

Effect of Sustainable HRM Practice on Organizational Performance Mediated by Knowledge Management, Work Engagement and Organizational Culture

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ABSTRACT

The manufacturing sector is currently under significant pressure to enhance productivity and sustainability due to rapid industry changes, technological advancements, and intensified global competition. This creates an urgent need for integrating sustainable Human Resource Management (HRM) practices to support long-term organizational performance. This study investigates the impact of sustainable HRM practices on organizational performance within the manufacturing industry in Batam, Indonesia. Employing a quantitative research approach, data were collected through structured questionnaires distributed to 370 employees across multiple companies. The research involved several stages of data analysis, including validity testing, reliability analysis, and structural equation modelling (SEM), to evaluate the hypothesized relationships among variables. The results revealed that sustainable HRM practices significantly influence knowledge management, work engagement, and organizational culture, which collectively enhance organizational performance. These findings imply that manufacturing firms should emphasize the development of sustainable HRM strategies, such as effective knowledge sharing systems and fostering a positive organizational environment. Implementing such practices will improve employee engagement, promote innovation, and sustain competitive advantage. Overall, this research underscores the importance of integrating sustainability initiatives into HRM practices to achieve resilient and high-performing manufacturing organizations.

Keywords: Knowledge Management, Organizational Culture, Organizational Performance Sustainable Human Resource Management (HRM) Practices, Work Engagement.



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INTRODUCTION

In the fast-paced and competitive manufacturing sector, sustainable human resource management (SHRM) is essential for enhancing organizational performance. SHRM encompasses strategies and practices that prioritize not only immediate results but also the long-term welfare of employees, the growth of the organization, and the broader social and environmental impact. Maintaining strong employee engagement continues to be a key factor in workplace success (Yuswardi & Chrisjunianti, 2022). In the context of manufacturing, sustainability becomes even more significant due to the capital-intensive nature of the industry and the ever-changing demands of the business environment (Norma & Putri, 2022).

The effectiveness of organizational performance is not solely determined by SHRM practices but is also influenced by how the company manages knowledge, work engagement, and organizational culture. Knowledge management enables the company to create, share, and utilize the information and skills possessed by its employees to enhance innovation and competitiveness (Asri, 2020). Work engagement plays a role in boosting employee productivity and commitment to their tasks, ultimately improving performance outcomes (Asri, 2021). Meanwhile, a strong and positive organizational culture can foster a work environment that supports collaboration, flexibility, and adaptability to change (Ababneh, 2020).

In the manufacturing sector, where efficiency and innovation are critical to success, organizational performance is greatly influenced by the interconnected roles of Sustainable Human Resource Management (SHRM), knowledge management, work engagement, and organizational culture. This study seeks to examine how sustainable SHRM practices affect organizational performance by analyzing the impact of these three key elements (Dini et al., 2024). The research aims to offer a deeper understanding of how these components work together to support the long-term success of Manufacturing Batam amid growing competition in the industry (Patwary et al., 2024).

The novelty of this article lies in its comprehensive examination of the interconnected roles of Sustainable Human Resource Management (SHRM), Knowledge Management, Work Engagement, and Organizational Culture specifically within the manufacturing sector in Batam. Unlike previous studies that often focus on these variables in isolation or in different industrial contexts, this research uniquely highlights how integrated sustainable HRM practices can holistically influence organizational performance through multiple mediating factors. Furthermore, the study applies a rigorous quantitative approach using structural equation modeling (SEM) to empirically validate these relationships, providing robust and context-specific insights. It also emphasizes the urgent need for sustainability-oriented HR strategies in a rapidly evolving and competitive manufacturing environment, addressing a gap in the existing literature that tends to overlook the practical implications of integrating environmental and social considerations into HRM frameworks in emerging industrial regions. By doing so, the research offers novel contributions to both academic understanding and managerial practice, proposing actionable strategies for manufacturing firms to promote long-term resilience and performance amid global challenges.

