

The Role of HR Analytics as a Moderator in the Integration Model of HR Capabilities and Strategic Alignment on the Sustainable Performance of Plantation Sector Companies in North Sumatra

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ABSTRACT

This research seeks to examine the function of HR Analytics as a moderating variable in the integration model of HR Capabilities and Strategic Alignment concerning Sustainable Performance in plantation sector enterprises in North Sumatra. The study's background stems from the significance of the plantation sector as a primary contributor to the regional GRDP, despite encountering challenges in sustainability, digital readiness, and HR competencies. This study employed a quantitative methodology utilizing the PLS-SEM technique, involving 162 participants, including HR managers, plantation managers, departmental assistants, and sustainability officers. The results show that HR Capabilities don't have a big effect on Sustainable Performance, but Strategic Alignment does have a big negative effect. HR Analytics has a big effect on Sustainable Performance, but it doesn't change the link between HR Capabilities and performance. On the other hand, HR Analytics makes the link between Strategic Alignment and Sustainable Performance worse. These results show that HR digitalization and the use of analytics are important for plantation companies to make their business processes more flexible, efficient, and long-lasting.

Keywords: HR Analytics; Human Resource Capability; Strategic Alignment; Sustainable Performance; Plantation Industry

INTRODUCTION

The plantation sector in North Sumatra is important to the economy of the region because it provides jobs and is the main source of foreign exchange. The North Sumatra Central Bureau of Statistics (2024) says that the agricultural and plantation sectors make up more than 21% of the province's GRDP. Palm oil, rubber, and coffee are some of the most important goods. The plantation industry has a lot of work to do to make sure that its operations are sustainable in terms of production efficiency, environmental resilience, and workers' social welfare. In this context, sustainable performance emerges as the primary criterion for assessing a company's success, encompassing economic, social, and environmental dimensions (Elkington, 1997; Rosário et al., 2024; W. Zihan et al., 2024).

But in real life, the plantation sector in North Sumatra hasn't been doing well when it comes to sustainability. The report from Holding Perkebunan Nusantara (PTPN III, 2023) shows that some plantation units are not meeting their productivity goals. This is because of common issues like a lack of skilled workers, a mismatch between business and operational strategies, and a slow adoption of digital technology in human resource management. These results correspond with the research conducted by Halim et al. (2024), which indicates that the plantation sector in Indonesia encounters structural deficiencies in the integration of human resources, innovation, and alignment with sustainability strategies. As the global market pushes for more environmentally friendly and socially responsible practices, environmental, social,

and governance (ESG) issues are becoming more and more important (RSPO & ISPO Report, 2024; Ayuningtias et al., 2025). This situation shows how important it is for companies to combine their human resources with their strategic goals so they can adapt to the changes in Industry 5.0 in a way that lasts (Moreno-Cárdenas et al., 2024).

In theory, HR capabilities are the skills that an organization has to train, move, and use its employees' skills well (Barney, 1991; Teece, 2007; Hitt et al., 2023). Strategic alignment, on the other hand, is the degree to which a company's business strategy and human resources strategy work together to reach the company's goals (Henderson & Venkatraman, 1993; Venkatraman et al., 2023). Bringing these two things together makes strategic synergy, which is a resource that is hard to copy (Barney, 1991; Teece, 2018). However, the success of this synergy depends a lot on how well the organization can use HR Analytics to analyze HR data to make sure that decisions about talent development and business strategies are based on solid, measurable evidence (Marler & Boudreau, 2017; Tessema et al., 2025; Minbaeva, 2023).

