

HUMAN FACTORS AND BARRIERS TO EMPLOYEE PRODUCTIVITY IN SOUTH PARS GAS COMPLEX

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Abstract. This study aimed to investigate the human factors and barriers affecting employee productivity in South Pars Gas Complex. The research approach was qualitative using grounded theory. The statistical population of the present study encompassed all managers and experts of the South Pars Gas Complex, of whom the managers and experts with sufficient information were selected using purposive sampling method. The data was extracted from in-depth interviews. The interviews continued until data saturation was reached. In this regard, 30 managers, experts, and senior experts were selected. In this study, reliability was approved using credibility, transferability, confirmability, and dependability. In order to ensure the findings, two coders coded the data. In all coding phases, the comments provided by the supervisor and the other university professors were taken into account and contradictions were removed. To analyze the data, open, axial, and selective coding methods were used. The results indicated that the factors and barriers affecting employee productivity in the research community are organizational climate, effective leadership, professional maturity of employees, and environmental conditions.

Keywords: Factors and barriers to productivity, Employee productivity, South Pars Gas Complex

INTRODUCTION

Management experts believe that the productivity of human resources is the most important factor affecting development and progress in this era (Georgios et al., 2014⁴). Human beings themselves are both producers and consumers of knowledge and technology and the most important factor in social, economic and industrial development. They also play a key role in improving productivity (Morakabati, 2000). Although productivity is one of the key indicators in the development of economic activities, its improvement and progress is also considered as one of the competitive advantages for different industries (Singeh et al., 2000, Kazaz and Turgut, 2016).

Productivity refers to the optimal use of various resources in producing goods and services to attract consumers' satisfaction, maximize employee's job satisfaction, and increase the quality of employee's life in all aspects. In this definition, human resources are highlighted since, among the factors affecting productivity, human is the only factor whose performance has no limitation and can be promoted unbelievably. The most important factor increasing or decreasing the productivity of an organization is the quality of its human resources (Sa'atchi, 2007).

Productivity is to maximize the exploitation of resources, and it is a combination of efficiency and effectiveness. In simple words, productivity means doing the right works appropriately. It also refers to the scientific use of human resources and tools to reduce the costs and to promote the satisfaction of employees, managers and consumers (Kudyba, 2003). Human resource productivity is also considered to be the maximum use of human resources in order to move toward reaching the organizational goals with minimum time and cost (Long et al., 2015⁵). According to Iran's National Productivity Organization (NPO), productivity is a rational attitude toward work and life. It is like a culture whose objective is to make activities more intelligent for a better and supreme life (Faraji, 2006). Productivity is to obtain the maximum possible profits from human labor, power, talent and skill, land, machinery,

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equipment of time, place, and others in order to promote the welfare of society; hence its increase is a necessity in promoting individuals' life standards and building a community (Bazzhina, 2015)

Productivity is a comprehensive and general concept, which has always been regarded by politicians, economics, and government officials as an imperative to promote the quality of life, prosperity, welfare, and comfort for humans, i.e. a fundamental goal for all countries in the world. Human resource productivity is one of the issues that has long attracted the attention of many scholars' due to its close relationship with the underdevelopment of countries (Martino, 2015). At a national level, improving the effectiveness and quality of manpower causes a greater increase in gross national income or production (GDP) than the use of additional capital and labor. Human resource productivity also largely determines how far a country's products can compete internationally. The promotion of productivity is one of the main concerns of executive managers in organizations and decision makers in each country, so that most of development plans in many countries are based on enhanced productivity. Over the past fifteen years, productivity has been increased by as much as 45 times worldwide (Faraji, 2015).

On the other hand, no long time has passed since the adoption of methods for improving the quality and productivity of different industries and sectors. The achievements of these strategies in economic growth and development made the authorities assess them in the most fundamental institutions and centers. According to them, the use of productivity enhancement methods has also been successful in these systems (Poirier et al., 2015¹), one of which is South Pars Gas Complex. This company is one of the subsidiary companies of Iran's National Gas Company, founded in 1998, and is in charge to exploit dry land facilities throughout multiple phases of the South Pars Gas Field. These facilities are designed and implemented by Pars Oil and Gas Co. as one of the Iran's subsidiary companies. Employing young professionals and qualified managers, the company has become a credible global brand and model and a model of technical knowledge for all industries in the country. South Pars Gas Complex is established in two industrial sites in Assaluyeh and Kangan, Bushehr province, along the Gulf coast with historical and tourist attractions. In addition to gas production services, the company has been involved in the field of social responsibility and adopted effective measures regarding culture, education, health, employment and environmental conservation of the region. In sum, this study is find out what are the human factors and barriers to employee productivity in South Pars Gas Complex.

RESEARCH METHODOLOGY

This research was conducted qualitatively based on data-based approach or grounded theory. Qualitative research is a complex process, which requires a relatively long time and inductive analysis of the collected data. The grounded theory is a qualitative research method through which, using a data set, a theory is developed. The data-based theory is usually implemented by three approaches: Systematic approach, emerging approach, and constructivist approach. In the present study, Strauss and Corbin's systematic approach was used to analyze the data. The systematic approach itself consists of three main open, axial, and selective coding (Foruzandeh, 2012).

