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Article

Leveraging strategic human resource management to enhance English and mathematics education outcomes: Students' perspective

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Abstract: Improving educational outcomes in subjects such as English and mathematics remains a significant challenge for educators and policymakers. Strategic Human Resource Management (SHRM), which aligns human resource practices with organizational goals, has proven effective in business sectors but is less explored in educational contexts, especially from students' perspectives. Existing studies often focus on teacher development, overlooking direct impacts on student performance. This research addresses the gap by examining how SHRM influences students' performance in English and mathematics, incorporating student feedback to assess SHRM's effectiveness. In the quantitative study, 200 students were analyzed to explore the relationship between SHRM practices and academic outcomes. The findings indicate that SHRM significantly affects student performance, with high predictive relevance and explanatory power in both subjects. The results suggest that strategic HR practices, such as professional development, performance management, and resource allocation, are critical to academic success. These insights provide valuable implications for educators and policymakers, highlighting the importance of integrating strategic HR management into educational frameworks to enhance curriculum design and resource distribution. The study demonstrates the broad applicability of SHRM across different academic disciplines, suggesting a need for comprehensive HR strategies that focus on both teacher and student performance. Future research should explore how SHRM influences educational outcomes and identify contextual factors that moderate its impact, enhancing effective HR practices in diverse academic settings.

Keywords: strategic human resource management; education outcomes; student perspective; teacher development; English and mathematics performance

1. Introduction

Improving educational outcomes in core subjects such as English and mathematics is a primary goal for educators and policymakers worldwide (Channa et al., 2021; Malin et al., 2020). However, despite various interventions, many education systems still need help to achieve optimal results. One emerging area of interest is the role of SHRM in enhancing education outcomes (Cooke et al., 2021). SHRM, which focuses on aligning human resource practices with organizational goals, has proven effective in business sectors by improving employee performance and organizational success (Jiang et al., 2024; Soekiman, 2024). However, its application within educational contexts, particularly from the perspective of students, remains underexplored.

Previous literature has focused primarily on teacher development and resource management within schools, with limited attention given to how strategic HR practices directly influence students' academic performance (Knies et al., 2024). Daguman (2020) highlighted the importance of teacher support and resource allocation but failed to consider student feedback as a critical factor in assessing SHRM's effectiveness. Therefore, this research aims to bridge that gap by incorporating students' perspectives on how SHRM impacts their performance in English and mathematics. The contribution of this study lies in its focus on student perceptions, offering a fresh perspective on how strategic management practices can directly influence educational outcomes. The findings provide valuable insights for policymakers and educators to improve curriculum design and resource allocation. This research seeks to answer how SHRM impacts English and mathematics education outcomes in schools.

Review of literature

SHRM refers to aligning human resource practices with organizational goals to improve performance and ensure long-term success. Originating from its proven effectiveness in business, SHRM integrates core HR functions such as recruitment, performance management, and resource allocation into a strategic framework that addresses organizational challenges while fostering employee engagement and productivity. This approach emphasizes the role of HR as a strategic partner, creating a link between human capital and broader organizational objectives (Greer, 2021; Jiang et al., 2024).

In the context of education, SHRM is relatively underexplored but holds significant potential to enhance outcomes. For example, SHRM can influence teacher performance, resource distribution, and professional development, ultimately improving academic achievements. By focusing on the interconnectedness of HR practices with curriculum planning and learning outcomes, SHRM enables educational institutions to create environments conducive to teacher and student success (Daguman, 2020; Knies et al., 2024).

Empirical evidence demonstrates SHRM's predictive relevance and explanatory power in improving outcomes, as shown in studies examining its impact on English and mathematics education. These findings highlight the need for a holistic approach considering contextual factors and feedback from all stakeholders, including students. SHRM's strategic implementation aligns HR functions with institutional priorities, proving its versatility across sectors and underscoring its role in achieving sustainable growth and excellence in diverse environments (Altındağ and Bilaloğlu Aktürk, 2020; Cooke et al., 2021).

2. Materials and methods

This study adopts a quantitative methods approach to understand how SHRM practices impact student outcomes in English and mathematics from the student's perspective. The study involved 200 students from three faculties of Muhammadiyah Tangerang University, representing diverse backgrounds and academic performance levels in English and mathematics. Students were selected using a stratified random

sampling technique to ensure representation across different socioeconomic backgrounds, gender, and academic performance levels. The measurement of socioeconomic status (SES) categorizes individuals into low, middle, or high groups based on two indicators: (a) family income level and (b) parents' employment and educational background. The English and mathematics study program database provided the student registration information. Students self-report their gender identities, or institutions record them in student databases. Gender identity consists of female and male. It is measuring students' academic performance using cumulative academic records and classifying students into three categories based on the minimum completeness criteria (KKM) that the campus has implemented, namely high performance (score 79–100), medium (score 64–78), and low (score 55–0). Researchers approached participants during regular class hours and collected data over two months. They emphasized voluntary participation and obtained informed consent from students and their guardians to ensure comfort during the study. To ensure honesty, they used anonymity or nonjudgmental questions.