HR Analytics helps plantation companies figure out how employee behavior, training methods, and productivity affect their ability to meet sustainability goals. Companies can find the factors that lead to long-term success, like employee retention, training effectiveness, and labor efficiency, while reducing bias in decision-making by managers (Minbaeva, 2023; Tessema et al., 2025; Wibowo et al., 2024). Even though there is a lot of operational data available in the plantation sector, such as attendance, daily productivity, and labor costs, HR Analytics is still not widely used. HR analytics can act as a moderating factor that strengthens the link between HR skills and strategic alignment with long-term success (Marler & Boudreau, 2017; Zihan et al., 2024). Therefore, this research is essential to fill empirical and conceptual voids in human resource management within the plantation sector in North Sumatra. By combining HR skills, strategic alignment, and HR Analytics, it is hoped that a conceptual model can be made that shows how plantation companies can make long-term competitive advantages that are good for the economy, society, and the environment (Teece, 2007; Elkington, 1997; Ayuningtias et al., 2025).

LITERATURE REVIEW

Organizational Performance

Organizational performance is a key idea in both public and business management studies. It is used to figure out how well an organization meets its strategic goals. For public organizations, performance is not just about meeting administrative goals; it's also about how well the organization can create public value and provide services that have an effect on society (Moore, 1995; Bryson, Crosby, & Bloomberg, 2014). Modern definitions of performance include not only how much money an organization makes or how efficient it is, but also how well it can adapt to changes, manage its people, use new technology, and stay competitive in the long term (Alonso, 2024).

Neely et al. (2005) say that organizational performance is the organization's ability to reach its goals by using its strategy, processes, and resources in a way that works. In the public sector, this includes things like how productive employees are, how efficiently the government works, how happy the public is with services, and how long service innovation will last. The Public Value Theory (Moore, 1995) says that we should look at public sector performance from

three main angles: the creation of public value, political legitimacy and support, and the organization's ability to achieve those goals. In other words, the success of government agencies is measured not just by how well they run their businesses, but also by how well they serve the public and how much trust people have in them.

HR Capability

HR capabilities are the combined skills, knowledge, experience, and behaviors of all the employees that help the organization reach its strategic goals (Collings et al., 2024). These are not just individual skills; they are skills that the whole organization has, like HR's ability to work together, solve problems, adapt, manage technology, and add value. Human Capital Theory (Becker, 1993) says that an organization will be more productive and perform better if it spends money on training, education, and work experience for its employees. In this case, HR is not just a factor in production; it is also a strategic asset that affects how well public organizations work.

The Resource-Based View (RBV) also says that human resource skills are valuable, rare, inimitable, and non-substitutable (VRIN), which is what gives a company a long-term competitive edge (Barney, 1991). In public sector organizations, human resources possessing analytical acumen, collaborative abilities, and a dedication to public service principles can serve as strategic assets that are challenging to replicate (Wright & McMahan, 2011).

Human Resources Analytics (HRA)

Human Resource Analytics (HRA) is the organized way of using HR data, statistics, machine learning, and digital technology to help make decisions based on facts in human resource management (Tessema et al., 2025). Human Resource Analytics (HRA) is a method of managing HR that uses data to make better decisions by looking at employee data in a statistical, algorithmic, and predictive way. Marler and Boudreau (2017) characterize HRA as a methodical approach to discern the correlation between HR practices and business results through the utilization of reliable data and scientific analytics. HRA has evolved into a facet of evidence-based HRM that transitions the role of HR from administrative to strategic.

Angrave et al. (2016) assert that the strategic significance of HRA materializes when HR data is utilized not solely for reporting (descriptive analytics) but also for forecasting and guidance (predictive and prescriptive analytics). HRA can improve the link between HR skills and how well an organization does because it gives leaders quantitative information that helps them make decisions based on facts.

METHODS

This research employs an associative methodology utilizing a correlational analytic framework (correlational study). Correlational research seeks to elucidate the relationships between variables. This study focuses on three companies operating in the plantation sector in Medan City. The variables employed in this study are intricate, necessitating respondents who possess comprehension and access to:

1. HR policies, talent development, training and development, and manpower planning policies.
Users of HRIS or HR Analytics.
2. Playing a role in the strategic perspective/ Strategic Alignment between HR and company/plantation strategy.
3. Managerial level familiar with/assessing HR capabilities and their contribution to performance.
4. Parties knowledgeable in sustainable performance aspects, environmentally friendly productivity, ISPO/RSPO certification, zero burning-zero waste.

