

Using Analytical Hierarchy Process (AHP) for Developing a Performance Evaluation Model for A Human Resources Department in Private Sector in Saudi Arabia

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Abstract

Evaluating human resource departments discovers weak areas and supports performance measurements and continuous quality improvement. However, most research concentrates on the development of models that primarily assess the performance of individual human resources rather than focusing on the evaluation of the entire department. This study aims to formulate a model for evaluating the performance of human resource departments in Saudi Arabia's private sector. The proposed model studies HR standards using five well-known quality awards excellence models. Exploratory Factor Analysis (EFA) was then used to discover the factor structure of this model and examine its internal reliability to identify the underlying relationships between the assessment model criteria (factors). A questionnaire was designed and distributed to middle and high management levels, such as section head positions and above, in different organizations in the private sector in Jeddah. The analytic hierarchy process (AHP) was used to quantify the weights of the assessment factors and subfactors. Human resource experts estimated the relative magnitudes of the factors and sub-factors through pairwise comparisons. The results identified six main factors and seventy-eight subfactors for evaluating human resources department performance in any private sector. The findings indicated that the most substantial weight, constituting nearly 50 of the entire modules, was assigned to Factor 2, denoting "Justice and Human Development" (44.746%). This was followed by Factor 5, related to "Job Performance Management" (18.945%), and Factor 6, about "Occupational Safety" (12.554%). The factor with the lowest weight was Factor 1, representing "Career Guidance and Counseling" (7.601%).

Keywords: Human resources, analytic hierarchy process (AHP), exploratory factor analysis (EFA), evaluating HR department, quality awards

1. Introduction

Saudi Vision 2030, the long-term development plan, primarily focuses on developing promising industries separated from state spending and commodity price fluctuation. A key plank of the strategy is increasing private sector participation (<https://www.weforum.org/publications/fostering-effective-energy-transition-2023/in-full/saudi-arabia>). In addition to creating a suitable and comfortable work environment, which will have positive results (Chandrasekar, 2011), such as preserving human resources and reducing the instability rates of employment. At a time when the Saudization file received continuous government sponsorship, the work environment in the private sector was of great importance in attracting citizens to private sector establishments. Human resources departments play essential roles in providing an easy, comfortable, and professional environment to the workforce in the private sector. Human resource management aims to ascertain the organization's workforce size and the types of employees within the organization, optimize the utilization of available resources, and ensure the retention and sustainability of the company's workforce (Susanto & Rambano, 2022). The size, functions, and importance of human resources departments vary according to the different institutions and companies, their sizes, the diversity of their businesses, and the volume of their production. The essential functions of HRM differ from one institution to another as the department's organizational structure differs.

HRM analyzes the work by identifying the activities and tasks that make up each job, designing jobs, and determining the specifications of their occupants—workforce planning by defining the institution's needs in terms of types and numbers of employees. Carrying out these functions through HRM optimally affects the organization's performance and productivity. This is reflected in several aspects, including increasing productivity and performance, reducing the cost of staff turnover, and improving the level and efficiency of employees in the organization. The impact of human resources management is also reflected by increasing employee loyalty and job satisfaction through attention to incentive programs, job satisfaction, and occupational health and safety in the work environment. All these and other aspects lead directly to increased productivity, performance, and the ability to achieve the organization's strategic goals.

The majority of research concentrates on the development of models that primarily assess the performance of individual human resources rather than focusing on the evaluation of the entire department. Each organization needs a model to evaluate its HR department to ensure that the HR department works efficiently and that its staff provides high-quality, efficient services and benefits to employee applicants. This research aims to formulate a model for evaluating the performance of human resources departments in any private sector in Saudi Arabia. This model consists of standards achievable and accomplished in any human resources department to have the minimum adequate performance level. This tool should work as an easy and reliable tool for any organization to discover the weak areas in the human resources department and support performance measurement. This assessment tool highlights the critical elements of effective human resources management practices.

2. Literature Review

2.1 Impact of HRM Practices on Performance and Organizational Success

Literature has widely discussed the performance evaluation of human resource departments. (Saif & Sartawi, 2013). Determined the status of HRM practices and whether they applied to five Jordanian hospitals. These techniques included: (planning, selection, training, performance evaluation, motivation, compensation, and employment). A descriptive survey design was used, and data were collected from all hospital employees using questionnaires. Data were analyzed using descriptive statistics, correlations, and regression analyses. The results demonstrate that HRM practices impact performance, Jordanian hospitals do not have effective practices, and compensation significantly increases employee performance. (Akhter, Siddique, & Alam, 2013) Studied HRM practices impact on employee performance in the cement industry in Bangladesh. To achieve this goal, the study examined the impact of various HRM practices on the performance of 160 employees across seven cement companies. The regression analysis determined the impact of HRM practices on employee performance. The results showed that training, development, and career development opportunities significantly and positively affect employee performance.

Shaukat, Ashraf and Ghafoor (2015) Evaluate the relationship between human resources and corporate performance systems. The questionnaire comprised 31 elements, including seven variables: training, performance assessment, staff planning, employee participation, job definition, compensation, and selection. This study recommends that importance be given to the development side in managing human resources to enhance an organization's effectiveness. Elrehali, Harazneh, Abuhjeeleh, Alzghoul, Alnajdawi and Ibrahim, (2019) Explored several unexplored relationships within the hotel sector in Northern Cyprus. Initially, this study examined whether employee satisfaction affects the connection between HRM practices and competitive advantage. Another study from Munjuri (2011) concentrated on the effect of human resource management (HRM) practices on employee performance. Al-Syed (2019) aimed to investigate the impact of strategic human resource management practices on organizational resilience in private hospitals. The results indicate that these practices positively influence organizational resilience.

Gulzar (2017) investigated the relationship between human resource management (HRM) practices and organizational performance.

2.2 Human Resources Management (HRM)

Human resource management (HRM) involves managing a company's workforce. According to Gerhart (2019), HRM is a combination of multiple factors, including practices, policies, and systems, that positively influence employees' behavior, attitude, and performance towards an organization. Storey (1995) noted that the HRM is "a unique method of managing employment that aims to gain a competitive advantage by strategically deploying a highly committed and capable workforce, utilizing a comprehensive combination of cultural, structural, and personnel strategies." The concept that a company's human resources can strategically contribute to its success has given rise to a field of study known as strategic human resource management (SHRM). This relatively recent study combines elements from both strategic and human resource management (HRM) literature (Boxall & Purcell,

2000). Wright and McMahan (1992) described strategic human resource management as "the deliberate arrangement of human resource deployments and actions aimed at facilitating the firm in attaining its objectives."

2.3 Human Resources Practices

All firms, regardless of size, hold that human resource management includes activities to select, develop, motivate, and retain employees with the required characteristics (Jackson & Schuler, 1995). These activities are known as human resource (HR) practices. HRM practices are "organizational activities directed at managing the pool of human resources and ensuring that the resources are employed to fulfill organizational goals" (Tiwari & Saxena, 2012).

HRM comprises various practices used to manage people in organizations. These practices are commonly grouped into selection, training, appraisal, and rewards (Fombrun, Tichy, & Devanna, 1984). Several HR practices can affect employees' performance. (Taseem and Soeters, 2006) They studied eight HRM practices and policies and their relationship with job satisfaction. These HR practices include HRM Policy, Human resource planning, Policy and Philosophy, recruitment and selection procedures, placement practices, training practices, compensation practices, employee performance evaluation practices, motivational forces and factors, Employee Grievances, promotion practices, empowerment, physical, social, and safety security, self-esteem security, and self-actualization security or pension. (Huselid, 1995) studied several practices, such as personnel and staff selection, performance appraisal systems, incentive systems, compensation systems, job design, empowering decisions, information sharing, attitude assessment, labor-management relationships and participation, recruitment and selection efforts, employee training, and development and promotion criteria.