The participants encompassed senior executives and experts from the South Pars Complex, who were selected purposefully. Inclusion criteria were to have experience, knowledge and willingness to participate in interviews, and the ability to express the experiences, so that the researcher could collect the most beneficial information. The analysis of the data from each interview provided a guide for the selection of subsequent samples, and sampling and observation continued until the data were saturated. In this study, reliability was approved using credibility, transferability, confirmability, and dependability. In order to analyze the obtained data, an inductive approach based on open, axial, and selective coding was used. The research instrument was interviews containing open and in-depth questions. Each interview lasted for 30 to 45 minutes. In-depth interviews started with some questions about the

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factors and barriers to productivity at the South Pars Complex, and continued in accordance with the participants' responses. The participants were then asked to describe their perceptions and experiences regarding the company's productivity. All interviews were recorded and transcribed on the same day to be used as the main research data. The data were then analyzed using Strauss Corbin's method during the data collection procedure. In this approach, coding was performed through open, axial, and selective coding methods. At open coding phase, the researcher reviewed the data thoroughly and extracted the main concepts. Two coding strategies in this phase were interviewee's language and words as well as implicit codes inferred by the researcher based on the concepts included in the data. This phase of the data-based approach was carried out immediately after the first interview. In other words, the researcher was to find concepts, label them appropriately, and combine the concepts after each interview (Al-Awa et al., 2011).

Open coding steps were: Analysis and coding, looking for categories, describing the categories with respect to their features, and preparing open coding table. In the first step, i.e. analysis and coding, the researcher should pay attention to everything in coding. It is possible to extract a large number of codes from an interview or a text; however, the new codes are obtained and the final codes are specified when the data is regularly reviewed. In the second step, the concepts are classified according to their similarity, which is referred to as "classification (or developing themes)." Categories have a high conceptual power since they can integrate concepts. The third stage aims to describe the categories according to their features in order to clarify their categories and their features. The fourth step produces an open coding table with two sections: Table of primary codes extracted from the interviews and table of themes derived from the concepts along with their secondary codes. In the second phase of axial coding, the primary codes are reduced to categories. In this phase, the researcher compares the codes with each other and forms clusters or categories that fit together. The interviews were initially exploratory and descriptive. After each interview, coding the interview data was carried out and theoretical codes emerged through constant comparison of the data. The same coding procedure was adopted for 31 interviews.

RESEARCH FINDINGS

In order to reach the research objective, the grounded theory approach was adopted. In this approach, the focus is on the emergence and occurrence of the concepts and theories in a natural phenomenon. By adopting fundamental theory as a research approach, an initial assessment was first undertaken to begin the research data collection process purposefully. In this regard, the data collection process began by semi-structured interviews with expert managers and professionals.

Open Coding: Coding process started immediately after the interviews. Table 1 shows the extracted codes.

Table 1. Concepts extracted from interviews: Factors and Barriers to Productivity (Open Coding)

Extracted concepts
Leadership style, Authority delegation by managers, Collaborative management, implementation of decentralized management, team management, welcoming new ideas and supporting ideologues by managers, allocation of specific budgets for innovation, managers' knowledge, expertise, and experience, scientific management, ability to create knowledge, applying knowledge in the company, sharing knowledge with colleagues, saving knowledge, managers with high self-esteem and high self-confidence, managing development plans, leadership and effective organizational management, time management, resource management, risk management, green management, effective communication with employees, ability to predict and anticipate, honesty, reliability, comfort in work, flexibility, emotional stability, transparency in management, adherence to ethics, relevant occupational expertise, efficient work experience, mental and physical health, provision of new ideas and solutions by employees, holding educational and research courses on creativity, employees' participation in decision making, holding various training work-related courses, employees' incentives, employees' income, providing opportunities to actualize employees' talents, cash and non-cash rewards, granting benefits and amenities for employees, considering qualifications in paying salaries and benefits, employees' promotion based on their qualifications, encouraging and punishing employees, encouraging employees to face difficult situations, managers' support from employees in case of difficulties, providing the grounds for employees' success and progress, employees' competition with each other in order to progress in their job, senior managers' support from their employees, assigning tasks to employees, managers' trust and confidence in employees in doing the right things, managers' consultation with

employees, material and spiritual support from employees' creativity and innovation, respecting employees in workplace, mutual respect between managers and employees, promotions in accordance with employees' competence and qualifications, appreciating employees in the presence of other colleagues, asking for employees' comments on how to award rewards and benefits, legal support from employees, establishing equity in payments, feeling pleased with work in the company, perceiving working in the company as a part of one's life, employees' job satisfaction, employee's being proud of their job, interest in their jobs, intimate communication with each other in the company, respect and appreciation of each other, affection and intimacy in the workplace, employees' work freedom, respect in work environment, feeling of safety and comfort at work, decisiveness and seriousness during work, conscientiousness and social discipline, adherence to ethics, employees' suggestions and creativity, employees' attention to the future and destiny of the company, cooperation and sharing experiences, creating responsibility and commitment among employees, occupational evaluation of employees, giving permission by managers to employees to comment on the work-related decisions, clarification of the barriers and description of employees' duties, the use of automated administrative and financial systems, availability of suitable and updated equipment at work, technology and technical knowledge, using modern technologies, availability of appropriate equipment and tools, research and development, the existence of an evaluation system based on performance, clarification of individual and collective goals, monitoring units and providing them with feedback, formation of a committee for continuous quality improvement, evaluating the effectiveness of training courses, decisive measures against offenders, work accident and incident control, integrated management system, non-discrimination and respect for organizational justice, favorable workplace in the company, healthy and safe working conditions, the possibility of learning and using new skills, establishing social cohesion in the organization, protecting personal rights, balancing the division of labor at working and non- working time, promoting work and organizational proudness, quality of work life, fighting against corruption, utilizing human resource policy, regular formation of relevant commissions and committees, the possibility of fair division of labor by deputies, clean and happy work environment (discipline), considering the health and safety of the workplace, spiritual environment, protection and observance of individual's privacy, using young individuals' capabilities, accountability, responsibility, administrative health, administrative structure, organizational culture, lack of complexity in organizational structure, organizational agility, reliance on laws and regulations to establish justice, existence of strategic plans in the organization, organization and alignment of human resources, impartial application of laws and regulations, prioritization of resource allocation, strict implementation of laws and regulations, sales market, foreign investment, foreign policy, sanctions and international issues, global laws and regulations, relations with international insurance, global credit, international threats, coordination with international assemblies, interaction with commonwealth countries, regional security, competition with neighbors having common reservoirs, relationship with neighbor countries, Iran's environmental condition, Iran's environmental opportunities in the field of economics, threats to Iran's water resources, the role of governments and states in coping with environmental crises and the role of public participation in protecting marine ecosystems, stability of political system, internal conflicts, inflation, currency fluctuations, promotion of exports, economic conditions, social security, location of factories, social factors, regional culture of people, economic condition of region, the consent of the employee's families

