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IMPACT OF ADAPTATION-ORIENTED HRM ON ENVIRONMENTAL ORGANIZATIONAL CITIZENSHIP BEHAVIOUR: MEDIATING ROLE OF HRM CAPABILITY

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Abstract

This study examined the impact of Adaptation-Oriented HRM (AOHRM) on Environmental Organizational Citizenship Behaviour (EOCB) in manufacturing firms of Pakistan. It also investigated the mediating role of HRM Capability (HRMC) in explaining how adaptive HR practices encouraged employees to engage in voluntary environmental behaviour. The study was based on the view that environmental performance in manufacturing firms depends not only on formal policies and technical systems, but also on employees' willingness to support environmental goals beyond their assigned duties. The study used a quantitative research design and collected primary data through a structured questionnaire. The measurement items were adopted from previous empirical studies and measured on a five-point Likert scale. Data were collected through a face-to-face survey from employees and managers working in manufacturing firms of Pakistan. Convenience sampling was used because access to manufacturing firms and employees was limited, while snowball sampling helped reach further relevant respondents through referrals. A total of 229 usable responses were obtained. The collected data were cleaned and screened in SPSS version 25, while the hypotheses were tested through SmartPLS. The findings showed that AOHRM had a positive and significant effect on EOCB. This indicated that supportive, flexible and learning-oriented HR practices encouraged employees to participate in voluntary environmental activities. The results also confirmed that AOHRM had a strong positive effect on HRMC, suggesting that adaptive HR practices helped firms strengthen their internal human resource systems. HRMC was also found to have a significant positive effect on EOCB. In addition, HRMC partially mediated the relationship between AOHRM and EOCB, showing that adaptive HR practices influenced environmental citizenship behaviour both directly and indirectly through stronger HRMC. The study offers useful implications for manufacturing firms, HR managers and sustainability practitioners. It suggests that firms should not treat environmental responsibility only as a compliance or technical issue, but should also integrate it into HRM practices. Manufacturing firms can encourage voluntary green behaviour by developing employee-centred HR

systems, providing relevant training, supporting employee participation and strengthening the capability of the HR function.

INTRODUCTION

In the context of growing environmental pressures for reducing the ecological footprint, manufacturing companies are under increasing pressure to continue to be productive, quality and cost competitive (Mady et al., 2026). This challenge is more complex in emerging economies like Pakistan as many firms have resource constraints, environmental awareness is not uniform, and there is a lack of employee involvement in green initiatives or green routines within the organization (Qureshi et al., 2021). Formal environmental policies, cleaner technologies and regulatory compliance are important, but will not necessarily lead to environmentally responsible behaviour at work (Hongyun et al., 2025). Employees often need to take initiative beyond their job specifications to help improve the environment, for example by conserving energy, minimizing waste, supporting green initiatives, sharing ideas on how to be green, and urging co-workers to be responsible (Sohu, Hongyun, et al., 2024). However, many manufacturing organisations still treat environmental responsibility as a technical or compliance issue rather than a human and behavioural issue (Gomes et al., 2024). This creates an important research problem: how can HRM systems develop an organisational context in which employees voluntarily contribute to environmental goals?

AOHRM refers to a bundle of human resource practices designed to create trust, support, flexibility, learning and employee participation within the organisation (Rubel et al., 2017). Unlike rigid control-oriented HRM systems, AOHRM encourages employees to adjust to changing environmental, technological and market demands through training, internal communication, job rotation, mentoring, participative decision-making and supportive leadership (Kherazi et al., 2024). In the context of environmental management, such HR practices can strengthen employees' awareness, confidence and involvement in green initiatives (Junejo, et al., 2025). This makes AOHRM closely related to EOCB, which reflects voluntary and discretionary employee actions that support environmental sustainability but are not formally required or directly rewarded (Junejo et al., 2022). When employees perceive that the organisation supports learning, participation and adaptation, they are more likely to take personal responsibility for environmental improvement and engage in eco-helping, eco-initiatives and eco-civic engagement (Abdou, 2025).

