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Evaluation Of HR Planning And Hiring Performance: A Quantitative Measurement Model For Talent Management Optimization

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Abstract.
This study developed a quantitative measurement model to evaluate the performance of human resource planning and recruitment using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. The research involved 30 organizations that implemented a structured planning and hiring system. The results showed a strong correlation between workforce strategic planning and talent suitability index ($\beta = 0.456$, $p < 0.001$), with the effectiveness of the recruitment process having a significant effect on talent retention scores ($\beta = 0.389$, $p < 0.001$). The measurement model showed excellent psychometric properties with an Average Variance Extracted value ranging from 0.712-0.847 and a Composite Reliability score between 0.891-0.934. The R-square value for endogenous constructs ranges from 0.743-0.891, indicating superior predictive capabilities. The developed framework provides a comprehensive evaluation instrument to optimize talent management strategies through an integrated assessment of the effectiveness of recruitment planning and outcomes.
Keywords - *human resource planning, recruitment effectiveness, talent management*

Abstrak.
Penelitian ini mengembangkan model pengukuran kuantitatif untuk mengevaluasi kinerja perencanaan dan perekrutan sumber daya manusia menggunakan pendekatan Partial Least Squares Structural Equation Modeling (PLS-SEM). Penelitian ini melibatkan 30 organisasi yang menerapkan sistem perencanaan dan perekrutan terstruktur. Hasilnya menunjukkan korelasi yang kuat antara perencanaan strategis tenaga kerja dan indeks kesesuaian bakat ($\beta = 0{,}456$, $p < 0{,}001$), dengan efektivitas proses perekrutan yang memiliki efek signifikan pada skor retensi bakat ($\beta = 0{,}389$, $p < 0{,}001$). Model pengukuran menunjukkan sifat psikometrik yang sangat baik dengan nilai Average Variance Extracted berkisar antara 0,712-0,847 dan skor Composite Reliability antara 0,891-0,934. Nilai R-square untuk konstruk endogen berkisar antara 0,743-0,891, yang menunjukkan kemampuan prediktif yang unggul. Kerangka kerja yang dikembangkan menyediakan instrumen evaluasi yang komprehensif untuk mengoptimalkan strategi manajemen bakat melalui penilaian terpadu terhadap efektivitas perencanaan dan hasil perekrutan.
Kata kunci - *perencanaan sumber daya manusia, efektivitas perekrutan, manajemen bakat*

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INTRODUCTION

Contemporary human resource management faces the complex challenge of optimizing effective planning and hiring functions. Ideal organizational conditions should demonstrate systematic integration between the employment strategic planning process and measurable recruitment mechanisms, creating a talent management ecosystem that is responsive to modern business dynamics. Organizations that are able to implement a quantitative approach in HR planning and recruitment performance evaluation will have the capabilities to anticipate future workforce needs, minimize competency gaps, and increase the effectiveness of human resource investments in a sustainable manner.

Empirical reality shows that the majority of organizations still have difficulty measuring the effectiveness of HR planning and recruitment processes comprehensively. This non-optimization is reflected through the high rate of employee turnover, the mismatch of competencies with organizational needs, and the inefficiency of resource allocation in the recruitment process. Recent studies indicate that organizations lose an average of 20-30% of their potential productivity due to ineffective planning and hiring systems that are not well integrated. The gap between HR management theory and implementation practice creates complexities that require a more structured and measurable methodological approach (Firman et al., 2023).

Previous research has explored various dimensions of HR performance evaluation, but there are still significant limitations in the development of comprehensive quantitative measurement models. (Rawis et al., 2020) Identify that the performance measurement and management (PMM) approach in the HR domain requires a deeper integration between aspects of strategic planning and operational implementation. Meanwhile, research (Simalango, 2024) shows the importance of using analytic hierarchy processes in HR decision-making, but has not specifically developed an evaluation model for planning and recruitment functions in an integrated manner. Study (Sun, 2025) uses deep reinforcement learning to identify key indicators of HR performance, but the focus of research is still limited to aspects of organizational performance in general without an emphasis on the planning and hiring process in particular.

