Testing the Human Resource Allocation Model with a Soft Skills Approach in Knowledge-Based Companies

Abbas Owaid. Abdulhussein Jebur[1], Sayed Hamidreza. Mirtavousi[2*], Mustafa Sabah. Hlaihel Almaliki[3], Saeid. Aghasi[4]

[1] PhD Student, Department of Public Administration, Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran
[2] Assistant Professor, Department of Public Administration, Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran
[3] Assistant Professor, Department of Public Administration, Faculty of Management, Sumer University, Al-Rifai, Dhi Qar, Iraq
[4] Assistant Professor, Social and Cultural Researches Center, Dehaghan Branch, Islamic Azad University, Dehaghan, Iran

* **Corresponding author email address**: hamidrezamirtavousi@yahoo.com

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Abstract

This study aimed to design and validate a human resource allocation model based on a soft skills approach in knowledge-based companies operating in Iraq. The research employed an applied, quantitative, and descriptive-correlational design. The statistical population consisted of employees working in knowledge-based companies across Iraq. Given the infinite size of the population, the sample size was determined to be 384 using Cochran's formula. Data were collected through a researcher-made questionnaire designed to capture various dimensions and indicators related to soft skills in human resource management. The constructs included identifying required skills, assessing current employee skills, identifying job requirements, appropriate selection and training, and monitoring and evaluating soft skills. Data analysis was conducted using structural equation modeling (SEM) with SmartPLS software, and model fit was evaluated using the GOF index. The results indicated that all hypothesized relationships within the model were statistically significant (t > 1.96). Specifically, human resource allocation based on soft skills showed strong and significant relationships with: evaluation of current employee skills (t = 175.84; factor loading = 0.93), appropriate selection and training of employees (t = 196.219; factor loading = 0.93), identification of required skills (t = 49.372; factor loading = 0.82), identification of job requirements (t = 197.961; factor loading = 0.93), and monitoring and evaluating soft skills (t = 222.504; factor loading = 0.94). The overall model demonstrated a strong fit with a GOF value of 0.67. The findings highlight the strategic role of soft skills in effective human resource allocation. Organizations can enhance employee performance and organizational alignment by investing in identifying, developing, and assessing soft skills. Training programs, continuous feedback, and cross-functional project participation are recommended to improve soft skill capacities. This model provides a robust framework for integrating soft skills into HR strategies in knowledge-based environments.

Keywords: Human Resources, Human Resource Allocation, Soft Skills

1.　Introduction

The modern educational system emphasizes quality, knowledge, skills, learning ability, life skills, flexibility in facing challenges, and the capability to use information technology. Today, an organization's profit and competitiveness no longer lie in material wealth and assets, but in knowledge and technology. Therefore, education to acquire knowledge has become essential in the competitive world. On this basis, institutional managers must aim to enhance their soft skills, as knowledge-based companies are distinctly environments where knowledge is taught (Aprilita & Pritasari, 2024; Bahuguna et al., 2024).

Unfortunately, despite the heavy emphasis on knowledge and science as vital assets in today's complex and unpredictable world, the skills of educational managers—especially soft skills, as a critical and influential human resource in companies—have been neglected. Although there are standardized tools to measure three managerial skills—interpersonal, technical, and cognitive—these tools typically assess general management abilities. Soft skills can be defined as those that focus on the ability to work with other individuals (Khalagh Khah, 2021).

Human resources encompass the entire capital comprising physical and mental capabilities and professional skills inherent in individuals. Human capital is recognized as one of the most critical assets in the production process, capable of generating future income resources. This capital resource is a set of skills, knowledge, and experiences gained through the production process (Gkrimpizi & Peristeras, 2023).

Although standardized tools exist to assess the three core managerial skills—human, technical, and conceptual—these instruments evaluate managers' skills broadly. Soft skills may be defined as human-centered competencies in working effectively with others (Khalagh Khah, 2021). Wijan (2012) stated that essential human skills for life in the 21st century include learning and innovation skills, problem-solving, communication and collaboration, critical thinking, creative thinking, information technology, and communication skills to enable faster access to information, life skills, social and cultural competencies, as well as leadership and responsibility (Wijan, 2012).

