



The Failure of Petrochemical Industries in the Oil Economy with a Special View on the Field of Human Resources Management

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Abstract

Today, the acceptable issue in the mind of public is human development. Humans are known as the goals, the means, and the guarantors of development. The human resource system is the advantaging resource in organizations that should be evaluated in order to be transformed to the actual resources. The human resources are considered as the main capital of organizations due to having thought capacity, creativity, and innovation, it has been also considered as the essential agent of production in organizations, as the efficiency would be possible by them. In recent years, human capital has become as the most important advantages in industries; however, there are also some theoretical ambiguities in determining components in terms of qualitative promotions of human capital, these complexities are due to the lack of a comprehensive model. Therefore, it has been perceived that the qualitative promotion of human resource in oil and petrochemical industries have a paradigm model. The general complexity of the oil industry and the specific complexity of project-oriented organizations have challenged the establishment of a balance between the two permanent parts of oil industry companies and their projects. Human capital, oil rents, degree of trade openness, and energy intensity are the most important reasons for the difference in total factor productivity in East and West Asian countries. Human capital and oil rents in West Asia have caused a decrease in TFP, while human capital in East Asia has led to an increase in TFP. This article has been done with a descriptive-library method in order to find out the reasons for the failure of petrochemical industries in the oil economy with a special view to the field of human resource management.

Keywords: *Human Resources Management; Productivity; Oil Industry; Petrochemical Industries*

Introduction

Creativity and innovation are the comprehensive and general concepts that their increase is considered as the necessity by the economists and statesmen to improve the standard of living, greater welfare, peace and comfort of people. In fact, it is the creative use of resources to exploit opportunities. (Nazem et al., 2021; Saadat et al., 2021). The studies have indicated that the economic growth depends on the human productivity in most countries. The human resources are the most valuable natural resources in a country. Some developed countries have known the human resources, development of skills, training behaviors, and incentives as the most important and the only resource of economic growth (Motallebi et al., 2019).

In fact, the foundation stones of petrochemical companies are human forces, or more correctly, human resources, which should be used as a suitable model to increase productivity; if these resources are motivated, they will use their talents and skills to serve the company and our country. Our age is the age of changes, and humans are influenced by these changes. The world has become a wavy ocean where the waves of changes throw the passengers of the boat here and there every moment, human life have been never stable uptodate (Abbaszadegan and Turkzadeh, 2017). In development age, the human forces are the most valuable capitals in organizations. Thus, they should be respected, as the material capitals cannot be used automatically as they can be repaired; but the experts who are experienced and trained cannot be replaced, as money have spended to train them, the loss of them would damage the organization (Armstrong, 2016).

In the era of globalization, all the countries of the world, including Iran, are facing many challenges. In this situation, traditional approaches to development have lost their role (Mohaqq et al., 2018). Some experts consider entrepreneurs as the main driver of the economic growth of society and the real pioneers of economic and social revolutions (Taherkhani et al., 2022). We see a growing concern at the intersection of corporate, government, and third sector performance, which no longer focuses solely on macroeconomic issues and elite politics, but on the hopes, desires, and aspirations of citizens in producing countries (Weszkalnys, 2016). The reduction of investment in the country's economy on the one hand and low productivity and the tendency to adjust human resources in organizations on the other hand have turned unemployment into a major economic and social problem of this time (Mousavi et al., 2020).

A look at the history of the oil industry shows that several factors have influenced this industry throughout history, and it could be considered as the most political industry in the world (Jahormi and Rezaei Sadr Abad, 2019). Numerous political, economic, social, etc. factors have always cast a shadow on the activities of this industry and affected the speed of its growth and development. Therefore, it would be sometimes welcomed by the public interest in investing in oil and gas; however, all projects could be sometimes abandoned (Derakhshan 2013).

Until a decade ago, one of the problems of domestic companies of oil and gas industry was the migration of specialists. At that time, perhaps few people believed that the price of oil would experience such a drop and, as a result, oil projects around the world would face a serious recession, all companies, SMEs, public and private companies as well as International multinational would loss their forces; while until recently, many companies had a very intense competition for recruiting capable personnel (Domanska, 2016). The loss of human capital in the organization is considered as a threat, and the biggest cases of loss are manifested in the method of employment. The loss of human capital in the organization is considered as a threat, and the biggest cases of loss are manifested in the way employees are employed. Most organizations have some kind of hidden unemployment in their structure

Although the employees are at the disposal of the organization and their entry and exit are carefully measured, their activity does not affect the development and progress of the organization. Human capital in the oil and petrochemical industries shows that if the existing structures continue, two

centers of focus around expert and simple human capital will be formed. The development of human resources is not achieved only with specialized and technical training, but also through a comprehensive system of training the organization's employees. The purpose of the development training program is to keep the organization alive and standing so that the process of adapting and changing policies in the organization can be done easily. The development of human resources includes examination, diagnosis, prevention and treatment (Salehi Fargani, 2021). When it comes to training and improvement of human resources, change in skills, knowledge, attitudes or social behavior of people is desired (Forghani et al., 2022). The better and more effective application of organizational knowledge in an organized and managed manner creates significant economic, social and cultural progress (Azadarmaki et al., 1400). For the industrial development of any country, the existence of a number of competent human resources with a set of knowledge and practical skills is necessary because living in the vicinity of the machine requires having special capabilities that must be learned through education, they could be improved through experience (Alizadeh Majd et al., 2018).

Today, the oil and gas industry is facing conditions such as the lack of experienced applicants, the lack of complete knowledge of the oil industry, the low absorption power of the industry, the workforce with aging experience, and the retention of knowledge in people's memory and not sharing it. If the organizations do not determine the level of preparedness against threats such as the lack of talented workforce and competitiveness in the replacement of such resources due to the disability, mission, and retirement of employees, they would be at risk of damaging. It is said that talented leaders are trained in the succession process so that they can advance the state of the organization, encourage employees, and increase the value of the organization's shares (Khaefollahi et al., 2015).

It requires organizations to adopt the best strategy to coordinate their approaches in creating industry positions by relying on their competencies and capabilities in order to achieve compatibility with internal and external environments as well as a sustainable competitive advantage. To achieve these goals, organizations should focus on their strategic orientation, because it helps their better performance (Al-Ansari et al., 2015).

Economic theory suggests a positive relationship between human capital and productivity, while Fani states that the former forms a human force behind the convergence (unity) or divergence (difference) of income. Theoretical content focuses on the separate and distinct roles of human capital density, human capital stock, or both mechanisms behind the growth process (Benos & Karagiannis, 2016). Therefore, the strategic orientation of the company indicates the operational, marketing and entrepreneurial status of that company. Accordingly, a company achieves its goals by taking risks, investing in innovation, and stimulating the development of future-oriented foresight. Strategic orientation has received much attention from management, marketing and entrepreneurship scholars, but there is no universally accepted definition for strategic orientation (Merriam-Webster, 2009). Strategic orientation is the way in which a company adapts to its external environment. In other words, strategic orientation refers to the responses that an organization gives to its operational environment in an effort to increase efficiency and gain competitive advantage (Kumar et al., 2012).