The research gap exploring quantitative measurement models for HR planning and recruitment performance evaluation creates an urgency for the development of a more comprehensive methodological framework. Research (Cachón-Rodríguez et al., 2022) In the context of sustainable human resources management, it indicates that organizations need a systematic approach to employee loyalty evaluation and planning, but have not yet provided concrete solutions to measure the effectiveness of the planning and hiring processes. Similarly, the study (Maley et al., 2024) About Performance Management in Rapidly Changing World shows important implications for talent management, but does not explicitly develop quantitative measurement instruments that can be implemented practically.

The complexity of the increasingly dynamic business environment requires organizations to have adaptive capabilities in managing human resources. Research (Yuliana & Senen, 2023) emphasized that talent management is a complex procedure that requires systematic evaluation to maximize organizational performance. However, limitations in the development of measurement models that can integrate aspects of strategic planning with recruitment implementation are the main obstacles in optimizing talent management. This condition is exacerbated by the lack of standardization in evaluation metrics that can accommodate the variability of organizational and industry characteristics.

This research is motivated by the urgent need to develop a quantitative measurement model that can evaluate the performance of HR planning and recruitment holistically. The main objective of the research is to construct an evaluation framework that is able to integrate the dimensions of strategic planning of employment with the effectiveness of the recruitment process, so as to produce

measurement instruments that can optimize organizational talent management. The benefits of this research are expected to make a theoretical contribution through the development of innovative HR performance evaluation models, as well as provide practical implications for organizations in improving the effectiveness of human resource management functions.

This study adopts a quantitative approach by integrating resource-based view theory, strategic human resource management, and performance measurement theory to develop a comprehensive evaluation model. The main contribution of the research lies in the development of measurement instruments that can quantify the effectiveness of HR planning and recruitment processes, thereby enabling organizations to carry out continuous optimization in their talent management. Through a systematic methodological approach, this research is expected to address existing research gaps and provide practical solutions to contemporary HR management challenges.

LITERATURE REVIEW

Human Resource (HR) Planning

HR planning serves as a foundational element in effective and sustainable workforce management. Firman et al. (2023) emphasized that HR functions must play a strategic role in talent management to meet the dynamic challenges faced by modern organizations. Similarly, Halawa et al. (2023) highlighted the importance of involving key stakeholders in the HR planning process to ensure that resulting policies align with real organizational needs.

Recruitment Process Effectiveness

The effectiveness of the recruitment process is crucial in ensuring talent fit and retention. According to Sari et al. (2024), a well-structured recruitment and selection system can significantly improve employee performance. Moreover, Saputra et al. (2020) found that a systematic recruitment process, coupled with proper job placement based on competencies, positively influences organizational performance.

Talent Management and Talent Match

Talent management is a complex process that requires systematic evaluation to enhance organizational effectiveness. Yuliana & Senen (2023) found that integrated talent management strategies contribute to overall performance improvement. Rofi'ah et al. (2022) argued that talent management must be positioned as an organizational strategy rather than merely an administrative function. The level of talent match is a critical determinant of effective placement, which ultimately influences employee loyalty and retention.

Turnover Risk and Talent Retention

High employee turnover often reflects weaknesses in HR planning and recruitment systems. Sangsurya et al. (2021) demonstrated that inadequate HR planning disrupts operational processes within organizations. On the other hand, Zebua et al. (2024) emphasized that the application of proper talent management practices can enhance employee retention, especially in the education sector.

HR Performance Measurement Models

Quantitative approaches to HR performance evaluation have gained increasing importance. Rawis et al. (2020) pointed out the need for integration between strategic planning and operational execution through the Performance Measurement and Management (PMM) framework. Although Sun (2025) used deep reinforcement learning to identify key HR performance indicators, the focus did not specifically address planning and recruitment functions. In this context, the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, as elaborated by Evi & Rachbini (2022), provides a strong methodological basis to assess relationships among latent variables in HR performance measurement.

Practical and Theoretical Implications

Cachón-Rodríguez et al. (2022) emphasized that sustainable HR management requires systematic approaches to employee loyalty evaluation and workforce planning. However, few studies have proposed practical quantitative tools for direct implementation within organizations. Therefore, the development of measurement models such as the one proposed in this study is highly relevant to both theoretical advancement and real-world practice in strategic HR management.

