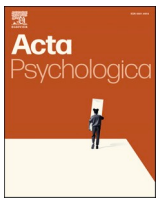
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Proactive eco-initiatives in healthcare: Exploring the role of motivation, organizational culture, and leadership

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ABSTRACT

This research aims to investigate the antecedents of employee eco-initiatives toconcerning public service motivation, green work climate, employee environmental concern and supervisor environmental priority in Malaysia's healthcare sector. Based on the structural equation modeling (SEM) analysis with the help of SMART-PLS, it was found that public service motivation positively influences eco-initiatives in a direct and indirect manner through green work climate and employee environmental concern. The results stress the role of intrinsic motivation and organizational culture in changing people's behaviors sustainably. Healthcare organizations should encourage public service motivation, develop a supportive green work climate, and integrate environmental leadership to support sustainability. This research advances the field by proposing a holistic framework that captures both the organizational and personal antecedents of eco-initiatives in an environment where service demands are high.

1. Introduction

Today, environmental problems have become a major global issue in areas ranging from depletion and waste management to pollution and the degradation of ecosystems (Ahmad, Samad, & Mahmood, 2024; Li, Ahmad, & Lewandowska, 2024). These issues threaten biodiversity and public health, food security, and social stability (Xu et al., 2022). In this context, the healthcare sector plays a major role, as it consumes high resources, operates continuously, and generates significant amounts of waste, including hazardous biomedical waste that needs special handling. Global warming, melting of polar ice caps and rising of natural disasters due to climate change contribute to threats to biodiversity, human life, food security, and stability (Ahmad, Ahmad, Lewandowska, & Han, 2024; Guan, Ahmad, Sial, Cherian, & Han, 2023; Yuxiang, Ahmad, Linda, & Heesup, 2024). These impacts demonstrate that the problem of environmental degradation requires multilateral effort cutting across disciplines (Ahmad, Scholz, AlDhaen, Ullah, & Scholz, 2021). Some of the intervening practices attributed to climate change include large-scale deforestation, emissions of greenhouse gases, and the use of fossil fuels in industries, energy production and transportation (Kong et al., 2021).

These unethical practices persist, driven by economic pressures and industrialization, with little regard for their long-term consequences on the environment (Dong et al., 2020; Murtaza et al., 2021). The sustainability discussions mostly focus on carbon neutrality, while there is a need to expand the discussion to encompass sustainability as a whole for the industries (Ahmad et al., 2021). The focus of this study is eco-initiatives in healthcare that attempt to promote environmental sustainability in multiple dimensions, including waste reduction and resources conservation, and the encouragement of environmentally responsible behavior. The desire for change is becoming apparent for society to shift to a carbon-neutral future (Ahmad, Ahmad, & Siddique, 2024; Liu, Ahmad, Jiang, & Arshad, 2024). Thus, to reach carbon neutrality in all spheres of human life, both the technological approach and the shift of culture and organizational practices toward sustainability are needed (You, Ren, Cai, Huang, & Li, 2023; Zhou, Ahmad, Lho, & Han, 2023).

This research combines addressing these broader environmental concerns with the imperative of integrating sustainable practices into the healthcare industry, limiting its environmental footprint, and synergizing with global sustainability goals. Specifically, the present study explores the role of public service motivation to encourage eco-initiatives in the healthcare industry, which is a large influence sector because it runs continuously 24/7, consumes resources, and results in

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environmental effects (Saba, Haseeb, Ahmed, & Rehman, 2020). Sustainability research in the healthcare industry is unique and compelling, and different from other 24/7 operational industries. In contrast to other resource-intensive sectors like manufacturing, healthcare not only consumes a great deal of energy and materials but generates a wide variety of specialized waste, such as biomedical waste, which requires special handling and disposal due to associated environmental and public health issues (Peng et al., 2022).

In addition, healthcare facilities required to continue to function continuously, providing life-saving services (Fu et al., 2022). Therefore, their environmental footprint is inevitable and more difficult to mitigate. The healthcare sector is selected for study because it simultaneously plays a critical role as a service provider and as a major generator of resource use and waste. Public health outcomes are strongly connected to environmental sustainability, and the healthcare industry directly affects public health outcomes. For example, air quality, contaminating water, and managing waste all affect community health in the here and now and in the future (Molnár, Mahmood, Ahmad, Ikram, & Murtaza, 2021). Thus, optimizing sustainability in healthcare minimizes environmental impact and is in tune with the spirit of the industry to promote health and protect future generations. The healthcare industry also often serves as an example to other industries of which practices to adopt. Its work as an evident and impactful sector provides an opportunity for its eco-efforts to inspire and drive cross-sector sustainability efforts (Ahmad, Ullah, Ryu, Ariza-Montes, & Han, 2023). This study contributes to the literature by exploring how intrinsic motivation (i.e., public service motivation) can promote eco-initiatives in healthcare, which may be scaled to other industries to further the study's applicability and relevance. While significant research has focused on sustainability in manufacturing industries, the healthcare sector remains underexplored despite its substantial environmental footprint. Additionally, the interplay between individual factors, such as public service motivation, and organizational factors, like green work climate and leadership priorities, has not been adequately examined in the context of eco-initiatives.

The study thereby explores the association between intrinsic motivation in public service and the practice of sustainable practices. It reveals that public motivation can catalyze constructive environmental change. The study is grounded on the assumption of a dual mediation model where green work climate and employee environmental concern are proposed as the two mediating variables of the relationship between public service motivation and eco-initiatives. A green work climate, defined as the extent to which an organization encourages and fosters environmentally responsible behavior of employees (Norton, Zacher, Parker, & Ashkanasy, 2017) is therefore instrumental in identifying how employees translate public service motivation toward tangible actions that positively impact the environment. The relationship between internal motivation and eco-initiatives is explained through the mediating role of employee environmental concerns. Employee environmental concern, defined as an individual's attention and commitment to environmental issues, serves as an intermediary mechanism that connects intrinsic motivation to eco-initiatives (Schultz, 2000). This means that internal motivation influences employees' environmental concerns, which in turn drive eco-initiatives. By acting as a mediator, employee environmental concern provides a pathway that explains how and why intrinsic motivation leads to environmentally responsible behaviors rather than merely strengthening the direct effect.

These mediators shed light on how organizational culture and individual conscience collectively foster sustainable practices. In addition, the study operationalized supervisor environmental priority as a moderating variable to highlight how organizational leadership supports environmental responsibility in organizations (Robertson & Barling, 2013). These practices are set by the supervisors, which creates a channel through which the larger workforce will have to observe its actions in a way that will support the larger eco-initiatives of the organization. The relationships between green work climate and eco-initiatives and between employee environmental concern and eco-initiatives are moderated by Supervisor environmental priority (Gusmerotti, Todaro, Tosi, & Testa, 2023). More specifically, it provides direction and support in a green work climate to strengthen the effects of a supportive green climate on employees' engagement in eco initiatives. In a similar way, it increases the power of employees' environmental concerns to shape eco-initiatives by building an encouraging and rewarding organizational culture that is environmentally conscious. The dual moderating effect elaborates the pivotal leadership role in making effective use of organizational and individual factors in support of sustainability initiatives.

