



## Effect of Strategic Planning of Human Resources in Management Performance

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### Abstract

Strategic planning is an important stage in the administrative process, as it is considered a specific thinking process and style of work that enables the company to choose the best alternatives that correspond to the company's capabilities and the goals it seeks to achieve. This study aimed to find out the impact of strategic planning for human resources with its dimensions (environmental variables, needs assessment, dealing with results, human resources plan) on the performance of project management with its dimensions (time, cost, safety, quality), and to determine the strategic interaction between (HRP) on the performance of project management in infrastructure contracting companies and its role in facing external challenges. The study used the descriptive approach, through which the researcher developed a scale to answer the questions of the study. The study sample consisted of 120 employees in infrastructure contracting companies, they were divided into non-overlapping groups. The results showed the impact of strategic planning for human resources on the performance of construction project management and its contribution to raising the level of readiness of construction companies in facing external challenges and enabling them to compete with international companies, in addition to the contribution of strategic planning in facing the negative effects resulting from the Corona pandemic. The results are according to the company's age, capital, and the size of the company's project. The results of the study also showed that strategic human resource planning helps project management officials in the early detection of expected danger areas and attracts well-equipped workers with the appropriate skills to work efficiently.

**Keywords:** Strategic Planning; Human Resources; Construction Project; Management Performance; Infrastructure Contracting Companies; AMOS.

### 1. Introduction

The construction industry is one of the main pillars of the economy, which includes all the activities of building major infrastructure and real estate, along with repairing and modifying any existing projects. It also includes various corporate stakeholders, such as real estate developers, professionals, contractors, and government officials [1]. Moreover, infrastructure is the backbone and lifeblood of all activities in economic, social, and political life in civilized societies. This was confirmed by many studies, which indicated the positive impact of the availability of infrastructure services due to their importance in achieving sustainable development [2]. It contributes to an increase in the GDP, which is reflected in the standard of living conditions in the country [3]. Considering the uncertainty surrounding the organization at present, it has become necessary for it to estimate its future needs of human resources (HR) with different skills, competencies, and specializations to choose the best ways to provide these needs based on the strategic planning of human resources. This planning process mainly focuses on forecasting using scientific quantity methods of was or how. The main objective of strategic planning for human resources at the enterprise level is to obtain suitable HR in the

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right place and at the right time to achieve performance efficiency. The institution is towards the future, but rather its intellectual energy and the motivation of its members [4]. Additionally, strategic human resource planning (HRP) depends on identifying external opportunities and threats in the environment and the internal strengths and weaknesses of the organization that may lead to abundance or scarcity in the future [5]. Therefore, organizations are becoming increasingly aware that the success of the strategic planning process is largely tied to the extent to which people working in human resource management participate in the process, especially those responsible for managing construction projects [6].

Strategic planning is an important stage in the performance of organizations as it represents a method of thinking and a comparison between methods and methods of work to choose the best alternatives that are suitable with the available capabilities on the one hand and the nature of the desired goals to be achieved on the other hand. It will be the future conditions and the readiness to develop plans and programs that ensure the achievement of goals under the expected conditions and competition in performance between organizations [7]. Strategic management in our time has become the focus of contemporary management that depends on external and internal environmental factors that affect organizations and the efficiency of their performance [8].

The construction industry is a basic industry that affects every aspect of life. The construction sector is considered one of the most important economic sectors in terms of fixed capital formation, national production, and the size of its workers [9]. This sector constitutes an essential axis of development because of its important role in advancing growth, creating more job opportunities, and stimulating economic activity in many industries and other related activities. Studies indicate that more than a hundred industries and activities are related to this sector, some of which are related to the pre-construction phase, others are related to the construction phase, and some are related to the post-construction phase [10].

The construction sector contributes to the movement of the national economy of any country because if the construction work is not the main element in the work of any project, it will be part of its business in one way or another, represented in the infrastructure and structural work of all sectors of transport, energy, communications, housing, education, and health. Therefore, strategic human resource planning is imperative in organizations to determine human resource needs [11]. It is also necessary in case of an internal reorganization of the company, as this can burden the organization with the increase of specific specializations or when new types of competencies and skills are used. This does not mean at all that it is not necessary to carry out the strategic planning process in the case of stable or modern enterprises, where the deficit or surplus of human resources must be forecast [12].

Therefore, strategic planning has become one of the most important modern concepts in contemporary management to achieve efficiency in performance, and to determine the current and future capacity of the organization in a world characterized by change and intertwining, which requires effective use of strategic planning, especially the infrastructure construction sector, due to the specificity of this sector, since infrastructure projects are implemented through tenders. Which may be international at times, and allow well-known international contracting companies to enter into local bids, which increases competition between local and international companies, and increases the burden on local companies, in addition to the great difference in capabilities between international companies and local companies in all respects (human , technology), and the extent of their reliance on strategic planning as a scientific method to achieve goals by exploiting opportunities with the highest levels of efficiency and effectiveness while avoiding risks and obstacles through developing a specific strategy to adapt to it, and put in place mechanisms capable of using the available resources in light of the various risks that companies are exposed to, especially during the spread of the COVID-19 and the consequent increase in the prices of materials, goods, and shipping costs, in addition to tightening the precautionary inspection procedures to combat the spread of the virus.

