

Do green transformational leadership, green human resource management, and pro-environmental behavior promote sustainable performance? evidence from Palestine

Abstract: Upholding ecosystems from climate change and environmental hazards has become a pressing global concern. Achieving enhanced sustainability performance relies heavily on adopting environmentally friendly practices. Despite increased research efforts, the factors influencing sustainable performance and their interrelations remain underexplored. This study addresses this gap by investigating the influence of green transformational leadership, green human resource management (GHRM), and pro-environmental behavior on sustainable performance. Using an exploratory mixed-method approach, the study commenced with 18 semi-structured interviews with managers from the Palestinian healthcare sector, analyzed via MAXQDA. This was followed by a quantitative survey analyzed using partial least squares structural equation modeling (PLS-SEM). The findings confirm that green transformational leadership positively influences GHRM, pro-environmental behavior, and sustainable performance. GHRM was significantly associated with pro-environmental behavior, which, in turn, enhanced sustainable performance. Furthermore, GHRM mediated the relationship between green transformational leadership and pro-environmental behavior, while pro-environmental behavior mediated the relationship between green transformational leadership and sustainable performance. These findings provide valuable insights into key drivers of sustainable performance, particularly within the healthcare sector, contributing to both theory and practice in sustainability research.

Keywords: Green transformational leadership; Organizational sustainability; Healthcare; Green human resources management; Pro-environmental behavior.

1. INTRODUCTION

Since the early 19th century, globalization has heightened environmental concerns regarding the extensive use of resources and rapid economic expansion (Tang et al., 2018). Modern research increasingly holds corporations accountable for climate change, citing their significant contribution to the release of harmful substances (Farrukh et al., 2022). The United Nations Foundation reports that all observed global warming can be attributed to human activities, as evidenced by unprecedented levels of carbon dioxide concentrations—higher than at any point in at least two million years—resulting in elevated global temperatures. With temperatures already exceeding over one degree above pre-industrial levels, the world faces greater unpredictability in weather patterns and mounting concerns about food security, necessitating collective efforts and guidance across sectors (UN, 2023).

In response, many countries have implemented environmental policies and regulations to promote sustainable development (Perez et al., 2023). Environmental advocates and scientists emphasize the importance of organizations adopting sustainable practices, with leadership playing a pivotal role in driving these efforts (Farrukh et al., 2022). Green transformational leadership (GTFL) encourages employees to think creatively,

develop new ideas and adopt proactive environmental measures, which are crucial for fostering innovation and achieving sustainability goals (Perez et al., 2023). Furthermore, employees' pro-environmental behavior (PEB) is essential for enhancing organizational sustainability, driven by their commitment to addressing environmental challenges (Liu et al., 2023; Shoaib et al., 2022).

Even in the 21st century, the human resources (HR) department remains integral to business expansion and development. Facing intensified global competition, organizations have adapted their policies and systems to align with evolving demands (Sharma et al., 2022). Studies highlight that employees across all levels of an organization are instrumental in influencing environmental performance (Ahmad, 2015; Song et al., 2021). To navigate environmental sustainability challenges and meet stakeholder demands, organizations must leverage intangible resources such as GHRM and GTFL (Singh et al., 2020). These practices are essential for cultivating internal capabilities, fostering competencies, and enhancing sustainable performance (Awan et al., 2023). However, the literature has comprehensively examined the interplay of GTFL, Pro-Environmental Behaviors (PEBs), and GHRM on sustainable performance within healthcare organizations, where environmental considerations are particularly critical. To address this research gap, we proposed and evaluated a framework illustrating how effective GTFL, GHRM, and PEB practices enable organizations to achieve green objectives and improve sustainable performance. Notably, no previous research has combined these variables into a single study in a developing country context specifically examining the healthcare sector, such as Palestine.

The healthcare sector plays a dual role in addressing environmental issues while simultaneously contributing significantly to environmental pollution (Rahat et al., 2023). Its primary mission of safeguarding public health is undermined by its substantial hazardous waste generation and carbon footprint (Berniak-Woźny & Rataj, 2023). Healthcare institutions produce dangerous and infectious waste that necessitates responsible management, including safe reuse, recovery, and recycling of medical materials without compromising health (Tanveer et al., 2022). In Palestine, hospitals generate considerable amounts of medical waste, with hazardous waste production averaging 0.54 to 1.82 kg per bed per day (Al-Khatib et al., 2020), highlighting the pressing necessity of investigating sustainable practices. The healthcare system in Palestine is a critical focus for the World Health Organization (WHO). Since October 7, 2023, escalating tensions have further strained an already resource-limited health system, prompting the WHO and partner organizations to address pressing health needs (WHO, 2024).

Our research aimed to achieve four objectives:

1. Investigate the role of GTFL in influencing GHRM, PEBs, and sustainable performance.
2. Examine both the direct and indirect effects of PEBs on sustainable performance.
3. Analyze the mediating impact of GHRM in the relationship between GTFL and PEBs.
4. Explore the mediating effects of PEBs between GTFL and sustainable performance within healthcare organizations in Palestine.

This research makes several valuable contributions. Firstly, it deepens the understanding of pro-environmental behaviors (PEBs) and sustainable performance in the healthcare sector, particularly within the distinctive context of a developing nation. By offering empirical insights into the impact of Green Transformational Leadership (GTFL) and PEBs on sustainable performance, the study adds meaningful value to the existing body of knowledge. Additionally, it investigates how GTFL and Green Human Resource Management (GHRM) practices improve PEB outcomes in healthcare organizations, addressing a significant gap in the field, as prior studies have been limited (Farrukh et al., 2022; Pham et al., 2020). Secondly, the study addresses a critical gap in the literature by analyzing the mediating role of GHRM practices in the connection between GTFL and PEBs. It also explores the mediating role of PEBs in linking GTFL to sustainable performance. Limited research has delved into these mediating relationships, especially within the healthcare sector of developing nations, underscoring the originality and importance of this work. Thirdly, the study adopts a mixed-methods approach, integrating both qualitative and quantitative techniques. This comprehensive design offers a strong framework for examining the interactions among GTFL, GHRM practices, PEBs, and organizational sustainability performance. By incorporating empirical data from Palestine, the study enhances its applicability and relevance to other similar emerging economies. The manuscript is organized as follows: the next section introduces the theoretical background and proposed hypotheses. Section 3 details the methodology, while Section 4 presents the findings. Finally, Section 5 discusses the study's implications, limitations, and potential avenues for future research.

2. BACKGROUND, STATE OF THE ART AND HYPOTHESES

2.1 Theoretical Background

This study developed to build upon the Resource-Based View (RBV) theory of organizations and the Ability-Motivation-Opportunity (AMO) theory. Our goal is to analyze and elucidate the connection between HRM practices and organizational performance within the framework of the Palestinian healthcare sector. While the association between human capital and firm performance is well-established, our investigation extends the existing literature on GTFL and GHRM in the specific context of the Palestinian healthcare sector (Barney, 1991; Renwick et al., 2013).

The RBV posits that firms that design their strategies around resources characterized by path dependency, causal ambiguity, social complexity, and intangibility often exhibit superior performance compared to those that rely primarily on tangible resources. These underpinnings of resource-based theories, sometimes referred to as "resource-picking" theories, highlight the strategic emphasis on exploiting assets and capabilities that are valuable, rare, and difficult to replicate. This exploitation generates economic rents and establishes a competitive advantage for businesses (Barney, 2001). According to the RBV theory concerning the HRM-performance link, employees and leaders are critical assets for an organization, comparable to any other organizational resources. The primary objective of GHRM is to develop, motivate, and offer opportunities for the workforce to demonstrate superior behaviors, thereby enhancing green performance and sustaining the company's competitive advantage (Singh et al., 2019). It is hypothesized that individuals in human resources and leadership positions

fulfill the requisite RBV conditions to cultivate and sustain superior organizational performance. This is because human capital is often deeply integrated within the complex social structures of a corporation, ensuring that it acquires distinct attributes beneficial for the specific company, rather than its competitors (Shahzad et al., 2023).

In addition to the RBV, we adopted the AMO theory introduced by Appelbaum et al. (2000). This theory proposes that promoting employee engagement, offering important opportunities that facilitate employee involvement, and enhancing an organization's capabilities are essential for improving employee performance. Research frequently applies the AMO theory to investigate the role of GHRM practices in terms of employees' abilities, motivations, and opportunities to forecast their attitudes, behaviors, job performance, and their impacts on organizational environmental performance (Al-Swidi et al., 2021; Sun et al., 2022).

In this research, we explore the effects of GTFL on the collaborative influence of GHRM and PEBs to foster the sustainable performance of organizations. We contend that GTFL, GHRM, and PEBs collectively play a crucial role in enhancing sustainable performance and promoting environmentally friendly actions.