The manufacturing sector is a crucial industrial sector supporting Indonesia's economic growth. It contributes 0.90 percent of the total national economic growth of 5.03 percent in 2024, meaning the manufacturing sector will contribute 20 percent of national economic growth. Data shows that the manufacturing sector plays a significant role in national economic growth. The growth of the manufacturing sector also significantly contributes to national labor absorption, from 17.43 million workers in 2020 to 19.96 million workers in 2024, indicating a significant increase in labor absorption and national economic growth. The manufacturing sector's contribution to GDP also remains low, although it is expected to increase slightly to 18.98% in 2024. At current prices, the manufacturing industry reached Rp 4,202.9 trillion in 2024, while the total national GDP was Rp

22,139 trillion. With a contribution of nearly 20%, or one-fifth of national GDP, the manufacturing sector's impact is crucial for Indonesia's economic growth (www.cnbcindonesia.com).



Figure 1. Distribution and Growth of GDP by Industry Sector

Source: BPS (2024)

The Batam manufacturing sector demonstrates high levels of employee engagement, particularly in the dimension of enthusiasm for work, with an outer loading value of 0.907, indicating a strong positive response among employees. Employees reported feeling motivated, inspired, and committed to their tasks, which significantly enhances organizational performance. Concerning organizational culture, it fosters collaboration, transparency, and innovation, as evidenced by high indicator values like logistics integration, cost control, and HR management. Such a culture supports efficient resource management and teamwork, which ultimately improves productivity and long-term success. These practices create an environment where employees are motivated and aligned with organizational goals, directly contributing to enhanced performance and competitive advantage in Batam's manufacturing industry.

LITERATURE REVIEW

Sustainable HRM Practice (SHRM) on Knowledge Management (KM)

A connection exists between knowledge management and sustainable human resource management (HRM) practices within organizations (Donnelly, 2019). Specifically, research has shown that effective knowledge management within teams and employee interactions is crucial for sustaining organizational performance. According to Rodríguez, Velastequí (2019) knowledge management is defined as the provision of information and knowledge tasks to assist others and collaborate with others to solve problems, develop new ideas, or implement policies and procedures. Sustainable HRM Practice (SHRM) positively influences Knowledge Management (KM) by fostering an organizational culture that emphasizes knowledge sharing, collaboration, and continuous learning. SHRM strategies, such as training and development focused on sustainability principles, create an environment where employees are motivated to share expertise and best practices. This integration enhances the organization's ability to effectively capture, disseminate, and utilize knowledge, leading to improved innovation, efficiency, and adaptability. Ultimately, SHRM-driven KM systems support long-term organizational sustainability by ensuring that critical knowledge resources are accessible and aligned with strategic goals. Moreover, knowledge management benefits team performance and collaboration (Alfandi & Bataineh, 2023).

H1: Sustainable HRM practices have a positive impact on Knowledge Management.

Sustainable HRM Practice (SHRM) on Work Engagement (WE)

This study has identified a relationship between work engagement and sustainable HRM practices (Abu-Mahfouz et al., 2023). Research on the relationship between work engagement and sustainable human resource management practices is very limited (Edeh et al., 2023). Sustainable

HRM Practice (SHRM) significantly enhances Work Engagement (WE) by creating a supportive and motivating work environment. SHRM initiatives, such as providing professional growth opportunities, recognition, and promoting employee well-being, foster enthusiasm and dedication among employees. These practices boost energy, commitment, and a sense of purpose in their roles, leading to higher levels of enthusiasm, inspiration, and motivation. Engaged employees are more productive, innovative, and committed to organizational goals, which ultimately improves performance. Therefore, effective SHRM strategies are vital for fostering work engagement, ensuring sustained employee motivation and long-term organizational success. HRM can enhance performance, learning, and innovation. This highlights the importance of work engagement as a critical factor in organizational success (Lopez-Cabrales & Valle-Cabrera, 2020).

H2: Sustainable HRM Practices positively influence work engagement.