Axial coding: In the next phase, the primary codes are converted into secondary codes (due to their abundance). A few secondary codes are then converted into a conceptual code. The following tables show the open coding results based on the secondary codes, conceptual codes, and categories. Table 2 shows the secondary coding and the formation of the categories.

Table 2. Broad categories and subcategories derived from the analysis of concepts (axial coding): Factors and barriers to productivity

Organizational climate	Use of automated administrative and financial systems Availability of suitable and updated equipment at work Technology and Technical knowledge Use of new technologies, Availability of appropriate equipment and tools Research and Development Existence of a performance-based evaluation system Transparency of individual and group goals, Monitoring units and providing them with feedback Formation of a committee for continuous quality improvement Evaluating the effectiveness of training courses, Decisive measures against offenders Work accident and incident control Integrated management system Non-discrimination and respect for organizational justice Favorable working conditions at the company Healthy and safe working conditions The possibility of learning and using new skills Establishing social cohesion in the organization Protecting personal rights Balancing the division of labor at working and non- working time Promoting work and organizational proudness Quality of work life
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	<p>Fighting against corruption Utilizing human resource policy Regular formation of relevant commissions and committees The possibility of fair division of labor by deputies Clean and happy work environment (discipline) Considering the health and safety of the workplace Spiritual environment Protection and observance of individual's privacy Using young individuals' capabilities Accountability Responsibility Administrative health Administrative structure Organizational culture Lack of complexity in organizational structure Organizational agility Reliance on laws and regulations to establish justice Existence of strategic plans in the organization Organization and alignment of human resources Impartial application of laws and regulations Prioritization of resource allocation Strict implementation of laws and regulations</p>
Effective leadership	<p>Leadership style Authority delegation by managers Collaborative management Implementation of decentralized management Team management Welcoming new ideas and supporting ideologues by managers Allocation of specific budgets for innovation Managers' knowledge, expertise, and experience Scientific management, Ability to create knowledge Applying knowledge in the company Sharing knowledge with colleagues Saving knowledge Managers with high self-esteem and high self-confidence Managing development plans Leadership and effective organizational management Time management Resource management Risk management Green management Effective communication with employees Ability to predict and anticipate Honesty Reliability Comfort in work Flexibility Emotional stability Transparency in management Adherence to ethics</p>
Professional maturity of employees	<p>Relevant occupational expertise Efficient work experience Mental and physical health Provision of new ideas and solutions by employees Holding educational and research courses on creativity Employees' participation in decision making Holding various training work-related courses Employees' incentives Employees' income Providing opportunities to actualize employees' talents Cash and non-cash rewards Granting benefits and amenities for employees Considering qualifications in paying salaries and benefits Employees' promotion based on their qualifications Encouraging and punishing employees Encouraging employees to face difficult situations Managers' support from employees in case of difficulties Providing the grounds for employees' success and progress Employees' competition with each other in order to progress in their job Senior managers' support from their employees Assigning tasks to employees Managers' trust and confidence in employees in doing the right things Managers' consultation with employees</p>

	<p>Material and spiritual support from employees' creativity and innovation Respecting employees in workplace Mutual respect between managers and employees Promotions in accordance with employees' competence and qualifications Appreciating employees in the presence of other colleagues Asking for employees' comments on how to award rewards and benefits Legal support from employees Establishing equity in payments Feeling pleased with work in the company Perceiving working in the company as a part of one's life Employees' job satisfaction, employee's being proud of their job Interest in their jobs Intimate communication with each other in the company Respect and appreciation of each other Employees' work freedom, respect in work environment Feeling of safety and comfort at work Decisiveness and seriousness during work Conscientiousness and social discipline Adherence to ethics Employees' suggestions and creativity Employees' attention to the future and destiny of the company Cooperation and sharing experiences Creating responsibility and commitment among employees Occupational evaluation of employees Giving permission by managers to employees to comment on the work-related decisions Clarification of the barriers and description of employees' duties</p>
Environmental conditions	<p>Sales market Foreign investment Trade policy Foreign policy Sanctions and international issues Global laws and regulations Relations with international insurance Global credit, international threats Coordination with international assemblies Interaction with commonwealth countries Regional security Competition with neighbors having common reservoirs Relationship with neighbor countries Iran's environmental condition Iran's environmental opportunities in the field of economics threats to iran's water resources The role of governments and states in coping with environmental crises and the role of public participation in protecting marine ecosystems Stability of political system Internal conflicts Inflation Currency fluctuations Promotion of exports Economic conditions Social security Location of factories Social factors Regional culture of people Economic condition of region Consent of the employee's families</p>

As outlined in the axial coding tables, four main categories are identified as productivity factors and barriers from the perspective of senior managers and experts: (1) Organizational climate, (2) Effective leadership, (3) Professional maturity of employees, and (4) Environmental conditions.

Formation of main themes (selective coding): After determining the categories, the main categories of the theory should be specified, as presented in Table 3.