Another group of scientists consider strategic orientation to be aspects of culturalization. Organizational culture is a type of intangible human resources, and the establishment of those resources such as orientations will have different effects on the organization (Graw et al., 2009). Human capital is not considered as important as physical and financial capital, it is the external talent of human capital that changes and transforms organizational processes and leads to the improvement of the organization's performance through human capabilities (Sanjari et al., 2014). The members of the organization are concerned by human resource management. In fact, employees are the main element of any organization; an organization that has more capable and productive employees is more successful. Employee productivity increases when the organization hires competent people and motivates them effectively. In addition, human resource activities lead to job satisfaction of employees, and satisfied employees also

cause customer satisfaction with more effort (Fulmer et al., 2003). The training and development of competent human resources will depend on the performance of the effective implementation of the set of human resource management policies. Knowledge management plays an important role in organizational excellence and providing an environment for economic growth (Amidi et al., 2018). Strategic management of human resources is a new concept in the field of human resources of today's organizations; it points to the fact that the most important resource in any organization is human capital. In fact, the goal of strategic human resource management is to achieve strategic alignment, it creates human resource strategies that are vertically integrated with business strategies. The main goal of strategic human resource management is to support the organization in achieving long-term and short-term goals and supporting activities in line with the mission. The mission of the human resources department is to help individuals, departments and senior management groups achieve strategic goals (Caldwell & Anderson, 2018).

It is clear that oil is important as a raw material. The health, well-being, and prospects of billions of people are directly affected by the price and availability of oil. Dependence on oil means economic vulnerability. In addition to powerful maneuvers, military intervention, and appropriate alliances, oil is associated with other types of actions that undermine civil security. The long history of oil is a history of competition, corruption, political repression, maneuvering for access and open conflict.

In the last one hundred years, the oil industry has had a special place in Iran's economy and has been practically the axis of the country's progress and development in all existing fields. Therefore, the country's growth depends on the growth and development of this industry. Since human resources are considered one of the important factors in the growth and development of the oil industry, the position and importance of human resources in this industry is doubled. Currently, companies active in the field of oil and gas are seriously facing a shortage of skilled and experienced manpower due to the increasing growth of oil projects around the world. Due to the departure of specialists, we will face a serious shortage of professional managers in the near future. Many factors distinguish oil and gas from other industries and create unique demands for human resource management, including its global nature, importance of safety, involvement of governments, active stakeholders, multifaceted workforce and project focus. So the role and position of human resources unit in industry, company and organizations is still not properly understood. Most industries and organizations have not realized the importance of human resources in increasing the productivity of the work environment and improving the situation. The use of human resources is very efficient and effective in achieving the goals of the organization, improving the performance of the organization, and guaranteeing the future of the company or organization. Therefore, the importance of human resources, recruitment, and training of specialists should be prioritized in order to provide the basis for growth and increase productivity for the organization. Therefore, the main question of this research is: To what extent can human resource management be effective on petrochemical industries in the oil economy?

Theoretical Framework

Development of Human Resources: recruitment of expert staff, maintenance, optimal use of people's expertise, planning to improve their academic and occupational levels are among the issues that are intertwined to the development of human capital (Farhi et al., 2015). Therefore, the development of human capital can be achieved by obtaining a greater share of human skills, which are highly needed. The use of existing human resources to gain superiority over other organizations should be considered as a success factor (Hajilo et al., 2018). Paying attention to the needs of human resources by creating a creative atmosphere is effective on financial performance and employee performance.

Furthermore, hiring according to the organization's goals, participation in decision-making, flexible strategies based on performance and specialized training are the tasks of human resource

management (Johasen & Sawa, 2019). Human capital is the main source of gaining competitive advantage in the organization and complementing financial resources (Boon et al., 2018). Human capital is the only resource that is different from other capitals it does not have the negative characteristics of other capitals such as perishability, imitability, etc. (McCracken & Wallace, 2017). If human capitals improve their quality, on the one hand, they increase innovation in the production process and on the other hand, they increase the speed of adaptation to existing technologies, thereby affecting the productivity of all factors (Li and Wang, 2018). The effectiveness of human capital can help the organization in benefiting from scarce resources from the perspective of knowledge, skills and limited capabilities to achieve a competitive advantage (Khan et al., 2018). Human resource development measures are programs that are strategically formulated into organizational processes in order to manage human resource development to contribute to the overall success of the organization (Otoo, 2019). Human resource development tends to change or improve people's learning, performance behavior, attitudinal and cognitive skills. They also believe that human resources development is a broad concept and includes training and development, technical training, management development, leadership development, human performance, organization development, and organizational learning (Akbari et al., 2013).

The emergence of human resources development can be seen as a turn from a traditional perspective to a strategic perspective. Human skill is the belief and ability to work with others, it includes recognizing the employees' motivation and application of effective leadership. Regardless the communication skills, the developed managers should be knowledgeable about the positions. In order to communicate, one must know the mental state of people and communicate based on that. With development, differences can be directed towards unity and an integrated model through a comprehensive and broad view in the field of the organization, it is the only comprehensive approach of organizational education (Hira, 2008). Since the emergence of the term "human resources development", this term has been widely used in various fields of organizational studies (Slotte et al., 2004). The development of human resources has a different meaning by different researchers. However, a common definition of this concept that is universally accepted has not been provided. Table 1 mentions some of these definitions.

Table 1. Definitions of Human Resource Development

Definitions	Scholars
The development of human resources is a set of organized activities that are guided in a certain period of time with the aim of behavioral change.	Nadler & Nadler (1970)
It refers to policies and programs that encourage and empower all people to develop their capabilities on an equal basis and without any discrimination and use it for their own benefit and according to their ideals.	Human Resource Development Convention (1975)
Human resource development is organized learning experiences provided by employers in a specific period of time in order to improve performance and individual growth	Nadler & Nadler (1989)
Human resource development focuses on providing learning and growth opportunities and supports achieving business strategies and improving organizational, group and individual performance.	Armstrongom & Baron (2002)
It is a systematic and long-term process whose ultimate goal is to increase the level of awareness and insight of employees, strengthen skills and optimize training to increase the level of employee performance, efficiency and effectiveness of human resources and actualize employees' potential talents and capabilities.	Lynham and Cunningham (2004)
The development of human resources is the process of increasing the knowledge, skills and capabilities of all members of society.	Haslinda (2009)

Human resource development focuses on improving the ability and performance of employees through existing methods of training, career development, performance evaluation and employee management	Yuvaraj & Mulugeta (2013)
The process of training, learning and empowering employees	Sheehan et al. (2014)
Human resource development is known as the process of improving people, groups and organizational functions through training, career paths and organizational development initiatives.	Nguyen (2017)

The development of human resources is not achieved only with specialized and technical training, but also it is necessary to educate the employees of the organization through the comprehensive education system, it means that the employees of the organization should be educated in different dimensions (Mortazavi, 2014). Human resource development is one of the most conventional, it is also the most expensive human resource management activity. This activity includes learning new skills, improving existing skills, effective behaviors, and methods of doing work. It is closely related to the training of human resources in organizations. In order to achieve the objectives of human resources development management, the level of knowledge, information, skills, and capabilities of employees must be improved; this requires planned and systematic training (Janavi and Hariri, 2014).

Various factors are involved in the development of human resources, which have been pointed out by different researchers. For example, some researchers have mentioned the strategic orientation of the organization. The management direction of the company has an effect on the operation of human resources development and its priority and importance. Companies that follow cost-based strategies mainly emphasize skills that drive productivity. These companies rarely invest in management and leadership development, and most strategic human resource development operations focus on the regular and routine implementation of these companies (Lepak and Snell, 2003). Human resources development activities can help the organization's innovation activities. Human resource development also has a positive effect on employment, leadership, manager's motivation to learn, promotion of learning culture, and development of social capital, all of which are associated with innovation (Sheehan et al., 2014).

Human capital is a set of skills, knowledge and general characteristics of people in the organization and it can indicate the ability to do work today and the capacity to work tomorrow (Soltani and Soleimani, 2015). Currently, human capital is one of the most important assets of societies (Martell and Richard, 2010). The degree of success in using this part of the country's national resources determines the success in using other resources and basic principles and the basis of development (Farahi et al. 2016). Two approaches can be considered for human resource planning: soft approach and hard approach (Armstrong, 2010).

