

**Enhancing Green
Knowledge Sharing:
The Roles
of Environmental Leadership,
Green Human Resource Management,
and Psychological Contract Breach
in the Aviation Industry**

Nguyen Thi Thu Huong, Ph.D.

Doctoral Thesis Summary

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Posílení sdílení “zelených znalostí”: Role environmentálního řízení včetně řízení lidských zdrojů dle principů GHRM v leteckém průmyslu

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ABSTRACT

Green human resource management (GHRM), which is defined as integrating the environmental aspect into human resource management, has been paid attention to by previous scholars. However, the existing literature has revealed an issue with how and when GHRM describes employees' green knowledge sharing as well as the roles of environmental leadership and psychological contract breach (PCB). Thus, by anchoring on social exchange theory and social learning theory, the study aims to build a comprehensive model to investigate (1) the direct effects of GHRM, environmental leadership, and PCB on green knowledge sharing (2) the mediating roles of environmental knowledge and eco-initiatives towards the effect of GHRM on green knowledge sharing (3) the moderating roles of environmental leadership and PCB in the connections from environmental knowledge, GHRM, and eco-initiatives to green knowledge sharing.

The mixed-methods approach is applied. First, the qualitative study is used to confirm and develop the questionnaire. Then, the quantitative approach is applied to test the proposed hypotheses. A two-wave time-lagged survey through this questionnaire is employed to collect the data from 443 respondents working for leading Vietnamese airlines and other companies in the aviation industry.

Data analysis is conducted by utilizing SPSS and the PROCESS package in R software. The main findings confirm the direct positive effect of GHRM on green knowledge sharing, environmental knowledge, and eco-initiatives, followed by the direct positive effect of environmental leadership and PCB on green knowledge sharing. Secondly, it is proven that environmental knowledge and eco-initiatives play a positive mediating role in the effect of GHRM on green knowledge sharing. Finally, it confirms the moderating roles of PCB in the connections from environmental knowledge, GHRM, and eco-initiatives to green knowledge sharing. Unexpectedly, hypothesis number 9, which is about the moderating role of environmental leadership in mediating from GHRM to green knowledge sharing via environmental knowledge, is not confirmed.

This study has contributions in both theoretical and practical aspects. In light of the social exchange theory, this study confirmed the relationship between GHRM and green knowledge sharing, which is a vital green behaviour. Besides, with the extension of social exchange theory and social learning theory, this study emphasized the mediating role of environmental knowledge and eco-initiatives in the relation between GHRM and GKS, and the moderating role of environmental leadership and psychological contract breach in the mediating relationship between GHRM and GKS. The study also contributes to the literature on how effective GHRM practices are in the aviation industry, which has been less studied before. It can be proved that, besides technical solutions, GHRM is also a crucial system for supplying solutions for effectively protecting the environment. Finally, the study shows its limitations and suggests further research.

ABSTRAKT

Ekologickému řízení lidských zdrojů (dále jen GHRM), které je definováno jako integrace environmentálních aspektů do řízení lidských zdrojů, je v současnosti věnována velká pozornost nejenom od současných autorů. Stávající literatura však poukázala na otázku, dotýkající se toho, jak a kdy GHRM popisuje sdílení ekologických znalostí u zaměstnanců, jakož i na roli environmentálního vedení za určitého psychologického vedení daného konceptu (PCB – psychological contract breach). Cílem této práce je tedy na základě teorie sociální výměny a teorie sociálního učení vytvořit komplexní model, který by zkoumal:

(1) přímý vliv GHRM a environmentálního vedení a PCB na sdílení ekologických znalostí. (2) zprostředkovaní role environmentálních znalostí a ekologických iniciativ vůči vlivu GHRM na sdílení ekologických znalostí. (3) roli environmentálního vedení a PCB na souvislosti mezi environmentálními znalostmi a GHRM a ekologickými iniciativami prostřednictvím sdílení jejich znalostí.

V práci se aplikuje přístup smíšených metod. Nejprve se na potvrzení dotazníku používá kvalitativní studie. Poté je využit kvantitativní přístup k ověření navržených hypotéz. Ke sběru dat od 443 respondentů (pracující ve vietnamských leteckých společnostech) je použit dvouvltný časově zpožděný průzkum prostřednictvím dotazníku.

Analýza dat byla uskutečněna pomocí programu SPSS a balíčku PROCESS v softwaru R. Hlavními zjištěními jsou nejprve potvrzení přímého pozitivního vlivu GHRM na sdílení zelených znalostí, na environmentální znalosti a na ekologické iniciativy, dále přímý pozitivní vliv environmentálního vedení a PCB na sdílení zelených znalostí. Zadruhé je prokázána pozitivní zprostředkující role environmentálních znalostí a ekoiniciativ vůči vlivu GHRM na sdílení zelených znalostí. Nakonec se potvrzuje také moderující role PCB ve vztazích od environmentálních znalostí, GHRM a ekoiniciativ ke sdílení zelených znalostí. Nečekaně se nepotvrdila hypotéza číslo 9, která se týká moderující role environmentálního vedení při zprostředkování od GHRM ke sdílení zelených znalostí prostřednictvím environmentálních znalostí.

Tato studie má přínos jak z teoretického, tak z praktického hlediska. Ve světle teorie sociální výměny tato studie potvrdila vztah mezi GHRM a sdílením zelených znalostí, což je zásadní pro ekologické chování. Kromě toho, s rozšířením teorie sociální výměny a teorie sociálního učení, tato studie zdůraznila zprostředkující roli environmentálních znalostí, ekologických iniciativ ve vztahu mezi GHRM a GKS a moderující roli environmentálního vedení a porušení psychologické smlouvy ve zprostředkujícím vztahu mezi GHRM a GKS. Studie také přispívá k identifikaci účinnosti postupů GHRM v leteckém průmyslu, který byl dosud méně studován. Lze prokázat, že kromě technických řešení je GHRM také klíčovým systémem pro dodávání řešení pro účinnou ochranu životního prostředí. Závěrem studie ukazuje svá omezení a navrhuje směr dalšího výzkumu.

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1. INTRODUCTION

Environmental challenges, including irreversible deforestation, global warming, severe levels of pollution, depletion of natural resources, climate change, and energy scarcity, have become urgent issues for the sustainability of ecosystems globally. In the context of the 21st century, interest in solving and mitigating these problems has become more widespread and diverse than ever before, as reflected in many international studies and reports (Saeed et al., 2019). In particular, the pressure of the global economy has forced countries in Asia to seek and implement sustainable solutions to deal with climate change, from applying green technologies and improving energy efficiency, to promoting advanced environmental policies (Renwick et al., 2013). The focus on these measures not only demonstrates countries' commitment to protecting the environment but is also an important step in ensuring sustainable development for future generations.

In the aviation industry, environmental protection has become an important concern for scientists and governments. Emissions such as SO_x and NO_x during the development and transformation of this industry can turn into volatile nitrate and sulfate aerosols. At the same time, hydrocarbon (HC) emissions can also form semi-volatile organic particles. These elements all have a role in causing climate change (Basseur et al., 2016). Forecasts show that, without intervention, emissions from this sector will increase significantly, with estimates that could increase two to four times compared to levels observed in 2015. This leads to a worrying forecast that annual CO₂ emissions from international aviation could reach around 1.8 billion tons by 2050 (ICAO, 2019).

Wehrmeyer (1996) emphasized the importance of integrating environmental management (EM) with human resource management (HRM), suggesting a close integration between the two fields. He noted that combining EM and HRM effectively faces many challenges and encouraged future research to focus on addressing these difficulties. In the same context, Milliman and Clair (1996) are known as pioneering scholars in exploring the role of HRM in implementing EM, proposing a new research direction in which HRM is considered an integral part of the environmental management process. The model of HRM practices developed by Milliman and Clair (1996) clearly points to the important role of human resources in supporting the implementation of a company's specific environmental strategy. They emphasize that these HRM practices tend to focus on environmental protection.

Renwick et al. (2013) clarified that GHRM is the integration of EM into HRM. GHRM is not just the application of one or two individual solutions but is a comprehensive system, including the ongoing development, implementation, and maintenance of programs and policies that support and motivate employees in organizations to become more environmentally friendly (Renwick et al., 2013). HRM in implementing EM standards is an important factor in proactively addressing environmental challenges (Ren et al., 2018). GHRM also has a significant influence on green

behavior and environmental performance in the hotel industry (Pham et al., 2019; Ren et al., 2020). GHRM offers diverse HRM strategies designed to nurture and develop green employees, also known as employees with high environmental awareness and environmental protection actions (Luu, 2019; Pham et al., 2019; 2020). Research on GHRM to date has shed light on the important role of GHRM in promoting general environmental behavior in the workplace, especially in encouraging voluntary green activities (Dumont et al., 2017). However, there is a lack of research on other green behaviors, such as green knowledge sharing, which opens up opportunities to expand and enrich the research literature on GHRM and its influence on environmental protection behavior in organizations.