A questionnaire was developed to collect quantitative data on students' perceptions of SHRM practices in their university. We created new questionnaire items to address unique aspects of how strategic HR practices influence English and mathematics outcomes. The questionnaire covered lecturer quality, resource allocation, professional development, and curriculum planning. The questionnaire comprised 60 items rated on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree). Data collection took place over two months (September–October 2023). The questionnaires were administered during regular lecturer hours. Correlation and regression analyses were performed to examine the relationship between SHRM practices and student performance in English and mathematics using the software Smart PLS version 3 (Ringle et al., 2015).

This study uses measurement models to validate constructs SHRM and educational outcomes. It applies partial least squares regression within the broader PLS-SEM framework, focusing on structural relationships and predictive modelling. The first step involves conducting an assumption test using the statistical package for the social sciences (SPSS) version 21 software. The assumption test includes the Kolmogorov-Smirnov test, where the result (0.506 > 0.05) indicates that the data follows a normal distribution. The second assumption is tested for linearity using the robustness test. The results were $p > 0.05$, specifically 0.432 for English education outcomes and 0.864 for mathematics education outcomes, indicating that the linearity assumption was satisfied. The third assumption checks for multicollinearity by examining the variance inflation factor (VIF), which is 1.000 < 10. The SHRM variables, English education outcomes, and mathematics education outcomes satisfy the assumption of no multicollinearity, enabling the regression analysis to proceed.

The second step involves evaluating the measurement model, including tests for (a) convergent validity, (b) discriminant validity, and (c) reliability. The structural model evaluation includes analyzing (a) the R^2 value, (b) predictive relevance (Q^2), and (c) goodness of fit (GoF). The third step is hypothesis testing using path coefficients. Finally, the fourth step analyzes the effect size (f^2).

3. Results and discussion

The measurement model is a crucial aspect of evaluating the validity and reliability of constructs in research. This section explains the measurement model: convergent validity, discriminant validity, and reliability test. Structural model, namely *R* Square Analysis. Then, conduct hypothesis testing results, goodness of fit and predictive relevance, effect size, and robustness test.

3.1. Measurement model

3.1.1. Convergent validity

Table 1 and **Figure 1** results of the convergent validity analysis indicate that all items measuring SHRM (*X*), English education outcomes (*Y*1), and mathematics education outcomes (*Y*2) have outer loadings above the critical point of 0.5, confirming their validity. For instance, items such as Y1EEO_2 (0.862) and Y2MEO_5 (0.849) demonstrate strong loading values, indicating that each item reliably contributes to its intended construct (Hair et al., 2022).

Table 1. Results of convergent validity.

Variables	Item	Outer loadings	Critical points	Interpretation
*Y*1 English education outcomes	Y1EEO_1	0.686	0.5	Valid
	Y1EEO_2	0.862	0.5	Valid
	Y1EEO_3	0.779	0.5	Valid
	Y1EEO_4	0.848	0.5	Valid
	Y1EEO_5	0.682	0.5	Valid
	Y1EEO_6	0.793	0.5	Valid
	Y1EEO_7	0.710	0.5	Valid
	Y1EEO_8	0.781	0.5	Valid
	Y1EEO_9	0.763	0.5	Valid
	Y1EEO_10	0.686	0.5	Valid
	Y1EEO_11	0.747	0.5	Valid
	Y1EEO_12	0.642	0.5	Valid
	Y1EEO_13	0.819	0.5	Valid
	Y1EEO_14	0.759	0.5	Valid
	Y1EEO_15	0.838	0.5	Valid
	Y1EEO_16	0.658	0.5	Valid
	Y1EEO_17	0.771	0.5	Valid
	Y1EEO_18	0.803	0.5	Valid
	Y1EEO_19	0.704	0.5	Valid
	X1EEO_20	0.790	0.5	Valid

Table 1. (*Continued*).