From this point of view, we focused in this research on the importance of strategic planning for human resources as a function of human resources management in improving performance and raising the level of readiness of local companies, as the human resources department assesses the needs of the company based on the volume of work to be accomplished, and the need to determine future work requirements in each Department within the company, in order to achieve a high level of performance. The study also aims to find out whether there is an impact of the dimensions of strategic planning for human resources on the performance of project management in its dimensions based on specific demographic variables (company age - company capital - project size).

## 2. Literature Review

Despite the literature's largely positive assessment of the phrase, enterprise resource planning, the controversy over its definition remains. An enterprise resource planning system (ERP) is a piece of software that provides a comprehensive view of all business operations in a company and acts as a link between them. This software will likely be derived from the company's database and will serve as an interface for all units [13]. Additionally, enterprise resource planning systems ensure that information retrieved from company data is stored on a common platform and is sent in the right way and right place [14]. An Enterprise resource planning system has a centralized structure that revolves around routing, storing, collecting, and updating business information [15]. Nowadays, companies prefer to strengthen managerial

decision-making capabilities by reducing managerial levels as well as the number of employees, rather than hiring more people [16]. Therefore, there is a need for a human resources information system that allows employees to access and use their information in a short amount of time to perform HR operations more functionally. These systems free HR managers and allow them to guide their employees in line with strategic goals.

### **2.1. Strategic Planning of Human Resources**

There is a practical view of strategic management as well, as it aims to manage innovation and creativity to improve efficiency and effectiveness. In this area, strategic planning is a form of knowledge management in a project or institution and its effective use [4].

### **2.2. Human Resources Planning**

The evaluations of the individuals in the database, as well as proposals for promotion and training, must be used in the HRP process. It's used to make judgments like which staff will be promoted to higher positions, what type of training the person should receive when promoted to a higher position, and what external resources should be employed if the person is unable to advance to a higher level [17]. During the planning phase, quick access to personnel information in the system will guarantee that the HRP process is done efficiently [18].

### **2.3. Finding and Selecting Personnel**

Human resources information systems also guide HR managers during the process of identification and selection of HR, in which both internal and external resources are used. As part of job analysis, the system compares job requirements and vacant seats with candidates within the company to determine which resources must be used to cover the personnel requirements. If internal resources are insufficient to meet personnel needs, a pool of candidates is created in the system, and the applicant's eligibility is evaluated. The system compares job requirements and vacant seats with candidates within the company as part of a job analysis to determine which resources must be used to cover the personnel requirements [19]. The information obtained from the system is used to identify the right personnel for that position. Therefore, placing the right people in the right places in the company can increase the effectiveness of the organization [20].

### **2.4. Training and Development**

Human resource managers focus on the individual training history of employees by tracking the training and trainees' performance in the system. This will determine the type of training needed by different employees and train the employees accordingly [21].

### **2.5. Performance Management**

Also, with the development of information technology, it has become easier to establish processes of personnel performance appraisals, training, selection, defining the qualifications, and job requirements that an employee must have for each position in the system, and how many employees meet the job requirements are determined during the period [22]. The data obtained as a result of performance management assists in the implementation of HRM activities such as identification of training needs, personal career planning, personnel backup application, new job analysis arrangements, and productivity improvement through employee feedback [23].

### **2.6. Compensation Management**

The system evaluates possible alternative wages using appropriate statistical programs, develops wage plans, determines wage costs from collective bargaining agreements, and prepares budgets for each department [24]. In addition to these, information from other HR features can be used to perform job classifications, display salary types, and determine rates for all departments. Thanks to this system, more accurate wage policies are to be determined through relevant job titles and time-based internal wage surveys [25].

### **2.7. Career Management**

A human resource information system includes self-assessment of employees' skills, knowledge, and interests, with the inclusion of employee development and assistance in decision-making about their career goals. By organizing job and employee assessment tests within the system, these results can be used to determine employment potential and capacity development [3, 19]. The system creates a list of actions and reduces the amount of time spent on these lists [22].

### **2.8. Project Management Experience**

While some consider project management to have started with the construction of the Pyramids and the Great Wall of China, many agree that the modern notion of project management originated with the Manhattan Project, in which the United States military created the atomic bomb. The modern project management technology arose from the

development of business principles developed by the increasingly complicated nature of businesses towards the end of the nineteenth century. Large-scale government projects were a driving force in the development of project management technology, notably during the mentioned times. When Frederick Taylor discovered that management methods could be scientifically analyzed and developed at the beginning of the 20th century, a new page was added to Understanding Management [5]. Before Taylor's research, the only way to increase productivity was to make employees work harder and for long hours. Taylor has increased the efficiency of business processes by analyzing the simplest parts individually. Perhaps therefore he was credited on his tombstone in Philadelphia with the phrase "father of scientific management." In 1917, Henry Gantt invented the Gantt chart. This came in handy when creating a project calendar. The work of project engineers has become much easier since the introduction of computers. Gantt charts are extremely useful in the field of performance measurement because they can be used in addition to spreadsheets for planning, review, and in real-time.

In the 1970s, bundled software was widely utilized in huge military projects [26]. However, computer drawing capabilities were not well developed at the time, and drawing tools were prohibitively expensive, limiting their use in projects. Project management packages are now employed in many industries as the cost of computers has reduced, computers have become more common, and graphical drawing capabilities have increased.

### 3. Hypothesis Development

Internal and external environmental challenges are imposed on the business environment by infrastructure developments, and they necessitate changes to address them. At the manager and employee levels, this necessitates the use of HR in the preparation, development, and implementation of strategic planning.