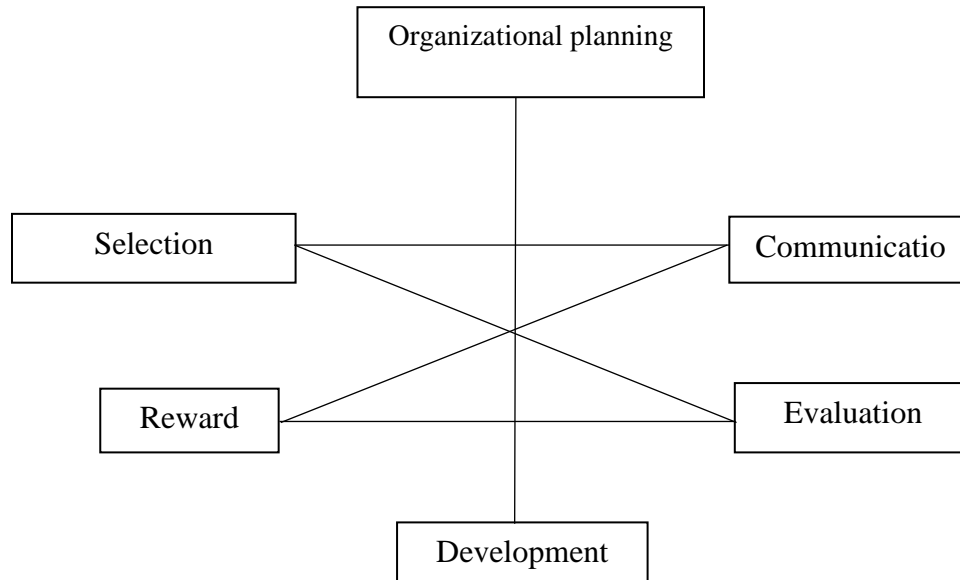
The hard approach, which is also called "manpower planning", seeks to predict and evaluate quantitatively and numerically the future needs of the organization for manpower. When successful organizations such as GM are studied, it is seen that the reason for their success is the hiring and proper management of competent people who can implement the organization's strategies. Therefore, the strict planning approach (which only focuses on the number of required personnel) will help the organization only in the field of recruitment, not management; human resource management department still needs planning. (Ulrich, 1992).

Instead of focusing on numbers, the soft approach adopts a strategic point of view and seeks to achieve the organization's strategic goals by relying on the competencies and skills of the workforce and human resources policies and procedures (Pilbeam, S. & Corbridge, 2006). In other words, the soft approach is concerned with the entire human resource system and related activities (Bramham, 1994; Marchington & Wilkinson, 1996). It can be considered as an equivalent to human resources system planning. Despite the strategic view of the soft approach and the potential impact of adopting strategic

methods of human resources on the realization of the overall goals of the organization and its survival (Bamberger & Meshoulam, 2000), the literature review shows that this approach has been ignored by the researchers, as there is no comprehensive model to consider all aspects of human resources system. The comprehensive human resource planning is a strategic opportunity that plays a role in strategic decisions and shaping the organization; it seeks to ensure that organizational goals are achieved by developing and implementing human resources strategies (Pilbeam, S. & Corbridge, 2006).

Effective human resource planning will lead to an increase in the effectiveness of the organization and will create a competitive advantage for the organization by improving the quality level of employees (Irfanuzzaman Khan, 2013; Kumar et al., 2014; Mominul et al., 1992). Also, the conducted research shows that the effective planning of human resources affects the performance of the organization and its productivity (Al-Gudah et al., 2014). Although most researchers who believe in the soft approach in resource planning have pointed to its comprehensiveness and comprehensiveness, in practice, it is observed in field research in most companies that human resource planning mainly relies on one aspect of human resources (e.g., succession planning, career development, Markov chain forecasting, or skill list planning). The human resources planning can play a role in the success of the organization, when it includes all human resources activities. Accordingly, Ulrich (1992) proposed six micro-systems that should be considered in the strategic planning of human resources, so that this process leads to the creation of a competitive advantage for the organization. Strategic planning of human resources is equivalent to one of these six sub-systems, which focus on each of these things alone, limits the ability and capability of human resources to create a competitive advantage, these include:

1. Organizational planning: it examines different ways of organizing work that must be done to research strategic goals.
2. Selection/recruitment: it can also be included in the strategic plan of human resources. In selection and recruitment, two issues should be considered: First, who should be hired? Second: Who should be promoted?
3. Reward system: research shows that people mainly do things for which they receive rewards (Atkinson et al., 2017). Strategic planning of human resources examines and analyzes different options for using the reward system in order to shape employee behavior.
4. Development systems: Development includes both formal training and in-service development activities; it can play a role in creating a competitive advantage. A development plan can also play a key role in creating strategic human resource plans.
5. Evaluation system: In the most general case, evaluation systems provide performance standards and feedback on performance.
6. Communication plan: When the strategic plans of human resources are created, the employees within the organization should continuously have access to the existing plans and understand why they exist. Communication plans determine how information will be disseminated in the organization, by whom, how, when, and what information should be raised.



Human resource subsystems (Ulrich, 1992)

Human Management System Evaluation Models

Organizations need an integrated model to evaluate, measure and monitor human resources activities with a strategic approach in order to show the stakeholders of the organization and senior managers how much it has helped them in the path of organizational success and excellence (Hafazi, 2009). Around the world, many models such as the Baldrige human resources model, the Deming human resources model, the European Foundation for Quality Management model, the ISO 9001 standard model, the human resource maturity model, and the human resource excellence award have been presented to evaluate the human resource management system. Each model has its own strengths and weaknesses. It is necessary to develop a special model for human resource planning in every industry, including the oil industry.

APQC model: APQC focuses on productivity, knowledge management, optimization, and quality improvement measures in interaction with its member organizations, to identify the best practices and effective methods in improving and disseminating the results related to knowledge, training and tools required for success. In 1993, Arthur Anderson, with the help of APQC organization, developed and introduced the process classification framework based on a pattern among the top 80 American companies and published its public version for the first time in 1996. This framework is a process that can be used in all organizations, whether manufacturing or service, regardless of their size and geographic location. This process framework is generally defined in 12 activity groups and more than 1500 processes and activities (Sadeghi Moghadam and Momeni, 2017).

Malcolm Baldrige Model: In 1987, with the decrease of competitiveness in the United States, the Malcolm Baldrige National Quality Award was introduced. At that time, American companies faced a serious challenge against Japanese companies. During these years (mid-1980s), Japan had become an economic power, passive American companies were striving to achieve excellence and innovation in performance, in order to reduce risk in the competitive arena. The Baldrige Award provides a suitable framework for operationalizing the quality management structure, many countries have made the criteria of the Baldrige National Quality Award the basis of their work, the positive effect of applying this model on quality management has been also proven (Torabi, 2011).

European Foundation for Quality Management (EFQM): In this model, 9 areas are of interest, 5 of which are related to the approaches that create the capabilities and capabilities needed by organizations

and are known as "enablers". The other 4 areas also examine the results of applying the approaches and are named as "results". Therefore, this model tries to identify the current state of the organization compared to an ideal organization (Abzeri et al., 2011; Conti, 2007; Davies, 2008). Two criteria of this model are related to human resources.

People capability maturity model: The human resources capability maturity model is an experienced collection of human capital management methods that provides a roadmap for the continuous improvement of the organization's employees. The maturity model of employee capabilities refers to these methods as human resources methods. Considering that an organization cannot implement all these methods at once in the best way, the maturity model of human resources capabilities presents these methods step by step. In this model, the transformation method is different in each stage and requires certain capabilities in the previous stages. Therefore, each maturity stage provides a set of procedures that can be the basis for creating procedures in the next maturity stages. The main goal in this model is to improve human resources capabilities, and these capabilities can be defined as the level of knowledge, skills, and process capabilities available to carry out the business activities of an organization (Curtis et al., 2009).