Variables	Item	Outer loadings	Critical points	Interpretation
*Y*2 Mathematics education outcomes	Y2MEO_1	0.761	0.5	Valid
	Y2MEO_2	0.659	0.5	Valid
	Y2MEO_3	0.841	0.5	Valid
	Y2MEO_4	0.763	0.5	Valid
	Y2MEO_5	0.849	0.5	Valid
	Y2MEO_6	0.672	0.5	Valid
	Y2MEO_7	0.775	0.5	Valid
	Y2MEO_8	0.810	0.5	Valid
	Y2MEO_9	0.744	0.5	Valid
	Y2MEO_10	0.819	0.5	Valid
	Y2MEO_11	0.663	0.5	Valid
	Y2MEO_12	0.858	0.5	Valid
	Y2MEO_13	0.774	0.5	Valid
	Y2MEO_14	0.851	0.5	Valid
	Y2MEO_15	0.677	0.5	Valid
	Y2MEO_16	0.798	0.5	Valid
	Y2MEO_17	0.709	0.5	Valid
	Y2MEO_18	0.787	0.5	Valid
	Y2MEO_19	0.754	0.5	Valid
	Y2MEO_20	0.672	0.5	Valid
X Strategic human resource management	XSHRM_1	0.744	0.5	Valid
	XSHRM_2	0.741	0.5	Valid
	XSHRM_3	0.779	0.5	Valid
	XSHRM_4	0.770	0.5	Valid
	XSHRM_5	0.739	0.5	Valid
	XSHRM_6	0.803	0.5	Valid
	XSHRM_7	0.692	0.5	Valid
	XSHRM_8	0.860	0.5	Valid
	XSHRM_9	0.786	0.5	Valid
	XSHRM_10	0.843	0.5	Valid
	XSHRM_11	0.770	0.5	Valid
	XSHRM_12	0.695	0.5	Valid
	XSHRM_13	0.860	0.5	Valid
	XSHRM_14	0.781	0.5	Valid
	XSHRM_15	0.810	0.5	Valid
	XSHRM_16	0.665	0.5	Valid
	XSHRM_18	0.709	0.5	Valid
	XSHRM_19	0.775	0.5	Valid
	XSHRM_20	0.721	0.5	Valid

The high outer loading values suggest the measurement model has strong convergent validity, meaning the indicators are well-correlated with their respective constructs. It confirms that the items used to measure SHRM and educational outcomes are appropriate and accurately capture the underlying concepts. High convergent validity is essential in ensuring the reliability of findings, as it validates that the constructs are measured as intended (Cheung et al., 2024).

These findings align with the literature on educational management, where robust measurement models are crucial for examining the impact of strategic HR practices on student performance. The validated items provide a solid foundation for interpreting how strategic HR interventions can improve educational outcomes, supporting the argument that effective HR management is a crucial driver of academic success (Greer, 2021).

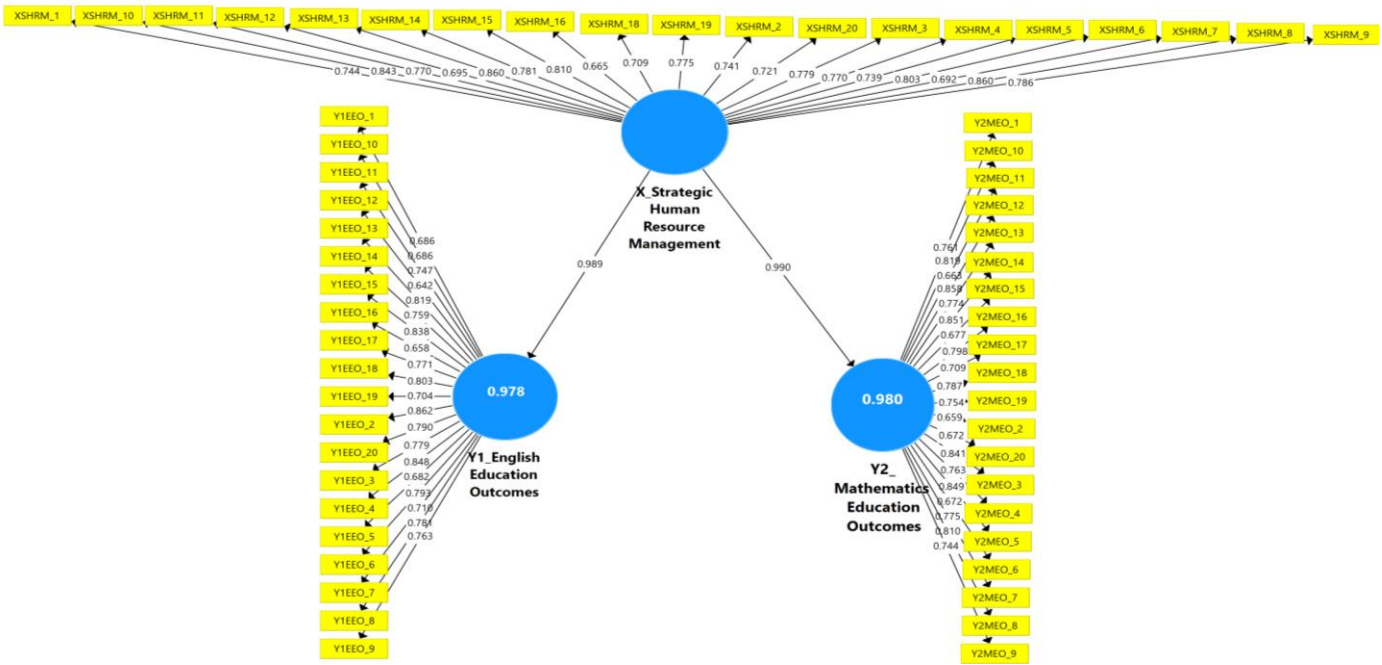

Figure 1. Structural drawing.

3.1.2. Discriminant validity

Table 2 indicates the degree to which each item loads onto its intended construct compared to other constructs.

Table 2. Results of cross-loading value results.