#### 3.1. Strategic Planning for Human Resources and Project Management Performance

Strategic HRP is the most critical part of construction project management performance. Because proper HRP and distribution undoubtedly contribute to improved overall performance [27]. Papke-Shields & Boyer-Wright (2017) stated in their study that many human capital phenomena and outcomes, such as recruitment, preparation, teamwork, communication, knowledge management, and employee satisfaction, are included in the network of relationships that exist between social capital and employees. Although social network analysis is not widely used in the field of human capital, it is well suited to help researchers and practitioners in understanding the complex relationships that drive an organization [14]. Report that the strategic planning characteristics can be effectively integrated into a generalized quality management framework, generating potentially useful insights into the relationship between project management behaviors and eventual project success.

According to Majumder et al. [25], proper project planning and scheduling can significantly improve project performance in the construction sector. Project performance can be improved by increasing the efforts invested in project planning, scheduling, and controlling activities. The organizational characteristics of construction companies and the project environment have a significant impact on planning and scheduling efforts. The company must be appropriately organized to maintain the relevant environmental context in project planning. However, the following hypothesis can be formulated:

**H<sub>01</sub>:** *There is no statistically significant effect at the level of significance ( $\alpha \geq 0.05$ ) for strategic planning for human resources with its dimensions (environmental variables, need assessment, dealing with results, human resources plan) on the performance of project management with its dimensions (time, cost, safety, Quality) for infrastructure companies in Jordan.*

#### 3.2. Strategic Planning for Human Resources and Project Management Time

Strategic HRP is the primary regulator for the delivery of construction projects, given the importance of time in construction projects. Popescu & Kyriakopoulos (2022) show that green HRM practices have a direct impact on sustainable performance [28-30], with green supply chain management practices mediating this effect. Internal green supply chain management practices mediate positively between green human resource management practices and long-term performance [29]. Strategic HR outsourcing activities appear to have long-term positive effects, which often lead to many positive results in terms of performance, such as operational cost efficiency and operational excellence of the company, which contributes to project progress and timeliness.

All sorts of goal-aligned and performance-based HRM activities (including rewards, training, appraisal, and recruiting) favorably enhance the speed with which a perceived agency objective is fulfilled [6]. Furthermore, certain sorts of HR contribute to the agency's perceived mission accomplishment. Strategic awareness of an organization's valuable, limited, distinctive, and non-tradable resources can aid in the completion of the perceived federal agency's mission in both HRM and HR practices. The following hypothesis is proposed:

**H<sub>01.1</sub>:** *There is no statistically significant effect at the level of significance ( $\alpha \geq 0.05$ ) for strategic planning for human resources with its dimensions (environmental variables, estimating the need, dealing with results, human resources plan) on the performance of project management with the dimension (time) of the structure companies. Infrastructure in Jordan.*

### 3.3. Strategic Planning for Human Resources and Project Management Cost

Strategic human resources planning helps to control costs and avoid duplication of the work, as wasting HR adds additional burdens on the project [30]. Also found that existing portfolio planning models can be improved by adding a random project flow generator that expands. This broadens the portfolio and strategic planning horizon to include unknown future projects. The paper examines multiple modeling methods for the problem and identifies historical market indicators that are strong predictors of future project flow profiles. The most essential characteristics for the company are the project's occurrence and lease, the estimated duration, and the expected cost, which are all outputs from the generator. In addition to this, Bonifaci et al. focused their research on the role of financial value in assisting feasibility studies within the methodological framework of feasibility studies [3]. However, this paper focuses on the strengths and weaknesses of a business project, as well as its reliance on external and internal factors by discussing the Palermo Strategic Planning case study. The importance of strategic planning regarding the role of financial valuation as a means of identifying weaknesses that may affect project execution and the need to leverage it to increase the chances of a successful strategic project emphasizes certain conditions. However, the following hypothesis can be formulated:

**H<sub>0</sub>1.2:** *There is no statistically significant effect at the level of significance ( $\alpha \geq 0.05$ ) for strategic planning for human resources with its dimensions (environmental variables, need assessment, dealing with results, human resources plan) on the performance of project management with the dimension (cost) of the structure companies. Infrastructure in Jordan.*

### 3.4. Strategic Planning for Human Resources and Project Management Safety

The application of strategic planning and coordination in project management focuses on all aspects of HSE management, including the effectiveness of health monitoring programs, safety prevention monitoring programs, environmental monitoring plans, and occupational health and safety monitoring programs. This type of management can also improve EHS management. In addition, Baporikar identified three major health and safety challenges in the early stages of construction projects: lack of efficiency, lack of prioritization, and lack of consequences [13]. Vardarlier, & Ozsahin stated that the main causes of emergencies are failure to apply safety-oriented management in project planning and emergency response, lack of clear project structuring, and failure to consider constant change and the impact of a turbulent project environment [31, 32]. However, the following hypothesis can be formulated:

**H<sub>0</sub>1.3:** *There is no statistically significant effect at the level of significance ( $\alpha \geq 0.05$ ) for strategic planning for human resources with its dimensions (environmental variables, need assessment, dealing with results, human resources plan), on the performance of project management with a dimension (safety) among companies that have structured infrastructure in Jordan.*