Green knowledge sharing is described by Lin and Chen (2017) as the process through which employees willingly share knowledge and information related to environmental protection with colleagues in their organization. This process is not just a simple exchange of information but is also an important means of disseminating environmental knowledge among employees, with the ultimate goal of enhancing common understanding and supporting environmental goals. When employees are fully informed and encouraged about environmental education, they become important agents in promoting positive environmental change within the organization. Thus, it is clear that GHRM has a positive impact on green knowledge sharing (Rubel et al., 2021).

Besides, in this study, we explore the role of environmental leadership and psychological contract breach (PCB) in moderating their impact on employee green behavior. Environmental leadership is defined as the ability of leaders to encourage and support individuals and organizations towards ecological sustainability (Egri & Herman, 2000). These leaders demonstrate a deep concern for environmental protection and sustainable development. In addition, there is a similar leadership style to environmental leadership. That is green transformational leadership, which is leaders' behavior that motivates employees to achieve environmental goals and encourages them to carry out environmental activities (Chen & Chang, 2013). Meanwhile, PCB is understood as a situation in which employees feel that the organization has not fulfilled their formal or informal commitments (Robinson & Morrison, 2000). This breach has been shown to have a negative relationship with employee commitment to the organization, as stated by Zhao et al. (2007). Therefore, from the existing literature, **the research problem** is to examine the relationships between green human resource management and green knowledge sharing and the roles of environmental leadership and PCB in the aviation industry.

2. LITERATURE REVIEW

2.1 Theoretical background

Social Exchange Theory

In a corporate environment, each individual's actions are considered part of a process of social interaction with leadership, described through the concept of social exchange according to Blau (2017). According to this view, interpersonal relationships provide a sense of obligation to reward actions directed toward the common good. This constant cycle of reciprocation leads to balance in interactions. Emerson (1976) expanded on this idea by stating that employees will feel the need to reciprocate when they perceive benefits from their organization (Dumont et al., 2017). This theory helps understand how HRM policy implementation affects employee behavior. At the same time, this theory also explains the connection between GHRM and leaderships (Afsar et al., 2016; Pham et al., 2019). Previous studies (Zhao et al., 2007) often focus on the negative relationship between employees' perceptions of psychological contract breaking and organizational citizenship behavior, based on the theory social exchange theory. In my research, this theory is applied to explore the influence of GHRM and psychological contract violation on environmental knowledge sharing.

Social Learning Theory

Social learning theory declares that employees in an organization learn when they find the leader alluring, investigates the effect of environmental leadership on knowledge sharing (Bandura, 1977). Albert Bandura's theory of social learning focuses on how the behaviour, how the attitudes are observed and reproduced. Learning is defined as social activities that helps people to exchange knowledge and understanding of the world. So, this theory may be utilized to explain how the leaders inspire their followers with green behaviour (Bandura et al., 1977). Based on this theory, workers are affected by the ways of behaving that is forming for their role in organizational settings, like their team leader, middle managers, and senior leaders (Ahmad et al., 2021). In my study, social learning theory explains the influences of environmental knowledge on green knowledge sharing and environmental leadership.

2.2 Green Human Resource Management

GHRM refers to the incorporation of environmental management principles into human resource management practices (Renwick et al., 2013). According to Ren et al. (2018), the objective of GHRM is to enhance employees' comprehension, expertise, abilities, and drive in order to enhance environmental performance in enterprises. Thus, GHRM may be regarded as the endeavors of HRM to uphold and facilitate environmental conservation. Dumont et al. (2017) have identified many HRM practices that are linked to environmental responsibility.

Many researchers have examined GHRM across a variety of functions (Renwick et al., 2013; Dumont et al., 2017). The five key components often emphasized include green recruitment, green selection, green training and development, green performance management, and green pay and bonuses, as pointed out by Yong et al. (2020). Recent studies have not only focused on how GHRM is implemented in organizations, but also highlighted the impact of GHRM on employees green outcomes. GHRM is believed to influence employee green behavior (Pham et al.,

2019), environmental performance (Kim et al., 2019), and improve sustainability. Many research works focus on studying GHRM in relation to employee green behavior in many countries, especially developing countries (Yong et al., 2020; Pham et al., 2019a). Therefore, research on the relationship between GHRM and specific green behaviors of each employee, such as sharing green knowledge, also needs to be paid more attention (Pham et al., 2019a).

2.3 Green knowledge sharing

In a green context, many researchers have examined the sharing of green knowledge related to environmental issues in business organizations. Specifically, as Lin and Chen (2017) pointed out, green knowledge sharing is the spreading of environmental knowledge among the employee community. According to Rubel et al. (2021), this contributes to enhancing organizational efforts towards sustainability goals. Aboramadan et al. (2022) also emphasized that green knowledge sharing includes the exchange of environmental knowledge and experience among employees. In summary, sharing green knowledge is an important process in which knowledge about environmental protection is shared and exchanged to support the implementation of environmental protection solutions and achieve the organization's sustainable development goals (Bhatti et al., 2020).

2.4 Environmental knowledge

Environmental knowledge can be understood as a comprehensive understanding of the facts, ideas, and associations related to the natural environment and its major ecological systems (Fryxell & Lo., 2003; Afsar et al., 2016). In addition, workers with high environmental awareness and understanding can translate that knowledge into practical action, demonstrated through the adoption of environmentally friendly measures and behaviors at work and daily life (Amad et al., 2021). This shows the close connection between knowledge about the environment and the actual implementation of environmental protection measures. Additionally, it is clear that an individual's specific environmental knowledge is more strongly related to support for pro-environmental behavior than just awareness of environmental issues (Ones & Dilchert, 2013).

2.5 Eco-initiatives

Eco-initiatives by refer to any actions undertaken by workers with the intention of enhancing the environmental performance of the organization (Ramus & Steger, 2000). Boiral and Paillé (2012) defined eco initiatives as voluntary actions and suggestions that attempt to enhance environmental performance. Ramus and Killmer (2007) contend that employee environmental efforts play a crucial role in the successful implementation of sustainability practices inside a firm. Multiple studies have demonstrated that employee environmental efforts exert a beneficial impact on the efficacy of an organization's environmental preservation endeavors. Finally, Paillé

et al. (2014) note that these eco-initiatives are voluntary actions taken by employees, emphasizing their importance in the organization's environmental protection efforts.

2.6 Environmental leadership

Environmental leadership is defined as the ability to influence individuals and organizations toward achieving the long-term goal of ecological sustainability (Zhang & Ma, 2021). Leaders' actions both encourage subordinates to carry out environmental protection activities that are highly effective and go beyond what is required, as well as motivate subordinates to care about and complete environmental goals (Chen & Chang, 2013). In fact, these environmental leaders themselves have also taken environmental protection actions. In an organization, the behaviors of these leaders become examples for their employees to look up to. These workers, in turn, will carry out strong environmental protection activities and, at the same time, be willing to creatively participate in green actions (Haddock-Millar et al., 2016).

2.7 Psychological contract breach (PCB)

The concept of "psychological contract" refers to an informal and unrecorded set of views that both employees and the company hold about each other's expectations and obligations in the current working relationship (Rousseau, 1989).

From an employee's standpoint, a psychological contract might be perceived as either fulfilled or breached. Employees see a breach of the psychological contract when they believe that the organization has failed to uphold one or more of its prior promises and obligations towards them (Morrison & Robinson, 1997). The term "psychological contract breach" refers to an employee's perception of the degree to which their firm has failed to fulfill its obligations (Robinson & Rousseau, 1994). In addition, Zhao et al. (2007) discovered that when workers perceive a breach, it has a negative impact on their dedication to the firm. Employees who perceive the breach by their organization have reduced job satisfaction, decreased work commitment, and develop negative perceptions of their employer (Zhao et al., 2007) and intend to quit when they have an opportunity.

2.8 Previous studies

In these studies, social exchange theory is applied to analyze the link between GHRM, environmental leadership, and the effectiveness of environmental activities (Fawehinmi et al., (2020); Yusliza et al. (2019); Pham et al.,2020).

Social learning theory is considered an appropriate method to analyze the relationship between environmental leadership and other environmental issues in organizations (Ahmad et al., 2021) . Regarding the application of GHRM, implementation methods are diverse, including all factors and develop an environmentally aware corporate culture as well as empower employees in environmental protection activities (Jabbour & Santos, 2008; Renwick et al., 2013; Renwick et al., 2016). Some other scholars

(Pham et al., 2019; Yusliza et al., 2019) have also conducted research on the relationship between GHRM and employee behavior.

