





## Assessment and Evaluation of a Strategic Human Resource Planning Model Based on Artificial Intelligence Development in Advertising Companies in Karbala

Ghanim Salman. Salih Alzahrli<sup>1</sup>, Sayed Hamidreza. Mirtavousi<sup>2\*</sup>, Alaulddin Buraa. Jawad Alaameri<sup>3</sup>, Siamak. Korang Beheshti<sup>4</sup>

<sup>1</sup> PhD Student, Department of Public Administration, Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran

<sup>2</sup> Assistant Professor, Department of Public Administration, Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran

<sup>3</sup> Assistant Professor, Faculty of Administration and Economics, University of Baghdad, Baghdad, Iraq

<sup>4</sup> Assistant Professor, Department of Management, Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran

\* Corresponding author email address: ghanemsalman3@gmail.com

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### ABSTRACT

The objective of the present study is to design a strategic human resource planning model based on the development of artificial intelligence (Case Study: Advertising Companies in Karbala). From a purpose perspective, this study is applied, and in terms of method, it is descriptive-survey. The research follows a mixed-methods approach combining qualitative and quantitative methods. The qualitative population includes advertising companies in Karbala, while the qualitative sample comprises academic experts in the fields of human resources, computer science and artificial intelligence, information systems, and managers of advertising firms in Iraq, selected for qualitative analysis and interviews. The participants in this phase were chosen purposively based on the principle of theoretical saturation. The sampling method employed was snowball sampling. In the quantitative phase, the statistical population consists of employees of advertising companies in Iraq who were asked to complete a questionnaire developed based on factors derived from the qualitative analysis. The quantitative sample size was determined using Cochran's formula. Given the unlimited population size, the sample size was calculated as 384 respondents, selected randomly. In the qualitative part, data analysis was conducted using thematic analysis, while in the quantitative part, structural equation modeling was used via SmartPLS software. The qualitative results revealed five dimensions for the model: development of organizational culture, recruitment and retention of artificial intelligence-related talents, design of AI systems to enhance HR processes, data analysis and forecasting, and training and development. The model's validity was examined using structural equations. Based on the calculations, the overall model fit index (GOF) was found to be 0.66, indicating a strong model fit. A significant relationship value of 223.512 was obtained between strategic human resource planning and training and development. The second-order factor loading was calculated as 0.949. For the relationship between strategic human resource planning and data analysis and forecasting, the significance value was 169.426, confirming a meaningful relationship. The second-order factor loading was 0.940. For the relationship between strategic human resource planning and organizational culture development, a significance value of

210.672 was obtained, confirming the relationship. The second-order factor loading was 0.948. Regarding the relationship between strategic human resource planning and the recruitment and retention of AI-related talents, a significance value of 167.958 was observed, indicating a significant relationship. The second-order factor loading was calculated as 0.938.

**Keywords:** Strategic planning, human resources, artificial intelligence development, advertising companies.

## 1. Introduction

Strategic planning in advertising companies refers to the process through which long-term business objectives are determined and the necessary strategies for achieving these goals are developed. Based on the conducted analysis, companies define their short-term and long-term objectives. These objectives may include increasing market share, attracting new customers, or improving service quality. The strategies required to achieve these goals are then formulated. Such strategies may involve selecting specific advertising nodes, determining advertising budgets, and choosing appropriate communication channels (Rusilowati et al., 2024). Planning alone is not sufficient; effective implementation of strategies and continuous monitoring of progress are equally critical. Companies must regularly assess results and make necessary changes when needed. Based on the outcomes, companies should be prepared to update their strategies and respond to market shifts and customer demands (Paroli, 2024).

Attention to these considerations helps advertising firms to operate more effectively in competitive markets, establish better connections with customers, and consequently achieve growth and development. The significance of qualitative and strategic aspects of human resource planning indicates that each employee is not merely a regular actor, but rather a long-term investment in the sustainability of the organization (Subyantoro & Suwanto, 2020).

Human resources aligned with the company's values, possessing relevant skills, and actively contributing to the achievement of strategic goals will serve as the driving force behind organizational growth and success. By focusing human resource planning on the development of individual potential, improving work quality, and complete integration with the company's vision, organizations can build a robust foundation for their existence amid market dynamics and global demands (Paroli, 2024).

