HOW PERCEPTION OF ARTIFICIAL INTELLIGENCE SHAPES GREEN HRM TO IMPROVE ENVIRONMENTAL SUSTAINABILITY

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ABSTRACT

Based on the social cognition theory, this research examines the effect of artificial intelligence (AI) on the environmental sustainability of commercial banks. "AI" plays a crucial role in enabling bank management to effectively assess environmental sustainability. Through the lens of green HRM, the study explored the advantageous aspects of AI in the workplace. Data was collected from 200 employees working in commercial banks in Sindh, Pakistan. Partial Least Squares (PLS) analysis revealed a direct positive relationship between AI and environmental sustainability. The results also confirmed the positive impact of Green HRM on environmental sustainability and supported its mediating relationship between AI and environmental sustainability. The study highlights the importance of integrating advanced AI technologies with green human resource management practices to promote sustainability. These findings suggest that leveraging AI can significantly enhance the environmental performance of commercial banks, offering valuable insights for policymakers and bank managers aiming to implement sustainable practices.

Keywords: *Environmental Sustainability; Green Human Resource Management; Artificial Intelligence.*

INTRODUCTION

Artificial intelligence (AI) has evolved from a nascent technology to a widely utilized instrument for enhancing business efficiency in the past few years. AI holds significant

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potential to benefit Asian countries across various domains, including reshaping competitive advantages (Akter et al., 2020). Over the past decade, AI tools and digital platforms, or those claiming "intelligent" capabilities, have become essential for businesses and society. This is largely due to AI algorithms' proficiency in automating processes, extracting insights from big data, making predictions and recommendations, and offering superior analytical and computational power compared to humans (von Krogh, Roberson, & Gruber, 2023).

Different forms of AI, such as robotic process automation (robots in warehouses), computer vision, speech recognition, machine learning, deep learning algorithms, and natural language processing, have provided organizations with opportunities to rethink corporate procedures, develop novel company strategies, and improve customer offerings. This covers project management, data-driven decision-making, and key productivity indicator strategies. (Schrage et al., 2023).

Artificial intelligence (AI) pertains to technologies that replicate human intelligence by mimicking decision-making processes and behaviors. Many AI systems can tackle complex tasks autonomously or with minimal human input (Zhang and Lu, 2021). AI encompasses expert systems that utilize natural language processing, speech recognition, and/or machine vision to continuously learn from new data (Narwani et al., 2022). AI-driven chatbots and virtual assistants offer personalized recommendations 24/7 (Camilleri & Troise, 2023), enabling businesses to glean insights from online interactions with customers and employees. Some leverage natural language processing to understand diverse business jargon, while others rely on AI expert systems to extract information from complex documents, automate processes, and make effective decisions across hybrid cloud environments (Wu, 2022; Sachan, 2020; Weber et al., 2022). Artificial intelligence (AI) can aid organizations in enhancing their performance. AI is revolutionizing the global economy, with projections estimating its contribution to be around $15.7 trillion by 2030. To enhance efficiency and facilitate the introduction of new services, organizations should increasingly rely on AI to improve their performance (Castka et al., 2020).

Green Human Resource Management

In the context of today's rapidly evolving world, environmental and sustainability issues have garnered increasing global attention. Current evidence indicates that the burgeoning growth of online businesses is significantly impacting the environment. Green Human Resources Management (GHRM) emerges as a pivotal business strategy capable of enhancing a company's environmental stewardship image. Ali Ababneh et al. (2021) characterize Green

HRM as an implementation of human resource management strategies to attain sustainability goals and encourage eco-friendly behavior among employees.

Hewapathirana et al. (2020) describe green HRM as a branch of human resource management that seeks to synchronize HR policies and practices with environmental management objectives, ensuring that employees support the organization's environmental performance.

Green HRM involves integrating environmental management strategies into HR practices to cultivate a sustainable organizational culture and ensure employees support environmental objectives. (Lutfi & Mao, 2023). Green HRM includes human resource activities designed to enhance environmental performance and foster organizational sustainability by motivating staff members to adopt environmentally responsible practices. (Jeronimo et al., 2020). Green HRM practices can be analyzed through various bundles, namely green recruitment and selection (GRS), green performance and compensation (GPC), and green training, involvement, and development (GTID).