This thesis focuses on Malaysia's healthcare sector, a key area for sustainability given its round-the-clock operations and high resource demand. The continuous demand for energy, medical supplies, and other resources, combined with a large workforce, makes Malaysia's healthcare sector an essential target for sustainable development initiatives. As a rapidly developing nation, Malaysia has embraced sustainability through government-wide initiatives that seek to minimize the environmental impact and improve resource efficiency (Husain, Ahmad Phesal, Kadir, Ungku Amirulddin, & Junaidi, 2021). Examples of these initiatives include policies and programs that encourage green practices within different sectors, such as healthcare. The context of Malaysia's healthcare sector, with its high resource consumption and environmental footprint, presents an important opportunity to understand how individual eco-initiatives, like those driven by public service motivation, fit with larger national sustainability goals (Azam, Othman, Begum, Abdullah, & Nor, 2016). This alignment shows that organized individual action within organizations can reinforce and support government-wide efforts, making Malaysia a suitable context for investigating the interaction between public service motivation and eco initiatives in resource-intensive industries. This study explores the relationship between intrinsic motivation and sustainable practices in a country committed to balancing economic growth with environmental sustainability.

Given the volume of literature on sustainability, there are crucial gaps in existing research, particularly in the healthcare sector. While a lot of the existing work has predominantly tackled manufacturing industries (Becker, Manske, & Randl, 2022; Schoeggl, Rusch, Stumpf, & Baumgartner, 2023), service industries such as healthcare have not been thoroughly studied regarding their environmental impact. It is particularly worrying that this oversight comes in an industry where healthcare consumption is a high resource consumer and plays a major role in environmental degradation (Ahmad et al., 2021). With more and more healthcare services modernizing, the need to address sustainability in the healthcare sector becomes more and more urgent. Additionally, there has been relatively little research into the impact of public service motivation on healthcare employee-driven eco-initiatives, an area that could harness a great deal of change. Despite its wide recognition as an important driver of pro-environmental behaviors in organizational settings, public service motivation, defined as an individual's intrinsic inclination to promote the public good without monetary return (Perry & Wise, 1990), has not been studied within the context of the healthcare industry. It has been found that people with high public service motivation tend to be more inclined to perform actions to benefit society, such as sustainable practices, as these reflect their own values and a form of civic duty (Nugroho, Setyowati, & Setiyono, 2021; Piatak & Holt, 2020).

While the ethical imperative to serve others is strong in the healthcare sector, public service motivation offers a strong basis for encouraging eco-initiatives and promoting environmental sustainability. Public service motivation (a person's desire to contribute to the public good without monetary compensation) is a key factor in encouraging healthcare workers to practice more sustainably (Perry & Wise, 1990). One must investigate the interplay between motivational factors and eco-initiatives to examine how to promote environmentally responsible behavior in demanding work environments like healthcare. This is

because motivational factors, like public service motivation, can drive sustainable behaviors that help employees act according to organizational sustainability goals. In resource-intensive sectors like healthcare, where environmental impact is substantial, this delineates the underlying motivational dynamics that are actionable by designing eco interventions and policies that can support eco initiatives and thereby improve environmental performance and reduce the ecological footprint. This study attempts to fill this gap by addressing how intrinsic motivational factors, such as public service motivation, can be leveraged to encourage sustainable behavior among healthcare employees in Malaysia.

Consistent with the emergence of an increasingly important body of literature that is investigating how organizational and personal factors interact to drive eco-initiatives, there is still much room for further research into these interactions in particular high-demand service settings such as healthcare. Gusmerotti et al. (2023) offered useful reflections on the interaction of green work climate and individual behaviors, though largely within a general organizational context. Based on these concepts, this study extends and builds on their findings by applying them in the context of the healthcare sector, where the distinct challenges of continuous operations, high resource consumption, and specialized waste generation warrant specialized strategies. Our research brings a new element by using public service motivation as a key driver of eco-initiatives and examining how it interacts with organizational and leadership factors in a resource-intensive industry. This comprehensive approach fills an important gap in the literature by situating these dynamics within an understudied context while carrying important implications for sustainability. Our study aims to bridge this gap by investigating how these mediators enhance the relationship between public service motivation and employee eco-initiatives. Additionally, the supervisor's environmental priority role as a moderating factor remains largely unexplored.

Our research introduces this moderator to comprehensively understand the factors that strengthen eco-initiatives in healthcare, contributing to more effective sustainability strategies in high-demand service environments. This study bridges these gaps by investigating how public service motivation, as an intrinsic motivator, drives eco-initiatives in the healthcare sector through mediators like green work climate and employee environmental concern. By doing so, it highlights actionable strategies for integrating sustainability into healthcare organizations, an area critical for balancing environmental impact with public health goals. The findings of this study not only contribute to the theoretical understanding of sustainability in service industries and provide practical guidance for healthcare organizations striving to enhance their environmental performance while maintaining critical services.

All in all, this study makes important theoretical and practice contributions. It theoretically extends the self-determination theory (SDT) application by examining the dual mediation of green work climate and employee environmental concern on the relationship between public service motivation and eco-initiatives. Finally, the moderation of supervisor environmental priority indicates how leadership may play a significant role in matching individual motivation to organizational sustainability objectives. These insights fill important gaps in the literature in the context of services that have received limited attention in sustainability research, such as high-demand service industries, including healthcare. This study is useful because it provides actionable recommendations for healthcare organizations wishing to reduce their environmental footprint. It stresses the importance of intrinsic motivation and recommends ways to achieve this, including creating a green work environment, improving employee environmental awareness, and enhancing environmentally aware leadership. Not only do these contributions expand theoretical understanding, but they also provide practical tools for the implementation of sustainability initiatives in resource-intensive sectors and the alignment of organizational operations with global sustainability goals.

2. Literature and hypotheses

2.1. Theoretical foundation

Self-Determination Theory (SDT) serves as the primary theoretical foundation for this study. The theory demonstrates how internal motivation drives human actions under conditions that fulfill psychological requirements (Deci & Ryan, 2000). According to this theory, people exhibit an innate tendency to participate in actions that fulfill the needs of autonomy, competence, and relatedness. Workers demonstrating high public service motivation exhibit increased tendencies to participate in eco-initiatives since such behavior matches their intrinsic values and their dedication to social welfare (Ojo, 2022). A core premise of SDT is that motivation does not operate in isolation but is shaped by the surrounding environment. Integrating sustainability across workplace norms within a green work environment helps sustain pro-environmental actions. Intrinsic motivation creates eco-initiatives by using employee environmental concern as a psychological link. Workers who deeply understand environmental concerns alongside their environmental effects demonstrate a stronger natural tendency to initiate sustainability efforts (Gusmerotti et al., 2023). Furthermore, the study incorporates the role of supervisor environmental priority as a moderating factor. Workplace behavior receives its direction from leadership through their creation of guidelines and their support system for sustainable practices. The active involvement of supervisors toward environmental issues enhances both green work climate and employee environmental concern effects on eco-initiatives, strengthening their link to action.

2.2. Hypotheses development

Public service motivation is a theoretical concept that describes an individual's intrinsic desire to contribute to the public good through actions that benefit society, particularly in the context of public policy and service (Ritz, Brewer, & Neumann, 2016). This autonomous motivation to act in the public interest is known to trigger pro-environmental behavior in organizational settings within which sustainability is becoming increasingly relevant (Stritch & Christensen, 2016). People with high levels of public service motivation are inclined to perform behaviors that will benefit both the public interest and the environmental objectives of their organization. Employee eco-initiatives entail activities such as energy saving, wastage reduction, advocacy of sustainability practices, and engagement in environmental endeavors at the workplace (Boiral & Paillé, 2012). These are concrete examples of how people take a stake in enhancing their organizations' environmental protection to the general notion of sustainability. This implies that people with public-spirited self-interest will be eager to practice eco initiatives because it is seen as a civic responsibility.