2.2. Variables of the Research Study

2.2.1 Green transformational leadership (GTFL)

Extant literature presents various theories and models of leadership, among which GTFL has garnered significant attention due to its broad influence on employee behaviors (Mansoor et al., 2021). GTFL describes leadership behavior where the primary goal is to inspire employees to achieve the organization's green goals. This is done through offering subordinates with a well-defined green vision, inspiring and motivating them, and supporting their development and demonstration of green behaviors that surpass expected levels (Chen & Chang, 2013; Chen & Wu, 2022). In 1998, Avolio and Bass identified four specific behaviors that define transformational leadership: "idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration." According to Farrukh et al. (2022), the four dimensions of GTFL are; Firstly, **Green Idealized Influence**: Leaders serves as examples, embodying green and social standards and serving as mentors whom employees aspire to follow. Secondly, **Green Inspirational Motivation**: Leaders have the ability and capacity to inspire and motivate subordinates to prioritize collective well-being over individual gains. They convey environmental values and a vision aligned with the organization's strategic objectives, directing employees toward achieving the green vision. Thirdly, **Green Intellectual Stimulation**: Leaders encourage and support employees in innovating green practices aimed at enhancing both green behavior and environmental performance. **Green Individualized Consideration**: Leaders foster employee engagement and loyalty at various organizational levels by cultivating strong relationships with their followers. This provides a channel through which they can impart their pro-environmental values (Sobaih et al., 2022).

In summary, GTFL motivates and inspires subordinates to acquire new environmental knowledge (Hameed et al., 2022). It encourages firms to introduce eco-friendly products or services to the market by actively engaging in activities related to green

processes and product innovation, thereby enhancing their environmental performance (Niazi et al., 2023).

2.2.2 GHRM

There has been a significant growth in human resource literature in recent years, particularly concerning GHRM, which first emerged in academic discourse post-1990s. Even as we advance into the twenty-first century, the HR department remains a vital partner in the expansion and development of any business or organization. Consequently, the field of HRM has established itself as a key player in environmental management. Both academia and industry now widely recognize HR as a strategic business partner (Ahmad, 2015). The rise in global competition has forced organizations to adapt their policies and systems. Environmental concerns have been prevalent since the beginning of globalization in the early nineteenth century (Sharma et al., 2022). Given the intrinsic link between human survival and environmental factors, organizations must transform into eco-conscious entities to contribute to environmental preservation and protect the planet. Addressing environmental challenges fundamentally involves awareness, understanding, and human action (Aftab et al., 2022a).

GHRM refers to HRM practices within the context of green management, aimed at influencing the environmental and ecological aspects of firms. It is connected to both the firm's environmental strategy and the environmentally responsible behaviors of employees (Gim et al., 2022). The core value of GHRM lies in leveraging employee effectiveness and reducing waste to enhance environmental performance. Organizations should therefore consider implementing GHRM strategies to achieve their environmentally sustainable goals (Al Doghan et al., 2022). GHRM focuses on developing employees' ecological capabilities through eco-friendly practices, including the selection, recruitment, and training of staff in environmental practices. It also seeks to boost employees' environmental motivation by rewarding their eco-friendly performance. This approach is seen as an effective method for assisting organizations in adopting environmentally conscious initiatives, particularly by training employees to assess and address environmental issues within the organization (Darvishmotevali & Altinay, 2022). In this study, GHRM is central as it represents a relatively new approach aimed at fostering an environmentally friendly workplace and enhancing sustainable performance (Pham et al., 2020). Despite its growing importance, GHRM remains under-researched and requires further academic exploration (Tanov & Bayighomog, 2022).

2.2.3 Pro-environmental behaviors (PEBs).

In recent years, the pursuit of environmental preservation and sustainability has emerged as a critical objective within organizational frameworks, prompting companies to adopt business practices that adhere to eco-friendly standards. One approach to achieving environmental sustainability involves encouraging employees to engage in Pro-Environmental Behaviors (PEBs) more regularly and consistently (Farrukh et al., 2022). PEBs signify responsible actions toward the environment that support the organization in becoming more ecological, reflecting employees' willingness to participate in environmentally friendly activities (Perez et al., 2023). For example, these behaviors include water conservation, resource preservation in offices, waste

segregation, energy conservation, duplex printing, promoting stair use over elevators, and facilitating information exchange among staff regarding environmental sustainability (Liu et al., 2023).

PEBs have long been significant in scholarly circles, particularly since the COVID-19 pandemic outbreak in 2020, which profoundly disrupted global financial structures. The pandemic prompted a reassessment of the relationship between human society and natural systems, intensifying scrutiny of the environmental implications of individual actions. Consequently, PEBs have emerged as a crucial discourse with profound implications for the future trajectory (Omarova & Jo, 2022). The effectiveness of the company's numerous green initiatives depends on the adoption of PEBs. Such sustainable practices enacted by staff members are instrumental in preserving ecological systems and enhancing the company's environmental performance (Elshaer et al., 2021). Furthermore, PEBs play a critical role in advancing both the financial and non-financial achievements of the firm (Farrukh et al., 2022).

2.2.3 Sustainable performance

The term "sustainable development" was initially introduced in the World Conservation Strategy report by the International Union for the Conservation of Nature and Natural Resources (Brown et al., 1987). The central themes related to sustainability are encapsulated in the 3P framework (People, Planet, and Profits), devised by Elkington (1995), who first explored the concept in 1994, coining the term "triple-bottom-line" (Elkington, 2013). Sustainable performance is viewed as the fulfillment of stakeholders' expectations across three primary dimensions: environmental, economic, and social aspects (Al-Shammari et al., 2022). It signifies organizations' commitment to achieving objectives in environmental, financial, and social domains for long-term growth and development, with a significant focus on financial performance to meet shareholders' expectations (Roscoe et al., 2019).

Sustainable performance has emerged in response to environmental risks posed by economic activities, aiming to replace environmentally harmful methods with eco-friendly practices (Roscoe et al., 2019). It compels organizations to consider social and ecological considerations alongside economic goals through the adoption of sustainable, value-driven, and socially responsible business management practices. Therefore, sustainable performance involves a blend of environmental (EP), financial (FP), and social performance (SP) (Santoyo-Castelazo & Azapagic, 2014).

2.3. Hypothesis Development

2.3.1 GTFL and GHRM

In this context, GTFL emerges as a vital element that can influence the establishment and sustenance of a culture characterized by creativity, ethics, commitment, cohesion, and green innovation within any organization (Aftab et al., 2022b). GTFL can craft a compelling green vision that motivates its followers to proactively fulfill tasks and exceed their environmental goals. Moreover, these leaders foster the generation of innovative ideas within their organizations, serving as exemplary forces that enhance creativity, which is crucial for the success of GTFL in fostering environmental performance (Sun et al., 2022). Studies suggest that the intellectually stimulating aspect

of transformational leadership has a positive influence on multiple dimensions, such as performance management, employee efficiency, innovation performance, and talent management (Zhu et al., 2005; Jia et al., 2018).

Meanwhile, GHRM, as the strategic facet of human resource management, concentrates on achieving organizational pro-environmental sustainability behavior through the cultivation, encouragement, and perpetuation of employees' environmentally conscious behavior (Yong et al., 2020). According to Farrukh et al. (2022), GTFL has an impact in fostering positive GHRM practices, including recruitment, selection, training, development, performance assessment, and compensation programs. This serves as a mechanism through which GTFL inspires, stimulates, and encourages followers to achieve the environmental goals of the organization (Zhu et al., 2005). Utilizing the AMO theory (Appelbaum et al., 2000), we propose that GTFL utilizes GHRM to improve the abilities and motivations of followers while providing opportunities to engage in activities related to environmental management for sustainable performance (Hameed et al., 2022; Perez et al., 2023). Recent research, utilizing the RBV as its theoretical foundation, has found that the role of GTFL as a strategic asset in the context of environmental management exerts a direct and markedly positive influence on GHRM, particularly impacting the skills and conduct of employees. This research further substantiates that policies and practices related to GHRM bolster the capabilities and competencies of employees, thereby positively affecting their environmental behaviors (Cahyadi et al., 2023). Therefore, we propose the following hypothesis:

H1. GTFL positively influences GHRM practices.

