



## Original Research Article

# New Model of Professional Competence of Managers of Hotels, Oil, Gas and Energy Industries toward Sustainable Development

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## ABSTRACT

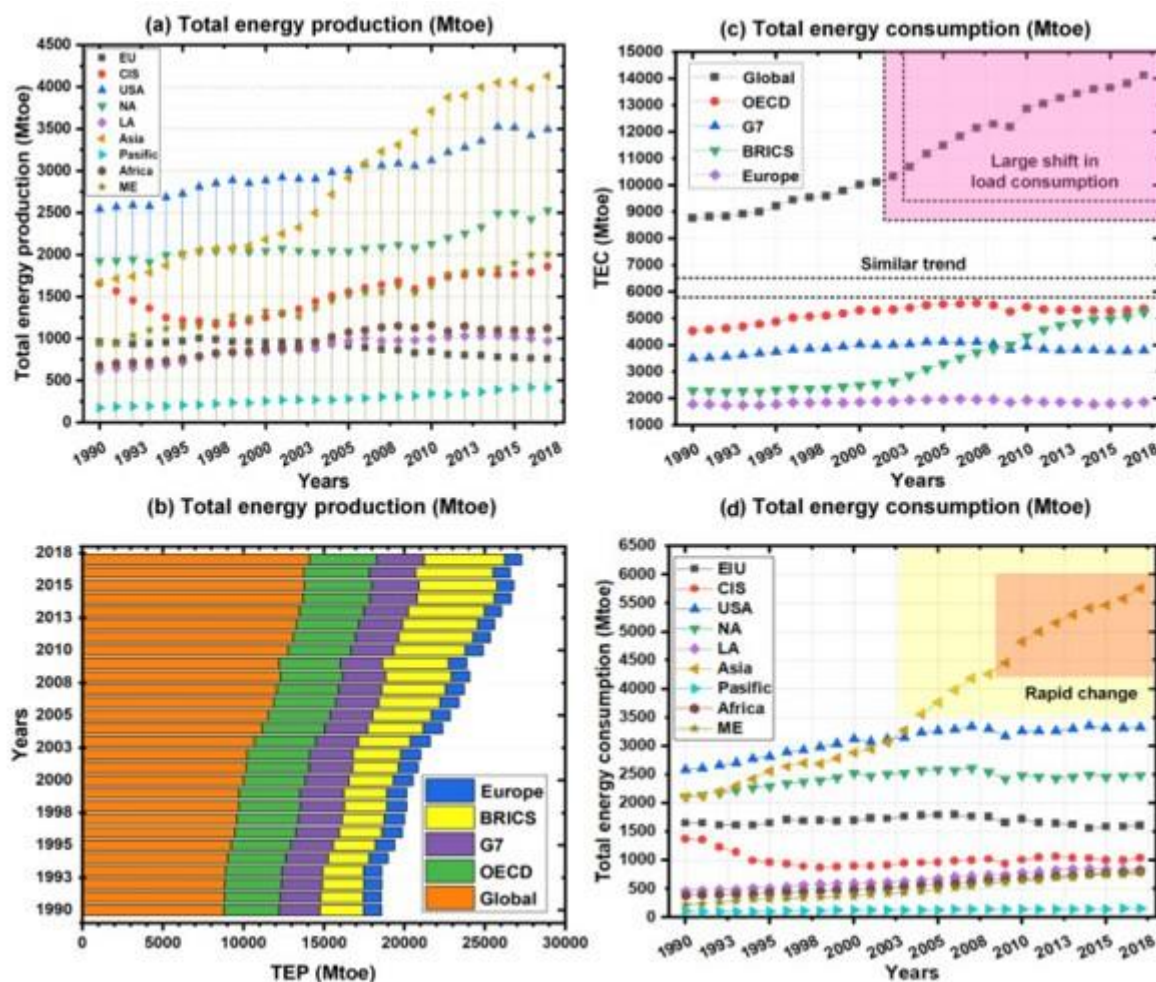
The present study is a combined research because it uses qualitative and quantitative methods in order to collect and analyze data by identifying indices and indigenous components of professional competence of hotel, oil and gas industry hotel managers. The qualitative and meta-analysis approach has been used. Following a quantitative approach, we have used the fuzzy structural equation modeling method. Finally, based on the data, a new model of sustainable development in the oil, gas and energy industry has been proposed. These components are: General professional performance, analytical skills, specific professional skills, general professional skills, job information and awareness, psychological abilities, innovative personality, basic specialized knowledge, job commitment, professional attitude, desire to job development, intrinsic personal characteristics, and increasing factors that psychological abilities and increasing factors of competence placed in the fourth level and were identified as the main and most effective dimensions in the development of sustainable development of oil, gas and energy industry. And the element of general professional performance is the least important among the studied dimensions.