Artificial intelligence companies embrace installation, integration, maintenance, and advancements. The proposed phase in automation markets is expanding beyond the forecasted stage. The AI platform includes chipsets similar to graphical processing systems, computer processing

systems, application-specific integrated circuits, and field-programmable gate arrays. Currently, the AI platform market is dominated by graphical and computer processing systems due to the high computational capacity required for AI frameworks (Arumugam et al., 2024).

To eliminate complexity and enhance accountability, improvements in data analytics have involved more stakeholders who believe they can report more freely on the changing world in which they operate. Human resource management is also closely linked to strategies for retaining and developing talent. This effort includes creating a work environment that supports employees' professional and personal growth (Salvador-Gómez et al., 2022).

Organizations aim to maintain employee motivation and well-being through development opportunities, training, and wellness programs, thereby ensuring that employees remain committed and productive. Thus, human resource management is not merely about acquiring the best workforce, but also about ensuring that employee potential continues to evolve, establishing consistent quality in work, and even enhancing that quality over time (AlDhaheri et al., 2023).

To ensure the availability of a qualified and competitive workforce, the steps of management are critically important. Human resource planning is not only necessary but strategic in guiding the direction and deployment of organizational human resources. This process involves identifying the future quantitative and qualitative needs of the organization and determining the necessary steps to meet those needs. With precise human resource planning, organizations can avoid imbalances between labor demand and supply, thereby optimizing productivity and achieving long-term goals. Human resource planning not only covers work aspects but also encompasses a set of processes and activities that involve collaboration between HR managers and line managers. This cooperation is essential for addressing various organizational challenges related to human factors (Noor, 2018).

Therefore, human resource planning is not solely the responsibility of the HR manager, but a synergistic collaboration among different stakeholders within the organization. Through an integrated planning process, an

organization can ensure that its human resources not only meet current needs but are also prepared to respond to future dynamics and demands (Sultan, 2022).

According to previous studies (Aldhaheri et al., 2023; Ali & Kallach, 2024; Arumugam et al., 2024; Barrett, 2024; Cai et al., 2024; Gandrita et al., 2023; Khan et al., 2024; Lishner & Shtub, 2023; Qaderi et al., 2023; Rismayadi, 2024; Rusilowati et al., 2024), it is expected that advertising companies focus on areas such as challenges and solutions in AI implementation, applications of business intelligence, AI architecture, AI deployment, and policies regarding security and privacy. However, such focuses have not been clearly observed in advertising firms. This research aims to address this gap by presenting a comprehensive model through expert interviews, with the goal of offering a new decision-making approach for senior managers in advertising companies. It is also highlighted that the success of such systems requires alignment with the specific conditions of advertising firms and ongoing technological advancements, which justifies the necessity of this study in addressing existing research gaps.

Therefore, this study aims to answer the following question: How can the design and evaluation of an employee information technology adoption model be conducted with an emphasis on the role of transformational leadership?

## 2. Methods and Materials

Given that the aim of this study is to design a strategic human resource planning model based on the development of artificial intelligence (Case Study: Advertising Companies in Karbala), the research method is categorized as exploratory-applied in terms of purpose; mixed-method (qualitative-quantitative) in terms of data type; cross-sectional in terms of data collection time; inductive-deductive in terms of philosophical foundation; and descriptive-survey in terms of data collection technique and overall research nature.

The first part of the study uses a qualitative method aimed at identifying, categorizing, and extracting concepts based on the perspectives of relevant experts and professionals. The qualitative approach employed in this section is thematic analysis. The second part of the study uses a quantitative method, relying on the opinions of the research's statistical population to examine the relationships between the study's dimensions and the research topic, as well as to assess and test the components and dimensions of

the proposed model. In this phase, thematic analysis is also applied to analyze interviews with 10 relevant experts.

In the second (quantitative) phase of the study, structural equation modeling is used to analyze the relationships between the model's dimensions and components, based on data obtained through a researcher-made questionnaire. Thus, the data collection method in this study is both library-based and field-based.

