, according to table 2. University staff from Saudi Arabia aged 22 to 33 were 35%, while 33 to 55 were 42%, and above 55 were 23%. In University staff from Saudi Arabia, master/MS were 46% and Ph.D. were 54%. In University staff from Saudi Arabia, the experience of 2-3 years were 42%, the experience of 3-5 years were 27%, and the

experience of more than 5 years were 31%. Marital status of staff from Saudi Arabia single were 31%, married were 42% and divorced were 27%.

Measurement model

The factor loadings, validity, and reliability of the data collected from 260 university employees in Saudi Arabia were initially evaluated using PLS-SEM. To quantify the relationship between a group of

observable variables and a group of latent variables, or variables that are not observed, a measurement model, which is a statistical model, is utilized. It is also a method for determining how accurately a set of observable variables represents the hidden variable or underlying construct that they are meant to measure (Purwanto et al., 2021).

Composite Reliability, Cronbach's Alpha: Table 3 displays the composite reliability, Cronbach's alpha, and AVE of the items for the PLS measurement model. The internal consistency of a test item is commonly evaluated using Cronbach's alpha test result, which must be 0.70 or higher (Purwanto et al., 2021). For the variables under examination, Cronbach's Alpha and CR scores exceeded 0.70.

How interconnected or linked the components of a scale or test are to one another is determined by Cronbach's alpha, a frequently used metric of internal consistency dependability. Its values could be between 0 and 1, with values nearer 1 denoting greater internal consistency (Ammad and Qureshi, 2021). The composite dependability of Cronbach's alpha, which also takes into account the different levels of relationship intensity between each element and the basic notion, allows for the possibility of unequal item weighting. Convergence validity and high reliability were shown because the average variance extracted (AVE) values for discriminant validity were higher than 0.50 (Fornell and Larcker, 1981).

Table 3: Composite reliability, Cronbach's Alpha, and AVE

	CA	Rho_A	CR	(AVE)
Corporate Environmental Responsibility	0.742	0.852	0.762	0.595
Environmental Protection Investment	0.715	0.764	0.827	0.618
Participation Behaviour	0.826	0.831	0.896	0.742
Social work	0.864	0.868	0.908	0.711

Note: CR=composite reliability; AVE=average variance extracted; CA= Cronbach's Alpha

Discriminant Validity (HTMT): Each data analysis must also demonstrate that it has discriminant validity. Purwanto et al. (2021) defined discriminant validity as "the degree to which a given latent variable differs from other latent variables". It is of the honorable and trustworthy sort. In other words, it demonstrates how effectively a test captures the idea for which it was created. In particular, discriminant validity assesses if connections exist between variables that theoretically

shouldn't be related. To prevent issues with construct validity and the confounding of results, discriminant validity involves making sure that the measurements of different constructs or variables do not overlap. If evaluations of many elements are too closely related, it may be challenging to pinpoint the concept that is responsible for any observed impacts (Purwanto et al., 2021). Table 4 demonstrated the value of discriminant validity.

Table 4: Discriminant validity

	CER	EPI	PB	SW
Corporate Environmental Responsibility	0.629			
Environmental Protection Investment	0.606	0.786		
Participation Behaviour	0.581	0.149	0.861	
Social work	0.616	0.217	0.755	0.843

R Square: R square's value will range from 0 to 1. The determination coefficients for the internal variables are shown in the table. The fit value in a simple regression refers to how well the independent variable(s) explain the fluctuation of a predictor variable. The amount of variance in the dependent variable in a regression model that is explained by the independent variable or variables is measured statistically as R-squared (R²). R² values vary

from 0 to 1, and higher values show that the independent variable accounts for a larger fraction of the variation in the dependent variable (Sobaih and Elshaer, 2022). According to table 5, the corporate environmental responsibility value of r square were 0.380 and environmental protection investment value were 0.047 and the participation behavior value of r-square were 0.610, respectively.