### 3.5. Strategic Planning for Human Resources and Project Management Quality

The project's quality dominates the company's survival in the market; the intensity of competition and the emergence of new companies require optimal planning to ensure the quality of project performance. On other hand, Papke-Shields & Boyer-Wright confirmed that there is a link between strategic planning and training quality [14]. The study also showed that strategic planning is applied in institutions, which raises the quality of workers' performance, and thus, increases and advances the project's outputs [21]. Note that the project quality of constructed social infrastructure is a necessary measure of project sustainability. Planning, monitoring, and evaluation should be better developed to address quality defects and better controlled by decision-makers, project managers as well as contractors. That is, through strategic HRP. Moreover, Zheng & Ma concluded that there is an inverse and statistically significant effect of the dimensions of strategic planning obstacles (financial, organizational, and human) that have an opposite statistically significant effect on quality assurance, and the financial obstacles are of great importance [21]. The organizational and human hurdles involve a lot of practice, but a lot of practice had to be done. However, the following hypothesis can be formulated:

**H<sub>0</sub>1.4:** *There is no statistically significant effect at the level of significance ( $\alpha \geq 0.05$ ) for strategic planning for human resources with its dimensions (environmental variables, need assessment, dealing with results, human resources plan) on the performance of project management with the dimension (quality) of the structure companies. Infrastructure in Jordan.*

### 3.6. Control Effect

Based on a literature review, it was found that demographic factors impact the performance of construction projects; since company age, the company capital, and the company projects size help improve the performance and quality of the project implementation. The contract may require the parties to avoid the fines that may result from a breach of delivery. Additionally, Vardarlier & Ozsahin found that combinations of independent variables (company size, institutional investors, debt ratio, company age, liquidity ratio, customer satisfaction, productivity, and level of financial leverage) were positive for companies [32]. It has been shown to have a moral impact on financial performance. The

survey also identified the need to develop and follow customer retention policies and strategies. Among these, Thacker et al. [33] showed that the most important aspect is that there is a statistically significant correlation between the dimensions of intellectual capital and strategic performance, as this relationship contributes to achieving outstanding strategic performance. In addition, the size and profitability of a company can have a significant impact on income smoothness [13, 26]. Although leverage does not affect income reduction practice, the greater the size and profitability of a company, the more opportunities must be implemented by the management for income relief measures. Management is responsible to outside parties regarding the basic management of the pursuit of stable profits to explain the company's good financial performance. However, the following hypothesis can be formulated:

**H<sub>02</sub>:** *There are no statistically significant differences at the level of significance ( $\alpha \geq 0.05$ ) for strategic planning for human resources with its dimensions (environmental variables, need assessment, dealing with results, human resources plan), on the performance of project management with its dimensions (time, cost, safety, Quality) of infrastructure companies in Jordan is attributed to demographic variables (company age - company capital - company's size projects).*

#### 4. Methodology

Enterprise resource planning (ERP) systems are a type of information system that has become popular among companies in recent years. Thanks to its modules, ERP systems bring together the functions of all departments under one roof and present them to all modules. In this way, it speeds up the flow of information by providing an instant display of updated information from both indoor and geographically remote units. It is a sub-module of ERP systems in HRBS. This research examines the effect of strategic planning for human resources on the performance of construction project management in infrastructure contracting companies in Jordan. The questionnaire form comprises two parts. In the first part, the first four questions aim to determine the demographic characteristics of the sample group, which include (age, professional qualification, job title, and experience). In the second part, the questions listed are generated using the scale prepared by Bayindir & Şahin according to the 5-point Likert scale. Where the second part consists of 24 questions about (Environmental Variables, Estimating the Need, Dealing with Result, and Human Resources Plan) accordingly, each paragraph of the tool is measured through Cost, Time, Quality, and Work safety respectively [23]. As a result of a literature review, no topic scale was found [19, 27]. The scale was developed based on the data provided in the relevant parts of the books. A 5-point Likert scale was used to assess judgments. Figure 1, shows the flowchart of the research methodology through which the objectives of this study were achieved.