SDT offers a solid conceptual foundation for why and when pro-environmental behaviors occur by understanding that intrinsic motivations drive long-lasting and beneficial behaviors. Based on SDT, people will tend to do things consistent with their values and meet their needs for psychological autonomy, competence, and relatedness (Aviste & Niemiec, 2023; Ojo, 2022). SDT can be used to explain how intrinsic motivation (e.g., public service motivation) elicits a sense of responsibility and empowerment that encourages people to act on eco-initiatives. For example, if employees feel they have autonomy to make environmentally conscious decisions, competence to contribute effectively, and a sense of relatedness to others who share similar environmental values, they are more likely to engage in sustainability practice. Consequently, SDT is the theoretical basis for connecting motivational factors to actual pro-environmental outcomes in organizational settings.

In this context, public service motivation is very close to intrinsic motivation, the internal drive to perform activities whose completion is intrinsically rewarding or in harmony with personal values. Those

employees with high public service motivation are intrinsically motivated to participate in eco-initiatives because they consider it socially and ethically their duty to the environment (Xu, 2022). Their commitment to sustainability is driven by this intrinsic motivation to adopt environmentally friendly behaviors without external reward or pressure. For them, it is not so much a matter of eco-initiatives but a part of their wider duty to and positively. This study integrates public service motivation, SDT, and organizational dynamics as a theoretical framework to explore their link to pro-environmental behaviors and sustainability in the healthcare context. As an intrinsic driver, public service motivation fits well with SDT's focus on psychological needs of autonomy, competence, and relatedness (Andrews, 2016). Understanding how employees convert their internal motivation to eco-initiative is critical to these concepts. For example, those with high public service motivation as healthcare employees are more likely to view eco-initiatives as mandates of the organization that would extend their total commitment to public welfare and foster sustainable practices.

This framework is further strengthened by SDT, which explains how motivational factors may stimulate sustained pro-environmental behaviors. Employee action on eco-initiatives increases as employees feel autonomous in decision-making, competent at implementing sustainability practices, and related to others who share environmental values. In the healthcare sector, employees work under high workloads and resource-intensive operations, and these psychological mechanisms are especially relevant. This study conceptualizes the green work climate and supportive leadership, which can allow these psychological needs to be present and provide an environment of sustainability goals being easier to adopt. These theoretical concepts are linked to organizational practices through supervisor environmental priority as a moderating factor (Gusmerotti et al., 2023), specifically leadership's role in harmonizing individual motivations with collective sustainability goals. For instance, healthcare supervisors who prioritize environmental issues can create a culture of accountability, and students can develop an attitude to integrate sustainable practices in their daily work. This dynamic ties public service motivation, green work climate, and eco-initiatives together for an overall framework to understand how intrinsic and organizational drivers influence pro-environmental behavior in the context of healthcare sustainability. In Hence, organizations that promote public service motivation among their workforce will find enhanced participation in sustainability initiatives, leading to a more environmentally responsible and conscious place of work.

Hypothesis 1. Public service motivation is positively related to employee eco-initiatives.

The green work climate is the extent to which an organization encourages and supports employees to develop and practice environmentally sustainable practices and the extent to which organizational culture integrates ecological responsibility in its daily operations (Tian, Zhang, & Li, 2020). This creates a climate that prompts employees to adopt sustainability values that eventually lead to eco-friendly behavior. Employees will likely feel empowered and motivated to contribute to environmental initiatives in organizations with a strong green work climate where sustainability becomes a shared organizational goal. It is important to drive long-term environmental performance by creating and maintaining a green work climate because it establishes the groundwork to get employees to work proactively in a sustainable way. Those organizations that emphasize public service motivation in their recruitment practices seek to attract those who have an inherent value for public and environmental good. Naturally, these employees, full of an intrinsic desire to serve society, are naturally inclined to support environmental initiatives and engage in behaviors that would help them align with sustainability objectives (Stritch & Christensen, 2016). Organizations that build a workforce that is skilled and motivated by social and environmental responsibility will become more committed to overall sustainability. Gusmerotti et al. (2023) concluded that when employees perceive a strong green work climate within their organization, they display higher levels of green behavior, and it was concluded that internal motivation, for example, public service motivation, has a strong influence on workplace sustainability practices.

Further studies confirm the close relationship between a green work climate and employee eco-initiatives. For instance, Singh, Yadav, and Pandey (2023) found that employees are more likely to engage in energy conservation, waste recycling, and sustainability advocacy when they perceive their workplace as environmentally friendly. External rewards or organizational mandates do not completely dictate these behaviors as they canresult from a good work climate that promotes employees to see sustainability as part of their professional responsibility. According to Temminck, Mearns, and Fruhen (2015), employees in such an environment are more likely to internalize these values and take ownership of eco-initiatives like reducing consumption of resources and minimizing waste. SDT can also be used to explain how public service motivation relates to employee eco-initiatives through a green work climate. The mediating mechanism of a green work climate links public service motivation to employee eco-initiatives. Indeed, such a work climate actively supports and encourages environmentally responsible behaviors (Ly & Ly, 2024). In a green work climate, employees with high public service motivation will thrive, as it fits with their intrinsic values and provides them with great autonomy, competence, and relatedness. The environment of support encourages the conversion of intrinsic motivation into tangible eco-initiatives like energy conservation, waste reduction, and advocacy for sustainability. Therefore, green work climate mediates this relationship by explaining how public service motivation affects eco-initiatives through a context of organizational creation of an organizational context that promotes pro-environmental behaviors.

While needs for autonomy, competence, and relatedness can be met in various supportive organizational climates, a green work climate specifically fosters these needs in the context of environmental sustainability. By empowering employees to make environmentally conscious decisions (autonomy), providing the resources and skills necessary for sustainability initiatives (competence), and promoting a shared commitment to environmental goals among coworkers (relatedness), a green work climate uniquely aligns organizational support with pro-environmental behaviors (Deci & Ryan, 2000). By giving employees autonomy to make environmentally conscious decisions, developing their competency in sustainability-related skills, and creating a sense of relatedness by promoting a sense of shared commitment with coworkers to environmental goals, green work climate provides employees with the autonomy to make environmentally conscious decisions, builds their competence in sustainability-related skills, and fosters a sense of relatedness by creating a shared commitment to environmental goals among coworkers. In such a climate, employees with high levels of public service motivation are supported in undertaking eco initiatives because their intrinsic values are similar to the organization's environmental mission. Consequently, this study posits several hypotheses based on these insights.

Hypothesis 2. Public service motivation is positively related to a green work climate.

Hypothesis 3. Green work climate is positively related to employee eco-initiatives.

Hypothesis 4. Green work climate mediates the relationship between public service motivation and employee eco-initiatives.

