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## Design and Presentation of a Human Resource Allocation Model with a Soft Skills Approach in Knowledge-Based Companies

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### Abstract

The present study aims to design and present a human resource allocation model with a soft skills approach. The research is exploratory-applied in terms of purpose, mixed-method (qualitative-quantitative) in terms of data type, cross-sectional in terms of data collection timing, inductive-deductive in terms of philosophical stance, and descriptive-survey in terms of data collection method and research nature. The qualitative section employs the thematic analysis technique, while the quantitative section utilizes structural equation modeling (PLS). The statistical population in the qualitative section consists of experts, managers of knowledge-based companies, and university professors in the city of Karbala. The statistical population in the quantitative section includes employees of knowledge-based companies in Iraq. A random sampling method is applied, and Cochran's formula is used for sample selection. Given the infinite nature of the population, the sample size is determined to be 384 individuals based on Cochran's formula. The research findings indicate that in the qualitative section, five main dimensions have been identified: required skills, assessment of employees' current skills, identification of job requirements, selection and appropriate training of employees, and monitoring and evaluation of soft skills. In the quantitative section, the overall validity of the model, based on the GOF formula, is calculated as 0.64, indicating a good fit. Furthermore, based on first-order and second-order confirmatory factor analysis, all relationships between independent and dependent variables are found to be acceptable.

**Keywords:** human resources, human resource allocation, soft skills.

### 1. Introduction

The modern educational system emphasizes quality, knowledge, skills, learning ability, life skills, flexibility in dealing with challenges, and the ability to use information technology. Today, the profitability and competitiveness of an organization are not based on wealth and material assets but rather on knowledge and technology. Therefore, education is essential for acquiring knowledge in today's competitive world. Accordingly, institutional managers must strive to enhance their soft skills, as knowledge-based companies serve as environments where knowledge is imparted (Dergy, 2014). Unfortunately, despite the significant emphasis on knowledge and science as substantial assets in today's complex and unpredictable world, the skills of educational managers, particularly their soft skills as key and influential human resources in organizations, have been overlooked. Although standard tools exist to measure three managerial skills—interpersonal, technical, and cognitive—these



tools assess general management skills rather than soft skills. Soft skills can be defined as abilities focused on working with others (Khaleghkhah, 2021).

Human resources encompass all forms of capital, including physical and mental strength and professional skills that individuals possess. Human capital refers to individuals who are considered one of the most crucial assets in the production process, capable of generating future income resources. This capital includes a collection of skills, knowledge, and experiences gained through the production process (Gkrimpizi et al., 2023; Sukarno et al., 2024). Although standard tools exist to assess managers' three primary skills—human, technical, and conceptual—these tools evaluate managerial competence in a general manner. Soft skills, in contrast, can be defined as human skills that emphasize competency in working with others (Khaleghkhah, 2021).

Wijan (2012) stated that essential human skills for living in the 21st century include learning and innovation skills, problem-solving, communication and collaboration, critical thinking, creativity, information technology proficiency, communication skills for quicker access to information, life skills, social skills, cultural competencies, leadership, and responsibility (Wijan, 2012). In the modern era, managers must develop their soft skills when managing human resources and even instill these skills in employees to enhance commitment to change and transformation. Soft skills cannot be ignored by educational managers, as they serve as motivators and facilitators in team collaboration, such as the shared learning process and sustainable development (Barani, 2020).

Soft skills are defined as personal and interpersonal behaviors that enhance and improve human qualities (Dewa & Satrya, 2023). They relate to interpersonal communication and intrapersonal abilities that are crucial in the workplace. Soft skills encompass various personal attributes and behaviors that facilitate effective interaction in work or social environments. These include emotional intelligence, which involves understanding and managing one's own emotions as well as those of others; communication, defined as the ability to convey information accurately and efficiently; creativity, which involves generating new ideas and solutions; and problem-solving, which entails identifying, analyzing, and resolving issues (Martins et al., 2020).