In the qualitative phase, a sample of academic experts in the fields of human resources, computer science and artificial intelligence, information systems, and managers of advertising companies in Iraq was selected for qualitative analysis and interviews. Additionally, relevant books and scholarly articles were considered part of the research population. The statistical sample for this phase was purposefully selected from the aforementioned experts based on the principle of theoretical saturation.

In the quantitative phase, data were collected using researcher-made questionnaires. The target population consisted of employees of advertising companies in Iraq, who were asked to complete the questionnaires developed based on the factors extracted from the qualitative analysis. The sample size was determined using Cochran's formula. The sample was randomly selected. Given the unlimited size of the population, the sample size was calculated to be 384 respondents using Cochran's formula.

The data collection instrument for the qualitative phase was semi-structured interviews. In the quantitative phase, based on the model derived from the qualitative section, a researcher-made questionnaire was designed and distributed among the statistical sample.

For analyzing data obtained from the interviews, this study employed the technique of thematic analysis. Thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within data. At a minimum, it organizes and describes the data in detail. However, it can also interpret various aspects of the research topic. Given the diversity, complexity, and subtlety of qualitative approaches, thematic analysis should be considered a foundational method for qualitative analysis. In this study, the coding process was conducted using thematic analysis.

In the quantitative section, data analysis was performed in two parts: descriptive and inferential. In the descriptive part, tests such as standard deviation, variance, mean, skewness, and kurtosis were calculated using SPSS software. In the inferential part, structural equation modeling was employed for path analysis using Smart PLS software.

### 3. Findings and Results

Analysis of the experts' average age shows that academic experts and university faculty members have the highest average age at 52.4 years, while advertising company managers have the lowest average age at 36.6 years.

Regarding average work experience, academic experts have the highest experience at 22.8 years, whereas advertising company managers have a lower average of 11.4 years. Among the participants in this study, 6 hold a PhD and 4 hold a master's degree.