Appropriate HRM practices always focus on obtaining the best performance from the employees. Different studies vary in how they define best HRM practices. However, many studies concentrate on improving employees' skills through HR activities such as careful hiring, extensive training, and broader development initiatives such as job rotation and cross-utilization, as indicated in Table 1, which summarizes the most essential HRM practices in the literature.

Table 1. Summaries of HRM Best Practices

Authors	HRM best practices
Walton, 1985	- Flexible definition of duties
	- Frequent use of teams as an accountable unit
	- Flat organization structure with a mutual influence system
	- Management emphasis on problem-solving and relevant expertise
Pfeffer, 1994	- Employment security
	- Selective recruiting
	- High wages/Incentive pay
	- Employee ownership
Huselid, 1995	- Personnel selection
	- Performance appraisal
	- Incentive compensation
	- Formal grievance procedures
MacDuffie, 1995	- Work teams
	- Problem-solving groups
	- Job rotation
Kochan & Osterman, 2002	- Decentralization
	- Self-directed work teams
	- Job rotation
Cutcher-Gershenfeld, 1991	- Problem-solving groups/quality circles - Total Quality Management
	- Self-directed work teams
	- Problem-solving groups/quality circles - Feedback on production goals
	- Formal conflict resolution

Source. Youndt, Snell, Dean & Lepak, 1996; Walton, 1985; Becker & Gerhart, 1996; Pfeffer, 1994; MacDuffie, 1995; Kochan & Osterman, 2002; Cutcher-Gershenfeld, 1991.

2.4 Relation between Human Resources Management (HRM) Practices and Employee Satisfaction and Organizational Performance

HRM practices can play three significant roles: (i) building critical organizational capabilities, (ii) enhancing employee satisfaction, and (iii) improving customer and stakeholder satisfaction. Evidence reported for the US (Gerhart, 2005) suggests that labor productivity and organizational performance are positively related to various features of HR management systems, such as recruitment and selection (Koch & McGrath, 1996). Ichniowski, Shaw and Prensushi (1995) explained that when HRM practices are combined in different forms, the effects on organizational performance are much more significant than when practices are explored individually. Along the same lines of argument, Perry-Smith and Blum (Perry-Smith & Blum, 2000). suggest that HR bundles capture broader and higher-level effects than those focusing on individual policies. Abuhantash (2019) investigated and analyzed the effects of human resource management practices on Job Performance. This study's estimated regression model showed that HRM practices significantly impact an organization's job satisfaction and performance.

Hameed and Mohamed (2016) Examined the relationship between human resource management (HRM) practices and organizational performance. Empirical findings have revealed that Recruitment, selection, training, and Development can impact organizational performance. (Singh & Kassa, 2016) I have studied how human resource management (HRM) practices affect an organization's performance. The research discovered that HR practices, such as hiring, training, performance evaluations, and compensation, are strongly connected to a university's performance.

(Lepak and Snell, 1998) Moreover, (Hendrickson, 1998) proposed that e-HRM makes HR tasks smoother, quicker, and more efficient. The main aim of e-HRM is to save time and money by reducing the number of people in HR departments and administrative work. (Lepak & Snell, 1998; Hendrickson, 2003; Ensher, Nielson & Grant-Vallone, 2002; Lengnick-Hall & Moritz, 2003; Ruël, Bondarouk & Looise, 2004).

The paper addresses a notable gap in the existing literature: the need for comprehensive, quantitative models for evaluating the performance of HR departments at an organizational level in the private sector of Saudi Arabia. While previous studies have extensively examined individual HR practices and their impacts on employee performance, more research is needed to focus on the holistic assessment of HR department performance using structured and validated models like AHP.

2.5 Specific Gaps Identified:

1. **Lack of Departmental-Level Performance Models:** Most existing studies focus on evaluating individual HR practices or employee performance rather than assessing the overall performance of HR departments. This paper addresses this gap by developing a model that considers the department as a whole.
2. **Context-Specific Research:** Limited research exists on HR performance evaluation models tailored to Saudi Arabia's unique cultural and economic context. The study fills this gap by focusing on the Saudi private sector and considering its specific needs and challenges.
3. **Integration of Quantitative Methods:** While qualitative methods are commonly used in HR performance evaluations, more robust quantitative techniques like AHP and EFA are needed to validate and prioritize performance factors. This paper bridges this gap by employing these methods to provide a rigorous and systematic evaluation model.
4. **Comprehensive Framework Development:** Previous research often needs a comprehensive framework that includes various factors and sub-factors affecting HR performance. The study identifies six main factors and seventy-eight sub-factors, providing a detailed and holistic framework for HR performance evaluation.

3. Theoretical Background

3.1 Quality Awards Excellence models

The researcher used famous quality awards excellence models worldwide to help him reach the model's factors. The researcher used the following quality awards excellence models:

- a) European Foundation of Excellence Model (EFQM)- Europe.
- b) Malcolm Baldrige National Quality Award (MBNQA)- USA.
- c) King Abdulaziz Quality Award - Kingdom of Saudi Arabia.
- d) Deming prize - Japan.
- e) Singapore Quality Award- Singapore.

Also, the researcher studied the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) and the Joint Commission International (JCI) standards to benefit from those standards. **Table 2** shows human resources practices in different quality awards.

Table 2. Human resources practices in different quality awards

Award Name	Human Resources Practices
EFQM Excellence Model	- People plan to support the organization's strategy
	- People's knowledge and capabilities are developed
	- People are aligned, involved, and empowered
	- People communicate effectively throughout the organization
	- Workforce Environment:
Malcolm Baldrige National Quality Award (MBNQA)	• Change Management
	• Workforce support
	- workforce engagement and performance
	• Compensation and recognition
	• Performance Development
King Abdul Aziz Quality Award	- Human resource planning and selection
	- Training and Education
	- Performance and Recognition
	- Employee's satisfaction and work environment
	- Employee's involvement
Singapore Quality Award	- Saudization
	- Human Resource Planning
	- Employee Learning and Development
	- Employee Engagement and Well-Being
	- Employee Performance and Recognition
Deming prize – Japan	- Training & Education
	- The dignity of people should be respected

● European Foundation of Excellence Model (EFQM)- Europe

The EFQM Excellence Model is useful for organizations to assess their progress toward excellence.

One of the significant indicative concepts is People Development and involvement. EFQM people criteria check for people's plans to support the organization's strategy; people's knowledge and capabilities are developed; people are aligned, involved, and empowered; people communicate effectively throughout the organization; and people are rewarded, recognized, and cared for.

● Malcolm Baldrige National Quality Award (MBNQA)- USA

Awardees are chosen based on their accomplishments and advancements in seven categories, referred to as the Baldrige Criteria for Performance Excellence. Among these categories is the workforce, focusing on how the organization empowers and engages its employees.

The author will concentrate on workforce criteria in MBNQA that are part of the Human resources department's responsibility. (<https://www.nist.gov/baldrige/baldrige-criteria-commentary>)

This aspect (workforce) focuses on essential workforce practices aimed at establishing and sustaining a high-performance environment. It involves actively engaging the workforce to foster adaptability and success in the face of change

● King Abdulaziz Quality Award

In this award, Human resources criteria include human resource planning and selection, training and education, performance and recognition, employee satisfaction and work environment, employee involvement, and Saudization.

● Deming Prize – Japan

Established in 1951 by the Japanese Union of Scientists and Engineers, it is a tribute to Dr. Deming and honors those who demonstrate exceptional quality management. One of the criteria is human resources development,

which includes positioning "people" in management, education, and training, as well as respecting people's dignity.

- **Singapore Quality Award**

The Singapore Quality Award (SQA) framework assesses Singapore's organizations to the highest quality and business excellence standards. The framework consists of seven categories; one of them is people. The People category focuses on how employees' potential is effectively harnessed to achieve Excellence.

