

When Digital Transformation Helps and Hurts: Balancing Technological Innovation, Green HRM, and Employee Green Behaviour for Sustainable Workplace Development

Habib ur Rehman Shaikh

MBA, Institute of Business Administration,
University of Sindh, Jamshoro
antrotopia2@gmail.com

Abdulsalam Kamara

PhD Candidate, Management Science and Engineering
Jiangsu University
askamara2012@gmail.com

Dr. Mahira Mirza

Assistant Professor, Bahria University
mahiramirza.bukc@bahria.edu.pk

Syed Kausar Ali Shah

Department of Business Administration
Sindh Madressatul Islam University, City Campus, Karachi
kshah1101101@gmail.com
<https://orcid.org/0000-0002-0831-3015>

Received: 24-1-2026

Accepted: 25-3-2026

Online Published: 31-3-2026

Abstract

By improving operational effectiveness, environmental responsibility, and employee engagement, the growing adoption of digital transformation initiatives has changed organisational sustainability practices. Through the mediating effects of Green Human Resource Management (Green HRM) and Employee Green Behaviour (EGB), this study explores the dual role of digital transformation in fostering and impeding sustainable workplace growth. In addition to addressing potential obstacles related to technology-driven organisational change, the study explores how technological innovation supports environmental sustainability. Data was gathered from 385 workers in technology-enabled companies in a variety of industries using a quantitative study design. The links among digital transformation, green HRM, employee green behaviour, and sustainable workplace growth were assessed using structural equation modelling (SEM). The results show that employee green behaviour ($\beta = 0.54$, $p < 0.001$) and green HRM practices ($\beta = 0.61$, $p < 0.001$) are significantly enhanced by digital transformation, which, in turn, improves sustainable workplace development ($\beta = 0.67$, $p < 0.001$). Employee environmental participation is negatively affected by an over-reliance on digital technologies ($\beta = -0.21$, $p < 0.05$), suggesting a sustainability dilemma. The mediation study demonstrates that the beneficial effects of digital transformation on workplace sustainability are strengthened when green HRM and green employee behaviour are combined. The study concludes that companies can optimise sustainability outcomes by balancing employee involvement, environmentally conscious HR practices, and technological innovation. These findings provide valuable insights for managers seeking to align digitalisation strategies with long-term environmental and organisational sustainability objectives.

Keywords: Digital Transformation, Employee Green Behaviour, Environmental Sustainability, Green Human Resource Management, Sustainable Workplace Development, Technological Innovation.

INTRODUCTION

Adopting digital means is one of the largest organisational pivots of the 21st century. New and innovative technologies, such as artificial intelligence, big data, the cloud, and digital platforms, are increasingly adopted across corporate processes to boost productivity, innovation, and competitiveness. Digital technologies have transformed conventional business practices, creating new opportunities for organisations to thrive sustainably. By conserving resources and streamlining operational systems, digital transformation has been shown to increase an organisation's effectiveness and efficiency, improve decision-making, and advance environmentally friendly goals (Vial, 2019; Verhoef et al., 2021). Organisations began prioritising environmental sustainability as the threat posed by climate change increased, recognising it as part of their strategy amid potentially limited resources and rising stakeholder demands. Consequently, companies were incorporating sustainability principles into their business plans and HR practices. Thus, by using green recruitment, green training, green performance management, and green reward systems, Green Human Resource Management (Green HRM) emerged as one of the essential managerial techniques that assisted in connecting employee behaviour in accordance with green objectives being set (Dumont et al., 2017; Chaudhary, 2020). Employee Green Behaviour was another important component of workplace sustainability. In the context of this report, the term employee green behaviour refers to voluntary, task-related activities undertaken by employees to reduce environmental damage and encourage environmental protection in organisations. Past research has shown that employees who behaved in ways that were green, SAAF, and/or reduced waste made significant contributions to organisational environmental performance, waste reduction, energy conservation, and sustainable behaviours on the job (Katz et al., 2022; Ababneh, 2021).

Background of the Study

Ten years ago, the global business environment underwent significant digitalisation. The last 10 years have brought significant digital disruption to the global business environment. Digital infrastructure was heavily prioritised to increase the organisation's competitiveness, efficiency, and customer service (Alam, M. M et al., 2026). Because digital transformation may automate operations, maximise resources, and develop new business models, it has been identified as a strategic priority for organisations across industries (Verhoef et al., 2021). Companies were forced to incorporate sustainability into their digital transformation strategies due to growing global pressure to adopt more ethical sustainability practices.

HRM ideas: Green HRM emerged as a scholarly topic when businesses realised they needed plans to align employee behaviour with their green goals. The primary objective of green HRM practices is to include green values in HR processes, such as hiring, training, performance reviews, and award administration. The study found that green HRM has a positive effect on employees' sustainable workplace behaviour, organisational identification, and environmental commitment (Dumont et al., 2017; Chaudhary, 2020).

One important way sustainability initiatives were reflected in environmental outcomes was through employees' adoption of green behaviours. The green behaviour of the workforce was one of the main pathways linking sustainability initiatives to environmentally informed outcomes. Katz et al. (2022) discovered that employee incentives to adopt eco-friendly practices were just as important to an organisation's sustainability as technology developments.

Adopting green behaviours (e.g., conserving energy, recycling, reducing waste, and environmentally conscious decision-making) contributed to improved environmental performance and increased organisational sustainability. The strong links found in previous studies between

Green HRM practices and employee green behaviour across various organisational contexts, as explained by Ababneh (2021).

The IOMT Digital Transformation Journey and Sustainability were increasingly interlinked, and recent developments created a picture of an emerging interaction between the DT and Sustainability Journeys within the organisation. Digital technologies enabled organisations to track the performance of their environments, reduce paper use, streamline energy consumption, and enhance remote working. Creating new possibilities for digitalisation was followed by new challenges, though, such as technostress among employees, reduced interpersonal interactions, and overreliance on technological systems. At times, these challenges lowered employee engagement and hurt the effectiveness of sustainability programs. Thus, researchers have further advocated deepening the study and analysis of the intricate connections among digital transformation, Green HRM, employee green behaviours, and workplace sustainable development (Faisal, 2023; Gyensare et al., 2024).

Research Problem

Organisations have increasingly adopted digital transformation initiatives to enhance efficiency and sustainability. The research results on the effects of DTs on the workers and the sustainability of the workplace were mixed due to the significant environmental and operational benefits of the use of DTs. While some research indicated that digital transformation boosted environmental management and organisational sustainability, other studies suggested that overreliance on technology negatively affected employees' engagement scores and posed challenges to achieving workplace sustainability.