Item	*X*_Strategic human resource management	*Y*1_English education outcomes	*Y*2_Mathematics education outcomes
XSHRM_1	0.744	0.709	0.706
XSHRM_2	0.741	0.704	0.708
XSHRM_3	0.779	0.750	0.752
XSHRM_4	0.770	0.745	0.739
XSHRM_5	0.739	0.786	0.788
XSHRM_6	0.803	0.780	0.781
XSHRM_7	0.692	0.664	0.665

Table 2. (*Continued*).

Item	*X*_Strategic human resource management	*Y*1_English education outcomes	*Y*2_Mathematics education outcomes
XSHRM_8	0.860	0.846	0.847
XSHRM_9	0.786	0.768	0.761
XSHRM_10	0.843	0.834	0.840
XSHRM_11	0.770	0.803	0.807
XSHRM_12	0.695	0.673	0.678
XSHRM_13	0.860	0.850	0.854
XSHRM_14	0.781	0.762	0.757
XSHRM_15	0.810	0.794	0.803
XSHRM_16	0.665	0.674	0.668
XSHRM_18	0.709	0.704	0.700
XSHRM_19	0.775	0.775	0.776
XSHRM_20	0.721	0.749	0.753
Y1EEO_1	0.709	0.686	0.686
Y1EEO_2	0.868	0.862	0.863
Y1EEO_3	0.793	0.779	0.774
Y1EEO_4	0.857	0.848	0.854
Y1EEO_5	0.667	0.682	0.679
Y1EEO_6	0.746	0.793	0.798
Y1EEO_7	0.715	0.710	0.706
Y1EEO_8	0.775	0.781	0.778
Y1EEO_9	0.730	0.763	0.765
Y1EEO_10	0.711	0.686	0.682
Y1EEO_11	0.701	0.747	0.752
Y1EEO_12	0.656	0.642	0.635
Y1EEO_13	0.824	0.819	0.813
Y1EEO_14	0.764	0.759	0.753
Y1EEO_15	0.832	0.838	0.836
Y1EEO_16	0.645	0.658	0.651
Y1EEO_17	0.726	0.771	0.775
Y1EEO_18	0.809	0.803	0.800
Y1EEO_19	0.665	0.704	0.702
Y1EEO_20	0.745	0.790	0.787
Y2MEO_1	0.711	0.758	0.761
Y2MEO_2	0.682	0.658	0.659
Y2MEO_3	0.846	0.840	0.841
Y2MEO_4	0.776	0.769	0.763
Y2MEO_5	0.848	0.843	0.849
Y2MEO_6	0.662	0.674	0.672
Y2MEO_7	0.723	0.770	0.775
Y2MEO_8	0.820	0.809	0.810
Y2MEO_9	0.707	0.740	0.744

Table 2. (*Continued*).

Item	*X*_Strategic human resource management	*Y*1_English education outcomes	*Y*2_Mathematics education outcomes
Y2MEO_10	0.777	0.815	0.819
Y2MEO_11	0.682	0.658	0.663
Y2MEO_12	0.863	0.855	0.858
Y2MEO_13	0.793	0.779	0.774
Y2MEO_14	0.851	0.843	0.851
Y2MEO_15	0.665	0.679	0.677
Y2MEO_16	0.746	0.793	0.798
Y2MEO_17	0.719	0.712	0.709
Y2MEO_18	0.782	0.787	0.787
Y2MEO_19	0.720	0.750	0.754
Y2MEO_20	0.697	0.673	0.672

The data reveal that items measuring SHRM had a higher loading on the intended construct when compared to English language learning outcomes (*Y*1) and mathematics learning outcomes (*Y*2), which supports the discriminant validity of the construct. For example, items like XSHRM_8 and XSHRM_13 exhibit high loadings on SHRM (0.860) compared to English (0.846) and mathematics (0.847), demonstrating a clear distinction among the constructs (Hair et al., 2022). The cross-loadings also indicate that while SHRM items are strongly associated with their intended construct, they still exhibit moderate associations with educational outcomes, reflecting the interconnected nature of strategic HR practices and educational performance.

It suggests that strategic HR management not only stands as a distinct construct but also indirectly influences educational outcomes, aligning with previous findings that strategic HR practices enhance teacher performance and student achievement (Daguman, 2020). These results validate the measurement model, confirming that each construct is adequately captured by its respective items. This distinction ensures that interpretations of SHRM's effects on educational outcomes are grounded in robust and reliable measures, which is critical for making informed educational policy and management recommendations.

3.1.3. Reliability test

Table 3 shows the results of high composite reliability values for SHRM and the educational outcomes in English and mathematics. The composite reliability values for SHRM, English education outcomes (*Y*1), and mathematics education outcomes (*Y*2) are 0.964, 0.964, and 0.965, respectively. Cronbach's Alpha and rho_A values are consistently high across the variables, ranging from 0.961 to 0.964, further supporting the reliability of the constructs. The average variance extracted (AVE) values are 0.589 for SHRM, 0.576 for English, and 0.585 for mathematics, indicating that each construct explains more than half of the variance of its indicators, meeting the acceptable threshold of 0.5 (Hair et al., 2022).