Managers today must develop their soft skills while managing human resources and also foster such skills among employees to increase commitment to change and transformation. Educational managers cannot ignore soft skills since they act as motivators and facilitators in group

collaborations, such as collaborative learning processes and sustainable development (Barani, 2020).

Soft skills are defined as personal and interpersonal behaviors that enhance and develop human quality (Dewa & Satrya, 2023). They relate to personal communication and intrapersonal abilities that are essential in the workplace. Soft skills include various attributes and personal behaviors that facilitate effective interaction in work or social environments. These include emotional intelligence—the ability to understand and manage one's emotions and those of others—communication skills defined as the ability to convey information accurately and efficiently, creativity as the ability to generate new ideas and solutions, and problem-solving, which involves identifying, analyzing, and resolving issues (Martins et al., 2020).

To achieve optimal overall satisfaction for managers and human resources staff, some job tasks assigned to employees may be less than ideal. Various algorithms capable of solving such problems exist. Consequently, more computer tools and systems have been proposed to assist managers in decision-making and workforce allocation. These tools can enhance the cognitive abilities of managers, helping them manage and assess vast amounts of data and identify the best candidate for each available job position (Fernández-Sanz et al., 2017).

However, current solutions still fall short in assigning appropriate jobs to employees based on their skill sets, since assessing employee skills is not a straightforward task and is subject to several constraints (Sopa et al., 2020). First, partial matches between job requirements and employee skills are often not accepted or evaluated. Existing solutions usually allow HR managers to search for employees based on skills (Black & Esch, 2020).

Human resource management is part of the process that helps governments achieve their goals. After setting the overall direction and strategy, the second phase involves defining the objectives of public organizations and developing them through actionable programs (Sukarno et al., 2024). The perspective on human resource development has shifted from merely executing policies and systems for workers to a comprehensive strategy aligned with sustainable development.

Researchers argue that human resource management faces enormous challenges in both the public and private sectors globally, given the rapid and complex political, economic, social, technological, and civilizational changes (Falaha et al., 2023). Human resource analytics remains a constant concern within HR management. The emergence of

technologies such as artificial intelligence, machine learning, data mining, and the Internet of Things has expanded studies focused on guiding HR management toward data-driven decision-making regarding human capital.

Nevertheless, data-driven decision-making has yet to significantly influence HR management (Bahuguna et al., 2024). In this regard, managers must be allowed to investigate and define the skills required for specific job positions and evaluate candidates who match the determined competencies. Hence, to properly assess the suitability of jobs and employees, the degree of alignment between employee characteristics and job demands must be evaluated from multiple perspectives. Specifically, job characteristics should relate to both job activities and professional outlooks (Sopa et al., 2020).

Every company or commercial organization should leverage employees' soft skills to facilitate knowledge sharing and continuous learning, enhancing both satisfaction and capability (Wang & Zheng, 2018). According to the International Labour Organization's view on utilizing human capacity, human resource development includes not only skill acquisition but also capacity building to improve labor productivity and meet both professional and personal satisfaction goals (Vu & Ho, 2020).

High-quality human resources meet three essential criteria: personal traits, physical capabilities, and professional competencies (including knowledge and skills) (Thimmanna & Bhat, 2022). Researchers maintain that employees' attitudes and behaviors generally depend on the organization's HR policies. Employee attitudes affect their behavior, which in turn influences organizational performance (Bruno et al., 2022).

Furthermore, research findings suggest that managers who employ soft skills in their leadership practices have employees who achieve better performance outcomes and foster a more positive organizational climate (Timourzadeh & Najafi, 2021).

A growing body of literature highlights the essential role of soft skills in enhancing employability, organizational performance, and human resource development. Aprilita et al. (2024) found a significant positive correlation between perceived job readiness and all examined soft skills—particularly communication, time management, teamwork, and problem-solving—among recent university graduates, concluding that soft skills training is essential for improving graduate employability (Aprilita & Pritasari, 2024). Similarly, Marzuki et al. (2024) emphasized the integration of both soft and hard skills in curriculum design to improve graduate quality and align higher education with industry needs (Marzuki et al., 2024). Kolak et al. (2023) investigated the impact of human resource management on organizational performance and found that organizational culture and commitment significantly mediate this relationship, though retention played a mediating role only from employees' perspectives (Kolak et al., 2023). Rahimi et al. (2023) assessed soft skills among university librarians in Kermanshah and identified interpersonal communication, customer service, and professional ethics as core competencies necessary for all librarians, regardless of career trajectory (Rahimi & Sohili, 2023). Finally, Zaid et al. (2023) demonstrated that soft skills—including communication, teamwork, problem-solving, and creativity—positively and significantly affect job performance in the telecommunications sector in Yemen (Zaid Najy Shawash, 2023). Collectively, these studies underscore the strategic importance of soft skills across educational and organizational contexts.