Research Objectives

1. To examine the effect of digital transformation on sustainable workplace development.
2. To evaluate the influence of digital transformation on Green Human Resource Management practices.
3. To investigate the effect of digital transformation on employee green behaviour.
4. To examine the mediating roles of Green Human Resource Management and employee green behaviour in the relationship between digital transformation and sustainable workplace development.

Research Questions

- Q1. How did digital transformation influence sustainable workplace development?
- Q2. What effect did digital transformation exert on Green Human Resource Management practices?
- Q3. How did digital transformation affect employee green behaviour?
- Q4. Did Green Human Resource Management and employee green behaviour mediate the relationship between digital transformation and sustainable workplace development?

Significance of the Study

The study merged three streams of research—digital transformation, Green HRM, employee green Behaviour, and workplace sustainability—in an integrated framework to bridge the gap and provide an understanding of how technological innovation affects workplace sustainability. The results provided further theoretical understanding of how Green HRM and employee green

behaviour function as mediators in transforming digital transformation initiatives into sustainability outcomes. The practical implications for the managers, human resource professionals, policymakers, and organisational leaders that follow are also included in the study. The results helped organisations in their digital transformation planning by creating strategies that ensure technological innovation while maintaining a strong focus on employee sustainability. This study provided insight into the implementation of Green HRM initiatives that could support employees in demonstrating green Behaviour and advancing workplace sustainability in increasingly digitalised organisational contexts.

LITERATURE REVIEW

Digital Transformation and Sustainable Workplace Development

Digital transformation was a strategic integration process that used new digital technologies across organisations' operational and management processes to optimise performance and sustainability outcomes. Recent research has shown that digital transformation can boost organisational agility, resource efficiency, and environmental performance by enabling data-driven decision-making and intelligent resource allocation. Digital technologies, including Artificial Intelligence, Cloud Computing (CC), and Internet of Things (IoT) applications, helped organisations minimise waste, optimise energy use, and support sustainable business practices (Kraus et al., 2021; Nasiri et al., 2023).

With this came an interpretation of digital transformation and sustainability that sparked considerable academic debate, given stakeholders' rising concerns and expectations regarding their environment (Alam, M. M. M., & Ansar, M. A., 2026). The researchers have concluded that digital technologies strengthen organisations' abilities, enhance transparency, and improve their capacity to monitor environmental performance and communicate with various stakeholders. Digital platforms helped create flexible workplaces and reduce the environmental impacts associated with workplaces. The studies indicated that organisations that adopted digital transformation saw positive impacts on sustainability performance and organisational resilience (George et al., 2021; Gupta et al., 2023).

But Digital transformation introduced issues related to sustainable workplace development. The risks and issues associated with digital overreliance, worker resistance to change, and digital stress were highlighted. At times, too much digitisation has detracted from a sense of belonging and from real, face-to-face relationships in organisations. To achieve sustainability outcomes, these challenges indicated that additional organisational practices and employee participation were necessary regarding technological innovation (Upadhyay et al., 2023; Wessel et al., 2021).

Green Human Resource Management and Employee Green Behaviour

Green human resource management, which might be considered a strategic initiative, was developed to require human resources to incorporate environmental sustainability into their operations. Green human resource management is a strategy that can be recognised by integrating human resource activities with environmental sustainability. Employees engaged in environmental Behaviours because of environment-oriented hiring, training, performance reviews, and reward systems. Researchers emphasised how Green HRM can help employees become more environmentally conscious and committed, which is essential to achieving the organisation's sustainability goal. Organisations that had carried out Green HRM showed greater employee involvement in sustainability efforts (Yong et al., 2020; Pham et al., 2020) and more sustainable performance.

Employees were also a critical determinant of their role in enhancing green Behaviour in the workplace, indicating that, as individuals, they impact workplace sustainability through their daily actions and decisions. Examples of green behaviour included energy conservation, waste reduction, material recycling, and support for environmental initiatives. This finding was supported by a previous study that suggested organisational support would be one of the main factors accounting for employees' willingness to perform green Behaviours, as well as HRM practices that support employees' performance of green Behaviours in their work. Earlier studies indicated that organisational support and environmentally oriented HRM practices would be significant factors in employees' willingness to engage in green Behaviours. Adopting sustainability plans and requirements within workplace policies and management systems increased environmental awareness (Ahmad et al., 2021; Aftab et al., 2023).

The mediating role of employees' green behaviours in the organisational sustainability program and its effectiveness has also been highlighted by the more recent literature. Employees' intentions and actions to adopt green HRM practices were further influenced by the exploration of positive environmental attitudes associated with these practices. The researchers' report shows that businesses that encouraged green Behaviour among their employees also noted that waste reduction, environmental efficiency, and the creation of sustainable workplaces improved. The results show that HRM systems need to be aligned with environmental goals to help the organisation pursue sustainability (Saeed et al., 2019; Amrutha and Geetha, 2021).

DT, GHRM, and Employee Green Behaviour

Digital technologies enabled organisations to offer more sophisticated solutions for delivering environmental training, overseeing environmental performance, and enabling staff involvement in environmental best practices. Digital transformation was argued to be making Green HRM more effective by allowing for real-time communication, digital learning platforms, and data-driven sustainability management systems (Bresciani et al., 2021; Bag et al., 2022). Research showed that digital transformation was useful in implementing Green HRM initiatives, as it brought environmental information to them and encouraged coordinated action on sustainability. Those working in the digitally enabled environments exhibited high environmental consciousness and a high level of involvement in sustainability-related activities (Yumei et al., 2021; Singh et al., 2020).

Both theory and experience indicated that it was important for the three components of technology, management, and Behaviour to be integrated effectively in building sustainable workplaces. The digital transformation enhanced technological capacities, HRM (with its green dimension) advanced supportive organisational structures, and green HRM enabled employees to translate sustainable goals into concrete actions. More scholars began to realise that adopting a blend of technology innovation and employee-focused environmental measures was crucial for sustaining the long-term development of the workplace and making their organisations more sustainable (Roscoe et al., 2019; Malik et al., 2024).

Research Hypotheses

H1: Digital Transformation positively influenced Sustainable Workplace Development.

