A Study on the Relationship Between Competencies and Job Performance of Human Resource Managers in High-Tech Enterprises

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Abstract. This study examines the relationship between competencies and job performance among human resource managers in high-tech enterprises, utilizing a Structural Equation Modeling approach for systematic analysis. The results demonstrate that general, managerial, professional, and underlying driving competencies all positively influence job performance. Based on these findings, recommendations are provided for the selection and development of human resource managers within enterprises. The research offers a theoretical foundation for understanding the pathways through which competencies affect job performance and for enhancing both competency and performance levels in this context.

Keywords: Competencies; Job Performance; Structural Equation Modeling

1 Introduction

Under the context of the innovation-driven development strategy, the core competitiveness of high-tech enterprises increasingly manifests in the acquisition and empowerment of strategic human resources. As key implementers, the role of human resource managers is undergoing a profound transformation from traditional administrative handlers to strategic partners and change agents[1]. This shift places new demands on their competencies, and clarifying how these competencies specifically influence job performance has become a central issue for enhancing the overall effectiveness of enterprise human resource management. Although competency models are recognized as important tools for linking individual capabilities to organizational performance, existing research still has limitations[2]. On one hand, research on the competencies of human resource managers within the specific context of high-tech enterprises remains relatively scarce, and their unique knowledge-intensive and highly dynamic characteristics have not been fully considered. On the other hand, theoretical and empirical exploration into the mechanisms through which competencies affect

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performance requires further depth. Therefore, this study focusing on the competencies of human resource managers in high-tech enterprises, this study categorizes them into four dimensions: General Competencies (e.g., learning ability, interpersonal skills, digital literacy), Managerial Competencies (e.g., planning, organizing, leading, controlling), Professional Competencies (e.g., foundational professional knowledge, vertical module expertise, applied professional skills), and Underlying Driving Competencies (e.g., motivation, values, self-concept, stress tolerance). It investigates the relationship between these competency dimensions and job performance.

2 Heoretical Framework and Research Hypothesis

2.1 Theoretical Framework

The Iceberg Model. A prominent theoretical model of competency in academia is the Iceberg Model, which emphasizes the importance of both observable behaviors and latent competency characteristics[3]. As shown in Figure 1, this model divides individual attributes into two major categories: those "above the waterline" and those "below the waterline." The former refers to an individual's foundational knowledge and basic skills, which can be improved over a relatively short period. The latter involves social roles, self-image, intrinsic traits, and motivations. These are less susceptible to external intervention but exert a decisive influence on an individual's behavioral patterns and goal attainment. Building upon McClelland's foundational work, Spencer further clarified that the knowledge and skills "above the waterline" are poor at differentiating outstanding performers from average ones, thus termed "threshold competencies." In contrast, attributes "below the waterline" are key to distinguishing performance levels and are defined as "differentiating competencies." These underlying attributes are often difficult to observe directly, challenging to alter in the short term, and complex to assess accurately.

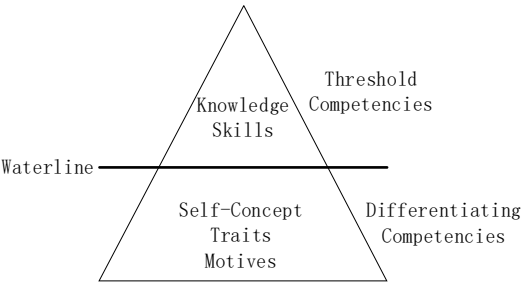

Fig. 1. Iceberg model diagram

Human Capital Theory. Human Capital Theory posits that the quality of a population is superior to its quantity, which is embodied in the aggregate of an individual's attributes, knowledge, experience, and values[4].The core rationale behind investing in

human capital lies in transforming latent capabilities into actual productive force[5].This explains why different human resource managers exhibit varying levels of job performance, which stems from differences in their accumulated capital within the dimension of Underlying Driving Competencies.

2.2 Research Hypothesis

In the context of accelerating technological iteration, a learning goal orientation has been shown to positively influence job performance by enhancing problem-solving efficacy[6].High-quality extra-role interpersonal interactions can significantly and positively affect employee task performance and organizational citizenship behavior by facilitating the exchange of cognitive and emotional resources[7].Digital literacy enables employees to effectively utilize digital technologies for communication, collaboration, and information processing. It has been identified as a significant antecedent for enhancing employability and innovative work behavior, ultimately contributing to improved performance[8].Based on this, the following hypothesis is proposed:

H1: General Competencies have a positive impact on job performance.