Sustainable HRM Practice (SHRM) on Organizational Culture (OC)

Sustainable HRM practice (SHRM) refers to human resource management practices that consider the social, economic, and environmental impacts of HR activities within organizations. Integrating SHRM into organizational culture (OC) can help companies select employees with principles and commitments aligned with sustainability. Organizations can identify candidates with environmental awareness and a dedication to sustainable business ethics (Javed et al., 2023). Sustainable HRM Practice (SHRM) influences Organizational Culture (OC) by embedding sustainability principles into core values, behaviours, and practices. SHRM promotes a culture of collaboration, transparency, and environmental responsibility, encouraging employees to align their actions with sustainable and ethical standards. Training programs on sustainability and eco-friendly practices foster a shared understanding and commitment among staff, shaping a culture that supports innovation, adaptability, and social responsibility. This integration helps build a resilient organizational culture that enhances teamwork, trust, and long-term success, positioning the organization as environmentally and socially conscious, which benefits overall performance and stakeholder relationships. Training programs on sustainability, such as sustainable business ethics or eco-friendly practices, can foster an organizational culture that supports sustainability (Piwowar-Sulej, 2024).

H3: Sustainable HRM practice has a positive influence on organizational culture.

Knowledge Management (KM) on Organizational Performance (OP)

Knowledge management is a deliberate approach to optimizing the business knowledge economy. It encompasses various components, such as organizational structure, culture, human resource practices, and technology (de Koker & du Plessis, 2020). Various knowledge management models propose that an effective knowledge management framework should incorporate both enablers and core knowledge processes. This framework should be grounded in a clear understanding of knowledge-related activities and the infrastructure that underpins organizational functions. According to Sahibzada et al., (2020), the mechanisms used by organizations to enhance the sustainable utilization of knowledge are referred to as knowledge management enablers (Abu-Mahfouz et al., 2023).

H4: Knowledge management has a positive impact on organizational performance.

Work Engagement (WE) on Organizational Performance (OP)

In terms of organizational performance, improving work engagement is one of the factors that can enhance organizational performance. According to Sofiah et al., (2022), work engagement is a critical component of business success. Some organizations recognize that work engagement is their greatest asset, enabling them to compete with both internal and external organizations. In the study conducted by Sofiah et al., (2022), they found that work engagement is an essential component required to achieve the success and sustainability of organizational performance. Those who are enthusiastic and engaged in their work generally perform better than others and contribute to the organization's success (Safitri, 2022).

H5: Work Engagement has a positive effect on Organizational Performance.

Organizational Culture (OC) on Organizational Performance (OP)

Culture is crucial for encouraging critical thinking and driving innovation (SUHARDI, 2021). However, some previous studies have not found a relationship between organizational culture and organizational performance (Yu & Wang, 2018). It is clear that organizational culture is important for innovation and adaptation in higher education institutions and for improving organizational performance. Therefore, It is necessary to provide a clear explanation of how organizational culture contributes to improving sustainable performance. In practice, organizational culture is often identified as a factor behind errors and failures within a company. Therefore, it is essential to develop organizational culture in a sustainable way to align with customer expectations of quality, ultimately enhancing both customer satisfaction and overall organizational performance. (Hambali & Idris, 2020).

H6: Organizational culture has a positive effect on organizational performance.

Sustainable HRM Practice (SHRM) with Organizational Performance (OP) mediated by Knowledge Management (KM)

Kokkaew et al., (2022) conducted a study showing that the knowledge management process significantly influences organizational performance. Knowledge Management is an essential tool for organizations to gain a competitive advantage by capturing and disseminating information. According to Qader et al., (2022), a positive relationship was found between this process and organizational performance. Sustainable HRM Practice (SHRM) impacts Organizational Performance (OP) through the mediating role of Knowledge Management (KM) by facilitating effective sharing, creation, and application of knowledge within the organization. SHRM encourages environments that promote learning, innovation, and continuous improvement, which are critical for KM initiatives. When knowledge is systematically managed, it enhances decision-making, operational efficiency, and adaptability, ultimately improving performance outcomes. The integration of SHRM and KM fosters a culture of collaboration and learning, enabling organizations to respond swiftly to market changes, innovate continuously, and sustain long-term competitive advantages. Sharing knowledge with employees who are required for daily tasks is necessary to improve the organizational performance index (Rajiani & Normuslim, 2023).

H7: The implementation of sustainable HRM practices positively affects organizational performance, mediated by knowledge management.