Environmental Sustainability

Environmental sustainability is an essential concept that focuses on the conservation of natural resources and the protection of global ecosystems to maintain health and well-being for present and future generations. The United Nations identifies environmental sustainability as a key component of sustainable development, alongside economic and social sustainability. The objective is to achieve a balance where societies can grow economically and socially without causing irreversible harm to the environment. Achieving this balance necessitates a transition to more use of renewable energy, production and consumption patterns that are sustainable, and greater efforts in conservation and ecosystem restoration (United Nations, 2021).

The need for environmental sustainability is well-researched by scientific authorities. The IPCC, or Intergovernmental Panel on Climate Change, has brought attention to human-driven climate change is leading to unprecedented changes in weather patterns, sea levels, and biodiversity, posing risks to food and water security, human health, and natural systems (IPCC, 2021).

While research on green HRM and its influence on environmental sustainability has expanded, the incorporation of Artificial Intelligence (AI) into this field remains relatively unexplored. Specifically, there is a need to examine how AI can be utilized to improve Green HRM practices within commercial banks. Existing studies predominantly focus on traditional HRM methods and lack insight into the ability of AI-powered instruments and methods to improve

environmental results. The perception of AI among HR professionals plays a significant role in its adoption and implementation. However, research on how these perceptions influence the integration of AI into Green HRM is limited. Understanding HR professionals' attitudes, beliefs, and concerns about AI is essential for designing effective strategies that harness AI to promote environmental sustainability in commercial banks. Current studies often concentrate on the technical aspects of AI, neglecting the human factors affecting its implementation in HRM practices.

There is a noticeable gap in sector-specific research, particularly in the context of commercial banks. The unique characteristics and regulatory environments of the financial sector may impact the adoption of AI and Green HRM practices differently than in other industries. Existing research tends to generalize findings across sectors, overlooking the specific challenges and opportunities within commercial banks. Addressing this sector-specific gap is crucial for tailoring green HRM strategies that are effective in the banking context. Furthermore, there is a lack of comprehensive frameworks integrating AI with green HRM practices tailored to commercial banks. Existing models inadequately incorporate AI's potential to enhance HRM processes aimed at environmental sustainability. Developing robust theoretical and practical models guiding the implementation of AI in green HRM within the banking sector would bridge this critical gap.

PROBLEM STATEMENT

The integration of Artificial Intelligence (AI) into Green Human Resource Management (Green HRM) practices presents a promising avenue for bolstering environmental sustainability within commercial banks. Nonetheless, a significant knowledge gap exists concerning how HR professionals' perceptions of AI influence its adoption and execution in Green HRM endeavors aimed at advancing environmental sustainability within this sector. Despite the increasing volume of research on Green HRM and the potential applications of AI in HRM contexts, there remains a dearth of empirical evidence and a comprehensive understanding of the intersection between these two domains, particularly within the context of commercial banks.

The research problem highlights the need to investigate the attitudes of HR professionals toward artificial intelligence and its impact on the incorporation of AI-driven tools and techniques into green HRM practices in commercial banks. This study aims to recognize the factors that mold HR professionals' attitudes, beliefs, and apprehensions regarding AI, and to comprehend how these perceptions influence decision-making processes concerning the

adoption and execution of AI in green HRM strategies. Furthermore, the research endeavors to examine the potential obstacles and facilitators associated with harnessing AI for environmental sustainability initiatives within the banking sector.

By tackling this research problem, this study can furnish valuable insights into understanding how AI shapes green HRM practices and how that influences the results of environmental sustainability in commercial banks. This research is imperative for guiding the formulation of tailored strategies and policies aimed at optimizing the potential of AI to fortify environmental sustainability efforts in the banking industry.

OBJECTIVES OF THE STUDY

The primary objective of this research is to examine the application of Artificial Intelligence in enhancing environmental sustainability through green banking practices, supported by evidence from the banking industry. This study offers an in-depth analysis of how AI techniques and green HRM practices are employed to advance environmental sustainability within commercial banks. In light of the literature review and study background, the following objectives and hypothesis of the study are formulated:

ROI: To evaluate the positive impacts of Artificial Intelligence on Environmental Sustainability.

RO2: To evaluate the positive impacts of Artificial Intelligence on Green HRM.

RO3: To evaluate the positive impact of Green HRM on Environmental Sustainability.

RO4: To evaluate the positive impact of Artificial Intelligence on Environmental Sustainability mediated through Green HRM.

Hypotheses

H1: Artificial Intelligence positively impacts Environmental Sustainability.

H2: Artificial Intelligence positively impacts Green HRM.