To achieve overall job satisfaction among managers and human resource employees, some tasks assigned to employees may be suboptimal. Various algorithms exist to address these issues. Consequently, an increasing number of computer tools and systems have been proposed to assist managers in decision-making and employee allocation. These tools can enhance managers' cognitive capabilities, help them manage and evaluate large volumes of data, and identify the best candidate for each available position (Fernández-Sanz et al., 2017). However, existing solutions still fail to assign jobs to employees based on their skills, as assessing employees' skills is not straightforward and involves multiple limitations (Sopa et al., 2020).

First, partial matches between job requirements and employee skills are either not accepted or not evaluated. Existing solutions typically allow HR managers to search for employees based on their skills (Black & Esch, 2020). Human resource management is a critical process that aids governments in achieving their objectives. Once general direction and strategies are determined, the next step involves defining the goals of public organizations and developing them within actual programs (Sukarno et al., 2024). The approach to human resource development has shifted from merely implementing policies and systems for workers to a strategy aligned with holistic sustainable development. Researchers argue that human resource management faces significant challenges in both the public and private sectors worldwide due to rapid and complex political, economic, social, technological, and civilizational transformations (Falaha et al., 2023).

Human resource analytics remains an ongoing concern in HR management. The emergence of technologies such as artificial intelligence, machine learning, data mining, and the Internet of Things has expanded research that integrates HR management with data-driven decision-making. However, data-driven decision-making has yet to significantly impact human resource management (Bahuguna et al., 2024). In this context, managers should be allowed to examine and define the required skills for job positions and evaluate candidates based on these criteria (Sahi, 2020).

Thus, to effectively assess the suitability of a job and an employee, it is necessary to measure the degree of alignment between employees' characteristics and job requirements from various perspectives. Job attributes should relate not only to job activities but also to career prospects (Sopa et al., 2020). Every company or business organization should leverage employees'



soft skills to foster knowledge sharing and continuous learning, thereby improving employee satisfaction and capabilities (Wang & Zheng, 2018).

According to the International Labour Organization's perspective on human resource capacity utilization, HR development includes not only acquiring skill competencies but also building capacities that enhance productivity and contribute to professional and personal satisfaction (Vu & Ho, 2020). High-quality human resources meet three criteria: personality traits, physical attributes, and professional competencies (including knowledge and skills) (Thimmanna & Bhat, 2022). Researchers argue that employees' attitudes and behaviors largely depend on an organization's HR policies. Employee attitudes influence their behaviors, which in turn affect organizational performance (Knut, 2022; Kolak & Soltani, 2023; Marzuki et al., 2024).

Moreover, research findings indicate that managers who incorporate soft skills into their management practices have employees with higher performance achievements and a more positive organizational climate (Teimurzadeh & Najafi, 2021). In this regard, soft skills represent an essential leadership style for fostering creativity and learning, which are achieved through collaboration and participation. Leaders must employ soft skills to guide their organizations toward self-efficacy and effectiveness, making this a strategic necessity for any organization. Soft skills include teamwork, communication, personal development, initiative, leadership ability, planning, and organization. The application of these skills by leaders is crucial for human development processes.

These aspects have not been extensively considered in previous studies, particularly within Iraq's knowledge-based companies, which operate based on employees' scientific expertise. Therefore, this research seeks to answer the following question: How can a human resource allocation model with a soft skills approach be designed and presented in knowledge-based companies?

## 2. Methods and Materials

Given that the objective of this study is to design and present a human resource allocation model with a soft skills approach in knowledge-based companies, the research methodology is classified as exploratory-applied in terms of purpose. In terms of data type, it follows a mixed-method approach (qualitative-quantitative). The research is cross-sectional in terms of data collection timing, inductive-deductive in terms of philosophical stance, and descriptive-survey in terms of data collection method and research nature.