Ulrich's strategic human resources model: Dave Ulrich used the term strategic partner in the book *Human Resources Champions* for the human resources managers of organizations, which after a while this term spread and was welcomed by the holders of positions and opinions of human resources and organizations. He changed the course of human resources excellence from traditional and administrative fields to transformative and effective fields. Ulrich's Human Resources are obliged to align its activities with the business strategy. They should discuss with the managing director, line managers, customers, and investors, they should also consider their opinions and at the same time pay attention to the external realities of the business. Finally, they, as the business partners, should transform the organization. To achieve this, competencies such as strategic partnership, business knowledge, operational executive, personal credibility and strategic architecture are needed. Also, in the mentioned book, Ulrich assigned four key roles for human resource managers, which include the following roles: (Binesh, 2008).

1. **Administrative specialist:** In this human resource management role, he deals with the effective design and implementation of human resource processes as well as the re-engineering of human resource processes.
2. **Supporter of employees:** In this role, human resource management focuses on the management of employee participation, increasing the commitment and capabilities of employees.
3. **Strategic partner:** In this role, human resources management tries to align human resources strategies and procedures with the organization's strategy.
4. **Agent of change:** In this aspect, human resources management (both as a culture custodian and as an agent of culture change) deals with the management of organizational change and also helps to identify and implement change processes. The result of this role is the capacity for change (Ulrich, 1996).

Berdin and Soderlund (2011) have briefly identified the following negative consequences in project-oriented organizations, which are related to human resource management and should be considered in the design of the human resources system of such organizations. These consequences include:

1. Problems related to loyalty and unclear responsibilities in these matrix organizations.
2. Lack of affiliation and lack of deep expertise due to inter-sectorality.
3. Limited time and opportunity to develop competencies, due to continuous work pressure.
4. Feeling of insecurity and confusion due to the complexity of tasks.
5. Role ambiguity and role strain due to technical uncertainty.

6. Social disconnection and lack of trust and personality erosion due to changing temporary teams and organizations.
7. Job insecurity due to constant fluctuation in demand

In addition to the weaknesses, the strengths should be also considered, so that the requirements of the human resources system are properly understood. Among the advantages of these organizations that have led to the expansion of their use, the following can be mentioned:

1. Project-oriented organizations have a high ability to integrate and solve complex problems that require the use of many experts in different fields.
2. Project-oriented organizations are often designed to meet deadlines and time constraints. These deadlines, in addition to the previously mentioned negative aspects, also have positive consequences.

Oil economy: An oil economy is an economy that receives significant amounts of oil revenues on a regular basis. So that these revenues account for a large part of the country's total income. It is not easy to determine a specific threshold in this definition. In this regard, the World Bank considers a guideline threshold of approximately 10% of GDP and 40% of total merchandise exports. Oil economy refers to the economy of countries where the high share of oil production in the gross national product and oil export in the total export puts it in the center of economic accumulation. In order to get a better understanding of this concept, related concepts such as rent, rentier government, rentierism, and consequently the oil government can be useful (Hasanvand, 2017).

Economic rent: Economic rent is defined in relation to the cost of lost opportunity. In order to maximize income, the factor of production is attracted to the activity from which he can get the most income. There is no economic rent in a perfectly competitive market. In fact, its value is equal to zero. Whenever the current income of the production factor is more than the minimum income that should be paid to attract and keep it in the said activity, then more production factors will enter the said market. This will cause a decrease in the income of the production agent and will continue until the economic rent is lost (Nasri, 2001).

Oil rent: Oil rent is economically defined as the difference between market prices and oil production costs. In economies based on oil exports, oil rent is the top source of government income. The government has distributed this rent to any section or stratum of the society or any of the government or non-government economic sectors in any way it wants; other resources and rents that exist in the society are affected (Nasri, 2001).

The oil economy is actually a type of rent economy that has the following conditions:

- a) Since many economies have a certain amount of oil income; we call only an oil economy that oil makes up a major part of its income. To detect this, some have considered a threshold of 40% (goods exports) and some 50%. This means that any country that has 40% or more of its total income from oil, we call its economy an oil economy.
- b) This income must be sourced from abroad, in other words, it has little connection with production processes in the country's domestic economy; this income comes from the sale of oil to foreign parties, either governments or private companies, etc.
- c) In an oil state, only a very small percentage of the labor force is involved in oil production, so most people in the society are recipients or distributors of oil revenues.
- d) In the oil economy, the government is the main recipient of oil revenues and plays an essential role in spending it (Hassanvand, 2017).

Factors Affecting Oil Economy

Factors Affecting Oil Demand:

Income, economic growth, degree of economic development, degree of market competition, demographic issues and population growth, degree of urbanization, social habits and traditions, export policies and commercial exchanges, weather conditions and seasonal factors, research and development, the abundance of temporary consumers, and some unpredictable factors are the most important factors.

The amount of crude oil reserves: Another factor affecting the oil market is the announcement of the amount of proven reserves of oil-bearing countries. Proved reserves are the amounts of crude oil that are estimated by geological and engineering data with a high degree of confidence until a specified date in the future and with defined economic conditions, operating methods and government laws, from the current reservoirs as Economically extractable.

Strategic Reserves: Large consuming countries always keep and store quantities of crude oil as strategic reserves. Strategic reserves are crude oil stored by governments or the private sector to protect the economy and national security from possible crises. According to the US Energy Information Administration, about 1.4 billion barrels of crude oil are kept as strategic reserves in the world (Ghanbari, 2011).

Political and Geopolitical Factors

The first oil crisis (1973): In October 1973, Egypt and Syria launched an attack on Israel, which became known as the October or Ramadan War. The West's support for Israel made the Arabs react. The result was the oil embargo of America and its allies in Western Europe and Japan, which shook the world economy and became known as the first oil shock. The price of oil quadrupled, so that following that, even during the drop in oil prices in 1980s, the nominal or real price of oil never reached the prices before 1973.

The second oil crisis (1979): The initial spark was sparked by the Iranian revolution in 1978, which was accompanied by a strike in the oil industry and the departure of foreign workers. This issue led to a shock to the oil market and increased prices. The Iran-Iraq war also fueled the energy crisis, so that the price of oil doubled by 1981.

The crisis of the 1980s: The 1980s were accompanied by a drop in oil prices and producers' incomes. The main reason was the decrease in demand. As a result, OPEC experienced excess production over market demand. These factors reduced the power of OPEC. (Bahreini, 2014; Seifollah et al., 2014).

Types of Oil Purchase and Sale Contracts

Option transactions: the trader is allowed to decide whether or not to do the transaction according to his future conditions and possibilities. The trader has the right to terminate the contract for a certain period of time.

Free on Board (FOB): The responsibility of the seller is until the cargo is loaded and has no responsibility for the transportation and insurance of the cargo until it reaches the destination.

Cost, Insurance, and Freight (CIF): This method includes the delivery of the goods at the destination with insurance, in which the seller is responsible for the transportation and insurance of the oil tanker and its cargo.

Price and shipping cost: This type of transaction is similar to Safe method, but without insurance. Delivery of goods at the destination is without insurance.

Exchange or swap (SWAP): In this method, the producer country gives it to the connecting country to deliver its oil to the buyer, and the connecting country receives transit rights for this location transfer, a clear example of the Caspian Sea oil swap.

Reciprocal sale: This transaction is almost similar to goods-to-goods or barter transactions, and payment is made in a way other than cash (Dabiri, 2016).