Employee environmental concern is defined as an individual's awareness, perception, and interest in environmental issues (e.g., a sense of responsibility for preserving natural resources and ecological systems) (Schultz, 2000). This is more than a passive acknowledgment of environmental issues; it is a proactive stance on issues such as climate change, pollution, and conservation of resources. Higher levels of employee environmental concern are associated with higher engagement in sustainable practices and with being an advocate of

environmental stewardship in their organization (Adam, Siregar, Musannip, & Supriadi, 2021). In this context, employee environmental concern is a key psychological and behavioral driver of organizational eco-initiatives influencing both individual actions and collective workplace sustainability efforts (Schwarz, Eva, & Newman, 2020). This concern is not dissimilar to public service motivation as it is often associated with people who are predisposed to promote social well-being, including a concern for the environment (Tandon, Dhir, Kaur, Kushwah, & Salo, 2020).

Since environmental degradation is of great concern for communities and future generations, environmental protection is naturally subservient to public service motivation, which stresses a commitment to the common good. Motivated by public service, those employees who engage in environmental protection do not just fulfill some corporate responsibility, but rather consider it to be a personal and civic duty. It makes them conscious of environmental challenges and motivates them to search for and take part in eco-initiatives that suit their values. Rozmiarek, Nowacki, Malchrowicz-Mośko, and Dacko-Pikiewicz (2022) identify the critical importance of employees' environmental concern level in participation in company eco-initiatives, including recycling, energy saving, and advocating sustainable practices within the company. Those employees who are concerned about the environment are more likely to be motivated to do something about it themselves and to promote others to do the same. Often, this active engagement manifests as small-scale action, minimizing waste in the office and larger structured actions, leading recycling programs, and advocating forenergy-efficient policies. Environmental concern, in turn, enables a variety of sustainable behaviors and as such is considered a key factor in inducing environmental responsibility at the organizational level.

Public service motivation's impact on eco-initiatives through employee environmental concern can be particularly significant. Apart from being more aware of most environmental issues, employees with high public service motivation are also more likely to turn their awareness into concrete actions that benefit the organization and the wider community (Rajiani, 2023).

The motivation behind these people to contribute to the greater good is internal, and they are compelled to incorporate environmental values into their day-to-day work practice. This makes their environmental concern a strong driver of eco-initiatives and how they come to participate in sustainability goals and encourage others in the organization to do the same. In organizations with high employee environmental concern, environmental concern is institutionalized as part of the more general organizational culture that sustains sustainability. The internalization of environmental values as a result of personal motivations and organizational support enables the transfer of public service motivation into environmentally appropriate action. Therefore, environmental concern among employees is an important link between public service motivation and eco-initiatives. It converts the inherent motivation to act in service of the public to tangible action that directly facilitates environmental sustainability. Employees who are dedicated to public service and also very concerned about the environment will take action to lead by example, advocating eco-friendly practices and promoting organizational policies that promote sustainability goals. Environmental concern becomes a major driver of eco-efforts in organizations, amplifying public service motivation and thus enhancing environmentally responsible working culture.

Hypothesis 5. Public service motivation is positively related to employee environmental concern.

Hypothesis 6. Employee environmental concern is positively related to employee eco-initiatives.

Hypothesis 7. Employee environmental concern mediates the relationship between public service motivation and employee eco-initiatives.

Supervisor environmental priority is the extent to which supervisors are concerned with environmental issues in their teams (Robertson & Barling, 2013). Supervisors are responsible for influencing the employee's perception and participation in environmental projects by offering directions and encouragement. This influence enhances the correlation between employee's motivation and their participation in eco-initiatives. Supervisors play a crucial role in maintaining a green work climate and increasing the environmental concern of their employees by setting clear expectations and promoting and rewarding environmentally friendly behaviors (Warner-Søderholm, Čepėnas, Minelgaite, & Akstinaitė, 2024). When employees observe their superiors' focus on environmental sustainability, they feel more supported in their green activities, thereby enhancing the effects of intrinsic incentives. The importance of supervisor environmental priority in shaping the relationships between organizational and individual factors and eco-initiatives is critical. For instance, when supervisors place greater emphasis on environmental goals, they increase the positive effect of a green work climate on eco-initiatives. When employees believe that their supervisors actively encourage and reward environmentally responsible behaviors, they are more likely to engage in those behaviors themselves (Aboramadan, Kundi, & Farao, 2021).

Similarly, in the presence of supervisor environmental priority, the relationship between employee environmental concern and eco-initiatives is strengthened. A supportive leadership environment creates a supportive environment for employees to be intrinsically committed to environmental issues and being proactive. These show that supervisor environmental priority is a critical enabler, translating the organizational culture and individual values into effective pro-environmental behavior. The moderating role of supervisor environmental priority can be explained by the positive social environment that promotes more engagement in significant actions. Thus, supervisors ensure that environmental sustainability is the top priority and that employees' self-generated preferences are considered, enhancing the connection between motivation and eco-initiatives.

Hypothesis 8. Supervisor environmental priority moderates the relationship between public service motivation and employee eco-initiatives via green work climate (H8a) and environmental concern (H8b), such that these relationships are stronger when supervisor environmental priority is high.

Fig. 1 presents the conceptual framework that guides this study. It illustrates how public service motivation influences eco-initiatives directly and indirectly through green work climate and employee environmental concern. Supervisor environmental priority moderates these relationships by either reinforcing or weakening the effects of the mediators.

3. Material and methods

3.1. Participants and procedure

This study targeted employees in Malaysia's healthcare sector, including doctors, nurses, administrative staff, and support personnel across cities such as Kuala Lumpur, Johor Bahru, Penang, and Ipoh. These cities were selected for their expanding healthcare infrastructure and commitment to sustainability efforts. The study aims to provide a well-rounded perspective on the environmental challenges and sustainable practices within Malaysia's healthcare system by gathering data from healthcare professionals in these cities. This diverse urban sample allows for a comprehensive analysis of regional healthcare sustainability approaches, while also highlighting the national efforts to integrate eco-initiatives in high-demand sectors. Data were collected through in-person surveys distributed during work shifts. As indicated by existing green policies, healthcare organizations were selected based on size, 24/7 operations, and commitment to environmental sustainability.

Ethical considerations ensured participants were fully informed, assured of anonymity and confidentiality, and given the option to