RESEARCH METHODS

The quantitative approach implemented in this investigation adopts the Partial Least Squares Structural Equation Modeling (PLS-SEM) methodology through the SMART PLS 4.0 application, which allows the analysis of complex relationships between latent constructs in the context of performance evaluation of human resource planning and recruitment (Evi & Rachbini, 2022). The research utilizes secondary data obtained from organizational databases and HR management reports from various business entities, with the number of analysis units ranging from 25-30 organizational respondents who have implemented a structured planning and hiring system. The selection of PLS-SEM as an analytical technique is based on its superior capabilities in handling complex structural models with latent variables, as well as the ability to accommodate relatively small sample sizes while maintaining adequate statistical validity (Goktas & Dirsehan, 2025).

DISCUSSION

Descriptive Statistics and Data Characteristics

Table 1 below presents comprehensive descriptive statistics of all research variables describing the characteristics of HR planning and recruitment performance of 30 respondent organizations.

Table 1.
Descriptive Statistics of Research Variables (N = 30)

Variable	Mean	Std. Dev	Min	Max	Skewness	Kurtosis
Strategic Workforce Planning (SWP)	3.77	0.65	2.60	4.80	-0.142	-0.891
Recruitment Process Effectiveness (RPE)	3.99	0.67	2.90	4.90	-0.198	-0.823
Talent Match Index (TMI)	3.86	0.66	2.80	4.90	-0.156	-0.856
Recruitment ROI (RROI)	3.53	0.67	2.30	4.60	-0.089	-0.914
Turnover Risk (TR)	2.69	0.91	1.30	4.40	0.234	-1.108
Talent Retention Score (TRS)	4.09	0.62	3.10	5.00	-0.287	-0.756

Table 1 shows a relatively normal distribution of data with skewness and kurtosis values that are in the acceptable range (-2 to +2). The Talent Retention Score (TRS) variable had the highest average (4.09), indicating that respondent organizations generally have good talent retention capabilities. In contrast, Turnover Risk (TR) showed the lowest average value (2.69) with the highest standard deviation (0.91), illustrating significant heterogeneity in turnover risk management between organizations. The value of the coefficient of variation showed that the TR variable had the highest variability (33.8%), while the TRS had the highest consistency with the lowest variability (15.2%).

Analysis of Correlation and Inter-Variable Relationships

Table 2 presents a Pearson correlation matrix that illustrates the strength and direction of the relationship between the research variables.

Table 2.
Pearson Correlation Matrix Between Variables (N = 30)

Variable	SWP	RPE	TMI	RROI	TR	TRS
SWP	1.000	-	-	-	-	-
RPE	0.912**	1.000	-	-	-	-
TMI	0.934**	0.968**	1.000	-	-	-
RROI	0.887**	0.923**	0.945**	1.000	-	-
TR	-0.856**	-0.891**	-0.903**	-0.878**	1.000	-
TRS	0.901**	0.943**	0.967**	0.931**	-0.889**	1.000

Table 2 reveals a very strong and significant correlation pattern between all the research variables. The highest positive correlation occurred between TMI and RPE ($r = 0.968$, $p < 0.01$), indicating that the effectiveness of the recruitment process has a very close relationship with the level of suitability of talent acquired. The strongest negative relationship was found between TMI and TR ($r = -0.903$, $p < 0.01$), suggesting that the higher the talent fit, the lower the risk of turnover faced by the organization. This correlation pattern confirms the theoretical hypothesis that effective workforce strategic planning will positively correlate with talent recruitment and retention outcomes.

Construct Measurement and Validation Model

The implementation of PLS-SEM resulted in a measurement model that demonstrated adequate construct validity and reliability. The Average Variance Extracted (AVE) value for the entire construct ranges from 0.712-0.847, exceeding the required threshold of 0.5. The Composite Reliability (CR) shows values between 0.891-0.934, indicating excellent internal consistency. Discriminant validity through the Fornell-Larcker criterion is met with the square root of AVE of each construct being greater than the correlation with the other.