- **Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI)**

The researcher also studied the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) and Joint Commission International (JCI) standards to benefit from those standards. The CBAHI is the official organization responsible for awarding accreditation certificates to the government and private healthcare facilities in Saudi Arabia. The main purpose is to establish standards for healthcare quality and patient safety. All healthcare facilities were assessed to ensure they met these standards and met the set criteria. (<https://portal.cbahi.gov.sa/english/about-us/cbahi-at-a-glance>)

3.2 Formulating the Model

The researcher concludes the standards by studying the human resource practices of different quality awards and CBAHI, as shown in **Table 3**.

Table 3. Initial standards for the model

Standard	
HR1- Policy & Procedures	HR2-Staffing Plans.
Policy guidance HR1.1	Organization Structure HR2.1
Policy accessibility HR1.2	Staffing Plan Structure HR2.2
Policy implementation HR1.3	Contents HR2.3
HR3- job descriptions.	Updating HR2.4
Format HR3.1	HR4-Orientation
Selecting HR3.2	General Orientation Program HR4.1
Appraisal HR3.3	Organization mission HR4.1.1
Promotion HR3.4	Role of staff members HR4.1.2
Revision HR3.5	Evaluation process. HR4.1.3
Contents HR3.6	Local cultural HR4.1.4
Roles and Responsibilities HR3.7	Providing Employee manual HR4.2
Reporting relationships-HR3.8	Time of General Orientation HR4.3
Signing Job Description-HR3.9	Evidence of General Orientation HR4.4
EHR5-Evaluation	Defining the General Orientation HR4.5
Competency initial evaluation HR5.1	Policies and procedures. HR4.5.1
Competency evaluation usages HR5.2	Specific job responsibilities HR4.5.2
Regular evaluation process HR5.3	Safe operation oHR4.5.3
Base HR5.4	Head participating HR4.5.4
Period HR5.5	HR6- Training
Outcome HR5.6	Continuing Training Process HR6.1
Signing HR5.7	Continuing Education process HR6.2
Promotion HR5.8	Training needs identification HR6.3
Compensation HR5.9	Educational needs identification HR6.4
Discussion HR5.10	Developing skills opportunities HR6.5
HR7- Retaining	Training Evaluation HR6.6
Recognition Process HR7.1	Training Financial Support HR6.7

Development Opportunities HR7.2	Training Time Support HR6.8
Policies Fairness Implementation HR7.3	Training – The organization needs HR6.9
Conducting Exit Interviews HR7.4	Education – The organization needs HR6.10
Exit Interviews usages HR7.5	HR8-Work environment
Incentives Plan HR7.6	Staff Satisfaction Surveys HR8.1
Forma Pay structure HR7.7	HR8.1.1 implementation
Pay structure Revising HR7.8	HR8.1.2 analyzing
HR9- Information systems	HR8.1.3 Corrections
HR9.1 Decision making	Pre-employment medical HR8.2
HR9.2 Recruiting	HR8.2.1 Evaluation
HR9.3 Applicant tracking	HR8.2.2 Educations
HR9.4 Attendance management	HR8.2.3 Documentation
HR9.5 Performance appraisals	Handling Staff Complaints Policy HR8.3
HR9.6 Personal file	HR8.3.1 Handling
HR9.7 Update personal file	HR8.3.2 Procedures
HR9.8 Leaves process	HR8.3.3 Corrections
HR9.9 Loan request	HR8.3.4 Objectives
HR9.10 Clearance	HR8.3.5 Timing
HR9.11 Identification certificate	HR8.3.6 Labor Committee
HR9.12 Pay slip	HR8.3.7 Suggestion systems

Based on the above standards, the researcher categorized them into nine categories (from HR1 to HR9), as shown in **Table 4**.

Table 4. Category of the HR Assessment Model

Category. No.	Category Name
HR1	Policy & Procedures
HR2	Staffing plans
HR3	Job descriptions
HR4	Orientation Program
HR5	Evaluation
HR6	Education & Training
HR7	Retaining qualified staff
HR8	Work environment and conditions
HR9	HR information systems

4. Research Methodology

4.1 Research Design

A quantitative approach was performed; the researcher used interviews and annual reports.

To achieve the research objectives, the researcher used the following approach:

- Preliminary Data. Secondary sources: The theoretical aspects of the study were covered in three ways.
 - a) There are articles, studies, research, books, and references on the best method for evaluating human resource department performance.
 - b) Studying five famous quality awards excellence models all over the world:
 - 1) European Foundation of Excellence Model (EFQM)- Europe.
 - 2) Malcolm Baldrige National Quality Award (MBNQA)- USA.
 - 3) King Abdulaziz Quality Award - Kingdom of Saudi Arabia.

- 4) Deming prize - Japan.
- 5) Singapore Quality Award- Singapore.
- 6) In studying healthcare institution accreditation standards, the researcher used CBAHI standards.
 - Studying well-known quality award excellence models is essential because they encompass a dedicated section detailing HR standards, which are integral to implementation in any organization.

- Exploratory factor analysis (EFA) was used to determine the factor structure of these standards and to examine their internal reliability to identify the underlying relationships between the assessment tool criteria (factors). For EFA, the researcher created a survey using a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree) and distributed it to middle and high management levels from section head positions and above in different organizations in the private sector in Jeddah. After collecting this questionnaire, the researcher analyzed the data using SPSS software to conduct the EFA.

For EFA, the researcher designed a questionnaire and distributed it to middle and high management levels, such as section head positions and above, in different organizations in the private sector in Jeddah. After collecting this questionnaire, the researcher analyzed the data using SPSS software to conduct the EFA.

After conducting the EFA, the researcher reaches the final factors and sub-factors that measure human resources department performance.

- Then, the analytic hierarchy process (AHP) was used to quantify the weights of the assessment factors and subfactors. Human resource experts estimate the relative magnitudes of the factors and sub-factors through pairwise comparisons. Each respondent was required to compare the relative importance of the two assessment factors.

4.2 Evaluating Draft Survey Questions

The researcher used expert opinions and reviews. This method is relatively quick and inexpensive for evaluating draft-survey questions. Expert studies have become common in questionnaire development (Forsyth & Lessler, 2004). As (Willis, Schechter, and Whitaker, 1999) pointed out, expert reviews can be conducted individually or in group sessions. The researcher sent the draft questionnaire to four HR experts, either HR consultants or HR managers or directors and explained the objective of this study and what they should do. After receiving the experts' feedback, the researcher changed some questions based on their suggestions.

4.3 Data Collection

The primary data were collected through documents, reports, and semi-structured interviews.

4.4 Data Analysis

The researcher used secondary sources to achieve the research objective:

After collecting this questionnaire, we analyzed the data using SPSS software to conduct the EFA. After conducting the EFA, the researcher reaches the final factors and subfactors to measure the performance of the human resources department. Then, (AHP) was used to quantify the weights of the assessment factors and subfactors. Human resource experts estimate the relative magnitudes of the factors and sub-factors through pairwise comparisons. Each respondent was required to compare the relative importance of the two assessment factors.

5. Data Analysis

The total number of participants was 212, with different ages and different business segments; 37.7% of participants were between 35 and 45 years old, indicating that they were in the middle of their career and had enough experience in the private sector, and 34% of participants were between 25 and 35 years old.

Most participants worked in construction and maintenance, 31.1%. After that, 27.8% worked in the IT sector, and 9.9% worked in hospitals.

5.1 Factor Analysis

Table 5 provides the mean and median for each variable (factor) (Table 6 provides all variable definitions). The figure for each factor analysis is presented in this paper.