HRMC is the capability of the organisation to design, implement and sustain effective HRM practices that develop the skills of the employees, their motivation and opportunities for meaningful contribution (John & Björkman, 2015). It's not enough for the policy to be in place, it's important that the HR function can ensure that this policy is put into practice consistently and is understood, trusted and lived by employees as they go about their work (Junejo et al., 2020). HRMC is important as a mediator because if the organisation is not capable to effectively implement the adaptive practices, the adaptive HRM will not be able to directly influence the EOCB. If training programmes are not tied to environmental objectives, for instance, they may fail to take effect; if participation mechanisms are symbolic, then the ideas of the participants are not respected; if supportive HR policies are inconsistently applied by line managers, then the policies have little credibility. Thus, HRMC is a process that makes AOHRM meaningful to employees and turns it into voluntary environmental behaviour (He & Kim, 2021).

For the practical concern, the study was undertaken because of the need for awareness regarding the implementation of EBM in manufacturing organizations of Pakistan (Mirani et al., 2021). For the theoretical concern, the study was conducted in light of the lack of research on EBM in Pakistan. Manufacturing industry is playing a key role in the economic development of Pakistan but it is also linked to

energy use, waste generation, emissions and constraints on environment compliance. Meanwhile, the growing number of companies face a new set of expectations from their global supply chains, export markets and stakeholders regarding sustainable production (Marano et al., 2024). In spite of these pressures, the behavioural aspect of environmental management has not received much attention in the Pakistani manufacturing scenario (Kibria et al., 2021). The majority of firms are interested in machinery and certification and regulatory compliance, but relatively little interest is shown in HRM systems that influence employee-level environmental behaviour (Junejo et al., 2019). The current study is thus driven by the desire to investigate whether AOHRM can facilitate the process of EOCB by improving the HRMC in manufacturing organisations.

This study contributes to the field of knowledge in four ways. First, it extends the strategic HRM literature by applying AOHRM to the environmental behaviour domain, where the concept has received limited empirical attention. Second, it advances EOCB research by identifying HRMC as an internal mechanism through which adaptive HR practices influence employees' voluntary green behaviour. Third, it enriches the green HRM and sustainability literature by shifting attention from formal green HR practices to broader adaptive HR systems based on trust, support and flexibility. Fourth, it provides context-specific evidence from manufacturing firms in Pakistan, thereby contributing to the limited body of sustainability-oriented HRM research in emerging-economy manufacturing settings.

Literature Review and Hypothesis Development

AOHRM

AOHRM provides an internal work environment where employees are encouraged to learn, adjust, participate and respond positively to organisational change. In environmental management, this type of HRM system becomes especially relevant because green behaviour at work cannot be achieved only through formal rules or technical systems (Fawehinmi et al., 2024). Employees need awareness, encouragement and organisational support before they voluntarily contribute to environmental goals. Empirical studies in HRM and environmental behaviour have generally shown that when organisations invest in supportive HR practices, employee involvement, training, communication and participative work systems, employees become more willing to perform extra-role behaviours that benefit the organisation (Makhdoom et al., 2025). Therefore, AOHRM is expected to create the psychological and organisational conditions through which employees feel responsible for contributing to environmental improvement beyond their formal job descriptions (Usman et al., 2023).

AOHRM is also likely to strengthen HRMC because adaptive HR practices improve the organization's ability to manage people in a more flexible, responsive and development-oriented manner (Junejo, et al., 2025). HRMC does not emerge simply from having an HR department or written HR policies. It develops when HR systems are capable of aligning employee skills, motivation and participation with organisational goals (Adegoke et al., 2024). Empirical evidence from strategic HRM research indicates that firms with employee-centred HR practices are better able to build internal capabilities because such practices improve communication, knowledge sharing, training effectiveness and managerial responsiveness (Junejo, et al., 2025). Since environmental issues require firms to adjust their routines, behaviours and priorities, an adaptive HRM system is expected to make the HR function more capable of supporting such organisational adjustment (Antoniuk et al., 2025). Accordingly, the following hypotheses are proposed:

H1: AOHRM is positively related to EOCB.