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## GRAPHICAL ABSTRACT



## Introduction

There are several definitions of sustainable development. Sustainable development means combining economic, social and environmental goals to maximize the current human well-being without harming the ability of future generations to meet their needs (OECD, 2001). According to Brandt Land Committee (1987) [1-3], sustainable development meets current needs regardless of the ability of future generations to meet those needs. Sustainable development is discussed at three levels of economic, social, and environmental sustainability. Therefore, we call development sustainable when it is not destructive and allows future resources to

conserve resources, including water, soil, genetic resources, plants and animals [4-6].

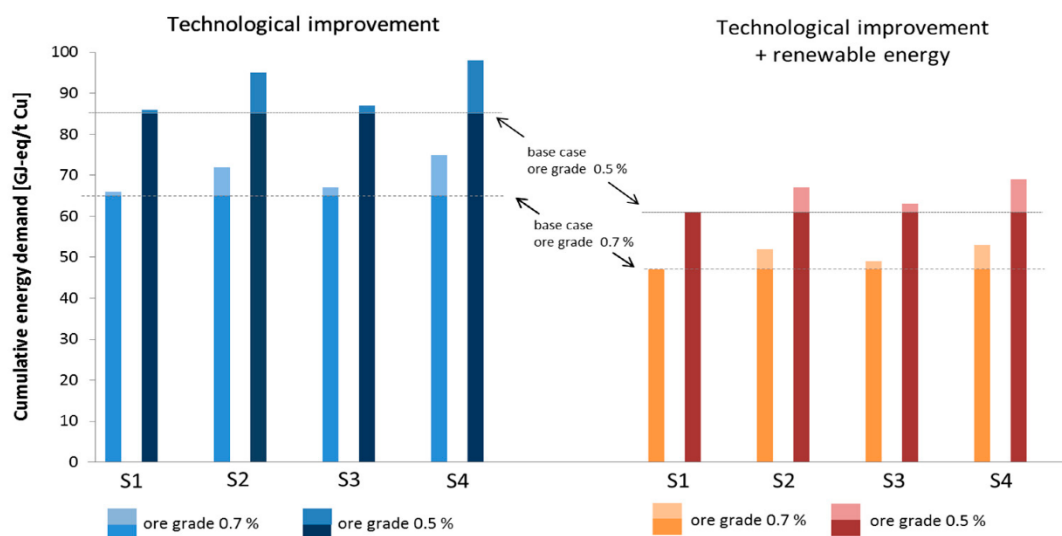
In sustainable development, the principle is to protect basic natural resources in such a way that future generations can produce and consume at least as much as the current generation. This concept includes ideals and principles that their understanding, knowledge and realization promise bright futures and failure to pay attention to them will lead to the destruction of the environment and humanity. Sustainable development is the effort to support the future in the present. The underlying assumptions and ideals of sustainable development are: a) Economic-environmental integration, b) commitment between generations, c) social

justice, d) environmental protection, e) quality of life and f) participation [7].