H3: Green HRM positively impacts Environmental Sustainability.

H4: the positive impacts of Artificial Intelligence on Environmental Sustainability are mediated through Green HRM.

LITERATURE REVIEW

This research employs a theoretical framework that incorporates fundamental principles of Social Cognitive Theory to explore AI and put green HRM strategies into practice aimed at

bolstering environmental sustainability within corporate settings. Social Cognitive Theory (SCT), initially proposed by Albert Bandura in 1986, presents a holistic framework for understanding how individuals' perceptions of artificial intelligence (AI) shape their actions, particularly in the adoption of green HRM practices to promote environmental sustainability. According to Social Cognitive Theory (SCT), individuals' actions are shaped by their perceptions of the environment and their self-efficacy beliefs. As AI becomes more integrated into organizational processes, individuals can witness how AI systems either support or impede environmental sustainability efforts.

Artificial Intelligence

AI involves machines to emulate human intelligence through advanced technological adaptations (Bohr & Memarzadeh, 2020). It enhances both operational efficiency and organizational effectiveness (Tursunbayeva & Renkema, 2023). AI boosts employee intelligence by helping them navigate complex situations, offering alternative solutions, and facilitating decision-making (Bader & Kaiser, 2019).

Additionally, AI enhances customer service by providing insights into customer behavior and preferences, enabling better service (Hou et al., 2023). AI-powered tools offer employees greater flexibility, helping them manage workloads effectively and work more efficiently (Hou et al., 2023). While AI and automation can boost productivity, they can also replace certain jobs and transform nearly all occupations to some degree (Frank et al., 2019). Noonan, 2018; Da Costa (2018) denotes specific applications of AI in banking, including:

- Tailored Financial Services: AI analyzes stock markets and provides recommendations based on individual financial goals.
- Underwriting: AI can automate underwriting by utilizing unstructured information for decision-making.
- Voice-Aided Banking: AI-driven language processing reduces human error and enhances process efficiency.
- Data-Driven Loan Decisions: AI assists in analyzing vast data, performing calculations, and making predictions, improving financial loan strategies.
- Digitization of Branches: AI enables the complete digitization of documents, streamlining the banking process through comprehensive digital platforms (Noonan, 2018; Da Costa, 2018).

Additionally, AI-driven learning platforms have facilitated the acquisition of new skills through customized educational resources (Noor et al., 2023). AI enhances the quality of banking transactions, potentially putting some technical banking jobs at risk as technology can replace certain human tasks.

Moreover, AI encompasses various branches, each specializing in different aspects of intelligent behavior.

- Expert Systems**:** This branch of AI simulates human decision-making. Expert systems use logical reasoning to solve complex problems and are commonly used in healthcare for diagnosing diseases and banking for managing investments and loans (Tan et al., 2016).
- Machine Learning (ML)**:** ML is one of the most prevalent branches of AI, focusing on enabling machines to learn from historical data to enhance performance. By training models on datasets, ML systems can predict future outcomes. ML applications include text, face, and speech recognition and their use in finance, human resources, healthcare, education, and robotics.
- Robotics**:** This branch deals with creating artificial agents, or robots, that operate in real-world environments (Alattas et al., 2019). Robots are designed to manipulate objects and perform tasks such as detecting, picking, manipulating, and altering physical attributes. They are particularly valuable for automating repetitive tasks.
- Natural Language Processing (NLP)**:** NLP enables machines to understand and interpret human language. This technology is vital for applications such as translation systems and spell checkers. Businesses leverage NLP to manage and analyze large volumes of data from sources like news articles and social media, uncovering valuable insights (Chowdhary et al., 2019).
- Planning**:** Planning in AI helps users determine their goals and devise steps to achieve them based on their current situation. This method facilitates strategic decision-making by outlining the necessary actions to reach the desired outcomes (Luketina et al., 2023).

By focusing on these branches, AI continues to advance and integrate into various sectors, enhancing efficiency and decision-making processes across different

Green Human Resource Management

GHRM involves integrating environmental sustainability into human resource management practices (Islam et al., 2020). The implementation of GHRM practices is accompanied by

several challenges, such as employee resistance, limited environmental awareness, and constrained resources for green initiatives (Renwick et al., 2013).

GHRM practices include a range of programs designed to advance environmental sustainability within organizations, including recruitment and selection processes, sustainable training programs, performance management systems aligned with environmental goals, and incentives for eco-friendly behaviors (Sahoo & Kumar, 2021).