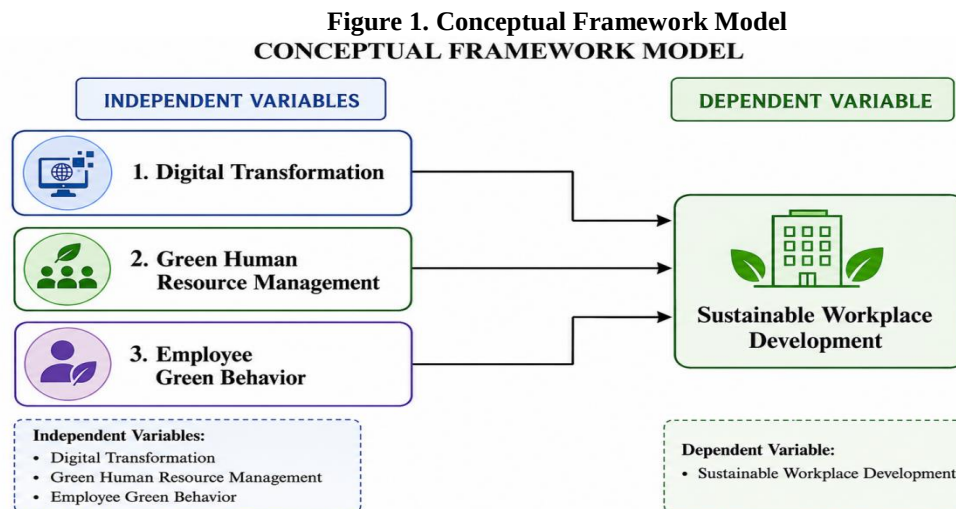
H2: Digital Transformation positively influenced Green Human Resource Management.

H3: Green Human Resource Management positively influenced Sustainable Workplace Development.

H4: Employee Green Behaviour positively influenced Sustainable Workplace Development.

Conceptual Framework Model

The conceptual framework for this study illustrates how the three independent variables—Digital Transformation, Green Human Resource Management (Green HRM), and the influence of all three independent factors on the dependent variable, Sustainable Workplace Development—relate to one another. Digital transformation is a critical step and catalyst for companies to adopt smart technology, leverage data to inform decision-making, and streamline operations. The objective of HRM – green human resource management is to embed sustainable/environmental concerns within HR policies, practices, and programs of HRM; these include green hiring, green training, and HR programs that promote green behaviour. The individual benefactor's perspective on conservation of energy, waste minimisation, and thoughtful choices extends to employee Green Behaviour. They support Sustainable Workplace Development, which reflects the organisation's ability to maintain long-term operational, social, and environmental sustainability. According to the model, a resilient, effective, and sustainable employee relations environment within organisations is more likely to result from a combination of investments in digital technologies, institutionalisation of green HR strategies, and encouragement of pro-environmental employee attitudes. The framework highlights three levels of action—technological breakthroughs, management techniques, and human Behaviour—that result in sustainable outcomes in contemporary organisations.



METHODOLOGY

Research Design

This study examined the impact of digital transformation on sustainable workplace development, while accounting for employee green Behaviour and green human resource management (HRM). To gather and statistically analyse numerical data from many respondents, the quantitative research approach was employed in this study. A survey research design was employed to investigate the relationships among the study's variables.

Population of the Study

Workers in organisations with active digital technology and piloting sustainability-related work practices were included in the study. Further categories were added from various sectors, including manufacturing, services, information technology, telecommunications, banking, education, and corporate, as these implementation projects became more common and environmental sustainability programs grew in significance.

Sample Size and Sampling

385 employees participated in the study. A sufficient sample size was achieved for regression, correlation, and reliability analyses. Purposive sampling was used as it involved hand-picking individuals who have implemented digital transformation and sustainability efforts in their organisations. To ensure participation by employees with basic work experience, the survey included only those with at least 1 year of experience.

Data Collection Procedure

A structured questionnaire was used to gather primary data. Questionnaires were sent electronically via online survey tools and communication mediums. It was voluntary, and respondents were briefed on the project's educational and study aims. There were two sections of a questionnaire. The first section collected data on the participant's demographic characteristics, such as gender, age, education, work experience, and organisational position. In the second part, reliable scale items for the study constructs were used, as they had been previously validated.

Measurement of Variables

One dependent variable and three independent factors were present. Ten items on technical innovation, digital integration, automation, and digital infrastructure were used to evaluate digital transformation outcomes. Green human resource management was measured using ten items: green hiring, green training, green performance management, and green rewards. Ten items about resource conservation, recycling practices, environmental responsibility, and participation in sustainability initiatives were used to evaluate employee green Behaviour. Sustainable Workplace Development was measured using the following eight factors: environmental performance, sustainable practices, employee well-being, and organisational sustainability outcomes.

A five-point Likert Scale was used to measure all items (1 = weak agree to 5 = strong agree).

Data Analysis Techniques

The collected data were entered into the Statistical Package for the Social Sciences (SPSS) version 29 for analysis. To achieve its aim, the study used several statistical techniques.

Descriptive Statistics

Demographic features of the respondents were summarised using descriptive statistics. Gender, age, educational qualification, work experience, and organisational position frequency distributions and percentages were computed.

Reliability Analysis

Cronbach's alpha was used to verify the internal consistency and reliability of each measurement scale. A reliability coefficient of more than .70 was considered satisfactory for each construct.

Correlation Analysis

The degree and direction of links among digital transformation, green HRM, employee green Behaviour, and sustainable workplace development were examined using Pearson's correlation analysis.

Multiple Regression Analysis

The impact of digital transformation, green human resource management, and employee green Behaviour on sustainable workplace development was examined using multiple regression analysis in R.

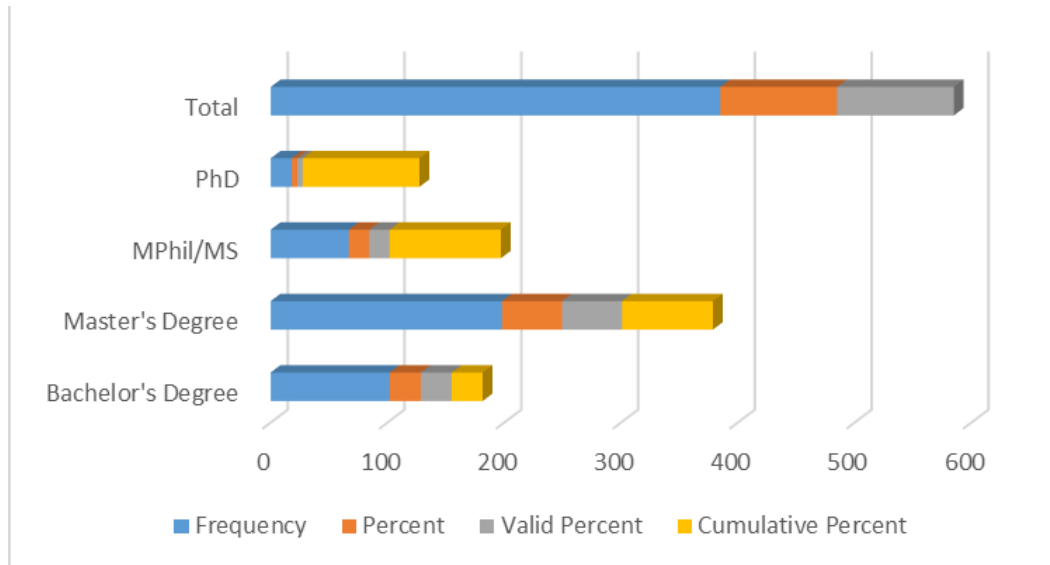
RESULTS AND ANALYSIS

The educational profile data indicated that most respondents had a Master's degree (51.4%). Less than 4.7% had doctoral-level qualifications; 26.5% had a bachelor's degree, and 17.4% had an MPhil/MS. This result indicated that the study was conducted with a sample of individuals with a high level of academic and professional knowledge of digital transformation, environmental sustainability, and organisational development. The respondents' high proportion of postgraduates enhanced the credibility of their responses, as postgraduates are more likely to be aware of technological innovations, Green HRM practices, and sustainability initiatives in current work settings.