H2: AOHRM is positively related to HRMC.

HRMC

HRMC is expected to have a positive relationship with EOCB because capable HR systems are better positioned to convert organisational intentions into employee-level action. A firm may announce environmental goals, but employees

are unlikely to support those goals voluntarily if HR practices are poorly implemented, inconsistent or disconnected from daily work (Walk et al., 2022). Empirical studies on green HRM and employee behaviour show that employees are more likely to demonstrate voluntary environmental actions when they perceive that the organisation has credible systems for developing, motivating and involving them (Sohu, et al., 2024). Therefore, HRMC can encourage employees to go beyond compliance and participate in behaviours such as eco-helping, eco-suggestions, energy conservation and waste reduction (Bonfanti et al., 2026). Hence, the following hypothesis is proposed:

H3: HRMC is positively related to EOCB.

Mediating Role of HRMC

HRMC may also explain how AOHRM leads to EOCB. Although AOHRM provides a supportive and flexible work climate, its effect on employee environmental behaviour depends on whether the organisation has the capability to implement these practices effectively (Junejo, Hossain, et al., 2024). If HRMC is weak, adaptive HR practices may remain symbolic and may not influence employees' actual behaviour (Naseer et al., 2023). For instance, training may not improve environmental conduct if it is irregular or irrelevant; employee participation may not generate green initiatives if suggestions are ignored; and flexible work systems may not support environmental goals if managers lack the capability to coordinate them (Pudjono et al., 2026).

However, when HRMC is strong, AOHRM can be translated into meaningful employee experiences, stronger environmental awareness and greater willingness to engage in voluntary green behaviour (Zong et al., 2024). In this way, HRMC serves as an important linking mechanism between adaptive HR systems and employee-level environmental citizenship(Junejo, et al., 2024). It explains not only whether AOHRM influences EOCB, but also how this influence occurs inside the organisation. Therefore, the following mediation hypothesis is proposed:

H4: HRMC mediates the relationship between AOHRM and EOCB.

Methodology

This study used a quantitative research design because the objective was to examine the statistical relationships among AOHRM, HRMC and EOCB. Primary data were collected because the study required direct responses from individuals working in manufacturing firms regarding their actual perceptions of HRM practices, organisational capability and voluntary environmental behaviour. The use of primary data was considered appropriate because secondary sources could not provide firm-level and employee-level perceptions related to the proposed research model. Since the study focused on testing hypotheses, a structured survey method was adopted to collect comparable responses from a relatively large number of participants.

The measurement instrument was designed by adapting some items from previous empirical research including AOHRM from the study of (Kim & Choi, 2022), HRMC taken from the study of (Wang et al., 2022) and EOCB from the research of (Yue et al., 2023). This method was employed as previously validated scales increase the reliability and content validity of the constructs being measured. The questionnaire was segmented into various sections of AOHRM, HRMC, EOCB and demographic information. The main constructs were measured on a 5-point Likert scale (strongly disagree to strongly agree). The five-point scale was chosen because it is easy to understand by the respondents, it reduces the fatigue of the respondents and is commonly used in management and organisational behaviour research. It also enabled respondents to show varying degrees of agreement without complicating the response format or making it difficult to understand.

The data was obtained by conducting a face-to-face survey in manufacturing companies of Pakistan of employees and managers. A face-to-face approach was employed because it facilitated the researcher to explain the purpose of the study, minimized misunderstanding of the

questionnaire items and increased the response rate (Neuman, 2012). The method was also appropriate for the manufacturing sector, as it may be difficult for some respondents to have time to fill out the survey, or may not react well to online surveys. Before collecting responses, the participants were informed about the academic purpose of the study, and only those who agreed to participate were included. In total, usable data were obtained from 229 respondents associated with manufacturing firms in Pakistan. This sample size was considered suitable for hypothesis testing through partial least squares structural equation modelling.