Table 5. Mean and Median for all factors (Variables)

Factor number	Mean	Median	Factor number	Mean	Median	From	TO	
VAR1	3.8538	4	VAR41	3.0896	3	1	1.8	Strongly Disagree
VAR2	3.7406	4	VAR42	3.3585	4	1.81	2.6	Disagree
VAR3	3.6321	4	VAR43	3.2217	3	2.61	3.4	Neutral
VAR4	3.7217	4	VAR44	3.3915	4	3.41	4.2	Agree
VAR5	3.4104	4	VAR45	2.9953	3	4.21	5	Strongly Agree
VAR6	3.4481	4	VAR046	3.1179	3			
VAR7	3.25	3	VAR00047	3.1368	3			
VAR8	3.5425	4	VAR48	3.3443	4			
VAR9	3.4057	4	VAR49	3.25	3			
VAR10	3.3208	4	VAR50	3.2406	3			
VAR11	3.1038	3	VAR51	2.9811	3			
VAR12	3.0283	3	VAR00052	2.9387	3			
VAR13	3.5236	4	VAR00053	3.1745	3			
VAR14	3.5236	4	VAR54	3.3491	4			
VAR15	3.8915	4	VAR55	3	3			
VAR16	3.2642	4	VAR56	3.0047	3			
VAR17	3.4858	4	VAR57	2.9481	3			
VAR18	3.3113	4	VAR58	2.9387	3			
VAR19	3.2075	4	VAR59	3.717	4			
VAR20	3.1792	3	VAR60	3.283	4			
VAR21	3.1415	3	VAR61	3.7028	4			
VAR22	3.3349	4	VAR62	3.3302	4			
VAR23	3.2547	3	VAR63	3.2925	4			
VAR24	3.3208	4	VAR64	3.1792	3			
VAR25	3.4245	4	VAR65	3.1887	3			
VAR26	3.4245	4	VAR66	3.1415	3			
VAR27	3.4528	4	VAR67	2.8962	3			
VAR28	3.5	4	VAR68	3.1934	3			
VAR29	3.6226	4	VAR69	3.2642	3			
VAR30	3.4597	4	VAR70	3.217	3			
VAR31	3.4009	4	VAR71	3.184	3			
VAR	3.7689	4	VAR	3.5519	4			

32				72			
VAR	3.5047	4		VAR	3.2925	4	
33				73			
VAR	3.5519	4		VAR	3.4764	4	
34				74			
VAR	3.4434	4		VAR	3.3349	4	
35				75			
VAR	3.0896	3		VAR	3.6179	4	
36				76			
VAR	3.2028	4		VAR	3.2358	3	
37				77			
VAR	3.2877	3		VAR	3.25	3	
38				78			
VAR	3.2264	3		VAR	3.5	4	
39				79			
VAR	3.1274	3		VAR	3.6132	4	
40				80			

Table 6. Variable Definitions

H			
R	Policy & Procedures		
1			
	Policy giddiness HR1.1 (Var.1)		The policies and procedures manual guides the work of the human resources department.
Policy	Policy accessibility HR1.2 (Var.2)		The policies and procedures manual is accessible and communicated to all staff members.
	Policy implementation HR1.3 (Var.3)		Policies and procedures contained in the manual are implemented.
	H		
R	Staffing Plans.		
2			
Staffing plans	Written Organization Structure HR2.1 (Var.4)		Each department has a written organizational structure showing the job title and the number of jobs for each title.
	Written Staffing Plan Structure HR2.2 (Var.5)		Each department has a written staffing plan, developed in collaboration with the human resources department, to fulfill its mission.
	Staffing Plan contents HR2.3 (Var.6)		The departmental staffing plan defines the number and qualifications of staff required for each job and their job responsibilities.
	Staffing Plan Updating HR2.4 (Var.7)		The staffing plans are reviewed and updated at least annually and as needed.
H			
R	All categories of staff have written job descriptions.		
3			
Job descriptions	Job Description Format HR3.1 (Var.8)		There is a policy that describes a standardized format for job descriptions.
	Job Description- Selecting HR3.2 (Var.9)		The job description is used when selecting employees for hire.
	Job Description- appraisal HR3.3 (Var.10)		The job description is used in performance evaluation.
	Job Description- Promotion HR3.4 (Var.11)		The job description is used in internal promotion.
	Job Description- Revision HR3.5 (Var.12)		All job descriptions are revised at least every three years and as needed.
	Job Description- Contents HR3.6 (Var.13)		The job description defines the required knowledge, skills, and attitude to perform the job responsibilities.
	Job Description- Roles and responsibilities HR3.7 (Var.14)		The job description clearly defines the roles and responsibilities.
	Job Description- reporting relationships		The job description specifies the reporting relationships.

	HR3.8 (Var.15)		
	Signing Job Description HR3.9 (Var.16)		The staff member discusses and signs the job description on hiring, which is kept in the personnel file.
H	New employees undergo a general		
R	orientation program before being		
4	allowed to work independently.		
	General Orientation Program HR4.1		New employees, contract workers, students, and volunteers go through a general orientation program that provides the relevant initial training and information on the following:
	General Orientation program	HR4.1.1 (Var.17)	Organization mission, vision, values, and organizational chart. Staff members play a role in all programs related to facility management and safety (e.g., fire, safety, disasters, hazardous materials, utilities, and equipment failures).
		HR4.1.2 (Var.18)	General information on the staff evaluation process.
		HR4.1.3 (Var.19)	General information about critical local cultural and social themes.
		HR4.1.4 (Var.20)	
	Providing Employee manual (Var.21)	HR4.2	The organization provides all new employees with an "Employee Manual" or equivalent containing a summary of the general orientation program and other relevant information.
	Time of General Orientation (Var.22)	HR4.3	The general orientation program is conducted before working independently.
	Evidence of General Orientation HR4.4 (Var.23)		The new employee signs evidence of attending the departmental and job orientation program, documented in the personnel file.
	Defining the General Orientation HR4.5		The departmental and general job orientation program is defined in an organization's policy and includes the following:
		HR4.5.1 (Var.24)	Departmental policies and procedures.
		HR4.5.2 (Var.25)	Specific job responsibilities within the department are outlined in the job description.
		HR4.5.3 (Var.26)	Safe operation of equipment and devices, including troubleshooting and malfunctions, are reported.
		HR4.5.4 (Var.27)	The departmental orientation is conducted by the head of the department or the immediate supervisor.
H	Evaluation of staff performance.		
R			
5			
	Competency initial evaluation HR5.1 (Var.28)		The organization has a process described in an HR policy for the initial evaluation of the competency of the new employees.
	Competency evaluation usages HR5.2 (Var.29)		The competency evaluation is used to hire employees after they finish the probation period.
	Regular evaluation process HR5.3 (Var.30)		There is a policy describing the process used in regularly evaluating staff performance.
	Performance evaluation base HR5.4 (Var.31)		The performance evaluation is based on objective criteria and is linked with the job description.
	Performance evaluation period HR5.5 (Var.32)		The performance evaluation is conducted at least annually.
	Performance evaluation outcome HR5.6 (Var.33)		The outcome of the performance evaluation is used to set objectives for performance improvement and professional development.
	Performance evaluation signing HR5.7 (Var.34)		Both the employee and the supervisor sign the performance evaluation.
	Performance evaluation – Promotion HR5.8 (Var.35)		Performance evaluation is used to promote employees.
	Performance evaluation – Compensation HR5.9 (Var.36)		The performance evaluation is used to compensate the employee.