Research on the impact of GHRM on environmental performance has been conducted by a range of scholars (Kim et al., 2019; Ren et al., 2020; Singh et al., 2020). According to analysis by Renwick et al. (2013), GHRM includes various activities such as green training, green salary and incentive systems, green recruitment and selection, along with green performance management. However, there are several other aspects in GHRM that have been emphasized (Dumont et al., 2017), and five key elements have become prominent in discussions and research, namely are green recruitment, green selection, green training and development, green performance management, and green pay and incentives (Yong et al., 2020).

The influence of GHRM on employees' green behavior is clearly demonstrated, Kim et al. (2019) also pointed out the relationship between GHRM and environmental performance. The majority of research in this area focuses on expanding understanding of specific country contexts, especially developing countries (Yong et al., 2020; Pham et al., 2019). GHRM has increasingly attracted research interest, especially in exploring its influence on employees' environmentally friendly behaviors. The importance of further research on specific green behaviors of each employee, including exchanging and sharing green knowledge was emphasized (Bhatti et al., 2020).

Thus, previous work has some gaps:

- Gap 1: The contributions of GHRM policies towards employees' GKS are less paid attention to.
- Gap 2: There are lack of research of the role of PCB in the relationship between GHRM policies and GKS.
- Gap 3: The role of EL in the relationship between GHRM policies and GKS needs to be studied more.
- Gap 4: The role of GHRM policies towards employees' green behaviors in the aviation industry is under explored.

3. RESEARCH QUESTIONS AND RESEARCH OBJECTIVES

3.1 Main goal of the research

The main goal of the research is to investigate factors impacting employees' green knowledge sharing, including investigating the role of GHRM, environmental leadership, and PCB in boosting employees' green knowledge sharing.

3.2. Research questions and research objectives

Research questions

- **RQ1:** Are there direct effects of GHRM, environmental knowledge and eco-initiatives, environmental leadership, and PCB on green knowledge sharing?

- **RQ2:** Are there the mediating roles of environmental knowledge and eco-initiatives towards the effect of GHRM on green knowledge sharing?
- **RQ3:** Are there moderating roles of environmental leadership and PCB in the connection from GHRM to green knowledge sharing?

Research Objectives:

- **RO1:** To investigate the direct effects of GHRM, environmental knowledge and eco-initiatives, environmental leadership, and PCB on green knowledge sharing.
- **RO2:** To investigate the mediating roles of environmental knowledge and eco-initiatives towards the effect of GHRM on green knowledge sharing.
- **RO3:** To investigate the moderating roles of environmental leadership and PCB to the connection from GHRM to green knowledge sharing.

4. HYPOTHESIS DEVELOPMENT AND RESEARCH FRAMEWORK

4.1 Hypothesis development

Applying HRM strategies has been shown to have a positive influence on knowledge sharing within organizations (Luu, 2019). In particular, when employees are fully equipped with knowledge through the company's training process and encouraged to apply it in their work, they become willing to share their knowledge with colleagues. Thereby, the impact of GHRM on the spread of environmentally friendly knowledge can be understood through social exchange theory (Blau, 2017). Although there has been much recent GHRM research exploring the relationship between GHRM and overall green behavior, attention to specific green knowledge sharing remains limited. In this study, we argue that GHRM may influence positive green knowledge sharing behavior. Thus, the following hypothesis is proposed:

H1: There is a positive effect of GHRM on green knowledge sharing.

Research in the field of GHRM, has discovered and demonstrated that implementing GHRM policies and practices has a significant impact on employees' perceptions and attitudes towards the environment. Applying GHRM strategies not only contributes to raising environmental awareness among employees but also motivates them to participate in more proactive environmental protection actions (Renwick et al., 2013; Tang et al., 2018). GHRM measures implemented in an organization will motivate individuals within that organization to have positive perceptions and knowledge about green practices. Consequently, the following hypothesis is valid:

H2: There is a positive effect of GHRM on environmental knowledge.

When implementing GHRM, by implementing green recruitment and selection strategies, employers will attract candidates with knowledge of environmental protection and a tendency to carry out environmental protection activities. GHRM employers obviously want to select a candidate who has environmental knowledge and tends to have an environmentally friendly attitude because this type of candidate

is more likely to participate in eco-initiatives (Jabbour & Jabbour, 2016; Renwick et al., 2013). According to Ren et al. (2018), when employees acquire a genuine comprehension of the significance of environmental preservation through the implementation of GHRM, they have a tendency to engage in environmental corporate citizenship behavior proactively. In this study, we will investigate the influence that GHRM has on eco-initiatives. For the reasons above, we propose this hypothesis:

H3: There is a positive effect of GHRM on eco-initiatives.

In today context, the role of environmental leadership has become more prominent and important than at any time in the past, reflecting unprecedented shifts in cultural and social norms. This requires leaders to constantly innovate, create, and make efforts to solve environmental problems while actively facilitating the participation and contribution of every employee in this process (Boiral et al., 2009). Effective trained leaders in the environmental field are acutely aware of the importance of protecting the environment (Daily et al., 2012). Therefore, organizations that exhibit great environmental leadership tend to have more effective environmental management, and the influence of environmental leadership on the environmental actions of workers, such as the sharing of environmental knowledge (Khan et al., 2023), tends to be better with these businesses. Thus, we suggest the following hypothesis:

H4: There is a positive effect of environmental leadership on green knowledge sharing.

Recently, in the field of environmental sustainability, research on psychological contract breach has become popular (Paille et al., 2014). We identify psychological contract breach (PCB) as a prominent problem, and we emphasize the importance of considering it as a factor that can help explain difficulties in implementing environmental protection behaviors in the workplace.

In cases where employees perceive the psychological contract breach, they often express negative attitudes and think about quitting their job. Zhao et al. (2007) have shown that there is often a gap between intending to quit and deciding to take that action. In fact, many employees choose to leave a company only when they find a new, more suitable job opportunity (Rousseau, 1989). However, Zhao et al. (2007) also highlight that in cases where employees continue to work at the organization despite negative attitudes, this can have a negative impact on the entire work environment. From the comments above, we propose the following.

H5: There is a negative effect of PCB on green knowledge sharing.

A business implementing GHRM will provide environmental knowledge training to their employees. Employees will then convert this knowledge into green behaviors (Renwick et al., 2013). Applying social exchange theory, we can explain that they happily participate in green activities and want to repay the company by performing green behaviors for the organization. One of those behaviors is sharing the green

knowledge that they learn from GHRM practice. Therefore, based on this argument, we assume that:

H6: There is a mediating effect of environmental knowledge on the relationship between GHRM and green knowledge sharing.

The idea of eco-initiatives has been formally presented by Ramus and Steger (2000) and is defined as “any action taken by employees that they think will improve the company's environmental performance” (page 606). Boiral and Paille (2012) also define eco-initiatives as a form of discretionary behavior and include proposals aimed at improving environmental activities and performance. Thus, scholars agree that this is a voluntary behavior that improves environmental performance. Besides, GHRM and eco-initiatives both address practicality. These eco-initiatives, according to Boiral and Paille (2012), for example, suggest how to use paper economically and use energy efficiently. Initiatives like this further promote the sharing of ideas, awareness of environmental protection among employees. So, we proposed the following hypothesis:

H7: There is a mediating effect of eco-initiatives on the relationship between GHRM and green knowledge sharing.

Environmental leadership is defined by the actions of leaders to motivate their employees to achieve environmentally related goals. At the same time, they also motivate employees to not only meet but also exceed performance expectations in environmental protection activities (Chen & Chang, 2013). These environmental issues are also leading to unprecedented changes in cultural and social norms, as well as the significant impact that environmental challenges are having on businesses (Boiral et al., 2009). In an organization, GHRM implementation has a positive impact on employees' environmental protection behaviors, such as green knowledge sharing behavior (Kim et al., 2019; Pham et al., 2019). Environmental leaders take action and make decisions that support green policies, guidelines, and processes within their organizations. So, employees fully understand these actions, and they are willing to perform them. Therefore, when leaders have a positive tendency to protect the environment, they will motivate the organization's employees to implement GHRM and share knowledge about environmental protection and vice versa. So, we proposed the following hypothesis:

H8: There is a moderating effect of environmental leadership on the link between GHRM and green knowledge sharing.

As analyzed in the above sections, implementing GHRM in an organization will improve environmental knowledge as well as ecological initiatives. On the contrary, when employees have increasingly deeper knowledge about environmental protection, they tend to share more green knowledge. Similarly, when employees are consciously proactive in implementing ecological initiatives, they will also be more inclined to share green knowledge with colleagues. Here, we want to consider the role of environmental leadership in the above relationships.