Table 5: R Square

	R-Square
Corporate Environmental Responsibility	0.380
Environmental Protection Investment	0.047
Participation Behaviour	0.610

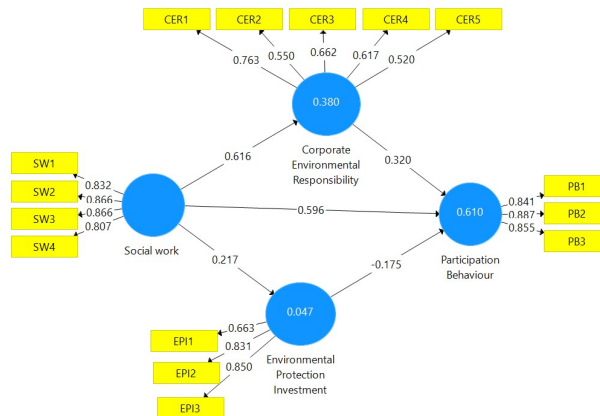


Figure 2: Assessment of algorithm

Structural equation model

Using the PLS-SEM bootstrapping method, the structural model route coefficients supporting the hypothesized associations were statistically determined. The structural equation model (SEM) can be used to assess intricate theoretical models and hypotheses since it is a versatile and effective statistical technique. To build a comprehensive model that can account for both the direct and indirect interactions between variables, SEM integrates factor analysis, regression analysis, and path analysis. Both sorts of variables are present in the model: latent variables, which are unobserved elements thought to underlie the observed variables, and observable variables, which are the variables that are measured (Purwanto et al., 2021).

Direct relation: The PLS-SEM assessment for correlations between social work, environmental protection investment, corporate environmental

responsibility, and participation behavior was also used, along with staff from Saudi Arabia. It shows the connection between social work, environmental protection investment, corporate environmental responsibility, and participation behavior. When there is a direct relationship between two variables, a change in one variable results in a predictable change in the other variable in the same direction (Purwanto et al., 2021). The results show that the relationship between social work and participation behavior is significant ($\beta = 0.596, t = 14.589, p = 0.000$). Hence H1 is accepted. The results show that the relationship between social work and environmental protection investment is significant ($\beta = 0.217, t = 4.931, p = 0.000$). Hence H2 is accepted. The results show that the relationship between social work and corporate environmental responsibility is significant ($\beta = 0.616, t = 19.960, p = 0.000$). Hence H3 is accepted.

Table 6: Direct relation

	Original Sample	T Statistics	p-Values	Decision
Social work → Participation Behaviour	0.596	14.589	0.000	Supported
Social work → Environmental Protection Investment	0.217	4.931	0.000	Supported
Social work → Corporate Environmental Responsibility	0.616	19.960	0.000	Supported

Mediating effect: The term "mediation" is used to describe a process in which "the parties participate in a meeting with a mutually agreed-upon neutral third party who assists them in the discussion of their differences" (Purwanto et al., 2021). The existence of a third variable, referred to as a mediating variable, intervenes in the relationship and may be used to explain a statistical connection between an independent and a dependent variable. In plain English, the mediating variable aids in the explanation of the relationship between the

independent and dependent variables. According to table 7 environmental protection investment as a mediating variable, the link between social work and participation behavior remained significant ($\beta = -0.038, t = 2.553, p = 0.000$, respectively). Hence, H4 is accepted. According to table 7 corporate environmental responsibility as a mediating variable, the link between social work and participation behavior remained significant ($\beta = 0.197, t = 5.723, p = 0.000$, respectively). Hence, H5 is accepted.