In this context, soft skills constitute a vital leadership style for fostering creativity and learning, realized through cooperation and collaboration. Leaders must utilize soft skills to steer their organizations toward self-efficacy and effectiveness—a strategic imperative for any institution. Soft skills include teamwork, communication, personal development, initiative, leadership ability, planning, and organization. The demonstration of these skills by leaders is essential in the process of human development. These issues have not been adequately addressed in previous studies, particularly in knowledge-based companies in Iraq, where operations are founded on the scientific competencies of employees.

Accordingly, this research seeks to answer the following question: How can a human resource allocation model based on a soft skills approach be designed and implemented in knowledge-based companies?

2.   Methods and Materials

Given that the purpose of this study is to design and present a human resource allocation model using a soft skills approach in knowledge-based companies, the research method is categorized as applied in terms of purpose, quantitative in terms of data type, and descriptive-correlational in terms of data collection method and research nature. The research analyzes the relationships among dimensions and components of the model using structural

equation modeling (SEM), based on data collected through a researcher-made questionnaire.

The statistical population consists of employees in knowledge-based companies in Iraq. The population and the sample are aligned. Since the population is considered infinite, Cochran's formula was used, resulting in a sample size of 384 individuals. The data collection tool was a researcher-made questionnaire. Data analysis was conducted using Smart PLS software to perform path analysis through structural equation modeling.

3.　Findings and Results

Table 1 presents the demographic characteristics of the research sample in terms of gender, age, education, and work experience.

Table 1

Demographic Statistics

Gender	Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Male	256	66.67	66.67
Female	128	33.33	100.00
Total	384	100.00	
Age Group	Frequency	Relative Frequency (%)	Cumulative Frequency (%)
20–30	98	25.52	25.52
31–40	139	36.20	61.72
41–50	88	22.92	84.64
51 and above	59	15.36	100.00
Total	384	100.00	
Education Level	Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Bachelor's	112	29.17	29.17
Master's	148	38.54	67.71
Doctorate	124	32.29	100.00
Total	384	100.00	
Work Experience (Years)	Frequency	Relative Frequency (%)	Cumulative Frequency (%)
5 or less	87	22.66	22.66
6–10	128	33.33	55.99
11–15	105	27.34	83.33
More than 15	64	16.67	100.00
Total	384	100.00	

The dimensions and indicators of the study, along with their symbols, are provided in Table 2.

Table 2

Dimensions and Components of the Study

| Row	Main Research Dimensions	Symbol	Secondary Codes
1	Identifying Required Skills	q1	Attention to organizational purpose and strategy
		q2	Job analysis within the organization
		q3	Attention to current abilities and experiences
		q4	Feedback from customers and stakeholders
		q5	Benchmarking with competitors and other industries
6	Evaluating Current Employee Skills	q6	Employee adaptability and flexibility
		q7	Enhancing team interaction and collaboration
		q8	Self and others' leadership and management
		q9	Possession of analytical and thinking skills
		q10	Developing communication and interactive skills
11	Identifying Job Requirements	q11	Problem-solving and critical thinking abilities
		q12	Understanding and addressing organizational needs
		q13	Efficient idea and opinion presentation
		q14	Ability for out-of-the-box thinking
		q15	Managing organizational changes

16	Selecting and Training Employees	q16	Analyzing organizational requirements
		q17	Alignment with organizational opportunities/vision
		q18	Evaluating current employee skills
		q19	Considering organizational culture in decisions
		q20	Empowering and developing employee soft skills
21	Monitoring and Evaluating Soft Skills	q21	Tracking employee performance
		q22	Measuring soft skills progress
		q23	Feedback and guidance to decision-makers in HR
		q24	Job motivation and satisfaction
		q25	Aligning soft skill procedures with org. needs