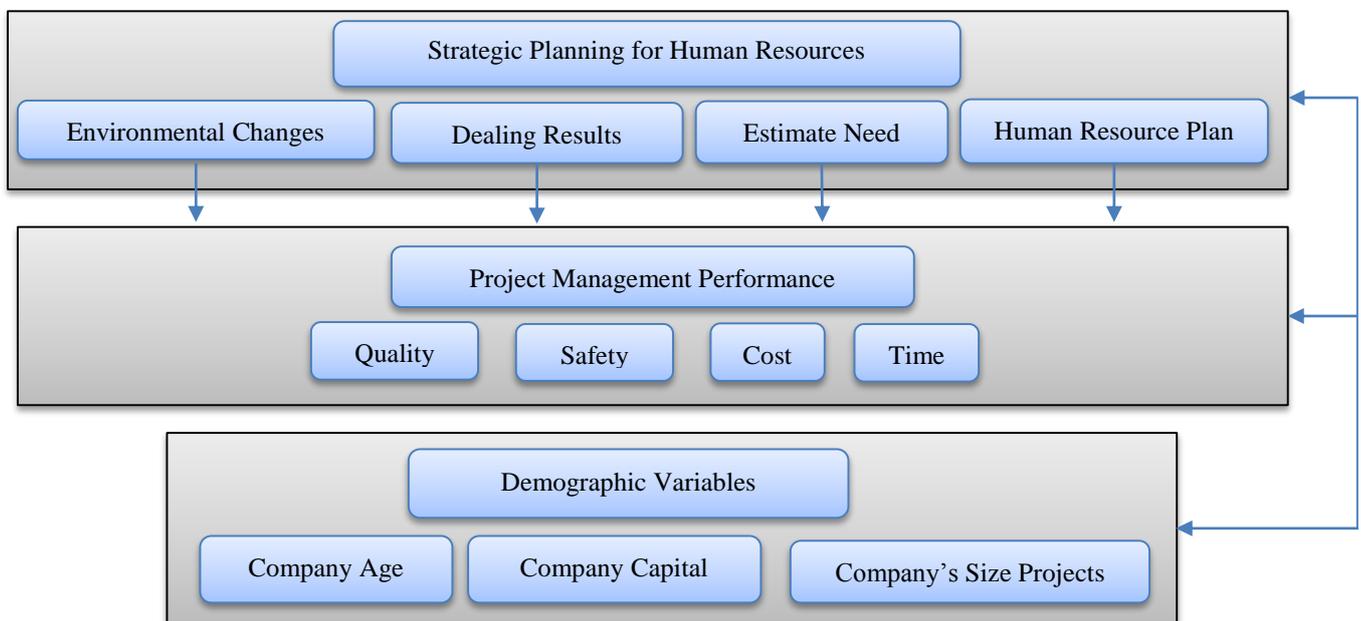


Figure 1. Flowchart of the research methodology

#### 5. Findings

The analytical process of the current study, including the demographic sample, was analyzed and presented to show the distribution of these factors. A total of 120 valid responses represent about 69.2% and 30.8% of men and women, respectively. This result interprets the superiority of masculinity among workers in the construction sector. The sample was slightly skewed to young adults with 43.3% out of 52 respondents aged between 31-40 years old, followed by the group of respondents between 41-50 years old 30%. This indicates the ages working in this sector are younger, also the study has different age groups.

The majority of the sample occupation were bachelor’s degree holders 51.7%, which indicates the importance of hiring university-educated staff with good work-related knowledge. The majority of years of experience among the participants were 15 years, and most of them had more than 15 years with a percentage of 42.5% followed by those who had the experience of 11-15 years with a percentage of 27.5%, and this goes to confirm the stability of working in this sector. In terms of the job title, most of the participants were employees at lower management levels around 65.8%, and only 9.2% were department managers.

The analysis process of the collected data also aligns with the suggested hypothesized model of the current research level. Figures 2 and 3 show the component of strategic planning of human resources, and they were abbreviated as (ENV = environmental variables, EST = estimating needs, DEAL = dealing with the results, HRP = human resources plan), and the figures show that all components are ranked around 3.25. Meanwhile, Figure 3 also presents the ranks for project management performance components, and they are abbreviated as (COST = cost, TIME = time, QUALITY = quality, SAFETY = Safety), and the figure shows that all components are also ranked around 3.25. Tables A1 and A2 show the Pearson correlation coefficient.