Based on these criteria, the respondents most relevant to this research are those holding the positions of:

1. HR Manager/ Assistant HR Manager
2. HRIS, IT, Data Analytics Staff/ Manager
3. Plantation Manager/ Head Nurse/ Assistant Department Head
4. Sustainability, ESG, or HSE Manager/ Officer 5. Planning Unit/SPI

This study used purposive sampling, which Saunders, Lewis, and Thornhill (2023) say is done by choosing respondents based on the researcher's judgment of who is most likely to give information that is most useful to the research goals. This study employed purposive sampling based on expertise, knowledge, and the relevance of the position to the research variables, yielding the following respondent data:

Table 1. Distribution of Respondents

Respondent's Position/Job Title	Number of Respondents		
	A	B	C
Corporate HR Manager	-	2	-
HR Manager/ Kabag SDM	3	8	4
HR Officer (Training, Talent, Manpower Planning)	6	8	5
HRIS/ IT/ Data Analytics Officer/ Data Scientist	4	8	6
Estate Manager	6	8	5
Head Assistant	6	7	5
Afdeling Assistant	9	12	10
Sustainability/ ESG/ ISPO-RSPO Officer	4	8	6
SPI/ Planning/ Performance Officer	5	9	8
Total	43	70	49
Total Sample	162		

Based on the distribution of the data, a sample of 162 respondents was obtained.

RESULTS AND DISCUSSION

RESULT

Outer Model Analysis

We did the outer model analysis to see how reliable and valid each indicator was in the constructs of Human Resource Capability (X1), Strategic Alignment (X2), HR Analytics (Z),

and Sustainable Performance (Y). This evaluation entails the examination of outer loadings, convergent validity via Average Variance Extracted (AVE) values, and internal reliability of constructs through Composite Reliability and Cronbach's Alpha values. The analysis shows that all of the indicators for each construct meet the standards for measurement model feasibility. This means that the reflective model used in this study has good measurement quality.

Convergent Validity

The correlation between the item/indicator scores and the construct scores shows that the measurement model with reflective indicators is convergent valid. If the correlation value of an individual indicator is above 0.70, it is thought to be reliable. In research on developing scales, though, loadings of 0.50 to 0.60 are still okay. Based on the outer loading results, all indicators have loadings above 0.70 and are important. Figure 1 below shows the structural model used in this study:

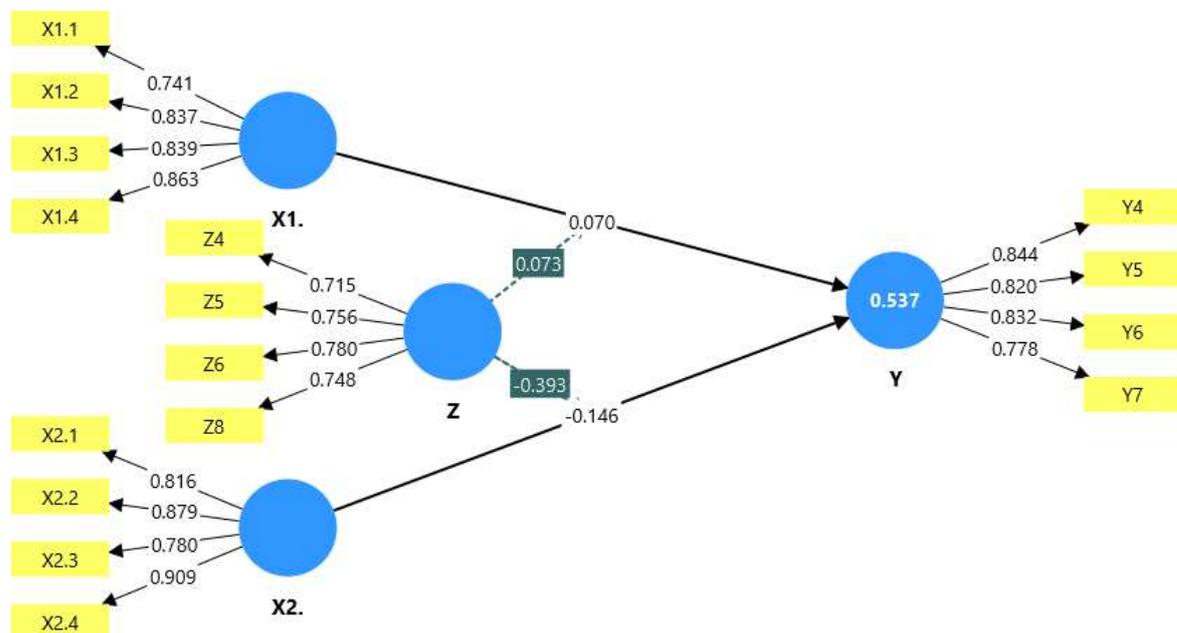


Figure 1. Outer Model

The processed results from SmartPLS indicate that all indicators for constructs X1, X2, Z, and Y exhibit outer loading values exceeding 0.70. This means that each indicator plays a big role in showing their own latent constructs (Hair et al., 2022). The loading values for the Human Resource Capability (X1) construct range from 0.741 to 0.863, which shows that they are very consistent. The Strategic Alignment (X2) construct also has high loading values, which range from 0.780 to 0.909. The HR Analytics (Z) construct has loading values that range from 0.715 to 0.780, which means that its indicators are stable and reliable. The indicators on the Sustainable Performance (Y) construct, on the other hand, have very strong loading values, from 0.778 to 0.844. In general, these results show that the four constructs have very good convergent validity. So, the measurement model is thought to meet the requirements to move

on to testing the inner model.

Discriminant Validity

The subsequent discriminant validity assessment employed the Fornell–Larcker criterion, a technique that juxtaposes the square root of the Average Variance Extracted (AVE) for each construct against the correlations among other constructs. Hair et al. (2022) assert that a construct possesses robust discriminant validity if the square root of its Average Variance Extracted (AVE) exceeds its correlations with alternative constructs. The purpose of this evaluation is to make sure that each construct in the study can stand for a different idea and that there is no overlap in measurements between constructs.

Table 2. Discriminant Validity

	X1.	X2.	Y	Z
X1.	0.821			
X2.	0.188	0.848		
Y	0.327	0.372	0.819	
Z	0.359	0.635	0.641	0.750

According to the Fornell–Larcker results in Table 2, the square root of the AVE values on the table's diagonal are all bigger than the correlations between the constructs in the same row and column. The Human Resource Capability (X1) construct has a $\sqrt{\text{AVE}}$ value of 0.821, which is higher than its correlations with X2 (0.188), Y (0.327), and Z (0.359). The Strategic Alignment (X2) construct also has a $\sqrt{\text{AVE}}$ value of 0.848, which is higher than its correlations with X1 (0.188), Y (0.372), and Z (0.635). The Sustainable Performance (Y) construct also has a consistent pattern, with a $\sqrt{\text{AVE}}$ value of 0.819, which is higher than its correlations with X1 (0.327), X2 (0.372), and Z (0.641). The HR Analytics (Z) construct also has a $\sqrt{\text{AVE}}$ value of 0.750, which is higher than the correlations between all of the other constructs.

The Heterotrait–Monotrait Ratio (HTMT) is also a good way to check for discriminant validity. It is the most accurate method in modern PLS-SEM (Hair et al., 2022). HTMT assesses the degree of distinctiveness among latent constructs by evaluating the correlations between indicators of disparate constructs against those of the same construct. If the HTMT value is below 0.90 (the conventional threshold) or 0.85 (the conservative threshold), the model is said to have good discriminant validity. The HTMT test results for all the study's constructs are shown below.