Table 3. Extensive categories and subcategories and items derived from conceptual analysis (selective coding)

Organizational climate	Technology	Use of automated administrative and financial systems Availability of suitable and updated equipment at work Technology and technical knowledge Use of new technologies, Availability of appropriate equipment and tools Research and Development
	Monitoring and control	Existence of a performance-based evaluation system Transparency of individual and group goals, Monitoring units and providing them with feedback Formation of a committee for continuous quality improvement Evaluating the effectiveness of training courses, Decisive measures against offenders Work accident and incident control Integrated management system
	Organizational culture	Non-discrimination and respect for organizational justice Favorable working conditions at the company Healthy and safe working conditions The possibility of learning and using new skills Establishing social cohesion in the organization Protecting personal rights Balancing the division of labor at working and non-working time Promoting work and organizational proudness Quality of work life Fighting against corruption Utilizing human resource policy Regular formation of relevant commissions and committees The possibility of fair division of labor by deputies Clean and happy work environment (discipline) Considering the health and safety of the workplace Spiritual environment Protection and observance of individual's privacy Using young individuals' capabilities Accountability Responsibility Administrative health Administrative structure Organizational culture
	Administrative regulations	Lack of complexity in organizational structure Organizational agility Reliance on laws and regulations to establish justice existence of strategic plans in the organization Organization and alignment of human resources impartial application of laws and regulations Prioritization of resource allocation Strict implementation of laws and regulations
Effective leadership	decentralized management	Leadership style Authority delegation by managers Collaborative management Implementation of decentralized management Team management Welcoming new ideas and supporting ideologues by managers Allocation of specific budgets for innovation
	Knowledge management	Managers' knowledge, expertise, and experience Scientific management, Ability to create knowledge Applying knowledge in the company Sharing knowledge with colleagues saving knowledge
	Manager's skills	Managers with high self-esteem and high self-confidence Managing development plans leadership and effective organizational management Time management

		<p>Resource management risk management green management Effective communication with employees Ability to predict and anticipate</p>
	Manager's features	<p>Honesty Reliability Comfort in work Flexibility Emotional stability Transparency in management Adherence to ethics</p>
Professional maturity of employees	Work potential	<p>Relevant occupational expertise Efficient work experience Mental and physical health Provision of new ideas and solutions by employees Holding educational and research courses on creativity Employees' participation in decision making Holding various training work-related courses</p>
	Occupational incentives	<p>Employees' incentives Employees' income Providing opportunities to actualize employees' talents Cash and non-cash rewards Granting benefits and amenities for employees Considering qualifications in paying salaries and benefits Employees' promotion based on their qualifications Encouraging and punishing employees Encouraging employees to face difficult situations Managers' support from employees in case of difficulties providing the grounds for employees' success and progress Employees' competition with each other in order to progress in their job Senior managers' support from their employees Assigning tasks to employees Managers' trust and confidence in employees in doing the right things Managers' consultation with employees Material and spiritual support from employees' creativity and innovation Respecting employees in workplace Mutual respect between managers and employees Promotions in accordance with employees' competence and qualifications Appreciating employees in the presence of other colleagues Asking for employees' comments on how to award rewards and benefits Legal support from employees establishing equity in payments</p>
	Job satisfaction	<p>Feeling pleased with work in the company Perceiving working in the company as a part of one's life Employees' job satisfaction, employee's being proud of their job Interest in their jobs Intimate communication with each other in the company Respect and appreciation of each other Employees' work freedom, respect in work environment Feeling of safety and comfort at work</p>
	Organizational commitment	<p>Decisiveness and seriousness during work Conscientiousness and social discipline Adherence to ethics Employees' suggestions and creativity Employees' attention to the future and destiny of the company Cooperation and sharing experiences Creating responsibility and commitment among employees</p>

		Occupational evaluation of employees Giving permission by managers to employees to comment on the work-related decisions Clarification of the barriers and description of employees' duties
Environmental conditions	international	Sales market Foreign investment Trade policy Foreign policy Sanctions and international issues Global laws and regulations Relations with international insurance Global credit, international threats coordination with international assemblies
	Regional	Interaction with commonwealth countries Regional security Competition with neighbors having common reservoirs Relationship with neighbor countries
	National	Iran's environmental condition Iran's environmental opportunities in the field of economics Threats to Iran's water resources The role of governments and states in coping with environmental crises and the role of public participation in protecting marine ecosystems Stability of political system Internal conflicts Inflation Currency fluctuations Promotion of exports Economic conditions Social security
	Local	Location of factories Social factors Regional culture of people Economic condition of region Consent of the employee's families

In the final phase or selective coding, the core category was selected, and the relationship between all major categories was studied based on the core category. Hence selective coding was used systematically and objectively to select the core category, and other categories were sub-classified. Then the core category was systematically linked to the other categories, and the model derived from the data was drawn based on the subject path.

Validity of the developed model: Partial least squares approach was used to investigate the significance and effect of identified components. According to this approach, the measurement and structural models were evaluated to assess the reliability and validity of the research variables. Convergent validity and divergent validity were also used to evaluate the external model. Internal model (structural model) was evaluated to assess the relationships between endogenous and exogenous structures. Finally, bootstrapping technique and t-value were used to determine significant effects.

Convergent validity and divergent validity: To evaluate the measurement model and to confirm the validity and reliability of the model, reflective model was designed in Smart-PLS software. In this model, the effect of the four components was evaluated in the form of a model. To estimate the indices in this phase, partial least squares algorithm was run. After implementing the model, the convergent validity results, including composite validity, AVE, and factor loads of the components, were evaluated and compared (Fig. 1).