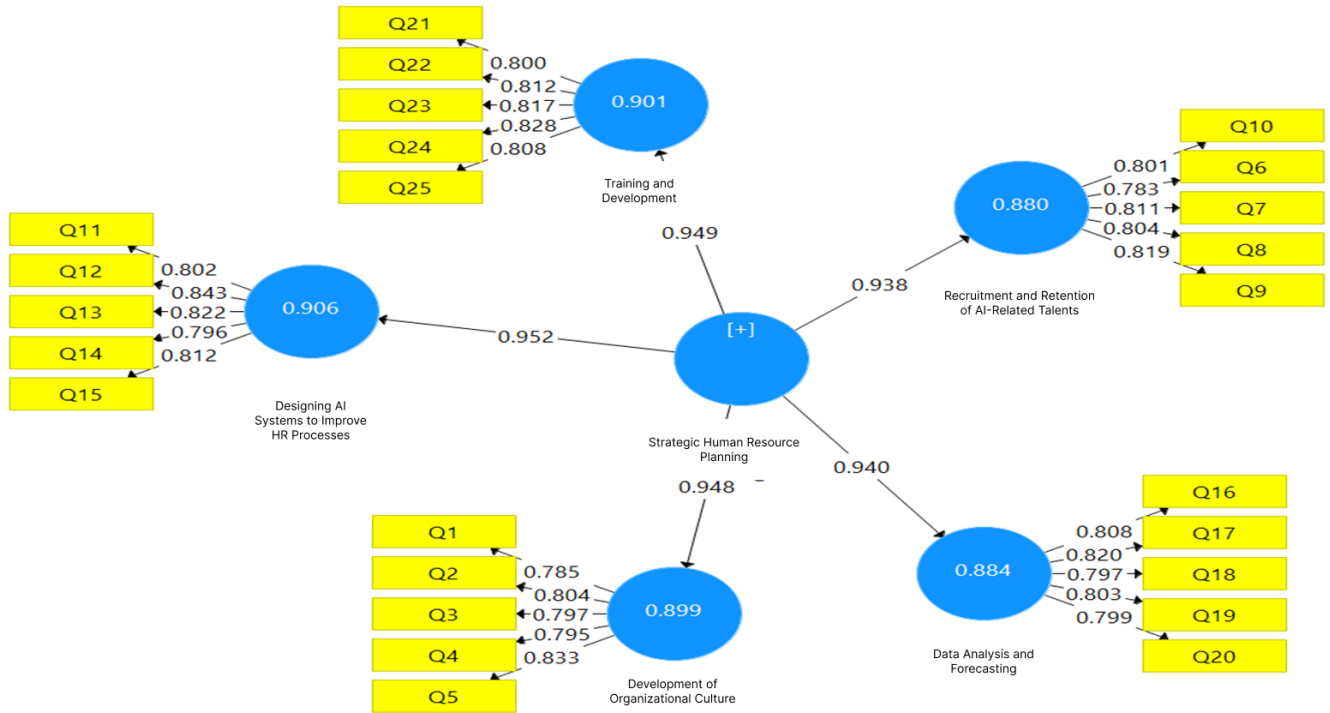
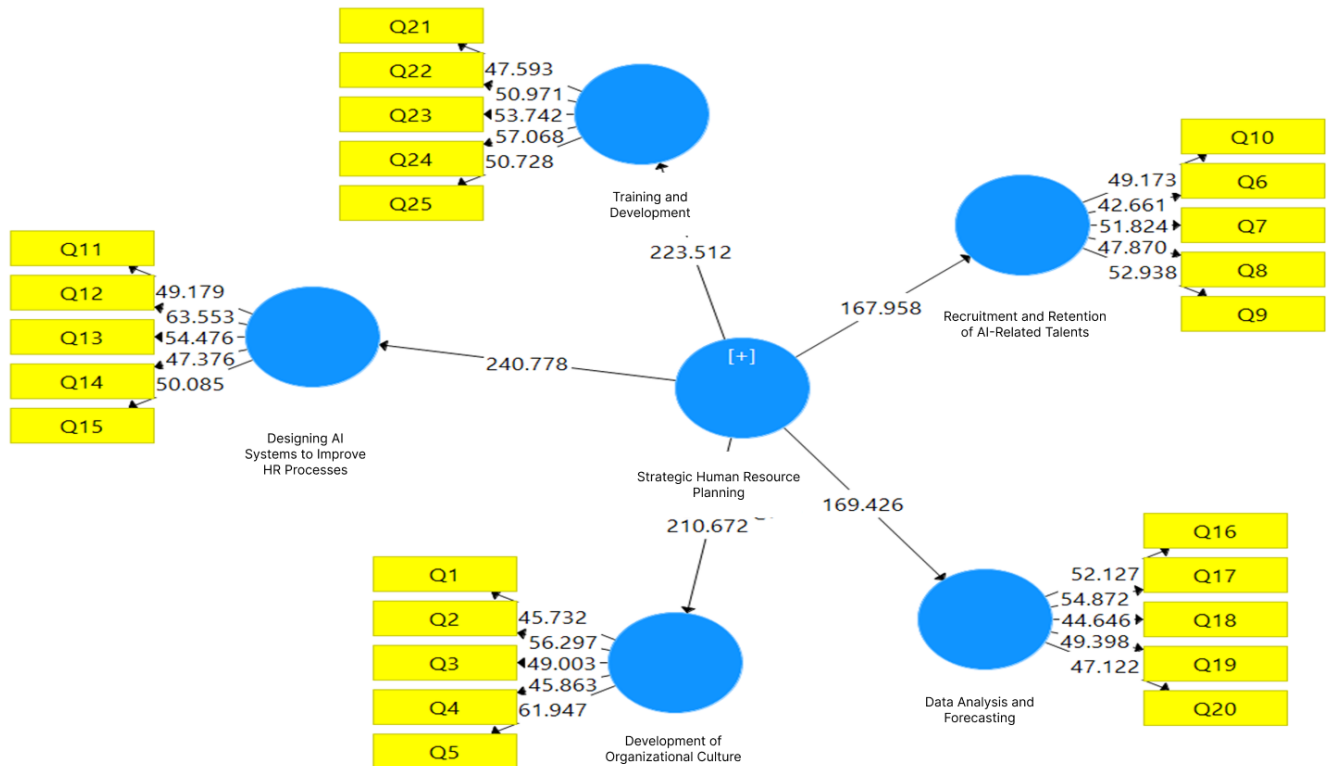
**Table 1**