Tabel 3. Heterotrait-Monotrait Values

	X1.	X2.	Y	Z	Z x X2.	Z x X1.
X1.						
X2.	0.194					
Y	0.358	0.414				
Z	0.412	0.834	0.715			
Z x X2.	0.218	0.331	0.522	0.293		
Z x X1.	0.280	0.195	0.183	0.292	0.269	

Table 3 shows the HTMT test results, which show that all HTMT values are below 0.90. This means that the test meets the discriminant validity criteria set by Hair et al. (2022). The HTMT value between Human Resource Capabilities (X1) and Strategic Alignment (X2) is 0.194, between X1 and Y it is 0.358, and between X1 and Z it is 0.412. All of these numbers are well below the maximum threshold. The relationship between Strategic Alignment (X2)

and HR Analytics (Z) is 0.834, which is still below the 0.90 threshold. This means that these two things are related but can still be distinguished in a scientific way.

The HTMT values between constructs and interaction variables, specifically $Z \times X2$ (0.522) and $Z \times X1$ (0.183), are also very low. This means that they don't cause any problems with discriminating between the main constructs and the moderation constructs. These results show that all of the model's constructs meet the Fornell–Larcker criteria, which means that discriminant validity is satisfied. Consequently, each construct has demonstrated its ability to differentiate itself from the other constructs and is deemed appropriate for continuation in the inner model analysis.

Composite Reliability

We do a construct reliability evaluation to make sure that each construct in the model is consistent with itself. Cronbach's Alpha, Composite Reliability (rho_c), and rho_A are new ways to measure reliability. Hair et al. (2022) say that for convergent validity, both Cronbach's Alpha and Composite Reliability should be above 0.70, and the AVE (Average Variance Extracted) value should be above 0.50. Table 4 below shows the results of the tests for construct reliability and validity.

Table 4. Construct Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
X1.	0.843	0.892	0.892	0.675
X2.	0.871	0.886	0.911	0.719
Y	0.837	0.841	0.891	0.671
Z	0.760	0.793	0.837	0.563

Table 4 shows that all of the constructs meet the recommended reliability standards. The Cronbach's Alpha values for all constructs are greater than 0.70. Specifically, $X1 = 0.843$, $X2 = 0.871$, $Y = 0.837$, and $Z = 0.760$. This means that the indicators in each construct consistently measure the same thing. The Composite Reliability (rho_c) values also show strong results, with values between 0.837 and 0.911, which is well above the minimum of 0.70. The rho_A values, which are a more cautious way to measure reliability, are also in an acceptable range (0.793–0.892). In addition, the AVE values for all constructs are greater than 0.50: X1 is 0.675, X2 is 0.719, Y is 0.671, and Z is 0.563. This means that the requirements for convergent validity are met (Hair et al., 2022). Consequently, it can be inferred that all constructs in this study exhibit robust internal reliability and satisfactory convergent validity.

Inner Model Analysis

The bootstrapping procedure in SmartPLS was used to get significance values for each path between constructs, which was how the inner model was tested. So, the results from this stage give us real-world evidence to help us decide if we can accept or reject the research hypotheses, as well as how much the independent constructs and moderating variables affect the dependent variable in the model.

Path Coefficient Estimate

The primary step in assessing the inner model prior to interpreting the results of

hypothesis testing is to examine the strength and significance of the relationships among latent variables via the estimation of path coefficients. The bootstrapping procedure is used to get the original coefficient values (O), sample means (M), and 95% confidence intervals (2.5%–97.5%). These are used to figure out if something is statistically significant. If the confidence interval does not include zero, the coefficient is considered important. The table below shows all of the results of the direct and moderating effects in the structural model used in this study.