After assessing the fitness of the measurement model, structural model, and the overall model in accordance with the data analysis algorithm in the PLS method, the researcher is permitted to examine and test the relationships between the variables. In this section, the standardized path coefficients related to the hypotheses and their corresponding t-values are examined. To confirm or reject the hypotheses, the t-value must be greater than 1.96 or less than -1.96. Values within this range indicate no significant difference between the calculated regression weights and zero at the 95% confidence level. Figure 1 shows the factor loading output, and Figure 2 displays the t-values for the relationships between variables.
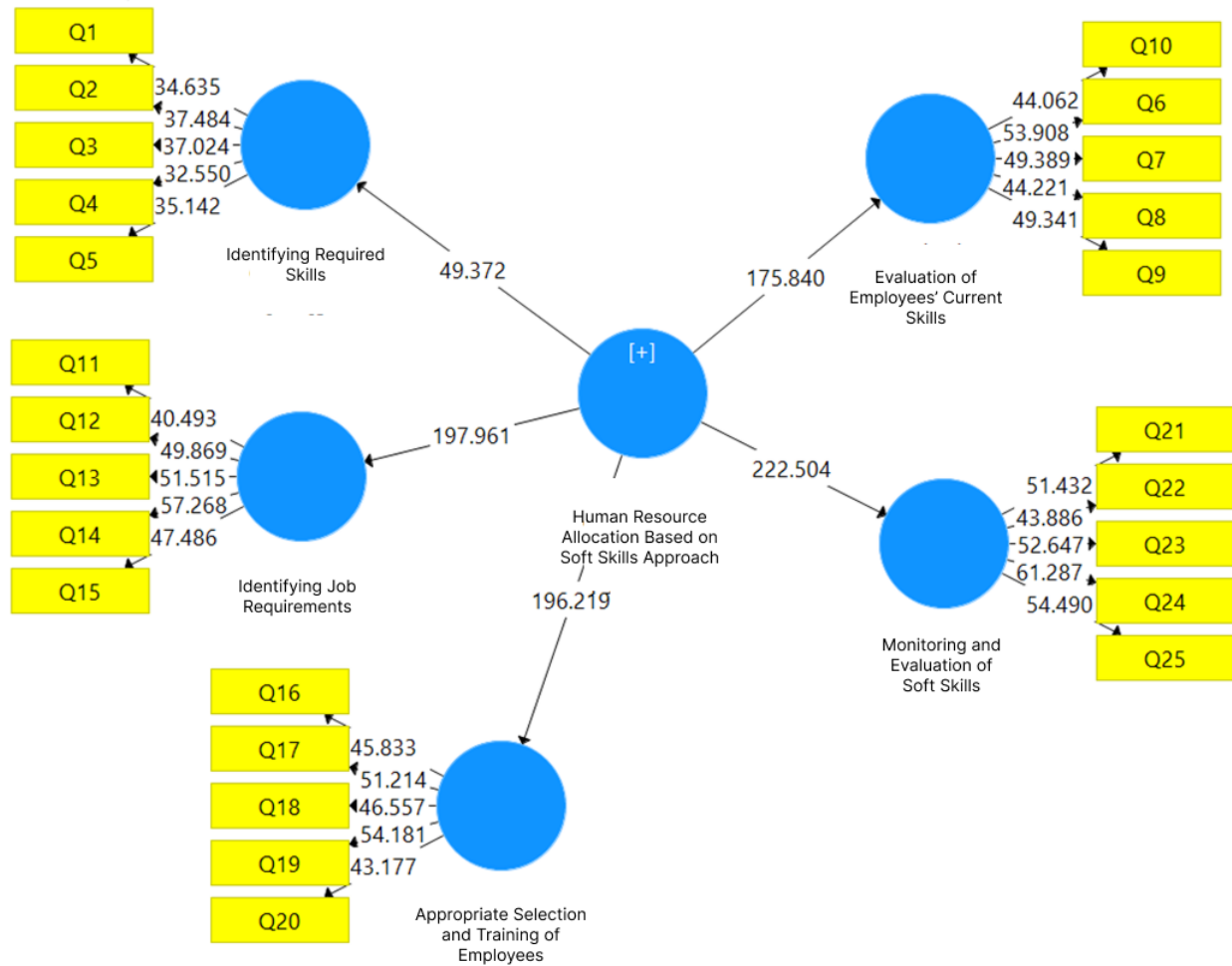
Figure 1