Table 7: Mediating effect

	Original Sample	T Statistics	p-Values	Decision
Social work → Environmental Protection Investment → Participation Behaviour	-0.038	2.553	0.011	Supported
Social work → Corporate Environmental Responsibility → Participation Behaviour	0.197	5.723	0.000	Supported

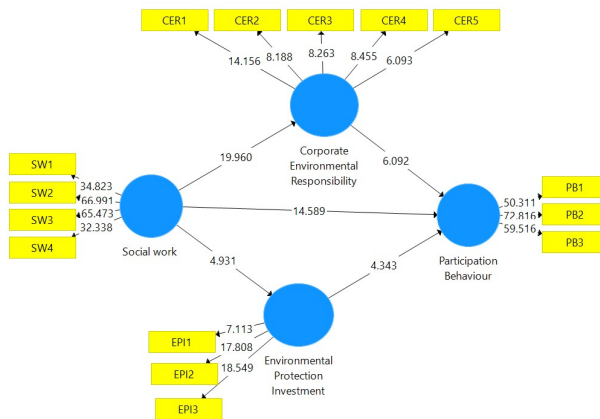


Figure 3: Assessment of bootstrapping

DISCUSSION

The present study determines the role of the discipline of social work in protecting the environment from pollution in Saudi Arabia, as well as the social exchange theory involved. It shows the connection between social work, and participation behavior, as well as two mediating variables as environmental protection investment, and corporate environmental responsibility. In general, most of the respondents in the current study revealed that they perceived social work education as only "scarcely" contributing to environmental protection in Saudi Arabia. The respondents advanced that social work education

did not adequately feature topics on environmental conservation and institutions do not empower social work students to deal with environmental issues. According to most of the respondents, social work education did not also motivate any societal shift toward environmental conservation. The findings from the study related to environmental protection considerations in social work strongly aligned with the research on the specific topic. All hypotheses were accepted.

The results show that the relationship between social work and participation behavior is significant. When social work incorporates a participatory approach, it

empowers individuals and communities, giving them a voice in shaping their destinies and addressing their unique needs and challenges. By actively involving the target population in the design and implementation of interventions, social workers can gain a deeper understanding of their experiences, priorities, and aspirations. This collaborative approach fosters a sense of ownership and responsibility among community members, leading to greater buy-in and commitment to the proposed solutions. Li et al. (2023) indicated that social work failed to support research related to environmental conservation. The findings on the importance and prominence of environmental considerations in social work research also largely conformed to those in available studies.

The results show that the relationship between social work and environmental protection investment is significant. Albeit no studies on Saudi Arabia could be identified by the current study, research on the contributions of social work education to environmental conservation also laments the absence of environmental protection considerations in most social work curricula. The study by Peng and Wan (2021), nonetheless, clarifies that education regulatory bodies recommend considerations on environmental protection in social work curricula, particularly in the US. However, despite the recommendations, Peng et al. (2023) highlight that social work curricula focus on power and oppression issues. The lack of focus on environmental pollution highlighted by studies outside Saudi Arabia aligns with the findings of the current study that social work education scarcely contributes to environmental protection (Bai and Meng, 2022). On the other hand, with respect to social work research, the current study mostly “disagreed” that it played a role in protecting the environment in Saudi Arabia from pollution. While there was an acknowledgment that social research should focus on environmental protection issues and that it would benefit environmental pollution issues, the participants in the study also recognized a lack of investment in social work research related to environmental conservation.

The results show that the relationship between social work and corporate environmental responsibility is significant. The findings of the current study concerning the role of social work practice in

mitigating pollution in Saudi Arabia aligned with those in the available literature, even though none of the studies identified were related to pollution in Saudi Arabia. In America and Zimbabwe, social workers surveyed recognized the importance of considering environmental issues in social work practice (Holbrook and Hobday, 2019; Lavuri, 2022). At the same time, however, they acknowledged that their practice did not significantly contribute to environmental conservation. As individuals, social workers also showed no difference in their concern for the environment relative to the average person. Appiah et al. (2020) attributed the shortcomings in social work practice to the lack of adequate skills and training that social workers perceived to have in managing the environment.