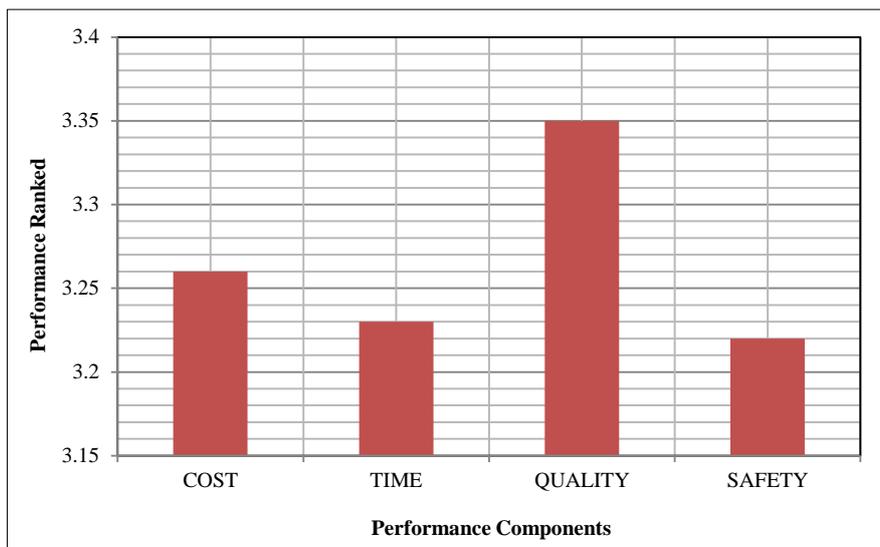


Figure 2. Strategic Planning of HR Components

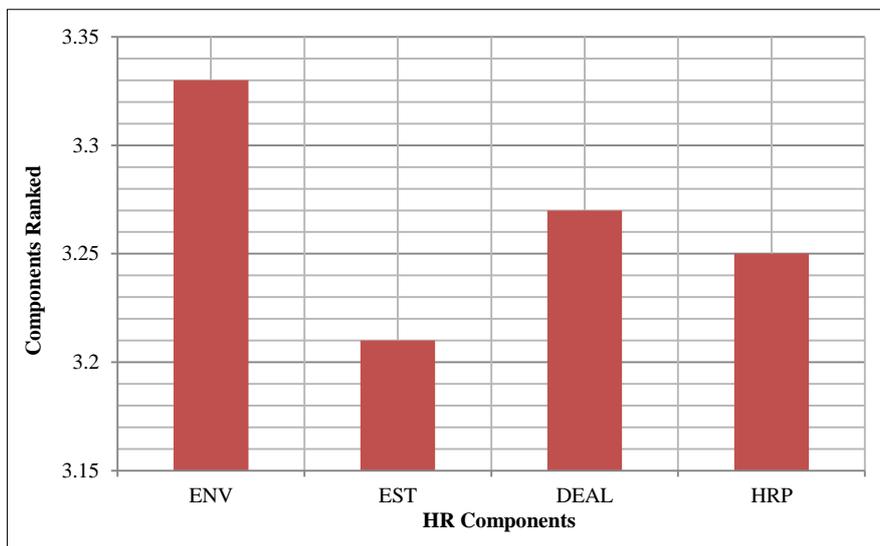


Figure 3. Project Management Performance Components

The reliability of the scales used in this study was assessed, and the results showed greater reliable indicators, achieving the acceptable value of the internal consistency and factor loadings 0.70 and 0.60, respectively, as shown in Table 1. The values of reliability, as well as fit indices for all constructs involved in the suggested model, were confirmed. Reliability is traditionally defined as the internal consistency of the constructs. As the reliability test was checked by using the most common test, called Cronbach's ‘α’ coefficient, in the current research. As stated, this test is satisfied if a value of over 0.7 is achieved for all variables. The given results of reliability analyses concluded that variables of both strategic planning of human resources and project management performance are reliable.

**Table 1. Variables Reliability**

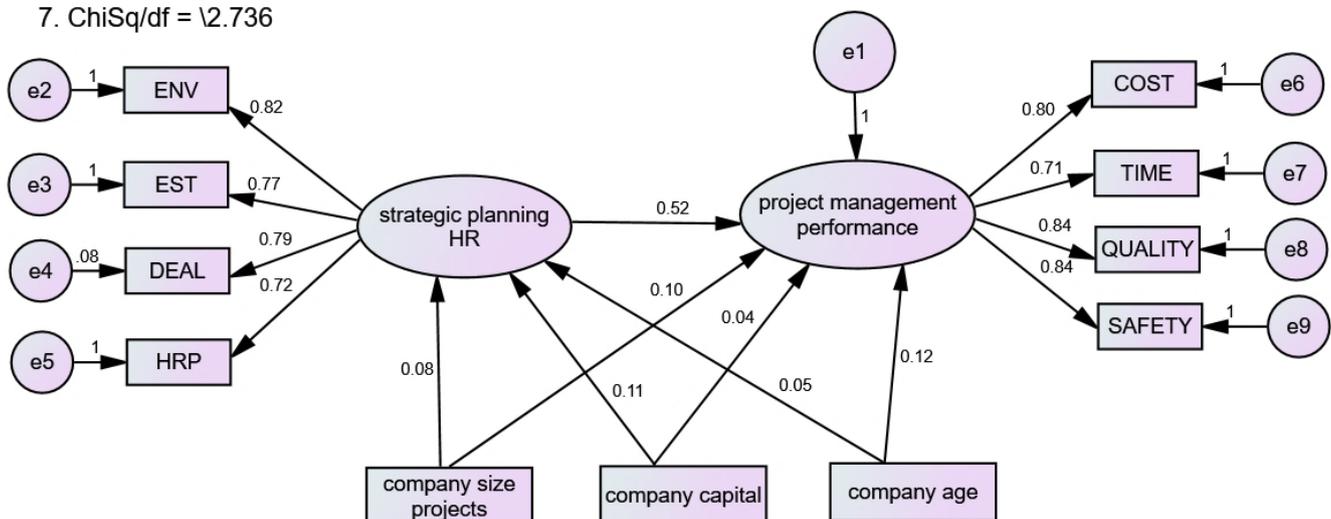
Variable	Reliability scale ( $\geq 0.70$ )	Factor loadings ( $\geq 0.60$ )	AVE ( $\geq 0.50$ )	CR ( $\geq 0.60$ )
Environmental variables	0.89	0.82	0.50	0.66
Estimating the needs	0.84	0.77	0.55	0.68
Dealing with the results	0.79	0.79	0.62	0.73
Human resources plan	0.74	0.72	0.51	0.75
Cost	0.80	0.80	0.57	0.72
Time	0.82	0.71	0.60	0.69
Quality	0.78	0.84	0.64	0.70
Safety	0.77	0.84	0.62	0.77

Confirmatory Factor Analysis (CFA) was also conducted to validate the measurement model, particularly for models that have more than one latent construct at one time. In this case, the measurement model of all constructs was validated at once and the item deletion process was executed for each construct by deleting the lowest factor loading item in each construct. This analysis is carried out to confirm these items are contributing factors in measuring their respective constructs. Results from CFA are used to assess the one-dimensionality, validity, and reliability of every construct. The Average Variance Extracted (AVE) and Composite Reliability (CR) were calculated to test the discriminant validity, and the results achieved acceptable values as shown in the respective table [24].