2.3.2 GTFL and PEBs.

Current research in the field of social psychology increasingly acknowledges that employees develop behaviors by observing their peers and subsequently endeavoring to replicate similar behavioral patterns (Sobaih et al., 2022b). Leadership plays a pivotal role in facilitating PEB within an organization. When leaders cultivate a positive outlook on sustainability, boost an organizational culture that values eco-friendly endeavors, and equip their staff with essential tools for success, they set the stage for environmentally responsible behavior. Consequently, employees are likely to discern and emulate behaviors that receive commendation, drawing from the examples set forth by their superiors (Hasan et al., 2024). GTFL can cultivate employees' capacity for considering ecological concerns, enhance their understanding of environmental matters, and foster the acquisition of relevant competencies. This, in turn, empowers them with the volition and proficiency required to exhibit sustainable practices (Chen & Wu, 2022). It is posited that the actions of transformational leaders related to environmental practices have a significant impact on organizational environmental sustainability. This is attributable to such leaders' commitment to making judicious choices advantageous to environmental performance. When GTFL establish a connection with their subordinates, they effectively inspire them to adopt behaviors supportive of the environment within the workplace. Furthermore, these leaders exemplify sustainable practices, thereby setting a standard that followers are likely to simulate (Chen & Chang, 2013).

Consequently, individuals who perceive intrinsic value and significance in engaging in PEBs are more inclined to partake voluntarily rather than out of compulsion. Furthermore, personnel motivated by GTFL are likely to advocate for eco-friendly conduct, promoting the adoption of PEBs and the implementation of sustainable practices and policies that encompass recycling, reusing materials, developing eco-friendly products, and actively preventing environmental pollution (Liu et al., 2023). According to the findings, we assume that GTFL contributes to predicting employees' PEB. Transformational leaders deeply understand how to fulfill the needs of their employees. The characteristics that define GTFL (e.g., stimulate employee motivation, intellectually stimulate employees, and provide individualized consideration) are ideal for establishing a good leader-follower exchange (Omarova & Jo, 2022). They are also essential for encouraging employees' behaviors because, as Bandura (1976) contended, most learning comes about through modeling and imitating others' behaviors; leaders must therefore be the model. Thus, the best way to instill PEBs in their followers is to lead them, nurturing and motivating them. Consequently, it is posited that a meaningful association exists between GTFL and PEBs among employees within the scope of this research:

H2. GTFL positively affects employees' PEBs.

2.3.3 GTFL and Sustainable Performance.

GTFL refers to leaders inspiring employees to achieve environmental objectives and encouraging them to exhibit environmentally friendly behaviors that surpass standard expectations. This includes exerting influence, providing motivation, stimulating intellectual engagement, and offering personalized care (Chen & Wu, 2022). Numerous scholars have confirmed that GTFL not only promotes PEB but also contributes to improved environmental performance. GTFL is identified as a crucial factor in cultivating a sustainability-oriented culture within organizations (Sobaih et al., 2022).

The theme of environmental sustainability and the adoption of eco-friendly practices are gaining prominence in managerial discussions and agendas, triggering a green revolution across conventional fields like human resources and operations management (Mousa & Othman, 2020; Malik et al., 2021). Collaborative efforts with other organizational factors such as green innovation, environmental knowledge, green corporate social responsibility, and green supply chain (Munawar et al., 2022; Niazi et al., 2023; Kara et al., 2023; Imran et al., 2021; Kanan et al., 2023; Muisyo & Qin, 2021) are essential to cultivate employees' skills, motivation, and opportunities for sustainable performance. An important aspect in this regard is the presence of GTFL within the organization's sustainable performance (Jia et al., 2018; Chen & Yan, 2022). Zhao and Huang (2022) found that GHRM and GTFL can help organizations mitigate the adverse effects of business activities on society and the environment, thereby enhancing the organization's sustainable performance.

Therefore, we propose the following hypothesis:

H3. GTFL practices have a positive impact on sustainable performance (EP, FP, and SP).

2.3.4 GHRM practices and PEB.

In the pursuit of environmental sustainability, the contribution of human resource management (HRM) is indispensable. The growing awareness of environmental issues is driving the human resources sector to adopt ecologically focused HRM practices, known as GHRM. This approach encompasses HRM practices that enhance environmental outcomes. Such practices are intertwined with employees' Pro-Environmental Behaviors (PEBs) and the overarching environmental strategy of the organization (Perez et al., 2023; Ahmad, 2015). GHRM is associated with employees' PEBs and the organization's environmental management strategy (Elshaer et al., 2021; Omarova & Jo, 2022). PEBs within the workplace context are defined as behaviors aimed at effecting positive change for the environment, including activities such as water conservation and energy efficiency. These behaviors are task-related, involving the specific duties outlined in job descriptions with a conscious focus on environmental impact. PEBs are a critical component of an organization's environmental management system (Ozkan et al., 2023). GHRM encompasses the development, implementation, and ongoing maintenance of systems designed to promote environmentally conscious behavior among an organization's employees. Moreover, GHRM involves formulating policies, adopting practices, and establishing systems to cultivate eco-friendly behaviors among employees, benefiting individuals, society, the natural environment, and the business itself.

Previous research on GHRM has demonstrated its influence on employees' PEBs (Farrukh et al., 2022; Perez et al., 2023; Liu et al., 2023). It is anticipated that employees demonstrate such behaviors, whether mandated by formal job descriptions or enacted voluntarily, such as engaging in green initiatives following appropriate GHRM support. Recent research on small and medium enterprises has shown that effective GHRM significantly enhances employee attitudes and behaviors. Furthermore, studies have illustrated GHRM's capacity to promote employee engagement and motivation, contributing to environmental improvement within organizations by encouraging PEBs that enhance environmental performance (Perez et al., 2023). Findings from the manufacturing sector by Farrukh et al. (2022) also highlighted GHRM's significant predictive role in employees' PEBs. Their research corroborated GTFL's significant predictive capacity for employees' PEBs through the mediating role of GHRM.

Based on these arguments, it is proposed that:

H4: GHRM has a positive effect on PEBs in healthcare organizations.

2.3.5 PEBs and Sustainable Performance (EP, FP, and SP).

Currently, environmental protection and sustainability are pivotal for enterprises as companies focus on integrating environmentally friendly methods into their management and business practices (Perez et al., 2023). Organizations employ diverse strategies to achieve environmental performance and foster sustainable practices, with PEBs considered a principal component among these strategies (Elshaer et al., 2021). The critical importance of PEB has sparked increasing scholarly interest in contemporary times. Organizations that actively promote PEB often experience a range

of benefits, including reduced costs, increased revenue streams, enhanced public reputation, progress toward sustainability goals, and strengthened competitive advantage (Hasan et al., 2024).

PEBs encompass behaviors that support environmental preservation, such as efficient energy use, resource conservation, responsible water management, recycling programs, reduced printing, and initiatives promoting environmental sustainability (Ozkan et al., 2024). While there has been a growing focus on exploring environmental management and sustainable practices and their potential benefits for businesses, the motivations driving employees' PEBs remain largely unexplored by scholars. Over the past decades, the urgency surrounding climate change, widespread environmental degradation, and resource scarcity has significantly increased. Concurrently, enterprises worldwide are engaging in initiatives aimed at promoting PEB practices (Liu et al., 2023). Limited research focused on sustainable practices within the service industry, specifically in hospitals, suggests that PEBs by staff members directly and substantially influence organizational environmental performance (Abdelkareem et al., 2024; Luo et al., 2024). Research in other sectors has demonstrated a positive correlation between employee PEBs and environmental and sustainable performance (Nisar et al., 2021; Shoaib et al., 2022; Elshaer et al., 2023). Therefore, based on these arguments, it can be proposed that:

H5: PEBs have a positive effect on sustainable performance (EP, FP, and SP) in healthcare organizations.

2.3.6 GTFL and sustainable performance: the mediating role of GHRM.

GHRM has emerged as a contemporary and effective management trend, integrating environmental management (EM) and sustainable performance to enhance organizational effectiveness (Joshi et al., 2023; Khan et al., 2023). Currently, environmental concerns pose critical managerial challenges, prompting corporations to actively seek strategies to minimize their environmental impact while enhancing sustainable performance (Ahmad, 2015; Naseer et al., 2023).

Sustainability is recognized as a lasting competitive advantage in today's business environment. Organizations, in collaboration with various sustainability agencies, adopt GHRM practices to assess and enhance organizational sustainability performance (Iftikhar et al., 2021). The simultaneous environmental influence on social and commercial aspects heightens the urgency to address emerging ecological-social issues. Employees, as significant stakeholders, profoundly impact a company's sustainable performance (Saunila et al., 2018; Li et al., 2022). The incorporation of GHRM practices is expected to contribute to the sustainable performance of organizations, improving the organization's public perception as a responsible corporate entity (Shen et al., 2018). Within HRM literature, it is proposed that HRM practices shape employee behavior and attitudes, thereby impacting organizational performance (Dumont et al., 2017). Existing research on GHRM indicates that these practices positively influence the triple bottom line — environmental, economic, and social performance — becoming a source of competitive advantage for organizations (Zaid et al., 2018; Awwad Al-Shammari et al., 2022). Furthermore, Zhao & Huang (2022) revealed that integrating green practices into HRM effectively addresses human resource issues,

enabling employees to align business processes with environmental, economic, and social expectations of consumers and the public.