According to social learning theory (Bandura, 1977), it can be seen that in any organization, the attention and priority that leaders give to environmental protection goes hand in hand with the application of high-level policies. High. of a GHRM policy will significantly increase the impact of environmental leadership in enhancing environmental knowledge and promoting ecological initiatives within the organization (Konovsky & Pugh, 1994). This will naturally have a positive impact on the process of sharing green knowledge among employees, promoting a positive work culture towards the environment and sustainability. And vice versa. As a result, the following hypotheses are assumed:

H9: There is a moderating effect of environmental leadership on the mediating role of environmental knowledge toward the relationship between GHRM and green knowledge sharing.

H10: There is a moderating effect of environmental leadership on the mediating role of eco-initiatives toward the relationship between GHRM and green knowledge sharing.

In recent times, a trend in environmental sustainability research has been increased interest in psychological contract breach (Paille et al., 2014). From a research perspective, we emphasize that understanding psychological contract breach (PCB) in an organization is essential. PCBs can cause significant obstacles within an organization, especially in specific circumstances. According to social exchange theory, when employees do not perceive the psychological contract breach and perceive that the organization has fulfilled its promises and commitments to them, they will respond with attitudes and positive behavior. Conversely, if employees perceive a breach of the psychological contract, they will respond with negative behavior. Therefore, it can be said that when PCB is high, the influence of GHRM on GKS will decrease, and vice versa, when PCB is low, the influence of GHRM on GKS will increase. So, from the above arguments, we propose these hypotheses:

H11: There is a moderating effect of PCB on the link between GHRM and green knowledge sharing.

During extensive research and analysis, we have realized that the presence of PCBs brings negative effects to the work process and work efficiency of employees. Through reviewing previous studies, SET is often applied to evaluate the effects of PCBs on workers in organizational settings (Lee et al., 2014). According to this principle, when employees feel that psychological connection with the organization - or in other words, when PCB is at a low level - they will develop strong trust in the organization. In such a situation, the influence of GHRM on enhancing environmental knowledge and encouraging eco-initiatives will be significantly improved. This, by natural law, will encourage the process of sharing green knowledge among employees.

However, this relationship is completely reversed when employees perceive that the organization has not complied with the psychological contract established between

them and the company (Zhao et al., 2007). In this case, workers may become apathetic or even react negatively, becoming unresponsive or even hindering the organization's efforts. This means that in a situation where PCBs are identified at high levels, employees will lose trust in the organization, leading to a decline in GHRM adoption, weakening environmental knowledge and eco-initiatives. As a result, workers will be less likely or not at all interested in sharing green knowledge, causing negative consequences not only for themselves but also for the organization and the surrounding environment.

As a result, the following hypotheses are assumed:

H12: There is a moderating effect of PCB on the mediating role of environmental knowledge in the relationship between GHRM and green knowledge sharing.

H13: There is a moderating effect of PCB on the mediating role of eco-initiatives toward the relationship between GHRM and green knowledge sharing.

4.2 Research Framework

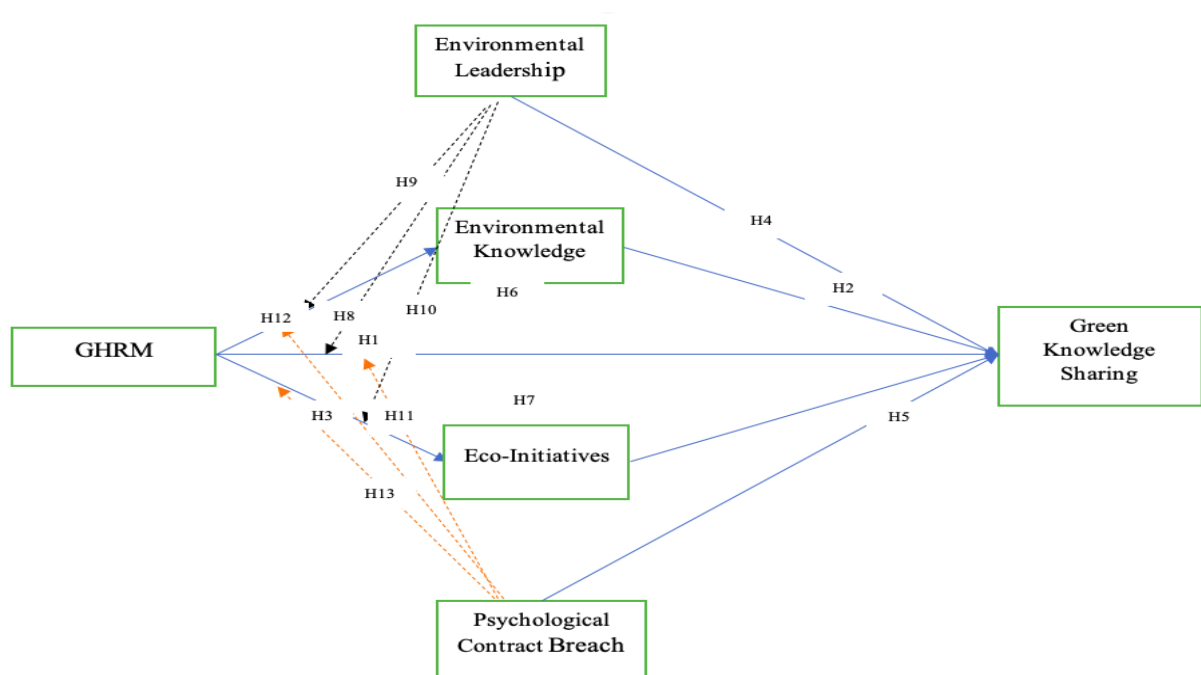


Figure 11: The Conceptual framework

(Source: The author's works)

5. RESEARCH DESIGN AND METHODOLOGY

5.1 Research approach

In this research, a positivist approach is adopted, grounded in the belief in an objective reality. Epistemologically, it is predicated on the positivist view that objective facts offer the most robust scientific evidence. Within this positivist paradigm, our study

predominantly utilizes quantitative and deductive methods (Saunders et al., 2019). The research design for this study involves a mixed-methods approach, placing a stronger focus on surveying. The mixed-methods approach is an investigative strategy that encompasses the collection and integration of both quantitative and qualitative data. This approach employs diverse research designs, potentially incorporating varying philosophical assumptions and theoretical frameworks. The core premise of this approach is the belief that integrating quantitative and qualitative data provides deeper insights than could be achieved through solely quantitative or qualitative data (Creswell & Creswell, 2017; Saunders et al., 2019).

5.2 Qualitative research

Through previous studies, a questionnaire was established for quantitative research. However, to gain a deeper understanding of how GHRM is applied and its impact in the aviation industry context, a qualitative study was conducted. was implemented (Saunders et al., 2009). The aim is to thoroughly analyze how GHRM is implemented and other variables such as EL, EK, ECO, PCB and their relationship with environmental knowledge sharing, thereby helping to clarify processes and relationships may arise (Eisenhardt & Graebner, 2007; Corley & Gioia, 2004). We interviewed experts to complete the questionnaire. Then, pilot testing will be implemented as a step to check the effectiveness and feasibility of the selected scales, ensuring they provide reliable and accurate results for the study.

5.3 Quantitative research

For phase, quantitative research is employed here to investigate the relationships between variables and to include controls to assure the validity of experimental data (Saunders et al., 2019). Based on quantitative research, the contributing effects of GHRM on GKS, the mediators of EK and ECO on GKS, and the moderating roles of EL and PCB will be tested in the aviation situation.

Data collected through a questionnaire with 7-point Likert scale. The questions in this questionnaire are confirmed from the qualitative research. The questionnaire is available in both soft and hard copy. With the great support and assistance of the aviation companies' leaders, the questionnaire are distributed to the targeting respondents, who are current aviation industry employees.

Sample size

Hair et al. (2017) reported that, a significance level of 5% is usually assumed in the field of marketing, management; With the suitable level: β_{\min} is waited in the range of 0.11 to 0.20, the minimum sample size should be 155 for the significance level of 5% (Hair et al., 2021). Another way to choose minimum sample size is A-priori Sample Size for Structural Equation Model Formulas. The suggested minimum sample size is 236. Besides, the minimum sample size for analysis by SEM can be chosen with 200 (Hoogland & Boomsma, 1998). From the three kinds of calculating sample sizes above, the minimum sample size chosen is 236.

Data analytical process

In this research, the technique of Structural Equation Modeling (SEM) has been utilized for data analysis. Recognized as a foundational instrument and preferred methodology within social science research (Hu & Bentler, 1999), SEM enables the delineation, estimation, and hypothesis testing concerning intricate interrelations among various variables. This is further elaborated in the studies of Hu and Bentler (1999), Suhr (2006), and Ullman & Bentler (2012). The application of SEM is driven by dual objectives: firstly, to enhance the comprehension of correlation or covariance patterns amongst a set of specified variables, and secondly, to endeavor in explaining the maximal quantum of variance within the confines of a designated theoretical framework.