The first phase of the study involves a qualitative approach aimed at identifying, categorizing, and extracting concepts based on the perspectives of experts and relevant professionals. The qualitative method applied in this phase is thematic analysis. The second phase of the study adopts a quantitative approach, in which the views of the statistical population are used to examine the relationship between the research dimensions and the study's subject, as well as to test the research components and dimensions. In this phase, the thematic analysis method is used to analyze interviews conducted with 10 relevant experts.

In the second phase, which represents the quantitative part of the study, structural equation modeling (SEM) is applied to analyze the relationships between the dimensions and components of the model. The data for this phase is collected using a researcher-developed questionnaire. Consequently, the data collection methods employed in this study include both library research and fieldwork.

The statistical population in the qualitative section consists of experts, managers of knowledge-based companies, and university professors in the city of Karbala. The conditions for expert interviews include holding a degree in public administration and having relevant work experience. The sample for this section is selected purposefully based on the principle of theoretical saturation. The sampling method is likely snowball sampling. In the quantitative section, the statistical population comprises employees of knowledge-based companies in Iraq. The statistical population and sample are considered identical. Since the population is infinite, the sample size is determined using Cochran's formula, resulting in a sample of 384 individuals.

The data collection tool for the qualitative section consists of semi-structured interviews. In qualitative research, researchers who plan data collection must align their approach with the type of information they seek. Scholars have proposed three strategies for qualitative data collection: in-depth interviews, observation, and sampling and enumeration. Researchers can also utilize document analysis, inscriptions, and both permanent and non-permanent records. The present qualitative study employs exploratory interviews as the primary data collection method. The rationale for selecting exploratory interviews is that this approach is highly flexible, can be applied in various settings, and allows for the generation of in-depth information.



Additionally, it is a method with which most research participants (interviewees) feel comfortable, ranking higher in credibility than other qualitative methods such as participant observation.

In the quantitative phase, based on the model derived from the qualitative section, a researcher-developed questionnaire is designed and distributed to the statistical sample. For data analysis in the quantitative section, structural equation modeling (SEM) is used to conduct path analysis, employing the Smart PLS software.

### 3. Findings and Results

An analysis of the average age of the surveyed experts indicates that university administrators have the highest average age, at 42.22 years, while university professors and academic experts have the lowest average age, at 41.25 years. An examination of the average work experience shows that university professors and experts have the most extensive experience, with an average of 15.33 years, whereas university administrators have slightly less experience, averaging 14.66 years. Among the participants in this study, seven individuals hold a doctoral degree, and three have a master's degree.

Following the identification of open codes from the analyzed interviews, the final stage involved defining and naming themes. The findings indicate that the primary factors influencing the design and presentation of a human resource allocation model with a soft skills approach encompass five key dimensions. These include identifying required skills, assessing employees' current skills, identifying job requirements, selecting and appropriately training employees, and monitoring and evaluating soft skills. Each of these main components also contains sub-components.

The demographic analysis of the participants in the quantitative stage of the study, consisting of 384 employees of knowledge-based companies in Iraq, revealed that 66.67% were male ( $n = 256$ ) and 33.33% were female ( $n = 128$ ). The age distribution indicated that 25.52% ( $n = 98$ ) were between 20 and 30 years old, 36.20% ( $n = 139$ ) were between 31 and 40 years old, 22.92% ( $n = 88$ ) were between 41 and 50 years old, and 15.36% ( $n = 59$ ) were 51 years or older. Regarding educational qualifications, 29.17% ( $n = 112$ ) held a bachelor's degree, 38.54% ( $n = 148$ ) had a master's degree, and 32.29% ( $n = 124$ ) held a doctoral degree. In terms of work experience, 22.66% ( $n = 87$ ) had five years or less, 33.33% ( $n = 128$ ) had between six and ten years, 27.34% ( $n = 105$ ) had between eleven and fifteen years, and 16.67% ( $n = 64$ ) had more than fifteen years of experience.

The dimensions and components of the research, along with their respective codes, are presented in Table 1.