Based on these studies, GHRM practices significantly influence sustainable performance, although alone they may not suffice to achieve a green competitive advantage for organizations (Malik et al., 2021; Shoaib et al., 2022; Shahzad et al., 2023). Leadership serves as a critical antecedent in fostering HRM practices that significantly influence and elevate sustainable performance metrics. Executive-level reinforcement and endorsement of employees' environmentally conscious practices are instrumental in developing eco-friendly products that mitigate pollution and minimize resource use (Sun et al., 2022). According to Shoaib et al. (2022), GTFL positively influences employees' eco-friendly actions, although its direct effect on sustainable performance is found to be minimal. Research findings affirm that GHRM and GTFL practices foster PEBs among employees, contributing to sustainable performance. Furthermore, attitudes favoring environmental protection have been shown to positively impact environmental behaviors. Therefore, the hypothesis is formulated as follows:

H6. GHRM mediates the relationship between TFL and sustainable performance (EP, FP, and SP).

2.3.7 GTFL and sustainable performance: the mediating role of PEBs.

Effective leadership holds considerable promise for augmenting staff PEBs, primarily through inspiration and cultivating an environment supportive of eco-friendly initiatives (Jia et al., 2018). Academic discourse continues to explore various leadership styles that positively impact corporate PEBs, with GTFL acknowledged as pivotal in this dynamic (Shoaib et al., 2022). Organizations should not limit efforts to enhancing environmental performance and mitigating operational impacts; they must also foster an ethos of ecological consciousness within their workforce. The movement toward establishing environmentally sustainable organizations hinges on embedding environmental practices, theoretical frameworks, methodologies, and norms in institutional operations (Al-Swidi et al., 2021).

Limited scholarly work on environmental management within healthcare indicates a direct, significant, and positive correlation between hospital employees' ecological behavior and organizational sustainable performance (Mousa and Othman, 2020). These behaviors, synonymous with PEB, include efforts to reduce energy consumption, conserve materials, save water, engage in recycling, and implement green initiatives (Elshaer et al., 2021). Parallel studies on employees' environmentally conscious behavior and organizational environmental metrics also show a favorable link between Organizational Citizenship Behavior for the Environment (OCBE) and environmental performance (Pham et al., 2019; Ziyadeh et al., 2024). Perez et al. (2023) examine GTFL's impact on fostering employee engagement and motivation in small and medium-sized enterprises in Lahore, facilitating PEB among employees, and contributing to organizational EP. Their research underscores that GTFL, by serving as an exemplar, induces pro-environmental actions among followers, thus promoting ecological performance. Based on these findings, one might hypothesize the following:

H7. PEBs mediate the relationship between GTFL and sustainable performance (EP, FP, and SP).

Drawing upon an extensive review of existing literature and theoretical hypotheses, we present a hypothetical research model (refer to Figure 1), explored empirically in our study.

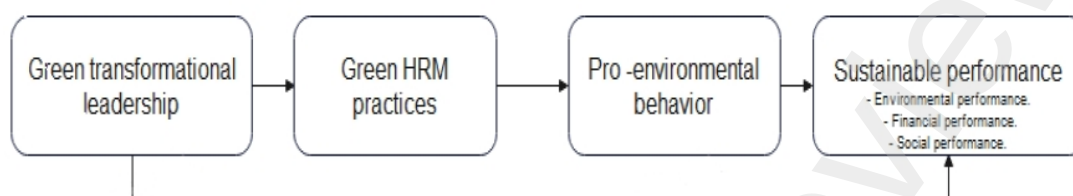


Figure (1): The research theoretical framework

3. The methodology of research.

3.1. Sampling and procedure.

Our research adopts a mixed-methods approach to address the multifaceted nature of the issue and the limited existing information (Creswell & Creswell, 2017). By integrating quantitative and qualitative data collection and analysis methods, this approach provides a comprehensive understanding of the research problem while enhancing validity and reliability (Creswell & Clark, 2017). The study follows an exploratory sequential mixed-methods design, with data collection conducted in two distinct phases.

The initial qualitative phase involved semi-structured interviews with leaders and experts in human resources and environmental management within the healthcare sector. This phase aimed to gain in-depth insights, uncover practical connections, and identify additional factors influencing sustainable performance in healthcare organizations. Eighteen interviews were conducted with administrative managers, quality department managers, HR managers, and subject matter experts from diverse healthcare organizations, including governmental, private, military, and non-profit sectors.

All interviews were audio-recorded and transcribed promptly. A guiding protocol, informed by Creswell et al. (2004), was used to ensure discussions focused on key concepts related to sustainable performance in healthcare. Example questions included:

How does GTFL contribute to the organization's sustainability efforts?

What role do GHRM practices play in reinforcing sustainability within your healthcare organization?

What are the primary challenges or barriers to implementing GHRM practices in the healthcare sector?

The qualitative phase was followed by a quantitative survey phase to further explore and measure the impact of GTFL, GHRM, and PEBs on sustainable performance

within the Palestinian healthcare sector. Participants included department managers from administration, HR, and quality management, selected for their comprehensive understanding of organizational performance and their engagement in strategic information exchange.

Participants in the qualitative study were employed at secondary care centers (hospitals) and tertiary care centers (rehabilitation organizations) in the West Bank, Palestine. Survey questions underwent expert review by a panel of nine healthcare and academic professionals, and feedback from potential respondents was incorporated. A translation-back-translation process was conducted to maintain clarity and accuracy of the original English questionnaires. Each survey included a cover letter outlining the study's purpose and assuring confidentiality.

Data collection occurred between September and November 2023, with surveys distributed in person and via email. According to the Palestinian Ministry of Health (MOH, 2022), there are 58 hospitals and rehabilitation centers in the West Bank. Of 55 surveys distributed, 48 were returned (an 83% response rate), and all were deemed valid.

Demographic Profile of Participants

Gender: 64.5% male (31 respondents) and 35.5% female (17 respondents).

Position: General Managers/CEOs (27.0%), Human Resources Managers (27.0%), Quality Managers (38.0%), and Directors of Administration (8.0%).

Educational Background: Bachelor's degrees (46.0%), Master's degrees (44.0%), and Doctorate degrees (10.0%).

Organizational Classification: Secondary care centers (92.0%) and tertiary care centers (8.0%).

Employment Sector: Governmental (35.0%), private (40.0%), and non-profit organizations (25.0%).

Organization Size by Employees:

10–19 employees: 8.0%

20–49 employees: 6.0%

50–99 employees: 18.0%

100–249 employees: 23.0%

More than 250 employees: 45.0%

This methodological approach enables a robust exploration of the research topic, ensuring a detailed and contextually relevant understanding of the factors influencing sustainable performance in the Palestinian healthcare sector.

3.2 Measures

In this study, data were gathered on several variables, namely, GTFL, GHRM, PEBs, and sustainable performance. These variables were evaluated using a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The survey items used to measure these variables were developed from a review of the available literature. For instance, the GTFL variable was measured using 6 items adapted from Chen & Chang (2013), Hameed et al. (2022), and Singh et al. (2020). A sample item from this measure is: "My leader inspires the organization members with the environmental plans." The GHRM practices variable was measured using 8 items

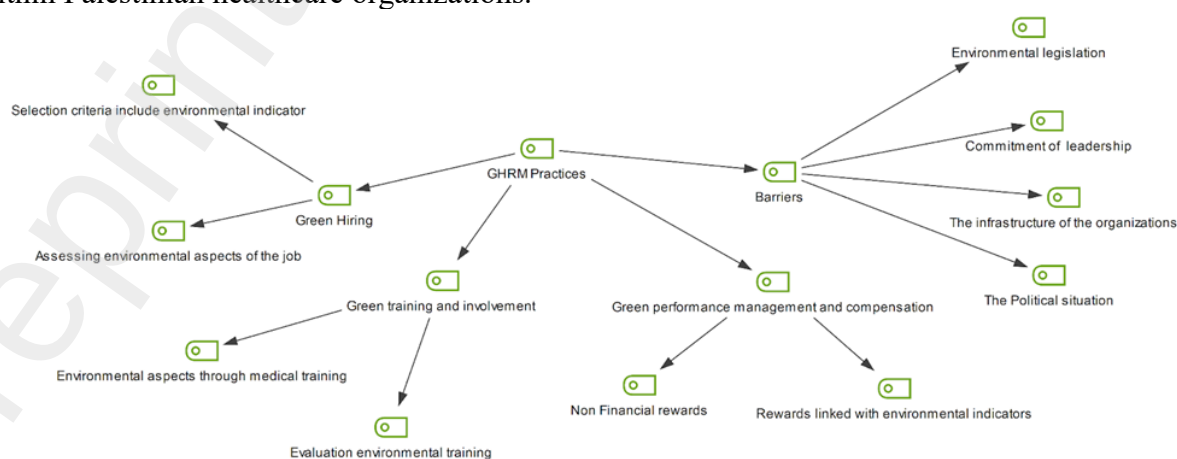
adapted from Mousa & Othman (2020), with sample items including: "The organization prefers to hire employees that have environmental knowledge in the selection process.". Additionally, PEBs were measured using a 6-item scale by Sobaih et al. (2022). An example from this scale is: "Employees discuss environmental issues in team meetings." Finally, sustainable performance was assessed using a 15-item scale developed by Mousa & Othman (2020), Zaid et al. (2018), and Al Kerdawy et al. (2018). A sample item from this scale is: "Direct and indirect toxic emissions are reduced."