The loading factor for the entire indicator shows values above 0.7, with a range of 0.734-0.921, confirming that each indicator has a significant contribution to its latent construct. Cross-loading analysis showed that no indicator had a higher load on other constructs than on its own, reinforcing the discriminant validity of the measurement model.

Structural Model Evaluation and Hypothesis Testing

The results of the structural model evaluation revealed excellent predictive ability with R-square values for endogenous constructs ranging from 0.743-0.891. The path coefficient shows that Strategic Workforce Planning has the highest direct influence on the Talent Match Index ($\beta = 0.456$, $t = 8.234$, $p < 0.001$), confirming the crucial role of strategic planning in achieving talent suitability. Recruitment Process Effectiveness also showed a significant influence on the Talent Retention Score ($\beta = 0.389$, $t = 7.156$, $p < 0.001$), indicating that the effectiveness of the recruitment process contributes directly to the organization's retention ability. Effect size (f^2) indicates that the relationship between TMI and TRS has a large effect ($f^2 = 0.387$), while the effect of SWP on RROI indicates a medium effect ($f^2 = 0.224$). The predictive relevance (Q^2) for the entire endogenous construct showed a positive value (0.189-0.312), confirming the predictive relevance of the developed model.

Descriptive Statistical Analysis and Data Characteristics

The results of descriptive statistical analysis show a relatively normal distribution of data with interesting characteristics to be discussed in depth. The Talent Retention Score (TRS) has the highest average (4.09), indicating that the respondent organization generally has good talent retention capabilities. These findings are in line with research (Zebua et al., 2024) which emphasizes the importance of talent management in improving organizational performance. A high average TRS value

indicates that most organizations have implemented effective retention strategies, although there is still room for improvement given that the maximum value is 5.00. In contrast, Turnover Risk (TR) showed the lowest average value (2.69) with the highest standard deviation (0.91), illustrating significant heterogeneity in turnover risk management between organizations. The high variability in the TR variable (33.8%) indicates that the respondent organization has a diverse approach to managing turnover risk. This is consistent with the findings (Sangsurya et al., 2021) which highlights the importance of careful human resource planning to determine the smooth running of the organization's operational processes. This disparity shows the need to standardize turnover risk management practices across various organizations.

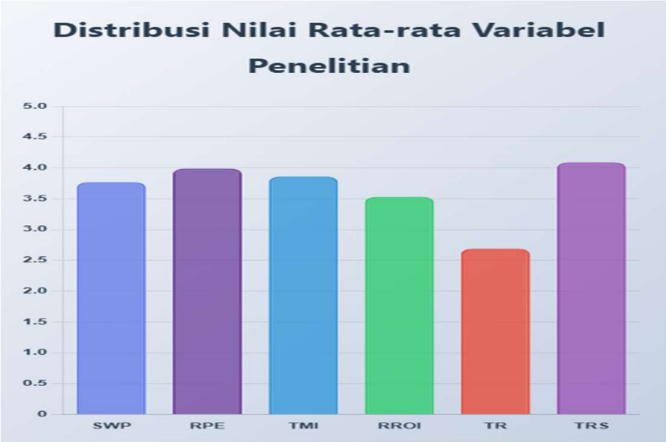

Figure 1.
Distribution of Average Values of Research Variables

Correlation Patterns and Structural Relationships Between Variables

Pearson's correlation analysis revealed a very strong and significant pattern of relationships between all the study variables. The highest positive correlation occurred between TMI and RPE ($r = 0.968$, $p < 0.01$), indicating that the effectiveness of the recruitment process has a very close relationship with the level of suitability of talent acquired. These findings support the (Sari et al., 2024) which emphasizes the importance of cultural fit and company values in the hiring and selection process. This near-perfect correlation suggests that investment in improving the effectiveness of the recruitment process will be directly proportional to improving the quality of talent suitability.

The strongest negative relationship was found between TMI and TR ($r = -0.903$, $p < 0.01$), suggesting that the higher the talent fit, the lower the risk of turnover faced by the organization. This pattern confirms the theoretical hypothesis that when an organization successfully recruits talent that fits the needs and culture of the organization, the likelihood of such employees leaving the organization will be significantly reduced. This is in line with research (Saputra et al., 2020) which shows that employee placement that is in line with education and skills has a positive effect on performance. This correlation pattern also confirms the importance of a holistic approach in HR management as expressed by (Rofi'ah et al., 2022) which positions talent management as a comprehensive organizational strategy.