Green HRM Practices

Green Recruitment and Selection

Green recruitment and selection (GRS) involves identifying, assessing, and hiring individuals who possess task expertise, motivation, and creativity that align with the principles of environmental management and sustainability development (Jia et al., 2018).

Green Performance and Compensation

Research indicates that GPC encompasses established procedures and policies designed to encourage teams to enhance their professional competencies while addressing the organization's environmental concerns (Pham et al., 2020).

Green Training, Involvement and Development

GTID involves the inclusion, engagement, skill enhancement, and knowledge improvement of teams to maintain and advance green-oriented capabilities and environmentally sustainable knowledge, benefiting both the organization and its stakeholders (Ahmad, 2015).

Environmental Sustainability

Effective governance and policy frameworks are essential for promoting environmental sustainability. Malik et al. (2023) stress the importance of multi-level governance structures in effectively addressing climate change, highlighting the need for cooperation among local, national, and international bodies to meet sustainability objectives. Chaaben et al. (2024), suggest that shifting to a green economy can yield significant economic benefits, such as job creation and lower healthcare costs resulting from reduced pollution. Social aspects of environmental sustainability involve raising public awareness, enhancing education, and fostering community engagement, as explored in a recent study by Kumar (2023). Geissdoerfer et al. (2022) offer a thorough review of circular economy practices, emphasizing their potential to improve sustainability across multiple sectors.

Hypothesis Development

Artificial Intelligence and Environmental Sustainability

Information asymmetries and human emotional biases are major obstacles to developing solutions for environmental sustainability that AI may help with (Cullen-Knox et al., 2017). Products and services that are more environmentally sustainable can benefit from artificial intelligence (Frank et al., 2019). Furthermore, AI has emerged as a critical instrument for tackling sustainability issues, protecting the environment, and advancing sustainable development (Rayhan, 2023).

H1: Artificial Intelligence positively impacts Environmental Sustainability.

Artificial Intelligence and Green HRM

Green HRM practices powered by artificial intelligence improve worker productivity, retention, learning, and talent development. while reducing employee turnover (Alzyoud, 2022). AI-powered tools make it easier to make data-driven decisions in workforce development, performance management, talent acquisition, and training and development. They also help to optimize energy use and reduce waste. Furthermore, AI aids firms in implementing GHRM services by providing smart technologies and applications that update processes and enhance employee productivity (Reddy et al, 2024).

H2: Artificial Intelligence positively impacts Green HRM.

Green HRM and Environmental Sustainability

Green HRM involves implementing HRM policies that promote the sustainable use of resources within organizations and broadly support environmental sustainability (Sharma & Gupta, 2020). Research indicates that green HRM practices in public and private universities positively impact environmental sustainability by fostering innovative work behavior among employees (Lashari et al., 2022). However, studies examining the relationship between green HRM, and overall organizational sustainability have often overlooked the specific context of environmental sustainability (Shafaei et al., 2019).

H3: Green HRM positively impacts Environmental Sustainability

Artificial Intelligence, Environmental Sustainability, and Green HRM

Organizational sustainability can be improved by synergistically combining AI and Green HRM (Masood et al., 2024). Organizations in emerging economies are becoming more and more driven to implement green practices as concerns about climate change increase and

innovation in smart technology, artificial intelligence, robotics, and algorithms (STARA) continue. Through the development and application of STARA capabilities, these companies can enhance their financial performance and environmental sustainability (Ogbeibu et al., 2024).

H4: Artificial Intelligence has a positive impact on Environmental Sustainability mediated through Green HRM.