4. Data analysis

4.1 Qualitative data analysis and results.

Between July and August 2023, semi-structured recorded interviews were conducted and transcribed into Microsoft Word documents. These transcripts were then analyzed using MAXQDA 2022, a computer-assisted qualitative data analysis software. MAXQDA 2022 facilitates the simultaneous analysis of multiple texts and simplifies the content analysis process. It is known for its user-friendly interface, comprehensive text study capabilities, effective data management, in-depth material analysis, and robust concept connections (MAXQDA, 2022).

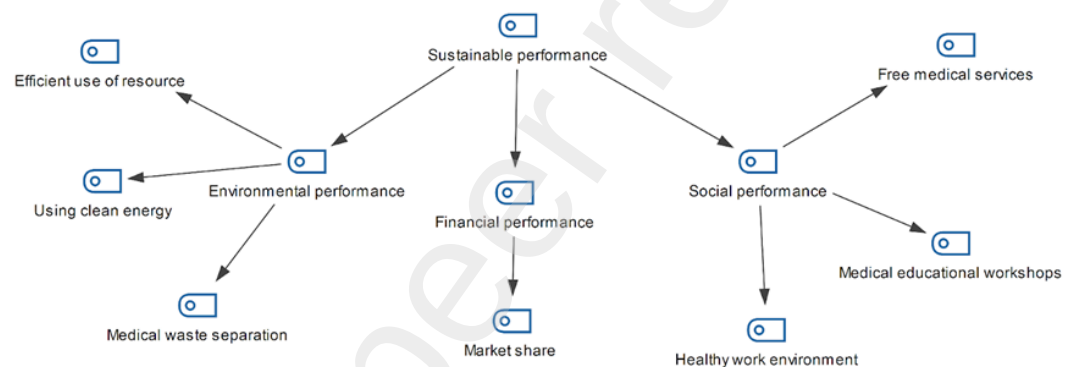
Based on the MAXQDA analysis, several GHRM practice themes and sub-themes were identified. The main themes included: (1) green hiring, (2) green training and involvement, (3) green performance management and compensation, and (4) barriers to adopting GHRM practices. **Sub-themes for green hiring involved** aligning candidate selection with environmental goals and assessing applicants' understanding of their roles' environmental aspects, like medical waste separation. **For green training and involvement, sub-themes** included incorporating environmental aspects into medical training and evaluating the effectiveness of such training. **Green performance management and compensation sub-themes** included non-financial and moral rewards for employees and linking performance evaluations with environmental indicators. **Barriers to adopting GHRM practices were summarized** as insufficient environmental legislation, lack of commitment from leadership and employees, organizational infrastructure challenges, and the complex political situation in the West Bank. Figure 2 displays the MAXQDA output and results from the thematic analysis, illustrating these sub-themes and providing a deeper understanding of GHRM practices within Palestinian healthcare organizations.



GHRM Practices themes

Figure 2: The results of interview analysis, Source MAXQDA 2022.

The MAXQDA analysis identified three major themes related to sustainable performance within Palestinian healthcare organizations: **social, financial, and environmental performance**. For environmental performance, sub-themes included efficient use of resources, using electronic systems to reduce energy consumption, utilizing clean energy sources like solar panels, and initiating medical waste separation. Within financial performance, the key sub-theme was increasing the organization's market share. For social performance, sub-themes included creating a healthy work environment for employees and patients, conducting medical educational workshops, and providing free medical services. Figure 3 illustrates the MAXQDA 2022 results, detailing the main themes and their sub-themes of sustainable performance in Palestinian healthcare organizations.



Sustainable performance themes

Figure 3: The result of interview analysis, Source MAXQDA 2022.

In the context of GTFL within Palestinian healthcare organizations, the MAXQDA analysis identified several key themes: governmental support, human resources as supporters, and complexity. **Governmental Support:** Interviewees perceived governmental support as insufficient and highlighted a need for more focused attention and backing from government entities. **Human Resources as Supporters:** Human resources were identified as crucial supporters with a positive impact on GTFL practices, playing a vital role in promoting and sustaining these practices within the organization. **Complexity of GTFL:** From the employees' perspective, GTFL concepts are complex and often met with difficulty and resistance to change. This sub-theme indicates the need for further clarification, education, and basic training to help employees in the healthcare sector understand and adopt GTFL practices effectively.

The MAXQDA analysis also explored the code themes related to PEBthe Palestinian healthcare sector, revealing two primary sub-themes: **Governmental Environmental Legislation:** Interviewees noted a significant gap in environmental legislation within the healthcare sector. They felt that environmental issues are not prioritized by decision-makers, largely due to the complex political situation in the country. **Cost of Adoption:** This sub-theme encompasses the financial and human resources required to implement

PEB. Many organizations expressed concerns about the high upfront costs associated with adopting green strategies and initiatives, despite their long-term cost-effectiveness. Figure 4 summarizes the results of the MAXQDA analysis, detailing the code themes and sub-themes for GTFL and PEB in Palestinian healthcare organizations.

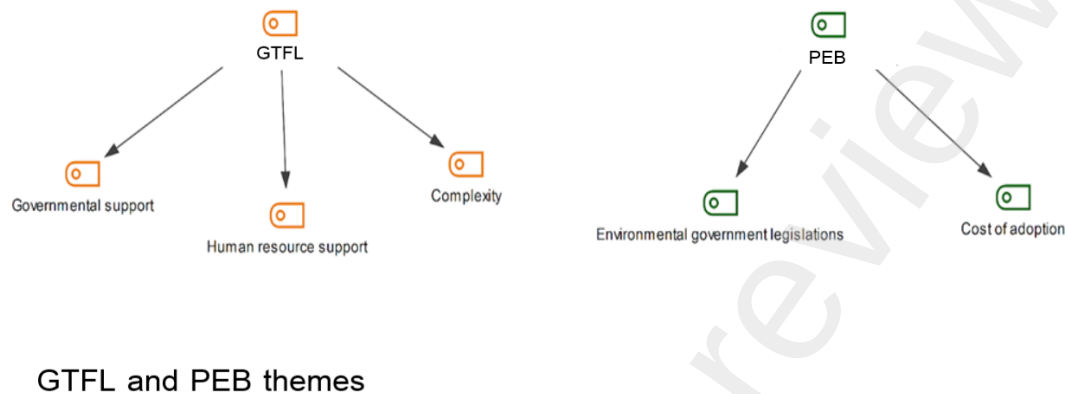


Figure 4: The result of interview analysis, Source MAXQDA 2022.

4.2 Qualitative data analysis and results.

In this study, we used partial least squares structural equation modeling (PLS-SEM 4) to investigate the proposed model. This methodology is widely used in management research for validating theories through statistical estimation (Hair et al., 2019; Farrukh et al., 2022). PLS-SEM is flexible and does not require data distribution assumptions, making it a valuable alternative to covariance-based SEM (CB-SEM) in contexts with small sample sizes, a focus on predictive accuracy, limited existing theory, or challenges in model specification (Wong, 2013). PLS-SEM involves a two-stage estimation process, covering both the measurement and structural models (Hair et al., 2021). This technique is ideal for testing early-stage hypotheses and models, aligning with the objectives of our study. While many studies have explored factors influencing sustainable performance, research on the interplay between GTFL, GHRM, and PEB remains scarce.

4.2.1. Assessment of the measurement model.

The measurement models aim to assess the connections between each latent variable and its corresponding indicators by evaluating the reliability, validity, and internal consistency of the variables. Factor loading helps to check the reliability of individual items. According to Hair et al. (2019), the lowest item loading should not fall below 0.6. In our study, all personal items exhibited loadings ranging from 0.647 to 0.936 (see Table 1 and figure (5)). The internal consistency of the adapted scales was assessed using composite reliability (CR). Hair et al. (2019) suggest that CR values should exceed 0.7. Our data analysis showed CR values ranging from 0.858 for PEB to 0.972 for GTFL. All scales had acceptable CR values, exceeding the 0.7 threshold.