Types of Transactions in Oil Futures Markets

A) Risk hedging transactions (hedging): Hedging means that the economic enterprise consciously accepts another risk that has a negative correlation with the initial risk. Hedging in the future markets is done in two ways: one in the buying situation and one in the selling situation. Sales coverage is usually used by producers of crude oil and petroleum products, as well as traders who have a warehouse of crude oil and products; purchase hedging is usually used by consumers of crude oil and products who are concerned about future price increases.

b) Price difference transactions: Arbitrage operations are performed in the price difference between two markets for similar or different products in order to gain profit at a moment in time. Arbitrage operations can take place in the price difference between the spot and futures markets.

C) Speculative transactions (game exchange): Speculative operations are the opposite of risk hedging operations. Traders expose themselves to risk for high returns. Of course, this action may be considered a kind of betting or lottery, because these people do not physically own crude oil, and in order to take advantage of market changes, they buy and sell contracts (Ghanbari, 2011).

Review of Literature

By examining and considering the repetition of many effective factors that exist in the development of human resources, seven components were identified and examined for the present research: organizational culture, organizational structure, leadership style, organization strategy, technology, education, and knowledge management. Variables affecting the development of human resources in the Oil Industry Research Institute, out of 24 research variables affecting the development of human resources in the Oil Industry Research Institute, seven factors that had more repetitions were identified. The following table shows these variables affecting the development of human resources in the Oil Industry Research Institute.

Table 2. Effective variables of human resource development in the oil industry research institute

Technology	C5	Organizational Culture	C1
Education	C6	Organizational Structure	C2
knowledge management	C7	leadership style	C3
		Organization Strategy	C4

Economic growth is made possible through the accumulation of production factors as well as increasing the productivity of the total production factors. For this reason, all factors of production that can affect economic growth are included in the productivity of all factors of production. There have been various researches about the factors affecting the productivity of the total factors, each of which has investigated and analyzed one aspect of this issue.

A group of studies have focused on the role of human capital in total factor productivity. The results of some of these studies indicate that human capital positively affects (Total Factor Productivity) TFP and thus economic growth (Borhan et al., 2012; Li and Wang, 2018; Heydari et al., 2015). However, evidence of the lack of impact and even the negative impact of human capital on productivity and economic growth can also be seen in other studies (Benos, & Karagiannis, 2016; Kumar and Kober, 2012).

In these studies, various variables have been considered to replace human capital. According to Kumar and Kober (2012), the educational components in Eastern countries (Malaysia, Japan, Korea, Singapore, & Hong Kong) and Western Asia have not influenced the total productivity. However, the effect of health components on TFP in these countries is significant (Kumar and Kober 2012). Two average indicators of years of education and the number of employees with higher education have been used as indicators of human capital; human capital has a significant and positive effect on TFP in Iran. The positive impact of human capital on TFP in Iran has been confirmed in other studies such as Asadzadeh et al. (2014) and Falahi et al. (2015). Also, the results of Adelakun (2011), Campbell and Agbiokoro (2013) and Whalley and Zhao (2013) indicate the positive and significant impact of human capital on economic growth in time and place (Komeijani et al., 2011). Organizational culture in the oil industry and especially in the petrochemical industry often becomes an issue among employees in the face of culture in achieving job satisfaction. The important issue is that the way such a situation is managed can turn it into an opportunity or a threat in the "organizational culture" of the petrochemical industry. (Alizadeh Majd&etal,2022)

The main economic structure of West Asian countries depends on oil, and this can affect the productivity of all production factors and be the reason for its difference in East and West Asia. Comparing the per capita income of East and West Asian countries shows that the per capita income in oil-rich and sparsely populated West Asian countries is much higher than other countries. The major part of the difference in per capita income is due to the income from the sale of crude oil. The difference in oil revenues can be one of the influencing factors on the difference in total factor productivity between East and West Asian countries. The variable of oil rents (difference from crude oil minus its production cost) has an effect on TFP growth, and it is expected that oil rents in West Asian countries are higher than in East Asia. Also, the review of various studies shows the impact of variables such as human capital, foreign direct investment, inflation, degree of commercial openness, financial development, energy consumption and the amount of use of fossil fuels and renewable energies on total productivity. One of the most important variables is human capital, which on the one hand increases innovation in the production process and on the other hand increases the speed of adaptation to existing technologies, thereby affecting the productivity of all factors. According to the statistics presented in Federal Reserve Economic Data (FRED), the trend of human capital as one of the influencing variables on TEP has been upward in East and West Asian countries, but its value is higher in East Asian countries than in West Asian countries (Lee and Wang, 2018).

Another group of studies have focused on the role of inflation as one of the influencing variables on TFP growth. According to some studies, an increase in inflation leads to a decrease in TFP (Smyth, 1995; Li and Tanna, 2018; and Komeijani et al., 2011), but the findings of others such as Freeman and Yerger (1997) and Ojede (2015) indicate the insignificant effect of inflation on TFP. Also, based on the study of Attari and Javed, (2013), inflation rate has no effect on economic growth in Pakistan in the short term, and there is an indirect causality between inflation rate and economic growth. According to the study of Ahmed and Mortaza (2010), there is also a negative relationship between inflation and economic growth in the long term.

The degree of commercial openness, financial liberalization and financial development are other variables affecting TFP, which have been studied in various studies (Kose et al., 2009; Hong et al., 2010; Serdaroğlu, 2015; Shahabadi et al., 2010). Based on these studies, it is expected that the impact of trade

openness and financial liberalization on TFP is positive. For example, Shahbaz (2012) showed that the degree of trade openness in the long run increases economic growth in Pakistan. Also, Yeboah et al. 2012 investigated the effect of the degree of trade openness on TFP and as a result economic growth in African countries, and the results of their research also confirm the positive effect of the degree of trade openness on economic growth.

Financial development can also positively or negatively affect productivity (Li and Tanna, 2018). According to Calub (2011), financial development increases the productivity of the total factors in the Philippines. In the same way, Estrada et al. (2010) by examining the effect of financial development on economic growth showed that financial development, especially in Asian developing countries, causes an increase in economic growth. Also, according to Anwar and Sun (2011), financial development increases domestic capital stock in Malaysia, but its effect on economic growth is not significant.

The impact of energy consumption on the productivity of total production revenue has also been investigated in studies such as Ladu and Meleddu (2014) and Pasten et al. (2007). By examining the long-term relationship between energy consumption and real Gross Domestic Product (GDP) in 19 Latin American countries, they found that there is a long-term relationship between these two variables. These results were also confirmed in the study of Ladu and Meleddu (2014) in Italian regions. They also found that energy consumption reduces real GDP in Latin American countries, so there is an indirect causality from energy consumption to GDP. In addition, according to some studies, the amount of renewable and non-renewable energy use can also affect TFP (Tugcu and Tiwari, 2016; Rath et al., 2019).

Rath et al. (2019) by examining the effect of energy consumption on total factor productivity in 36 selected countries, showed that fossil fuel consumption reduces TFP, while renewable energy consumption increases total factor productivity. Also, according to Tugcu and Tiwari (2016), in the BRICS countries (Brazil, Russia, India, China and South Africa), there is no significant link between renewable energy consumption and TFP growth. However, the consumption of renewable energy by creating positive external effects due to the increase in the productivity of the total factors causes an increase in economic development.

Oil rent is another variable that can determine the difference in total factor productivity in East and West Asian countries. According to Shahabadi and Sarigol (2017), the direct effect of oil revenues on the productivity of all factors in Iran's economy is negative and significant. The results of Kafaei and Bagherzadeh's research (2016) also show the positive effect of foreign exchange earnings from oil exports in the long term in Iran. Also, there have been studies about the role of factors such as institutions and income inequality in the productivity of total factors, including McGuinness (2007), Fuentes et al. (2014), Sequeira et al. (2017) and Li and Tanna (2018).