Sustainable HRM Practice (SHRM) with Organizational Performance (OP) mediated by Work Engagement (WE)

Work engagement serves as a key intermediary that connects various critical factors to overall organizational performance within a constantly evolving business landscape. Previous research Montani et al., (2020) shows that work engagement has a significant impact as a mediator. The level of work engagement is reflected by the enthusiasm, attachment, and commitment of employees to their responsibilities and organizational goals. As a mediator, work engagement helps understand how HRM practices, talent management, knowledge management, and organizational innovation can enhance performance. Work engagement is anticipated to enhance the connection between management elements and their influence on organizational performance.

H8: The implementation of sustainable HRM practices positively affects organizational performance, mediated by work engagement.

HRM Practice (SHRM) and Organizational Performance (OP) Mediated by Organizational Culture (OC)

Organizational culture is crucial in encouraging employees' interest in learning more. If an organization does not encourage employees to learn and increase their knowledge, employees will not be motivated to engage in learning activities. To ensure that employees reach their full potential, additional support from the organization, such as effective learning programs, is required (Hermawan, 2023). Research conducted by previous studies (Hermawan, 2023; Grueso-Hinestroza et al., 2018; Chaerunissa & Pancasasti, 2021) indicates that organizational culture has a significant positive impact on employee performance. Sustainable HRM Practice (SHRM) positively influences Organizational Performance (OP) through the mediator of Organizational Culture (OC)

by shaping values, behaviours, and norms aligned with sustainability and innovation. When SHRM integrates practices supporting ethics, collaboration, and adaptability, it fosters a strong, positive organizational culture that encourages employee engagement, creativity, and commitment. This culture enhances organizational effectiveness, drives performance improvements, and supports strategic goals. By aligning HR practices with a sustainable organizational culture, companies create a cohesive environment that promotes continuous development, adaptability, and long-term competitive advantage, ultimately leading to superior organizational performance.

H9: The implementation of sustainable HRM practices positively affects organizational performance, mediated by organizational culture.

METHODS

Design in Research

This research is designed to collect and analyze relevant data to answer the research questions. First, this research will select an appropriate sample from the population of employees working in the manufacturing industry in Batam. Then, through a questionnaire This study will present respondents with questions related to talent management, HR practices, knowledge management, organizational innovation, work engagement, and organizational performance. Additionally, statistical analysis will be used to examine the relationships among these variables.

Population and Sample

The population of this study consists of employees working at Manufacturing Batam, a prominent player in the manufacturing sector. The company has a diverse workforce spread across various departments, and the study will aim to gather insights from this sample to understand the broader implications of SHRM practices in a manufacturing environment. Amin et al., (2023) It was stated that the sample size representing the population is influenced by the chosen confidence level and margin of error (significance level). A higher confidence level requires a larger sample size, while a lower confidence level allows for a smaller sample. This study employed a random sampling technique.

Table 1. Employee Size

Name of company	Employee
PT Kwong Fai Manufacturing Batam	600
PT Panasonic Industrial Device Batam	2000
PT Cladtek Bi-Metal Manufacturing	1500
PT Shimano Batam Manufacturing	300

The sample size used was based on the formula by Hair et al., (2019), which states that the total number of questions should be multiplied by 10. The research questionnaire contained 26 questions, resulting in a required sample size of 260 respondents. A total of 374 respondents completed the questionnaire; however, 4 questionnaires were deemed invalid. Therefore, the remaining 370 respondents will be used as the sample for this study.

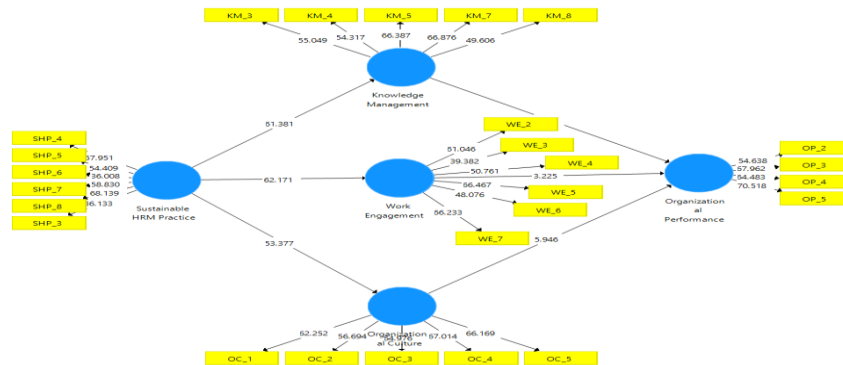


Figure 2. Empirical Research Method
Source: Data Processed (2024)