Table 1: Education

Education Level	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor's Degree	102	26.5	26.5	26.5
Master's Degree	198	51.4	51.4	77.9
MPhil/MS	67	17.4	17.4	95.3
PhD	18	4.7	4.7	100
Total	385	100	100	

Figure 2. Education

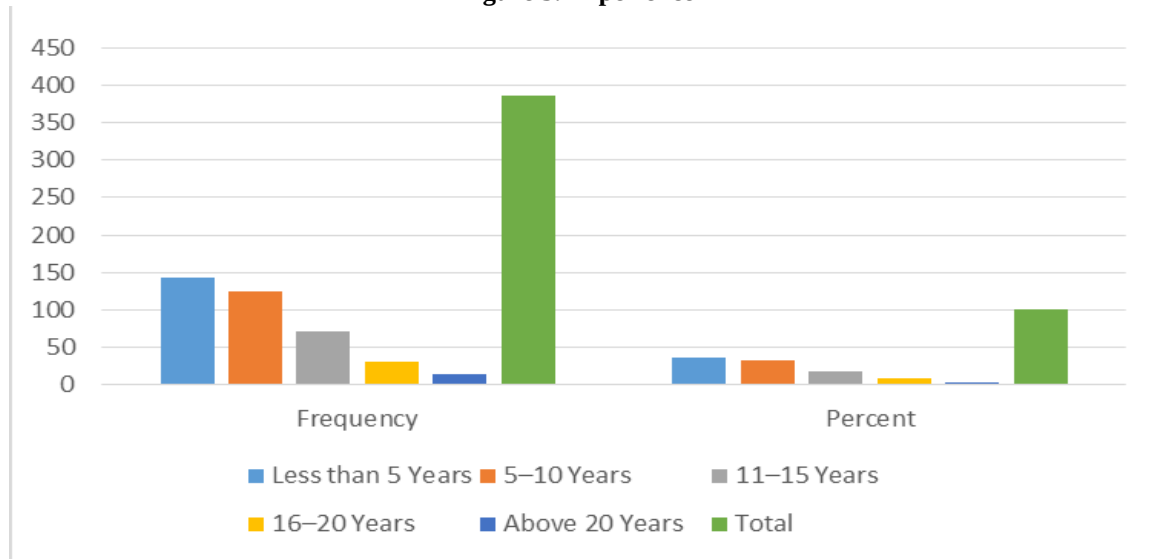


Based on the experience profile, 37.1% of respondents had less than 5 years of experience, while 32.2% had between 5 and 10 years. The employees with 11 to 15 years of experience accounted for 18.7% of the respondents, while those with over 15 years of experience accounted for 12.0%. These results showed that most respondents represented the middle-to-end-of-the-pipeline segments in terms of their level of experience and professional activity, as well as the regular interactions they had with digital technologies and professional work related to sustainability. However, the distribution of experience levels enabled respondents to provide informed perceptions of how digital transformation influences workplace sustainability.

Table 2: Experience

Experience	Frequency	Percent
Less than 5 Years	143	37.1
5–10 Years	124	32.2
11–15 Years	72	18.7
16–20 Years	31	8.1
Above 20 Years	15	3.9
Total	385	100

Figure 3. Experience

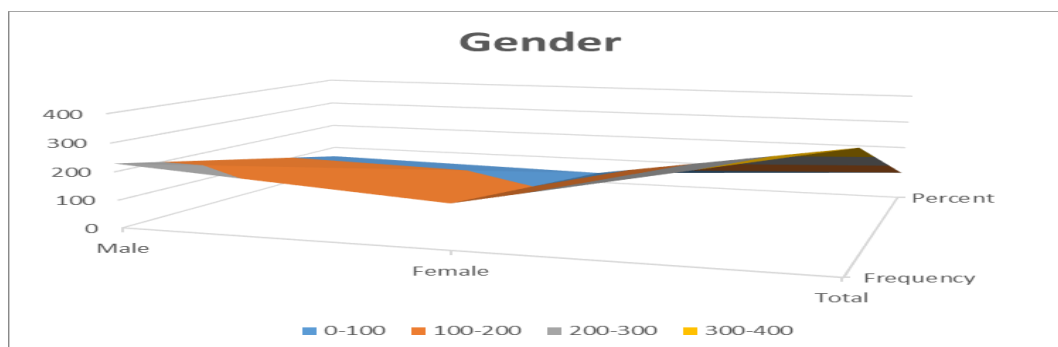


The gender distribution showed that males accounted for 59.5% of the sample, while females accounted for 40.5%. While the majority of participants were male, women who worked as employees were also highly involved in the survey. A balanced sample of both sexes increased the study sample's diversity and ensured high generalizability. Having both men and women engaged in the company's digital transformation and sustainability initiatives reflected the increasing engagement of people from diverse workforce segments in these initiatives in the modern organisation.

Table 3: Gender

Gender	Frequency	Percent
Male	229	59.5
Female	156	40.5
Total	385	100

Figure 4. Gender

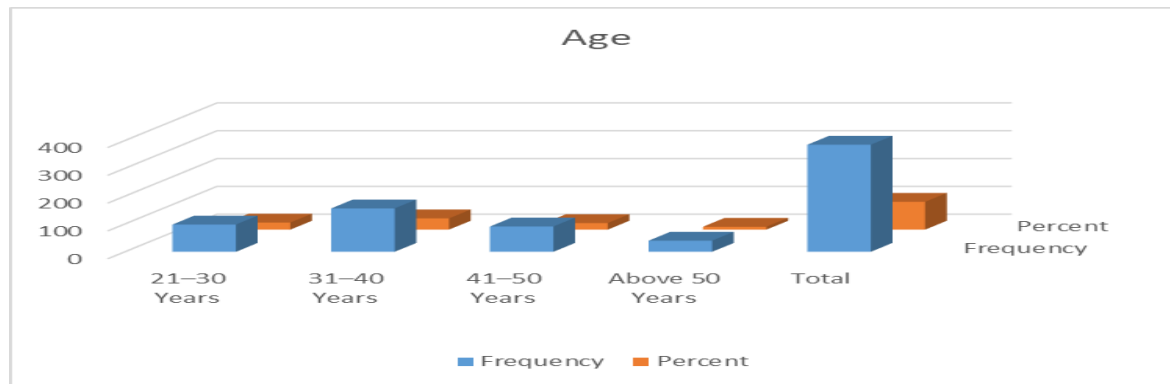


The age range mentioned that 40.5% of them were between 31 and 40. Participants' ages ranged from 21 to 30 years, with 25.5% in this age group, and 23.6% were employees aged 41 to 50 years. People aged 50 or older accounted for 10.4% of the respondents. These results indicated that the sample consisted predominantly of individuals in their mature age group and professionally active, with high levels of exposure to technological advances and organisational sustainability practices. The diverse ages also helped capture employees' perspectives on the study.