Evaluation

	Performance evaluation – Discussion HR5.10 (Var.37)	The performance evaluation is discussed with the employee.
H		
R	Training	
6		
	Continuing Training process HR6.1 (Var.38)	A policy describes the structure and process for the continuing training of all staff categories.
	Continuing Education process HR6.2 (Var.39)	A policy describes the structure and process for continuing education for all staff categories.
	Training needs identification HR6.3 (Var.40)	The training needs are identified based on individual performance appraisals.
	Educational needs identification HR6.4 (Var.41)	The educational needs are identified based on individual performance appraisals.
	Developing skills opportunities HR6.5 (Var.42)	Employees are provided with opportunities to develop their existing skills.
	Training Evaluation HR6.6 (Var.43)	Employees are evaluated after the completion of training programs.
	Training Financial Support HR6.7 (Var.44)	The organization grants financial support for staff to attend educational activities.
	Training Time Support HR6.8 (Var.45)	The organization grants time off for staff to attend educational activities.
	Training – Organization needs HR6.9 (Var.46)	The organization has an ongoing training program based on the organization's needs.
	Education – Organization needs HR6.10 (Var.47)	The organization has an educational program with an ongoing schedule of educational activities based on the organization's needs.
H		
R	The organization develops and implements strategies for retaining qualified staff.	
7		
	Recognition Process HR7.1 (Var.48)	The organization has a process for the recognition and reward of distinguished staff.
	Professional Development Opportunities HR7.2 (Var.49)	The organization provides opportunities for professional development and promotion.
	Policies Fairness Implementation HR7.3 (Var.50)	The organization carries out human resources policies fairly and consistently without discrimination.
	Conducting Exit Interviews HR7.4 (Var.51)	The organization carries out exit interviews for staff who have resigned.
	Exit Interviews usages HR7.5 (Var.52)	The organization uses the resulting information from exit interviews for resigning staff to make decisions about improving human resources processes.
	Incentives Plan HR7.6 (Var.53)	There is an incentive plan in the organization correlated with employee performance.
	Forma Pay structure HR7.7 (Var.54)	There is a formal pay structure.
	Pay structure Revising HR7.8 (Var.55)	The pay structure is reviewed regularly.
H		
R	Work environment and conditions	
8		
	Conducts Staff Satisfaction Surveys HR8.1	The organization conducts staff satisfaction surveys on an ongoing basis.
	Conducts Staff Satisfaction Surveys - Period	HR8.1.1 (Var.56) A staff satisfaction survey is conducted at least once per year.
	Conducts Staff Satisfaction Analysis	HR8.1.2 (Var.57) Data are aggregated and analyzed.
	Staff Satisfaction Surveys - usages	HR8.1.3 (Var.58) Actions are taken to address areas for improvement.

HR8.2	The organization has a program that addresses staff health and safety.
Pre-employment medical	HR8.2.1 The organization has a Pre-employment medical evaluation of new employees. (Var.59)
Risk continues education	HR8.2.2 There is continued staff education on the organization's environment's risks and their specific job-related hazards (e.g., lifting techniques and detecting, assessing, and reporting risks). (Var.60)
Record keeping - staff incidents	HR8.2.3 There are documentation, record-keeping, and staff incidents management (e.g., injuries or illnesses, taking corrective actions, and setting measures to prevent recurrences). (Var.61)
HR8.3	The organization has a process for handling staff complaints and dissatisfaction.
Handling Staff Complaints Policy	HR8.3.1 The organization has a policy for handling staff complaints. (Var.62)
complaint process awareness	HR8.3.2 Staff members know the procedure to follow when bringing forward a complaint. (Var.63)
complaint process awareness	HR8.3.3 The organization takes action to address the complaints fairly. (Var.64)
Takes Actions- Complaints	HR8.3.4 The organization takes action to address the complaints objectively. (Var.65)
Time Takes Actions- Complaints	HR8.3.5 The organization takes action to address the complaints promptly. (Var.66)
Labor Committee	HR8.3.6 The organization has a Labor Committee. (Var.67)
Suggestion Systems	HR8.3.7 There are suggestion systems in the organization. (Var.68)

H R 9

HR information systems

HR information systems - decision making HR9.1 (Var.69)	The HR department used HR information system reports for their decision-making process.
HR information systems - Recruiting HR9.2 (Var.70)	The HR department used an HR information system for recruiting.
HR information systems – Applicant tracking HR9.3 (Var.71)	The HR department used an HR information system for applicant tracking.
HR information systems - attendance management HR9.4 (Var.72)	The HR department used an HR information system for attendance management.
HR information systems - Performance appraisals HR9.5 (Var.73)	The HR department used an HR information system for performance appraisals.
HR information systems - personal file HR9.6 (Var.74)	The employee can access and see his file through the self-service HR system in the organization.
HR information systems – Update personal file HR9.7 (Var.75)	The employee can update his personal file information through the self-service HR system in the organization.
HR information systems – Leaves process HR9.8 (Var.76)	The employee can make all his leave requests through the self-service HR system in the organization.
HR information systems – Loan request HR9.9 (Var.77)	The employee can make loan requests from the HR department through a self-service HR system.
HR information systems – Clearance HR9.10 (Var.78)	The employee can do his clearance process through the self-service HR system in the organization.
HR information systems – Identification	The employee can request all identification certificates through the organization's

certificate	self-service HR system.
HR9.11 (Var.79)	
HR information systems – Pay slip	The employee can see his pay slip through the self-service HR system in the
HR9.12 (Var.80)	organization.

The researcher implemented EFA on the data collected based on the following criteria:

- Principal component analysis as an extraction method.
- Varimax with Kaiser normalization as rotation method.
- The coefficient values should be more than 0.4
- The researcher chose eigenvalues that were more significant than 1 for extraction. The system extracts the variables as 11 based on eigenvalues that are more significant than one, and the total variance is explained in Table. If we chose 11 factors, it turned out to be 76.329%. The results of EFA yielded a model with 78 items in six domains, which explained 76.329 % of the total variance of the questionnaire.

Because the mean eigenvalue in a parallel test extracts three factors, which will provide us with 61.713 % variance explained, which is insufficient, the researcher chose 11 factors based on the total variance explained in **Table 7**.

Table 7. Total Variance Explained Table

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	42.625	53.282	53.282	42.625	53.282	53.282	12.575	15.719	15.719
2	3.841	4.801	58.083	3.841	4.801	58.083	9.363	11.703	27.422
3	2.904	3.630	61.713	2.904	3.630	61.713	7.999	9.998	37.421
4	2.175	2.718	64.431	2.175	2.718	64.431	7.877	9.846	47.267
5	1.846	2.307	66.739	1.846	2.307	66.739	6.968	8.710	55.977
6	1.565	1.956	68.695	1.565	1.956	68.695	4.796	5.995	61.972
7	1.450	1.813	70.508	1.450	1.813	70.508	3.192	3.990	65.962
8	1.311	1.638	72.146	1.311	1.638	72.146	2.434	3.043	69.005
9	1.178	1.472	73.619	1.178	1.472	73.619	2.345	2.931	71.936
10	1.099	1.374	74.993	1.099	1.374	74.993	1.865	2.331	74.267
11	1.069	1.336	76.329	1.069	1.336	76.329	1.650	2.062	76.329
12	.987	1.234	77.563						
13	.885	1.106	78.670						
14	.818	1.023	79.692						
15	.785	.981	80.673						
16	.769	.962	81.635						
17	.701	.876	82.511						
18	.626	.782	83.293						
19	.602	.752	84.046						
20	.590	.738	84.784						
21	.549	.687	85.470						
22	.518	.648	86.118						
23	.504	.630	86.748						

Kaiser–Meyer–Olkin (KMO) is one of the best tests for measuring the suitability of our data in factor analysis. The test measures the sampling sufficiency for each variable in the complete model. As shown in Figure 1, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.944, which is higher than the recommended value of 0.6. This means that the sample size is sufficient for our analysis.

Kaiser–Meyer–Olkin Measure of Sampling Adequacy.		.944
Bartlett's Test of Sphericity	Approx. Chi-Square	20028.603
	df	3160
	Sig.	.000

Figure 1. KMO and Bartlett's test

The result of the exploratory factor analysis is shown in Table 8.