RESULTS AND DISCUSSION

After distributing a questionnaire with a google form online to employees working at Manufacturing In Batam located in Batam, the results of the needed research data were obtained. Demographic data shows:

Table 1. Data Analysis

No	Demographic Item	Category	Frequency	%
1	Gender	Male	195	52,1
		Female	179	47.9
2	Age	< 20 Tahun	48	12.8
		21 – 30	209	55.9
		31 – 40	90	24.1
		>45	27	7.2
3	Last Education	Senior High School	119	31.7
		Diploma	135	36.6
		Bachelor	120	30.3
4	Monthly Income	Rp 4.500.000 – 5.500.000	90	24.3
		Rp 5.500.000 – 6.500.000	130	28.7
		Rp 6.500.000 – 7.500.000	97	26.2
		>7.500.000	57	20.8
5	Position	Staff/Clerk Level	253	67.6
		Supervisor Level	91	24.3
		Managerial Level	30	8.1
6	how long have you worked in this company	< 1 Year	99	26.3
		1-2 year	114	30.3
		3-4 Year	93	25
		>4 Year	68	18.4
7	Company Established	1-3 Year	38	10.3
		4-6 Year	105	28.3
		7-9 Year	122	32.7
		>9 Year	109	28.7

Source: Data Processed (2025)

Table 2. Correlations, Measures of Reliability, and Validity

Constructs	Items	Loadings	Cronbach's Alpha	CR	AVE
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Sustainable Practice	HRM	SHP1	0.883	0.940	0.953	0.771
		SHP2	0.883			
		SHP3	0.868			
		SHP4	0.891			
		SHP5	0.894			
		SHP6	0.848			
Knowledge Management		KM1	0.883	0.933	0.949	0.789
		KM2	0.881			
		KM3	0.898			
		KM4	0.897			
		KM5	0.882			
Organizational Culture		OC1	0.892	0.939	0.953	0.803
		OC2	0.885			
		OC3	0.902			
		OC4	0.898			
		OC5	0.903			
Work Engagement		WE1	0.894	0.946	0.957	0.787
		WE2	0.871			
		WE3	0.881			
		WE4	0.907			
		WE5	0.870			
		WE6	0.899			
Organizational Performance		OP1	0.900	0.924	0.946	0.814
		OP2	0.897			
		OP3	0.897			
		OP4	0.915			

Source: Data Processed (2025)

Indicator Reliability is carried out by determining whether the suitability of the indicators to a construct is reliable or not (Hair et al., 2019). As can be seen in table 1, the results of the outer loading values in Sustainable HRM Practice (SHRM) variable range from 0.848 – 0.894; Knowledge management (KM) ranges from 0.881 – 0.898; Organizational Culture (OC) ranges from 0.885 – 0.903; Work engagement ranges from 0.871-0.907; Organizational performance (OP) ranges 0.897 – 0.915. All indicators are declared valid because the outer loading value is more than 0.6 according to (Ghozali, 2021). Internal Consistency reliability defines the extent to which items in an instrument measure different aspects of the same construct. The composite reliability values in table 2 range from 0.946 to 0.957. Based on the guidelines from Ghozali (2021) Cornbach's alpha, Rho.A, Composite Reliability values can be concluded that they meet the criteria with a value of 0.6 or more.

According to Ghozali (2021) individual indicators with correlation values above 0.7 are considered reliable. However, in the study of increasing the scale, the factor loading value of 0.5 to 0.6 is still acceptable, convergent validity can be met when each variable has an AVE value above 0.5 (Ghozali, 2021). It can be seen in table 1, the AVE value has shown that it meets the convergent validity threshold.