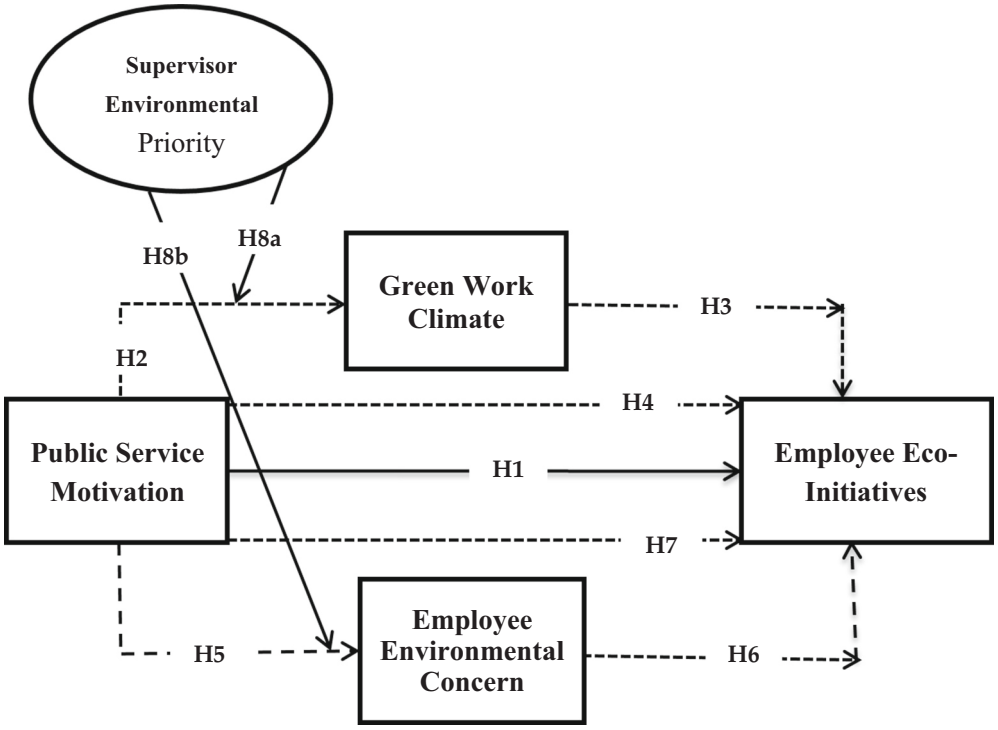


Fig. 1. The Conceptual Framework.

withdraw at any time, with consent obtained in person (Ahmad, Samad, & Han, 2023; Ahmad, Ullah, AlDhaen, & Siddique, 2023). A total of 600 questionnaires were distributed. We received 466 completed questionnaires, and after data cleaning, 438 responses were considered valid. Data collection occurred in three stages to ensure comprehensive coverage of all variables while minimizing respondent fatigue (Ahmad, Samad, & Han, 2024; Liu et al., 2023). A single questionnaire was divided into three parts, with each part administered at different times to the same group of participants. In the first stage, demographic information and measures of public service motivation were collected. The second stage focused on green work climate and employee environmental concern, while the third stage gathered data on supervisor environmental priority and employee eco-initiatives. Each stage was administered to the same set of respondents, ensuring consistency in the data and allowing for robust analysis of the relationships among the variables.

3.2. Measures

Public service motivation was assessed using a multidimensional construct with four dimensions: self-sacrifice (3 items), attraction to public policy-making (3 items), commitment to the public interest (3 items), and compassion (3 items) based on Hue, Vo Thai, and Tran (2022). Sample items include: "Making a difference in society means more to me than personal achievements" (self-sacrifice), "I am interested in making public programs beneficial for my country or community" (attraction to public policy-making), "I consider public service my civic duty" (commitment to the public interest), and "It is difficult for me to contain my feelings when I see people in distress" (compassion).

Supervisor environmental priority was measured using a four-item scale from Gusmerotti et al. (2023), modifying Henning et al. (2009). Sample items include: "My supervisor thinks environmental protection comes before productivity." Green work climate was assessed using a six-item scale from Gusmerotti et al. (2023). Sample items include: "My organization takes environmental aspects into account while planning work activities" and "In my organization, information initiatives promote environmentally friendly behavior." Employee environmental concern was measured using a four-item scale based on Chuah, El-Manstrly, Tseng, and Ramayah (2020). Sample items include: "I am emotionally involved in environmental protection issues." Employee eco-initiatives were measured using a five-item scale adapted from Boiral and Paillé (2012). Sample items include: "I often raise awareness among my colleagues about the environmental aspects of work activities." The reliability of the variables was assessed using Cronbach's alpha and composite reliability (CR) to ensure internal consistency. Public service motivation achieved a Cronbach's alpha of 0.87 and a CR of 0.89, while green work climate demonstrated a Cronbach's alpha of 0.85 and a CR of 0.88. Employee environmental concern showed a Cronbach's alpha of 0.83 and a CR of 0.86. Supervisor environmental priority had a Cronbach's alpha of 0.88 and a CR of 0.91, and eco-initiatives recorded a Cronbach's alpha of 0.84 and a CR of 0.87. All reliability coefficients exceeded the recommended threshold of 0.70 (Hair, Risher, Sarstedt, & Ringle, 2019; Jiang, Ahmad, Arshad, & Liu, 2025), indicating high internal consistency and reliability for the measures used in this study (Ahmad, Han, & Kim, 2024; Xue, Ahmad, Han, & Lho, 2024). All items were rated on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The sample demographic is presented in Table 1.

4. Data analysis

The results of the SEM analysis with SMART-PLS indicated high factor loadings for each construct (>0.70), indicating good convergent validity (Fu, Ahmad, Lho, & Han, 2023; Hair Jr, Matthews, Matthews, & Sarstedt, 2017; Zhou et al., 2023). For instance, attraction to public policy-making (APPM) varied between 0.947 and 0.967, compassion (CMP) from 0.829 to 0.960, and commitment to the public interest (CMPI) from 0.961 to 0.977. The composite reliability (CR) values were also >0.70, while the average of the variance extracted (AVE) was >0.50 (Fornell & Larcker, 1981; Han et al., 2022), confirming convergent validity. The r-square values showed moderate explanatory power (Cohen, 1992): The employee eco-initiatives (ECI) at 0.417, employee

Table 1
Sample socio-demographic.

Demographic Category	Frequency	Percentage (%)
Gender		
- Male	215	49.1
- Female	223	50.9
Age		
- 20-29	95	21.7
- 30-39	178	40.6
- 40-49	110	25.1
- 50 and above	55	12.6
Job Role		
- Doctor	140	31.9
- Nurse	160	36.5
- Administrative Staff	80	18.3
- Support Personnel	58	13.2
Education Level		
- Bachelor's Degree	190	43.4
- Master's Degree	180	41.1
- Doctoral Degree	68	15.5

environmental concern (EEN) at 0.326, and green work climate (GWCL) at 0.169. Table 2 includes more detail. Fig. 2 reflects our measurement model.

The analysis of discriminant validity reveals that the square root of AVEs in the correlation matrix is higher than the correlation values (Ahmad, Ullah, AlDhaen, Han, & Scholz, 2022; Chen et al., 2022). For instance, the square root of AVE for supervisor environmental priority (SENP) is 0.889, more than the correlation values. Moreover, the HTMT ratios are all below 0.850 (Ahmad, Ahmad, & Siddique, 2023; Henseler, Ringle, & Sarstedt, 2015), which also provides evidence for discriminant validity. For more details, we refer to Table 3 below.

The relationship between EEN and ECI is significant ($\beta = 0.211$, $p = 0.001$), supporting H6. The relationship between GWCL and ECI is also highly significant ($\beta = 0.424$, $p < 0.001$), supporting H3. Public Service Motivation (PSMT) shows a significant positive relationship with ECI ($\beta = 0.217$, $p < 0.001$), supporting H1, as well as with EEN ($\beta = 0.503$, $p < 0.001$), supporting H5, and GWCL ($\beta = 0.169$, $p < 0.001$), supporting H2. The mediation effect of EEN between PSMT and ECI (H7) is significant ($\beta = 0.106$, $p = 0.001$). Also, the mediation effect of GWCL between PSMT and ECI (H4) is significant ($\beta = 0.072$, $p < 0.001$). The moderating effect of SENP on the relationship between GWCL and ECI (H8a) is significant ($\beta = 0.103$, $p < 0.001$), while its moderating effect on the relationship between EEN and ECI (H8b) is not significant ($\beta = 0.018$, $p = 0.091$). Table 4 summarizes these results and Fig. 3 explains full structural model.