RESEARCH MODEL

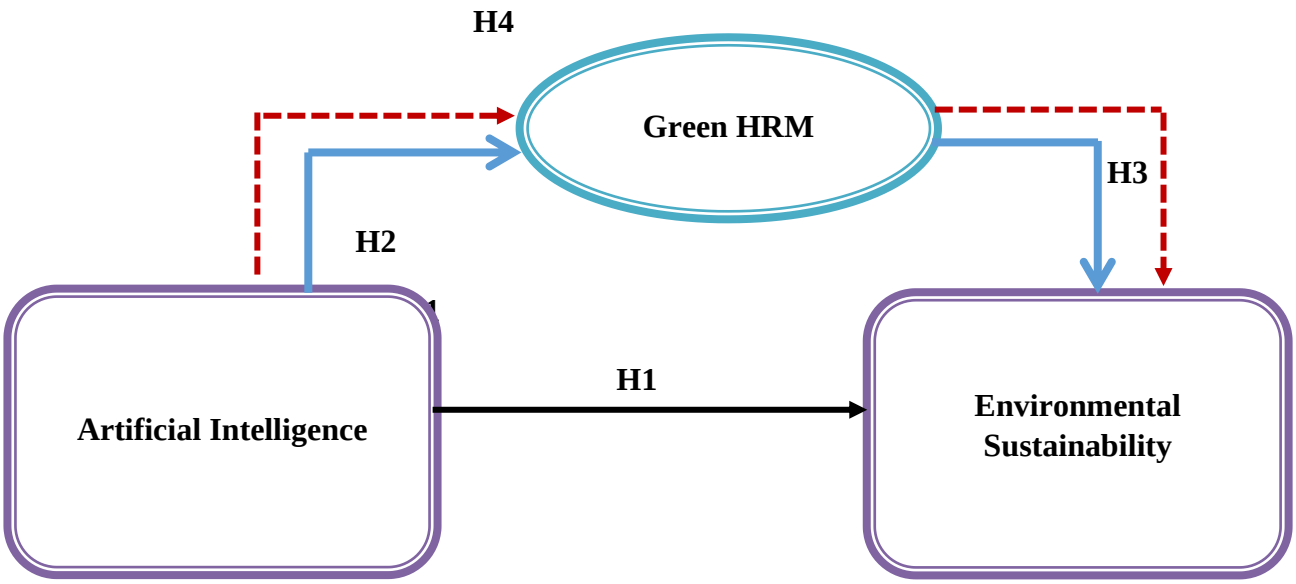

Figure 1. *Research Model*

METHODS AND MATERIALS

Research Context, Data Collection, and Sampling

The study was conducted within the commercial banking sector in Pakistan, specifically targeting major branches of commercial banks located in Sindh province. The research aimed to inspire innovative studies and propose theoretical and practical applications of artificial intelligence (AI) to accomplish environmental sustainability using commercial banks' green HRM mediation systems. Surveys, conducted in English (the official language of banks in Pakistan), targeted full-time employees working in these major branches. Data collection was carried out using a convenience sampling technique through a survey-based questionnaire over three weeks, minimizing matters concerning common method bias. The survey examined

employees' perspectives on AI as the independent variable, green HRM as the mediating mechanism, and environmental sustainability as the dependent variable.

Ethical considerations were addressed by obtaining consent from potential respondents before data collection. Surveys were distributed to 250 employees across 20 major branches of 10 commercial banks in Sindh, yielding 220 responses, resulting in an 88% response rate. We confirmed that the respondents were conversant with the usage of AI and digital technology in their banking jobs.

Measures

The evaluation was conducted using a 5-point Likert scale, with 1 denoting "strongly disagree" and 5 representing "strongly agree." each study construct. Artificial intelligence was evaluated using a 4-item scale developed by Noor et al. (2023). Green HRM was measured with an 8-item scale from Ogbeibu et al. (2020). To determine environmental sustainability, 4 items were adopted from Akter et al's (2020) scale.

Analytical Strategy

Structural Equation Modeling based on Smart PLS is commonly applied in the Management of Science (Wilden et al., 2013). To conduct a primary investigation, the SEM based on PLS is considered an appropriate approach through which the theoretical model can also be extended. Furthermore, a mediating variable is also involved in this study, and PLS_SEM is used for assessing it effectively (Hair Jr et al., 2021). Additionally, our study model includes a second-stage moderator in the mediation process, which works better to evaluate by using PLS-SEM (Sarstedt et al., 2022). Therefore, considering that our model is in its early stages, PLS-SEM was appropriate for testing. It is also stressed through other studies for using the PLS_SEM because of its significance in the research of HRM (Ringle et al., 2020).