Table 5. Path Coefficient and Confident Interval (Bootstrapping)

	Original sample (O)	Sample mean (M)	2.5%	97.5%
X1. -> Y	1.211	1.256	1.120	1.442
X2. -> Y	1.763	1.810	1.492	2.171
Z -> Y	1.885	1.961	1.562	2.405
Z x X1. -> Y	1.156	1.220	1.059	1.496
Z x X2. -> Y	1.185	1.254	1.055	1.579

The variable $X1 \rightarrow Y$ has an original coefficient of 1.211, which means that X1 has a positive and significant effect on Y. The CI range is (1.120–1.442). Also, $X2 \rightarrow Y$ has a stronger effect, with a coefficient of 1.763 and a CI range of (1.492–2.171). The moderating variable Z has a direct effect on Y of 1.885, with a confidence interval of (1.562–2.405). This means that Z is a good predictor of Y.

The interaction effect gives a general idea of how moderation works. The coefficient for the interaction $Z \times X1 \rightarrow Y$ is 1.156 (CI: 1.059–1.496), and the coefficient for $Z \times X2 \rightarrow Y$ is 1.185 (CI: 1.055–1.579). Neither of the confidence interval ranges crosses zero, which means that Z has a big effect on the relationship between X1 and Y and X2 and Y. The positive direction of the coefficients indicates that the moderation is increasing; thus, a higher value of Z correlates with a stronger relationship between X1 and X2 with Y.

Coefficient of Determination (R-Square)

The coefficient of determination (R-square) is a way to see how well exogenous variables can explain changes in endogenous variables in a structural model. The R-square value shows how well the constructs being studied can predict the outcomes. This makes it an important measure of the quality of the inner model. Hair et al. (2021) say that R-square values of 0.25, 0.50, and 0.75 show weak, moderate, and strong explanatory power, respectively. So, to show how much the overall constructs in the model affect the formation of endogenous variables, it is necessary to show both the R-square and adjusted R-square values. The table below shows the coefficients of determination that were found in the SmartPLS analysis results.

Table 6. R-Square and Adjusted R-Square

	R-square	R-square adjusted
Y	0.537	0.523

The R-square value is used to figure out how well exogenous variables can predict the endogenous variable in the structural model. The estimation results show that the R-square value for variable Y is 0.537. This means that the combination of variables X1, X2, Z, and two interaction variables ($Z \times X1$ and $Z \times X2$) can explain 53.7% of the changes in Y. The adjusted R-square value of 0.523 shows that the number of predictors has been taken into account, and it is still in the moderate range according to Hair et al. (2021) (0.50–0.75 = moderate). This means that the model does a good job of explaining things and is stable when it comes to

predicting how variable Y will act.

Goodness of Fit Testing

The assessment of goodness of fit in PLS-SEM is performed to verify the degree to which the constructed structural model corresponds with empirical data. PLS-SEM does not stress precise model fit like CB-SEM does, but it still needs one main measure of model fit, which is the Standardized Root Mean Square Residual (SRMR). Henseler et al. (2014) say that this index is the best way to tell if a model is good enough in the variance-based approach. The table below shows the results of the goodness of fit test for both the saturated and estimated models.

Table 7. Goodness-of-Fit (SRMR) dari Saturated Model and Estimated Model

	Saturated model	Estimated model
SRMR	0.112	0.113
d _{ULS}	1.714	1.750
d _G	0.676	0.680
Chi-square	561.782	570.933
NFI	0.664	0.659

We used the Standardized Root Mean Square Residual (SRMR) to check the model fit value. SmartPLS processing shows that the SRMR of the saturated model is 0.112 and the SRMR of the estimated model is 0.113. Both values are just above the acceptable fit threshold (≤ 0.10), so the model is only slightly fit but still acceptable for predictive and exploratory PLS-SEM research. Even though the model doesn't fit well, it still meets the requirements for further analysis because PLS-SEM focuses on prediction rather than exact fit.