5. Discussion of results

The results from this study contribute to understanding the link between public service motivation and employee eco-initiatives in the healthcare sector. These results support previous studies that have studied the effect that intrinsic motivation can have in promoting sustainable behaviors in organizational contexts. This study's findings are consistent with previous research that shows that intrinsic motivation (e.g., public service motivation) is important for encouraging pro-environmental behavior (Hue et al., 2022; Ritz et al., 2016). The findings specifically concur with the literature on the role of organizational support, such as green work climate, in supporting sustainability initiatives (Norton et al., 2017). This work goes beyond previous research by demonstrating how employee environmental concern mediates individuals' values and their eco-initiatives in the healthcare sector. Hypotheses 1, 2, and 3 were tested to determine that public service motivation positively affects employee eco-initiatives directly and through a green work climate.

Consistent with the work of (Norton et al., 2017) and Xu (2022), our results demonstrate that intrinsic motivation is key in shaping pro-environmental behaviors. We extend this understanding to the healthcare context, a field characterized by high demand and high consumption of resources, by focusing on the importance of a green work climate. This result emphasizes that public service motivation can be more potent in driving employee-driven sustainability efforts when supported by such a positive organizational climate focused on environmental goals. The results from the validation of hypotheses 5 and 6 further support the idea that public service motivation influences employee environmental concern, influencing their eco-initiatives. This result echoes the literature which suggests that environmental concern is a key driver of sustainable behaviors, as indicated in past studies (Rozmiarek et al., 2022). Employees 'awareness and concern of environmental issues will lead to their action to mitigate their organization's environmental impact. This concern, particularly in the healthcare sector where resource usage is significantly high, can be translated into eco-initiatives around energy usage, waste minimization, and sustainability. This study contributes to the growing literature on the role of intrinsic motivation and environmental awareness in fostering organizational sustainability by demonstrating that public service motivation plays a substantial role in employee environmental concern.

Noteworthy also is the confirmation of hypothesis 7, which shows that employee environmental concern mediates the relationship between public service motivation and eco-initiatives. This result indicates the positive impact of public service motivation not only on eco-initiatives but also on employees' environmental concern, which, in turn, leads to eco-initiatives. Also, like previous studies, such as (Tandon et al., 2020) and Xu (2022), the findings indicate that internalization of environmental values is important. Employees with higher public service motivation are, in turn, more likely to translate their intrinsic commitment to the public good into an increased environmental concern, leading to eco-initiatives. Adding depth to our understanding of how motivational factors lead to workplace sustainable behavior, the mediating effect of environmental concern is also discussed. Additionally, the confirmation of hypothesis 8a, which specifies the moderating role of supervisor environmental priority in the relationship between green work climate and employee eco-initiatives, is consistent with earlier research regarding the role of leadership in fostering pro-environmental behavior (Deci & Ryan, 2000).

Environmental goals can be a priority of supervisors, and it's important that they support a green work climate and encourage employees to participate in sustainability efforts. This finding confirms that leadership plays a central role in the effort to translate organizational culture into eco-initiatives. Employees are more likely to believe in their efforts to make their organization more sustainable if they feel that their supervisors are prioritizing sustainability. Nevertheless, Hypothesis 8b did not support the finding that environmental concern mediates between public service motivation and eco-initiatives, but supervisor environmental priority did not significantly impact the relationship between public service motivation and eco-initiatives. This finding contrasts with previous research suggesting that leadership plays an important role in shaping pro-environmental behavior (Robertson &

Table 2
Psychometric indicators of the measurement model.

Construct	Items	Loadings	Composite Reliability	Average Variance Extracted (AVE)	R Square
APPM	APPM1–3	0.947–0.967	0.969	0.913	
CMP	CMP1–3	0.829–0.960	0.94	0.839	
CMPI	CMPI1–3	0.961–0.977	0.978	0.938	
ECI	ECI1–5	0.833–0.860	0.926	0.714	0.417
EEN	EEN1–4	0.922–0.944	0.964	0.87	0.326
GWCL	GWCL1–6	0.862–0.910	0.956	0.783	0.169
PSMT	PSMT1–3	0.759–0.930	0.937	0.789	
SENP	SENP1–4	0.759–0.930	0.937	0.789	
SFSC	SFSC1–3	0.958–0.969	0.974	0.927	

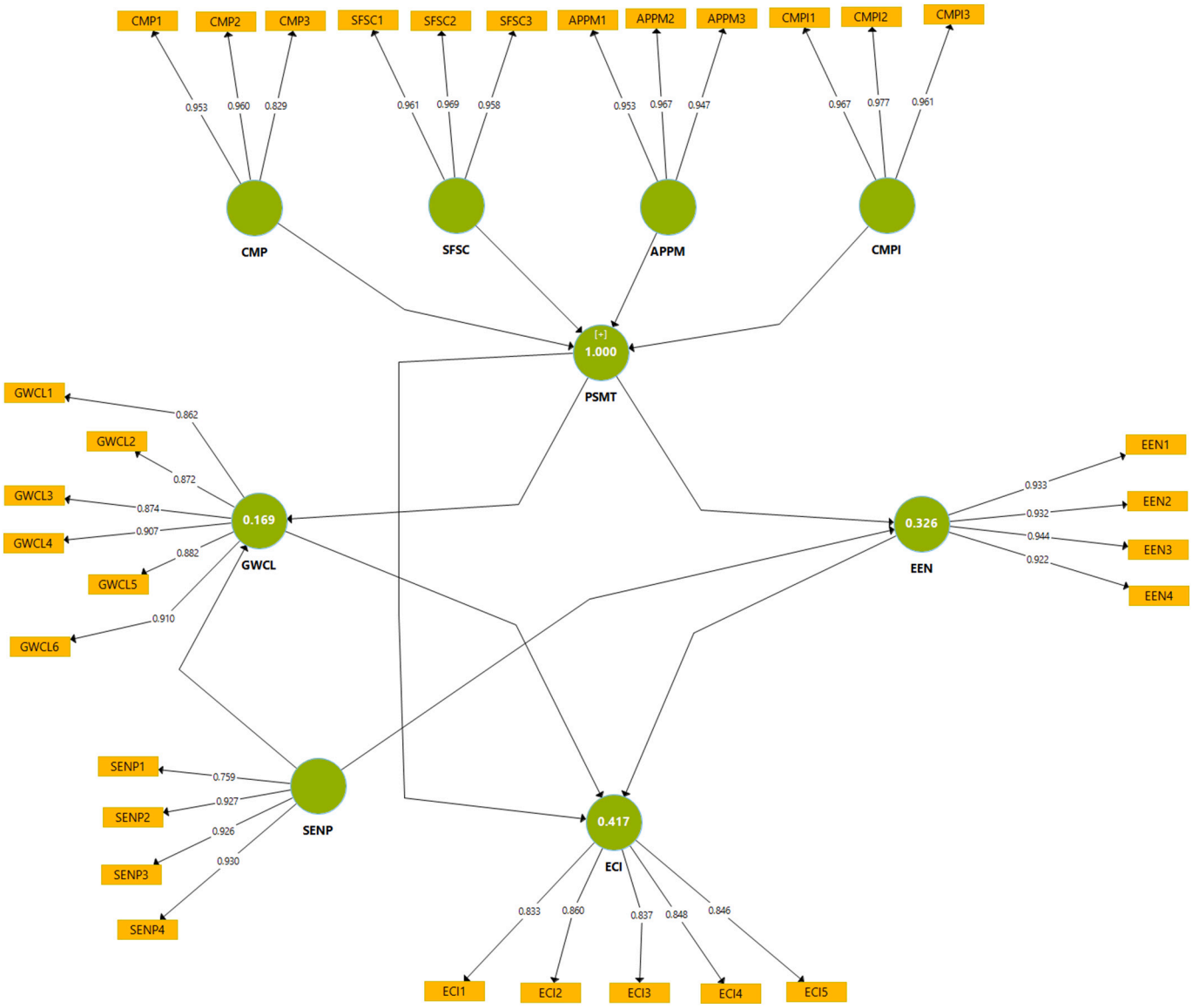


Fig. 2. The measurement model.