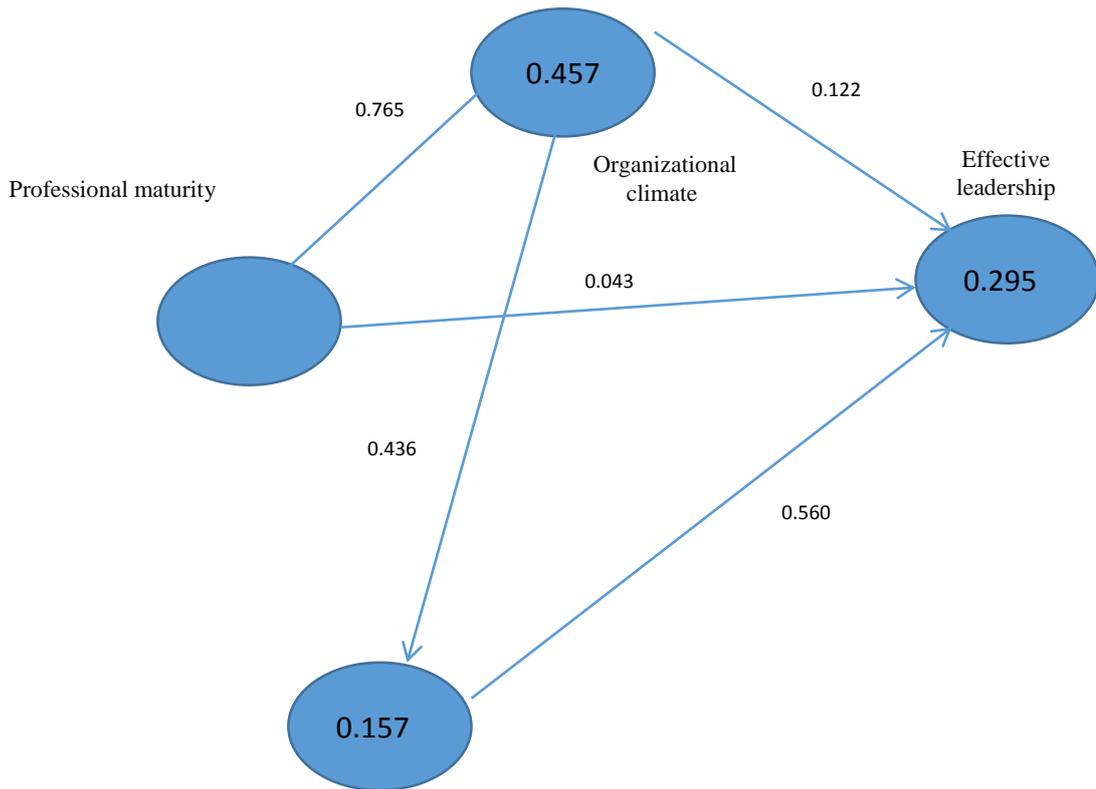


Figure 1. Factor loads and path coefficients in the reflective model representing factors and barriers to productivity

According to the results, the components in the model showed acceptable values of the parameters (Table 3) as the factor loads and AVE values were greater than 0.5, and the composite validity values were greater than 0.7. According to the researchers, if the values of these parameters are acceptable, then the structures have an appropriate convergent validity.

Table 3. Parameters estimating the validity of components indicating the factors and barriers to productivity

Variable	Factor load	AVE	CR
Organizational climate	Technology	0.518	0.912
	Monitoring and control	0.635	0.948
	Organizational Culture	0.846	0.913
	Administrative regulations	0.517	0.841
Effective leadership	Decentralized management	0.627	0.911
	knowledge management	0.564	0.818
	Manager's skills	0.512	0.910
	Manager's Features	0.774	
Professional maturity of employees	Work potential	0.526	0.838
	Occupational incentives	0.663	0.571
	Job Satisfaction	0.479	0.531
	Organizational Commitment	0.449	0.672
Environmental conditions	International	0.248	0.357
	Regional	0.670	0.439
	National	0.517	0.818
	Local	0.647	0.951

After confirming the convergent validity, the divergent validity of the components needs to be examined. The divergent validity was evaluated based on the correlation matrix presented after the model implementation. The values on the matrix represent the root value of the AVE, and the other values indicate the degree of correlation

between the components. According to Table 4, since correlation values are smaller than the root value of the AVE, the divergent validity of the components is verified.

Table 4. Divergent validity of components indicating the factors and barriers to productivity

Variable	Structural-administrative	Leadership-Management	Individual-employee	Environmental-situational
Organizational climate	0.842			
Effective leadership	0.654	0.944		
Professional maturity of employees	0.323	0.498	0.627	
Environmental conditions	0.332	0.450	0.642	0.732

The effects of the productivity model components: The effect sizes were evaluated through comparing the values of the determination coefficients (multiple squared correlation R^2) and path coefficients (β). In general, the productivity components explain about 30% of the productivity variance, which is low (Wong, 2013). In this regard, the component individual-employee had the greatest effect. Bootstrapping technique was used to determine the significance of the path coefficients, and the results are presented in Table 5.

Table 5. Path coefficients and t-values of productivity

Assumptions	standard error	T-value	level of significance
Professional maturity of employees - organizational climate	0.245	2.804	0.005
Environmental conditions - organizational climate	0.228	0.591	0.005
Organizational climate - Effective Leadership	0.234	5.674	0.000
Environmental conditions - effective leadership	0.267	0.345	0.000
Environmental conditions - effective leadership	0.240	1.922	0.000

As shown in Table 5, the professional maturity of employees, among the other three variables, has a significant effect (at 10%) on environmental conditions. On the other hand, the effective leadership also has a significant impact on organizational climate, thus having a direct impact on environmental conditions. Meanwhile, organizational climate has a significant effect on effective leadership.

