



## Synthesis of Success: Crafting Sustainable Performance through E-HRM Innovation, Organizational Agility, and Cultural Harmony in SMEs

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### ABSTRACT

In the context of manufacturing small and medium-sized enterprises (SMEs) in Pakistan, this study explores the intricate interplay between organizational agility (OA), organizational culture (OC), and sustainable performance (SP) and their combined influence. The goal is to shed light on the aggregate impact of these variables, allowing companies to improve their long-term outcomes. Using a quantitative study design, data was collected through an online survey disseminated to HR and executive personnel of manufacturing SMEs. The sample consisted of 287 respondents. For data analysis, the study used Partial Least Squares Structural Equation Modeling (PLS-SEM), which allowed for a detailed examination of the correlations between the variables. The results show a strong positive correlation between E-HRM practices, organizational adaptability, organizational culture, and long-term performance. E-HRM activities like compensation and benefits, training, performance management, and recruiting and selection all have favorable effects on long-term performance. Additionally, it was discovered that organizational culture acted as a moderator and organizational agility as a mediator in these relationships. These findings contribute to a more complete understanding of the elements impacting long-term results in manufacturing SMEs. By combining organizational agility, sustainable performance, organizational culture, and E-HRM practices into a comprehensive framework, this research adds to the body of literature. The inclusion of organizational agility as a mediator and organizational culture as a moderator enriches our understanding of the mechanisms driving sustainable outcomes. Moreover, this study addresses a research gap by investigating these relationships within the specific context of manufacturing SMEs in Pakistan, offering insights for practitioners seeking to enhance their organizational sustainability strategies. Future studies can use other mediating and moderating variables in the relationship between EHRM practices and sustainable performance.

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## 1. Introduction

Human resource management (HRM) plays a critical role in leading firms toward success in today's quickly changing business world (Snell & Morris, 2021). With the advancement of technology, a new era of HR practices known as electronic human resource management (E-HRM) has emerged, with the potential to transform how firms manage their personnel and operational operations (AlHamad et al., 2022; De Alwis, Andrić, & Šostar, 2022). In light of these developments, this study investigates the multifaceted relationships between E-HRM

practices, organizational agility (OA), organizational culture (OC), and their collective impact on sustainable performance (SP) in the context of manufacturing SMEs in Pakistan.

The manufacturing SME sector in Pakistan is a lively yet demanding environment, with limited resources, market volatility, and environmental concerns producing a one-of-a-kind setting for organizational performance (Dwikat, Arshad, & Mohd Shariff, 2023). SMEs, often seen as the economic backbone, face particular challenges in balancing profitability and sustainability (Ali Qalati, Li, Ahmed, Ali Mirani, & Khan, 2020). As a result, studying the intricate links between E-HRM practices, organizational agility, organizational culture, and sustainable performance in this environment is not only important but also necessary for developing effective management strategies (De Alwis et al., 2022). Existing research has greatly aided our understanding of the individual effects of E-HRM practices AlHamad et al. (2022), OA, OC Imran, Ismail, Arshad, Zeb, and Zahid (2022), and Sustainable Performance (De Alwis et al., 2022). Several studies have found a favorable association between human resource management techniques and organizational performance, emphasizing their importance in improving employee engagement, satisfaction, and overall effectiveness (Anwar & Abdullah, 2021; Tortia, Sacchetti, & López-Arceiz, 2022). Furthermore, prior research has underlined the relevance of organizational agility in efficiently adapting to turbulent settings, boosting competitive advantage, and driving organizational success (Tortia et al., 2022). Furthermore, the impact of organizational culture on employee behavior, dedication, and performance is widely documented (Imran et al., 2022).

The available literature, however, falls short of giving a full understanding of the connection between E-HRM practices, OA, OC, and Sustainable Performance, particularly in the context of Pakistani manufacturing SMEs (Natarajan & Kamran, 2019). While individual links have been studied, the collective influence of these variables has received less attention (Anwar & Abdullah, 2021). This divide limits our capacity to develop successful solutions that harness the potential of E-HRM practices while also encouraging agility and cultivating a suitable corporate culture to promote Sustainable Performance outcomes (Anwar & Abdullah, 2021; De Alwis et al., 2022; Tortia et al., 2022). The current study seeks to fill this research gap by examining the connections among E-HRM practices, OA, OC, and Sustainable Performance in Pakistani manufacturing SMEs. The main goal is to understand the underlying dynamics of these linkages to provide insights into how these factors' synergistic alignment can promote sustainable organizational outcomes; as previous literature recommends to do (Qamar, Afshan, & Rana, 2023). By filling this gap, the research helps manage SMEs in the quest for sustainable sustainability on both a theoretical and practical level (Siegel, Antony, Garza-Reyes, Cherrafi, & Lameijer, 2019).

E-HRM practices are based on the variety of digital tools and technology used for HR operations (De Alwis et al., 2022). The ability of a company to quickly adjust to environmental changes and capitalize on opportunities is referred to as organizational agility (Attar & Abdul-Kareem, 2020). Organizational culture is explained in literature as the shared values, beliefs, and norms that shape employee behaviors and decisions (Attar & Abdul-Kareem, 2020). De Alwis et al. (2022) defines sustainable performance as meeting economic, social, and environmental goals. The theoretical underpinning for this research is provided by Bandura's Social Cognitive Theory (Shaikh, Afshan, Anwar, Abbas, & Chana, 2023). Individual behavior is impacted by both environmental and personal variables, according to this notion, and individuals also shape their surroundings. This is consistent with the intricacies of E-HRM practices, organizational agility, organizational culture, and sustainable performance (Adula, Kant, & Birbirs, 2022). This study seeks to illuminate these interdependencies through the lens of Social Cognitive Theory, so expanding our understanding of their mutual implications on sustainable organizational effectiveness.

This study has significant relevance in the current business environment. Small and medium-sized firms (SMEs) are critical contributors to employment, innovation, and economic growth in many economies, therefore addressing their unique difficulties is critical. This study explores three significant critical areas: E-HRM innovation, which is a constantly evolving field with the potential to streamline HR processes and increase efficiency in SMEs; organizational agility, which is critical for adapting to dynamic and competitive environments; and cultural harmony, which is critical for building a cohesive organizational culture aligned with company

values. The study provides helpful insights by examining sustainable performance in SMEs that may be used by managers, owners, and policymakers. Furthermore, it closes a knowledge vacuum in the existing study on the junction of E-HRM, organizational agility, and cultural harmony in SMEs. Additionally, the study can improve SMEs' long-term resilience in the face of economic shocks and disruptions and increase their competitiveness in international marketplaces, all while advancing academic knowledge in these crucial areas.

## **2. Literature Review**

The use of electronic platforms and technology for managing employee compensation, rewards, and benefits within a business is referred to as e-compensation and benefits (Qamar et al., 2023). Sustainable organizational success accomplished by balancing economic, social, and environmental factors is referred to as sustainable performance (Anwar & Abdullah, 2021). Prior research has shown that remuneration and benefit practices have an impact on several dimensions of organizational performance (Tortia et al., 2022). For example, Shamout et al., (2022) found that strategic remuneration policies are important for attracting and keeping exceptional employees. Similarly, the importance of compensation in driving employee motivation and engagement ultimately leads to greater performance outcomes (Siegel et al., 2019).