Table 3
Discriminant validity.

Construct	APPM	CMP	CMPI	ECI	EEN	GWCL	PSMT	SENP	SFSC
APPM	**0.956**	0.888	0.916	0.402	0.502	0.215	0.964	0.358	0.913
	–	(0.821)	(0.755)	(0.434)	(0.527)	(0.227)	(0.826)	(0.389)	(0.754)
CMP	(0.821)	**0.916**	0.901	0.449	0.566	0.236	0.96	0.414	0.918
	–	–	(0.958)	(0.499)	(0.616)	(0.255)	(0.828)	(0.461)	(0.779)
CMPI	(0.755)	(0.958)	**0.968**	0.41	0.525	0.221	0.964	0.354	0.9
	–	–	–	(0.439)	(0.547)	(0.231)	(0.789)	(0.381)	(0.733)
ECI	(0.434)	(0.499)	(0.439)	**0.845**	0.452	0.535	0.435	0.629	0.417
	–	–	–	–	(0.489)	(0.579)	(0.463)	(0.686)	(0.448)
EEN	(0.527)	(0.616)	(0.547)	(0.489)	**0.933**	0.283	0.556	0.336	0.55
	–	–	–	–	–	(0.298)	(0.576)	(0.358)	(0.574)
GWCL	(0.227)	(0.255)	(0.231)	(0.579)	(0.298)	**0.885**	0.237	0.402	0.24
	–	–	–	–	–	–	(0.245)	(0.432)	(0.252)
PSMT	(0.826)	(0.828)	(0.789)	(0.463)	(0.576)	(0.245)	**0.917**	0.389	0.968
	–	–	–	–	–	–	–	(0.415)	(0.796)
SENP	(0.389)	(0.461)	(0.381)	(0.686)	(0.358)	(0.432)	(0.415)	**0.889**	0.375
	–	–	–	–	–	–	–	–	(0.403)
SFSC	(0.754	(0.779	(0.733)	(0.448)	(0.574)	(0.252)	(0.796)	(0.403)	**0.963**

Note: The bold values represent the square root of AVE, and the values in parenthesis represent HTMT ratios.

Table 4
Summary of hypotheses analysis.

Hypothesis	Path Coefficient	SD	t-value	*p*-value	95 % Confidence Interval
EEN - > ECI (H6)	0.211	0.062	3.399	0.001	[0.067, 0.319]
GWCL - > ECI (H3)	0.424	0.050	8.533	<0.001	[0.314, 0.509]
PSMT - > ECI (H1)	0.217	0.054	4.020	<0.001	[0.107, 0.324]
PSMT - > EEN (H5)	0.503	0.055	9.078	<0.001	[0.381, 0.599]
PSMT - > GWCL (H2)	0.169	0.040	4.225	<0.001	[0.012, 0.119]
Moderating Effect 2 - > EEN - > ECI (H8b)	0.018	0.011	1.693	0.091	[0.003, 0.046]
PSMT - > EEN - > ECI (H7)	0.106	0.032	3.279	0.001	[0.034, 0.166]
Moderating Effect 1 - > GWCL - > ECI (H8a)	0.103	0.027	3.749	<0.001	[0.049, 0.158]
PSMT - > GWCL - > ECI (H4)	0.072	0.022	3.273	<0.001	[0.006, 0.083]

Barling, 2013). One explanation for this result could be that once internalized by employees, environmental concern is independent of supervisory influence. Employees with strong intrinsic care for the environment may not need their supervisors to direct their actions but instead are motivated by personal values and felt responsibility. This finding implies that the relationship between personal motivation and organizational support is not simple, and that some internalized values, like environmental concern, may be independently related to direct leadership influence.

In comparing these results with existing literature, it is evident that public service motivation plays a central role in promoting eco-initiatives, particularly when coupled with a supportive green work climate and a heightened sense of environmental concern. The findings contribute to the growing body of research that highlights the interplay between intrinsic motivation, organizational culture, and environmental responsibility in driving sustainable behaviors. These outcomes emphasize the multifaceted nature of eco-initiatives in the workplace, where both individual motivations and organizational factors must align to foster meaningful participation in sustainability efforts. Additionally, the results diverge in some aspects and support many established theories. For instance, the findings indicate that public service motivation is a crucial driver, but its potency is highly conditional on the availability of a green work climate and supportive leadership. This sophistication implies a new direction for future research, moving away from single or organizational variables to the interplay of multiple factors. Beyond providing background information for existing literature, these findings extend the research into underexplored areas, particularly the service industry, where sustainability has often been omitted in favor of manufacturing contexts.

5.1. Theoretical implications

This research adds significantly to the existing literature in its extension of the application of SDT to the issue of sustainability within the healthcare sector. Historically, SDT has been used to explain the effects of intrinsic motivation on behavior that accords with personal values (Aviste & Niemiec, 2023; Ojo, 2022). This study extends this foundation by introducing green work climate and employee environmental concern as mediators, which better explain how intrinsic motivation, such as public service motivation, translates into pro-environmental behavior in high-demand service contexts like healthcare. This work captures a nuanced relationship between individual and organizational factors that support sustainable behaviors. In particular, results reveal that a supportive green work climate and elevated employee concern for the environment amplify the relation between public service motivation and eco-initiatives, consistent with previous theorizing on the importance of organizational support in promoting pro-environmental behavior (Singh et al., 2023). Additionally, the supervisor's environmental priority results in a moderating effect of leadership in facilitating environmental management strategies, in line with the findings of Gusmerotti et al. (2023).

Leadership is important not only in setting appropriate organizational sustainability standards (Robertson & Barling, 2013), but also in shaping a green work climate that encourages employees to take part in eco-initiatives. This study fills a critical gap in the sustainability literature by focusing on a service sector that has been less emphasized in past studies (Becker et al., 2022). This research combines organizational culture and individual psychological factors to examine sustainability within the healthcare sector to offer a broad framework for empowering eco-initiatives. This dual approach provides insights into how sustainable behavior is possible in complex, resource-intensive service environments and implications toward other sectors with similar sustainability challenges.