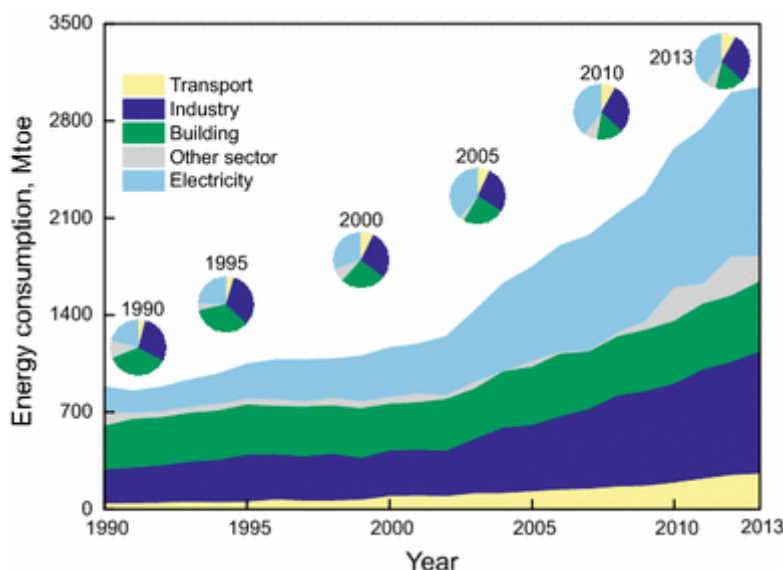
Accordingly, by developing the necessary strategies and knowledge, various companies and organizations pave the way to reach the highest level of professional competence. On the other hand, the unprecedented growth of consumption in the oil, gas and energy industry in the past few years and its comparison with global levels, has faced the discussion of sustainable development with new challenges

that have led researchers to seek more effective strategies (Figure 1) [8].

One of the factors that can develop this industry is the use of tools and effective parameters of professional competence of hotel managers. To achieve this, it is necessary to examine the relationship between the use of sustainable development tools and the process of formation of professional competence in order to be able to use these tools more effectively (Figure 2) [9-11].



**Figure 1.** A critical review of comparative global historical energy consumption and future demand



**Figure 2.** (a) Domestic consumption of oil products; (b) input of crude oil to refineries; (c) trade balance of crude oil; (d) trade balance of crude oil; (e) trade balance of total oil products; and (f) production of refined oil products

Competence is defined as an ability or skill. It is, in fact, a set of related but different behaviors organized into a structure, which we call "intent." Behaviors are different experiences of intention that act according to that situation in different situations and times. The US Department of Labor has also introduced a model that includes the knowledge, skills and abilities required of employees in the tourism industry through this model. These skills were presented in the form of a pyramid in which individual skills fall at the first level of this pyramid. Academic skills, workplace skills, skills required in the industry in general, and skills required in the industry in particular appear at other levels [12].

According to Alkiawi and Azldin (2015), competence is a set of learnable skills and abilities that affect performance. Lou et al. (2018) and Wu et al. (2018) consider competence as a state in which individuals perform their responsibilities properly, especially in the field of work, using their unique characteristics, knowledge and skills [13]. The word professional also means expertise in a specific field. Lou (2018) defines competence as measurable characteristics of people for success in work. These competencies may be behavioral skills, technological skills, and a unique trait, such as intelligence, and a moral trait, such as optimism. From a human resource management perspective, employees' competence depends on their ability to perform their tasks, which may require specific knowledge, skills or abilities (Lou et al., 2018). Lester (2013) defines job competence as "the ability to perform the required tasks and tasks to the expected standard" [14].

Having easy skills for jobs in the hotel industry is essential, and according to researchers and authors in the study, the most important competencies of hotel staff are teamwork, effective listening, verbal and written skills, the ability to design a professional image and the ability to empathize with customers [15].

Modification of "easy skills" includes many of the behaviors required in the workplace, and in the hotel industry, "easy skills" as interpersonal, human, people, or behavioral skills required to use skills, technical and knowledge in the workplace" [16]. In a survey of business managers about the most important easy skills in their jobs, they looked at integration, communication, politeness, responsibility, social skills, positive attitude, expertise, flexibility, teamwork and work ethic was mentioned as 10 cases. In comparison with effective individual competencies in the field of hospitality, in addition to the items mentioned in other models such as interpersonal skills, initiative, flexibility and lifelong learning, competency models in the field of resorts also examine personal characteristics such as self-control and work conscience [1]. Competence in aspects that are specifically related to the tourism sector, for example, tourism, product design and commercialization, ability to speak foreign languages are essential requirements for improving the quality of the tourist experience in Russia [3]. Applying emotional intelligence skills can improve individual and group decisions. One of the key factors in the development of competency in managers is the level of their awareness of the different cultures among the human resources of the organization [17]. Other researchers found that 10 of the most important competencies and competencies of hotel managers are: Not to undermine others, to behave honestly, not to say inappropriate words, to fulfill commitments, to show enthusiasm, to follow others, to be professional in responding to guests, be polite and behave with respect [18]. In another study, researchers observed that two important competencies are the development of positive customer relationships and the ability to engage effectively with their partners [13].