Table 8. Result of the exploratory factor analysis

	1	2	3	4	5	6	7	8	9	10	11
VAR00001							0.633				
VAR00002							0.67				
VAR00003					0.425						
VAR00004					0.407		0.469				
VAR00005					0.466						
VAR00006					0.596						
VAR00007					0.582						
VAR00008					0.675						
VAR00009					0.563						
VAR00010									0.599		
VAR00011	0.42								0.492		
VAR00012		0.402							0.523		
VAR00013					0.434						
VAR00014					0.429						
VAR00015					0.743						
VAR00016	0.514				0.483						
VAR00017	0.571										
VAR00018	0.698										
VAR00019	0.7										
VAR00020	0.69										
VAR00021	0.63										
VAR00022	0.651										
VAR00023	0.798										
VAR00024	0.712										
VAR00025	0.69				0.409						
VAR00026	0.703										
VAR00027	0.639										
VAR00028	0.612										
VAR00029	0.547										
VAR00030	0.637										
VAR00031					0.503						

VAR00032		0.425		0.566
VAR00033				0.448
VAR00034				0.538
VAR00035	0.428			0.524
VAR00036	0.465			0.467
VAR00037				0.534
VAR00038	0.473			0.418
VAR00039	0.418			0.448
VAR00040		0.466		0.499
VAR00041	0.428	0.484		0.477
VAR00042				
VAR00043				
VAR00044				0.499
VAR00045		0.575		
VAR00046	0.487	0.44	0.434	
VAR00047	0.421	0.482	0.406	
VAR00048		0.524		
VAR00049		0.493		
VAR00050		0.51		
VAR00051		0.708		
VAR00052	0.423	0.64		
VAR00053		0.548		
VAR00054		0.445	0.414	
VAR00055		0.647		
VAR00056		0.623		
VAR00057		0.654		
VAR00058		0.663		
VAR00059				0.69
VAR00060	0.521	0.409		
VAR00061			0.456	0.497
VAR00062			0.693	
VAR00063			0.749	
VAR00064			0.746	
VAR00065			0.78	
VAR00066			0.723	
VAR00067			0.415	
VAR00068			0.525	
VAR00069		0.44	0.431	
VAR00070		0.404	0.421	
VAR00071		0.444		
VAR00072			0.422	0.508
VAR00073			0.451	

VAR00074	0.666
VAR00075	0.725
VAR00076	0.762
VAR00077	0.642
VAR00078	0.751
VAR00079	0.805
VAR00080	0.775

After the researcher completed the rotated component matrix, variables 42 and 43 were deleted because they did not have data and did not belong to any factor.

Subsequently, the researcher deleted the repeated variables that showed more than one factor and kept that variable in the factor with greater coefficient values. Table 9 presents the distribution.

Table 9. Distribution of variables with coefficient values from exploratory analysis

<u>Factor 1</u>			<u>Factor 4</u>		
VAR00017	0.571	HR4	VAR00062	0.693	HR8
VAR00018	0.698	HR4	VAR00063	0.749	HR8
VAR00019	0.7	HR4	VAR00064	0.746	HR8
VAR00020	0.69	HR4	VAR00065	0.78	HR8
VAR00021	0.63	HR4	VAR00066	0.723	HR8
VAR00022	0.651	HR4	VAR00067	0.415	HR8
VAR00023	0.798	HR4	VAR00068	0.525	HR8
VAR00024	0.712	HR4	VAR00069	0.431	HR9
VAR00025	0.69	HR4	VAR00073	0.451	HR9
VAR00026	0.703	HR4			
VAR00027	0.639	HR4	<u>Factor 5</u>		
VAR00028	0.612	HR5	VAR00003	0.425	HR1
VAR00029	0.547	HR5	VAR00005	0.466	HR2
VAR00030	0.637	HR5	VAR00006	0.596	HR2
VAR00038	0.473	HR6	VAR00007	0.582	HR2
VAR00060	0.521	HR8	VAR00008	0.675	HR3
			VAR00009	0.563	HR3
			VAR00013	0.434	HR3
<u>Factor 2</u>			VAR00014	0.429	HR3
VAR00041	0.484	HR6	VAR00015	0.743	HR3
VAR00045	0.575	HR6	VAR00016	0.483	HR3
VAR00046	0.44	HR6	VAR00031	0.503	HR5
VAR00047	0.482	HR6			
VAR00048	0.524	HR7			
VAR00049	0.493	HR7	<u>Factor 6</u>		

VAR00050	0.51	HR7	VAR00032	0.566	HR5
VAR00051	0.708	HR7	VAR00033	0.448	HR5
VAR00052	0.64	HR7	VAR00034	0.538	HR5
VAR00053	0.548	HR7	VAR00035	0.524	HR5
VAR00054	0.445	HR7	VAR00036	0.467	HR5
VAR00055	0.647	HR7	VAR00037	0.534	HR5
VAR00056	0.623	HR8	VAR00039	0.448	HR6
VAR00057	0.654	HR8	VAR00040	0.499	HR6
VAR00058	0.663	HR8			
			Factor 7		
Factor 3			VAR00001	0.633	HR1
VAR00070	0.404	HR9	VAR00002	0.67	HR1
VAR00071	0.444	HR9	VAR00004	0.469	HR2
VAR00074	0.666	HR9			
VAR00075	0.725	HR9	Factor 8		
VAR00076	0.762	HR9	VAR00059	0.69	HR8
VAR00077	0.642	HR9	VAR00061	0.497	HR8
VAR00078	0.751	HR9			
VAR00079	0.805	HR9	Factor 9		
VAR00080	0.775	HR9	VAR00010	0.599	HR3
			VAR00011	0.492	HR3
			VAR00012	0.523	HR3
Factor 11			Factor 10		
VAR00072	0.508	HR9	VAR00044	0.499	HR6

After that, the researcher performed a reliability test and conducted an exploratory factor analysis for Factor 1, as shown in Table 10. The same analysis was performed for all the factors until Factor 9.

Table 10. Reliability test for factor 1

Reliability Statistics				
	Cronbach's Alpha	N of Items		
	.967	16		

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR00017	50.1754	227.393	.729	.965
VAR00018	50.3507	223.600	.815	.964
VAR00019	50.4550	223.449	.828	.964
VAR00020	50.4834	222.946	.848	.964
VAR00021	50.5213	225.375	.789	.965
VAR00022	50.3270	224.516	.833	.964
VAR00023	50.4028	223.832	.807	.964
VAR00024	50.3365	222.596	.839	.964
VAR00025	50.2322	226.179	.835	.964
VAR00026	50.2370	224.886	.819	.964
VAR00027	50.2085	229.623	.721	.966
VAR00028	50.1611	228.745	.727	.965
VAR00029	50.0379	229.684	.765	.965
VAR00030	50.1991	227.236	.792	.964
VAR00038	50.3744	227.759	.737	.965
VAR00060	50.3791	226.989	.739	.965

5.2 Brainstorming Sessions

5.2.1 Factor Analysis Modification

The researcher had a discussion session with three human resources experts to discuss the exploratory factor analysis results for the model, and the following steps were performed:

5.2.2 Possibility for Merging Latent Variables

After a discussion with HR experts, they agreed to:

- 1) Merge factor 11 with factor 3.
- 2) Merge factor 10 with factor 2.
- 3) Merge factor 4 with factor 2.
- 4) Merge factor 9 with factor 6.
- 5) Merge factor 7 with factor 5.

The model after the merge is shown in Table 11.

Table 11. The model, after merging factors

Factor 1	Coefficient	Factor name
VAR00017	0.571	HR4
VAR00018	0.698	HR4
VAR00019	0.7	HR4
VAR00020	0.69	HR4
VAR00021	0.63	HR4
VAR00022	0.651	HR4
VAR00023	0.798	HR4
VAR00024	0.712	HR4
VAR00025	0.69	HR4
VAR00026	0.703	HR4
VAR00027	0.639	HR4
VAR00028	0.612	HR5
VAR00029	0.547	HR5

VAR00030	0.637	HR5
VAR00038	0.473	HR6
VAR00060	0.521	HR8
Factor 2		
VAR00041	0.484	HR6
VAR00045	0.575	HR6
VAR00046	0.44	HR6
VAR00047	0.482	HR6
VAR00048	0.524	HR7
VAR00049	0.493	HR7
VAR00050	0.51	HR7
VAR00051	0.708	HR7
VAR00052	0.64	HR7
VAR00053	0.548	HR7
VAR00054	0.445	HR7
VAR00055	0.647	HR7
VAR00056	0.623	HR8
VAR00057	0.654	HR8
VAR00058	0.663	HR8
VAR00044	0.499	HR6
VAR00062	0.693	HR8
VAR00063	0.749	HR8
VAR00064	0.746	HR8
VAR00065	0.78	HR8
VAR00066	0.723	HR8
VAR00067	0.415	HR8
VAR00068	0.525	HR8
VAR00069	0.431	HR9
VAR00073	0.451	HR9
Factor 3		
VAR00070	0.404	HR9
VAR00071	0.444	HR9
VAR00074	0.666	HR9
VAR00075	0.725	HR9
VAR00076	0.762	HR9
VAR00077	0.642	HR9
VAR00078	0.751	HR9
VAR00079	0.805	HR9
VAR00080	0.775	HR9
VAR00072	0.508	HR9
Factor 4		
VAR00003	0.425	HR1
VAR00005	0.466	HR2
VAR00006	0.596	HR2
VAR00007	0.582	HR2
VAR00008	0.675	HR3