Table 1. Constructs and their Sources

Variables	Position	Items	Source
AI	Independent Variable	4	Noor et al. (2023)
GHRM	Mediator	8	Ogbeibu et al. (2020)
ES	Dependent Variable	4	Akter et al. (2020)

Demographic Characteristics

Demographic characteristics of the respondents are represented in Table 1 which represents that there were 155 males and 66 females. Furthermore, if it is looked on the age most of the

respondents were between 31 to 35 83 respondents and 57 respondents were between the ages of 41 to 45 years, whereas 50 respondents were between the ages of 36 to 40 years, 19 of the respondents were between the age of 46 and over than it and less respondents were between the age of 25 to 30 which represents a frequency equal to 11. Regarding the experience of employees, most of the employees had experience of 11 to 15 years, representing 82 employees. Whereas a lesser number, that is 22 had 1 to 5 years of experience, 77 employees had experience, which is greater than 16 years, and 39 employees had experience between 6 to 10 years. In the last look at the monthly income of employees, 66 employees were earning 81000 and greater than that, and 5 employees had monthly income from 31000 to 40000. The following is given in Table 2, which shows all the values of demographic characteristics.

Table 2. Demographic Profile

Demographic Variable	Attributes	Frequency	Percentage
Gender	Male	155	70.5
	Female	65	29.5
	Total	220	100.0
Age	25 to 30	11	5.0
	31 to 35	83	37.7
	36 to 40	50	22.7
	41 to 45	57	25.9
	46 +	19	8.6
	Total	220	100.0
Experience	1 to 5 years	22	10.6
	6 to 10 years	39	17.7
	11 to 15 years	82	37.3
	Over 16 years	77	35.0
	Total	220	100.0
Monthly Income	31000 to 40000	5	2.3
	41000 to 50000	26	11.8
	51000 to 60000	35	15.9
	61000 to 70000	39	17.7
	71000 +80000	49	22.3
	81000 +	66	30.0
	Total	220	100.0

DATA ANALYSIS AND RESULTS

Smart PLS version 4 was used for analyzing the results of this study. measurement model and structural model were both assessed which are discussed below. As the measurement model is used to confirm the items of the constructs which require the tests of composite reliability, indicator reliability, measure of average variance extracted, and discriminant validity, on the other hand, structural model assessment involves the relationship among the constructs.