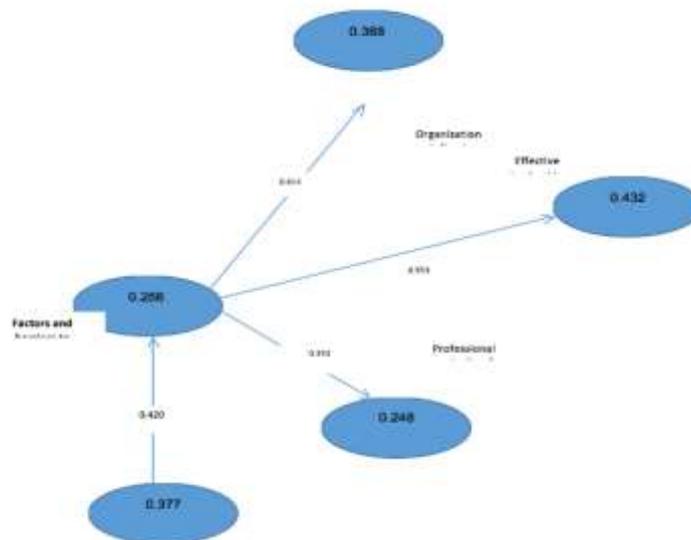


Figure 2: Factor loads and path coefficients in reflective model

According to the results, the model components reflect acceptable values of the parameters (Table 6) as the factor loads and AVE values were greater than 0.5, and the composite validity values were greater than 0.7 (Table 6). According to the

researchers, if the values of these parameters are acceptable, then the structures have an appropriate convergent validity.

Table 6. Validity values of parameters indicating the factors and barriers to productivity

Variable	AVE	CR
Environmental conditions	0.652	0.946
Organizational climate	0.668	0.921
Effective leadership	0.872	0.876
Professional maturity of employees	0.544	0.890

After confirming the convergent validity, the divergent validity of the components needs to be examined. The divergent validity was evaluated based on the correlation matrix presented after the model implementation. The values on the matrix represent the root value of the AVE, and the other values indicate the degree of correlation between the components. According to Table 7, since correlation values are smaller than the root value of the AVE, the divergent validity of the components is confirmed.

Table 7. Divergent validity of productivity components

Variable	Environmental conditions	Organizational climate	Effective leadership	Professional maturity of employees
Environmental conditions	0.776			
Organizational climate	0.648	0.921		
Effective leadership	0.668	0.689	0.718	
Professional maturity of employees	0.467	0.640	0.765	0.921

Developing a model for factors and barriers to productivity: To develop a comprehensive model of factors and barriers to employee productivity, the effective indices and factors were first used to develop the primary conceptual model. In this conceptual model, the impact of each factor was also measured. The partial least squares approach was adopted to formulate the model and examine the effects, according to which the measurement model and structural model were assessed to evaluate the reliability and validity of the research variables, the relationships between endogenous and exogenous structures, and the significance of the effects. Finally, the model fit index was estimated.

Convergent validity and divergent validity: To evaluate the measurement model and to confirm the validity and reliability of the reflective model, the model was designed in Smart-PLS software. In this model, the direct and indirect effects of the indices were evaluated in the form of a model. To estimate the indices in this phase, partial least squares algorithm was run. After implementing the model, the convergent validity results, including composite validity, AVE, and factor loads of the components, were evaluated and compared. According to the results, the model components reflect acceptable values of the parameters (Table 8) as the factor loads and AVE values were greater than 0.5, and the composite validity values were greater than 0.7 (Table 8).

Table 8. Validity parameters of the model components indicating the factors and barriers to productivity

Variable	AVE	CR
Environmental conditions	0.645	0.926
Organizational climate	0.667	0.964
Effective leadership	0.821	0.920
Professional maturity of employees	0.556	0.867

After confirming the convergent validity, the divergent validity of the components needs to be examined. The divergent validity was evaluated based on the correlation matrix presented after the model implementation. The values on the matrix represent the root value of the AVE, and the other values indicate the degree of correlation between the components. According to Table 9, since correlation values are smaller than the root value of the AVE, the divergent validity of the components is confirmed.

Table 9. Divergent validity of the components in productivity model

Variable	Environmental conditions	Organizational climate	Effective leadership	Professional maturity of employees
Environmental conditions	0.759			
Organizational climate	0.543	0.804		
Effective leadership	0.708	0.537	0.719	
Professional maturity of employees	0.494	0.555	0.651	0.903

The effects of the productivity model components: The effect sizes were evaluated through comparing the values of the determination coefficients (multiple squared correlation R^2) and path coefficients (β). In general, the productivity components explain about 62% of the organizational productivity variance. In this regard, the component ‘professional maturity of employees’ had the greatest effect (path coefficient=0.903), indicating its greater effect on productivity. Bootstrapping technique was used to determine the significance of the path coefficients, and the results are presented in Table 10 and Fig. 4 (along with t-values). As it can be noticed in Table 10, the greatest t-value is reported for professional maturity of employees. Finally, a comprehensive model of organizational productivity barriers and factors is presented in Fig. 3 and Table 11.