In a study by Bergholt et al., it was shown that the recent drop in oil prices has raised policymakers' concerns about the implications of trade shocks for resource-rich countries. This is not a minor concern - the world's commodity exporters are collectively responsible for 15-20% of global value added. Domestic supply chains connect mainland (non-oil) Norway to the offshore oil industry, while fiscal authorities collect revenue into a sovereign wealth fund. Oil prices and the international business cycle are jointly determined abroad. These features allow us to disentangle the structural sources of oil price fluctuations and how they affect mainland Norway. The estimated model provides three key results. First, oil price movements are an important source of macroeconomic volatility in mainland Norway. Second, while no two shocks cause the same dynamics, conventional trade channels make less economic difference in the transmission of global shocks to oil exporters than to oil importers. Third, the supply chain of the domestic oil industry is an important transmission mechanism for oil price changes, while the prevailing fiscal regime provides significant protection against external shocks (Bergholt et al., 2019).

Any factor other than labor and capital that can explain the economic growth of countries is caused by the productivity of the total factors (Solow, 1975). Investing in education, skill acquisition and

physical health can lead to the accumulation of human capital. More accumulation of human capital can, on the one hand, provide the basis for innovation in production, and on the other hand, adaptability to existing technologies can increase TFP and create more added value (Kumar and Kober, 2012; Li and Wang, 2018; Conti and Sulis, 2016). On the one hand, foreign direct investment increases the rate of capital formation by increasing gross capital formation, and on the other hand, it increases capital productivity through improving the competitive environment, positive external effects of technology, and spillover effects (Hsiao and Shen, 2013). The role of FDI in the entry and transfer of advanced technologies, especially in developing countries, is undeniable (Li and Tanna, 2018).

Inflation on the demand side reduces people's real income by reducing their purchasing power, and on the supply side, it deprives companies of the incentive to invest, it also reduces TFP growth in these two ways (Li and Tanna, 2018). In fact, inflation imposes costs on production by affecting relative prices and investors' decisions (Mahadevan and Asafu-Adjaye, 2005).

Energy consumption can increase the efficiency of the production process through the technology channel as a result of TFP (Rath et al., 2019). Also, according to Tugcu and Tiwari (2016), the type of energy consumption can be decisive in TFP growth. In fact, the percentage of use of fossil fuels and renewable energy may affect TFP. Financial development causes more opportunities for diversification as well as risk taking and thus can affect TFP positively or negatively. The degree of trade openness can increase TFP in two ways. On the one hand, based on the "learning through export" hypothesis, the efficiency of a company increases by entering export markets (De Loecker, 2013). On the other hand, the expansion of trade exchanges can lead to the growth of TFP, and the dependence of the economy of West Asian countries on oil revenues in West Asian countries can be one of the important factors affecting TFP. Oil rents may reduce TFP by increasing a country's dependence on oil revenues and reducing the incentive to innovate in society. As a result, the variable of oil rents, which measures the difference between crude oil production in world prices and its total cost, has been used as one of the factors affecting TFP (Li and Tanna, 2018).

The degree of trade openness is another factor that determines the difference between TFP in East and West Asian countries. This factor has had a negative and small impact on TFP in East Asian countries, while its impact has been positive and significant in West Asian countries. The percentage of fossil fuel use in East Asia has increased TFP and in West Asia it has decreased. The percentage of use of renewable energy has reduced the productivity of the total factors in East and West Asian countries. Foreign direct investment has also had a positive but insignificant effect on TFP in East Asia, while its effect has been negative and small in West Asia. Inflation in countries with modern management practices (East and West Asia) has led to a decrease in TFP. In general, it can be said that the degree of trade openness is another factor that has determined the difference in productivity in East and West Asia. This variable has had a positive and significant effect on TFP growth in West Asian countries, while its effect is not significant in East Asia. Financial development has also caused a decrease in TFP in East and West Asian countries, and its negative impact has been greater in West Asian countries. However, the mutual effect of human capital and foreign direct investment has been in favor of West Asian countries in all models. In fact, the positive effect of this variable on the total productivity of factors has been greater in West Asian countries (Jaafari et al., 2020).

Today, the oil and gas industry is facing conditions such as the lack of experienced applicants, the lack of complete knowledge of the oil industry, the low absorption power of the industry, the workforce with aging experience, and the retention of knowledge in people's memory and not sharing it. If the organizations do not determine the level of preparedness against threats such as the lack of talented workforce and competitiveness in the replacement of such resources due to the disability, mission, and retirement of employees, they would be at risk of damaging. It is said that talented leaders are trained in the succession process so that they can advance the state of the organization, encourage employees, and increase the value of the organization's shares (Khaefollahi et al., 2015).

Knowledge management in Iran's oil industry is important from many aspects, including its role in competitive advantage. Great economic and business theorists have named knowledge as the ultimate competitive advantage for organizations and the key to their victory. The Ministry of Petroleum and its subsidiaries have very diverse fields of knowledge, as it includes a wide range of specialists in different fields, including oil, gas, petrochemical, refining and distribution of oil products and drilling in various sectors of upstream and downstream oil industries, including exploration, production and development, transfer, and exploitation which can play a key role in its competitive advantage in the region and improving its global position (Allameh et al., 2015).

Adding to the general complexities of the oil industry, project-based organizations also have their own complexities. These organizations have two permanent (i.e. the companies themselves) and temporary (i.e. projects) parts, and they must constantly maintain a balance between these two parts (Berdin et al., 2011).

Manpower supply in the oil industry should be done through the promotion and transfer of qualified employees or, if necessary, the recruitment, employment and employment of new manpower (Alizadeh et al., 2019).

Table 3. Concepts identified for the sub-section of human resources supply (Alizadeh et al., 2019)

Second Level	First Level	Main Component
Strategic orientation	Sub -category	Supply Human Resources
Providing human resources through the promotion and transfer of qualified employees	Supply of manpower through employment between oil companies	
	Supply of human resources through internal transfer of employees	
	Providing manpower by transferring official staff from other ministries and government agencies to the oil industry	
	Supplying manpower by promoting other oil companies and units	
	The supply of manpower through upgrading	
Recruiting and employing the required human resources through a call to action in accordance with employment justice	Attracting and recruiting and employing new manpower	
	Attracting and employing the required manpower through formal and contractual recruitment	
	Recruitment and employment required within the framework of the approved organization and the rules	
	Attracting and recruiting the required manpower through the public call	
	Attracting and recruiting the required manpower through universities	
	Recruitment and recruitment of human resources required by public advertisement and success in written exams, recruitment and psychological interviews, and industrial medicine examinations	
	Attracting and recruiting the required manpower through universities	
	Recruitment, recruitment and employment required by recalling recruitment of employment justice	
	Recruitment and recruitment of the required manpower from the informal forces of oil companies	
	Design of new indicators and criteria in the use of force	
	Using new models of use including private sector models	
	Attracting indigenous forces	
	Attracting operational forces	
	Employing distinguished	

graduates of prestigious universities inside and outside the country	Recruitment and employment required by privileged graduates of prestigious universities in the country	
	Recruitment and employment required by privileged graduates of prestigious universities in the country	
	Attracting and applying the required manpower through privileged graduates of prestigious universities abroad	
	Attracting and recruiting the required manpower through universities	
Recruiting and employing human resources on a contractual basis and for a certain period of time for public support jobs	Non -recruitment / recruitment	
	Temporary recruitment (lifelong recruitment cancellation)	
Employing non-permanent human resources in the operation process or carrying out projects without the commitment of permanent employment	Non -recruitment / immethodical recruitment	
	Temporary recruitment (lifelong recruitment cancellation)	

In order to improve the level of efficiency and effectiveness of the oil industry, the Ministry of Petroleum is obliged to redesign, update, and implement the system of training and development of human resources of the industry in order to establish the general, technical, and professional qualifications of employees with the desired job. In this regard, the direction of the education strategy is as described in the following table (Alizadeh et al., 2019).