Table 3 Direct Research Hypotesis

Hypothesis	Original Sample	T-Statistics (STDEV)	P-values	Results
<i>Sustainable HRM Practice -> Knowledge Management</i>	0.933	64.767	0.000	H1: Significant
<i>Sustainable HRM Practice-> Work Engagement</i>	0.933	63.788	0.000	H2: Significant
<i>Sustainable HRM Practice -> Organizational Culture</i>	0.929	55.575	0.000	H3: Significant
<i>Knowledge Management -> Organizational Performance</i>	0.248	3.344	0.001	H4: Significant
<i>Work Engagement -> Organizational Performance</i>	0.288	3.172	0.002	H5: Significant
<i>Organizational Culture -> Organizational Performance</i>	0.434	5.634	0.000	H6: Significant

Source: Data Processed (2025)

Sustainable HRM Practice has a positive effect on Knowledge Management and have a significant effect because they have a T value of 64.767 > 1.96 and P values 0.000 < 0.05, as shown in Table 3. This study contradicts the findings of Kokkaew et al., (2022), which consistently demonstrated a positive and significant impact on the relationship between Sustainable HRM Practice and Knowledge Management. Furthermore, Fanama et al., (2023) support this idea by showing a significant effect of Sustainable HRM Practice on Knowledge Management. From Table 2, it is evident that the highest outer loading value for the Sustainable HRM Practice variable is on the fifth indicator, with a value of 0.894, related to the dimension of confidence in one's ability to fulfill job responsibilities. It can be concluded that achieving a balance between work and personal life, sustainable skill development, and a commitment to environmental sustainability are essential. By focusing on these dimensions, employees will feel more engaged and confident.

Sustainable HRM Practice has a positive effect on work engagement and have a significant effect because they have a T value of 63.788 > 1.96 and P values 0.000 < 0.05, as shown in Table 3. The study found that Sustainable HRM Practice has a very positive influence on Work Engagement within an organization, according to the study by Xu et al., (2020). In Table 2, it is noted that the highest outer loading value for the Work Engagement variable is on the fourth indicator, with a value of 0.907, which corresponds to the dimension of being enthusiastic about one's work. It can be concluded that the importance of Work Engagement lies in showing the extent to which a person feels enthusiastic, inspired, and motivated in performing their tasks. When someone is enthusiastic about their job, they tend to have high energy and a strong desire to achieve goals and deliver good results.

Sustainable HRM Practice has a positive effect on Organizational Culture and have a significant effect because they have a T-value of 55.575 > 1.96 and P values 0.000 < 0.05, as shown in Table 3. This study is supported by research from Huseynova & Matošková, (2022). In their study, it was found that Sustainable HRM Practice has a highly positive influence on Work Engagement within an organization, according to the study by Rahmawati & Savitri Pusparini, (2023). In Table 2, it is noted that the highest outer loadings value for the Work Engagement variable is in the fifth indicator, with a value of 0.903, corresponding to the dimension of the ability to integrate various marketing activities. It can be concluded that with integrated capabilities, companies can ensure that marketing messages and strategies remain consistent across all channels, improve operational efficiency, and maximize the impact of marketing campaigns. Ultimately, this will strengthen the company's competitive position in the market and help achieve long-term business goals.

Knowledge management has a positive effect on *Organizational Performance* and have a significant effect because they have a T value of $3.344 > 1.96$ and P values $0.001 < 0.05$, as shown in Table 3. Knowledge Management has a positive effect on Organizational Performance and has a significant impact, as evidenced by a T-value of $3.344 > 1.96$, as shown in Table 3. This study is supported by the research of Majid & Mahmud, (2019), which found that Knowledge Management has a highly positive influence on Organizational Performance within an organization. According to Majid & Mahmud, (2019), Table 2 reveals that the highest outer loadings value for the Knowledge Management variable is on the third indicator, with a value of 0.898, corresponding to the dimension: "We have a well-organized system where we can share knowledge and learn from each other." It can be concluded that in Knowledge Management, there are several important dimensions, such as knowledge creation, knowledge storage, knowledge transfer, and knowledge application. Knowledge creation involves the process of developing new ideas and solutions.