*Research Dimensions Derived from Secondary Codes*

No.	Research Dimensions	Extracted Secondary Codes
1	Development of Organizational Culture	Encouraging productivity and efficiency in AI utilization Offering rewards and incentives for AI technology use Promoting collaboration and interaction among work teams Managerial support in AI implementation Defining the company's goals and values
2	Recruitment and Retention of AI-Related Talents	Defining clear roles and career paths Attracting AI specialists Providing educational opportunities Creating a flexible work environment for experts Enhancing collaboration with universities and research centers
3	Designing AI Systems to Improve HR Processes	Integrating AI with human resource management systems Developing automated systems Expanding the use of recommender systems Utilizing natural language processing systems
4	Data Analysis and Forecasting	Image and voice processing for detecting employee emotions and stress Data collection and aggregation Preprocessing of big data Data analysis using AI Using algorithms for prediction and modeling Model accuracy evaluation and improvement
5	Training and Development	Conducting AI-specific training courses for employees Training on communication with AI developers Developing a company-wide knowledge sharing system Assigning practical AI-related projects to teams Collaborating with AI specialists and expert consultants

In the quantitative phase of the study, a total of 384 participants from advertising companies in Iraq were surveyed. Of these, 62.76% were male ( $n = 241$ ) and 37.24% were female ( $n = 143$ ). Regarding age distribution, 26.30% were under 30 years old, 34.38% were between 30 and 40 years, 21.61% were aged 41 to 50 years, and 17.71% were over 50 years old. In terms of educational attainment, 41.15% held a bachelor's degree ( $n = 158$ ), 42.71% a master's degree ( $n = 164$ ), and 16.15% a PhD ( $n = 62$ ). As for work experience, 21.88% had 5 years or less, 30.99% had between 6 and 10 years, 29.43% had between 11 and 15 years, and 17.71% had more than 15 years of experience.

After assessing the fit of the measurement models, the structural model, and the overall model according to the data analysis algorithm in the PLS method, the researcher is permitted to examine and test the relationships between variables. This section evaluates the standardized path coefficients related to the hypotheses and the corresponding t-values. To confirm or reject hypotheses, the t-value must be greater than 1.96 or less than -1.96. Values within this range indicate no statistically significant difference between the calculated regression weights and zero at the 95% confidence level.