In Table 5, the results of the PLS model goodness of fit test show that the NFI value of 0.700 means FIT. Based on these results, we can say that the model used in this study fits well and is good for testing the research hypotheses.

Hypothesis Testing

Path coefficients are tested to find out the direction, strength, and importance of the relationships between latent variables in the structural model. In the PLS-SEM approach, path coefficient values are assessed using bootstrapping results that yield values for the original sample, sample mean, standard deviation, t-statistics, and p-values. If the t-statistic value is higher than 1.96 for a 5% significance level and the p-value is lower than 0.05, the relationship is statistically significant. The table below shows the results of testing the path coefficients for direct and moderating effects between the model's variables.

Table 8. Test Results of Path Coefficients (Direct Effects and Moderating Effects)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
X1. → Y	0.070	0.081	0.064	1.108	0.268
X2. → Y	-0.146	-0.138	0.070	2.078	0.038
Z → Y	0.635	0.628	0.082	7.769	0.000
Z x X1. → Y	0.073	0.078	0.082	0.889	0.374
Z x X2. → Y	-0.393	-0.391	0.068	5.796	0.000

The results of the estimation show that the effect of X1 → Y has a coefficient of 0.070

and a p-value of 0.268, so it is not considered significant. This means that X1 does not directly affect Y in a meaningful way. The variable $X2 \rightarrow Y$, on the other hand, has a negative coefficient of -0.146 and a p-value of 0.038, which means it is significant at the 5% level. This means that when X2 goes up, Y goes down, which means that the relationship is negative but important. The variable $Z \rightarrow Y$ has a very strong and important effect, with a coefficient of 0.635 and a p-value of 0.000. This shows that Z is the most important direct predictor of Y.

The interaction effect $Z \times X1 \rightarrow Y$ has a coefficient of 0.073 and a p-value of 0.374, which means that it is not significant. This means that Z does not change the relationship between X1 and Y. The interaction $Z \times X2 \rightarrow Y$, on the other hand, has a coefficient of -0.393 and a p-value of 0.000, which means it is significant. These results show that Z has a big effect on the relationship between X2 and Y, and that effect makes the negative effect of X2 on Y even stronger. So, moderation only happens in the $X2 \rightarrow Y$ relationship, not in the $X1 \rightarrow Y$ relationship.

DISCUSSION

This section examines the research findings by integrating the empirical results from SmartPLS with theoretical frameworks, prior studies, and the research context pertaining to HR Capability, Strategic Alignment, HR Analytics, and Sustainable Performance. The discussion is based on each research hypothesis.

The Influence of HR Capability on Sustainable Performance

The study findings demonstrate that HR Capability (X1) does not significantly influence Sustainable Performance (Y) in plantation enterprises. This insignificance indicates that despite plantation companies employing highly skilled individuals, these skills have not yet directly enhanced sustainability dimensions, whether environmental, economic, or social. In the context of plantations, highly skilled workers often concentrate on operational efficiency and production goals, and they have not yet been directed toward sustainability issues like land conservation, waste management, or eco-friendly technologies.

These results corroborate the assertions of Rahman and Idris (2025) that HR capabilities influence sustainability performance solely when the organization has implemented digital and evidence-based management systems. Saleh et al. (2025) also discovered that HR capabilities frequently fail to enhance sustainable performance in the absence of an innovative work culture. In the plantation sector of North Sumatra, HR capability necessitates enhanced integration with digitalization processes and data-driven decision-making systems to facilitate sustainable performance.

The Influence of Strategic Alignment on Sustainable Performance

The research finding that Strategic Alignment (X2) has a significant but negative effect on Sustainable Performance is an important point for plantations. The strategies of plantation companies in North Sumatra are often focused on production goals and expanding their land. These strategies can lead to internal pressure, environmental risks, and a gap between strategic goals and operational resources. Mendoza and Park's (2025) study shows that strategic alignment can hurt performance if the strategies aren't backed by the organization's capacity or if they are too rigid and make it hard for the organization to adapt to changes in operations.