Environmental protection investment as a mediating variable, the link between social work and participation behavior remained significant. Studies on the role of social work research on environmental protection also recognize that this aspect of the discipline fails to contribute significantly to protecting the environment. Holbrook and Hobday (2019) highlight how the available social work research fails to consider environmental aspects when exploring the discipline. on the other hand, notes how the available social work research focuses on issues of power and oppression, similar to what Appiah et al. (2020) highlighted regarding social work education. Holbrook and Hobday (2019) recommends that social work research focus on environmental issues in tandem with those of classism and racism, which combine to bring social injustice. While studies acknowledge the insufficiency of social work research in contributing to environmental protection, similar to the current study, they also recognize that the need for social work research considering environmental issues is deemed essential in the discipline. Holbrook and Hobday (2019) highlighted that environmental issues have gained significant attention in social work research, both in Canada and globally, a sentiment exemplified by this study and its findings. Perhaps uniquely, however, the available studies attribute the notable gap in social work research on environmental protection to the lack of consideration of this aspect by social work education (Bai and Lyu, 2023). Nonetheless, this is

not a relationship that the current study looked into with its specific focus on the role of the discipline of social work in protecting the environment in the Kingdom. Finally, in relation to the role of social work practice in environmental protection in Saudi Arabia, the respondents in the current study view that the discipline had a minimal role in preventing pollution. Social work programs were seen as having an insignificant role in solving pollution in Saudi Arabia and in developing the practice of social workers in conservation. Nonetheless, it was well recognized in the discipline that there was a need for social work practice to consider resolving the issue of environmental degradation. It was also recognized that social workers need more skills, albeit the lack of training was highlighted to affect social work practice. Corporate environmental responsibility as a mediating variable, the link between social work and participation behavior remained significant. All in all, the issue of the discipline of social work lacking a prominent role in environmental conservation was not unique to Saudi Arabia based on the studies. There were cases of social work taking a backseat in environmental conservation in both developed and developing nations. Social work education, research, and practice recognized the value social work could bring to environmental conservation. Nonetheless, there was a lack of knowledge and understanding of the mechanisms through which social work could impact due to minimal social work research and suboptimal education (Duan, 2022; Li et al., 2020). By partnering with socially responsible corporations, social work interventions gain access to additional resources, expertise, and funding, which can amplify the impact of their efforts. Such collaborations not only bolster the scale and reach of interventions but also lend credibility to the initiatives, garnering increased trust and support from the community. Corporations with a strong commitment to environmental responsibility often have established relationships with the local community, which facilitates better communication and participation.

Theoretical and practical implications

By incorporating it within the field of environmental protection, the current work adds to the richness of social exchange theory. The study advances the

theoretical knowledge of the variables influencing pro-environmental acts by showing how social work can promote beneficial social interactions and stimulate engagement in environmentally responsible behaviors. The study emphasizes the significance of including the field of social work in initiatives for environmental defense. This integration can provide a fresh viewpoint on how to deal with environmental problems by highlighting the importance of social interaction, community involvement, and reciprocity in encouraging sustainable behavior. The clarification of the mechanisms by which social work interventions influence environmental protection behavior is aided by the identification of environmental protection investment and corporate environmental responsibility as mediating variables. This discovery opens the door for further investigation into the precise tactics social workers might use to encourage ecologically friendly behavior. The study promotes a multilevel analysis of environmental protection initiatives by examining the relationship between social work and participation behavior as well as the mediation of environmental protection investment and corporate environmental responsibility. It emphasizes how crucial it is to take into account societal, organizational, and individual elements in order to comprehend and improve environmental stewardship. This study's findings highlight how critical it is to include environmental issues in social work education and training. Giving social workers environmental protection knowledge and skills will improve their capacity to address ecological issues and encourage sustainable behavior among the people they serve. The study emphasizes the possible advantages of working together with environmental organizations or governmental bodies. Together, these organizations may use their collective experience to create comprehensive and integrated environmental protection projects and programs. Social workers can create customized interventions for various stakeholders by having a thorough understanding of the mediating variables (environmental protection investment and corporate environmental responsibility). For instance, they can encourage local residents to spend money on environmentally friendly goods and services while encouraging businesses and sectors to embrace

green practices. The study's conclusions can help social workers in their efforts to promote ecologically friendly laws and procedures. Social workers can advocate for policies that support sustainable development and environmental preservation at the local, regional, and national levels using the study's findings as evidence. Social workers can play a leadership role in creating and implementing environmental community-based projects. Community members may feel empowered and a sense of ownership as a result of these projects, which may motivate them to take an active role in environmental preservation initiatives. Insights from the study can be used by practitioners to assess the success of social work interventions in encouraging environmental protection behaviours.