**Table 1. Research Dimensions and Components**

No.	Main Research Dimensions	Code	Secondary Codes
1	Identifying Required Skills	q1	Emphasis on goal orientation and organizational strategy
2		q2	Analysis of organizational jobs
3		q3	Consideration of employees' current competencies and experiences
4		q4	Feedback from customers and stakeholders
5		q5	Comparison with competitors and industries
6	Assessing Employees' Current Skills	q6	Employee flexibility and adaptability
7		q7	Enhancing team interaction and collaboration
8		q8	Self-management and leadership of others
9		q9	Possession of analytical and critical thinking skills
10		q10	Development of communication and interaction skills
11	Identifying Job Requirements	q11	Problem-solving ability and critical thinking
12		q12	Understanding and addressing organizational needs
13		q13	Effective presentation of ideas and opinions
14		q14	Ability to think outside conventional frameworks
15		q15	Managing organizational changes
16	Selecting and Training Suitable Employees	q16	Analysis of organizational needs
17		q17	Alignment with organizational opportunities and outlook
18		q18	Evaluation of employees' current skills
19		q19	Consideration of organizational culture in decision-making
20		q20	Employee empowerment and soft skill development
21	Monitoring and Evaluating Soft Skills	q21	Tracking and evaluating employee performance
22		q22	Measuring employees' progress in soft skills
23		q23	Providing feedback and guidance to decision-makers in human resource allocation
24		q24	Motivation and job satisfaction
25		q25	Adjusting soft skill procedures based on organizational needs



After assessing the fit of the measurement model, the structural model, and the overall model based on the data analysis algorithm in the PLS method, the researcher is allowed to examine and test the relationships between the study variables. In this section, the standardized path coefficients related to the hypotheses and the t-values are analyzed. To confirm or reject a hypothesis, 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.