SEM approach was also examined for the suggested hypotheses between the proposed variables, also it tests the link between the hypothesized relationships through the path coefficients drawn in Figure 4, which includes project management performance as an exogenous variable with four components: cost, time, quality, and safety. It also includes the strategic planning of HR as endogenous with four components: environmental variables, estimating the needs, dealing with results, and human resources plan. The respective figure indicates a single on the headed arrow, which represents the direction between the parameters of the model constructs as illustrated in the respective figure, which also shows the path coefficients which are similar to the regression weights in SEM. Furthermore, the study also adopted the SEM approach by using AMOS software which runs some of the common tests like Chi-square, common fitness indices CFI, good fitness indices GFI, and root mean square error of approximation RMSEA in order to check the model goodness of fit. According to Awang (2015) [24], the satisfied threshold of all tests should exceed 0.90 for CFI and GFI, meanwhile, the RMSEA is better to be lower e.g., less than 0.08, and the chi-square/degree of freedom less than 3 as stated in Table 2. The analysis of the proposed framework presents a ratio of chi-sq/df as 2.736, CFI as 0.963, RMSE as 0.079, and GFI as 0.955, and this concludes that the data presents a good fit to the model.

**Fitness Indexes**

1. P-Value = \0.000
2. RMSEA = \0.079
3. CFI = \0.963
4. GFI = \0.955
5. TLI = \0.911
6. IFI = \0.928
7. ChiSq/df = \2.736



**Figure 4. Path Coefficients Model**

**Table 2. Fitness Indices**

Index	Required cut-off	SEM model
P-value	0.000	0.000
Comparative fitness index CFI	0.90	0.963
Goodness fitness index GFI	0.90	0.955
Tucker Lewis index TLI	0.90	0.911
Incremental fit Index IFI	0.90	0.928
Root mean square error of approximation RMSEA	0.080	0.079
Chisq/df	3.00	2.736

Further, in terms of hypotheses testing, the findings of the analysis revealed a statistically significant effect at the level of significance ( $\alpha \leq 0.05$ ) for strategic planning for human resources with its dimensions on the performance of project management. The text output for the regression path coefficient is presented in Table 3, which provided the results of testing all hypotheses. Referring to the results of SEM output, the computed probability value (P-value) obtained by the MLE procedure is 0.000 which is less than the type 1 error being set at 5% (0.05). Thus, the obtained probability value indicates that the effect of the exogenous construct (strategic planning of human resources) on the endogenous construct (project management performance) is not significant at Type 1 error 0.05 ( $P > 0.05$ ). Therefore, all proposed research hypotheses are empirically supported, statistically positive, and significant.

**Table 3. The Regression Coefficient and Significance**

Endogenous Construct	← Exogenous Construct	Standardized Regression Coefficient	Regression Coefficient	P	Result
Project management performance	← Strategic planning of HR	0.521	0.116	0.000	Supported
Cost	← Strategic planning of HR	0.121	0.165	0.006	Supported
Time	← Strategic planning of HR	0.129	0.241	0.000	Supported
Quality	← Strategic planning of HR	0.278	0.367	0.000	Supported
Safety	← Strategic planning of HR	0.383	0.387	0.000	Supported

The second main hypothesis states that there are no statistically significant differences in the dimensions of the strategic planning for human resources on the performance of project management with its dimensions based on the identified demographic variables (e.g., company age - company capital - projects size). The results showed no significant differences by using the Mann-Whitney U test since the data did not achieve the normal distribution ( $P = < 0.05$ ), which is recommended inferential nonparametric statistical approach used in the studies to identify if there is a statistically significant difference between the groups [34]. The independent variables in this study are categorical, the company age, which is classified into two groups called new companies and old companies (<10 years and >10 years), and no respondents were in more than one group. The mean rank is presented to show if there is a statistically significant between the respective group of new and old companies  $p = 0.028$  as shown in Table 4. The same results showed that the mean rank score for old companies was higher at 207.36. However, as the results already have presented, the mean rank was statistically significantly different  $p = < 0.05$ , so it would conclude that there were differences based on the company age factor towards the effects of strategic planning of human resources on project management performance.

**Table 4. Differences in Company Age**

New companies (n=45)	Old companies (n=75)	Mann-Whitney U	Z	Sig.
Mean rank	Mean rank			
183.90	207.36	19094	3.274	0.028

In terms of analyzing the differences among the company capital, the independent variables are divided into two groups: small capital and large capital (< 1 million JOD and >1 million JOD), and no respondents were in more than one group. The mean rank is presented to show if there is a statistically significant between the respective groups  $p = 0.039$  as shown in Table 5. The same results showed that the mean rank score for the large capital was higher at 210.55. However, as the results already have presented, the mean rank was statistically significantly different  $p = < 0.05$ , so it would conclude that there were differences based on the company capital factor towards the effects of strategic planning of human resources on project management performance.

**Table 5. Differences in Company Capital**

Small capital (n=78)	Large capital (n=42)	Mann-Whitney U	Z	Sig.
Mean rank	Mean rank			
172.81	210.55	12384	2.503	0.039

In terms of analyzing differences among the company size projects, the independent variables are divided into two groups: small projects and large projects (< 1 million JOD and >1 million JOD), and no respondents were in more than one group. The mean rank is presented to show if there is a statistically significant between the respective groups  $p = 0.043$  as shown in Table 6. The same results showed that the mean rank score for the company with large-size projects was higher at 198.72. However, as the results already have presented, the mean rank was statistically significantly different  $p = < 0.05$ , so it would conclude that there were differences based on the company size projects factor towards the effects of strategic planning of human resources on project management performance.