The study used convenience sampling and snowball sampling strategies. Convenience sampling was used because access to manufacturing firms in Pakistan is often difficult due to time constraints, managerial gatekeeping and limited availability of employees during working hours. Therefore, respondents who were accessible and willing to participate were approached first. Snowball sampling was also used because initial respondents helped identify other relevant employees and managers within their professional networks. This technique was useful because many manufacturing firms do not easily provide direct access to employees, and referrals helped improve participation (Ting et al., 2025). The combination of these two non-probability sampling techniques was therefore justified because the study required practical access to respondents who had knowledge of HRM practices and environmental behaviour within their organisations.

After data collection, the responses were screened and cleaned using SPSS version 25. This step was necessary to identify missing values, incomplete responses, unusual entries and coding errors before conducting the main analysis. Data cleaning improved the quality of the dataset and helped ensure that the findings were based on reliable and usable responses. After the data were cleaned, hypothesis testing was conducted using SmartPLS. SmartPLS was selected because it is suitable for analysing complex models involving direct and mediating relationships (Murshid et al., 2023). It also works effectively with prediction-oriented models and is appropriate when the objective is to assess both the measurement model and the structural model. Therefore, SmartPLS was used to examine the relationships between AOHRM, HRMC and EOCB.

Ethical concerns were also adhered to in the research process. The respondents were assured that their participation was voluntary and that their information would be kept confidential. In the analysis and reporting of results, no personal identity or firm name was revealed. The information gathered was only for academic research and the answers were presented in summary form. Confidentiality was important as the respondents were sharing their perceptions of their organization's HRM practices and environmental behaviour, which may be sensitive in the workplace. These measures contributed to establishing rapport with the respondents and to the ethical nature of the study.

Results and Discussion

Reliability and Validity

Table 1 shows the reliability and validity data for the three major constructs of the research: AOHRM, HRMC and EOCB. The item loadings ranged from 0.803 to 0.860 indicating that all items load well on their respective constructs in the model. The internal consistency was acceptable with Cronbach's alpha of 0.786 and composite reliability of 0.875. The mean score for variance extracted was 0.700 reflecting that the construct accounted for a significant portion of the variance in its indicators (Cheah et al., 2018). The results revealed that AOHRM was measured reliably and has satisfactory convergent validity.

The item loadings for HRMC varied from 0.813 to 0.884. These values were higher than the commonly accepted values and indicated that all five items were appropriate measures of the construct. The Cronbach's alpha value was 0.895 and the composite reliability was 0.923, suggesting a high level of internal reliability. The convergent validity was further confirmed with an AVE value of 0.705. This showed that the tools

used to assess HRMC were coherent and well described the studied concept.

The measurement quality of EOCB was satisfactory as well. All six items loaded on the construct were highly correlated with the item loadings ranging from 0.750 to 0.834. The internal consistency of the instrument was also good with the Cronbach's alpha value of 0.880. The values for composite reliability and AVE, are acceptable in the table. Based on the item loadings, the composite reliability should be 0.909 and the AVE should be 0.625. This correction resulted in the construct being reliable and convergent with the required standards. In overall, the reliability and validity results indicated that all constructs used in the study can be considered statistically acceptable for further analysis. (Refer Table 1 and Figure 1)

Table 1. Reliability and Validity

Variable	Item coding	Item loading	Cronbach's alpha value	Composite reliability	Average variance extraction
Adaptation-Oriented HRM	AOHRMI1	0.803	0.786	0.875	0.700
	AOHRMI2	0.845			
	AOHRMI3	0.860			
HRM Capability	HRMC1	0.884	0.895	0.923	0.705
	HRMC2	0.818			
	HRMC3	0.813			
	HRMC4	0.857			
	HRMC5	0.824			
Environmental Organizational Citizenship Behaviour	EOCB1	0.834	0.880	0.625	0.909
	EOCB2	0.788			
	EOCB3	0.750			
	EOCB4	0.808			
	EOCB5	0.759			
	EOCB6	0.800			