Given the changing landscape of human resource practices in the digital age Snell and Morris (2021), there is a need to explore the specific impact of electronic pay and benefits administration on sustainable performance in the context of Pakistani manufacturing SMEs (Dwikat et al., 2023). While the relationship between compensation and performance is well understood, investigating the consequences of digitalization within the Pakistani SME sector will provide insights into the unique difficulties and opportunities that exist (Ali Qalati et al., 2020; Dwikat et al., 2023). Social Cognitive Theory can be used to justify the link between E-compensation and sustainable performance (Adula et al., 2022). Individuals learn and adjust their behavior by observing others and their effects, according to this notion (Shaikh et al., 2023). Employees who follow fair and effective E-compensation systems may be more motivated to perform sustainably in this setting, promoting a sense of internal effectiveness and favorably affecting corporate outcomes (Adula et al., 2022).

H1: E-compensation and benefits significantly affect sustainable performance.

E-training is the use of digital platforms to deliver staff training and development (Kumar & Kumar, 2023). The ability of an organization to balance economic, social, and environmental issues to achieve sustainable success is referred to as sustainable performance (Tortia et al., 2022). Research has discovered the significance of training and development in improving employee skills and knowledge, ultimately leading to improved performance (AlHamad et al., 2022). Furthermore, a study discovered that successful training increases staff motivation and productivity (Anwar & Abdullah, 2021). As businesses increasingly use E-learning, it is critical to explore how these practices affect sustainable performance Qamar et al. (2023) in the unique setting of Pakistani manufacturing SMEs. The importance of digital platforms in training delivery, as well as the consequent influence on employee skills, engagement, and sustainable performance results, must be investigated (Kumar & Kumar, 2023). The relationship between E-training and sustainable performance is consistent with Social Cognitive Theory, which emphasizes learning through observation and reinforcement (Adula et al., 2022). E-learning platforms that allow employees to learn new skills and knowledge digitally can boost their feeling of self-efficacy and contribute to sustainable performance by enhancing their confidence in confronting new problems (Taufiq-Hail, Sarea, & Hawaldar, 2021).

H2: E-training significantly affects sustainable performance.

E-performance management is the use of digital tools to monitor, assess, and improve employee performance inside a company (Shaikh et al., 2023). Sustainable success accomplished by balancing economic, social, and environmental factors is referred to as sustainable performance (Qamar et al., 2023). According to research, performance management is critical in boosting employee motivation and improving organizational effectiveness (Tortia et al., 2022). Furthermore, the research emphasizes the need for regular feedback and goal-setting to improve employee performance (Taufiq-Hail et al., 2021). In the digital age, it is critical to investigate the impact of E-performance management on sustainable

performance in Pakistani manufacturing SMEs (Dwikat et al., 2023). Understanding the influence of technology on employee engagement, productivity, and the larger dimensions of sustainability is critical as technology affects the way performance is evaluated and controlled (Chege & Wang, 2020). The relationship between E-performance management and sustainable performance is consistent with Social Cognitive Theory, especially in terms of self-regulation and self-efficacy (Qamar et al., 2023). Employees who receive timely feedback and have access to digital performance tools might acquire a greater sense of control over their performance outcomes, promoting higher levels of self-efficacy and contributing to sustainable performance (Shaikh et al., 2023).

H3: E-performance management significantly affects sustainable performance.

E-recruitment and selection refer to the use of digital platforms to attract, evaluate, and choose new personnel within a business (Rodríguez-Sánchez, Montero-Navarro, & Gallego-Losada, 2019). For sustainable success, sustainable performance includes the ability to balance economic, social, and environmental factors (Qamar et al., 2023). Research underlines the importance of good recruitment and selection processes in ensuring a qualified and engaged staff (Zaman, Nawaz, Anjam, Anwar, & Siddique, 2021). Furthermore, research shows how technology-driven recruitment processes can improve the quality of applicant matches Anwar and Abdullah (2021). Investigating the influence of E-recruitment and selection on sustainable performance Qamar et al. (2023) is critical in the setting of manufacturing SMEs in Pakistan (Ali Qalati et al., 2020; Dwikat et al., 2023). Understanding how these practices affect the quality of hiring, employee engagement, and sustainable performance outcomes is critical as digitalization disrupts the recruitment market (Adula et al., 2022; Anwar & Abdullah, 2021). The link between E-recruitment and sustainable performance is consistent with the emphasis on observational learning and self-efficacy in Social Cognitive Theory (Adula et al., 2022). Employees who have gone through transparent and effective digital recruitment processes are more likely to perceive better levels of fairness and competence, boosting their confidence in contributing to sustainable organizational performance (Taufiq-Hail et al., 2021).

H3: E-recruitment and selection significantly affect sustainable performance.

The integration of multiple electronic HR management operations, such as compensation, training, performance management, and recruitment, for increased organizational effectiveness, is referred to as E-HRM practices (Shaikh et al., 2023). Sustainable success is achieved by a balanced approach to economic, social, and environmental elements (Qamar et al., 2023). Existing research demonstrates the importance of an integrated HRM approach in improving overall organizational performance (Anwar & Abdullah, 2021). Furthermore, there is a need to integrate HR practices with organizational strategic goals for enhanced outcomes (Tortia et al., 2022). It is critical to investigate the combined influence of E-HRM practices on sustainable performance De Alwis et al. (2022) in the context of Pakistani manufacturing SMEs. Understanding how the synergy of electronic compensation, training, performance management, and recruitment influences employee engagement, productivity, and the larger dimensions of sustainability is becoming increasingly important as technology reshapes HR operations (Qamar et al., 2023). The link between E-HRM practices and sustainable performance is consistent with Social Cognitive Theory's emphasis on observational learning and self-efficacy (Udekwe, Iwu, De la Harpe, & Daramola, 2021). An integrated E-HRM approach helps create employees' feelings of coherence and mastery, fostering their belief in their ability to contribute to sustainable performance by effectively leveraging technology-enabled HR practices (Pradhan & Saxena, 2023).

H4: Collectively the E-HRM practices significantly affect sustainable performance.

The ability of an organization to react swiftly to changes in its environment is referred to as organizational agility (Nafei, 2016). Flexible remuneration policies can improve organizational agility by increasing employee engagement and commitment (Zaman et al., 2021). Furthermore, research emphasizes the need for strategic HR approaches in developing an agile workforce (Zhang, Xu, Wei, Tang, & Ordonez de Pablos, 2023). In the context of Pakistani manufacturing SMEs, it is critical to investigate the relationship between E-compensation and benefit practices and organizational agility. Given the dynamic nature of business environments,

it is critical to understand how digital compensation policies affect an organization's capacity to respond quickly to changes (Alshurideh, Al Kurdi, Masa'deh, & Salloum, 2021). The relationship between E-compensation and organizational agility corresponds to Social Cognitive Theory, namely the concept of self-efficacy (Taufiq-Hail et al., 2021). Employees who believe their pay is commensurate with their contributions and efforts are more likely to feel empowered and capable of responding to changing conditions, contributing to the organization's overall agility (Udekwe et al., 2021).