Table 3. Results of composite reliability values.

Variables	Cronbach's Alpha	rho_A	Composite reliability	Average Variance Extracted (AVE)	Interpretation
X Strategic human resource management	0.961	0.962	0.964	0.589	Reliable
*Y*1 English education outcomes	0.961	0.963	0.964	0.576	Reliable
*Y*2 Mathematics education outcomes	0.962	0.964	0.965	0.585	Reliable

These high-reliability values indicate that the constructs used in the study are consistent and dependable measures of SHRM and educational outcomes. The results suggest that the model's constructs effectively capture the intended dimensions, enhancing the study's overall validity (Mathieu et al., 2020). The strong reliability across SHRM and both educational outcomes reinforce the robustness of the model, ensuring that the findings are based on sound measurement instruments. This high level of reliability aligns with previous studies emphasizing the importance of using reliable measurement models in educational research to accurately assess the impact of HR strategies on student outcomes (Pillai and Sivathanu, 2022).

3.2. Structural model

R Square analysis

Table 4 shows the *R* Square values for English and mathematics education outcomes, indicating how well SHRM explains the variance in these outcomes. The *R* Square for English education outcomes (*Y*1) is 0.978, and for mathematics education outcomes (*Y*2) is 0.980, with both values being identical to their respective *R* Square Adjusted values. These high *R* Square values suggest that SHRM accounts for approximately 98% of the variance in educational outcomes for both subjects, indicating an extreme explanatory power (Alfawaire and Atan, 2021).

Table 4. Results of *R* Square.

Variables	*R* Square	*R* Square Adjusted
*Y*1_English education outcomes	0.978	0.978
*Y*2_Mathematics education outcomes	0.98	0.98

The high *R* Square values imply that the SHRM model used in this study is highly effective in predicting educational outcomes, reinforcing the importance of strategic HR practices in academic settings. Such strong predictive power aligns with the findings of Miriti (2024), who emphasized the significant role of HR strategies in shaping educational success by improving teacher performance, satisfaction, and motivation. These results highlight the critical role of SHRM in education, suggesting that nearly all variations in English and mathematics outcomes can be attributed to strategic HR interventions. It underscores the importance for educational leaders to continue investing in HR strategies that align with institutional goals, as these practices directly impact student performance (Poncelet et al., 2023).

3.3. Hypothesis testing results

Table 5 presents the hypothesis test results based on path coefficients, evaluating the effect of SHRM on English and mathematics education outcomes. The standardized path coefficients are 0.002 and 0.001 for English and mathematics education outcomes, respectively, with corresponding *T*-statistics of 599.462 and 788.750. Both hypotheses (H1 and H2) were accepted, as indicated by the *p*-values of 0.000, confirming a statistically significant relationship between SHRM and the two educational outcomes. These results prove that SHRM positively impacts educational outcomes in both English and mathematics. Despite the small standardized coefficient values, the exceptionally high *T*-statistics and statistically significant *p*-values suggest a robust relationship supporting the working hypotheses.

Table 5. Hypothesis test based on path coefficient.

No.	Hypothesis	Std Value Coefficient	*T* statistics	*P* values	Interpretation
H1	*X*_ Strategic human resource management → Y1 English education outcomes	0.002	599.462	0.000	Hypothesis Accepted
H2	*X*_ Strategic human resource management → Y2 Mathematics education outcomes	0.001	788.750	0.000	Hypothesis Accepted

This finding is consistent with previous studies that highlight the importance of strategic HR management in enhancing educational performance (Knies et al., 2024). The small effect size, as shown by the standardized coefficients, may indicate that while SHRM contributes to educational success, its impact is incremental and works alongside other educational factors, such as teaching quality, curriculum design, and student motivation (Širůček and Galečka, 2017). The statistical significance emphasizes that SHRM interventions are consistently effective across academic disciplines. This uniform impact suggests that strategic HR practices, such as professional development, performance management, and employee engagement, play a crucial role in fostering a positive educational environment that supports teachers and students (Daguman, 2020).

SHRM aligns human resources with organizational goals, significantly boosting student achievement by enhancing instructional quality and resource allocation (Cooke et al., 2021). This alignment ensures that educators are adequately supported and motivated, fostering an environment conducive to learning. Alayoubi et al. (2020) reported that effective SHRM practices, such as teacher performance evaluations and professional development, significantly improved student learning outcomes in English and mathematics. These practices increased teacher competency and engagement, directly impacting student academic performance. Similarly, Knies et al. (2024) highlighted that SHRM strategies tailored to teacher needs—such as personalized coaching and collaborative opportunities—positively impacted student learning outcomes by encouraging innovative teaching methods.

Strategic SHRM implementation also supports the recruitment and retention of high-quality educators. Meijerink et al. (2021) found that SHRM practices that emphasize continuous learning and employee recognition increase teacher

satisfaction and have a measurable impact on student mastery of core subjects such as English and mathematics. Furthermore, Pillai and Sivathanu (2022) found that institutions that integrated SHRM into their broader organizational strategy experienced marked improvements in standardized test scores, particularly in mathematics, due to better curriculum planning and resource allocation.