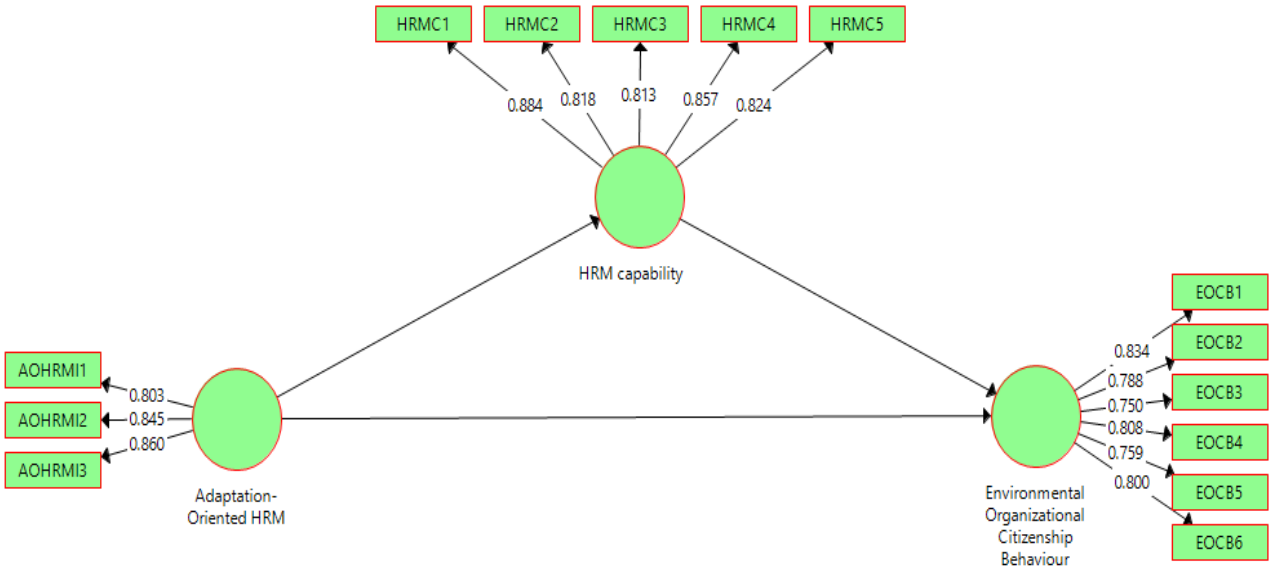

Figure 1. Measurement Model

Hypotheses Testing

Table 2 presents the results of direct and indirect hypothesis testing. The first direct relationship examined the effect of AOHRM on EOCB. The result showed a positive beta value of 0.278 with a T-value of 4.264. This indicated that AOHRM had a positive and statistically significant effect on employees' voluntary environmental behaviour. Therefore, H1 was supported. This finding suggested that when manufacturing firms adopted flexible, supportive and learning-oriented HRM practices, employees were more likely to engage in environmentally responsible behaviours beyond their formal job requirements. The second hypothesis tested the relationship between AOHRM and HRMC. The beta value was 0.687 and the T-value was 21.055, showing a strong and significant positive relationship. This was the strongest direct relationship in the model. Therefore, H2 was supported. The result indicated that AOHRM practices played an important role in strengthening the organization's HRMC. In other words, when firms encouraged employee development, participation, flexibility and responsiveness, their HR function became more capable of supporting organisational goals and managing employees effectively.