**Table 6. Differences in Company Size Projects**

Small projects (n=91)	Large projects (n=29)	Mann-Whitney U	Z	Sig.
Mean rank	Mean rank			
163.04	198.72	18404	2.112	0.043

## 6. Discussion

Results depend on the dimensions of the Jordanian infrastructure companies (time, cost, security, quality). However, the results show that strategic workforce planning impacts project management performance [35] in addition to its role in maintaining flexibility, so that project stakeholders can manage change if the future is different from expectations [36]. This result is consistent with Papke-Shields [14], Hollenbeck and Jamieson [27], and Rajhans and Bhavsar [37]. This result is explained because strategic planning is a systematic administrative process that reflects the awareness of the future and determines its dimensions, through long-term goals that reflect the comprehensive vision of the organization in the future environment, which enables stakeholders to develop a clear vision in a large way towards the future direction. And take decisions related to the future of the organization and its development, in addition to defining the procedures to be used to achieve the goals efficiently.

This paper also found that in the field of HRP, preparation is essential for any project that aims to meet the project's needs for employment. In addition, these characteristics are commensurate with the nature and volume of work activities. In a way that helps the company to achieve its goals for a future period and under changing conditions [38].

The result explains that strategic planning for human resources lies in determining the company's needs for human resources according to the size and nature of the work in the company and the nature of the cadres required for all sections of the project.

Additionally, the performance of project management in the dimension (cost) of a commissioning company's infrastructure is affected by strategic personnel planning. A good talent plan can help increase the effectiveness of a talent, which is characterized by a high level of competence, ability, and willingness to work, resulting in lower financial costs and a corresponding balance of supply and demand. Understanding project needs-based resources and talent planning are some of the latest management methods for predicting quantitative and qualitative needs, which are supported by Bonifaci [3] and Ramos et al. [39].

Another finding is related to environmental variables, which indicates strategic planning for human resources helps project management officials in the early detection of expected danger areas [6, 26]. The result explains that strategic planning carries out a risk assessment process, through which risks are identified and the degree of risk to the work to be implemented, whether it is a project, a goal or an executive step in a project, or any work to be implemented or achieved, is measured. The measurement of risks is through measuring the extent of the impact.

Additionally, strategic planning works to attract and retain workers who are well-equipped and, at the same time, have the appropriate skills to work efficiently and achieve quality results, which is confirmed by Waring [5], Kobylkin et al. [31], and Thacker et al. [33]. The result explains the importance of the infrastructure construction sector in terms of work volume and bid value, which makes companies interested in selecting workers with the competencies and skills to achieve the required project specifications so that the company is not exposed to a fine or delay.

This paper also found that the strategic planning for human resources has an effect on the performance of project management for infrastructure companies in Jordan due to demographic variables (company age, company capital, and company project size), where companies gain more experience with the number of years they operate, and capital helps assess the value of projects that the company can use. The size of the company also affects its productivity and the size of projects that can be received, as mentioned by Baporikar [13], Ramos et al. [39] and Rauzana and Dharma [40].

The result explains that companies gain more experience in the number of years they work, and capital helps assess the value of projects that the company can use. The size of the company also affects its productivity and the size of the projects implemented.

## 7. Conclusion

This paper reveals the extent of the clarity of the scientific concept of strategic planning in the management of human resources in infrastructure contracting companies in Jordan. Also, identifying the reality of the proper planning process for human resource development in light of strategic planning in infrastructure contracting companies in Jordan. This paper indicated that strategic planning for human resources with its dimensions (environmental variables, needs assessment, dealing with results, human resources plan) on the performance of project management with its dimensions (time, cost, safety, quality) for infrastructure companies in Jordan. Moreover, provided an explanation of how the strategic interaction between (HRP) on the performance of project management in infrastructure contracting companies in Jordan (cost, time, safety, and quality). Explaining the obstacles that limit the achievement of strategic planning for human resources management on the performance of project management in contracting companies in Jordan. In addition, the results indicate that strategic planning for human resources works to attract and retain workers, where sufficient numbers of human resources are available and, at the same time, the appropriate skills that enable them to work efficiently. Thus, the enormity of the sector discussed in this paper is in terms of size and funds, the high contribution it presents to the Jordanian GDP, and the employment of large numbers of specialized technical manpower, including engineers, technicians, and workers.

## 8. Declarations

### 8.1. Author Contributions

A.A., and G.J.A. contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

### 8.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

### 8.3. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

### 8.4. Conflicts of Interest

The authors declare no conflict of interest.

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## Appendix I

Table A1. The Pearson correlation coefficient

		Correlations			
		ENV	EST	DEAL	HRP
ENV	Pearson Correlation	1	0.883**	0.884**	0.878**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	120	120	120	120
EST	Pearson Correlation	0.883**	1	0.894**	0.887**
	Sig. (2-tailed)	0.000		0.000	0.000
	N	120	120	120	120
DEAL	Pearson Correlation	0.884**	0.894**	1	0.911**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	120	120	120	120
HRP	Pearson Correlation	0.878**	0.887**	0.911**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	120	120	120	120

\*\* Correlation is significant at the 0.01 level (2-tailed).

Table A2. The Pearson correlation coefficient

		Correlations			
		COST	TIME	QUALITY	SAFETY
COST	Pearson Correlation	1	0.937**	0.900**	0.861**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	120	120	120	120
TIME	Pearson Correlation	0.937**	1	0.854**	0.902**
	Sig. (2-tailed)	0.000		0.000	0.000
	N	120	120	120	120
QUALITY	Pearson Correlation	0.900**	0.854**	1	0.887**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	120	120	120	120
SAFETY	Pearson Correlation	0.861**	0.902**	0.887**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	120	120	120	120

\*\* Correlation is significant at the 0.01 level (2-tailed).