Limitations and future research

The current study opted to focus on the role of social work in protecting the environment in Saudi Arabia from pollution, given the gap in literature focusing on this specific topic. Nonetheless, in exploring the current topic, the study faced some limitations. The first related to the study approach used the descriptive analytical approach. While this was sufficient in describing the sentiments of the respondents, it was not enough to truly quantify the relationship between the three variables of social work and environmental protection in Saudi Arabia. The study was also limited by the general lack of insight into the issue of pollution in Saudi Arabia, as well as the role of social work in combating environmental degradation. The lack of prior studies meant insufficient background for the study to be based upon, even while allowing the study to be somewhat novel. Since the current study is exclusively concerned with Saudi Arabia, its applicability to other cultural and social settings may be constrained. Because socio-cultural norms, governmental laws, and levels of industrialization fluctuate across nations and regions, social work's contribution to environmental protection might vary dramatically from one area to another. Cross-sectional data may have been used in the study, which restricts the capacity to prove causality and long-term consequences. Studies that track changes over time, such as longitudinal ones, would be able to show more conclusively how social work and environmental preservation are related. The complexity of reasons

and incentives that impact environmental protection acts may not be fully captured by social exchange theory, despite the fact that it provides useful insights into understanding the dynamics of social connections and participation behaviors. To develop a comprehensive understanding of the dynamics of environmental protection initiatives, investigate the perspectives and experiences of various stakeholders, including social workers, community members, businesses, and policymakers. The discipline of social work has been growing concerned with its role in environmental protection, seeing how cases of environmental pollution have come to intertwine with social justice, which has always been at the core of social work. Nonetheless, there is a shortage of studies assessing the role of social work in environmental preservation. Therefore, this study contributes to filling this gap, looking at the subject from the lens of individuals in university social work departments in Saudi Arabia. The study also addresses the gap in inquiries about the role of social work in environmental protection in the Kingdom, which highly demands scholarly inquiry, given that there are no current studies.

CONCLUSION

The current study sought to establish the role of social work as a discipline in preventing environmental pollution in Saudi Arabia. It sought to examine this by surveying faculty members and students in social work departments across multiple higher-learning institutions in the Kingdom. The study showed that social work education scarcely affected environmental protection. On the other hand, the respondents disagreed that social work research was concerned with environmental conservation. At the same time, social work practice had a small role to play in protecting the environment in Saudi Arabia from pollution. The findings in the study aligned with what is available in present studies. Research has found that, across the world, social work has a limited role to play in environmental conservation, even while social workers generally recognize the need to contribute to environmental preservation efforts. Social workers in Saudi Arabia should work towards having a more prominent role in protecting the environment in Saudi Arabia from pollution across all three categories,

education, research, and practice.