**Figure 1**
*Research Model with Standardized Coefficients*

**Figure 2**
*Research Model with t-values*


**Table 2**

*Factor Loadings, T Statistics, and P Values for Research Items*

Item	Factor Loading	T Statistic	p Value	Status
Q1 ← Strategic Human Resource Planning	.745	41.793	.000	Confirmed
Q1 ← Organizational Culture Development	.785	45.732	.000	Confirmed
Q10 ← Strategic Human Resource Planning	.734	38.967	.000	Confirmed
Q10 ← Talent Attraction & Retention (AI)	.801	49.173	.000	Confirmed
Q11 ← Strategic Human Resource Planning	.776	47.955	.000	Confirmed
Q11 ← AI System Design (HR Processes)	.802	49.179	.000	Confirmed
Q12 ← Strategic Human Resource Planning	.798	53.366	.000	Confirmed
Q12 ← AI System Design (HR Processes)	.843	63.553	.000	Confirmed
Q13 ← Strategic Human Resource Planning	.768	46.810	.000	Confirmed
Q13 ← AI System Design (HR Processes)	.822	54.476	.000	Confirmed
Q14 ← Strategic Human Resource Planning	.772	44.716	.000	Confirmed
Q14 ← AI System Design (HR Processes)	.796	47.376	.000	Confirmed
Q15 ← Strategic Human Resource Planning	.765	45.737	.000	Confirmed
Q15 ← AI System Design (HR Processes)	.812	50.085	.000	Confirmed
Q16 ← Strategic Human Resource Planning	.764	46.258	.000	Confirmed
Q16 ← Data Analysis and Forecasting	.808	52.127	.000	Confirmed
Q17 ← Strategic Human Resource Planning	.760	43.491	.000	Confirmed
Q17 ← Data Analysis and Forecasting	.820	54.872	.000	Confirmed
Q18 ← Strategic Human Resource Planning	.743	38.280	.000	Confirmed
Q18 ← Data Analysis and Forecasting	.797	44.646	.000	Confirmed
Q19 ← Strategic Human Resource Planning	.763	42.317	.000	Confirmed
Q19 ← Data Analysis and Forecasting	.803	49.398	.000	Confirmed
Q2 ← Strategic Human Resource Planning	.767	49.257	.000	Confirmed
Q2 ← Organizational Culture Development	.804	56.297	.000	Confirmed
Q20 ← Strategic Human Resource Planning	.757	41.905	.000	Confirmed
Q20 ← Data Analysis and Forecasting	.799	47.122	.000	Confirmed
Q21 ← Strategic Human Resource Planning	.752	42.821	.000	Confirmed
Q21 ← Training and Development	.800	47.593	.000	Confirmed
Q22 ← Strategic Human Resource Planning	.774	46.701	.000	Confirmed
Q22 ← Training and Development	.812	50.971	.000	Confirmed
Q23 ← Strategic Human Resource Planning	.781	48.238	.000	Confirmed
Q23 ← Training and Development	.817	53.742	.000	Confirmed
Q24 ← Strategic Human Resource Planning	.782	46.941	.000	Confirmed
Q24 ← Training and Development	.828	57.068	.000	Confirmed
Q25 ← Strategic Human Resource Planning	.770	48.493	.000	Confirmed
Q25 ← Training and Development	.808	50.728	.000	Confirmed
Q3 ← Strategic Human Resource Planning	.762	43.823	.000	Confirmed
Q3 ← Organizational Culture Development	.797	49.003	.000	Confirmed
Q4 ← Strategic Human Resource Planning	.770	41.767	.000	Confirmed
Q4 ← Organizational Culture Development	.795	45.863	.000	Confirmed
Q5 ← Strategic Human Resource Planning	.763	43.711	.000	Confirmed
Q5 ← Organizational Culture Development	.833	61.947	.000	Confirmed
Q6 ← Strategic Human Resource Planning	.741	39.114	.000	Confirmed
Q6 ← Talent Attraction & Retention (AI)	.783	42.661	.000	Confirmed
Q7 ← Strategic Human Resource Planning	.767	47.298	.000	Confirmed
Q7 ← Talent Attraction & Retention (AI)	.811	51.824	.000	Confirmed
Q8 ← Strategic Human Resource Planning	.763	43.017	.000	Confirmed
Q8 ← Talent Attraction & Retention (AI)	.804	47.870	.000	Confirmed
Q9 ← Strategic Human Resource Planning	.766	42.836	.000	Confirmed
Q9 ← Talent Attraction & Retention (AI)	.819	52.938	.000	Confirmed

**Table 3.** Second-Order Factor Loadings

Pathway	Factor Loading	T-value	p-value	Status
Strategic Human Resource Planning → Training and Development	.949	223.512	.000	Confirmed
Strategic Human Resource Planning → Data Analysis and Forecasting	.940	169.426	.000	Confirmed
Strategic Human Resource Planning → Organizational Culture Development	.948	210.672	.000	Confirmed
Strategic Human Resource Planning → Talent Attraction & Retention (AI)	.938	167.958	.000	Confirmed
Strategic Human Resource Planning → AI System Design for HR Processes	.952	240.778	.000	Confirmed

In the relationship between strategic human resource planning and training and development, a t-value of 223.512 was obtained ( $t > 1.96$ ), indicating a statistically significant relationship. The second-order factor loading was calculated as .949.

In the relationship between strategic human resource planning and data analysis and forecasting, a t-value of 169.426 was obtained ( $t > 1.96$ ), indicating a statistically significant relationship. The second-order factor loading was calculated as .940.

In the relationship between strategic human resource planning and organizational culture development, a t-value of 210.672 was obtained ( $t > 1.96$ ), indicating a statistically significant relationship. The second-order factor loading was calculated as .948.