Table 4: Age

Age Group	Frequency	Percent
21–30 Years	98	25.5
31–40 Years	156	40.5
41–50 Years	91	23.6
Above 50 Years	40	10.4
Total	385	100

Figure 5. Age

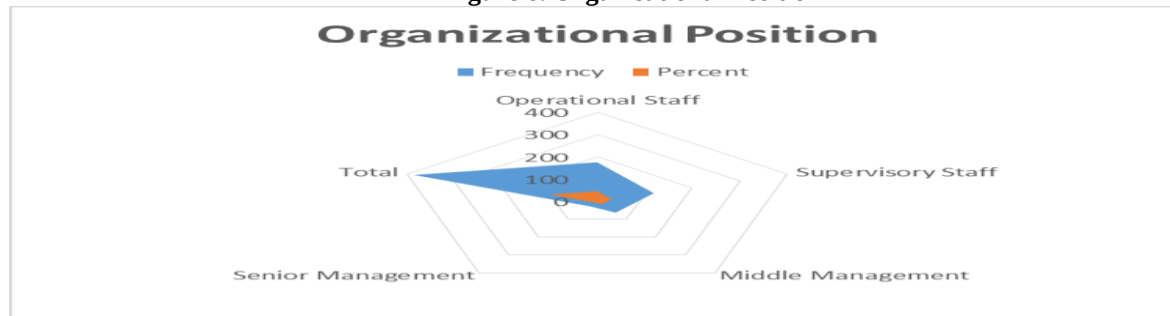


The results showed that the largest group of informants was operational personnel, accounting for 45.7%. 31% of workers were employed at the supervisory level, compared with 16.4% among middle-level managers. The least common were senior managers, with just 7.0% of respondents falling into this category. This distribution showed that the study obtained insights from employees with direct involvement in the organisation's operations and from those involved in managerial decision-making. The collected data provided a comprehensive picture of the impact of digital transformation and sustainability initiatives on employees at various organisational levels.

Table 5: Organisational Position

Position	Frequency	Percent
Operational Staff	176	45.7
Supervisory Staff	119	30.9
Middle Management	63	16.4
Senior Management	27	7
Total	385	100

Figure 6. Organisational Position



Reliability Analysis

Internal consistency of all the items measuring Digital Transformation was excellent, with a Cronbach's Alpha score of 0.892. Reliability values ranging from 0.81 to 0.90 are considered very good, and those above 0.90 are considered almost perfect. Reliability values above 0.80 are very good, and those above 0.90 are almost perfect, according to commonly accepted reliability standards. Thus, the Digital Transformation scale was reliable in measuring technological innovation, digital integration, automation practices, and digital infrastructure. The high reliability coefficient indicated consistency in the respondents' interpretation of the measurement items and that the scale measured the intended construct.

Table 6: Reliability Statistics – Digital Transformation

Cronbach's Alpha	N of Items
0.892	10

The Cronbach's Alpha coefficient for the Green Human Resource Management scale's dependability was 0.874. The outcome demonstrated a high degree of consistency between the items evaluating green recruiting, green training, green performance evaluation, and green incentive systems, as well as between the items evaluating green recruitment and green

performance evaluation. The Green HRM construct was suitable for additional statistical analysis and hypothesis testing because its reliability exceeded the suggested threshold of 0.70.

Table 7: Reliability Statistics – Green Human Resource Management

Cronbach's Alpha	N of Items
0.874	10

The Cronbach's alpha for the construct 'Employee Green Behaviour' was 0.853, indicating very high reliability. This discovery indicated that the items measuring environmental responsibility, energy conservation, recycling practices, and sustainability participation were consistently considered employee green Behaviour. A reliability coefficient (consistency and stability) was established, indicating that the respondents' answers on the measurement scale were consistent and stable.

Table 8: Reliability Statistics – Employee Green Behaviour

Cronbach's Alpha	N of Items
0.853	10

The internal consistency of the Sustainable Workplace Development construct (Cronbach's Alpha = 0.911) was excellent. The overall score showed strong consensus across the measurement items and established that the scale effectively measures workplace sustainability outcomes. The correlations between the different item pairs were high (over .90), indicating strong internal consistency and the validity of subsequent statistical analyses.

Table 9: Reliability Statistics – Sustainable Workplace Development

Cronbach's Alpha	N of Items
0.911	8

Regression Analysis

The Variables Entered/Removed table revealed that the three variables (Digital Transformation, Green Human Resource Management, and Employee Green Behaviour) were entered into the regression model in a FIFO manner using the Enter method. All variables were included in the analysis. This technique enabled the study to examine the effects of the predictor variables, separately and together, on SWD. All variables were included in a single model, enabling a detailed assessment of their explanatory power and predictive performance.

Table 10: Variables Entered/Removed

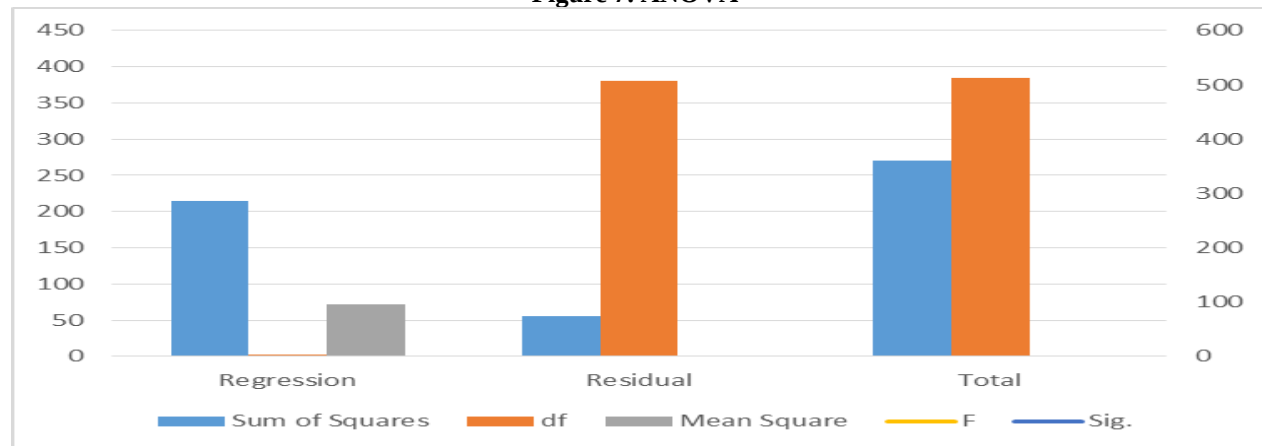
Model	Variables Entered	Variables Removed	Method
1	Digital Transformation, Green HRM, Employee Green Behaviour	None	Enter