The procedural implementation of SEM encompasses two critical stages: the validation of the measurement model and the development of the structural model. Consequently, in the ambit of this study, exploratory factor analysis (EFA) along with multiple confirmatory factor analyses (CFA) were conducted. This approach is instrumental in corroborating the structure of the pre-defined observed variables under investigation.

6. RESULTS AND FINDINGS – QUALITATIVE PHASE

In-depth interview

From previous studies, the measurements of all constructs are identified as in Table 1. Then from these measurements a semi-structured interview was prepared for the interviews

Table 1: The measurements

Items	Code	References
Green human resource management	GHRM	(Dumont et al., 2017)
My Company sets green goals for its employees.	GHRM1	
My Company provides employees with green training	GHRM2	
My Company provides employees with green training to develop employees' knowledge and skills required for green management.	GHRM3	
My Company considers employees' workplace green behavior in performance appraisals	GHRM4	
My Company relates employees' workplace green behaviors to rewards and compensation	GHRM5	
My Company considers employees' workplace green behaviors in promotion	GHRM6	

(Source: Summarized from previous studies)

In the process of designing and implementing a quality research strategy, applying in-depth interviews is an important factor to ensure the accuracy and depth of the data

collected. Creswell and Creswell (2017) emphasizes that choosing the right team of experts to conduct these interviews is a factor that cannot be ignored, because it directly affects the quality and reliability of the information obtained. Saunders et al. (2009) also assert that, in the context of qualitative research, researchers need to access non-standardized interview methods such as semi-structured interviews and in-depth interviews, to be able to a deeply exploration of "how" and "what" happens in specific situations. Experts are experienced supervisors or managers. Then, after offering the participants the ability to choose the location and time of the interview, 7/10 participants were willing to participate in one-on-one interviews.

Table 2: Characteristics of participants

No	Participant	Age	Position	Experience
1	Participant A	49	Academic expert	25
2	Participant B	44	Human Resource Manager	22

(Source: The author's works)

In the discussion about the independent variable GHRM, the researcher asked participants for their opinions on how the concept was understood and how it could be implemented in their workplaces. Participants were then encouraged to share their thoughts about GHRM, including insights and examples they know. Next, the experts read and commented on the questionnaire. The same procedure is applied to the five variables on the left: EK, ECO, PCB, EL and GKS. Some example questions from this stage are presented in table 6 below.

Table 3: Selected results of qualitative research

	Example questions	Selected opinions	Remark
GHRM	Have you ever heard of the term GHRM? How are the GHRM practices in your company? Do you know GHRM practices? Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily? May you suggest some more items of GHRM	'We practice GHRM for a long time. Some workers understand this as 'economic activities'. 'Our airline performs environmental protection activities in KPI'	

(Source: The author's works)

After getting the result from an in-depth interview, we gather and adjust information into one questionnaire and then ask the experts one more time checking this

measurements. Here, A stands for experts from aviation industry, B stands for academics.

Table 4: Results of in-depth interview: Agreeing responses

Constructs and Items	Matching responses			Percentage (%)
	A	B	Total	
Green human resource management				
GHRM1	5	2	7	100.00
GHRM2	5	2	7	100.00
GHRM3	5	2	7	100.00
GHRM4	4	2	6	85.71
GHRM5	4	2	6	85.71
GHRM6	5	2	7	100.00

(Source: The author’s works)

Pilot Test

Before providing the questionnaire to respondents in the quantitative phase, it needs to be tested in a pilot. According to Saunders et al. (2009), this stage aims to refine the questionnaire so that participants will have fewer misunderstandings or unpleasant replying the questions and avoid problems in recording the data

7. RESULTS AND FINDINGS - QUANTITATIVE PHASE

7.1 Research sampling

The unit of analysis was an individual. A survey will be performed. Responses will be required from individuals. Only employees who actually work in the aviation industry, such as the reservation and ticketing department, sales and marketing department, administration department, etc., are surveyed. Outsourced employees are excluded. The minimum sample size for analysis is 236 (see Section 5.3). Data from this study will be collected mainly in Viet Nam, with leading airlines such as: Vietnam Airlines, Vietjet Air and other aviation companies. Respondents will be selected for convenience. The author will contact these aviation companies, and then the questionnaire can be sent to respondents by email, the Internet, or paper.

7.2 Research Strategy and Data Collection

In this research work, the method chosen is the survey strategy. This strategy is very suitable for the goal of collecting quantitative data for the purpose of analyzing and measuring the relationship between research variables, as well as supporting the construction and testing of research variables (Saunders et al. the.,2019), determine the relationship models between them. Creswell and Creswell (2017) also emphasize that, through the use of survey design, researchers can gain a clear quantitative view of the trends, attitudes, and opinions of a population or specific segment. Analyze correlations between variables through surveying a representative population sample.

Primary data for this study was collected through a survey of employees working in the Vietnamese aviation industry. The self-administered questionnaire was designed with a seven-point Likert scale, allowing the assessment of participants' level of agreement or disagreement with a series of statements related to the topic. This questionnaire is divided into two main parts: basic statistics and socio-demographics of respondents, such as age, years of employment, job position and education level, and questions. Ask about the variables in the research model. This questionnaire was originally written in English. Since the majority of respondents were Vietnamese, the questionnaire was then translated into Vietnamese using the reverse process.

To minimize the risk of common method bias (Podsakoff et al., 2012), we conducted separate surveys at two separate time periods. The fieldwork took place from April to June 2022, demonstrating a clear and organized schedule.

In the first survey (T1), we focused on collecting information on GHRM policies and practices, environmental knowledge, and ecological initiatives being implemented at aviation companies. This time, with the aim of collecting data effectively and widely, we distributed a total of 1,000 questionnaires to participants and resulted in 600 completely and carefully filled-in responses. The difference between the number of questionnaires sent and the number of responses received not only reflects the level of interest and willingness to participate of respondents but is also an important basis for evaluating and analyzing data. more accurate in the research process. This process plays an essential role in ensuring the accuracy, objectivity and reliability of collected data, thereby contributing to achieving valuable and meaningful research results.

After carefully checking the votes submitted by respondents, there were some invalid votes due to missing some data. We removed these invalid votes because they could not be processed.

During this round (T1) data collection, a total of 593 respondents completed the survey. Next, one month after the first survey (T1), we conducted a second survey (T2) with the main goal of collecting information related to topics such as sharing green knowledge, leadership and leadership. Environmental ethics and the psychology of contract violation. This survey was sent to participants in the T1 survey to collect follow-up information. During this round, we received 443 complete and valid questionnaires from participants.

This disaggregated data collection process allowed us to gather information from a variety of sources, an approach designed to minimize bias due to Common Method Variance (Podsakoff et al., 2012). By conducting data collection in two separate phases and focusing on different topics, we sought to create a more diverse and precise research framework, thereby enhancing credibility and the value of research results.

7.3 Measurement

This study identified six constructs. The detailed concept of each variable is shown in table 5.

Table 5: The Concept of Variables

Variables	Definition	Author
Environmental leadership	"behaviors of leaders who motivate followers to achieve environmental goals and inspire followers to perform beyond expected levels of environmental performance"	(Chen & Chang, 2013)

(Source: summarized from previous studies)

The questionnaire was designed for the purpose of data collection. This helps support the achievement of research objectives. The six factors in this study are environmental knowledge, environmental leadership, GHRM, Eco-initiatives, PCB, and green knowledge sharing. These items will be formulated as a seven-point Likert scale, in which, 1 means "strongly disagree", then 7 means "strongly agree."

Measurements: The measures items for variables/constructs (01 independent, 01 dependent, 02 mediators, and 02 moderator variables) were considered for scale reliability. The internal consistency of a set of items was given by Cronbach's Alpha. The questionnaire contained 31 items, which are shown in Table 6.

Table 6: Measurements

Items	Code	References
Green human resource management	GHRM	(Dumont et al., 2017)
"My Company sets green goals for its employees"	GHRM1	
"My Company provides employees with green training"	GHRM2	
"My Company provides employees with green training to develop employees' knowledge and skills required for green management"	GHRM3	
"My Company considers employees' workplace green behavior in performance appraisals"	GHRM4	

(Source: Summarized from previous studies)

7.4 Demographic Information and Measurement model Test

SEM using in R are utilized to analyze collected data. Data analysis is mainly conducted through the following main steps:

Step 1: Descriptive Statistic Analysis

Description statistics are intended to describe the characteristics of the sample: gender, title, academic qualification, age and experience. Statistics of the frequency, percentage, average and standard deviation of each research variable and a cross-tabulation of demographic variables have been presented.