In the relationship between strategic human resource planning and talent attraction and retention related to

artificial intelligence, a t-value of 167.958 was obtained ( $t > 1.96$ ), indicating a statistically significant relationship. The second-order factor loading was calculated as .938.

In the relationship between strategic human resource planning and the design of artificial intelligence systems to improve HR processes, a t-value of 240.778 was obtained ( $t > 1.96$ ), confirming the significance of the relationship. The second-order factor loading was calculated as .952.

All relationships had t-values greater than 1.96, indicating that all relationships are statistically significant, validated, and reliable.

To evaluate the overall model fit—which accounts for both the measurement and structural models—the GoF (Goodness-of-Fit) index was used. The GoF value was calculated using Equation (1):

$$(1) \text{ GoF} = \sqrt{(\text{average communalities} \times \text{average } R^2)}$$

**Table 4**

*Average Communality and Average R<sup>2</sup> Values*

Component	R <sup>2</sup>	Communality	Average Communality	Average R <sup>2</sup>
Training and Development	.901	.415	.481	.894
Strategic Human Resource Planning	—	.509		
Data Analysis and Forecasting	.884	.537		
Organizational Culture Development	.899	.528		
Talent Attraction & Retention (AI)	.880	.469		
AI System Design for HR Processes	.906	.427		

Based on the above values, the GoF index was calculated to be .67, indicating a strong model fit.

#### 4. Discussion and Conclusion

The findings of the present study revealed that the dimensions of strategic human resource planning, with an emphasis on artificial intelligence (AI) development in advertising companies, include: organizational culture development, recruitment and retention of AI-related talent, design of AI systems to enhance HR processes, data analysis and forecasting, and training and development. The components of strategic HR planning focused on AI

development, under the dimension of organizational culture development, encompass: encouraging efficiency and optimal use of AI, providing incentives and rewards for AI technologies, promoting teamwork and collaboration, managerial support for AI implementation, and clarifying organizational goals and values.

The dimension of recruitment and retention of AI-related talent includes the following indicators: clearly defined roles and career paths, structured recruitment of AI experts, provision of learning opportunities, creating flexible workspaces for specialists, and strengthening collaboration with universities and research centers. The dimension of AI system design for HR process improvement consists of:

integration of AI with HRM systems, development of automation tools, adoption of recommender systems, use of natural language processing tools, and deployment of image and sound processing to assess employees' emotions and stress levels.

The dimension of data analysis and forecasting comprises: data aggregation and collection, preprocessing of big data, application of AI for data analysis, use of algorithms for prediction and modeling, and evaluation and improvement of model accuracy. Lastly, the training and development dimension involves: organizing AI-specific training courses for employees, training on communication with AI developers, establishing company-wide knowledge-sharing systems, assigning AI-related projects to teams, and collaboration with AI experts and consultants.

This outcome can be explained by recognizing the close link between strategic human resource planning and training and development. Strategic HR planning helps define an organization's key objectives, while training equips employees with the necessary skills and competencies to achieve those goals. Training improves employee capabilities, enabling them to perform effectively and adapt to dynamic market conditions. Furthermore, strategic HR-aligned training programs support talent attraction and retention, especially when employees perceive ongoing learning and growth. Training also contributes to shaping a learning-oriented organizational culture, enhancing performance and motivation. When organizations undergo transformation, HR planning must include targeted training to prepare employees for change.

This finding aligns with the results of Barrett (2024), which emphasized that HR managers and personnel must continuously monitor the evolving skill requirements of the workforce, ensuring employees are well-trained and future-ready. He also argued that due to rapid technological change, HR professionals must become more technically equipped and proactive in managing transformation (Barrett, 2024).

There is also a strong relationship between strategic HR planning and data analysis and forecasting, which can be understood through various aspects. Strategic HR decisions require data-driven approaches. Data analytics helps managers make informed, logical decisions based on real-time information. Identifying trends and patterns enables organizations to align strategic HR plans with market demands and workforce expectations. Forecasting helps anticipate future workforce needs, including skills shortages or organizational restructuring. Analytics also supports performance assessment and process evaluation, enabling

organizations to identify strengths and weaknesses and implement improvements. In today's volatile environment, analytics empowers organizations to proactively respond to challenges with appropriate strategic solutions. This relationship enhances effective HR management and supports the achievement of strategic objectives.