From a theoretical perspective, these findings contribute to the broader literature on educational management by reinforcing that effective HR strategies are critical to educational success. The results align with the firm's resource-based view (RBV), which posits that human resources are a strategic asset that can provide a competitive advantage (Ployhart, 2021). In educational institutions, strategic HR management ensures that educators are well-supported, motivated, and aligned with institutional goals, leading to improved student outcomes (Bratton et al., 2021). Practically, the findings suggest that educational leaders and policymakers should prioritize SHRM as part of their overall strategy to enhance academic performance. Investments in strategic HR practices, such as ongoing professional development, effective performance management systems, and creating a supportive work environment, can directly contribute to better educational outcomes. For instance, training programs that enhance teachers' skills and competencies improve instructional quality and indirectly benefit student learning experiences (Daguman, 2020).

This study's results align with previous research that has consistently found a positive link between strategic HR management and educational outcomes. For example, Alayoubi et al. (2020) reported that schools with well-implemented HR strategies, including teacher appraisal and feedback systems, significantly improved student achievement in core subjects. Meijerink et al. (2021) found that HR practices that emphasize collaboration, continuous learning, and recognition of teaching staff positively impact student performance.

However, the current study adds to the literature by demonstrating that the impact of SHRM is not confined to one subject area but is broadly applicable across different academic disciplines, such as English and mathematics. The benefits of SHRM are not subject-specific but contribute to a holistic improvement in the educational environment. This broad applicability underscores the importance of adopting a comprehensive approach to HR management in educational settings rather than focusing on isolated interventions.

While this study provides valuable insights into the role of SHRM in education, there are several areas where future research could further expand our understanding. First, exploring the mechanisms through which SHRM influences educational outcomes would be valuable. While this study confirms a significant relationship, it does not delve into the specific pathways—such as teacher motivation, job satisfaction, or instructional quality—that mediate this relationship. Longitudinal studies could help unravel these mechanisms, offering a more detailed picture of how HR strategies translate into improved student outcomes over time (Boon et al., 2024). Additionally, future research could investigate the contextual factors that might moderate the impact of SHRM on educational outcomes. For instance, the influence of SHRM might vary depending on school size, student demographics, or available resources. Understanding these contextual nuances would allow for more

targeted HR interventions tailored to different educational environments' specific needs (Burke and Morley, 2023).

Another potential area for exploration is the comparative impact of different HR practices. This study treats SHRM as a single construct, but future research could disaggregate SHRM into its components—such as recruitment, training, performance management, and employee engagement—to determine which practices have the most significant impact on educational outcomes. It would enable schools to prioritize their HR efforts on the most effective strategies, optimizing resource allocation (Knies et al., 2024). Finally, expanding the scope of research to include qualitative methods could provide deeper insights into the lived experiences of educators and administrators implementing SHRM practices. Interviews and case studies could reveal the challenges and successes associated with strategic HR initiatives, providing practical guidance for other institutions looking to adopt similar approaches (Shet et al., 2021).

SHRM can significantly enhance educational outcomes, particularly in English and mathematics. By implementing targeted SHRM practices, educational institutions can create a supportive and effective learning environment that benefits teachers and students. These insights provide actionable recommendations for educators and policymakers to integrate SHRM into their strategic plans for sustainable academic success.

3.3.1. SHRM in educational policy: A strategic approach

SHRM in the educational sector aims to ensure that the management of educational staff—teachers, administrators, and support staff—aligns with the broader goals of improving student learning outcomes, fostering innovation, and building sustainable systems within schools (Cascio and Boudreau, 2020). It involves adopting a long-term, strategic perspective on human capital development, making it integral to educational policy formulation. The integration of SHRM in educational policy provides a model where educational leadership and human resource management practices are linked to national goals of quality education, effective teaching, and equitable access to resources.

According to Armstrong and Taylor (2021), effective SHRM practices in education can directly contribute to educational infrastructure improvements. This is achieved by fostering a culture of continuous professional development for educators, thereby improving the quality of teaching and learning environments. Furthermore, SHRM can ensure that human resources are allocated efficiently, focusing on high-demand areas such as STEM subjects, special education, and rural schools where teacher shortages are prevalent. By aligning staffing policies with strategic objectives, SHRM can optimize educational outcomes across various regions.

3.3.2. The role of SHRM in resource allocation

One of the key challenges in educational policy today is the efficient allocation of resources. Traditionally, resource distribution has been based on historical budgets, without much regard for the actual needs of schools and students (Bush and Glover, 2020). SHRM provides a strategic framework to address this issue. Through workforce planning, recruitment strategies, and performance

management, SHRM ensures that resources are allocated where they are needed most. This can include reallocating staff from underperforming schools to those facing staffing shortages or shifting professional development resources to areas with the greatest needs. For instance, in countries where rural areas suffer from teacher shortages, SHRM practices can promote targeted recruitment strategies and retention policies aimed at bringing qualified teachers to these regions (Sahlberg, 2021). Moreover, SHRM allows educational institutions to make data-driven decisions, ensuring that resources are allocated based on actual performance metrics, student outcomes, and community needs.