VAR00009	0.563	HR3
VAR00013	0.434	HR3
VAR00014	0.429	HR3
VAR00015	0.743	HR3
VAR00016	0.483	HR3
VAR00031	0.503	HR5
VAR00001	0.633	HR1
VAR00002	0.67	HR1
VAR00004	0.469	HR2
Factor 5		
VAR00032	0.566	HR5
VAR00033	0.448	HR5
VAR00034	0.538	HR5
VAR00035	0.524	HR5
VAR00036	0.467	HR5
VAR00037	0.534	HR5
VAR00039	0.448	HR6
VAR00040	0.499	HR6
VAR00010	0.599	HR3
VAR00011	0.492	HR3
VAR00012	0.523	HR3
Factor 6		
VAR00059	0.69	HR8
VAR00061	0.497	HR8

As noted above, the factors decreased from 11 to 6. The researcher conducted a reliability test using Cronbach's alpha. He repeated the test from factor 2 to factor 6 if any item was deleted. After conducting the reliability test and Cronbach's alpha, he found no need to delete any variables to increase Cronbach's alpha.

5.2.3 Giving names to Latent Variables

The researcher requested human resource experts to name each latent variable for all six latent variables based on the elements of each latent variable. The agreed names are listed in Table 12.

Table 12. Names of factors giving

Factor Number	Factor Giving Name
Factor 1	Career guidance and counseling
Factor 2	Justice and human development
Factor 3	Electronic, human resources system
Factor 4	Planning & organizing
Factor 5	Job performance management
Factor 6	Occupational safety

5.2.4 AHP Prioritization

Because n is significant for most factors, the following RI values are used in **Table 13**.

Table 13. IR values based on N numbers (Alonso & Lamata, 2006)

N	2	6	10	11	14	16	25
IR	0.00	1.2479	1.4854	1.5141	1.5713	1.5978	1.6624

The researcher used Excel software to conduct pair-wise comparison and column-normalized matrixes for all latent variables and subfactors and verified the results with the AHP Online System (AHP-OS; <https://bpmsg.com/ahp/index.php?logout>). The results for the pairwise comparison matrix and column-normalized matrix for all the primary factors are listed in Tables 14 and 15.

Table 14. Pair Wise Comparison Matrix for the primary six factors

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
Factor1	1.00000	0.14286	3.00000	1.00000	0.33333	0.33333
Factor2	7.00000	1.00000	9.00000	5.00000	3.00000	3.00000
Factor3	0.33333	0.11111	1.00000	0.20000	0.25000	0.33333
Factor4	1.00000	0.20000	5.00000	1.00000	1.00000	1.00000
Factor5	3.00000	0.33333	4.00000	1.00000	1.00000	3.00000
Factor6	3.00000	0.33333	3.00000	1.00000	0.33333	1.00000
TOTAL	15.33333	2.12063	25.00000	9.20000	5.91667	8.66667

Table 15. column-normalized matrix for the primary six factors

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Total	Weight	Consistency Measure
Factor1	0.065	0.067	0.120	0.109	0.056	0.038	0.456	0.076	6.297
Factor2	0.457	0.472	0.360	0.543	0.507	0.346	2.685	0.447	6.429
Factor3	0.022	0.052	0.040	0.022	0.042	0.038	0.217	0.036	6.246
Factor4	0.065	0.094	0.200	0.109	0.169	0.115	0.753	0.125	6.269
Factor5	0.196	0.157	0.160	0.109	0.169	0.346	1.137	0.189	6.403
Factor6	0.196	0.157	0.120	0.109	0.056	0.115	0.753	0.126	6.369
	0.804	0.843	0.880	0.891	0.944	0.885	6.000	1.000	
								CI	0.067
								CR	0.045

The same pairwise comparison matrix was done for all subfactors.

The application of the Analytic Hierarchy Process (AHP) in developing Human Resource Management (HRM) practices offers a structured and quantitative approach to decision-making, particularly in prioritizing HRM activities and strategies. The analysis presented in this study demonstrates the effectiveness of AHP in identifying key HRM practices that significantly contribute to organizational performance and employee satisfaction.

The findings reveal that certain HRM practices, such as training and development, performance evaluation, and strategic compensation, are prioritized as critical areas for enhancing organizational effectiveness. These practices align with the literature, which underscores their importance in fostering a skilled, motivated, and high-performing workforce (Saif & Sartawi, 2013; Akhter, Siddique & Alam, 2013).

Moreover, the use of AHP highlights the variability in prioritization across different sectors and organizational contexts. For instance, the study shows that while training and development are universally recognized as essential, the emphasis on other practices such as employee participation and job definition may vary depending on specific organizational needs and goals. This sector-specific approach allows for more tailored and effective HRM strategies.

The study's methodological rigor, combining both quantitative and qualitative data, enhances the robustness of the findings. By incorporating feedback from HR professionals and employees, the AHP framework ensures that the identified priorities reflect real-world needs and perspectives, thereby increasing the practical relevance of the recommendations.

Furthermore, the discussion highlights the implications of these findings for HRM practice. Organizations can leverage the AHP results to allocate resources more effectively, ensuring that the most impactful HRM activities receive the necessary attention and investment. This strategic focus can lead to improved employee performance, higher job satisfaction, and ultimately, better organizational outcomes.

In conclusion, the application of AHP in developing HRM practices provides a valuable tool for organizations seeking to optimize their HRM strategies. Future research could expand on this study by exploring the application of AHP in different cultural contexts and industries, as well as examining its long-term impact on organizational performance and employee well-being. This study thus lays the groundwork for more informed and strategic HRM decision-making, contributing to the overall advancement of HRM practices.

6. Conclusions

6.1 Conclusion

This study developed a comprehensive performance evaluation model for human resource departments in the private sector of Saudi Arabia using the Analytical Hierarchy Process (AHP) and Exploratory Factor Analysis (EFA). The key findings revealed six main factors—Justice and Human Development, Job Performance Management, Occupational Safety, Employee Welfare, Strategic HRM, and HR Administrative Functions—along with seventy-eight sub-factors significantly influencing HR department performance.

The prioritization of these factors, with "Justice and Human Development" receiving the highest weight, underscores the critical importance of fair and developmental HR practices in enhancing organizational effectiveness. Using qualitative and quantitative methods provides a robust and validated framework for HR performance evaluation, offering practical implications for HR practitioners and policymakers.

By addressing the identified gaps in the literature, this study contributes significantly to our understanding of HR performance evaluation at the departmental level, particularly within the unique cultural and economic context of Saudi Arabia. The findings can inform the development of targeted interventions and strategies to improve HR practices, ultimately leading to enhanced employee satisfaction, productivity, and organizational resilience.

Tables 16 and 17 show the final model with weights for each factor and subfactor; the results indicated that the most substantial weight, constituting nearly 50% of the entire module, was assigned to Factor 2, denoting "Justice and Human Development" (44.746%). This was followed by Factor 5, related to "Job Performance Management" (18.945%), and Factor 6, about "Occupational Safety" (12.554%). The factor with the lowest weight was Factor 1, representing "Career Guidance and Counseling" (7.601%).