Research Model with Standardized Coefficients
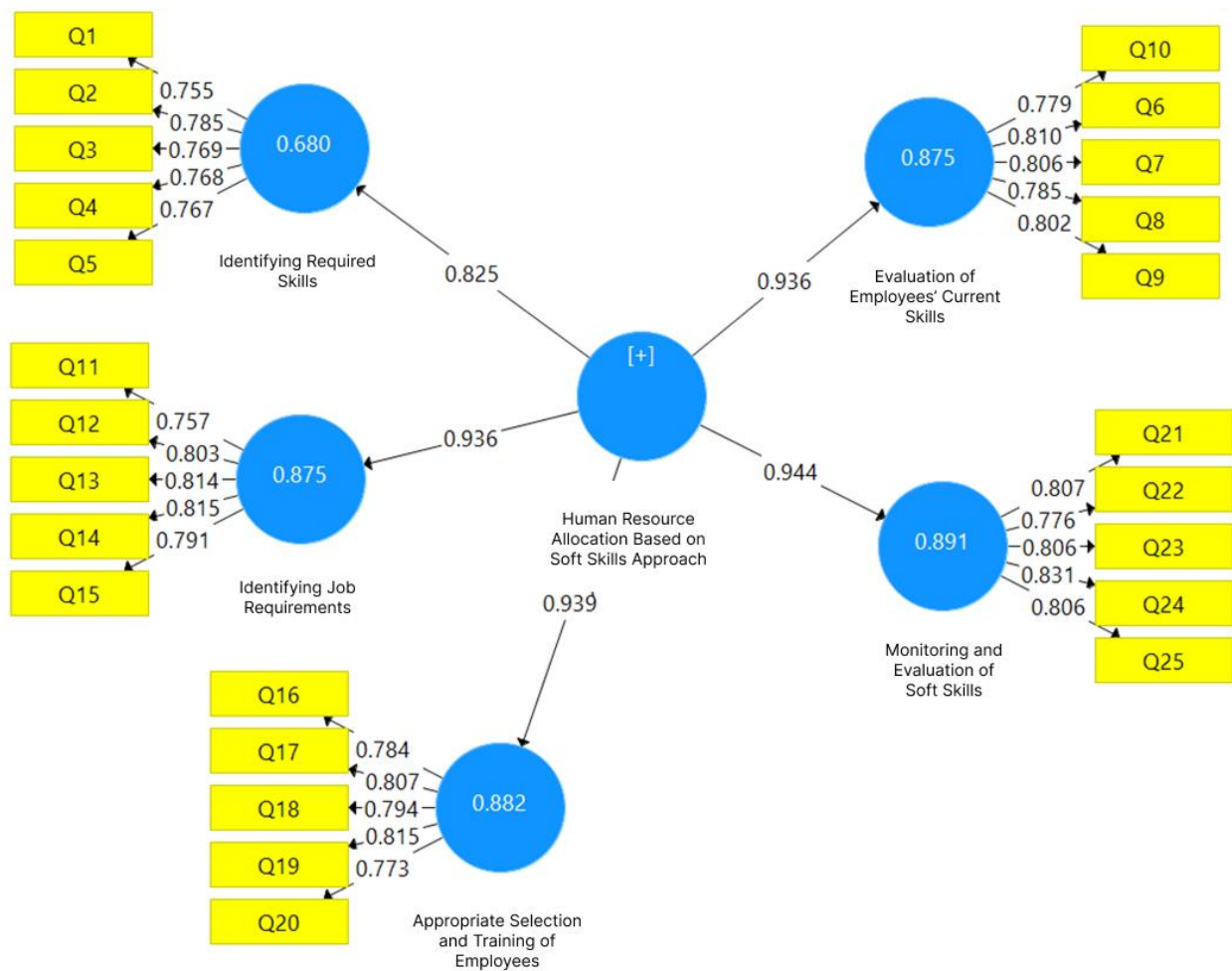
Figure 2