In the plantation sector, a strategic alignment that focuses too much on growth, cost-

cutting, and increasing output can conflict with sustainability goals like protecting biodiversity or managing waste. Sitorus and Bawono (2025) discovered that organizations that impose strategic alignment without digital readiness encounter strategic overload, which ultimately diminishes sustainable performance. The detrimental impact of X2 on Y in this study is significantly pertinent to the dynamics of North Sumatra's plantations, which are confronted with sustainability demands as well as operational and technological challenges.

The Role of HR Analytics Moderation in the Influence of HR Capability on Sustainable Performance

The study's findings indicate that HR Analytics does not influence the connection between HR Capability and Sustainable Performance. This means that HR analytics don't change the fact that HR capabilities don't have a big effect on sustainability performance. Kurniawan and Shiraishi (2025) say that HR Analytics moderation only works if the company's digital systems are linked to HR capabilities. In the plantation sector, many HR skills are manual, field-based, and depend on physical skills that haven't been fully digitized yet. This means that analytics can't make them more powerful.

To make sure that HR Analytics can do its best job as a moderator, the digital transformation of HR in plantations needs to be improved.

The Role of HR Analytics Moderation on the Influence of Strategic Alignment on Sustainable Performance

It is very important to find that HR Analytics has a big and negative effect on the link between Strategic Alignment and Sustainable Performance. This finding suggests that in the context of plantations, increased utilization of HR Analytics makes it increasingly evident that the company's strategy may be impractical or misaligned with its actual operational capabilities. This is consistent with Huang and Sutanto (2025), who demonstrated that analytics can uncover strategic misalignments, thereby worsening performance declines when organizational strategies lack adequate internal support.

Mariani and Yusuf (2025) assert that analytics can expose flawed strategies, generate internal pressure, and diminish sustainable performance if not accompanied by strategic reforms. This means that this negative moderation is a sign that plantation companies in North Sumatra need to look at their strategies again because HR Analytics "reveals the reality" that the current strategies do not help sustainability. Mariani and Yusuf (2025) assert that analytics can expose flawed strategies, generate internal pressure, and diminish sustainable performance if not accompanied by strategic reforms. This means that this negative moderation is a sign that plantation companies in North Sumatra need to look at their strategies again because HR Analytics "reveals the reality" that the current strategies do not help sustainability.

CONCLUSION

The results of the discussion show that HR Analytics is the most important factor in Sustainable Performance. It is both a direct predictor and a moderator of the relationship between Strategic Alignment and Sustainable Performance. There are different dynamics between HR Capability and Strategic Alignment. X1 has no effect, but X2 has a bad effect.

Moderation is present solely in the relationship between X2 and Y, and not in the relationship between X1 and Y. In general, these results add to the strategic HRM literature in a big way and stress the need to use analytical data to understand how capabilities, strategic alignment, and organizational sustainable performance work together.

Practical Implications

The results of this study show that companies in the plantation sector in North Sumatra need to make HR Analytics a key part of their sustainability transformation. This is because it has been shown to have the biggest effect on sustainable performance and can also be used as a strategic evaluation tool. Companies need to make HR digitalization stronger, make field data better, and connect HR Analytics to decision-making processes. This is especially important for figuring out if the business strategies being used are realistic or not.

The discovery that Strategic Alignment has a detrimental effect and is adversely influenced by HR Analytics signifies the necessity for a reassessment of corporate strategies to enhance their adaptability and alignment with operational capacity, technological advancements, and sustainability requirements. Also, the fact that HR Capability isn't important means that technology-based training needs to be changed so that human resource capabilities really help with sustainability. Plantation companies need to make sure that their HR capabilities, strategies, and HR Analytics work together better so that their operations are efficient, long-lasting, and based on evidence.

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