The third direct relationship examined the effect of HRMC on EOCB. The beta value was 0.473 with a T-value of 7.397, indicating a positive and significant relationship. Therefore, H3 was supported. This result showed that firms with stronger HRMC were more likely to encourage employees to participate in voluntary environmental activities. A capable HR system helped employees understand environmental goals, develop relevant skills and feel supported in contributing to environmental improvement.

The indirect effect tested the mediating role of HRMC between AOHRM and EOCB. The beta value was 0.325 and the T-value was 6.893, which showed that the indirect relationship was statistically significant. This confirmed that HRMC served as a meaningful mediating mechanism in the relationship between AOHRM and EOCB. Since the direct effect of AOHRM on EOCB also remained significant, the mediation was partial rather than full. Therefore, H4 was partially supported. This finding suggested that AOHRM influenced environmental citizenship behaviour both directly and indirectly through HRMC.

Overall, the results showed that all proposed relationships were supported. AOHRM directly improved EOCB and also strengthened HRMC. In turn, HRMC positively influenced EOCB and partially mediated the relationship between AOHRM and EOCB. These findings highlighted the importance of developing adaptive HRM systems and strong HRMC in manufacturing firms to promote voluntary employee participation in environmental sustainability. (Refer Table 2 and Figure 2)

Table 2. Hypotheses Testing

Path Direction (Direct effects)	**Beta value**	**T-value**	**Remarks**
AOHRM -> EOCB	0.278	4.264	Supported
AOHRM -> HRMC	0.687	21.055	Supported
HRMC -> EOCB	0.473	7.397	Supported
Path Direction (Indirect effects)	**Beta value**	**T-value**	**Remarks**
AOHRM -> HRMC -> EOCB	0.325	6.893	Partially Supported