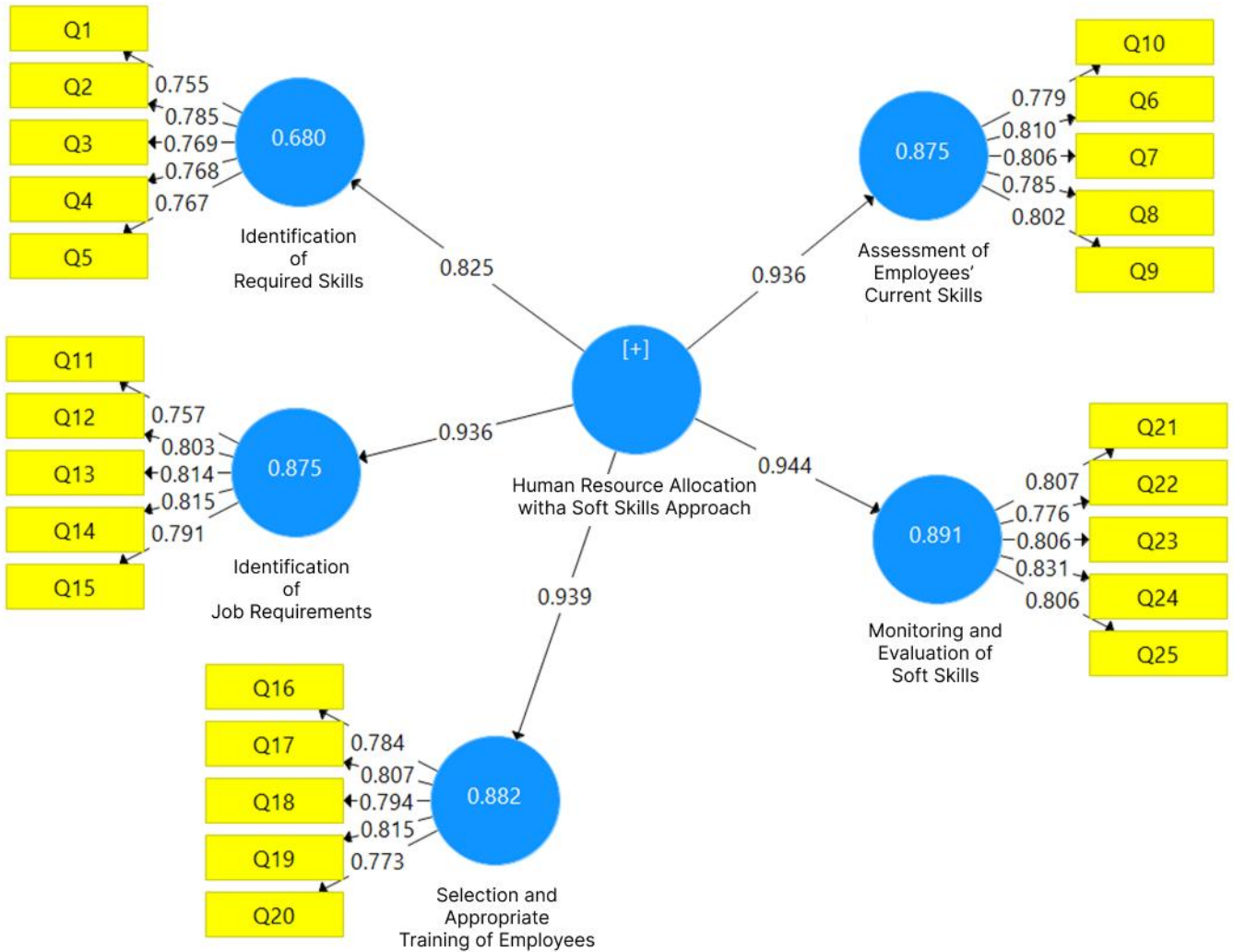
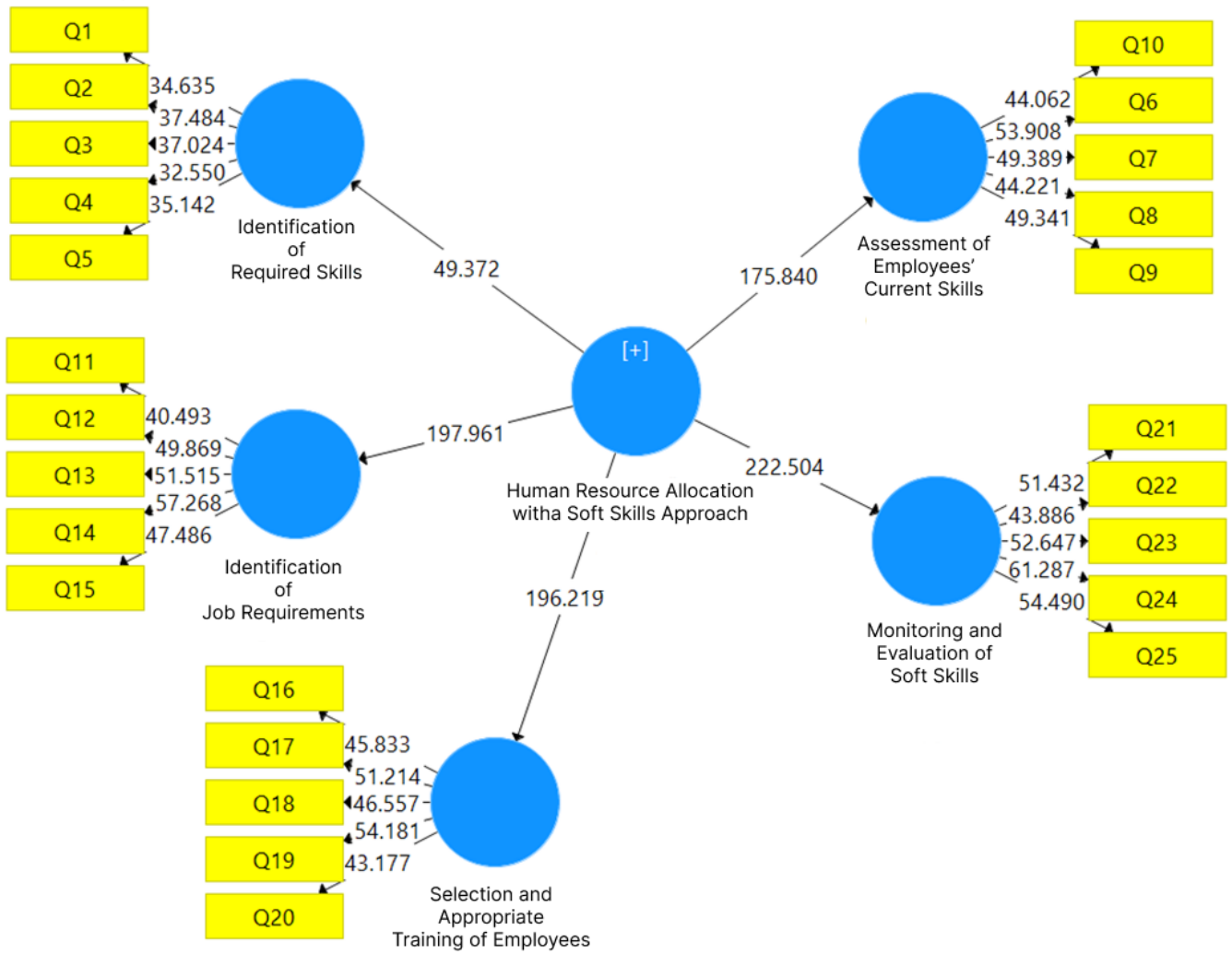