Table 7: Demographic and Descriptive Information

Demographic Variables		Frequency (N=443)	%
Gender	Male	205	46.30
	Female	238	53.70

(Source: The author's works)

Previous studies have shown that demographic information such as age and gender play an important role in evaluating environmentally related behavior. For this reason, in the present study, both of these factors were given importance and included in the analysis to better understand their influence on pro-environmental behavior. From the data shown on table 11, it is clear that the distribution between men and women is quite balanced, with 46.0% being men and 53.70% being women, which reflects the gender balance. In terms of age, participants are from 23 to over 51 years old, indicating the participation of a wide range of different age groups. Notably, a large portion of the participants, namely 333 people, were between the ages of 23 and 40, representing the young and middle-aged group, which may reflect interest and awareness of the research topics in these age groups. These group may show their strong behaviour of sharing knowledge (Sammarra et al., 2017). This distribution provides a general view of the demographic factors.

Table 8: Descriptive Analysis for Items

Indicators	Observations	Mean	Median	Min	Max	Std. Deviation
GHRM1	443	5.600	6.000	3.000	7.000	0.912
GHRM2	443	5.680	6.000	3.000	7.000	0.899
GHRM3	443	5.680	6.000	4.000	7.000	0.916
GHRM4	443	5.700	6.000	4.000	7.000	0.894

(Source: The author's works)

The results of 443 qualified observations are presented in Table 8, and their results are all positive. For GHRM, all mean and median values are 6 of 7, which means almost all respondents agree that GHRM practices in the aviation industry are rather good.

Table 9: Factor Analysis and Reliability Test

Research Items	Factor Loading	Eigenvalue	Cumulative Explained Variance	Item-to-total correlation	Cronbach's Alpha (α)
		1.024	0.77		
GHRM					0.92
GHRM1	0.76			.725	0.91
GHRM2	0.85			.792	0.90
GHRM3	0.82			.788	0.90

(Source: The author's works)

Step 3: Common Method Variance Issue

The variance of the common method (CMV) refers to the overlap of variance between two variables resulting from the form of measurement as opposed to a true relationship between the variables (Teo, 2011). Campbell and Fiske (1959) stated that one consequence of CMV is an amplification of the observed correlations, which may provide erroneous support for the hypotheses. Initially, a Harmon one-factor test is implemented, which inserts all variables into a principal component factor analysis (Podsakoff & Organ, 1986). Secondly, the discriminated validity is evaluated by comparing the square root of the AVE (average variance extracted) to the Pearson correlations between the constructs. According to Hair et al. (2019), all AVE estimates should be greater than the corresponding inter-construct square correlation estimates.

Table 10 Convergent validity and Consistency reliability

Constructs and Items		Convergent validity		Internal consistency reliability		
		Loadings ≥0.708	AVE >0.50	Composite Reliability 0.60 - 0.95	Cronbach's Alpha 0.60-0.95	Rho_A 0.70-0.95
GHRM	GHRM1	0.76	0.715	0.938	0.920	0.927
	GHRM2	0.85				
	GHRM3	0.82				
	GHRM4	0.79				

(Source: The author's works)

Table 11: Correlation and Discriminant validity

Constructs	AVE	CR	CA	MEAN	SD	GHRM	EK	EL	ECO	PCB	GKS	Age	Gen
GHRM	.715	.938	.92	5.661	.7632	-							
EK	.695	.932	.91	5.724	.7583	.363**	-						
EL	.825	.966	.93	5.594	.9346	.107*	.556**	-					
ECO	.879	.956	.96	5.574	.8748	.220**	.566**	.736**	-				
PCB	.900	.978	.97	3.781	1.4349	.018	-.416**	-.571**	-.547**	-			
GKS	.886	.975	.96	5.520	1.1152	.173**	.471**	.773**	.691**	-.573**	-		
Age				35.341	8.185	-.269**	-.312**	-.177**	-.237**	.167**	-.233		
Exp				9.284	7.4549	-.163**	-.369**	-.256**	-.320**	.424**	-.294	.848**	
Gender				1.537	.4992	.315**	.144**	.131**	.153**	.019	.115	-.167**	-.097

Note: *p < 0.05; AVE: average variance extracted; CR: Composite Reliability; CA: Cronbach's Alpha, SD: Standard Deviation (Source: The author's works)

Table12: Comparison of measurement models

Models	χ^2	df	CFI	TLI	NFI	AGFI	RMR	RMSEA	SRMR
6 factors model GHRM+EK+ECO+EL+PCB+GKS	934.845	419	.965	.962	.939	.859	.039	.053	.034

(Source: The author's works)

GHRM: green human resource management, EK: environmental knowledge, ECO: eco-initiatives, EL: environmental leadership, PCB: psychological contract breach, GKS: green knowledge sharing.

The table show that 6 factors model with $\chi^2 = 934.845$, $df = 419$, $CFI = 0.965$, $TLI = 0.962$, $NFI = 0.939$, $AGFI = 0.859$, $RMR = 0.039$, $RMSEA = 0.053$, $SRMR = 0.034$ is the most suitable model.

7.5 Research findings

Direct effects

Table 13: Evaluation of hypotheses testing direct effect

Variables	Model 1 (GKS)	Model 2 (EK)	Model 3 (ECO)	Model 4 (GKS)	Model 5 (GKS)
Gender	0.134	0.037	0.156	0,008	-0.047
Age	0.018	0.015	0.024	-0.003	0.042
Exp	-0.057	-0.046	-0.055	-0.009	.215
GHRM	0.188**	0.323***	0.201***	-	-
EL	-	-	-	0.849 ***	-
PCB	-	-	-		-0.493***
Adjusted R2	0.1016	0.2303	0.1424	0.484	0.3677
F - statistic	13.5	34.06	19.34	102.80	65.27

(Source: The author's works)

P value <0.1 *, p value < 0.05 **, p value <0.01 ***. GHRM: green human resource management, EK: environmental knowledge, ECO: eco-initiatives, EL: environmental leadership, PCB: psychological contract breach, GKS: green knowledge sharing.

As Table 17 exhibits, GHRM demonstrated a significantly positive association with green knowledge sharing ($\beta = 0.188$, $p < 0.05$) showing support for H1. GHRM also demonstrated a significantly positive association with environmental knowledge ($\beta = 0.323$, $p < 0.001$) showing support for H2. Besides, GHRM demonstrated a significantly positive association with eco-initiatives ($\beta = 0.201$, $p < 0.001$), showing support for H3.

Moreover, environmental leadership was positively and significantly related to green knowledge sharing ($\beta = 0.849$, $p < .001$). So, hypothesis H4 was supported. Then, psychological contract breach was positively and significantly related to green knowledge sharing ($\beta = -0.493$, $p < .001$). So, hypothesis H5 was supported.

Indirect effects - Mediating role of environmental knowledge and of eco-initiatives

Table 14: Evaluation of Hypotheses testing indirect relationship

Variables	Model 6 (GKS)	Model 7 (GKS)
-----------	---------------	---------------

Gender	0.111	0.001
Age	0.009	-0.002
Exp	-0.029	-0.010
GHRM	-0.010	0.018
EK	0.612***	-
ECO	-	0.846***
EL	-	-
PCB	-	-
GHRM:EK	0.221***	-
GHRM:ECO	-	0.213***
GHRM x EL	-	-
GHRM x PCB	-	-
Adjusted R2	0.233	0.4783
F - statistic	27.86	82.05

(Source: The author's works)

P value <0.1*, p value < 0.05 **, p value <0.01 ***. GHRM: green human resource management, EK: environmental knowledge, ECO: eco-initiatives, EL: environmental leadership, PCB: psychological contract breach, GKS: green knowledge sharing

Let look at table 18. In model 6, the regression results also showed that GHRM positively and indirectly influenced green knowledge sharing via environmental knowledge ($\beta = 0.221$, $p < 0.01$). Besides the direct effect show that environmental knowledge significantly and positively influences green knowledge sharing ($\beta = 0.612$, $p < 0.01$). So, we have initial evidence supporting the mediating role of environmental knowledge. Thus, Hypothesis 6 was supported.

And then, in model 7, the regression results also present that GHRM positively and indirectly influenced green knowledge sharing via eco-initiatives ($\beta = 0.213$, $p < 0.01$). Eco-initiatives significantly and positively influence green knowledge sharing ($\beta = 0.846$, $p < 0.01$). So, we have initial evidence supporting the mediating role of eco-initiatives. Thus, Hypothesis 7 was supported.