Table 4. Concepts identified for the education and human development sub-section (Alizadeh et al., 2019)

Second Level	First Level	Main Component
Strategic orientation	Sub -category	
Up-to-date redesign and implementation of human resources training and development system in order to improve the level of efficiency and effectiveness of the oil industry	Comprehensive Human Resources Education and Development System	Training and development
	Targeted strategy -based training	
	public education	
	Diversity in education	
	Family training (spouse and child)	
	Training of female staff	
Improving the level of management, especially project	Management Training (Management Development) Replacement Plan	

management and human resource development at the regional and then global level	(Management Breeding)	
	Training of basic managers	
	Job education and development	
Designing and compiling educational needs and programs and learning opportunities based on strategic analysis of tasks and job competency models and individual ability level	Educational programs based on strategic analysis and job competence and the level of individual ability	
	Electronic virtual education	
	Increasing employee skills	
	Working training	
	Training tailored to the educational needs	
Maintaining educational and research centers and institutions of the oil industry and, if necessary, using domestic and foreign governmental and non-governmental educational centers and institutions	Using the capacity of other government and non -governmental, domestic and foreign educational institutions and institutions	
	Preservation of oil industry educational and research centers and institutions	
Designing and defining educational programs in order to transfer technical knowledge related to equipment and emerging technologies related to upstream and downstream operations in the form of training courses, specialized and professional internships, and scientific and specialized seminars in collaboration with international experts.	Educational programs internationally	
	Design and define specific training programs in the form of training courses,	
Granting scholarships or educational missions in prestigious domestic and foreign universities	Specialized and professional trainees and scientific and specialized seminars	
	Design of agile and innovative internship courses	

Employee Maintenance

The oil industry pays according to the rate of manpower in the labor market in order to strengthen competitiveness and create suitable conditions to achieve justice, and in order to honor human capital and improve relationships in a healthy and competitive work environment and provide incentives to attract and retain manpower; the strategic orientation of the employee maintenance field is as described in the table below (Alizadeh et al., 2019).

Table 5. Concepts identified for the sub-section of employee maintenance (Alizadeh et al., 2019)

Second Level	First Level	Main Component
Strategic orientation	Sub -category	
Determining salaries based on job factors and comparing the three main factors of job evaluation in order to strengthen competitiveness	Determining salaries based on education and work history	Employee maintenance
	Determine of job -based rights.	
	Legal determination based on job factors	
Identifying and observing effective factors in determining and adjusting salaries in order to achieve justice	Justice in payments	
Defining, determining and paying superannuation in accordance with the conditions, requirements and coordinates related to the nature of work, work environment and life, characteristics of the workforce and the labor market.	Payment of extras fits the geographical location	
	Determining and paying extraordinary	
Communicating between service compensation system and performance management	Pay appropriate to performance	
Compilation of comprehensive guidelines for incentive criteria in order to motivate the attraction and retention of distinguished and elite graduates of the oil industry	Motivate the maintenance of privileged and elite graduates	
	Compensation for Elite Employees/Experts	
Reorganization of the service compensation system and bonuses, especially for the	Correction of Operational Areas	
	Creating attractiveness to recruit in operational areas	

employees of operational areas	Benefits and welfare plans	
Necessary arrangements for the housing of employees at the place of service based on the relevant terms and conditions in order to eliminate the lack, weakness and lack of civil and welfare facilities in operational centers and other places.	Provision of housing for employees in operational areas	
Implementing and strengthening the necessary cultural-social, support-welfare and health programs with the aim of increasing productivity, creating motivation and maintaining human capital.	Implementation of cultural programs in the oil industry in particular	
	in operational areas	
	Implementation of welfare support program	
Providing welfare and cultural and social assistance, especially improving the level of physical and mental health	Implementation of health-oriented programs	
Allocation of benefits and development of welfare plans including loans, cash and non-cash grants, future and savings funds.	Implementation of health-oriented programs	
The benefit of the employee or his qualified family from monthly pension and bonus for years of service for valid years of service and medical facilities in case of normal/early retirement/total disability, permanent or death according to regulations	Establishment of monthly pension and medical facilities in case of retirement	
Periodic examinations to ensure the prevention and reduction of occupational diseases	Qualitative and quantitative improvement of the level and distribution of healthcare services / employee health category	
Monitoring occupational and non-occupational diseases of employees and their qualified families and providing medical services as needed		

Maintaining and improving the health level of working and retired employees and their qualified families and achieving acceptable standards of health and treatment		
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Employment of Manpower

In order to research the goals and plans of human resources development, the oil industry is obliged to design, maintain, integrate, promote the systems, evaluating the talent, competence, and performance of employees within the framework of the relevant regulations. For the strategic orientation of the field of human resources, the description of the table is attached. (Alizadeh et al. 2019)

Table 6. Concepts identified for the sub-section of using human resources (Alizadeh et al., 2019)

Second Level	First Level	Main Component
Strategic orientation	Subcategory	
Identifying, directing talent, selecting and appointing competent and qualified human resources to supervisory/management positions in the oil industry after obtaining the necessary qualifications in the managers' evaluation and development center	Selection and appointment of managers	Employment
	Meritocracy	
	Evaluation center	
	Establishing gender justice	
Promotion, appointment and promotion of employees against organizational positions with a meritocracy approach and the principle of matching the job and the employee by observing the conditions of job certification according to the results of performance evaluation and the results of the outputs of the evaluation centers	Selection and appointment of sensitive and dedicated jobs	
	Granting employee promotions	
Design, establishment, integrated application and promotion of talent, competence and performance evaluation systems and systems, classification and grouping of jobs and employees, succession system, development of management systems, evaluation and development of professional skills, empowerment training, and performance management at the level of the organization, unit and individual	Performance management/performance evaluation, replacement plan (management training), oil industry job classification and evaluation	
	succession plan	
	Job plan	
Monitoring of human resources based on environmental, structural and technological changes	Human resources monitoring	

Table 7. Review of Literature

Findings	Purpose	Author/Authors	Year
Hoping to improve the quality of human capital and the performance of human resources in the industry and increase competitiveness in the global market and gain lasting competitive advantages in this field.	Analyzing factors affecting the improvement of the quality level of human capital in oil and petrochemical industries	Salehi Fargani	2021
The greatest role of total factor productivity in the past period on total factor productivity in the current period, the most important reason for the difference in total factor productivity in these countries is human capital, oil rents, and energy intensity.	The role of influencing factors on total factor productivity in East and West Asia with emphasis on human capital and oil rents	Jafari et al.	2020
Strategic management with the aim of innovation can provide more detailed planning.	Strategic risk management in human resource planning and its role in organizational innovation in the oil industry	Hashemi	2020
The implementation of the Delphi technique led to the identification of four dimensions and 28 components in order to evaluate the human resource management system with a strategic approach.	Explaining the dimensions and components of the human resource management system evaluation model with a strategic approach	Liravi et al.	2021
Education and organizational structure are part of the obstacles and problems in the development of human resources, and the technology variable is an independent variable in the development of human resources of the Oil Industry Research Institute.	Explaining the concept of human resource development in the oil industry research institute using the Fuzzy Dimetal technique	Rajabpour et al.	2019
The comprehensive human resource planning framework includes ten subsystems (organization design, recruitment, selection, development, promotion and succession, retention, reward, performance management and evaluation, communication, knowledge management, safety and health).	Providing a framework for comprehensive human resource planning in project-oriented organizations in the oil and gas industry	Abbaspour et al.	2019
The strategic direction in relation to the human resources policies of the oil industry includes four main categories (supply, training, employment and maintenance of human resources).	Developing a framework for identifying and categorizing the strategic orientations of human resources in the oil industry with a qualitative approach	Alizadeh et al.	2019
Empowering employees is the first step in the development of human capital in the Ministry of Petroleum.	Human capital development model in Iran's Ministry of Oil	Hajiloo et al.	2019
Khazar Oil Company was able to obtain an acceptable score in the managed level of the maturity model of employees' capabilities	Pathology of human resource processes using the maturity model of employees' capabilities in Khazar Oil Company	Baradaran & Habibi	2018
Increasing and improving working conditions and improving the productivity of human resources is	The role of human capital in manpower productivity	Qalenoei & Negahdari	2017