5.2. Practical implications

In practice, the results of this study provide practical strategies for healthcare organizations to improve environmental performance through employee-driven eco-initiatives. The first major recommendation to organizations is to raise employee's public service motivation levels. Targeted interventions like training programs, workshops and initiatives to harmonize employees' personal values with the organization's sustainability goals can be done to achieve this. As it transfers an employee's passion for the environment from his or her own sphere to the organization's sphere, an organization can then direct employees to become active in eco-initiatives. Furthermore, a green work climate is essential to support eco-friendly behaviors. Organizations need to spend more time developing strong environmental policies that employees are aware of and value, and sustainability becomes the organizational culture. This implies giving employees the means to participate in environmental workers, for example, recycling programs, energy-saving initiatives, and so on by giving them needed resources. Maintaining long-term engagement in eco initiatives depends on creating an environment where employees feel their efforts are being valued and impacting change. The promotion of sustainability is also influenced by leadership. It is time for managers and supervisors to set environmental standards and demonstrate eco-friendly behaviors. They can launch environmentally friendly groups inside departments to work on a given sustainability goal, say reducing waste or improving energy efficiency.

Additionally, the organization should proceed with regular assessment of the environmental impact of the organization to know the areas to improve and make sustainability efforts continuous and adapt to new challenges. An incentive system to reward those who engage in leading environmental conservation is one effective strategy for promoting employee engagement in eco-initiatives. Financial incentives and public recognition are just two examples of rewards. The important part is that employees feel their contributions to the organization's sustainability are important. This will increase employee motivation and establish a corporate culture where environmental responsibility is the norm throughout the organization. Healthcare organizations can greatly advance their sustainability performance by using public service motivation, creating a green work climate, and providing leadership support. These strategies will decrease the organization's environmental footprint, enhance a healthier workplace environment, and move the organization toward larger social goals of environmental sustainability.

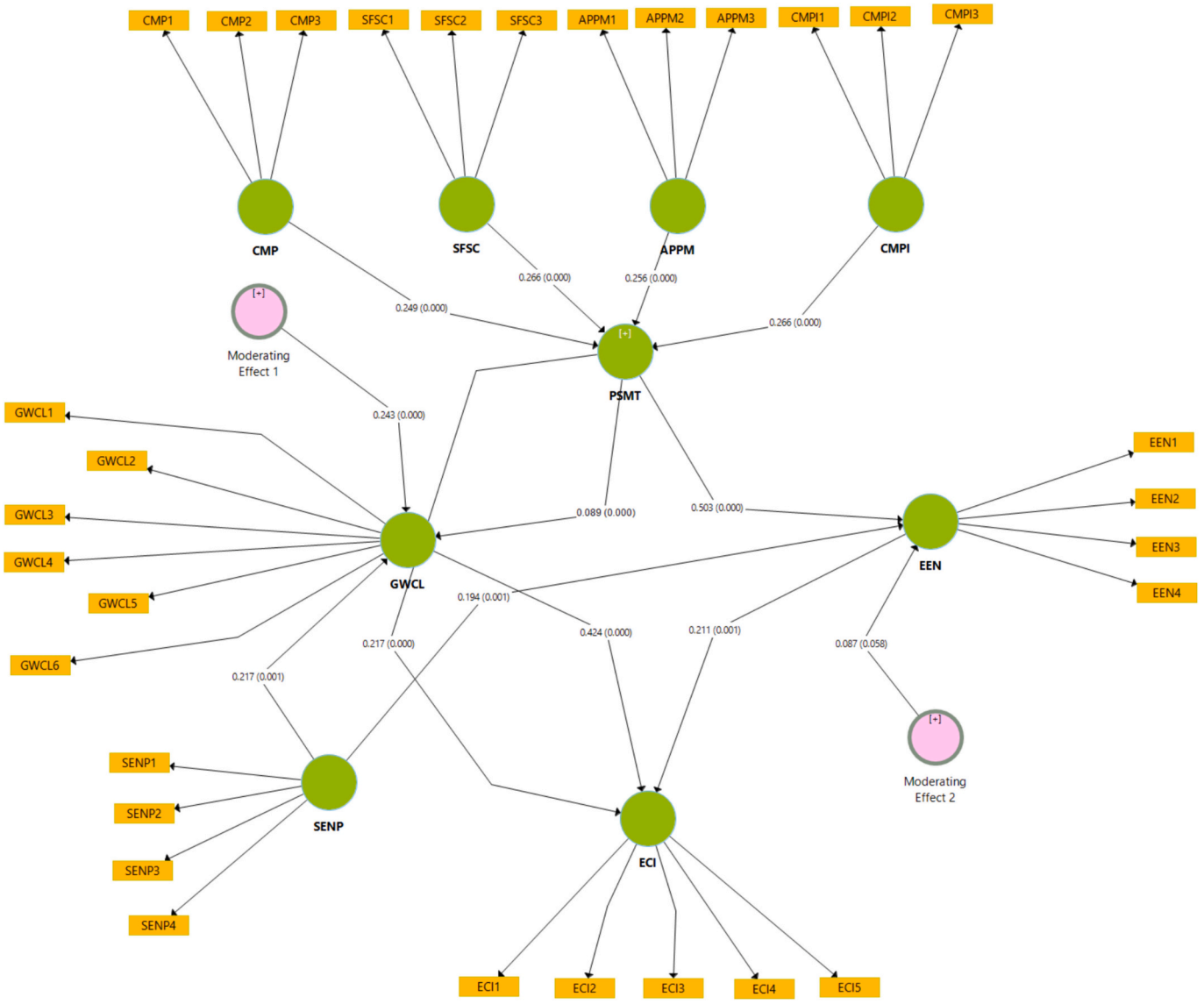


Fig. 3. Full structural model.

5.3. Limitations and future research directions

The following are the limitations of this study: The cross-sectional design restricts the chances of establishing causality between the variables. Future studies should employ longitudinal research designs to capture the dynamics of the relationships. The study is conducted only on the Korean healthcare sector, which restricts the applicability of the findings to other settings or countries. Future research should include participants from other organizations and geographical regions. Also, the study used public service motivation, green work climate, employee environmental concern, and supervisor environmental priority as variables that affect eco-initiatives. Other factors that may affect eco-initiatives were not considered, including organizational support, employee education level, and external environmental legislation. Further research should examine these additional variables to better understand the factors that lead to sustainable behaviors in organizations.

6. Conclusions

This research stresses the importance of public service motivation for implementing eco-initiatives in the healthcare industry, mediators, green work climate, employee environmental concern, and moderator, supervisor environmental priority. Our research further applies self-determination theory to expand knowledge of how both intrinsic motivation and organizational culture contribute to sustainable behaviors. The results of this study offer significant theoretical and practical implications, which stress the importance of a positive organizational climate and active management to strengthen the sustainability initiatives of healthcare organizations. Further research should be conducted in such dynamics in different settings, and more variables should be included to enhance the understanding of sustainability in high-demand sectors.

CRediT authorship contribution statement

Yu Wang: Writing – original draft, Investigation, Conceptualization. **Muhammad Zulqarnain Arshad:** Software, Methodology, Formal analysis, Data curation. **Darwina Arshad:** Writing – review & editing, Validation, Supervision, Methodology.

Author contributions

All of the authors contributed to the conceptualization, formal

analysis, investigation, methodology, and writing and editing of the original draft.

Informed consent statement

Informed consent was obtained from all subjects involved in the study.

Ethical approval

This study was approved by the Ethics Committee Universiti Utara Malaysia, with the reference number UUM/COLGIS/GSGSG/905179, dated December 20, 2023. All procedures performed in this study complied with the ethical standards of UUMHREC, including participant consent, confidentiality, and data security protocols.

Declaration of competing interest

The authors declare no conflict of interest.

Data availability

Data will be made available on request.

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