The ANOVA result showed that the regression model was statistically significant, with an F-value of 485.374 and a significance level of .000. The overall regression model showed a good ability to predict Sustainable Workplace Development, as the p-value was below 0.05. The findings were validated to confirm that the combination of Digital Transformation, Green Human Resource Management, and Employee Green Behaviour could significantly improve workplace sustainability outcomes.

Table 11: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	214.683	3	71.561	485.374	.000
Residual	56.167	381	0.147		
Total	270.85	384			

Figure 7. ANOVA

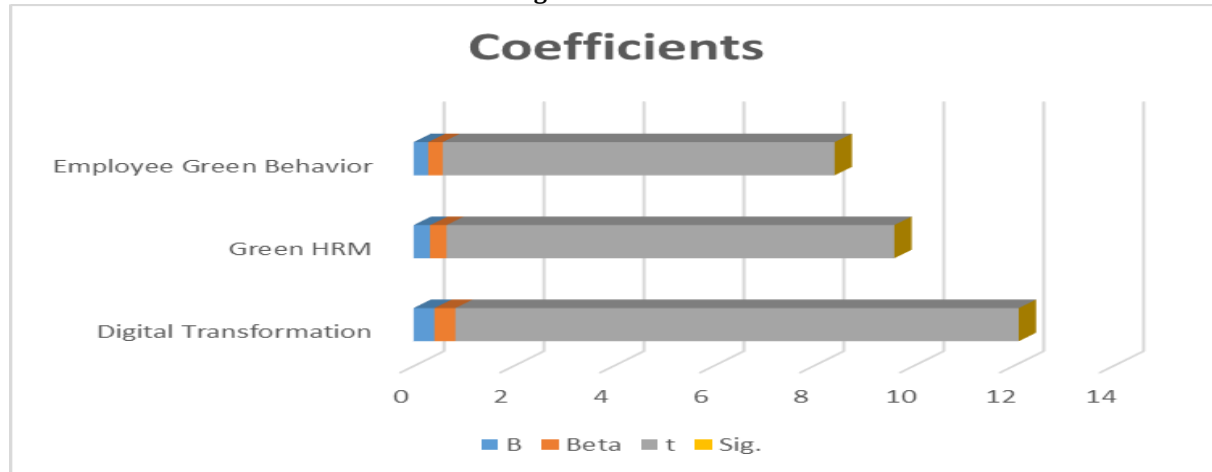


The coefficient results indicated that Digital Transformation had the highest positive standardised beta coefficient of 0.418 towards Sustainable Workplace Development. The beta values are 0.329 for Green Human Resource Management and 0.291 for Employee Green Behaviour, ranking them second- and third-highest, respectively. The p-values for all predictor variables were significant ($p < 0.05$). This research revealed that two factors, namely, the enhancement of digitalisation-related activities and HR practices that foster green Behaviour, add significant value to the sustainability benefits of a workplace.

Table 12: Coefficients

Variable	B	Beta	T	Sig.
Digital Transformation	0.418	0.418	11.274	0
Green HRM	0.329	0.329	8.961	0
Employee Green Behaviour	0.291	0.291	7.843	0

Figure 8: Coefficients

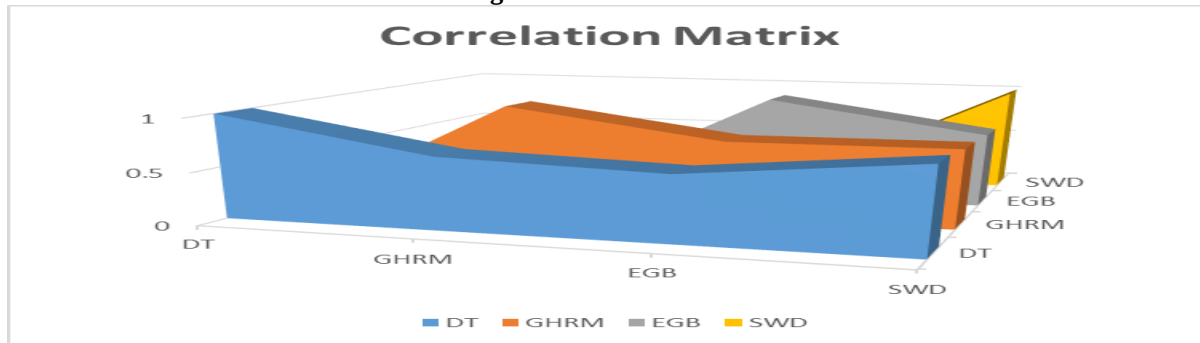


All the study variables were found to be highly positively correlated via a correlation analysis. Digital Transformation's correlation with Sustainable Workplace Development was strong and positive ($r = .801$), indicating that greater technological innovation was associated with better sustainability outcomes. Green Human Resource Management also showed a considerable positive correlation with Sustainable Workplace Development ($r = .745$), and Employee Green Behaviour showed a significant positive correlation ($r = .711$). There was a strong relationship between Green HRM and Employee Green Behaviour ($r = .733$), indicating an association between them and suggesting that environmentally oriented HR practices enabled employees to adopt sustainable Behaviours. These results confirmed the hypotheses proposed and indicated the need for using regression analysis.

Table 13: Correlation Matrix

Variables	DT	GHRM	EGB	SWD
DT	1			
GHRM	0.684	1		
EGB	0.621	0.733	1	
SWD	0.801	0.745	0.711	1

Figure 9. Correlation Matrix



The results of the hypothesis testing supported all four hypotheses. Sustainable workplace development, green human resource management, and employee green Behaviour all benefited greatly from digital transformation. Green HRM was determined to be an essential part of the organisation's overall sustainability efforts, as it showed positive correlations with Employee Green Behaviour and Sustainable Workplace Development. Employee green Behaviour led to a positive, significantly correlated sustainability outcome for the work. The results supported the idea that the companies' better sustainability performance was due to both technical innovations and HRM policies that considered the environment, as well as employee engagement in green projects.