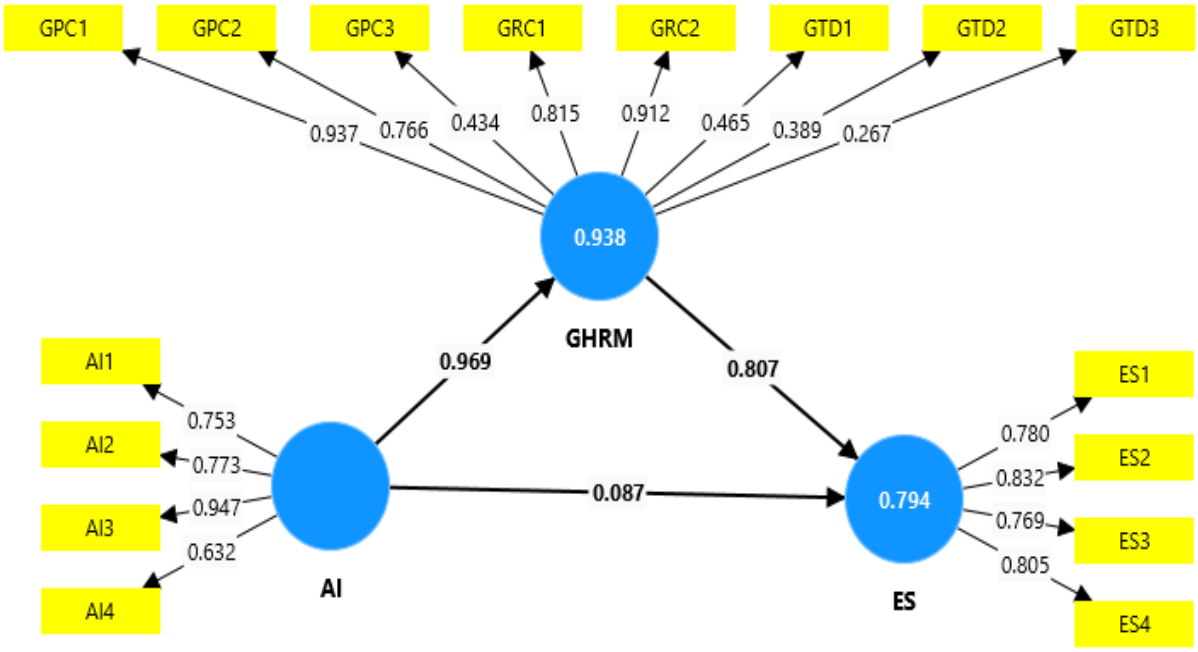

Figure 2. *Measurement Model*

Measurement Model

composite reliability is considered more appropriate than Cronbach's alpha because it claims to have standardized values of observable items of the constructs. Hence, it is suggested to use composite reliability rather than Cronbach's alpha Hair Jr et al. (2021). The results of Cronbach's alpha and composite reliability are represented in Table 3 which shows the values of all constructs greater than 0.70 of the thresholds (Fornell & Larcker, 1981). According to Hair Jr et al. (2021), scores of good composite reliability lie between 0.7 to 0.9. Thus, in this study, we have achieved composite reliability which reflects the scores of all variables which are between 0.849 to 0.874 (see Figure 2). Whereas convergent validity of the data is proven through the values of AVEs. According to Fornell and Larcker (1981), the recommended value for it is greater than 0.5 for the convergent validity of each construct. As represented in Table 3. Therefore, all values higher than 0.5 confirm the convergent validity of this study.

Table 3. Reliability and Convergent Validity

	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
AI	0.861	0.881	0.862	0.615
ES	0.875	0.875	0.874	0.635
GHRM	0.859	0.913	0.849	0.648

Table 4. Measurement Model

Construct	Indicator	Factor Loading	VIF
AI	AI1	0.753	1.845
	AI2	0.773	5.040
	AI3	0.947	2.631
	AI4	0.632	3.581
ES	ES1	0.780	9.377
	ES2	0.832	1.713
	ES3	0.769	1.588
	ES4	0.805	10.431
GHRM Practices	GPC1	0.937	6.947
	GPC2	0.766	1.622
	GPC3	0.434	2.315
	GRC1	0.815	2.539
	GRC2	0.912	5.850
	GTD1	0.465	2.460
	GTD2	0.389	1.415
	GTD3	0.267	1.370

The value of HTMT must be less than 0.85 (Kline 2015). Resultantly, this study achieved the desired values for HTMT Table 5.

Table 5. Discriminant Validity – Heterotrait-Monotrait Ratio (HTMT)

	AI	ES	GHRM
AI			
ES	0.768		
GHRM	0.608	0.650	

RESULTS

Direct Effects of Constructs

Although it is known that t-value, p-value, and beta-value measures are used in the structural model for confirming the hypothesized relationship of constructs . Therefore, table 6 shows that Artificial Intelligence (H1= b= 0.087, t= 4.007 and p= 0.000) Is positively associated with Environmental Sustainability, so the H1 is supporting. In this way, Artificial Intelligence (H2= b= 0.969, t= 68.778 and p= 0.000) is positively impacted by GHRM thus, H2 is supporting. In the same way, GHRM (H3= b= 0.807, t= 8.322 and p= 0.000) is positively related to Environmental Sustainability and H3 is also supporting.

Mediation Analysis

The mediation analysis approach is followed by this research study (Nitzl et al., 2016). Hence, outcomes of indirect effect show that AI (H4= b= 0.871, t= 69.342 and p= 0.000) is indirectly significantly affecting Environmental Sustainability. Thus Hypothesis 4 is accepted.