Systematic strategic planning activities and clear goal-setting provide a defined direction and measurable standards for action, serving as key antecedents to enhanced job performance[9].The leadership ability of human resource managers, manifested through empowering, motivating, and developing team members, directly influences team morale, engagement, and capability development. Controlling ability serves as the safeguard to ensure that management activities are continuously aligned with strategic objectives. In summary, the following hypothesis is proposed:

H2: Managerial Competencies have a positive impact on job performance.

The "factual and theoretical knowledge" possessed by human resource managers directly influences their job performance. Vertical module expertise is key to translating human resource strategy into concrete outcomes. Applied professional skills enable human resource managers to tailor human resource solutions to address an enterprise's specific management challenges. In summary, the following hypothesis is proposed:

H3: Professional Competencies have a positive impact on job performance.

Strategic Human Resource Management practices aimed at enhancing employee motivation represent one of the key pathways influencing organizational innovation performance[10].Values serve as the underlying principles for person-job fit and decision-making orientation. A stable and confident self-concept helps human resource managers maintain decisive judgment and leadership authority in complex management situations. Exceptional stress tolerance enables human resource managers to maintain emotional stability, cognitive clarity, and behavioral resilience in the face of high-intensity challenges and crises. In summary, the following hypothesis is proposed:

H4: Underlying Driving Competencies have a positive impact on job performance.

3 Research Method

3.1 Questionnaire Design

The questionnaire for this study consists of three sections: Basic Information, the Competency Scale, and the Job Performance Scale. The Basic Information section primarily includes items such as educational background and annual income. The Competency Scale contains a total of 45 items, measuring four dimensions: General Competencies, Managerial Competencies, Professional Competencies, and Underlying Driving Competencies. The Job Performance Scale comprises 6 items, covering two dimensions: individual performance and organizational performance. Both the Competency and Job Performance Scales employ a five-point Likert scale to gauge respondents' level of agreement with each statement, with the options being: Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree.

3.2 Research Tools

This study collected research data via the Questionnaire Star online survey platform, targeting human resource managers in high-tech enterprises as respondents. A total of 350 questionnaires were distributed, with 309 completed questionnaires returned, yielding a response rate of 88.3%.After reviewing the details of the questionnaire, this study excluded 8 responses not completed by HR managers, resulting in a total of 301 valid responses collected. The proportion of employees working in companies with fewer than 100 people is 30.43%, 34.78% in companies with 100-500 people, and 34.79% in companies with more than 500 people. The questionnaire data were subjected to reliability and validity tests using SPSS 26.0 software. Subsequently, modeling analysis was conducted with AMOS software to investigate the relationship between the competencies and job performance of human resource managers in high-tech enterprises.

4 Data Analysis and Results

4.1 Reliability and Validity Analysis

To ensure the validity of hypothesis testing, this study employed Cronbach's alpha coefficient to assess the internal consistency of the research variables across their respective measurement items. A Cronbach's alpha value greater than 0.7 indicates that a variable possesses good reliability[11]. In this study, the reliability coefficients for the overall competency construct and its secondary dimensions all exceeded 0.7, indicating that the scales used have high reliability and good internal consistency. The KMO values for both the independent and dependent variables were greater than 0.7, and Bartlett's Test of Sphericity was significant ($p < 0.05$), confirming that the data were suitable for factor analysis. The factor loadings for all variables were above 0.6, demonstrating a strong association between the measurement items and their respective factors, and indicating that the factors effectively extracted information. In summary,

the design of the independent and dependent variables in the study's scales is reasonable, with both good reliability and validity. Given the good fit of the Confirmatory Factor Analysis (CFA) model, the convergent validity and composite reliability of each scale dimension were further examined. The results showed that the Average Variance Extracted (AVE) for each dimension was greater than 0.5, and the Composite Reliability (CR) values all exceeded 0.7. Therefore, the scales used in this study exhibit good convergent validity and composite reliability. The specific values from the reliability and validity tests are presented in Table 1.

Table 1. Reliability and Validity Test Table.