Many studies that have been done on the value of hotel education at the university science level; however, Tson and Ritchie (2012) suggested,

"The relationship between educational factors and the potential for success in the industry is far more important than a simple hospitality." In order to identify skills, specific knowledge is required, as well as the competence of individuals and the purpose of training must be properly identified [18].

One of the goals of hospitality education is to transfer knowledge and skills development to graduates to meet the needs of the oil, gas, and energy industry. Competencies are often considered as the set of knowledge, skills, performance characteristics, and motivations needed to do a successful job [5]. It can be added that competence is not only about having knowledge, but also about having the ability to behave in order to function properly [13].

One of the dimensions of professional competence that hotel managers in this industry should pay attention to is the issue of optimization. The purpose of optimizing energy consumption is to select patterns and adopt and apply methods and policies in the correct use of energy that are desirable from the point of view of the national economy and ensure the continuity of energy and the continuation of life and movement. Optimization of energy consumption for one process can be done locally or comprehensively for a system consisting of several processes. In this framework, determining the share of different forms of energy in the energy basket of each society is according to the long-term possibilities of that society, as well as using the most efficient way of using them, which reduces energy degradation and the effects of misuse of energy on other factors. The environment is also taken into account. This proper use of energy, not only ensures the continuity of life and sustainable development of society, but also leads to the survival of energy for all and future generations and an obstacle to the production and spread of environmental pollution due to improper use of energy.

In this article, we have tried to examine the components of professional competence of hotel managers that are related to the optimization of energy consumption in the oil and gas industry and provide practical and appropriate solutions to reduce energy consumption. The following questions were addressed in this study:

1- What are the indicators and components of professional competence of hotel managers in the oil, gas and energy industry for reaching the sustainable development?

2- What is the structure of relationships and prioritization of the importance of components?

3- Based on what strategies and suggestions can the sustainable development and professional competence of the actors in this industry be promoted and improved?

### **Methods and tools of data collection**

In the first stage of the study, the researcher identified the indicators, components and dimensions of professional competence of hotel managers in the oil and gas industry from the research literature. In this step, by refining and selecting the literature in the field of marketing competence as well as the competence and competence of tourism actors, 40 final articles were extracted and through reviewing and analyzing the texts of these articles, 1002 open codes were extracted. By classifying these codes and based on a reduction approach and refining them in order to remove inappropriate codes and combine similar codes, the main themes were identified and based on these themes, organizing themes and comprehensive themes were formed. The second part of the study included the collection of data from experts in this field and the identification of indicators, components and local dimensions of the professional competence of hotel managers in this industry and the appropriate characteristics and structures of this industry. In the qualitative section, systematic review tools, inductive content analysis and

qualitative Delphi were used. Semi-structured interviews were applied. In this type of interview, the interview questions are pre-defined and all respondents are asked the same questions, but they are free to give their answer in any way they want.

Also, in the present study, in order to assess the validity of the qualitative research tool, the methods of structural validity, internal validity, interpretive validity and descriptive validity were used. Also, as explained, several interviews with another person as a second interviewer were used in parallel and the data were compared and based on these two strategies, the reliability of the tools used in the qualitative study was confirmed. Finally, we came to the indicators, components and dimensions of the indigenous professional competence system of the hotel industry.

The statistical population considered by the researcher in the field of collecting qualitative research data included senior managers of hotels and guesthouses as well as senior managers of reputable companies affiliated with the oil, gas and energy industry. The reason for choosing this statistical community is the ability and mastery of these people on the key issue of sustainable development and the issue of professional competence and performance in hotel managers.

### Statistical sample of interviewees

In this study, the members of the panel of experts were selected using the snowball sampling approach. In this method, future members of the sample are selected through former members of the sample, and the sample becomes larger and larger like a snowball. Therefore, in a qualitative interview method, as in the present study, people are asked if they are proposing another person for an interview, and this will make their sample bigger and bigger. In this regard, the researcher, with the opinions of experts, selected other members of the panel for interviews. Thus, among the proposed experts, a total of 12 experts agreed to be involved in the qualitative data collection process through interviews.