Table 10. Path coefficients and t-values of organizational productivity model

Hypothesis	standard error	T-value	Level of significance
professional maturity of employees - organizational climate	0.189	0.475	0.005
Organizational climate- effective leadership	0.275	0.689	0.005
effective leadership- organizational climate	0.167	2.068	0.005
professional maturity of employees – Environmental conditions	0.182	0.677	0.005
Organizational climate- environmental conditions	0.157	0.238	0.005
Effective Leadership - Environmental conditions	0.213	1.987	0.005

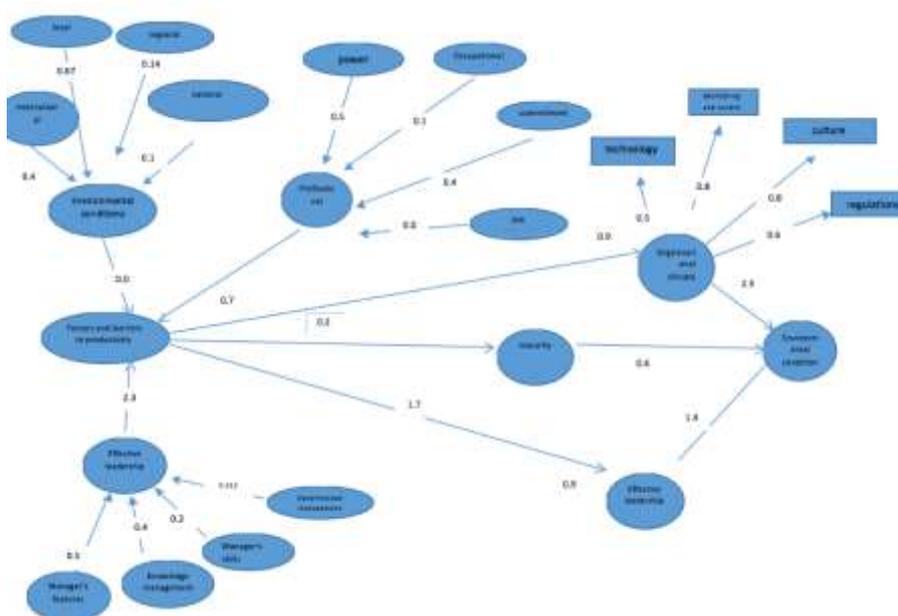


Figure 3. Comprehensive model of factors and barriers to organizational productivity

Table 11. Factor loads of items forming factors and barriers to organizational productivity

Category	Subcategory	items	Factor load
Effective leadership	decentralized management	Leadership style	0.555
		Authority delegation by managers	0.587
		Collaborative management	0.674
		Implementation of decentralized management	0.920
		Team management	0.681
		Welcoming new ideas and supporting ideologues by managers	0.502
		Allocation of specific budgets for innovation	0.742
	Knowledge management	Managers' knowledge, expertise, and experience	0.521
		Scientific management,	0.741
		Ability to create knowledge	0.625
		Applying knowledge in the company	0.741
		Sharing knowledge with colleagues	0.582
		Saving knowledge	0.891
	Manager's skills	Managers with high self-esteem and high self-confidence	0.572
		Managing development plans	0.731
		Leadership and effective organizational management	0.581
		Time management	0.521
		Resource management	0.812
		Risk management	0.564
Green management	0.511		
Effective communication with employees	0.762		
Ability to predict and anticipate	0.632		

	Manager's features	Honesty	0.894
		Reliability	0.567
		Comfort in work	0.745
		Flexibility	0.512
		Emotional stability	0.852
		Transparency in management	0.750
		Adherence to ethics	0.621
Professional maturity of employees	Work potential	Relevant occupational expertise	0.632
		Efficient work experience	0.555
		Mental and physical health	0.587
		Provision of new ideas and solutions by employees	0.674
		Holding educational and research courses on creativity	0.920
		Employees' participation in decision making	0.548
		Holding various training work-related courses	0.539
	Occupational incentives	Employees' incentives	0.537
		Employees' income	0.841
		Providing opportunities to actualize employees' talents	0.645
		Cash and non-cash rewards	0.580
		Granting benefits and amenities for employees	0.654
		Considering qualifications in paying salaries and benefits	0.751
		Employees' promotion based on their qualifications	0.532
		Encouraging and punishing employees	0.785
		Encouraging employees to face difficult situations	0.913
		Managers' support from employees in case of difficulties	0.569
		Providing the grounds for employees' success and progress	0.811
		Employees' competition with each other in order to progress in their job	0.515
		Senior managers' support from their employees	0.519
		Assigning tasks to employees	0.512
		Managers' trust and confidence in employees in doing the right things	0.590
		Managers' consultation with employees	0.845
		Material and spiritual support from employees' creativity and innovation	0.589
		Respecting employees in workplace	0.512
		Mutual respect between managers and employees	0.751
		Promotions in accordance with employees' competence and qualifications	0.523
Appreciating employees in the presence of other colleagues	0.560		
Asking for employees' comments on how to award rewards and benefits	0.841		
Legal support from employees	0.632		
Establishing equity in payments	0.854		

	Job satisfaction	Feeling pleased with work in the company	0.871
		Perceiving working in the company as a part of one's life	0.580
		Employees' job satisfaction	0.523
		Employee's being proud of their job	0.564
		Interest in their jobs	0.511
		Intimate communication with each other in the company	0.762
		Respect and appreciation of each other	0.632
		Intimacy at workplace	0.894
		Employees' work freedom	0.541
		Respect in work environment	0.572
		Feeling of safety and comfort at work	0.564
	Organizational commitment	Decisiveness and seriousness during work	0.784
		Conscientiousness and social discipline	0.641
		Adherence to ethics	0.597
		Employees' suggestions and creativity	0.596
		Employees' attention to the future and destiny of the company	0.882
		Cooperation and sharing experiences	0.784
		Creating responsibility and commitment among employees	0.729
		Occupational evaluation of employees	0.921
		Giving permission by managers to employees to comment on the work-related decisions	0.625
		Clarification of the barriers and description of employees' duties	0.741
Organizational climate	Technology	Use of automated administrative and financial systems	0.740
		Availability of suitable and updated equipment at work	0.532
		Technology and technical knowledge	0.789
		Use of new technologies	0.652
		Availability of appropriate equipment and tools	0.513
		Research and Development	0.564
	Monitoring and control	Existence of a performance-based evaluation system	0.501
		Transparency of individual and group goals,	0.578
		Monitoring units and providing them with feedback	0.564
		Formation of a committee for continuous quality improvement	0.511
		Evaluating the effectiveness of training courses,	0.762
		Decisive measures against offenders	0.632
		Work accident and incident control	0.894
		Integrated management system	0.541