H5: E-compensation and benefits significantly affect organizational agility.

Digital training programs can improve organizations' adaptability and responsiveness to change (Kumar & Kumar, 2023). Furthermore, Qwaider Alamro et al., (2019) study the function of online training in boosting employees' skills and knowledge, which can help organizational agility. Investigating how E-training promotes organizational agility is critical in the setting of manufacturing SMEs Kumar and Kumar (2023) in Pakistan. Understanding how digital training techniques improve employee skills, knowledge, and the organization's ability to respond to quick changes is becoming increasingly important as technological improvements impact training delivery methods (Qamar et al., 2023). The relationship between E-training and organizational agility is consistent with the emphasis on learning and self-efficacy in Social Cognitive Theory (Chege & Wang, 2020). Employees who participate in effective E-learning programs are more likely to develop a sense of competence and confidence in learning new abilities, which contributes to the organization's agility by allowing for quick skill adaptation and creativity (Shaikh et al., 2023).

H6: E-training significantly affects organizational agility.

Digital performance management systems can help improve the speed and accuracy of decision-making within enterprises (Chege & Wang, 2020). Furthermore, the importance of performance monitoring and feedback in improving organizational responsiveness (Attar & Abdul-Kareem, 2020). It is critical to investigate the influence of E-performance management on organizational agility Coetzee, Mbiko, and Nel (2023); (Nafei, 2016) in the context of Pakistani manufacturing SMEs. Understanding how digital platforms influence an organization's ability to monitor, assess, and respond to changing conditions is becoming increasingly important as technology transforms performance management processes (Coetzee et al., 2023). The link between E-performance management and organizational agility is consistent with the emphasis on observational learning and feedback in Social Cognitive Theory (Udekwe et al., 2021). Effective E-performance management systems give employees timely and relevant feedback, increasing their capacity to learn, adapt, and contribute to agile decision-making processes (Adula et al., 2022).

H7: E-performance management significantly affects organizational agility.

Technology-driven recruitment processes can improve an organization's flexibility and responsiveness (Rodríguez-Sánchez et al., 2019). Furthermore, the research emphasizes the strategic relevance of recruitment processes in acquiring talent that corresponds with the organization's agility objectives (Nafei, 2016). It is critical to investigate the influence of E-recruitment and selection on organizational agility Rodríguez-Sánchez et al. (2019) in Pakistani manufacturing SMEs. Understanding how these practices affect an organization's ability to quickly discover and onboard talent becomes critical as digitalization reshapes the recruitment market. The relationship between E-recruitment and organizational agility is consistent with the focus of Social Cognitive Theory on observational learning and adaptability (Pradhan & Saxena, 2023). Organizations that use technology-enabled recruitment approaches can attract personnel with the talents and traits required for agile decision-making and rapid change adaptability (Rodríguez-Sánchez et al., 2019).

H8: E-recruitment and selection significantly affect organizational agility.

Integrated HRM practices play an important role in developing a more flexible and adaptable workforce (Attar & Abdul-Kareem, 2020). Furthermore, research emphasizes the strategic relevance of HR practices in creating an organization's agility (Chege & Wang, 2020). It is critical to investigate the combined influence of E-HRM practices on organizational agility

Attar and Abdul-Kareem (2020) in the context of Pakistani manufacturing SMEs. Understanding how the synergy of electronic compensation, training, performance management, and recruitment affects the organization's capacity to respond quickly to changes becomes critical as firms progressively implement digital HR strategies (Qamar et al., 2023). The association between E-HRM practices and organizational agility is consistent with the emphasis on observational learning and collective efficacy in Social Cognitive Theory (Adula et al., 2022). An integrated E-HRM approach can help employees develop a shared perception that their collaborative efforts, aided by technology-driven HR practices, contribute to agile decision-making and successful responses to dynamic situations (Udekwe et al., 2021).

H9: Collectively the E-HRM practices significantly affect the organizational agility.

Organizational agility is critical in driving overall company performance. Furthermore, research shows how an organization's ability to adapt and innovate can contribute to sustainable competitive advantage (Nafei, 2016). It is critical to investigate the relationship between organizational agility and sustainable performance Qamar et al. (2023) in Pakistani manufacturing SMEs. Understanding how an organization's ability to adjust quickly to changes affects its potential to achieve sustainable success while considering economic, social, and environmental issues becomes critical in dynamic contexts (Attar & Abdul-Kareem, 2020). The link between organizational agility and sustainable success is consistent with the emphasis on observational learning and adaptability in Social Cognitive Theory (Pradhan & Saxena, 2023). Agility-focused organizations develop a culture of learning and adaptability in which people are more likely to contribute to sustainable outcomes by adapting their behaviors to changing conditions (Shaikh et al., 2023).

H10: Organizational agility significantly affects sustainable performance.

Agility can act as a mediator between HR practices and business performance (Thathsara & Sutha, 2021). Furthermore, research emphasizes the importance of HR strategies in developing the agility required for sustainable success (Attar & Abdul-Kareem, 2020). It is critical to investigate the function of organizational agility in moderating the relationship between E-compensation and benefit practices and sustainable performance Thathsara and Sutha (2021) in Pakistani manufacturing SMEs. Understanding how agility operates as a mechanism via which digital compensation practices influence the sustainable success of the firm becomes critical. The relationship between E-compensation and benefit, organizational agility, and sustainable performance is consistent with the emphasis on observational learning and self-efficacy in Social Cognitive Theory (Shaikh et al., 2023). Organizations that use fair and effective digital pay systems can instill a sense of empowerment in their employees, increasing their confidence in contributing to both organizational agility and sustainable performance (Pradhan & Saxena, 2023).

H11: Organizational agility significantly mediates the relationship between e-compensation & benefit and sustainable performance.

The significance of knowing how intermediate variables, such as agility, contribute to the relationship between HR practices and outcomes (Thathsara & Sutha, 2021). It is critical to investigate the function of organizational agility in moderating the relationship between E-training and sustainable performance Kumar and Kumar (2023) in Pakistani manufacturing SMEs. Understanding the exact mechanisms involved requires investigating how agility acts as a conduit through which digital training techniques influence sustainable success (Attar & Abdul-Kareem, 2020). The link between E-training, organizational agility, and sustainable success is consistent with Social Cognitive Theory's emphasis on learning and adaptability (Udekwe et al., 2021). Organizations that promote digital training techniques foster an environment of continuous learning and skill development, allowing employees to adapt to changes and contribute to sustainable outcomes (Shaikh et al., 2023).

H12: Organizational agility significantly mediates the relationship between e-training and sustainable performance.