### Quantitative analysis

In this section, quantitative data analysis is considered. These components are derived from the analysis of two different sections, namely the analysis of the literature in the field of tourism marketing and the analysis of interviews with experts. The combination of the results obtained are presented in Table (1), including the following 13 components as follow:

**Table 1.** Components of research

Entry	Component	Symbol	Entry	Component	Symbol
1	General professional performance	K1	8	Job commitment	K8
2	Analytical skills	K2	9	Professional attitude	K9
3	Specific professional skills	K3	10	Desire for career development	K10
4	General professional skills	K4	11	Intrinsic individual characteristics	K11
5	Job information and awareness	K5	12	Competency process factors (interest in tourism, curiosity, physical and mental health)	K12
6	Basic professional knowledge	K6	13	Psychological abilities	K13
7	Innovative personality	K7			



### Introducing the components of interest for analysis

Then, in quantitative part, the method of interpretive structural modeling and surveys of experts were used in order to level the interrelationships between the 13 dimensions of professional competence in managers in the hotel industry. These 13 dimensions are a combination of the dimensions identified from the research literature as well as the interviews conducted. In this section, initially, the interrelationships between these 13 dimensions are identified, and secondly, the importance and power of influence of each dimension in the field of professional competence in sustainable development is determined as the highest and lowest. In this context, the researcher uses interpretive structural modeling to determine the roles and positions of selected dimensions identified in the area of competence of individuals in the marketing of the hotel industry.

### Formation of structural self-interaction matrix

This section deals with comparing a pair between the above factors in terms of the presence or absence of a relationship between them. To this end, experts were asked to comment on the existence or non-existence of the relationship or the impact of the opinion. In this regard, the opinions of 8 experts were used. After the experts expressed their views, they expressed their views in a joint meeting in order to obtain an agreement, which is the result of the final and concise table below. After determining the relationship between two factors or elements, the following symbols are used to indicate the type of relationship between factors:  
E: If A has an effect on B but B has no effect on A;  
F: If A has no effect on B but B has an effect on A;  
G: If both elements have an effect on each other;  
H: If the two elements have no effect on each other.

The structural self-interaction matrix is given in Table 2.

**Table 2.** Structural self-interactive matrix

	K13	K12	K11	K10	K9	K8	K7	K6	K5	K4	K3	K2	K1
K1	H	F	H	H	H	F	H	H	H	F	F	F	
K2	H	F	H	H	H	F	H	F	F	H	H		
K3	H	H	H	E	H	H	H	F	F	G			
K4	H	H	H	E	H	H	H	H	F				
K5	F	H	G	E	F	H	H	E					
K6	F	H	G	G	F	H	H						
K7	H	H	E	H	H	H							
K8	H	F	F	H	H								
K9	H	H	G	E									
K10	H	H	E										
K11	F	H											
K12	H												
K13													

### Formation of the availability matrix

The accessibility matrix consists of two matrices, initial accessibility and final accessibility.

The initial availability matrix is the result of completing the structural self-interaction matrix

based on the values 0 and 1 in all the elements of this matrix based on the letters placed.

The final availability matrix is also the result of applying the law of transferability. First, the initial availability matrix is formed using a structural self-interaction matrix (Table 3).

**Table 3.** Initial availability matrix of the presence or absence of a relationship

	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13
K1	1	0	0	0	0	0	0	0	0	0	0	0	0
K2	1	1	0	0	0	0	0	0	0	0	0	0	0
K3	1	0	1	1	0	0	0	0	0	1	0	0	0
K4	1	0	1	1	0	0	0	0	0	1	0	0	0
K5	0	1	1	1	1	1	0	0	0	1	1	0	0
K6	0	1	1	0	0	1	0	0	0	1	1	0	0
K7	0	0	0	0	0	0	1	0	0	0	1	0	0
K8	1	1	0	0	0	0	0	1	0	0	0	0	0
K9	0	0	0	0	1	1	0	0	1	1	1	0	0
K10	0	0	0	0	0	1	0	0	0	1	1	0	0
K11	0	0	0	0	1	1	0	1	1	0	1	0	0
K12	1	1	0	0	0	0	0	1	0	0	0	1	0
K13	0	0	0	0	1	1	0	0	0	0	1	0	1

In order to convert this matrix to a final availability matrix, the law of transferability must be implemented on each device. Starred elements refer to the added relationships resulting from the law of transferability. Then, we sought to level the research factors, based on the final availability matrix, by forming input, output and common sets. In this step, using the final availability matrix, the input, output and common sets were obtained. The input set for each factor is the column of that factor and the output set for each factor is the row of that factor. Based on the final availability matrix, the 13 elements are graded. The lower an element is,

the greater its impact on other elements. In other words, in the segmentation of interpretive structural modeling method, the intensity of the effect on other factors increases from top to bottom. The elements that are at the highest level have the least effect on other factors. In order to be able to level the factors, the following sets must be defined:

- Availability set for each element, including elements that are affected by element A plus element A itself;
- Preliminary set for each element, including elements that affect element A in addition to element A itself; and,



- Subscription set for each element; subscribing between the above two sets.