Research Model with t-values

Table 3

Description of Research Constructs

Pathway	Factor Loading	t Statistics	p-Value	Confirmatory Factor Analysis Status
Employee IT Acceptance Focusing on the Role of Transformational Leader → Valuation and Reward	0.931	140.976	0.000	Confirmed
Employee IT Acceptance Focusing on the Role of Transformational Leader → Trust in Organizational Technology	0.951	222.358	0.000	Confirmed
Employee IT Acceptance Focusing on the Role of Transformational Leader → Leadership Influence	0.935	166.110	0.000	Confirmed
Employee IT Acceptance Focusing on the Role of Transformational Leader → Leadership Characteristics	0.946	185.464	0.000	Confirmed

To evaluate the overall model fit, which examines both the measurement and structural components, the GOF (Goodness-of-Fit) index is used. The GOF is calculated using Equation (1):

(1) GOF = $\sqrt{(\text{Average Communalities} \times \text{Average R}^2)}$

Table 4 presents the average values of communalities and R Squares, based on which the GOF value is 0.67, indicating a strong model fit.

Table 4

Average Communalities and R² Values

Variable	R Square	Communality	avg-Communality	avg-R²
Evaluation of Employees' Current Skills	0.875	0.511	0.841	0.494
Appropriate Selection and Training of Employees	0.882	0.457		
Human Resource Allocation Based on Soft Skills Approach	–	0.563		
Identifying Required Skills	0.680	0.417		
Identifying Job Requirements	0.875	0.593		
Monitoring and Evaluation of Soft Skills	0.891	0.425		

The relationship between human resource allocation based on a soft skills approach and the evaluation of current employee skills yielded a significance value of t = 175.84 (t > 1.96), indicating a statistically significant relationship. The second-order factor loading was calculated as 0.93.

The relationship between human resource allocation based on a soft skills approach and the appropriate selection and training of employees yielded a significance value of t = 196.219 (t > 1.96), indicating a statistically significant relationship. The second-order factor loading was calculated as 0.93.

The relationship between human resource allocation based on a soft skills approach and the identification of required skills yielded a significance value of t = 49.372 (t > 1.96), indicating a statistically significant relationship. The second-order factor loading was calculated as 0.82.

The relationship between human resource allocation based on a soft skills approach and the identification of job requirements yielded a significance value of t = 197.961 (t > 1.96), indicating a statistically significant relationship. The second-order factor loading was calculated as 0.93.

The relationship between human resource allocation based on a soft skills approach and the monitoring and evaluation of soft skills yielded a significance value of t = 222.504 (t > 1.96), indicating a statistically significant relationship. The second-order factor loading was calculated as 0.94.

Since all t-values exceed the threshold of 1.96, all relationships are statistically significant, confirmed, and valid.

4. Discussion and Conclusion

The findings of this study confirm that the allocation of human resources based on a soft skills approach in knowledge-based companies is significantly influenced by multiple factors including the evaluation of current skills, identification of required job competencies, employee selection and training, and the monitoring of soft skill development. The results, derived through structural equation modeling using Smart PLS, demonstrate that all examined relationships were statistically significant (t-values > 1.96), with high second-order factor loadings (ranging from 0.82 to 0.94). These results strongly support the theoretical model and highlight the practical necessity of integrating soft skills as core criteria in HR allocation decisions.

One of the key findings of the study is the statistically significant relationship between the evaluation of current employee skills and HR allocation strategies based on soft skills. This supports the position that organizations need to conduct systematic assessments of their workforce's soft skills to inform more strategic talent placement. This result aligns with the work of Aprilita et al. (2024), who found that soft skills such as communication, time management, teamwork, and problem-solving significantly affect perceived job readiness among recent graduates. When companies actively evaluate these skills, they are better positioned to match employees to roles that suit their competencies, leading to higher efficiency and job satisfaction (Aprilita & Pritasari, 2024).

The study also confirmed the importance of selecting and training employees with a focus on soft skill development. The high path coefficient (0.93) indicates that aligning training content with soft skill requirements can significantly enhance HR practices. This is consistent with Marzuki et al. (2024), who emphasized the importance of designing higher education curricula that prepare students for the complexities of the labor market by developing both soft and hard skills (Marzuki et al., 2024). By extension, organizations must continue this developmental trajectory through targeted onboarding and internal training programs that further strengthen essential non-technical competencies.