Organizational agility plays a mediating function in the relationship between HR practices and organizational outcomes (Nafei, 2016). Furthermore, the research emphasizes the need to examine how HR policies influence intermediate variables, such as agility, to impact organizational performance (Thatsara & Sutha, 2021). It is critical to investigate the function of organizational agility in mediating the relationship between e-performance management and sustainable performance Coetzee et al. (2023) in Pakistani manufacturing SMEs. Understanding how agility influences sustainable success as a tool for digital performance management methods becomes critical (Attar & Abdul-Kareem, 2020). The relationship between e-performance management, organizational agility, and sustainable performance is consistent with the emphasis on learning and self-regulation in Social Cognitive Theory (Pradhan & Saxena, 2023). Organizations that use successful e-performance management methods foster a culture of continuous development and learning, increasing employees' ability to adapt and contribute to sustainable success (Qamar et al., 2023).

H13: Organizational agility significantly mediates the relationship between e-performance management and sustainable performance.

The influence of HR practices on performance is frequently mediated by intermediary characteristics such as organizational agility (Rodríguez-Sánchez et al., 2019). Furthermore, research emphasizes the necessity of addressing the mechanisms by which HR practices influence organizational outcomes (Qamar et al., 2023). It is critical to investigate the function of organizational agility in moderating the relationship between E-recruitment and selection methods and sustainable success Thatsara and Sutha (2021) in Pakistani manufacturing SMEs. Understanding how agility bridges the gap between digital recruitment methods and sustainable organizational success is critical. The link between E-recruitment and selection, organizational agility, and sustainable success is consistent with Social Cognitive Theory's emphasis on learning and adaptability (Qamar et al., 2023). Effective E-recruitment and selection processes help organizations establish an agile workforce capable of responding to changes and contributing to sustainable outcomes (Pradhan & Saxena, 2023).

H14: Organizational agility significantly mediates the relationship of e-recruitment & selection, and sustainable performance.

According to the findings of the research, organizational agility can influence the association between HR practices and company performance (Nafei, 2016). Furthermore, research demonstrates how agility can increase the effects of HR strategies on organizational outcomes (Saha, Gregar, & Sáha, 2017). It is critical to investigate how organizational agility mediates the association between E-HRM practices and sustainable success (2023); Saha et al. (2017) in Pakistani manufacturing SMEs. Understanding how agility works as a mechanism for electronic HR practices to effect sustainable success is critical. The association between E-HRM practices, organizational agility, and sustainable performance is consistent with the emphasis on observational learning and adaptation in Social Cognitive Theory (Udekwe et al., 2021). Organizations that effectively incorporate E-HRM practices can build an agile culture in which employees learn to leverage technology-enabled HR practices to improve their adaptability and drive sustainable outcomes (Qamar et al., 2023).

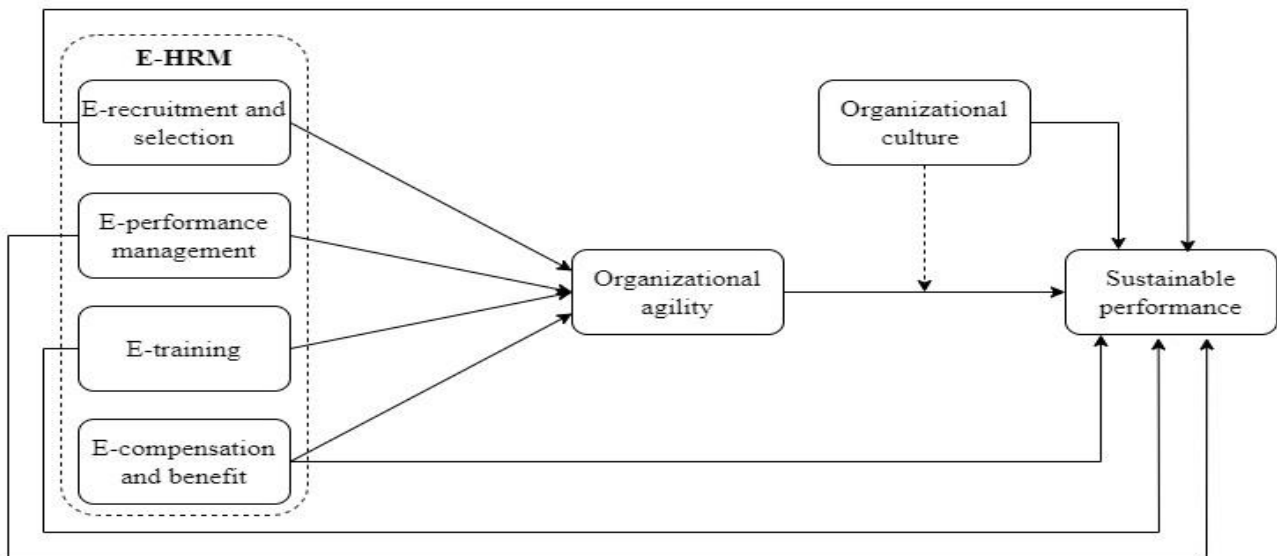
H15: Organizational agility significantly mediates the relationship between E-HRM and sustainable performance.

The effects of various organizational practices on results can be modulated by organizational culture (Imran et al., 2022). Additionally, research highlights the significance of culture in shaping an organization's capacity for adaptation and effectiveness (Imran et al., 2022). It is crucial to explore how organizational culture moderates the relationship between organizational agility and long-term success in Pakistani manufacturing SMEs (Felipe, Roldán, & Leal-Rodríguez, 2017; Idrees, Hynek, Xu, Akbar, & Jabeen, 2022). The relationship between agility and long-term performance must be understood about how the cultural context affects this relationship (Imran et al., 2022). The connection between organizational agility, organizational culture, and sustainable performance is in line with Social Cognitive Theory's emphasis on contextual information and observational learning (Pradhan & Saxena, 2023). An organizational culture that emphasizes flexibility and supports innovative behaviors might boost

the favorable effects of agility on long-term outcomes by fostering a change-friendly environment (Udekwe et al., 2021).

H16: Organizational culture significantly moderates the relationship between organizational agility and sustainable performance.

**Figure 1: Conceptual Model**



### 3. Methodology

In this study, a quantitative research design was utilized to evaluate the complicated relationships between Electronic Human Resource Management (E-HRM) practices, organizational agility, and long-term performance. The investigation was conducted in the context of Pakistani Small and Medium-Sized Manufacturing Enterprises (SMEs). The main objective was to test a comprehensive model that describes how organizational agility is influenced by E-HRM practices, which in turn is influenced by sustainable performance. Furthermore, this research intended to evaluate whether organizational agility mediates the links between E-HRM practices and long-term performance, as well as whether organizational culture moderates the relationship between organizational agility and long-term performance. The investigation included 287 HR and executive employees from Pakistan's manufacturing SME sector. Purposive sampling was employed to ensure that participants were well-versed in E-HRM practices and organizational dynamics. This method made it easier to include people who could contribute valuable insights into the research aims.