Leveling is such that in each round or round, elements that have the same set of accessibility and commonality are placed on level one and excluded from the next round. In the following periods, leveling is provided:

The first important output of this method is the final availability matrix, which is based on the collection and aggregation of expert opinions and the analysis of these opinions in Excel software. This matrix, which shows the intensity of direct and indirect relations of elements to each other with respect to the principle of transferability, is given in Table 4.

**Table 4.** Final availability matrix (penetration power - factor dependence)

	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13
K1	1	0	0	0	0	0	0	0	0	0	1*	0	0
K2	1	1	0	0	0	0	0	0	0	0	0	0	0
K3	1	0	1	1	0	1*	1*	0	0	1	1*	0	0
K4	1	0	1	1	0	1*	0	0	0	1	1*	0	0
K5	1*	1	1	1	1	1	1*	1*	1*	1	1	0	0
K6	1*	1	1	1*	1*	1	0	1*	1*	1	1	0	0
K7	1*	0	0	0	1*	1*	1	1*	1*	0	1	0	0
K8	1	1	0	0	0	0	0	1	0	0	0	0	0
K9	0	1*	1*	1*	1	1	0	1*	1	1	1	0	0
K10	0	1*	1*	0	1*	1	0	1*	1*	1	1	0	0
K11	1*	1*	1*	1*	1	1	0	1	1	1*	1	0	0
K12	1	1	0	0	0	0	0	1	0	0	1*	1	0
K13	0	1*	1*	1*	1	1	0	1*	1*	1*	1	0	1

### Mick Mac Analysis

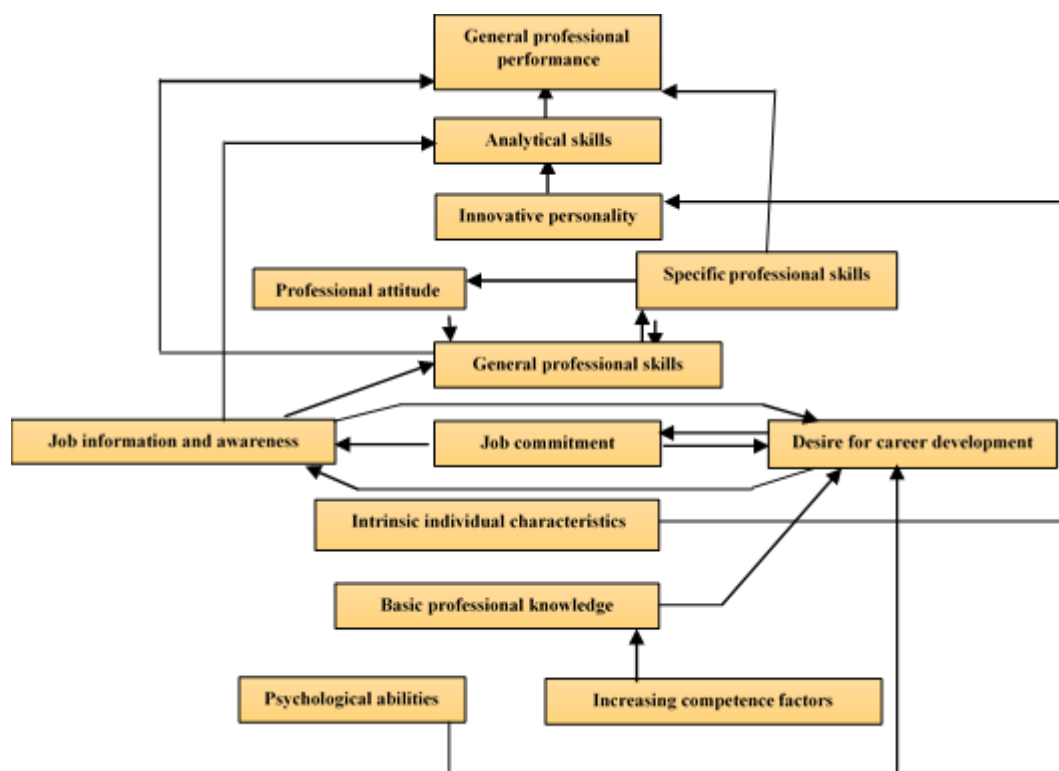
Mick Mac's approach based on matrix multiplication properties has been proposed (Mandal & Dashmuk, 1994). This method is used to calculate the influence and dependence of each factor. The purpose of this analysis is to plot the infiltration power-dependency factor from the final availability matrix and analyze it. At this stage, the factors are classified into four groups. The first group includes autonomous agents that have weak influence and dependency. These factors are somewhat different from the others and have little correlation. The second group