Furthermore, we evaluated convergent validity using the average variance extracted (AVE), with values needing to surpass the cut-off value of 0.50 (Hair et al., 2019). In this study, all constructs had AVE values greater than 0.5, meeting the required criterion for convergent validity. Furthermore, all variables had Variance Inflation Factor (VIF) values below the recommended threshold of 3 (ranging from 1.54 to 2.75), as suggested by Hair et al. (2019), which indicates that there are no problems with multicollinearity in the research model. To examine discriminant validity (DV), we employed the Heterotrait-Monotrait ratio of correlations (HTMT) (Table 2). The recommended threshold for HTMT is less than 0.90 (Henseler et al., 2015). Our results suggested adequate discriminant validity, as all HTMT values were below the recommended 0.90 threshold, as displayed in Table 2, which provides the complete findings of the HTMT correlations.

Table (1): Measurement model Validity and Reliability.

Items	Item Loading	Cronbach's Alpha	Composite reliability (CR)	Average variance extracted (AVE)	VIF
GHRM practices		0.931	0.943	0.675	2.226
GHRM 1	0.814				
GHRM 2	0.724				
GHRM 3	0.769				
GHRM 4	0.910				
GHRM 5	0.869				
GHRM 6	0.828				
GHRM 7	0.807				
GHRM 8	0.839				
GTFL		0.965	0.972	0.853	2.703
GTFL 1	0.915				
GTFL 2	0.924				
GTFL 3	0.932				
GTFL 4	0.936				
GTFL 5	0.931				
GTFL 6	0.903				
PEB		0.804	0.858	0.503	1.896
PEB 1	0.69				
PEB 2	0.715				

PEB 3	0.685				
PEB 4	0.664				
PEB 5	0.70				
PEB 6	0.792				
Sustainable performance		0.940	0.948	0.556	2.176
Environmental performance (EP)		0.878	0.912	0.678	1.486
EP1	0.892				
EP2	0.876				
EP3	0.833				
EP4	0.647				
EP5	0.847				
Financial performance (FP)		0.818	0.879	0.646	2.009
FP1	0.729				
FP2	0.821				
FP3	0.865				
FP4	0.793				
Social performance (SP)		0.931	0.946	0.746	2.147
SP1	0.848				
SP2	0.892				
SP3	0.765				
SP4	0.883				
SP5	0.922				
SP6	0.862				

Table (2): Discriminant validity.

Heterotrait–monotrait ratio (HTMT).

	EP	FP	GHRM practices	GTFL	PEB	SP
EP						
FP	0.704					
GHRM practices	0.489	0.549				
GTFL	0.657	0.605	0.776			
PEB	0.784	0.85	0.766	0.796		
SP	0.889	0.638	0.45	0.662	0.585	

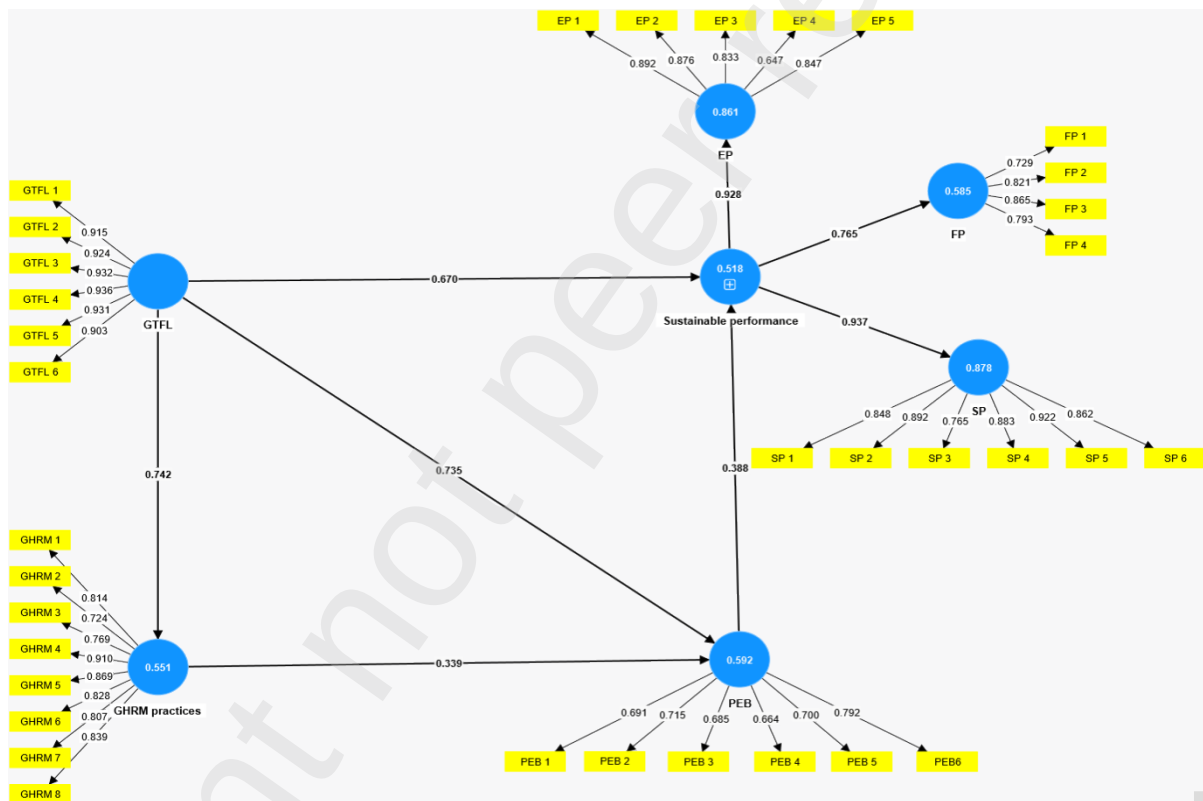


Figure (5): The Measurement model.

4.2.2. Assessment of the structural model.

In the second phase, we evaluated the structural model to examine both the direct and indirect hypotheses of the study. Various criteria were employed to assess the significance and appropriateness of our model. Initially, we used the coefficient of determination, denoted as R^2 , to measure the model's capacity to explain variance. R^2 indicates the extent to which changes in endogenous variables can be attributed to exogenous variables. The R^2 value ranges from 0 to 1, with higher values suggesting greater predictive precision. Typically, R^2 values of 0.75, 0.50, and 0.25 for endogenous

latent variables are considered high, moderate, or weak, respectively (see Table 3). Furthermore, we utilized Q^2 , also known as Stone-Geisser's Q^2 , to measure the predictive relevance within the structural model. A Q^2 value greater than zero for a given reflective endogenous latent variable indicates the model's predictive significance for that construct. According to Cohen et al. (2000), Q^2 values of 0.02, 0.15, and 0.35 suggest predictive relevance of minor, medium, and large effect sizes, respectively. Additionally, the goodness of fit (GoF) for the study model was assessed, yielding a value of 0.655, which surpasses the threshold of 0.36, indicating a large fit. This outcome reflects the model's robust alignment with the data. The results of these evaluations are summarized in the provided table (see Table 3).

Table (3): R2, communality, and redundancy.

	R-square	R-square adjusted	Q²predict
GTFL	---	---	---
GHRM practices	0.550	0.547	0.526
PEB	0.592	0.586	0.507
Sustainable performance	0.528	0.518	0.425
EP	0.861	0.860	0.330
FP	0.584	0.582	0.266
SP	0.878	0.878	0.526

We formulated five direct hypotheses, and the results obtained after employing the bootstrapping technique with 5000 resamples indicate the following: GTFL is positively and significantly linked to GHRM practices ($\beta = 0.742$, t -value = 12.248, $p = 0.00$), PEB ($\beta = 0.484$, t -value = 3.33, $p = 0.001$), and sustainable performance ($\beta = 0.385$, t -value = 3.394, $p = 0.001$). Additionally, the results revealed that GHRM practices are positively associated with PEB ($\beta = 0.339$, t -value = 2.203, $p = 0.028$), and that PEB is positively and significantly associated with sustainable performance ($\beta = 0.39$, t -value = 3.172, $p = 0.002$). Therefore, our study supports all five direct hypotheses (H1, H2, H3, H4, and H5), as shown in Table 4. Moreover, we developed hypotheses for indirect and total effects. The results revealed that GTFL is positively associated with PEB ($\beta = 0.251$, t -value = 2.062, $p = 0.039$) and with sustainable performance ($\beta = 0.286$, t -value = 3.032, $p = 0.02$). Finally, PEB has a significant and positive effect on sustainable performance ($\beta = 0.388$, t -value = 3.061, $p = 0.02$). Hence, all indirect hypotheses were supported. Table 4 summarizes the outcomes of these tests for both direct and indirect effects.