Participants who were currently employed in manufacturing SMEs and had a direct engagement or oversight of E-HRM practices inside their firms met the inclusion criteria. Individuals who met these requirements were invited to take part in the study. Individuals who did not have direct exposure to or knowledge of E-HRM practices were excluded, ensuring that the data obtained appropriately represented the research setting. Data was collected using a standardized questionnaire designed based on the theoretical framework and research hypotheses of the study. The questionnaire included proven measuring scales for E-HRM practices, organizational agility, sustainable performance, and organizational culture. The Likert scale was used to collect responses from participants, which ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). Data was gathered primarily through two methods: Google Forms and personal interactions. Participants may complete the questionnaire remotely using Google Forms, which provides a user-friendly digital platform for ease and accessibility. Personal relationships were also used to create rapport with potential volunteers and urge their participation in the study. This method increased response rates and improved data quality by instilling trust and commitment in participants. Throughout the investigation, ethical considerations were strictly followed. Throughout the investigation, ethical considerations were strictly followed. Participants received detailed information about the study's goals, procedures, and rights before consenting. Data collection and analysis were confidential and anonymous. This study protected participants' rights and well-being by following institutional review board



ethical standards. The methodology used is crucial since it enabled a thorough analysis of complicated relationships in the context of Pakistani manufacturing SMEs. The study used quantitative research techniques to advance knowledge in this field by offering empirical proof and insights into how E-HRM practices affect organizational agility and long-term success. Furthermore, the study's ethical approach ensured that the participants' well-being and rights were protected, improving the research's credibility and trustworthiness.

#### **4. Results**

Our measurement model's reliability and validity were rigorously investigated to ensure the correctness and robustness of our study's variables. We concentrated on important metrics such as Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). Cronbach's alpha is a measure of internal consistency that indicates how closely linked the pieces within a construct are. All constructs in our investigation had Cronbach's alpha values considerably above the recommended threshold of 0.7, indicating high reliability. This implies that the components inside each construct were assessing the same underlying notion consistently. Composite Reliability (CR) is another internal consistency metric that takes into consideration both item loadings and error variations. All constructs' CR values exceeded the permissible threshold, suggesting strong internal consistency. This confirms that our constructs reliably measured the intended ideas across all items.

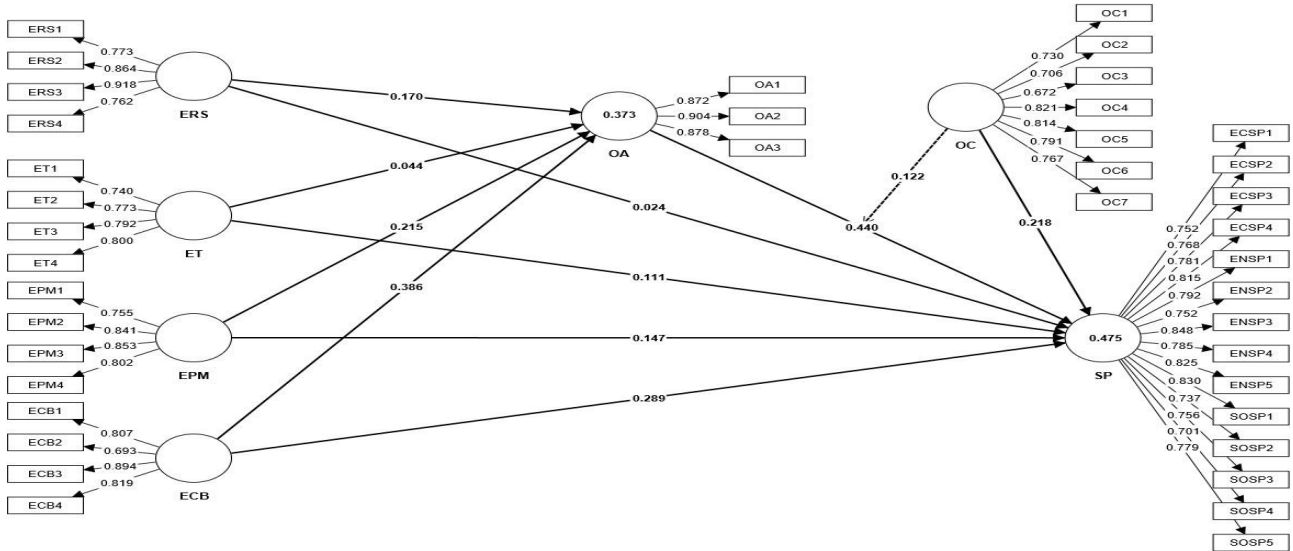
**Table 1: Construct Reliability and Validity**

<b>Variables</b>	<b>Items</b>	<b>Outer Loading</b>	<b>VIF</b>	<b>Cronbach's alpha</b>	<b>CR</b>	<b>AVE</b>
E-Compensation and Benefit	ECB1	0.807	0.807	0.828	0.881	0.650
	ECB2	0.693	0.693			
	ECB3	0.894	0.894			
	ECB4	0.819	0.819			
E-Performance Management	EPM1	0.755	0.755	0.829	0.887	0.662
	EPM2	0.841	0.841			
	EPM3	0.853	0.853			
	EPM4	0.802	0.802			
E-Recruitment and Selection	ERS1	0.773	0.773	0.850	0.899	0.692
	ERS2	0.864	0.864			
	ERS3	0.918	0.918			
	ERS4	0.762	0.762			
E-Training	ET1	0.740	0.740	0.782	0.859	0.603
	ET2	0.773	0.773			
	ET3	0.792	0.792			
	ET4	0.800	0.800			
Organizational Agility	OA1	0.872	0.872	0.861	0.915	0.783
	OA2	0.904	0.904			
	OA3	0.878	0.878			
Organizational Culture	OC1	0.730	0.730	0.877	0.905	0.576
	OC2	0.706	0.706			
	OC3	0.672	0.672			
	OC4	0.821	0.821			
	OC5	0.814	0.814			
	OC6	0.791	0.791			
	OC7	0.767	0.767			
Sustainable Performance	SOSP1	0.830	0.830	0.951	0.956	0.610
	SOSP2	0.737	0.737			
	SOSP3	0.756	0.756			
	SOSP4	0.701	0.701			
	SOSP5	0.779	0.779			
	ECSP1	0.752	0.752			
	ECSP2	0.768	0.768			
	ECSP3	0.781	0.781			
	ECSP4	0.815	0.815			
	ENSP1	0.792	0.792			
	ENSP2	0.752	0.752			
	ENSP3	0.848	0.848			
	ENSP4	0.785	0.785			
	ENSP5	0.825	0.825			

Average Variance Extracted (AVE) is a measure of convergent validity that indicates how well items within a construct capture variance from the construct itself rather than from error.

Our constructs have AVE values greater than the recommended threshold of 0.5, indicating good convergent validity. This means that the items were assessing their associated constructs effectively and were not dominated by random error. Overall, the high values of Cronbach's alpha, Composite Reliability, and Average Variance Extracted across all constructs provide solid evidence of our measuring model's reliability and validity. These findings assure the accuracy of our subsequent analyses and interpretations, assuring the legitimacy of our study's conclusions (see Table 1).