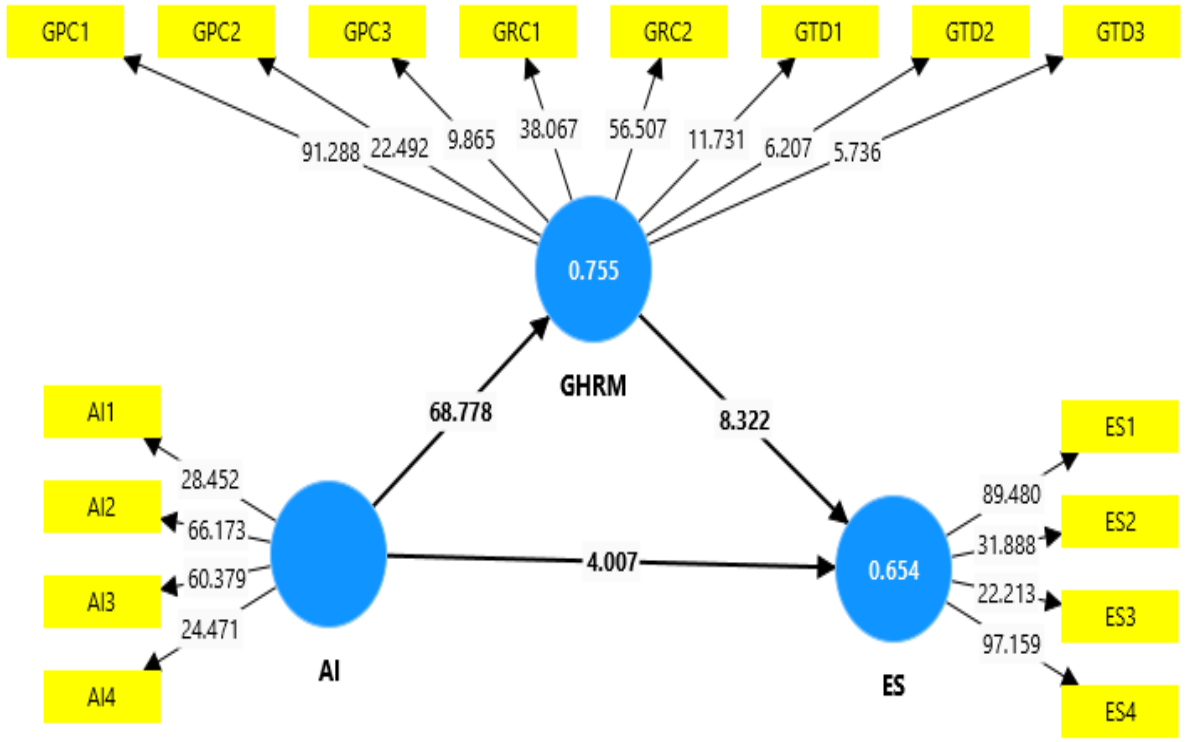

Figure 3. *Path Coefficients*

Table 7. Path Coefficients and Hypothesized Model

Hypothesis	Effect	Path coefficients (b)	Sample mean (M)	"Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Empirical Remarks
H1	AI-ES	0.087	0.284	0.072	4.007	0.000	Supported
H2	AI-GHRM	0.969	0.871	0.013	68.778	0.000	Supported
H3	GHRM-ES	0.807	0.550	0.066	8.322	0.000	Supported
H4	AI-GHRM=ES	0.871	0.923	0.075	69.342	0.000	Supported

PRACTICAL IMPLICATIONS

This study offers implications for banking sector practitioners. HR management should be encouraged to focus on aspects of environmental sustainability, including the implementation of artificial intelligence and Green HRM practices.

Create comprehensive training programs to enhance employees' understanding and perception of AI tools in Green HRM. Increased employee awareness and acceptance of AI can lead to

more effective implementation of sustainability initiatives. AI technologies implemented strategically are tailored to improve green HRM practices. Customized AI solutions can optimize resource management, reduce waste, and enhance overall environmental sustainability in banking operations. Leverage AI to collect and analyze data on environmental performance and HR practices. Data-driven insights can help banks make informed decisions that align HR practices with sustainability goals. Promote collaboration between the banking sector and other industries to share best practices and innovations in AI-driven green HRM. Learning from other sectors can help banks adopt more effective and innovative sustainability practices.

LIMITATIONS AND FUTURE DIRECTIONS

The study may have a limited sample size, but the data was gathered from the banking sector only and might not encompass a diverse range of commercial banks. This can affect the generalizability of the findings across different regions and types of financial institutions. future researchers might gather data from other sectors like health, education, and industrial sectors. The research might focus on specific AI applications within Green HRM, not covering all possible AI technologies and their varied impacts on environmental sustainability. Rapid advancements in AI technology may outpace the findings of the study, leading to results that may quickly become outdated. However, further investigation is required to critically assess the application of SCT in interpreting the connection between artificial intelligence (AI), green HRM, and environmental sustainability, as our study also emphasizes. While our results provide preliminary support for SCT, it is important to recognize that this theory does not for all the intricate elements impacting environmental sustainability, including leadership style, employee engagement, and organizational culture. Thus, incorporating alternative theoretical frameworks that address these extra aspects could be beneficial for future research.

CONCLUSION

This study highlights the beneficial role of AI in green HRM and environmental sustainability within commercial banks. Additionally, the findings reveal the positive effect of Green HRM on environmental sustainability and the mediating role of green HRM in artificial intelligence and employee productivity. These results underscore the significance of applying social cognitive theory in the development and application of AI in the work environment. All things considered, this study adds to the growing body of "literature" regarding the benefits and difficulties of integrating AI into the banking industry, highlighting the necessity of continued investigation and application of "social cognitive theory" in this setting.

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