Figure 1. Research model with standardized path coefficients



**Figure 2. T-values associated with the relationships between the variables**

Table 2 presents the description of the research constructs.

**Table 2. Description of Research Constructs**

Path	Factor Loading	t	P	Results
Employee Acceptance of IT with a Focus on Transformational Leadership → Valuation and Reward	0.931	140.976	0	Confirmed
Employee Acceptance of IT with a Focus on Transformational Leadership → Trust in Technology within the Organization	0.951	222.358	0	Confirmed
Employee Acceptance of IT with a Focus on Transformational Leadership → Leadership Influence	0.935	166.11	0	Confirmed
Employee Acceptance of IT with a Focus on Transformational Leadership → Leadership Characteristics	0.946	185.464	0	Confirmed

To evaluate the overall model fit, which accounts for both the measurement model and the structural model, the Goodness-of-Fit (GoF) index is used.

The GoF value is 0.67, indicating a strong model fit.

**Table 3. Mean Communality and R-Squared Values**

Variable	R-Squared	Communality	avg-Communality	avg-R
Assessment of Employees' Current Skills	0.875	0.511	0.841	0.494
Selection and Appropriate Training of Employees	0.882	0.457	-	-
Human Resource Allocation with a Soft Skills Approach	-	0.563	-	-
Identification of Required Skills	0.68	0.417	-	-
Identification of Job Requirements	0.875	0.593	-	-
Monitoring and Evaluation of Soft Skills	0.891	0.425	-	-



In the relationship between human resource allocation with a soft skills approach and the assessment of employees' current skills, the t-value obtained is 175.84 ( $t\_value > 1.96$ ), indicating a significant relationship. The second-order factor loading is calculated at 0.93.

In the relationship between human resource allocation with a soft skills approach and the selection and appropriate training of employees, the t-value obtained is 196.219 ( $t\_value > 1.96$ ), indicating a significant relationship. The second-order factor loading is calculated at 0.93.

In the relationship between human resource allocation with a soft skills approach and the identification of required skills, the t-value obtained is 49.372 ( $t\_value > 1.96$ ), indicating a significant relationship. The second-order factor loading is calculated at 0.82.

In the relationship between human resource allocation with a soft skills approach and the identification of job requirements, the t-value obtained is 197.961 ( $t\_value > 1.96$ ), indicating a significant relationship. The second-order factor loading is calculated at 0.93.