The mediation effect hypothesis was assessed using the Smart-PLS bootstrapping function. As recommended by Hair et al. (2021), when both direct and indirect effects are significant and point in the same direction, it indicates the presence of partial mediation (complementary mediation). Bootstrapping does not make any assumptions

about the form of the variable distribution or the sampling distribution of the statistics. The findings presented in Table 4 indicate that GTFL has a significant indirect effect on PEB through GHRM ($\beta = 0.251$, t -value = 2.062, $p = 0.039$), providing evidence for the existence of complementary mediation by GHRM practices. Additionally, the results revealed the presence of complementary mediation by PEB between GTFL and sustainable performance ($\beta = 0.188$, t -value = 2.184, $p = 0.029$), suggesting that H6 and H7 are supported (See table (4) and figure 6).

Table (4): The results of direct and indirect relations.

	Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistic s (O/ST DEV)	P values	BCI LL	BCI UL	Result
Direct relations									
GTFL -> GHRM practices	H1	0.742	0.75	0.061	12.248	0.000	0.617	0.855	Accepted
GTFL -> PEB	H2	0.484	0.484	0.145	3.33	0.001	0.187	0.763	
GTFL -> Sustainable performance	H3	0.385	0.382	0.113	3.394	0.001	0.170	0.615	Accepted
GHRM practices -> PEB	H4	0.339	0.348	0.154	2.203	0.028	0.28	0.633	Accepted
PEB -> Sustainable performance	H5	0.39	0.39	0.123	3.172	0.002	0.119	0.617	Accepted
Indirect and Total effects									
GTFL -> PEB	--	0.251	0.263	0.122	2.062	0.039			Accepted
GTFL -> Sustainable performance	--	0.286	0.289	0.094	3.032	0.002			Accepted
PEB -> Sustainable performance	--	0.388	0.389	0.127	3.061	0.002			Accepted
Specific Indirect Effects									
GTFL -> GHRM practices -> PEB	H6	0.251	0.263	0.122	2.062	0.039	0.020	0.504	Partial mediation (complementary).
GTFL -> PEB -> Sustainable performance	H7	0.188	0.188	0.086	2.184	0.029	0.043	0.379	Partial mediation (complementary).

In addition, as described in the study by Shmueli et al. (2019), the simulation findings indicate that Root Mean Square Error (RMSE) and Mean Absolute Deviation (MAE) are particularly valuable metrics when choosing the best predictive model among a set of competing models. The study employed predictive relevance using a holdout sample-

based approach to generate case-level predictions at the item or construct level. After performing a 6-fold cross-validation procedure, it was observed that all Partial Least Squares (PLS) model values were lower compared to those of the linear regression (LM) model (see Table 5). Therefore, it can be concluded that the tested model exhibits strong predictive ability.

Table (5). PLS predict.

	<u>PLS</u>		<u>LM</u>		<u>PLS-LM</u>	
	<u>RMSE</u>	<u>MAE</u>	<u>RMSE</u>	<u>MAE</u>	<u>RMSE</u>	<u>MAE</u>
GHRM 1	0.596	0.288	0.648	0.307	-0.052	-0.019
GHRM 2	0.524	0.248	0.533	0.250	-0.009	-0.002
GHRM 3	0.534	0.243	0.574	0.262	-0.04	-0.019
GHRM 4	0.485	0.221	0.517	0.235	-0.032	-0.014
GHRM 5	0.540	0.252	0.572	0.267	-0.032	-0.015
GHRM 6	0.636	0.296	0.675	0.305	-0.039	-0.009
GHRM 7	0.613	0.277	0.693	0.317	-0.08	-0.04
GHRM 8	0.476	0.221	0.504	0.238	-0.028	-0.017
PEB 1	0.523	0.242	0.596	0.279	-0.073	-0.037
PEB 2	0.514	0.230	0.607	0.269	-0.093	-0.039
PEB 3	0.501	0.236	0.541	0.256	-0.04	-0.02
PEB 4	0.523	0.242	0.596	0.279	-0.073	-0.037
EP1	0.561	0.238	0.594	0.266	-0.033	-0.028
EP2	0.550	0.264	0.616	0.281	-0.066	-0.017
EP3	0.489	0.212	0.559	0.244	-0.07	-0.032
EP4	0.612	0.273	0.655	0.287	-0.043	-0.014
EP5	0.587	0.271	0.606	0.281	-0.019	-0.01
FP1	0.561	0.240	0.594	0.266	-0.033	-0.026
FP2	0.550	0.263	0.616	0.281	-0.066	-0.018
FP3	0.489	0.212	0.559	0.244	-0.07	-0.032
FP4	0.640	0.301	0.718	0.336	-0.078	-0.035
SP1	0.507	0.229	0.552	0.253	-0.045	-0.024
SP2	0.528	0.233	0.555	0.259	-0.027	-0.026

SP3	0.611	0.282	0.676	0.310	-0.065	-0.028
SP4	0.471	0.199	0.480	0.205	-0.009	-0.006
SP5	0.521	0.226	0.540	0.242	-0.019	-0.016
SP6	0.611	0.282	0.676	0.310	-0.065	-0.028

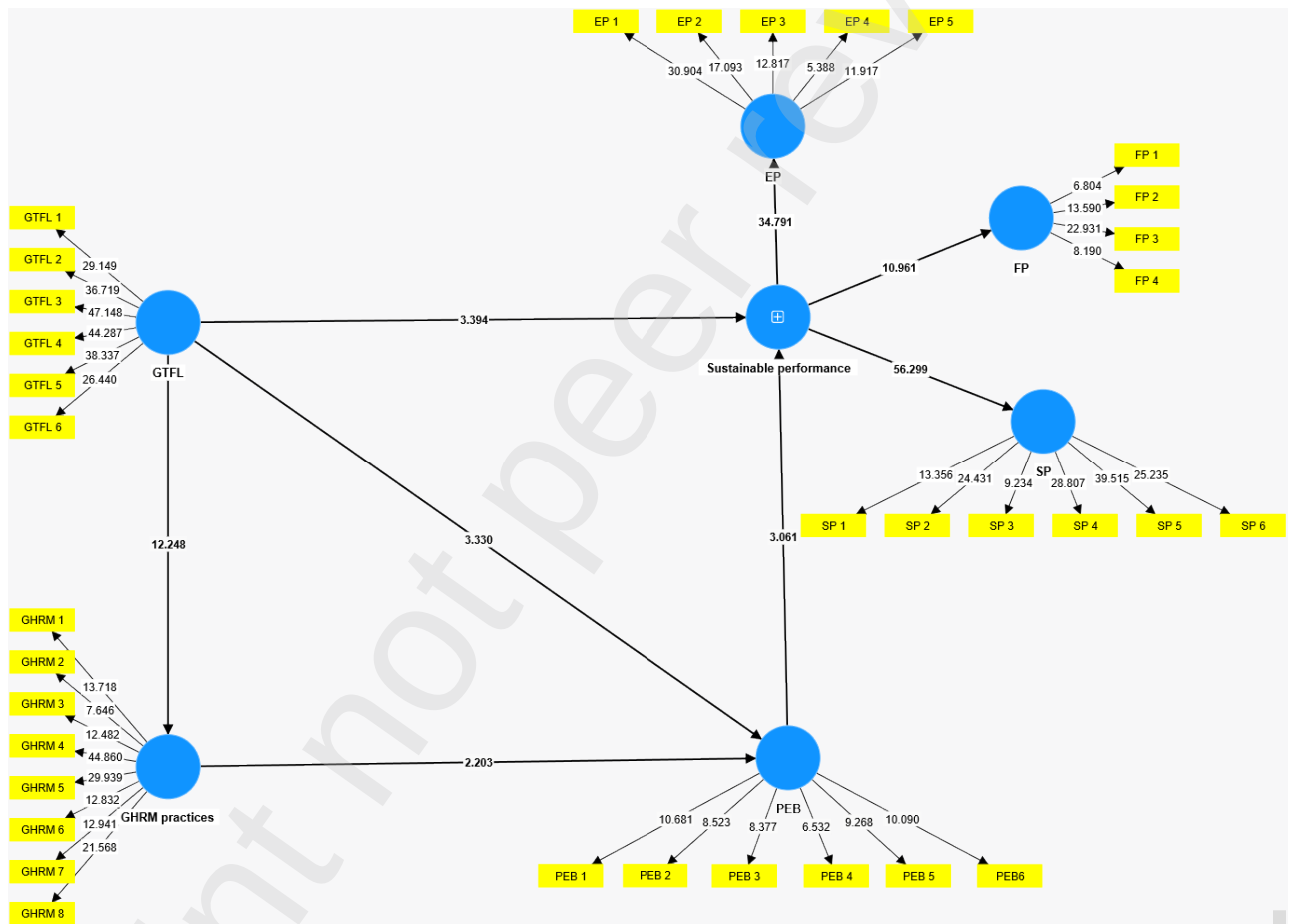


Figure (6): The Structural model.