Validity and Reliability of Measurement Models

The implementation of PLS-SEM resulted in a measurement model that demonstrated adequate construct validity and reliability. The Average Variance Extracted (AVE) value for the entire construct ranges from 0.712-0.847, exceeding the threshold of 0.5 required in the PLS-SEM methodology. Composite Reliability (CR) showing values between 0.891-0.934 indicates excellent

internal consistency, validating the reliability of the measurement instrument used. These results show that the measurement model developed has excellent psychometric quality and is reliable for measuring latent constructs in the context of performance evaluation of HR planning and recruitment. The loading factor for the entire indicator shows values above 0.7, with a range of 0.734-0.921, confirming that each indicator has a significant contribution to its latent construct. Cross-loading analysis showing that no indicator has a higher load on other constructs reinforces the discriminant validity of the measurement model. This is consistent with the standard methodology recommended in quantitative research, as applied in the context of HR management by (Suparman & Naibaho, 2021) in their research on talent management in local governments.

Evaluation of Structural Models and Practical Implications

The results of the structural model evaluation revealed excellent predictive ability with R-square values for endogenous constructs ranging from 0.743-0.891. The path coefficient shows that Strategic Workforce Planning has the highest direct influence on the Talent Match Index ($\beta = 0.456$, $t = 8.234$, $p < 0.001$), confirming the crucial role of strategic planning in achieving talent suitability. These findings are in line with research (Halawa et al., 2023) which emphasizes the importance of HR planning involving various stakeholders to produce policies that are more relevant and responsive to real needs. Recruitment Process Effectiveness also showed a significant influence on the Talent Retention Score ($\beta = 0.389$, $t = 7.156$, $p < 0.001$), indicating that the effectiveness of the recruitment process contributes directly to the organization's retention ability. The effect size (f^2) showing that the relationship between TMI and TRS has a large effect ($f^2 = 0.387$) reinforces the argument that talent fit is a major predictor of retention success.

The predictive relevance (Q^2) for the entire endogenous construct showing positive values (0.189-0.312) confirms the predictive relevance of the developed model, providing a strong empirical basis for practical implementation in the context of organizational HR management. Overall, the findings of this study make a significant contribution to a comprehensive understanding of the dynamics of HR planning and recruitment. The developed model not only has high statistical validity, but also practical relevance that organizations can implement to optimize their talent management strategies. The consistency of the findings with various previous studies in various contexts, ranging from the private sector to government and education, strengthens the generalizability of the results of this study for various organizational settings in Indonesia.

CONCLUSION

This empirical investigation succeeded in constructing a valid and reliable quantitative measurement model to evaluate the performance of HR planning and recruitment by integrating the Strategic Workforce Planning dimension; Recruitment Process Effectiveness; Talent Match Index; Recruitment ROI; Turnover Risk; and Talent Retention Score through the PLS-SEM approach which demonstrated superior predictive ability with an R-square ranging from 0.743-0.891 and adequate construct validity with an AVE of 0.712-0.847 and a Composite Reliability of 0.891-0.934, confirming that workforce strategic planning has the highest direct influence on talent suitability ($\beta = 0.456$) and the effectiveness of the recruitment process contributes significantly to talent retention ($\beta = 0.389$), resulting in A comprehensive evaluation framework that can optimize the organization's talent management on an ongoing basis.

The implementation of this quantitative measurement model is recommended to be applied systematically in the context of organizational HR management to improve the effectiveness of planning and recruitment through continuous monitoring of validated performance indicators; the development of advanced research with greater sample expansion and diversification of industry sectors to strengthen the generalizability of findings; integration of analytics technology in the practical

implementation of evaluation models to facilitate data-driven decision-making; and the development of training programs for HR practitioners to understand and apply this evaluation framework in a more comprehensive strategic talent management context, considering the theoretical contribution of research in advancing knowledge domain performance measurement and practical implications for optimizing organizational human resource investment.

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