an important factor in achieving the goals of economic growth and development of countries.			
Human resources play a key role in managing all activities, and human resource practices and policies affect the performance of employees directly and indirectly.	The impact of human resource practices on individual and organizational growth	Chetan Sharma & et al	2022
The impact of human resource initiatives related to the environment on creating long-term capabilities in the organization and environmental sustainability	Conceptualization and theorization of human resource management	Anuradha Mukherji and Jyotsna Bhatnagar	2021
Continuing to improve the talent attraction system, creating a "people-oriented" management concept, improving the quality of leaders and employees, developing a scientific and effective employee reward system, adapting to the economic needs of new conditions in CQ petrochemicals.	Analysis of human resource problems in CQ Petrochemical Company and countermeasures	Jiansheng Xue	2020
Systematic relationship between innovation indicators and the use of human capital in the process	Human capital development guidelines for innovative petrochemical enterprises	Alexey & et al	2020
Challenges of human capital development are explained based on scientific evidence of specific tools around the world	Human capital development for the oil and gas industry	Dairove & et al	2020
Choosing an effective human resource management strategy for an oil company is developed using the presented strategy. Using the calculation results, the average efficiency of human resource engagement and the average level of long-term stability have been calculated. A strategy focused on achieving a high rate of development is recommended to the company.	Forming an effective human resources management strategy of an oil company	Gayfullina & et al	2018

Methodology

In this article, considering the necessity of human resources, a library method has been used to collect information in the field of human resource management and the factors affecting the success or failure of petrochemical industries in the oil economy. The library method is a step-by-step process of gathering information from available sources. To collect information related to the background and research literature, the method of studying documents and the library method was used.

Conclusion

Human capital is a key factor in TFP growth. The negative impact of human capital on the productivity of all factors and economic growth causes a decline. The low level of human capital, lack of attention to correct practical and creative training, and the use of human resources in inappropriate situations have not only not led to innovation in the production process, but also it leads to a decrease in the productivity of all factors through disruptions in the process of using production factors. This shows that those policies of human capital formation which are focused on expanding the dimension of education and neglecting the dimension of educational efficiency are obvious mistakes.

Human resource management systems focus on the organization's unique goals, what it needs to achieve, and the changes that need to be made. These systems seek to provide roadmaps for developing and implementing plans; they also seek to provide a model for transferring the authority of the organization regarding how human resources are used. When talking about strategic human resource management systems, sensitivities are multiplied and different evaluation models of human resource management systems are proposed. These models, which cover a wide range, all have a contribution in some way in providing a role in the evaluation discussion.

Optimum use of human capital in appropriate situations, proper training of the workforce and providing them with the motivation for creativity and innovation can contribute to the favorable impact of human capital in the process of productivity, growth, and quality improvement. Also, due to the negative impact of oil rents, it is necessary to reduce dependence on oil revenues and focus more on the formation of human capital based on its broad dimensions. Give employees more opportunities to show themselves. In order for human resources actions to lead to better performance, payment should be based on internal factors and not external rewards, if only external incentives are emphasized, it may lead to leave the service. Emphasis should be placed on increasing skills through training and payment. In this regard, skills should be considered a more important factor than work duties.

In general, industry disruptions and fundamental changes in human resources in the oil and petrochemical industry have profound consequences on the human resources performance of oil and gas companies. Considering this issue, oil and gas companies should renew their human resources strategy and revise their human resources operational model. In a time of rapid advances in artificial intelligence, automation, and human-machine interaction, people will be at the core of oil and gas companies (and their HR functions). In fact, at all levels of the organization, every employee needs to create more business value. Given this fact, and the wide productivity differences between average and top performers, the strategic importance of human resources is increasing. Specifically, HR creates value by identifying the right people for each job in a more reality-based way, and supporting these people to perform to their full potential. The oil and petrochemical industries face a dynamic environment where many headquarters decisions that are important for the company's success require quick decision-making, and in this situation, task structures and decentralized decision-making will not be responsive. Therefore, trusting in knowledgeable and expert human resources, who are able to make quality decisions due to the benefit of multiple skills, is used as a solution in such companies.

Considering the direct impact of human capital on performance, it is suggested that institutions in charge of legislation, guidance, control, and inspection of the petrochemical industry should create a culture to invest in activities that promote interpersonal relationships, develop specialized knowledge, and improve the multiple skills of employees in this industry.

Evidence shows that, despite managers' mental concern about transformation, strengthening the culture of learning-based creativity in the organization in order to create innovation and increase employees' self-esteem requires more effort. Allocating funds for education, rewarding to creative ideas, entrepreneurship of employees as well as encouraging them should be emphasized. The organizational culture of selected companies does not help to develop human capital; it does not provide educational opportunities for the specific needs of the organization. In addition, the educational opportunities provided through outsourcing due to financial constraints have very limited and poor quality. Therefore, it is inferred that senior executives have acquired their skills mainly through direct experience rather than through education, they have done the same for the staff. Thus, change in organizational culture should lead to different approaches of human resource education and development. In fact, human capital must be viewed as part of knowledge management; however, in selected companies it is assumed that, given the importance of direct field and field experiences, knowledge management has become one of the common human resource management activities.

Human capital is considered a key factor in the growth of total productivity of factors for East Asian countries, while it acts as a regressive cause in growth in West Asian countries. The low level of human capital in West Asian countries, the lack of practical and creative training as well as the use of human resources in inappropriate situations in these countries not only prevent innovation in the production process, but also it has led to overall productivity reduction by disrupting the process of using production factors.

The policies of human capital formation in some countries focused on expanding the dimension of education, and the output dimensions are ignored. In some countries the accumulation of human capital, proper and practical training is more efficient and creative allocation that can increase the productivity of labor and capital by creating innovation in the production process.

Oil rentals in West Asian countries have significantly reduced TFP growth, while in East Asian, it has had a vague impact. Relying on the revenues of crude oil exports in West Asian countries has reduced attention to human capital, innovation in the production process, knowledge -based economy, and consequently reduced the efficiency of total factors in these countries. These findings are consistent with the findings achieved by Shahabadi and Sarigol (2017) who examined the negative impact of oil revenues on the efficiency of all factors in Iran.

As it has been said, the need for expert personnel is very felt in this industry. One of the proposed ways is to buy the specialized forces of competing companies with high benefits, this lowers training costs, the experiences of competing companies are also used. On the other hand, providing the necessary policies to cultivate a skilled workforce in the long term may associate a good result.

According to the studies, one of the reasons for the departure of specialized human resources is the mismatch between job conditions and capabilities, so it is suggested to consider intelligence to a sufficient extent when selecting and hiring employees.

Given that the industry is weak in the management of the industry, retired managers can be used in thought and decision making rooms, the experienced middle managers can be also in the position of senior management. In addition to the material issues, job dissatisfaction and frustration caused by the unqualified management are the important causes of this weakness.

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