This result corresponds with the findings of Ali et al. (2024) which highlights the impact of AI integration on HR effectiveness and decision-making (Ali & Kallach, 2024).

Strategic HR planning is also closely related to organizational culture development. This relationship can be analyzed from several perspectives. First, HR planning involves setting core organizational values and goals, which shape and reinforce organizational culture. Strategic HR planning promotes a positive and supportive work environment, where employees feel valued and motivated. A strong culture attracts and retains top talent, and HR planning can support this through programs designed to embed desirable cultural traits. Additionally, an innovative and learning-oriented culture encourages knowledge sharing and collaboration, which strategic HR initiatives can foster through training and development. Organizations with robust cultures are more adaptable to change, and HR planning must incorporate mechanisms to ensure cultural readiness for transitions. Finally, employee engagement and commitment are strongly influenced by organizational culture, and HR strategies that support participation and shared values can strengthen these outcomes.

This conclusion is supported by studies which confirmed that strategic HR practices significantly influence organizational culture development (Aidhaheri et al., 2023; Qaderi et al., 2023).

The link between strategic HR planning and the recruitment and retention of AI-related talent is also crucial. Strategic HR planning enables organizations to identify specific AI skill needs and design targeted strategies for attracting such talent. These strategies may involve offering competitive benefits, creating attractive work conditions, and offering growth opportunities. Beyond talent acquisition, upskilling existing employees is essential. Strategic HR planning should include training initiatives to develop in-house AI capabilities. In a fast-paced tech-driven environment, retaining top AI talent requires supportive, innovation-driven cultures. HR planning should also enhance cross-functional collaboration and R&D projects to challenge and motivate AI professionals. With markets evolving rapidly, continuous talent evaluation and

adjustment of HR strategies are necessary to maintain competitiveness and maximize productivity.

These findings align with the study by Rismayadi (2024), which showed that AI adoption significantly enhances HR efficiency in recruitment, performance management, and employee development (Rismayadi, 2024). However, the study also identified challenges, including job displacement, high maintenance costs, and the need for specialized skills—thus calling for a holistic, inclusive approach involving staff training and collaboration with academic institutions.

The present results also corroborate the study by Khan et al. (2024) which focused on how strategic HR planning aligns workforce capabilities with business goals and market fluctuations. It emphasized the importance of strategic alignment between HR strategies and organizational needs, describing models such as the probabilistic and resource-based approaches that contribute to improved organizational performance (Khan et al., 2024).

Another critical link exists between strategic HR planning and the design of AI systems for enhancing HR processes. Effective strategic planning depends on accurate, analyzable data. AI systems can process big data to provide actionable insights for HR decisions. Many HR functions—recruitment, performance appraisal, and training management—can be automated via AI, increasing efficiency and reducing costs. AI tools can also personalize employee development, increasing satisfaction and motivation. Predictive analytics can identify workforce trends, helping HR teams plan proactively. AI can optimize talent acquisition and retention by refining candidate matching, performance evaluation, and development needs assessments. Strategic HR planning requires continuous performance monitoring, which AI facilitates through real-time data analysis and process optimization.

Given the constantly evolving global landscape, AI-integrated HR systems help organizations adapt, innovate, and sustain improvement. Ultimately, the synergy between strategic HR planning and AI system design ensures that organizations can utilize human resources effectively and progress toward strategic success.

Based on the findings, the following recommendations are proposed:

a) **Enhancing Organizational Culture:** Develop AI platforms to strengthen internal communication and organizational culture. These platforms could include real-time surveys and sentiment analysis tools.

b) **Risk Management and Challenge Forecasting:** Utilize AI tools to anticipate and manage human-centered crises.

These tools help in early problem detection and the development of strategic responses.

c) **Data Analysis and Process Optimization:** Leverage big data to analyze HR processes and identify areas for improvement. This can lead to cost reduction and efficiency gains.

d) **Online Support and Consultation:** Implement AI-powered chatbots to respond to employee safety inquiries and provide guidance on mental health, professional development, and other relevant issues.

## 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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