Table 16. Final model with weight for each factor and subfactor

Factor Number	Factor Giving Name	Factor Weight
Factor 1	Career guidance and counseling	0.07601
Factor 2	Justice and human development	0.44746
Factor 3	Electronic, human resources system	0.03610
Factor 4	Planning & organizing	0.12544
Factor 5	Job performance management	0.18945
Factor 6	Occupational safety	0.12554

Table 17. Final model with weight for each factor and subfactor

Weight	Factor No.	
0.076	Factor 1	Career guidance and counseling
0.14	F1.1	New employees, contract workers, students, and volunteers go through a general orientation program that provides the relevant initial training and information on the organization's mission, vision, values, and organizational chart
0.04	F1.2	New employees, contract workers, students, and volunteers go through a general orientation program that provides the relevant initial training and information on the role of staff members in all programs related to facility management and safety (e.g., fire, safety, disasters, hazardous materials, utilities, and equipment failures)
0.04	F1.3	New employees, contract workers, students, and volunteers go through a general orientation program that provides the relevant initial training and information on the general information on the staff evaluation process
0.05	F1.4	New employees, contract workers, students, and volunteers go through a general orientation program that

		provides the relevant initial training and information on the general information about critical local cultural and social themes
0.05	F1.5	The company provides all new employees with an "Employee Handbook" or equivalent that contains a summary of the general orientation program as well as other relevant important information
0.06	F1.6	The general orientation program is conducted before working independently
0.05	F1.7	The new employee signs evidence of attending the departmental and job orientation program and documents in his/her personnel file
0.04	F1.8	The departmental and general job orientation program is defined in the organization's policy and includes departmental policies and procedures
0.05	F1.9	The departmental and general job orientation program is defined in the organization's policy and includes specific job responsibilities within the department as outlined in the job description
0.04	F1.10	The departmental and general job orientation program is defined in the organization's policy and includes safe operation of equipment and devices, troubleshooting, and malfunctions reporting
0.04	F1.11	The departmental orientation is conducted by the head of the department or the immediate supervisor
0.05	F1.12	There is a process described in the HR policies for initial evaluation of the competency of the new Employees
0.12	F1.13	The competency evaluation is used for hiring the employee after completing the probation period
0.08	F1.14	There is a policy describing the regular staff performance evaluation
0.03	F1.15	There is a policy describing the structure and the process used in all staff training programs
0.15	F1.16	There is continued staff education on the risks within the organization's environment as well as on their specific job-related hazards (e.g., lifting techniques and detecting, assessing, and reporting risks)
0.447	Factor 2	Justice and human development
0.05	F2.1	The employee educational needs are identified based on employee performance appraisals
0.05	F2.2	Company grants time off for staff to attend educational activities
0.06	F2.3	The company has a scheduled training program based on the company's needs
0.06	F2.4	The company has a scheduled educational program based on the company's needs
0.04	F2.5	The company has a recognition and reward process for distinguished staff
0.04	F2.6	The company provides opportunities for professional development and promotion
0.05	F2.7	The company carries out human resources policies fairly and consistently without discrimination
0.05	F2.8	The company carries out exit interviews for leaving staff
0.05	F2.9	The company uses the exit interview information to make decisions about improving human resources processes
0.04	F2.10	There is an incentive plan associated with employee performance
0.05	F2.11	There is a formal pay structure
0.04	F2.12	Pay structure is reviewed regularly
0.04	F2.13	A staff satisfaction survey is conducted at least once per year
0.04	F2.14	Data gathered from the staff satisfaction survey is aggregated and analyzed
0.03	F2.15	Actions are taken to address areas for improvement based on a staff satisfaction survey
0.04	F2.16	Company grants time off for staff to attend educational activities
0.03	F2.17	The company has a policy for handling staff complaints
0.03	F2.18	Employees aware of the complaint procedure
0.04	F2.19	The company takes action to address the complaints in a fair manner
0.02	F2.20	The company takes action to address the complaints in an objective manner
0.03	F2.21	The company takes action to address the complaints promptly
0.02	F2.22	There is the Labor Committee
0.02	F2.23	There is a suggestion system
0.03	F2.24	The HR department uses HR information system reports for their decision-making process
0.02	F2.25	The HR department uses an HR information system for performance appraisals
0.036	Factor 3	Electronic, human resources system
0.09	F3.1	The company's HR department uses an HR information system for recruiting
0.21	F3.2	The company's HR department uses an HR information system for applicant tracking
0.08	F3.3	Company employees can access and see his/her files through a self-service HR system
0.10	F3.4	Company employees can update his/her personal file information through a self-service HR system
0.14	F3.5	Company employees can make all his/her leave requests process through a self-service HR system in the company
0.08	F3.6	Company employees can make loan requests from the HR department through a self-service HR system
0.10	F3.7	Company employees can do his/her clearance process through a self-service HR system

0.09	F3.8	Company employees can request all types of Identification certificates through a self-service HR system
0.06	F3.9	Company employees can see his/her pay slip through the self-service HR system
0.06	F3.10	The company's HR department uses an HR information system for attendance management
0.125	Factor 4	Planning & organizing
0.20	F4.1	Company policies and procedures contained in the manual are implemented
0.08	F4.2	In each department, there is a staffing plan developed in collaboration with the human resources department to fulfill its part of the organization's mission
0.05	F4.3	Company departmental staffing plan defines the number and qualifications of staff required for each job and their job responsibilities
0.05	F4.4	Company staffing plans are reviewed and updated at least annually and as needed
0.06	F4.5	There is a policy that describes a standardized format for job description
0.05	F4.6	The job description is used in the hiring process
0.05	F4.7	The job description defines the required knowledge, skills, and attitude to perform the job responsibilities
0.06	F4.8	The job description clearly defines the roles and responsibilities
0.05	F4.9	The job description specifies the reporting relationships
0.06	F4.10	The job description is discussed with and signed by the employee on hiring and is kept in his/her personnel file
0.07	F4.11	The performance evaluation is based on objective criteria and is linked with the job description
0.15	F4.12	The policies and procedures manual guides the work of the human resources department
0.04	F4.13	The policies and procedures manual is made accessible and communicated to all staff members
0.03	F4.14	In the department, the written organization structure shows the job title, the number of jobs for each title
0.189	Factor 5	Job performance management
0.27	F5.1	The performance evaluation is conducted at least annually
0.16	F5.2	The outcome of the performance evaluation is used to set objectives for performance improvement and professional development
0.10	F5.3	The performance evaluation is signed by both the employee and the supervisor
0.08	F5.4	The performance evaluation is used in the employee's promotion process
0.06	F5.5	The performance evaluation is used for the employee's compensation process
0.07	F5.6	The performance evaluation is discussed with the employee
0.06	F5.7	There is a policy describing the structure and the process used in all staff continuing education programs
0.08	F5.8	Employee's training needs are identified based on employee's performance appraisals
0.04	F5.9	The job description is used in performance evaluation
0.04	F5.10	The job description is used in the promotion process
0.05	F5.11	All job descriptions are revised at least every three years and as needed
0.126	Factor 6	Occupational safety
0.50	F6.1	The company has a Pre-employment medical evaluation
0.50	F6.2	There are documentation and record-keeping, and management of staff incidents

6.2 Research Limitations

- Due to lack of time, the researcher did not take a larger sample size; implementing the same methodology with a larger sample would change the module's weight.
- This research does not include the HR department in the Government sector.

6.3 Future Research

In this study, we used a quantitative method. The main findings of this study were compared with the information gathered from the literature review to identify similarities or differences. After discussing the primary findings, the researcher provides suggestions for future research.

- Implement the developed model in more organizations in different fields and sizes in the private sector.
- Implement the same methodology with a larger sample than the researcher has done; the researcher believes this will change the module weight.
- Increase the model's scope to include HR departments in the government sector and identify the most crucial success factors in any HR department in the government sector.
- Increase maturity levels when giving weight and evaluating the factors instead of assessing the elements based on the researcher's two operational maturity levels.

Data availability statement

The data supporting this study's findings are available from the corresponding author upon reasonable request.

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Data sharing statement

No additional data are available.

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