Moderating role of environmental leadership and of psychological contract breach

Table 15: Indirect relationships and Interactional relationships

Variables	Model 8 (GKS)	Model 9 (GKS)	Model 10 (GKS)	Model 11 (GKS)	Model 12 (GKS)	Model 13 (GKS)
Gender	-0.042	-0.043	-0.050	0.093	0.085	0.005
Age	-0.005	-0.005	-0.007	-0.046	-0.043	-0.035
Exp	-0.009	-0.009	-0.003	0.041	0.043	0.035
GHRM	0.105**	0.112**	0.064	0.143**	0.057	0.031
EK	-	-0.027	-	-	-	-
ECO	-	-	0.289***	-	-	-
EL	0.880***	0.890***	0.696***	-	-	-
PCB	-	-	-	-0.431***	-0.381***	-0.237***
GHRM x EL	0.002**	0.002**	0.001**	-	-	-
GHRMx PCB	-	-	-	-0.008***	-0.007***	-0.006***
Moderated mediation	-	0.0008 [-0.0096: 0.0124]	0.0268** [0.0067:0.0557]	-	-0.0250** [-0.0490:-0.0067]	-0.0842** [-0.1369:-0.0367]
Adjusted R2	0.6251	0.6244	0.6444	0.4295	0.4534	0.5615
F - statistic	123.8	106	115.4	56.46	53.37	81.87

(Source: The author's works)

P value <0.1*, p value < 0.05 **, p value <0.01 ***. GHRM: green human resource management, EK: environmental knowledge, ECO: eco-initiatives, EL: environmental leadership, PCB: psychological contract breach, GKS: green knowledge sharing

Hypothesis 8 proposed the moderating effect of environmental leadership on the relationship between GHRM and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM * EL) was significantly related to green knowledge sharing ($\beta = 0.002$, $p < .05$), which indicated that the moderating influence of environmental leadership on the GHRM and green knowledge sharing association was positive and significant. Hypothesis 8 was supported. Despite this, the moderating influence is significant at p-value 5% only, and insignificant at p-value 1% and 0.1%. Thus, this influence is small.

The indirect effect of GHRM on green knowledge sharing via environmental leadership was .002, $p < .05$. The 95% CIs with bootstrapping 10 000 samples for the indirect effect ranged between -.0096 and 0.0124, so it contains zero. Therefore, the results provided evidence that does not support Hypothesis 9.

Hypothesis 10 proposed the moderating effect of environmental leadership on mediating effect of eco-initiatives on the relationship between GHRM and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM * ECO) was significantly related to green knowledge sharing ($\beta = 0.001$, $p < .05$), which indicated that the moderating influence of environmental leadership on the GHRM and green knowledge sharing association was positive and significant. The 95% CIs with bootstrapping 10,000 samples for the indirect effect ranged between 0.0067 and 0.0577, so it does not contain zero. Thus, Hypothesis 10 was supported.

Hypothesis 11 proposed the moderating effect of PCB on the relationship between GHRM and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM * PCB) was significantly related to green knowledge sharing ($\beta = -0.008$, $p < .01$), which indicated that the moderating influence of environmental leadership on the GHRM and green knowledge sharing association was negative and significant. Therefore, Hypothesis 11 was supported.

Hypothesis 12 proposed the moderating effect of PCB on the mediating effect of environmental knowledge on the relationship between GHRM and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM * PCB) was significantly related to green knowledge sharing ($\beta = 0.007$, $p < .05$), which indicated that the moderating influence of environmental leadership on the GHRM and green knowledge sharing association was positive and significant. The 95% CIs with bootstrapping 10,000 samples for the indirect effect ranged between -0.0490 and -0.0067, so it does not contain zero. Therefore, Hypothesis 12 was supported.

Hypothesis 13 proposed the moderating effect of PCB on mediating effect of eco-initiatives on the relationship between GHRM and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM * PCB) was significantly related to green knowledge sharing ($\beta = 0.006$, $p < .05$), which indicated that the moderate influence of environmental leadership on GHRM and green knowledge sharing association was positive and significant. 95% CIs with bootstrapping 10,000 samples

for the indirect effect ranged between -0.1369 and 0.0367, so it does not contain zero. Thus, Hypothesis 13 was supported.

8. DISCUSSION

First, the study confirms that GHRM is an important factor in enhancing the sharing of green knowledge, environmental knowledge, and eco initiatives with H1, H2, H3, H4, H5 are all supported. According to Yong et al. (2020), green training is considered the most important and beneficial factor of GHRM. This is quite obvious, because when an employee is educated and trained in environmental protection, their environmental knowledge will gradually increase. According to social exchange theory, employees will also increase the exchange and sharing of environmental knowledge among themselves when the company provides them with environmental knowledge training. In addition, not only green training but also other aspects of GHRM, such as green recruitment, also help companies recruit employees with green tendencies.

Other GHRM practices, including green rewards and incentives, also motivate employees to participate in more eco-initiatives. This, over time, will improve the sharing of environmental knowledge within the organization. These results are consistent with previous studies (Bhatti et al., 2020), found that human resource management is the most important factor determining how employees share their expertise.

The findings from this study shed light on the important role of environmental leadership in promoting green knowledge sharing among employees within an organization. Environmental leaders regularly establish and communicate clear environmental protection policies, for example by publishing these policies on the organization's website or through posters at workplace. This not only helps employees be clearly aware of the organization's goals and direction towards the environment, but also creates conditions for them to exchange and share environmental knowledge with each other, creating an active and informative working environment (Khan et al., 2023).

Next, psychological contract breach was shown to have a negative effect on the green knowledge sharing process within the organization. This finding is consistent with previous studies (Zhao et al., 2007), which indicate that psychological contract breach occurs when employees feel that managers are non-compliant or disrespectful with previous commitments.

Second, the more knowledge and understanding each company employee has about the environment, the more they will share green knowledge with each other. The more each employee implements eco initiatives, the more opportunities they have to share green knowledge with each other. Thus, we see that environmental knowledge as well as eco initiatives play a mediating role in the relationship between GHRM and green knowledge sharing, specifying by H6 and H7 are confirmed.

This is the first time a study has focused on specifically assessing the importance of eco-initiatives as a bridging factor, thereby clarifying how GHRM can promote green knowledge sharing within the organization. This not only helps managers better understand how to facilitate the sharing of green knowledge, but also contributes to the development of more effective HRM strategies, aimed at maximizing benefits from environmental protection activities in the organization. This environmental knowledge even has an impact on improving internal operations and establishing carpooling programs (Boiral & Paillé, 2012).

Third, PCBs can also be considered internal barriers in some contexts. According to research by Zhao et al. (2007), when employees realize that their company has violated and failed to fulfill previous commitments, they will become disappointed. However, due to psychological factors, these frustrations may be less likely to be voiced but more likely to turn into action.

In cases where employees perceive that their manager is unreliable or lacks commitment, they tend to reduce their commitment to work, because they perceive that the leader does not keep their commitment or do not meet their expectations. This leads to the thinking that they will be willing to leave their jobs if they find a better opportunity. According to social exchange theory, this suggests that when employees experience PCB feelings, they may become hesitant to enter into a reciprocal relationship with the organization, and it is likely that they will respond to breaches by reducing effort and contribution to the job. This may also influence their participation in environmental protection initiatives, as these efforts are often viewed as an extra-role behavior, which can be influenced by the level of commitment and job satisfaction (Ramus & Killmer, 2007).

The findings from this study also clarify the negative role of PCBs in moderating the relationship between environmental knowledge, GHRM, eco-initiatives and knowledge sharing green. When PCB is high, the effectiveness of GHRM in encouraging green knowledge sharing is significantly reduced. Even if employees are environmentally knowledgeable and committed to eco-initiatives, they do not feel responsible for sharing their green knowledge if they feel their manager is not keeping their promises (Zhao et al., 2007). On the contrary, when PCB levels are low, employees feel happier and more satisfied with their work, leading to them being more proactive in proposing and sharing ideas and knowledge to protect the natural environment. This shows that a positive working environment and good labor relations can facilitate the development of environmental protection actions and green knowledge sharing within the organization (Wong, 2013).

Regarding the moderating role of environmental leadership, the results confirm that when leadership have a higher tendency to protect the environment, they will increase and facilitate the implementation of GHRM in enterprises. This will help increase the company's employees' eco initiatives, leading to increased sharing of environmental protection knowledge. This is also consistent with Tuan (2022) on green leaders

motivating employees to practice green behaviors. On the contrary, if the leaders do not care about environmental protection, they will not promote GHRM activities in a substantive way. At that time, employees will not have the conditions to increase the opportunity to carry out eco-initiatives. This is also consistent with the research of Konovsky and Pugh (1994), who argue that employees are influenced by their environmental leadership. While H8 and H10 were supported, H9 was rejected. Contrary to the author's expectation, environmental leadership does not have a moderating influence on the relationship between GHRM and GKS through the mediator EK. Although H6 is supported, that is, GHRM has a beneficial effect on GKS through the mediation of EK. This is probably explained by the fact that the application of GHRM has already had a good effect on hypothesis H6, so the moderating influence of EL is not clearly seen.