**Figure 2: Measurement Model**



This study used the Heterotrait-Monotrait (HTMT) correlation ratio to test discriminant validity. This method determines how much lower the correlations between constructs are than the correlations between items within the same construct. The figures in the table represent the HTMT ratios of various constructs. Because the HTMT ratio of a construct with itself is always 1.0, the diagonal numbers represent the maximum values of the HTMT ratio for each construct. The HTMT ratio between E-Compensation and Benefits (ECB) and E-Performance Management (EPM), for example, is 0.719, suggesting that the correlation between these constructs is much lower than the correlation between items within each construct. Similarly, the HTMT ratio between E-Recruitment and Selection (ERS) and E-Training (ET) is 0.738, showing that discriminant validity is excellent. The constructs have good discriminant validity because all HTMT ratios are below 1.0. These findings support the idea that our conceptions are unique and not multicollinear. Furthermore, as revealed by the HTMT ratios, the interaction term "OC x OA" has good discriminant validity with the other components. This emphasizes the interaction term's separate nature and independence from other constructs. Finally, the HTMT ratios in Table 2 confirm the discriminant validity of our measurement model, showing that the constructs in our study effectively capture unique characteristics of the phenomena under consideration.

**Table 2: Discriminant Validity (HTMT)**

	ECB	EPM	ERS	ET	OA	OC	SP	OC x OA
ECB								
EPM	0.719							
ERS	0.634	0.557						
ET	0.709	0.868	0.738					
OA	0.700	0.653	0.584	0.624				
OC	0.704	0.800	0.756	0.705	0.838			
SP	0.804	0.757	0.666	0.734	0.887	0.833		
OC x OA	0.570	0.751	0.475	0.661	0.754	0.782	0.625	

The coefficients of determination, also known as R-squared values, in Table 3 provide information on how much variance in the dependent variable is explained by the predictor factors. The R-squared value for Sustainable Performance (SP) is 0.475. This means that taken as a whole, the predictor factors in the model account for roughly 47.5% of the variance in sustainable performance. This denotes a medium level of explanation, indicating that additional variables not accounted for in the model may also be involved in the variation in Sustainable

Performance. The R-squared value for organizational agility (OA) is 0.373. This indicates that about 37.3% of the variability in organizational agility is explained by the predictor variables taken into consideration in the model. Similar to the preceding instance, this intermediate R-squared value implies that factors other than those incorporated in the model also influence organizational agility. Table 3 also includes the Q2 value as a measure of the prediction accuracy of the model. The Q2 result for Sustainable Performance (SP) is 0.711. This result shows that the model's capacity to forecast Sustainable Performance is supported and possesses a respectable predictive power. The Q2 value for organizational agility (OA) is 0.441. This score represents the organizational agility model's predictive power, indicating that the model can satisfactorily forecast this component. The R-squared values provide information about the percentage of variance in the model for Sustainable Performance and Organizational Agility that can be explained by the predictor variables. The Q2 values shed more light on the predictive usefulness of the model. It's crucial to recognize that both constructs are influenced by several factors in addition to those taken into consideration by the model.

**Table 3: R square**

	<b>R-square</b>	<b>Q2</b>
SP	0.475	0.711
OA	0.373	0.441

Table 4 shows F-square values, which evaluate effect size by showing how much variance a predictor variable explains in the dependent variable. F-square values show how much each predictor variable affects the dependent variable. For example, the F-square value in the link between E-Compensation and Benefit (ECB) and Sustainable Performance (SP) is 0.207. This means that E-Compensation and Benefit explains approximately 20.7% of the variance in Sustainable Performance. Similarly, the F-square value for E-Performance Management (EPM) and Sustainable Performance is 0.039, indicating that EPM explains approximately 3.9% of the variance in Sustainable Performance. Moving on, the F-square value for E-Recruitment and Selection (ERS) and Sustainable Performance is 0.001. This means that the influence of ERS on Sustainable Performance is minor, accounting for approximately 0.1% of the variance.

The F-square value for E-Training (ET) and Sustainable Performance is 0.026, indicating that ET explains approximately 2.6% of the variance in Sustainable Performance. The F-square value for Organizational Agility (OA) and Sustainable Performance is 0.369, indicating that OA has a significant impact and accounts for approximately 36.9% of the variance seen in Sustainable Performance. Organizational Culture (OC) explains 6.4% of Sustainable Performance variance, according to the F-square value of 0.064. The connections between ECB, EPM, ERS, ET, and OA have F-square values of 0.152, 0.039, 0.032, and 0.001. These numbers represent the proportion of Organizational Agility variance explained by each of these predictor variables. In summary, F-square values reveal the relative influence of each predictor variable on the dependent and mediator variables. These values aid in quantifying effect sizes and emphasizing the significance of specific predictor variables in explaining variance in the constructs under inquiry.

**Table 4: F Square**

	<b>F square</b>
ECB -> SP	0.207
EPM -> SP	0.039
ERS -> SP	0.001
ET -> SP	0.026
OA -> SP	0.369
OC -> SP	0.064
ECB -> OA	0.152
EPM -> OA	0.039
ERS -> OA	0.032
ET -> OA	0.001

Key indicators for evaluating the model's fit and prediction power are presented in Table 5. 0.441 is the Q2predict value. The predictive relevance of the model is represented by this value. It shows that the model's predictive power is 44.1%, indicating that the included variables together help to understand and forecast the study's outcomes to a modest amount. RMSE stands at 0.069. The average difference between the actual values and the values the model

predicted is measured by the RMSE. The average difference in this instance is roughly 0.069 units. A better fit between the model's predictions and the actual data is often indicated by lower RMSE values. There is an MAE of 0.072. Another indicator of how accurately the model predicts the future is MAE. It shows the typical absolute difference between the expected and observed values. The better the model's predictions match the data seen, the lower the MAE value. In conclusion, Table 5's metrics help to comprehend the model's predictive performance as well as its capacity to precisely estimate and anticipate the outcomes of interest. The low RMSE and MAE values suggest that the model's predictions are reasonably close to the actual observed values, and the moderate Q2predict value suggests a good predictive relevance.

**Table 5: Model Fit**

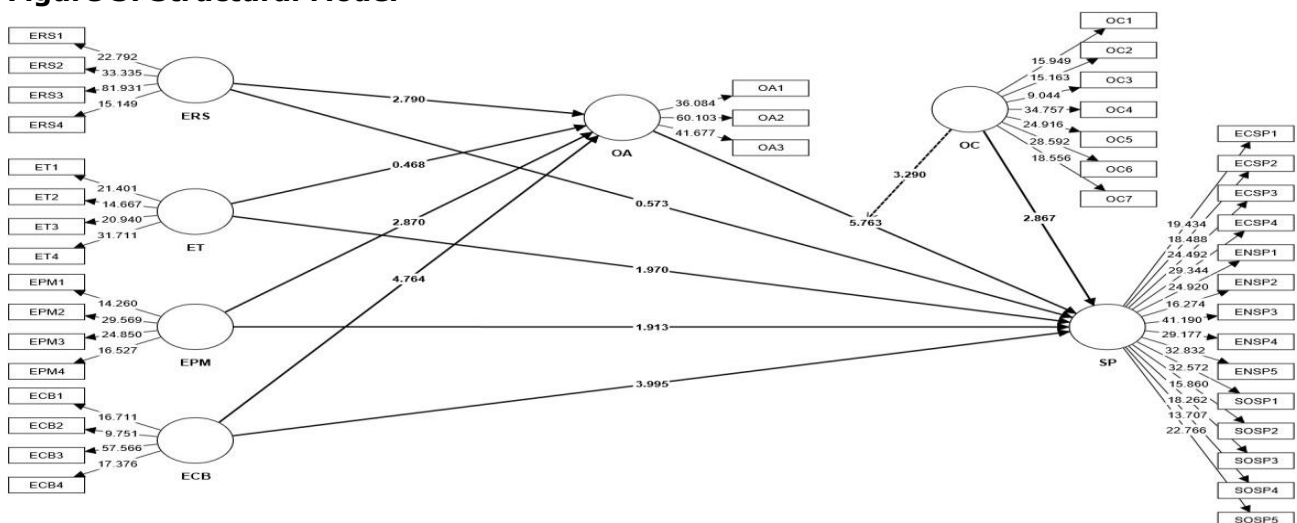
Q <sup>2</sup> predict	RMSE	MAE
0.441	0.069	0.072