Variable	Cronbach's Alpha	KMO	AVE	CR	Number of Items
Learning Ability	0.787	0.706	0.552	0.787	3
Interpersonal Skills	0.869	0.818	0.625	0.870	4
Digital Literacy	0.860	0.733	0.674	0.861	3
Planning Ability	0.791	0.702	0.558	0.791	3
Organizing Ability	0.777	0.698	0.538	0.778	3
Leading Ability	0.844	0.805	0.576	0.845	3
Controlling Ability	0.805	0.713	0.580	0.805	4
Foundational Prof. Knowledge	0.765	0.753	0.521	0.766	3
Vertical Module Expertise	0.791	0.705	0.560	0.792	3
Applied Professional Skills	0.794	0.703	0.562	0.764	3
Motivation	0.829	0.718	0.613	0.826	3
Values	0.854	0.724	0.665	0.856	3
Self-Concept	0.767	0.747	0.524	0.768	3
Stress Tolerance	0.851	0.824	0.591	0.852	4
Job Performance	0.951	0.974	0.600	0.951	6

4.2 Model Hypothesis Testing

Table 2. Path Coefficient Diagram

Path	Std.	SE	CR	P	Hypothesis	Supported
Job Performance←General Competencies	0.23	0.053	3.336	***	H1	Yes
Job Performance ←Managerial Competencies	0.288	0.065	3.809	***	H2	Yes
Job Performance ←Professional Competencies	0.21	0.063	2.718	0.007	H3	Yes
Job Performance ←Underlying Driving Competencies	0.21	0.058	3.072	0.002	H4	Yes

Following satisfactory reliability and validity testing, a structural equation model was constructed and analyzed using AMOS 28.0. The results indicated a chi-square/degrees

of freedom (χ^2/df) ratio of 1.668, RMSEA of 0.014, RMR of 0.033, and CFI, GFI, IFI, NFI, and TLI all above 0.9. All actual fit indices fell within the acceptable ranges, demonstrating a well-fitting model. As shown in Table 2, the standardized coefficients of all competency dimensions are greater than 0, indicating that each competency dimension has a positive impact on job performance, supporting the previous hypothesis.

5 Conclusions and Recommendations

5.1 Research Conclusions

Based on the questionnaire survey and modeling analysis of competencies and job performance among human resource managers in high-tech enterprises, this study yielded the following conclusions:

Firstly, general Competencies, Managerial Competencies, Professional Competencies, and Underlying Driving Competencies all exert a positive impact on job performance.

Secondly, the contributions of different competency dimensions to job performance vary. Specifically, Managerial Competencies have the strongest influence, with a standardized path coefficient of 0.288.

5.2 Recommendations

Firstly, when recruiting or promoting human resource managers, priority should be given to assessing their planning, controlling, organizing, and leadership capabilities.

Secondly, improve the Organizational Support System. Establish a "competency-performance" linked assessment mechanism that incorporates behavioral manifestations from all competency dimensions into performance evaluation metrics.

References

1. Zhang X, Wang P, Peng L. Developing a Competency Model for Human Resource Directors (HRDs) in Exponential Organizations Undergoing Digital Transformation[J].Sustainability,2024,16(23):10540-10540.
2. Wang, X. P. The System Construction of Human Resource Performance Management from the Perspective of Competency Model[J]. Modern Business, 2024, (11): 151-154.
3. McCartney S, Murphy C, Mccarthy J. 21st century HR: a competency model for the emerging role of HR Analysts[J].Personnel Review,2020,50(6):1495-1513.
4. Li, B. Research on the Income Distribution Mechanism and Methods of Human Capital in Technology-Based Small and Medium-Sized Enterprises[D]. Hefei University of Technology, 2019.
5. Huang, P. T. Research on the Coupling and Coordination Mechanism between the Talent Chain and Industrial Chain in Higher Vocational Education[D]. Guangzhou University, 2025.

6. Lin, Chieh-Peng. Developing problem-solving efficacy and job performance: Moderation of knowledge-oriented leadership[J].International Journal for Educational and Vocational Guidance,2024,1-21.
7. Liu, X. M. Extra-Role Interpersonal Interaction and Its Impact Mechanism on Job Performance: Based on the Context of Chinese Organizations[M]. Southwestern University of Finance and Economics Press, 2025: p. 185.
8. Caroline A, Coun H J M, Gunawan A, et al. A systematic literature review on digital literacy, employability, and innovative work behavior: emphasizing the contextual approaches in HRM research[J].Frontiers in Psychology,2025,151448555-1448555.
9. James C, Sara M, Hélène M B. Feedback, training, goal-setting, planning and performance: understanding the pathway to improved organizational outcomes[J].International Journal of Manpower,2024,45(9):1797-1815.
10. Li S, Jia R, Seufert J H, et al. The impact of ability-, motivation- and opportunity-enhancing strategic human resource management on performance: the mediating roles of emotional capability and intellectual capital[J].Asia Pacific Journal of Human Resources, 2021.
11. Barclay, D., Higgins, C., & Thompson, R. (1995). The Partial Least Squares (PLS) approach to causal modeling: Personal computer adoption and use an illustration. Technology Studies, 2(2), 285–309.