In the relationship between human resource allocation with a soft skills approach and the monitoring and evaluation of soft skills, the t-value obtained is 222.504 ( $t\_value > 1.96$ ), indicating a significant relationship. The second-order factor loading is calculated at 0.94.

Since all t-values are greater than 1.96 ( $T\_VALUE > 1.96$ ), all relationships are statistically significant, validated, and reliable.

#### 4. Discussion and Conclusion

In this study, the selection and appropriate training of employees include analyzing organizational needs, aligning with opportunities and organizational visions, assessing employees' current skills, considering organizational culture in decision-making, and empowering and developing employees' soft skills. The findings suggest that feedback from customers and stakeholders can help identify the most critical soft skills from their perspective. Such feedback enables organizations to focus on developing soft skills that are of higher priority to customers and stakeholders. Employees' soft skills can have a direct impact on customer satisfaction, as customer feedback can help identify employees' strengths and weaknesses in this area. Enhancing employees' soft skills can improve customer satisfaction and strengthen established relationships. Soft skills also play a crucial role in building stakeholder trust, as stakeholder feedback can help recognize and develop the necessary soft skills to meet their expectations (Aprilita & Pritasari, 2024; Marzuki et al., 2024; Zayed Naji et al., 2023).

The essential components of required skills identified in this study include goal orientation and organizational strategy, job analysis, employees' current competencies and experiences, customer and stakeholder feedback, and comparisons with competitors and industries. Empowerment, in this context, means creating an environment in which employees actively participate and develop their soft skills. Decision-makers can implement training programs and soft skills development initiatives within organizations. These opportunities may include workshops, training courses, webinars, and other educational resources. Providing appropriate training opportunities encourages employees to engage in the development of their soft skills and improve themselves. Access to educational resources and training related to necessary soft skills enables employees to enhance their competencies. Training programs may cover time management, communication skills, leadership abilities, and other job- and organization-related soft skills. Periodic and systematic performance evaluations allow decision-makers to assess employees' soft skills and adjust human resource allocation based on skill needs and individual performance. By identifying the necessary soft skills required to achieve organizational goals, appropriate procedures for human resource development and allocation can be established. Based on the identified soft skill requirements, suitable training programs can be designed to enhance employees' skills.

In this study, job requirements include problem-solving ability and critical thinking, understanding and addressing organizational needs, effectively presenting ideas and opinions, the ability to think beyond conventional frameworks, and managing organizational changes. The findings suggest that by analyzing job tasks and responsibilities, soft skills such as leadership, collaboration, interpersonal communication, and time management, which are essential for effective job performance, can be identified. Job analysis allows for the comparison of required soft skills with employees' skill profiles,



helping determine which employees currently possess the necessary soft skills and which ones need further development. This information supports decision-making related to human resource allocation, such as training and development programs.

Based on these findings, this study suggests that knowledge-based companies in Iraq should encourage participation in interdisciplinary projects. By providing opportunities for employees in diverse fields, they can enhance their soft skills. These experiences may include working in cross-functional teams, participating in joint projects, and engaging in group challenges.

Establishing a framework for the continuous assessment of employees' soft skills and providing them with feedback can be highly effective. Such assessments may include surveys, feedback sessions, and the introduction of performance metrics, allowing employees to identify their strengths and weaknesses and take steps for improvement.

A key responsibility of each job is identifying the necessary skills for effective performance. By analyzing job roles and defining key responsibilities, a comprehensive list of required soft and hard skills can be compiled. This process may involve conducting interviews with managers and employees and utilizing job descriptions.

Surveys and interviews with stakeholders, including managers, supervisors, and employees, can help identify the required skills. These surveys may include questions about current challenges, skills that need to be strengthened, and new skills required for future projects. Such information can contribute to a better understanding of training needs and the development of employees' skills.

### Ethical Considerations

All procedures performed in this study were under the ethical standards.

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### Conflict of Interest

The authors report no conflict of interest.

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