Work Engagement has a positive and significant effect on Organizational Performance and have a significant effect because they have a T value of $3.172 > 1.96$ and P values $0.002 < 0.05$, as shown in Table 3. This research is supported by (Vol et al., 2020). In their study, it was found that Work Engagement has a strong positive influence on Organizational Performance within an organization, as also noted by (Rahmayani & Wikaningrum, 2022). Organizational Performance significantly affects Work Engagement. When an organization demonstrates high performance, it creates a positive work environment, providing satisfaction and motivation for employees.

Organizational Culture has a positive and significant effect on Organizational Performance and have a significant effect because they have a T-value of $5.634 > 1.96$ and P values $0.000 < 0.05$, as shown in Table 3. This study is supported by research conducted by Evangeline, (2021). In the study, it was found that Organizational Culture has a very positive influence on Organizational Performance within an organization, according to the study by Ayu Raihani & Oki Berlianti, (2022). Organizational Performance significantly impacts Organizational Culture. Good performance creates a productive and motivating work environment, while a strong organizational culture fosters collaboration, innovation, and job satisfaction, all of which contribute to the improvement of organizational performance.

Table 4 Indirect Research Hypotesis

Hypothesis	Original Sample	T-Statistics (STDEV)	P-values	Results
<i>Sustainable HRM Practice</i> -> <i>Knowledge Management</i> -> <i>Organizational performance</i>	0.231	3.323	0.001	H7: Significant
<i>Sustainable HRM Practice</i> -> <i>Work Engagement</i> -> <i>Organizational Performance</i>	0.269	3.195	0.001	H8: Significant
<i>Sustainable HRM Practice</i> -> <i>Organizational Culture</i> -> <i>Organizational Performance</i>	0.403	5.531	0.000	H9: Significant

Source: Data Processed (2025)

This study found that Knowledge Management has a positive effect as a mediator between Sustainable HRM Practice and organizational performance and have a significant effect because they have a T value is $3.323 > 1.96$ and P values $0.001 < 0.05$, as shown in Table 3. This research aligns with the study by Grueso-Hinestroza et al.,(2018). Table 3 shows that all indicators of the Knowledge Management variable have average values across dimensions. This reflects a well-structured system that facilitates knowledge sharing and mutual learning. It can be concluded that the system effectively combines processes, technology, and organizational culture to ensure that

essential knowledge is readily available and accessible to those who need it, ultimately enhancing organizational efficiency, innovation, and competitiveness.

This study found that work engagement has a positive effect as a mediator between Sustainable HRM Practice and organizational performance and have a significant effect because they have a T value is $3.195 > 1.96$ and P values $0.001 < 0.05$, as shown in Table 3. This study aligns with the findings of (Gürbüz et al., 2023). It can be observed from Table 3 that all indicators of the Work Engagement variable have the lowest value within the dimension of "Your work inspires you." It can be concluded that when work inspires someone, they tend to feel more enthusiastic and committed to their tasks. This can enhance productivity, creativity, and job satisfaction.

This study found that Organizational Culture has positive effect as a mediator between Sustainable HRM Practices and organizational performance and have a significant effect because they have a T-value is $5.531 > 1.96$ and P values $0.000 < 0.05$, as shown in Table 3. This finding aligns with the study by Sah, (2023). As seen in Table 3, all indicators of the Organizational Culture variable display high values, especially in areas such as logistics integration, cost control, financial and HR management, revenue forecasting, and marketing planning. This suggests that a culture promoting collaboration, transparency, and innovation helps businesses operate efficiently, reduce costs, and boost productivity. Sustainable HRM Practices strongly influence Knowledge Management, Work Engagement, and Organizational Culture, as evidenced by high outer loading values linked to confidence in job performance, enthusiasm, and integration capabilities. In turn, Knowledge Management improves organizational performance through structured knowledge sharing, while Work Engagement enhances outcomes by fostering motivation and dedication. Organizational Culture also significantly contributes by supporting the efficient coordination of resources and activities. Together, these findings indicate that Sustainable HRM Practices not only impact each factor individually but also play a central role in driving overall organizational performance by creating a more engaged, effective, and unified workforce.(Donal Mon et al., 2024).