In addition to human resources, SHRM can be instrumental in optimizing physical infrastructure. For example, aligning teaching staff with the infrastructure of a school—such as ensuring that teachers have access to adequate facilities, technology, and support services—can improve the overall learning environment. By ensuring that the human and material resources are in sync, SHRM can enhance the overall efficiency of the educational system (Bennett, 2022).

3.3.3. Enhancing teacher effectiveness through SHRM

A critical aspect of improving educational infrastructure is enhancing teacher effectiveness. SHRM plays a central role in this by focusing on the professional development of educators, fostering a culture of excellence in teaching, and providing adequate support and resources to enhance teacher performance. As evidenced by studies conducted by Hargreaves and Fullan (2020), professional development initiatives linked to SHRM principles have led to improvements in both teacher quality and student achievement.

Through strategic performance management, SHRM integrates continuous feedback loops, creating opportunities for teachers to receive constructive feedback and engage in professional learning communities (PLCs). By investing in teachers and aligning their development with national or regional policy goals, educational systems can ensure that their human resources are consistently improving, adapting to new challenges, and meeting the needs of diverse student populations.

3.3.4. SHRM and educational infrastructure improvement

SHRM also offers strategic benefits in the broader context of educational infrastructure improvement. Educational policies that prioritize the strategic alignment of human resources with infrastructure development can help in the long-term planning of school facilities. As highlighted by Darling-Hammond (2020), education systems that invest in the development of both human and material resources tend to perform better in terms of student outcomes, teacher satisfaction, and overall infrastructure efficiency. For instance, aligning SHRM with the digital transformation in education can lead to better integration of technology in the classroom. Teachers who are equipped with the necessary skills and resources are better able to utilize digital tools effectively, contributing to the improvement of teaching infrastructure. Likewise, SHRM can foster collaborations between schools, local governments, and businesses, creating a more holistic approach to infrastructure development that goes beyond mere brick-and-mortar improvements (Tebbe and Knippenberg, 2021).

3.4. Goodness of fit (GoF) and predictive relevance (Q^2)

Table 6 results of the GoF index show a high level of fit, with a GoF value of 0.721. The GoF index is derived from the average communality and the average *R* Square, which are 0.979 and 0.531, respectively. According to Becker et al. (2023), a GoF value above 0.36 is considered high, indicating the model has a solid overall fit.

Table 6. Results of GoF.

Average Communality	Average *R* Square	GoF Index	Interpretation
0.979	0.531	0.721	High GoF

The high GoF value suggests that the model used in the study effectively captures the relationships between the variables, demonstrating a good balance between explained variance and measurement quality. It implies that the structural model is robust, and the hypothesized relationships align well with the observed data (Hair et al., 2022).

The high level of fit indicated by the GoF index further reinforces the reliability and validity of the findings, suggesting that strategic human resource management significantly contributes to educational outcomes. This robust model fit supports using SHRM as a valuable predictor in educational settings, emphasizing the importance of aligning HR strategies with educational goals to enhance performance (Karman, 2020). The robust model fit provides confidence in the study's conclusions, supporting the effectiveness of SHRM practices across different educational outcomes. This alignment with a high GoF index underscores the strategic value of HR management in improving educational success.

Table 7 results of Q^2 demonstrate that SHRM exhibits a considerable predictive relevance for both English and mathematics education outcomes. Specifically, the Q^2 value for SHRM is 0.545, for English education outcomes (*Y*1) is 0.525, and for mathematics education outcomes (*Y2*) is 0.537. A Q^2 value above 0.35 indicates considerable predictive relevance, according to Hair et al. (2022).

Table 7. Results of Q^2.

Variables	SSO	SSE	Q^2 (= 1 − SSE/SSO)	Interpretation
*X*_ Strategic human resource management	3800	1728.138	0.545	Large predictive relevance
*Y*1_ English education outcomes	4000	1900.651	0.525	Large predictive relevance
*Y*2_ Mathematics education outcomes	4000	1851.301	0.537	Large predictive relevance

These results suggest that SHRM strongly predicts educational performance in both subjects, highlighting its critical role in shaping educational success. The high predictive relevance indicates that SHRM can significantly explain the variance in educational outcomes, reinforcing the importance of strategic HR practices in the educational sector (Altındağ and Bilaloğlu Aktürk, 2020). The consistently high Q^2 values across English and mathematics underscore the robustness of SHRM as a determinant of student achievement, suggesting that the application of strategic HR

management can uniformly enhance educational quality. This insight is valuable for educational institutions aiming to optimize their HR strategies to achieve better academic results. Moreover, the findings align with recent studies that emphasize the strategic role of HR in educational settings, supporting the argument that effective HR management is essential for fostering a productive learning environment (Altındağ and Bilaloğlu Aktürk, 2020).