The findings also emphasize the role of identifying required soft skills as a predictor of effective HR allocation. The significant relationship found here (t = 49.372, loading

= 0.82) highlights the necessity for organizations to anticipate and define the soft skill needs tied to various roles. In support of this, Rahimi et al. (2023) identified interpersonal communication, teamwork, and ethical awareness as essential skills for university librarians, arguing that these are universally applicable regardless of career direction (Rahimi & Sohili, 2023). This confirms that organizations in any sector must first map out the relevant skill sets before assigning personnel.

In a similar vein, the study shows a strong association between understanding job requirements and resource allocation decisions. The findings affirm that job descriptions must go beyond technical tasks to include required soft competencies such as creativity, leadership, and adaptability. This result is supported by Zaid et al. (2023), whose research in the Yemeni telecommunications sector demonstrated a significant impact of soft skills—including problem-solving and teamwork—on job performance. By explicitly incorporating such competencies into job profiles, organizations can ensure more accurate alignment between individual capabilities and job expectations.

The strongest relationship revealed in the study is between monitoring and evaluating soft skills and the strategic allocation of HR. A factor loading of 0.94 and a t-value of 222.504 suggest that continuous performance appraisal based on soft skill criteria significantly influences HR planning and outcomes. Furthermore, the study's outcomes align with Kolak et al. (2023), who explored the mediating roles of organizational culture and commitment in the relationship between HR management and organizational performance. Their findings suggest that soft skill-based competencies like leadership and communication are pivotal in cultivating a high-performance culture (Kolak et al., 2023). From both managerial and employee perspectives, these intangible traits drive collaborative engagement and innovation—critical assets for knowledge-based firms aiming to remain competitive.

The current study also resonates with the broader recommendation from Aprilita et al. (2024) that universities and employers should integrate real-world problem-solving and soft skill training into their systems. In doing so, they can bridge the gap between graduate capabilities and job market demands (Aprilita & Pritasari, 2024). For knowledge-based companies, this implies a duty not only to assess and allocate talent efficiently but also to build developmental infrastructures—such as interdisciplinary

project participation, team-based challenges, and feedback-rich cultures—that nurture these capabilities continually.

Overall, the findings validate the theoretical assumption that soft skills are not supplementary but central to modern human resource allocation strategies. In knowledge-driven environments where creativity, adaptability, and collaboration are key, employees' intangible competencies can be the differentiating factor in achieving organizational goals. The evidence presented in this study supports a shift in HR philosophy—from traditional task-role matching to a more holistic framework that values character, communication, and continuous development as strategic variables in workforce planning.

Despite the robustness of the results, this study is not without its limitations. First, the research sample was confined to knowledge-based companies in Iraq, which may limit the generalizability of the findings to other organizational contexts or national cultures. Second, the use of self-reported questionnaires may introduce biases such as social desirability or inaccurate self-assessment, especially in relation to soft skills that are inherently subjective. Third, the cross-sectional nature of the study precludes any causal interpretations. Finally, while the structural equation modeling approach provides strong statistical validation, it cannot fully capture the dynamic and evolving nature of soft skill development in real workplace settings.

Future research can expand upon this study by incorporating longitudinal designs to examine how soft skill competencies evolve over time and influence long-term HR outcomes. Comparative studies across different industries or cultural settings could also be useful in validating the universal applicability of the findings. Additionally, integrating qualitative methods such as interviews or behavioral observations may yield deeper insights into how soft skills manifest in practice and affect team dynamics, leadership, and innovation. Further studies could also explore the role of digital platforms and AI-driven tools in assessing and developing soft skills in remote or hybrid work environments.

Organizations should prioritize the integration of soft skills criteria in their recruitment, selection, and internal mobility frameworks. Structured onboarding programs, coupled with periodic soft skill evaluations, can help managers make informed decisions about talent deployment. Learning and development departments should design training modules specifically focused on communication, adaptability, emotional intelligence, and collaborative problem-solving. Managers are encouraged to create

inclusive environments where feedback, reflection, and cross-functional collaboration are embedded in the organizational culture. By doing so, companies can ensure a sustainable talent pipeline aligned with both operational needs and strategic objectives.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were considered.

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