REFERENCES

- Ammad AWSS S, Qureshi AH; 2021. Personal protective equipment (PPE) usage in construction projects: A systematic review and smart PLS approach. *Ain Shams Engineering Journal*, 12(4):495-3507.
- Appiah BK, Zhang D, Majumder SC, Monaheng MP; 2020. Effects of environmental strategy, uncertainty and top management commitment on the environmental performance: Role of environmental management accounting and environmental management control system. *International Journal of Energy Economics and Policy*, 10(1):360.
- Bai G, Meng D; 2022. Assessing Influence Mechanism of Management Overconfidence, Corporate Environmental Responsibility and Corporate Value: The Moderating Effect of Government Environmental Governance and Media Attention. *International Journal of Environmental research and public health*, 20(1):577.
- Bai X, Lyu C; 2023. Executive's environmental protection background and corporate green innovation: Evidence from China. *Sustainability*, 15(5):4154.
- Chaaben N, Elleuch Z, Hamdi B, Kahouli B; 2022. Green economy performance and sustainable development achievement: Empirical evidence from Saudi Arabia. *Environment, Development and Sustainability*, p. 1-16.
- Cheng Z, Wu B, Deng X, Li W; 2022. The impact of employees' pro-environmental behaviors on corporate green innovation performance: The mediating effect of green organizational identity. *Frontiers in Psychology*, 13:984856.
- Duan LHYMCTPLRGDL Y; 2022. The moderating effect of corporate environmental responsibility on relational capital and green innovation: Evidence from a knowledge-driven context. *Journal of Intellectual Capital (Ahead-of-print)*.
- Fornell C, Larcker DF; 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1):39-50.
- Holbrook SHASGABJAFMOECALVBMTDMG N J, Hobday AJ; 2019. A global assessment of marine heatwaves and their drivers. *Nature communications*, 10(1):2624.
- Juo WJ, Wang CH; 2022. Does green innovation mediate the relationship between green relational view and competitive advantage?. *Business Strategy and the Environment*, 31(5):2456-2468.
- Kao RH; 2017. Task-oriented work characteristics, self-efficacy, and service-oriented organizational citizenship behavior: A cross-level analysis of the moderating effect of social work characteristics and collective efficacy. *Personnel Review*, 46(4):718-739.
- Lavuri R; 2022. Organic green purchasing: Moderation of environmental protection emotion and price sensitivity. *Journal of Cleaner Production*, 368:133113.
- Li JB, Yang A, Dou K, Wang LX, Zhang MC, Lin XQ; 2020. Chinese public's knowledge, perceived severity, and perceived controllability of COVID-19 and their associations with emotional and behavioural reactions, social participation, and precautionary behaviour: A national survey. *BMC Public Health*, 20(1):1-14.
- Li W, Bhutto MY, Waris I, Hu T; 2023. The nexus between environmental corporate social responsibility, green intellectual capital and green innovation towards business sustainability: An empirical analysis of chinese automobile manufacturing firms. *International Journal of Environmental Research and Public Health*, 20(3):1851.
- Liao HY, Hsu CT, Chiang HC; 2021. How does green intellectual capital influence employee pro-environmental behavior? The mediating role of corporate social responsibility. *International Journal of Management Studies*, 28(2):27-47.
- Liu T, Gao H; 2022. Does Supply Chain Concentration Affect the Performance of Corporate Environmental Responsibility? The Moderating Effect of Technology Uncertainty. *Sustainability*, 14(2):781.