3.5. Effect size (f^2)

Table 8 indicates that SHRM has a medium effect on English and mathematics education outcomes. Specifically, the f^2 value for English education outcomes ($Y1$) is 0.297, and for mathematics education outcomes ($Y2$), it is 0.177. According to Cohen's criteria, an f^2 value of 0.15 to 0.35 suggests a medium effect size, implying that SHRM moderately impacts educational performance in both subjects (Jebbari, 2024).

Table 8. Results of f^2.

Variables	***Y*1_ English education outcomes**	***Y*2_ Mathematics education outcomes**
*X*_ Strategic human resource management	0.297	0.177
Interpretation	Medium effect	Medium effect

These findings highlight the critical role that SHRM plays in shaping educational outcomes, suggesting that while SHRM practices contribute positively to academic performance, the influence is manageable but still significant enough to warrant attention from educational administrators. The medium effect reflects that strategic HR management can moderately enhance the teaching and learning environment, subsequently influencing student outcomes (Alfawaire and Atan, 2021). The consistent medium effect across both English and mathematics outcomes suggests that the impact of SHRM is uniform across different academic disciplines. This uniformity provides valuable insights for policymakers aiming to standardize HR practices across various educational settings, ensuring a balanced approach to improving overall educational quality. The findings align with recent literature emphasizing the need for effective HR management strategies in schools to achieve better educational performance (Bratton et al., 2021).

3.6. Robustness test

The robustness test examines the linearity of the relationship between SHRM and educational outcomes in English and mathematics (**Table 9**).

Table 9. Results of robustness.

Linearity test	***p*-value**	**Interpretation**
Strategic human resource management x Strategic human resource management → English education outcomes	0.432	Linear
Strategic human resource management x Strategic human resource management → Mathematics education outcomes	0.864	Linear

Table 9 shows a *p*-value of 0.432 for the English education outcomes and 0.864 for the mathematics education outcomes, indicating that both relationships are linear. A *p*-value greater than 0.05 typically suggests that the null hypothesis cannot be rejected, confirming that the relationship is not significantly different from linearity (Maneejuk and Yamaka, 2021). These findings imply that strategic human resource management consistently affects educational outcomes across different subject areas without deviation from linearity. This linear relationship suggests that any changes in SHRM practices will proportionally impact educational outcomes, which is crucial for policymakers and educational leaders when designing HR strategies to improve academic performance. The robustness of the linearity highlights the effectiveness of SHRM across different academic disciplines and supports the generalizability of the findings (Perera and Premadasa, 2023).

Therefore, these results underscore the importance of consistently applying strategic HR practices in education, aligning with existing literature that emphasizes the critical role of human resources in enhancing educational quality (El-Farr and Hosseingholizadeh, 2019). This alignment with linearity strengthens the evidence that SHRM is a reliable predictor of educational outcomes, reinforcing the strategic importance of HR management in the educational context.

4. Conclusion

This study examined the impact of SHRM on educational outcomes in English and mathematics, emphasizing student perspectives. The findings confirm that SHRM significantly influences academic performance in these core subjects, highlighting its critical role in educational settings. The high *R*-square values indicate that SHRM explains approximately 98% of the variance in English and mathematics outcomes, demonstrating the effectiveness of strategic HR practices in shaping academic success. The predictive solid relevance of SHRM further underscores its importance as a determinant of student achievement, supporting the argument that aligning HR strategies with educational goals can enhance overall performance. The study's results align with the broader literature on educational management, suggesting that effective HR practices—such as professional development, performance management, and resource allocation—play a vital role in creating a supportive educational environment. The acceptance of the hypotheses confirms the positive relationship between SHRM and academic outcomes, reinforcing the strategic value of HR management in fostering educational success. These findings provide valuable insights for educators and policymakers, suggesting that investments in strategic HR practices can directly benefit student learning experiences.

Furthermore, the study highlights the uniform impact of SHRM across different academic disciplines, suggesting that its benefits are not confined to specific subjects but contribute to a holistic improvement in the educational environment. This broad applicability emphasizes the need for a comprehensive approach to HR management in schools to enhance teacher and student performance. Future research should explore the specific mechanisms through which SHRM influences educational outcomes, such as the roles of teacher motivation, job satisfaction, and instructional

quality. Additionally, investigating the contextual factors that moderate the impact of SHRM, such as school size, student demographics, or available resources, provides deeper insights into optimizing HR strategies in diverse educational settings. Disaggregating SHRM into its components—such as recruitment, training, and employee engagement—could help identify the most impactful practices, guiding schools in prioritizing their HR efforts effectively.

This study contributes to understanding how strategic HR management can be leveraged to improve educational outcomes, offering a new perspective that centres on student perceptions. By demonstrating the significant impact of SHRM on English and mathematics performance, this research provides a strong case for integrating strategic HR practices into educational policy and management frameworks. As educational institutions seek ways to enhance academic performance, aligning HR strategies with organizational goals will be essential in driving long-term success.

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