9. CONTRIBUTIONS OF THE STUDY

The main purpose of this study is to delve into the analysis and understanding of the impact of GHRM on outcomes related to green behavior in the aviation sector, with a particular focus on green knowledge sharing. We aim to determine how GHRM impacts the process of sharing and disseminating environmental knowledge among individuals within the organization. In addition, the study explores the role of environmental knowledge and eco-initiatives as mediating factors that bring positive influence, thereby improving understanding and promoting actions to protect the environment. The study also emphasizes the importance of environmental leadership and PCB as a moderating variable in supporting and strengthening the relationship between GHRM and green knowledge sharing.

9.1 Theoretical contributions

Within the framework of the stated objectives, this study aims to extensively study the factors that influence the sharing of environmental knowledge in organizations. This study was designed to fill the gaps in current research, especially to gain a deeper understanding of the link between GHRM and green knowledge sharing. The research results have made academic contributions.

First, based on social exchange theory, this study marks an important step forward in clarifying the link between GHRM and green knowledge sharing, an area that is still little explored by prior research. Therefore, identifying the direct and positive relationship between GHRM and green knowledge sharing becomes an important contribution of this study (Ansari et al., 2022).

Second, this study extends theory by using social exchange theory and social learning theory to explore the role of environmental leadership and psychological contract violation (PCB) as a moderating factor in the relationship between GHRM and green knowledge sharing. By analyzing the role of environmental leadership and the impact of PCBs, this study provides insight into how these factors impact the capacity and willingness to share environmental knowledge in organizations, thereby contributing

to building a more effective human resources strategy in encouraging and supporting environmental protection activities.

Third, this study sheds light on how environmental knowledge and eco-initiatives mediate the impact of GHRM on green knowledge sharing. Eco-initiatives refer to intentional actions and proposals aimed at improving environmental performance or engagement (Boiral & Paillé, 2012). According to previous research, employees with better environmental knowledge achieve individual and team green performance goals (Fawehinmi et al., 2020). It is clear that actions to protect the environment will come from people with a better understanding of the environment.

Finally, this study strengthens theory by examining how GHRM affects green knowledge sharing in the aviation industry. Both ICAO and the Vietnam Civil Aviation Administration consider the environment a top priority. For the aviation industry, they prioritize the concept of green aviation with technical solutions. For example, activities aimed at creating aircraft that consume less fuel, release fewer emissions into the sky, and make less noise include the production and development of modern machinery to help pilots perform their effective flight operations. Additionally, to fulfill the global goal of developing carbon-neutral air transportation, they are working to develop new technologies and processes in the field of systems engineering (Weeks et al., 2011). Taking this into consideration, the findings of this study indicate that GHRM has the potential to help the aviation industry in both indirect and direct ways to enhance its green performance.

9.2 Practical implications

From a management perspective, this study extensively analyzes the positive impact that GHRM brings to the process of sharing green knowledge. Specifically, applying GHRM in a comprehensive way, spanning from the recruitment process to training, performance management and engagement, helps improve employees' environmental knowledge and eco-initiatives. (Renwick et al., 2013).

Organizations can conduct periodic reviews, perhaps every three or six months, to identify and recognize employees who perform excellent environmental work, thereby encouraging healthy competition and commitment to the environment within the organization. This is also consistent with the study by Harvey et al. (2013), which suggests that the aviation industry is an area where HRM has the potential to promote green performance.

The aviation leaders should be shining examples of environmental protection, thereby inspiring employees to learn and share green knowledge.

In contrast to environmental leadership, PCBs have a significant negative impact on the behavior and commitment levels of employees in the organization. At that time, their common reaction is to express a negative attitude, and in many cases, they begin to think about leaving the company. However, Zhao et al. (2007) point out that there is a difference between intending to quit and actually taking that action. They often

only terminate their employment contracts when they receive other job offer (Rousseau, 1989). Therefore, Zhao et al. (2007) also highlight that in cases where employees continue their work at the organization while maintaining a negative attitude, this can seriously harm the organization. To minimize psychological contract breach, organizations, especially in the aviation industry, need to take some specific steps as: a) Set realistic expectations; b) Periodic evaluation and communication ; c) Adjust expectations; d) Transparent and continuous.

By taking the above steps, the aviation industry can build a work environment based on mutual respect and trust, minimize the mentality of breach of contract, and encourage employees to perform better in their jobs.

Organize green knowledge sharing sessions suitable to the conditions of the aviation industry. Aviation leaders can also organize meetings on a smaller scale, for example, meetings of winners from online environmental knowledge competitions. Aviation organizations can also enhance communication by providing information and knowledge about environmental protection through social networks, thereby creating channels to share environmental knowledge not only among employees, but also between employees and their customers. This creates open, familiar communication to increase sharing green knowledge.

In summary, the study shows that GHRM implementation in aviation enterprises is very effective in promoting employees' green behavior, especially green knowledge sharing. Therefore, in addition to investing in technical improvements to create new machines and technologies that are more environmentally friendly, the aviation industry should also pay attention to applying GHRM in its operations like other businesses. Implementing these policies will help the aviation industry quickly achieve its environmental protection goals, in addition to providing technical solutions.

10. CONCLUSIONS

This study intends to reach the research problem of investigating the relationship between GHRM and green knowledge sharing and the moderating roles of environmental leadership and PCB in the aviation industry, mediating role of environmental knowledge and eco-initiatives.

To solve these, the study is conducted with mixed methods. The qualitative research explores and confirms these measurements, while the quantitative study aims to test hypotheses, especially the mutual effects of GHRM practices and other variables to enhance employees' green knowledge sharing. The thesis brings out theoretical and empirical contributions and proposes managerial implications.

Besides, like other research, this study is not without limitations. From our limitations, we also suggest some further studies.

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LIST OF PUBLICATIONS

1. Thi Lan Phuong Nguyen, **Thi Thu Huong Nguyen (2024)**. The Link Between Socially Responsible Human Resource Management And Eco-Helping Behavior In Aviation Industry – A Moderated Mediation Model. *International Journal of Law and Management* (Accepted)
2. Thi Lan Phuong Nguyen, **Thi Thu Huong Nguyen**, & Aleksandr Ključnikov (2023). Influence of Socially Responsible Human Resource Management on Green Behaviours in the Aviation Industry. *Journal of Competitiveness*, 15(2), 188-206.
3. **Nguyen, T. T. H.**, Nguyen T.P.L., Tuckova, Z., & Tran, H.T. (2023). Green Human Resource Management and Employee Environmental Performance in the Aviation Industry: The Role of Gender. *Problems and Perspectives in Management* (Under review)
4. Hoang, S. D., Ngo, N. T., Nguyen, T.N.D., **Nguyen, T. T. H.**, & Tučková, Z. (2022). The Determinants of Loyalty to Ecotourism against the Background of Consumer Satisfaction. *Journal of Environmental Management & Tourism*, 13(8), 2295-2310.
5. Le, H.L. , **Nguyen, T. T. H.**, & Ho, V.A. (2022). Workplace Support and Service-Oriented Organisational Citizenship Behaviour: The Mediating Role Of Psychological Empowerment And Affective Commitment. *Cogent Business & Management*, 9(1), 2131984.
6. Nguyen, T.L.A., Pham, T.N., Ha, T.N., & **Nguyen, T. T. H.** (2022). Job satisfaction in remote work context: the mediating effect of work-life balance and digital HRM support. In *DOKBAT 2022 - 18th International Bata Conference for Ph.D. Students and Young Researchers* (Vol. 18). Zlín: Tomas Bata University in Zlín, Faculty of Management and Economics. Retrieved from <http://dokbat.utb.cz/conferenceproceedings>
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8. Le, H.L., **Nguyen, T.T.H.**, & Ho, V.A. (2021). Service Innovative Behavior in the Aviation Industry: An Empirical Study of the Contribution of Perceived Organizational Support. *AJMI-ASEAN Journal of Management and Innovation*, 8(1), 75-86.
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10. Ho, V.A., Le, H.L., & **Nguyen, T.T.H.** (2020). Conceptual View of the Relation between Regional Innovation Cluster and Its Innovative Outcomes: the Moderating Role of Knowledge Sharing. *ICFE 2020*, 426

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Green HRM, Aviation management, Organizational learning

Nguyen Thi Thu Huong, Ph.D.

Enhancing green knowledge sharing: the roles of environmental leadership, green human resource management, and psychology contract breach in the aviation industry

Posílení sdílení “zelených znalostí”: role řízení environmentálně zaměřeného, a to včetně řízení lidských zdrojů dle principů GHRM v leteckém průmyslu

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