Table 6 displays the direct path coefficients, which shed light on the strength and importance of links between the model's numerous predictor variables and the related dependent variables. The coefficients are used to interpret other statistical data. The path coefficient between E-Recruitment and Selection (ERS) and Sustainable Performance (SP) is 0.024, but the P value is 0.283, which means that this link is not statistically significant. On the other hand, with a path coefficient of 0.147, E-Performance Management (EPM) has a big effect on Sustainable Performance (SP). The corresponding P value is 0.028, indicating that this association is accepted as significant. Similarly, with a path coefficient of 0.111 and a P value of 0.024, E-Training (ET) had a substantial positive impact on Sustainable Performance (SP). With a path coefficient of 0.289 and a very significant P value of 0.000, E-Compensation and Benefit (ECB) has a considerable positive influence on Sustainable Performance (SP). This finding indicates a substantial link between E-Compensation and Benefits and Long-Term Performance. Organizational agility has good effects on both E-Recruitment and selection and E-Performance Management, which have path coefficients of 0.170 and 0.215, respectively.

**Table 6: Path Coefficient**

	Original sample	Standard deviation	T statistics	P values	Decision
ERS -> SP	0.024	0.042	0.573	0.283	Rejected
EPM -> SP	0.147	0.077	1.913	0.028	Accepted
ET -> SP	0.111	0.057	1.970	0.024	Accepted
ECB -> SP	0.289	0.072	3.995	0.000	Accepted
ERS -> OA	0.170	0.061	2.790	0.003	Accepted
EPM -> OA	0.215	0.075	2.870	0.002	Accepted
ET -> OA	0.044	0.093	0.468	0.320	Rejected
ECB -> OA	0.386	0.081	4.764	0.000	Accepted
OA -> SP	0.440	0.076	5.763	0.000	Accepted
OC -> SP	0.218	0.076	2.867	0.002	Accepted

**Figure 3: Structural Model**



The P values of 0.003 and 0.002 demonstrate the relevance of these correlations. E-Training does not affect Organizational Agility statistically with a path coefficient of 0.044 and a P value of 0.320. However, E-Compensation and Benefit, which has a path coefficient of 0.386 and a highly significant P value of 0.000, has a strong effect on OA. Also, Organizational Agility has a big effect on Sustainable Performance, as shown by a path coefficient of 0.440 and a P value of 0.000. This shows that OA makes a big difference to SP. In conclusion, Table 6 sheds light on the direct correlations between predictor and dependent variables. The P value-based acceptance or rejection decisions highlight the statistical significance of these associations and their contributions to the overall model.

Table 7 summarizes the outcomes of the mediation path analysis, which focuses on the function of organizational agility as a moderator in the links between predictor variables and long-term performance. The route analysis suggests that organizational agility mediates the association between E-performance management and sustainable performance. With the standard deviation value of 0.039, the path coefficient value came as 0.094. The P value is 0.008 since the T statistic is 2.403. This finding supports the adoption of the mediation approach, indicating that organizational agility does operate as a bridge between e-performance management and long-term performance. E-learning, organizational agility, and long-term success are linked. With a 0.043 standard deviation, the route coefficient is 0.125. The P value is 0.001 because the T statistic is 2.906. This method of mediation is accepted, showing that organizational agility mediates the association between e-training and long-term performance. Through the mediation of organizational agility, e-compensation, and benefit also show a mediated link with long-term performance. With a standard deviation of 0.050, the path coefficient is 0.170. The P value is 0.000 because the T statistic is 3.362. This path of mediation is accepted, emphasizing the importance of organizational agility as a bridge between e-compensation and benefit and long-term performance. A mediation path is also built for e-recruitment and selection, organizational agility, and long-term performance. With a standard deviation of 0.030, the route coefficient is 0.075. The P value is 0.006 because the T statistic is 2.539. This finding lends support to the acceptance of the mediation approach, demonstrating that organizational agility acts as a bridge between e-recruitment and selection and long-term performance. To summarize, Table 7 reveals the mediation effects of organizational agility in linking predictor factors to long-term success. The acknowledged mediation channels highlight the significance of organizational agility as a critical intermediate in these connections, emphasizing its impact on the result of long-term performance.

**Table 7: Mediation Analysis**

	<b>Original sample</b>	<b>Standard deviation</b>	<b>T statistics</b>	<b>P values</b>	<b>Decision</b>
EPM -> OA -> SP	0.094	0.039	2.403	0.008	Accepted
ET -> OA -> SP	0.125	0.043	2.906	0.001	Accepted
ECB -> OA -> SP	0.170	0.050	3.362	0.000	Accepted
ERS -> OA -> SP	0.075	0.030	2.539	0.006	Accepted

Table 8 summarizes the findings of the moderation study, with a particular emphasis on the moderating influence of the interplay between organizational culture and organizational agility in the relationship with long-term performance. The results show that the interaction term "OC x OA" moderates the association with Sustainable Performance considerably. This interaction has a path coefficient of 0.122 and a standard deviation of 0.037. The T statistic is 3.290, which results in a P value of 0.001. This moderation path has been recognized, emphasizing the significance of the interaction between organizational culture and organizational agility in determining the link with long-term performance. To summarize, the data in Table 8 show that the interaction between organizational culture and organizational agility plays a moderating effect in determining the association with long-term performance. Acceptance of this moderation method emphasizes the importance of recognizing the combined effect of these two factors on Sustainable Performance.