	Organizational culture	Non-discrimination and respect for organizational justice	0.572
		Favorable working conditions at the company	0.564
		Healthy and safe working conditions	0.784
		The possibility of learning and using new skills	0.641
		Establishing social cohesion in the organization	0.647
		Protecting personal rights	0.572
		Balancing the division of labor at working and non- working time	0.512
		Promoting work and organizational proudness	0.821
		Quality of work life	0.516
		Fighting against corruption	0.540
		Utilizing human resource policy	0.561
		Regular formation of relevant commissions and committees	0.740
		The possibility of fair division of labor by deputies	0.621
		Clean and happy work environment (discipline)	0.632
		Considering the health and safety of the workplace	0.555
		Spiritual environment	0.587
		Protection and observance of individual's privacy	0.674
		Using young individuals' capabilities	0.920
		Accountability	0.681
		Responsibility	0.502
		Administrative health	0.742
		Administrative structure	0.721
		Organizational culture	0.594
			Administrative regulations
Organizational agility	0.582		
Reliance on laws and regulations to establish justice	0.891		
Existence of strategic plans in the organization	0.572		
Organization and alignment of human resources	0.731		
Impartial application of laws and regulations	0.581		
Prioritization of resource allocation	0.762		
Strict implementation of laws and regulations	0.632		
Environmental conditions	international	Sales market	0.894
		Foreign investment	0.541
		Trade policy	0.572
		Foreign policy	0.564
		Sanctions and international issues	0.784
		Global laws and regulations	0.641
		Relations with international insurance	0.597
		Global credit	0.641

		International threats	0.631
		Coordination with international assemblies	0.854
	Regional	Interaction with commonwealth countries	0.647
		Regional security	0.572
		Competition with neighbors having common reservoirs	0.512
		Relationship with neighbor countries	0.821
	National	Iran's environmental condition	0.516
		Iran's environmental opportunities in the field of economics	0.540
		Threats to Iran's water resources	0.561
		The role of governments and states in coping with environmental crises and the role of public participation in protecting marine ecosystems	0.740
		Stability of political system	0.620
		Internal conflicts	0.954
		Inflation	0.721
		Currency fluctuations	0.594
		Promotion of exports	0.731
		Economic conditions	0.582
		Social security	0.891
	Local	Location of factories	0.572
		Social factors	0.731
		Regional culture of people	0.581
		Economic condition of region	0.521
		Consent of the employee's families	0.621

Finally, GoF equation was used to calculate the fit index of the model (Akter et al., 2011), according to which the fit index of the employee productivity model for those working in South Pars Gas Co. is calculated based on the mean AVE multiplied by the mean of the coefficients of determination. The reported value was 0.41, which, according to Akter et al. (2011), is acceptable. Hence it could be concluded that the model is well-fitted with an acceptable predictive power.

Calculation of the model's fit index: $GoF = \sqrt{AVE \times R^2}$
 GoF = 0.45

DISCUSSION AND CONCLUSION

The present study was to detect and provide a model of the factors and barriers to occupational productivity of the employees at the South Pars Gas Complex. The research was qualitative based on a data-driven theory. In this study, four categories (including organizational climate, effective leadership, professional maturity of employees, and environmental conditions) and 16 sub-categories were extracted. No long time has passed since the adoption of methods for improving the quality and productivity of different industries and sectors. The achievements of these strategies in economic growth and development made the authorities assess them in the most fundamental institutions, one of the most important of which is South Pars Gas Complex. On the other hand, experts believe that the countries pioneered in economic and social development have not gone beyond the promotion of human resource productivity. Iran is also moving towards a knowledge-oriented economy and spares its efforts to increase human capital so that there is no alternative but to improve human resource productivity. Furthermore, there is a need for employees with high

productivity since they play a critical role in organizational effectiveness and provide the grounds for achieving the organization's ultimate goals. In this regard, the present study detected the factors and components affecting the employee productivity in the South Pars Gas Complex and ranked them using the Smart PLS technique. The research findings show that the four components affect human productivity of South Pars Gas Complex, of which the professional maturity of employees and effective leadership have the greatest effect on human resource productivity. Furthermore, the ranking results for the factors for the four categories affecting human resource productivity, detected by PLS technique, indicate that one should focus on the factors that affect effective productivity and possess a higher significance and impact to improve the employee productivity, so that the company's human resource productivity would be significantly increased. The results of this study revealed that the professional maturity of employees was one of the variables affecting the human resource productivity as this variable had a direct and positive relationship with employee productivity. This finding is in line with the findings of Sheikhol Eslami's (1998) study. The findings of the present study are consistent with the results reported by Sabbagh Mollahosseini (2008), Rasouli Moghaddam (2008), Kudiba (2003), Ellis and Dick (2003), Taheri (1999), and Kleg and Dunkerley (1980), indicating the effectiveness of the component "effective leadership" in human resource productivity". Zarepour and Mehrara (2008) and Yousofi's (2008) studies also indicate the impact of organizational climate on human resource productivity. This finding is also consistent with the results of the present study. In addition, the results of this study suggest that environmental conditions provide the grounds for promoting the human resource productivity, which is in a similar vein with Taheri (1999) and Spence's (2002) studies.

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