Table 14: Hypotheses Testing

Hypothesis	Statement	Decision
H1	Digital Transformation positively influences Sustainable Workplace Development.	Accepted
H2	Digital Transformation positively influences Green HRM	Accepted
H3	Digital Transformation positively influences Employee Green Behaviour	Accepted
H4	Green HRM positively influences Sustainable Workplace Development	Accepted

DISCUSSION

The results showed that companies with high levels of digital technology implementation and the most recent solutions achieved higher sustainable workplace outcomes, with digital transformation exerting a significant positive influence on sustainable workplace growth. When evaluating the impact on creating a sustainable workplace, digital transformation was found to be the most important factor. This indicates that technological innovation helped optimise resources, set up operations, and make the business more efficient and environmentally conscious. The results were consistent with other recent research on how digital transformation, as a strategic tool, can support sustainability goals by increasing organisational capabilities, environmental monitoring, and resource use (Ma et al., 2023; Lou et al., 2024). The results also confirmed that digital technologies have made it easier for organisations to reduce operational waste, expand communication

channels, and encourage sustainable working habits, thereby facilitating long-term organisational development and environmental performance.

The study has revealed that Green Human Resource Management made a significant contribution to sustainable workplace development, which, in turn, positively affected the employees' green behaviour. This discovery indicated that an HR strategy aligned with the scope of the environment was a key factor in motivating staff to participate in sustainability and environmental projects. The introduction of "green recruitment," employee environmental training, a green assessment system, and a green reward system seemed to have boosted employees' ability to adopt an environmentally responsible attitude and take on environmental responsibility. The findings were aligned with previous empirical studies showing that green HRM practices were associated with sustainable work behaviours and organisations' environmental performance (Gyensare et al., 2024; Shahzad et al., 2023). In organisations with well-developed Green HRM, employee changes were positively associated with workplace sustainability outcomes. There was a positive association between changes in employees and workplace sustainability outcomes in organisations with well-developed Green HRM.

Another crucial result was that employees' green actions positively affected the workplace's sustainable development. Employees' voluntary activities related to the sustainability concept conceptually helped improve the effectiveness of sustainability measures.

The findings demonstrated that an organisation's policies and environmental support encouraged employees to adopt a green mindset at work, and that a higher level of HRM was strongly associated with increased employee green Behaviour. These findings are consistent with the most recent research, which has already shown that employee green Behaviour is a crucial link between organisational sustainability initiatives and actual environmental and organisational changes (Xie et al., 2023; Akram et al., 2024). Therefore, encouraging environmentally conscious Behaviour among employees is just as important as investing in technology to sustain sustainable workplace development.

The overall results endorsed the suggestion that sustainable workplace development could be achieved by combining digital transformation and GHRM with employees' green Behaviour in an appropriate manner. Digital transformation equipped companies with technological tools and operational effectiveness,, while Green HRM created an enabling organisational context that fostered HR attitudes and behaviours towards Sustainability. This synergy among these factors improved organisational sustainability performance and workplace development. The results aligned with the latest studies that focused on the sustainability advantage of technological innovation, integrated with the implementation of Green HRM and employees' participation in green initiatives (Liu et al., 2023; Ahmed et al., 2024). Digital transformation, optimally translated into people operations practices grounded in environmental responsibility, leads to better sustainability and performance outcomes for organisations.

CONCLUSION

This study is made easier by considering the impact of employee green Behaviour, digital transformation, and Green Human Resources Management (Green HRM) on sustainable workplace growth. The findings demonstrated that digital transformation significantly improves workplace sustainability in several ways, including organisational effectiveness, technical innovation, and the adoption of environmentally friendly operating procedures. Digital transformation showed the strongest association with workplace sustainability development, with more favorable sustainability outcomes for companies that successfully used digital technologies. The results also showed that technological innovations contributed to environmental goals by optimising resource use, reducing waste, and strengthening organisational capabilities for

adaptability and sustainability in complex business environments. The study also demonstrated the crucial role of green human resource management in promoting sustainability within businesses. Employees' active participation in environmental programs was largely encouraged by the adoption of green HRM methods, such as green hiring, environment-related training, sustainable performance evaluation, and green rewards. It has been demonstrated that implementing green HRM practices, such as environmental training, sustainable performance monitoring, green recruitment strategies, and green incentive programs, encourages employees to participate actively in environmental projects.

Recommendations

Digital transformation should focus on balancing the development of technology with improvements in employee health and safety and the environment. The administration should incorporate Green Human Resource Management (Green HRM) practices into human resource processes (recruitment, training, appraisal, and reward systems) that promote responsible environmental practices. In addition, regular training programs should focus on enhancing employees' digital skills and knowledge of sustainable workplace practices, enabling technology to complement, rather than compete with, employee engagement. Organisations should also develop well-defined sustainability policies, backed by digital monitoring systems that record environmental data, resource use, and employee engagement in sustainability initiatives. Policy and organisational leaders should encourage investment in digital technologies that reduce environmental impacts and foster a culture of collaboration, innovation, and climate stewardship in the workplace. These synergistic actions will contribute to sustainable workplace development and promote long-term organisational performance.

REFERENCES

- Ababneh, O. M. A. (2021). How do green HRM practices affect employees' green Behaviours? The role of employee engagement and personality attributes. *Journal of Environmental Planning and Management*, 64(7), 1204–1226. <https://doi.org/10.1080/09640568.2020.1814708>
- Aftab, J., Abid, N., Cucari, N., & Savastano, M. (2023). Green human resource management and employee green Behaviour: The role of green innovation and environmental commitment. *Corporate Social Responsibility and Environmental Management*, 30(2), 884–898. <https://doi.org/10.1002/csr.2398>
- Ahmad, S., Islam, T., Sadiq, M., & Kaleem, A. (2021). Promoting green Behaviour through ethical leadership and green human resource management. *Corporate Social Responsibility and Environmental Management*, 28(6), 1841–1854. <https://doi.org/10.1002/csr.2143>
- Ahmed, R., Khan, S., Ali, M., & Hussain, T. (2024). Towards a greener tomorrow: Investigating the nexus of GHRM, technology innovation, and employee green Behaviour in driving sustainable performance. *Cogent Business & Management*, 11(1), 2442095. <https://doi.org/10.1080/23311975.2024.2442095>
- Akram, M. W., Mirza, S., & Mahar, S. (2024). Employee green behaviour in Pakistani education sector: Does green perceived organisational support mediate the relation between green human resource management and employee green behaviours? *Vision*. <https://doi.org/10.1177/09721509241232195>
- Alam, M. M., & Ansari, M. M. A. (2026). A Multi-Dimensional Assessment of Digital Transformation and AI in Driving Resilience and Sustainability of Construction Firms. *Journal of Management Science Research Review*, 5(1), 557-576.