5. Discussion and implications

This study provides significant insights into the determinants of sustainable performance and the adoption of Green Transformational Leadership (GTFL) within the Palestinian healthcare sector. The findings demonstrate that GTFL positively influences Green Human Resource Management (GHRM), pro-environmental behavior (PEB), and sustainable performance. These results align with and extend prior research on the role of GTFL in enhancing GHRM practices and organizational sustainability (Singh et al., 2020; Farrukh et al., 2022; Luo et al., 2024). The statistical analysis further confirms the strong positive correlation between GTFL and PEB, as supported by

Sobaih et al. (2022) and Perez et al. (2023), and underscores the critical impact of GTFL on sustainable performance, consistent with Zhao and Huang (2022) and Liu et al. (2023).

The findings highlight GTFL as an indispensable leadership approach for organizations aiming to adopt GHRM systems and foster employee PEBs, thereby improving sustainability performance. Previous studies have shown that GHRM can reduce operational costs while enhancing sustainability outcomes (Singh et al., 2020). Moreover, GHRM is instrumental in implementing green initiatives and strengthening environmental management (Song et al., 2012; Yong et al., 2020). The results also support the Resource-Based View (RBV) and Ability-Motivation-Opportunity (AMO) theory, emphasizing that both leadership and employee contributions are vital for achieving sustainable performance in healthcare organizations.

The mediating roles of GHRM and PEB offer deeper insights into the mechanisms driving sustainability outcomes. The study confirms that GHRM mediates the relationship between GTFL and PEB, highlighting the importance of HR practices in translating leadership influence into actionable employee behaviors. Furthermore, PEB mediates the relationship between GTFL and sustainable performance, reinforcing the notion that eco-conscious organizational cultures drive collective environmental actions (Sun et al., 2022). Leaders modeling environmentally responsible behaviors inspire employees to adopt sustainability practices, showcasing the pivotal role of GTFL in promoting PEB and sustainable performance (Sobaih et al., 2022).

The healthcare sector's dual role in addressing environmental challenges while contributing to environmental degradation is particularly significant. The sector's hazardous waste and carbon emissions necessitate responsible waste management strategies, including reuse, recovery, and recycling, to mitigate health risks and environmental harm (Tanveer et al., 2022). Encouraging PEB among healthcare workers is essential for these efforts, as employees with stronger environmental values are more likely to engage in sustainable practices. This study underscores the importance of personal beliefs and leadership in fostering PEB, aligning with prior research (Al-Swidi et al., 2021; Sobaih et al., 2022; Perez et al., 2023; Hasan et al., 2024).

By integrating empirical evidence from Palestine, this research makes a unique contribution to the understanding of GTFL, GHRM, and PEB in the context of developing economies. The findings provide actionable recommendations for policymakers and organizational leaders, emphasizing the need for transformational leadership and strategic HR practices to enhance sustainability performance in healthcare organizations.

5.1 Theoretical Implications

This study provides several significant theoretical contributions, particularly to scholars examining green practices within the healthcare sector.

First, while existing literature on Green Transformational Leadership (GTFL) predominantly explores its impact on Pro-Environmental Behavior (PEB) and environmental performance among employees, this research uniquely investigates its

role in enhancing sustainable performance within healthcare organizations. By doing so, it makes a distinct contribution to the GTFL literature.

Second, the study is a pioneering addition to the emerging body of work on GTFL, Green Human Resource Management (GHRM) practices, employee PEB, and sustainable performance in healthcare. It expands this body of knowledge by addressing diverse healthcare contexts, including secondary care centers (hospitals) and tertiary care centers (rehabilitation centers). The study uncovers new insights into the relationships among GTFL, GHRM, workforce PEB, and sustainable healthcare performance, particularly in the Palestinian healthcare sector.

Third, this research broadens the understanding of the Resource-Based View (RBV) and Ability-Motivation-Opportunity (AMO) theories in healthcare. It demonstrates how GTFL, GHRM, and PEB interact as critical resources and competencies to drive sustainable performance. Furthermore, the study validates the mediating role of GHRM between GTFL and PEB and the mediating role of PEB between GTFL and sustainable performance, marking a novel contribution to the GTFL literature within the healthcare domain.

Fourth, the use of a mixed-methodology approach offers a robust methodological perspective, enriching the understanding of sustainable performance determinants in healthcare. By integrating qualitative and quantitative research methods, this study addresses gaps in empirical research using mixed methods, particularly within the service sector and in the context of developing nations. The findings provide valuable empirical insights into sustainable performance in the Palestinian healthcare context, contributing to literature on emerging economies.

Finally, this study acknowledges the complex political landscape in Palestine and its effect on healthcare systems, highlighting the need for environmental conservation efforts. Despite these challenges, the research provides practical insights for healthcare practitioners and policymakers in Palestine and other developing countries. It underscores the importance of GTFL, GHRM, and PEB in achieving sustainable performance, particularly in resource-limited settings.

5.2 Practical Implications

The healthcare sector globally faces dual challenges: mitigating its ecological footprint and enhancing resilience against the impacts of climate change. Addressing these challenges aligns with the United Nations Sustainable Development Goals (SDGs), universal health coverage (UHC), and global health security objectives. This study offers practical recommendations for healthcare leaders, managers, and policymakers aiming to foster Pro-Environmental Behaviors (PEB) and achieve sustainable performance in their organizations.

Prioritizing Green Leadership:

Healthcare leadership should integrate environmental sustainability into the organization's mission, vision, and strategic goals. Leaders committed to green initiatives can cultivate a culture of environmental stewardship by actively supporting environmental management systems and fostering eco-friendly practices within healthcare facilities. By demonstrating commitment, they can motivate employees to align their behaviors with sustainability goals.

Implementing Green Human Resource Management (GHRM) Practices:

GHRM can be a strategic tool for effectively mobilizing human capital in support of environmental management initiatives. The study indicates that GHRM reflects an organization's strategic alignment with environmental goals, encouraging employees to engage in behaviors that reduce environmental impact. Senior leadership should integrate environmental objectives into HR policies, including green hiring, training, and performance appraisals, to strengthen sustainable organizational performance.

Promoting Environmental Awareness and Education:

Managers should prioritize employee education on environmental issues through targeted training programs, workshops, and awareness campaigns. These initiatives can emphasize the importance of sustainability, encourage eco-friendly behaviors, and recognize employees' contributions to environmental solutions. Promoting knowledge exchange through forums and seminars enhances environmental awareness and fosters a culture of sustainability within healthcare organizations.

Monitoring and Evaluating Sustainable Performance:

Measuring and tracking progress in sustainable performance is essential for understanding an organization's current standing and guiding future strategies. Managers should conduct regular assessments of sustainable performance metrics, evaluating the impacts of GTFL, GHRM, and PEB. This data-driven approach enables organizations to identify improvement areas, monitor changes over time, and inform sustainability-related decision-making.

Personalizing Green Initiatives:

Recognizing the diverse responses of employees to green leadership initiatives is crucial. Managers should gather employee feedback through surveys or interviews to tailor strategies that address specific needs and preferences. This personalized approach enhances the effectiveness of GTFL in promoting sustainability, ensuring that interventions resonate with employees and lead to meaningful organizational change.

By implementing these recommendations, healthcare organizations can address their environmental challenges while improving their sustainability outcomes. These findings are particularly relevant to resource-constrained settings, offering actionable guidance to leaders and policymakers striving to balance healthcare delivery with environmental responsibility.

5.3. Limitations and future research

This research offers valuable practical and theoretical insights while highlighting opportunities for future investigation through its limitations. Our study's focus on Palestine's healthcare sector, while providing deep contextual understanding, naturally constrains the generalizability of findings to other industries such as manufacturing. To address this limitation, we encourage future scholars to test our theoretical framework across diverse sectors within Palestine and extend it to other national contexts,

potentially revealing cultural and industry-specific nuances in sustainable leadership practices.

Another boundary of our research stems from its organizational-level analysis, which centered on departmental managers in healthcare administration, human resources, and quality management. Expanding this scope to include healthcare staff across various hierarchical levels could uncover how green transformational leadership cascades through organizations and affects sustainable behaviors at different organizational strata.

While our research established GHRM and PEB as significant mediating variables, the complex nature of sustainable organizational behavior suggests the presence of additional unexplored mediating and moderating factors. Future research would benefit from examining the role of personal environmental beliefs, which could shape how employees respond to green leadership initiatives. Similarly, investigating green knowledge sharing mechanisms could illuminate how sustainable practices diffuse through organizations. External influences, such as regulatory pressures and stakeholder expectations, might also moderate the relationships between GTFL, PEB, and sustainable performance, offering another promising avenue for research.

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Do green transformational leadership, green human resource management, and pro-environmental behavior promote sustainable performance? evidence from Palestine

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