Sustainable HRM (SHRM) significantly impacts organizational culture and employee engagement in Batam's manufacturing sector due to its strategic emphasis on aligning HR practices with sustainability values. SHRM fosters a culture of collaboration, transparency, and environmental consciousness by promoting ethical practices, environmental awareness, and participative management, which are crucial in a competitive manufacturing environment. According to the resource-based view (RBV), HR capabilities like those developed through SHRM serve as unique resources that enhance organizational culture and employee motivation (Barney, 1991). Additionally, social exchange theory suggests that when organizations invest in sustainable HR practices, employees perceive greater organizational support and commitment, leading to higher engagement levels (Blau, 1964). Previous research by Gürbüz et al. (2023) and Sah (2023) supports this, indicating that SHRM influences perceptions of organizational ethos and enhances motivation, ultimately driving performance. Thus, in Batam, SHRM acts as a catalyst that shapes a positive work environment, fostering both high engagement and a strong, value-driven organizational culture.

The critique highlights that the article's practical implications are largely generalized, lacking specific actionable strategies tailored to Batam's manufacturing sector. To enhance its usefulness for practitioners, the study could emphasize the development and implementation of sustainability-based HR programs that directly target key organizational outcomes. For example, integrating eco-friendly and socially responsible practices into talent management such as sustainability-focused training, green recruitment policies, and eco-awareness initiatives can improve employee retention by aligning organizational values with employee values. These programs foster a sense of purpose and pride among employees, increasing job satisfaction, commitment, and loyalty. Moreover, establishing structured knowledge sharing systems and recognition schemes that reward sustainability efforts can reinforce engagement and mitigate turnover. Practically, manufacturing firms in Batam could adopt targeted initiatives like sustainability internships, green certifications,

or environmental sustainability champions within teams to embed these principles into daily HR practices. Such specific, context-driven strategies would translate theoretical insights into tangible actions that genuinely enhance retention, engagement, and organizational performance in Batam's manufacturing industry.

The article's findings offer valuable theoretical contributions that can significantly expand the understanding of Sustainable Human Resource Management (SHRM) within the broader framework of organizational theory. Specifically, the results bolster the Resource-Based View (RBV) by illustrating how sustainable HR practices serve as strategic resources that enhance organizational performance through mediating factors such as knowledge management, work engagement, and organizational culture. The positive influence of SHRM on these mediators demonstrates that sustainability-oriented HR initiatives act as unique, valuable, and inimitable firm resources aligning with RBV principles that lead to sustained competitive advantage. Additionally, these findings suggest that integrating sustainability into HRM strategies creates a dynamic capability, fostering organizational resilience and long-term success. This reinforces the notion that sustainable HR practices are not merely ethical imperatives but are strategically rooted resources capable of driving innovation, commitment, and cultural alignment thus advancing theoretical understanding of how sustainability integrates with core strategic resources to achieve high performance in contemporary organizations.

CONCLUSION

The conclusion of this research on "Sustainable HRM Practice on Organizational Performance Effectiveness through Knowledge Management, Work Engagement, and Organizational Culture" at Manufacturing in Batam highlights the essential role of sustainable HRM in enhancing organizational performance. The findings show that sustainable HRM practices contribute significantly to performance by promoting effective knowledge management, strong employee engagement, and a positive organizational culture. These practices have led to greater employee commitment to environmental sustainability, skill enhancement, and increased job satisfaction all of which positively influence organizational outcomes. The study also reveals that robust knowledge management and engaged employees boost efficiency and innovation, while a strong organizational culture fosters collaboration and long-term success.

Based on these results, the study suggests that Manufacturing in Batam should continue to strengthen its sustainable HRM efforts, especially by developing structured knowledge management systems to facilitate seamless knowledge sharing and application. Increasing employee engagement through opportunities for professional growth and recognition programs will further encourage motivation, productivity, and satisfaction. Additionally, fostering a healthy organizational culture that reflects the company's values will enhance teamwork and innovation. Implementing these strategies is expected to significantly elevate organizational performance, giving the company a stronger competitive edge and ensuring sustainable long-term growth.

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