- Alam, M. M., Khan, M. A. H., Ansari, M. M. A., & Sarwar, M. Z. (2026). From Information to Intelligence: Optimising Strategic Decision-Making in Saudi Entities through Big Data Synthesis. *Journal of Business Insight and Innovation*, 5(1), 67-77.
- Amrutha, V. N., & Geetha, S. N. (2021). Linking organisational green training and voluntary workplace green Behaviour: Mediating role of green supporting climate. *Journal of Cleaner Production*, 290, 125876. <https://doi.org/10.1016/j.jclepro.2021.125876>
- Bag, S., Yadav, G., Dhamija, P., Kataria, K. K., & Chopra, S. S. (2022). Industry 4.0 and the circular economy: Resource melioration in logistics. *Resources Policy*, 77, 102769. <https://doi.org/10.1016/j.resourpol.2022.102769>
- Bresciani, S., Ferraris, A., Romano, M., & Santoro, G. (2021). Digital transformation management for agile organisations. *Management Decision*, 59(8), 1730–1747. <https://doi.org/10.1108/MD-09-2020-1236>
- Chaudhary, R. (2020). Green human resource management and employee green Behaviour: An empirical analysis. *Corporate Social Responsibility and Environmental Management*, 27(2), 630–641. <https://doi.org/10.1002/csr.1827>
- Dumont, J., Shen, J., & Deng, X. (2017). Effects of green HRM practices on employee workplace green Behaviour: The role of psychological green climate and employee green values. *Human Resource Management*, 56(4), 613–627. <https://doi.org/10.1002/hrm.21792>
- Faisal, S. (2023). Green human resource management—A synthesis. *Sustainability*, 15(3), 2259. <https://doi.org/10.3390/su15032259>
- Fatima, S., & Laheri, V. K. (2025). Unearthing the Green Human Resource Management and Employee Green Behaviour Paradigm: A Comprehensive Review. *Asia-Pacific Journal of Management Research and Innovation*, 21(3), 83–102. <https://doi.org/10.1177/2319510X251385376>
- George, G., Merrill, R. K., & Schillebeeckx, S. J. D. (2021). Digital sustainability and entrepreneurship. *Entrepreneurship Theory and Practice*, 45(5), 999–1027. <https://doi.org/10.1177/1042258721993188>
- Gupta, S., Modgil, S., Bhushan, B., & Luo, Z. (2023). Digital transformation and environmental sustainability: A review and future research agenda. *Technological Forecasting and Social Change*, 188, 122264. <https://doi.org/10.1016/j.techfore.2022.122264>
- Gyensare, M. A., Adomako, S., & Amankwah-Amoah, J. (2024). Green HRM practices, employee well-being, and sustainable work Behaviour: Examining the moderating role of resource commitment. *Business Strategy and the Environment*, 33(2), 1040–1057. <https://doi.org/10.1002/bse.3642>
- Kamboj, J., & Eronimus, A. (2024). Mapping the green human resource management practices: A systematic scoping review and its implications for employees' well-being. *Human Systems Management*, 43(6), 781–801. <https://doi.org/10.3233/HSM-230183>
- Katz, I. M., Rauvola, R. S., Rudolph, C. W., & Zacher, H. (2022). Employee green Behaviour: A meta-analysis. *Corporate Social Responsibility and Environmental Management*, 29(5), 1146–1157. <https://doi.org/10.1002/csr.2260>
- Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital transformation: An overview of the current state of the art of research. *SAGE Open*, 11(3), 1–15. <https://doi.org/10.1177/21582440211047576>

- Liu, R., Yue, Z., Ijaz, A., Lutfi, A., & Mao, J. (2023). Sustainable business performance: Examining the role of green HRM practices, green innovation and responsible leadership through the lens of pro-environmental Behaviour. *Sustainability*, 15(9), 7317. <https://doi.org/10.3390/su15097317>
- Lou, Y., Hong, A., & Li, Y. (2024). Assessing the role of HRM and HRD in enhancing sustainable job performance and innovative work Behaviours through digital transformation in ICT companies. *Sustainability*, 16(12), 5162. <https://doi.org/10.3390/su16125162>
- Ma, L., Zhang, X., & Dong, L. (2023). Enhancing sustainable performance: The innovative strategy of digital transformation leading green collaborative management. *Sustainability*, 15(17), 13085. <https://doi.org/10.3390/su151713085>
- Malik, M. S., Cao, Y., Mughal, Y. H., Kundi, G. M., Mughal, M. H., & Ramayah, T. (2024). Green HRM and employee sustainable performance. *Business Strategy and the Environment*, 33(1), 420–436. <https://doi.org/10.1002/bse.3488>
- Nasiri, M., Ukko, J., Saunila, M., & Rantala, T. (2023). Managing digital transformation toward sustainability. *Sustainability*, 15(4), 3302. <https://doi.org/10.3390/su15043302>
- Pham, N. T., Tučková, Z., Jabbour, C. J. C., & Chiappetta Jabbour, A. B. L. S. (2020). Greening the hospitality industry: Green HRM practices and employee green Behaviour. *International Journal of Hospitality Management*, 88, 102392. <https://doi.org/10.1016/j.ijhm.2019.102392>
- Roscoe, S., Subramanian, N., Jabbour, C. J. C., & Chong, T. (2019). Green human resource management and the enablers of green organisational culture. *Journal of Cleaner Production*, 226, 621–632. <https://doi.org/10.1016/j.jclepro.2019.04.001>
- Saeed, B. B., Afsar, B., Hafeez, S., Khan, I., Tahir, M., & Afridi, M. A. (2019). Promoting employee green Behaviour through green human resource management practices. *Corporate Social Responsibility and Environmental Management*, 26(2), 424–438. <https://doi.org/10.1002/csr.1694>
- Shahzad, M. A., Jianguo, D., & Junaid, M. (2023). Impact of green HRM practices on sustainable performance: Mediating role of green innovation, green culture, and green employees' Behaviour. *Environmental Science and Pollution Research*, 30(38), 88524–88547. <https://doi.org/10.1007/s11356-023-28498-6>
- Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green HRM. *Technological Forecasting and Social Change*, 150, 119762. <https://doi.org/10.1016/j.techfore.2019.119762>
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889–901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*, 28(2), 118–144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Xie, J., Bhutta, Z. M., Li, D., & Andleeb, N. (2023). Green HRM practices for encouraging pro-environmental Behaviour among employees: The mediating influence of job satisfaction. *Environmental Science and Pollution Research*, 30(47), 103620–103639. <https://doi.org/10.1007/s11356-023-29362-3>
- Yong, J. Y., Yusliza, M. Y., Ramayah, T., Juhari, N. F., & Fawehinmi, O. O. (2020). Nexus between green intellectual capital and green human resource management. *Journal of Cleaner Production*, 278, 123903. <https://doi.org/10.1016/j.jclepro.2020.123903>