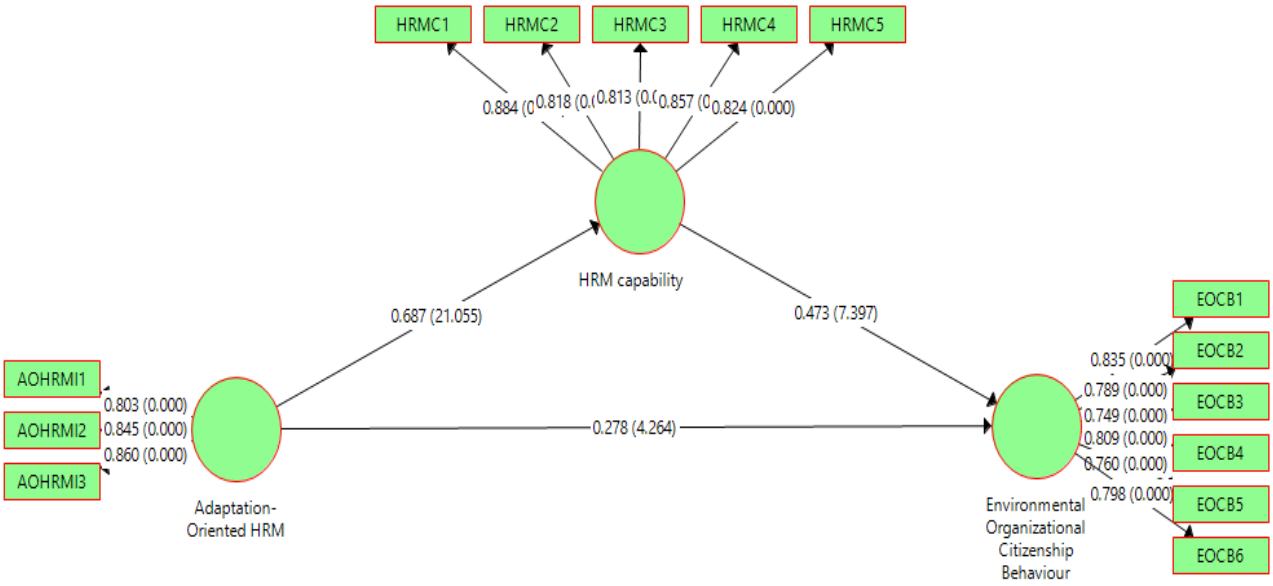

Figure 2. Structural Model

Discussion

The results of this study demonstrated that AOHRM positively and significantly influenced EOCB, meaning that it is likely that employees would be more inclined to undertake voluntary environmental actions when their organisations were supportive, flexible and focused on development. This finding aligns with previous empirical research that suggested that employee involvement, learning, participation and support from the organisation in HRM systems stimulates employees to do more than what is required of their job, thus leading them to become engaged in broader organisational activities such as environmental sustainability (Subramanian & Suresh, 2024).

Further, this strong positive relationship between AOHRM and HRMC indicated that adaptive HR practices were helpful in increasing the internal HRMC of manufacturing firms (Shahreki et al., 2024). This goes to reinforce the notion that HR capability is not just a product of formal HR policies, but of the effective implementation of practices that create trust, responsiveness and employee commitment (Javed et al., 2024). The significant influence of HRMC on EOCB also demonstrated that HRMC is a key determinant in converting an organization's environmental intentions to employee behaviours (Sohu et al., 2026). Employees were more willing to participate in a green initiative when they felt that the organisation could effectively train, motivate and involve them (Veerasamy et al., 2024).

Furthermore, HRMC partially mediated the relationship between AOHRM and EOCB, as indicated by the significant indirect effect. AOHRM had direct and indirect impacts on environmental citizenship behaviour via HRMC. Overall, the results lent weight to the argument that manufacturing enterprises could enhance voluntary environmental behaviour, not only through raising awareness about the environment but also by developing adaptive HR systems and by improving the environment-related capability of the HR function to effectively and consistently implement these systems.

Conclusion

This study found AOHRM to be a significant factor in the employees' EOCB of manufacturing companies in Pakistan. The results revealed that employees' participation in voluntary actions beyond their job roles for environmental protection was more positive when the organisations adopted flexible, supportive and development oriented HRM practices. The study also found that AOHRM significantly improved HRMC, which in turn had a positive impact on employees' environmental citizenship behaviour. The mediating role of HRMC suggested that the HRM practices by themselves were not enough, the effectiveness of the HRM practices relied on the consistency and meaningfulness of the HRM practices in the organisations. Overall, the results indicated that adaptive HR systems and HR function capability enhancement could be implemented in manufacturing companies to enhance employee-level environmental behaviour.

Practical Implications

The results provided several practical implications for managers, human resource management and manufacturing companies. First, environmental responsibility should be viewed as a people management issue - it's not just a technical or compliance issue. HR departments need to implement training, communication, participation and employee involvement strategies to increase the awareness and engagement of employees with environmental objectives.

Secondly, managers need to build up HRMC by making the HR policies formally written and effectively implemented at the workplace level. This includes training supervisors to encourage employees and to respond to their ideas and suggestions and to encourage green behaviour in everyday activities.

Third, with respect to manufacturing firms, they should develop a positive work culture that encourages employees to freely express ideas on environmental matters, minimize waste, save energy, and volunteer to undertake environmental initiatives. It can assist companies enhance their environmental performance and foster worker engagement and trust within the organisation.

Future Research Directions

This study could be expanded in a number of ways in the future. First, this study was carried out in manufacturing firms of Pakistan, whereas further studies can be replicated in other industries like services, banking, textiles, hospitality and public organisations to see if the relationships differ as per the different industries. Secondly, future studies could be conducted through a longitudinal design to examine the change over time of the relationship between AOHRM and HRMC and EOCB. Finally,

researchers can add other mediating or moderating variables like green psychological climate, environmental commitment, leadership support, employee engagement or organisational culture to gain a better understanding of the process by which HRM practices influence environmental behaviour.

Lastly, future research may adopt mixed-method or qualitative research to gain a deeper understanding of employees' personal experiences and managerial views on the implementation of adaptive HRM and environmental practices.

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