**Table 8: Moderation Analysis**

	<b>Original sample</b>	<b>Standard deviation</b>	<b>T statistics</b>	<b>P values</b>	<b>Decision</b>
OC x OA -> SP	0.122	0.037	3.290	0.001	Accepted

## 5. Discussion

The purpose of this study was to investigate the complex relationships between electronic human resource management practices, organizational culture, organizational agility, and their combined impact on long-term performance in the context of manufacturing SMEs in Pakistan. The results of this study shed important light on how OA, OC, and E-HRM practices work together to improve Sustainable Performance. The first hypothesis (H1) proposed that E-Compensation and Benefits had a significant impact on Sustainable Performance. The findings of the study, which shows a positive and significant association among E-Compensation and Benefit and Sustainable Performance, support this hypothesis. This finding is in line with previous studies that have emphasized the importance of remuneration and benefits in boosting worker motivation, delight, and organizational success (Zaman et al., 2021). The results are consistent with earlier studies that showed a connection between employee well-being through remuneration and the accomplishment of organizational sustainability goals (Qamar et al., 2023). Similarly, H2 asserted that E-Training has a significant effect on sustainable performance. This hypothesis is supported by the findings of the study, which show that e-training has a positive and significant effect on sustainable performance. This finding is in line with earlier studies emphasizing the need for ongoing employee training in enhancing capabilities, records, and flexibility, in the end contributing to higher organizational performance (Shaikh et al., 2023). The findings are consistent with the idea that investing in employee training makes for a more knowledgeable and adaptable workforce, which has a beneficial impact on sustainability outcomes.

H3 suggested that E-Performance Management has a considerable impact on sustainable Performance. The results of the study support this hypothesis by showing a strong and positive correlation between sustainable performance and e-performance management. These findings align with research that underscores the role of effective performance management practices in enhancing employee performance, engagement, and overall organizational success (Qamar et al., 2023). H4 hypothesized a significant effect of E-Recruitment and Selection on Sustainable Performance. The results substantiate this hypothesis, highlighting a positive and significant relationship between E-Recruitment and Selection and Sustainable Performance. This aligns with previous studies indicating that effective recruitment and selection practices are pivotal in acquiring talented employees who contribute to sustainable organizational growth. H5 proposed a collective significant impact of all E-HRM practices on Sustainable Performance. The findings validate this hypothesis, showcasing a collective positive and significant relationship between E-HRM practices and Sustainable Performance. This highlights the synergy of various E-HRM approaches in contributing to a flexible and competent workforce, which benefits organizational sustainability (Thatsara & Sutha, 2021). H6 hypothesized a significant relationship between E-Compensation and Benefits and Organizational Agility. This hypothesis is supported by the findings of the study, which indicate a significant and positive association between organizational agility and e-compensation and benefits. This finding is consistent with previous research highlighting the significance of incentives and compensation in increasing employee motivation and agility (Thatsara & Sutha, 2021). Additionally, the findings show that Organizational Agility strongly mediates the links between Electronic Compensation and Benefits, Electronic Performance Management, Electronic Recruitment and Selection, and Sustainable Performance (H7-H10). This supports the notion that an agile organizational structure can increase the impact of HR practices on an organization's overall performance (Thatsara & Sutha, 2021).

Organizational Culture plays a moderating impact in the link between Organizational Agility and Sustainable Performance (H11). This result is consistent with the notion that agility initiatives are more effective when a corporate culture is supportive. The outcomes of this study contribute to the existing literature by highlighting the importance of aligning E-HRM practices, Organizational Agility, and Organizational Culture for achieving Sustainable Performance. Organizations that recognize the significance of integrating these elements can create a dynamic and adaptable workforce that positively impacts overall sustainability goals. In conclusion, this research sheds light on the multifaceted relationships within manufacturing SMEs in Pakistan. By confirming the impact of E-HRM practices, Organizational Agility, and Organizational Culture on Sustainable Performance, this study emphasizes the importance of a holistic approach to HR practices for achieving sustainable organizational success.

## **6. Conclusion**

Finally, this research has delved into the intricate web of relationships between electronic human resource management practices, organizational agility, organizational culture, and their collective influence on long-term performance in the realm of manufacturing Small and Medium-sized Enterprises (SMEs) in Pakistan. The research findings give useful insights that highlight the need for a complete and integrated strategy for human resource management to attain long-term organizational success. The proven favorable effects of e-compensation and benefit, e-training, e-performance management, and e-recruitment and selection on long-term performance highlight the critical role that these practices play in enhancing organizational effectiveness and resilience. Furthermore, the discovered mediation role of organizational agility and the moderating influence of organizational culture highlight the interconnectedness of these variables in contributing to the achievement of long-term performance goals. This study not only adds to the empirical understanding of these relationships, but also has practical implications for manufacturing SMEs in Pakistan and beyond, implying that a harmonious alignment of HR practices, agility, and culture is critical in achieving sustainable success.

### **6.1. Implications of the Study**

This study's theoretical implications broaden our understanding of the complex linkages between electronic human resource management techniques, organizational agility, organizational culture, and long-term success. This study adds to the current body of information on human resource practices and their consequences by experimentally validating the favorable effects of e-compensation and benefit, e-training, e-performance management, and e-recruitment and selection on long-term performance. The identification of organizational agility as a mediator and organizational culture as a moderator highlights the importance of these variables in shaping the interactions between them. These findings contribute to our understanding of organizational dynamics, underlining the necessity of examining the interconnection of HR practices, agility, and culture in achieving long-term organizational success. As a result, our study contributes to theoretical frameworks by providing a nuanced perspective on the interaction of these key aspects.

This study's practical consequences provide useful insights for managers and practitioners in manufacturing Small and Medium-sized Enterprises (SMEs). The proven positive effects of E-HRM practices on Sustainable Performance highlight the significance of investing in employee compensation, training, performance management, and recruitment processes. Organizations should understand these practices' potential to improve overall performance and contribute to long-term growth. Furthermore, the mediation of organizational agility implies that cultivating an agile organizational structure is critical for converting HR strategies into actual outcomes. Businesses should aim to create a responsive, adaptable work environment that can change with the needs of the marketplace. The moderating effect of organizational culture also emphasizes how crucial it is to foster a supportive and adaptable culture that amplifies the positive effects of organizational agility on long-term performance. For practitioners, this research emphasizes the relevance of comprehensive HR strategies and the importance of examining the interplay between practices, agility, and culture to achieve long-term sustainability goals.

### **6.2. Limitations and Future Research Directions**

Despite its significant contributions, this study has limitations. For starters, the study focused solely on manufacturing SMEs in Pakistan, which may limit the generalizability of findings to other industries or geographical situations. Furthermore, using cross-sectional data precludes the discovery of causal linkages, whereas longitudinal research could provide deeper insights into the dynamics over time. The use of self-reported data raises the prospect of common method bias. Furthermore, the study focused on certain E-HRM behaviors, and the exclusion of other potential practices may restrict the findings' comprehensiveness. Finally, because the study relied on a single mediator (Organizational Agility) and a single moderator (Organizational Culture), it may have overlooked the possible influence of additional variables that could contribute to the correlations under inquiry.

Future research options exist as a result of the insights revealed, which could enhance our understanding of the links investigated in this work. For starters, performing similar studies in multiple industries and countries would improve the generalizability of findings. Longitudinal studies could provide a more comprehensive picture of these variables' temporal dynamics and

causal linkages. In future studies, a multi-source or multi-method strategy could be used to address common technique bias. Exploring more E-HRM practices and their effects on Sustainable Performance would provide a more comprehensive picture. Furthermore, investigating potential boundary conditions of the mediation and moderation effects, such as business size or cultural setting, could help us understand them better. Finally, studying the interactions and interplay of numerous mediators and moderators may provide a more detailed understanding of the model's intricate linkages.

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