- Lucas MT, Noordewier TG; 2016. Environmental management practices and firm financial performance: The moderating effect of industry pollution-related factors. *International Journal of Production Economics*, 175:24-34.
- Luo H, Qu X; 2023. Impact of environmental CSR on firm's environmental performance, mediating role of corporate image and pro-environmental behavior. *Current Psychology*, p. 1-15.
- Mo X, Boadu F, Liu Y, Chen Z, Ofori AS; 2022. Corporate social responsibility activities and green innovation performance in organizations: Do managerial environmental concerns and green absorptive capacity matter?. *Frontiers in Psychology*, 13:938682.
- Peng B, Zhao Y, Elahi E, Wan A; 2023. Investment in environmental protection, green innovation, and solid waste governance capacity: Empirical evidence based on panel data from China. *Journal of Environmental Planning and Management*, 66(6):1229-1252.
- Peng CSEE B, Wan A; 2021. Can corporate environmental responsibility improve environmental performance? An inter-temporal analysis of Chinese chemical companies. *Environmental Science and Pollution Research*, 28(10):12190-12201.
- Peng TY B, Wei G; 2018. Can environmental regulations promote corporate environmental responsibility? Evidence from the moderated mediating effect model and an empirical study in China. *Sustainability*, 10(3):641.
- Purwanto A, Asbari M, Santoso TI; 2021. Analisis Data Penelitian Marketing: Perbandingan Hasil antara Amos, SmartPLS, WarpPLS, dan SPSS Untuk Jumlah Sampel Besar. *Journal of Industrial Engineering & Management Research*, 2(4):216-227.
- Rustam A, Wang Y, Zameer H; 2020. Environmental awareness, firm sustainability exposure and green consumption behaviors. *Journal of Cleaner Production*, 268:122016.
- Shah SGM, Sarfraz M, Ivascu L; 2021. Assessing the interrelationship corporate environmental responsibility, innovative strategies, cognitive and hierarchical CEO: A stakeholder theory perspective. *Corporate Social Responsibility and Environmental Management*, 28(1):457-473.
- Shah SMM, Ahmed U, Ismail AI, Mozammel S; 2021. Going intellectually green: Exploring the nexus between green intellectual capital, environmental responsibility, and environmental concern towards environmental performance. *Sustainability*, 13(11):6257.
- Singh HP, Singh A, Alam F, Agrawal V; 2022. Impact of sustainable development goals on economic growth in Saudi Arabia: Role of education and training. *Sustainability*, 14(21):14119.
- Sobaih AEE, Elshaer IA; 2022. Personal Traits and Digital Entrepreneurship: A Mediation Model Using SmartPLS Data Analysis. *Mathematics*, 10(21):3926.
- Tian PCXRYXTWCJXZS J F; 2020. Corporate innovation and environmental investment: The moderating role of institutional environment. *Advances in Climate Change Research*, 85-91(2):86-91.
- Wang K, Cui W, Mei M, Lv B, Peng G; 2023. The Moderating Role of Environmental Information Disclosure on the Impact of Environment Protection Investment on Firm Value. *Sustainability*, 15(12):9174.
- Wang S, Zhou Z, Tian K; 2022. Environmental awareness and environmental information disclosure: An empirical study based on energy industry. *Frontiers in Psychology*, 13:1038040.
- Wu L, Qing C, Jin S; 2022. Environmental protection and sustainable development of enterprises in China: The moderating role of media attention. *Frontiers in Environmental Science*, p. 1781.
- Wu W, Yu L; 2023. How Does Environmental Corporate Social Responsibility Affect Technological Innovation? The Role of Green Entrepreneurial Orientation and Green Intellectual Capital. *Journal of the Knowledge Economy*, p. 1-32.
- Yang D, Wang Z, Lu F; 2019. The influence of corporate governance and operating characteristics on corporate environmental

- investment: Evidence from China. *Sustainability*, 11(10):2737.
- Yang QHXWGQLLSJYX L; 2021. Resource slack, environmental management maturity and enterprise environmental protection investment: An enterprise life cycle adjustment perspective. *Journal of Cleaner Production*, 309,(127339).
- Yousef R.; 2019. Disability, social work and social exclusion: new strategies for achieving social inclusion of people with physical disabilities in the Kingdom of Saudi Arabia. (ph.d thesis), University of Salford, UK.
- Zahoor N, Gerged AM; 2021. Relational capital, environmental knowledge integration, and environmental performance of small and medium enterprises in emerging markets. *Business Strategy and the Environment*, 30(8):3789-3803.
- Zhao L, Zhang L, Sun J, He P; 2022. Can public participation constraints promote green technological innovation of Chinese enterprises? The moderating role of government environmental regulatory enforcement. *Technological Forecasting and Social Change*, 174:121198.
- Zheng S, Jin S; 2023. Can Enterprises in China Achieve Sustainable Development through Green Investment?. *International Journal of Environmental Research and Public Health*, 20(3):1787.
- Zhou J, Jin S; 2023. Corporate Environmental Protection Behavior and Sustainable Development: The Moderating Role of Green Investors and Green Executive Cognition. *International Journal of Environmental Research and Public Health*, 20(5):4179.