includes dependent factors that have weak penetration but high dependence. The third group includes linking factors. These factors have high penetration power and high dependence. In fact, any action on these factors causes a change on other factors. The fourth group also includes infiltrating factors. These factors are high penetration but low dependence. Factors belonging to this category have significant effects on other factors. According to the results of interpretive structural modeling, two elements of psychological abilities and increasing competence factors, including interest in tourism, curiosity, physical and mental health

have the most importance in measuring and improving the professional competence of hotel managers in the oil, gas, energy industry for sustainable development and the element of general professional performance is the least important among the studied dimensions.

Based on the results, the dimensions of psychological capabilities and increasing competency factors are located at the basic and

lower levels and at the fourth level and are identified as the main and most effective dimensions in the path of sustainable development and professional development of hotel, gas and energy industry hotel managers. Based on the calculations, leveling and structural modeling of the 13 dimensions of professional competence are as follows (Figure 3).



**Figure 3.** Quantitative phase final output (interpretive structural modeling)

## Results and Discussion

The results of the quantitative part of the research showed that psychological abilities along with increasing competence factors such as interest in sustainable development and curious spirits along with the desire to learn continuously are the most fundamental factors in achieving professional competence in the hospitality industry. In this regard, it is suggested that in the stage of attracting and hiring people, some categories such as curiosity along with interest in the field of sustainable development

along with personality traits that are strongly needed in this field such as psychological resilience, emotional intelligence, social intelligence, personality, individual analyst and his or her level of detail should be well considered. By emphasizing and paying attention to the development of psychological capabilities, as mentioned above, it can play an important role in improving and upgrading the professional competencies and competencies of hotel managers in the oil, gas and energy industry of the country. Therefore, as a whole, continuous

training and continuous performance appraisal will be well able to gradually increase the key capabilities of individuals and organizations in the field of sustainable development.

Another important factor in the development of professional competence in the hospitality sector is the analytical skills and decision-making of individuals, especially in abnormal and critical situations. In this regard, organizations should look for people who, either inherently or through quality training, can include skills such as creative performance, self-assessment skills, critical thinking skills and creative thinking skills. The higher the level of quality and quantity of such skills, the higher the level of competence of individuals.

Among the key competencies of hospitality activities are special professional skills such as the ability to work under pressure, professional etiquette, teamwork skills and skills in customer needs. Acquiring such skills is key to discussing the effectiveness of marketing activities. Accordingly, it is suggested that such skills be developed through continuous training.

The results showed that professional competence beyond educational needs and performance appraisal is highly dependent on the internal characteristics and personality of individuals. Therefore, at the time of recruitment and employment, the necessary psychological tests should be performed to identify the abilities and personality, psychological and behavioral characteristics of individuals.

Among the common professional skills that actors can play in the hotel industry are: Flexibility, complete familiarity with the culture of the host country or region, skills in attracting and inspiring team members and individuals, knowing valid international languages, familiarity with the legal laws of the destination country, commitment and honesty in providing information, good relations with the organs and institutions of the destination country, knowledge about tastes and eating habits and

complete familiarity with the cultural background of the country of origin and destination.

Based on the following solutions and suggestions, we can also improve the sustainable development and professional development of the actors in the oil, gas and energy industry.

- Preparation of a comprehensive program for training human resources at different levels of higher education in a ten-year period in order to coordinate and adapt executive programs to the needs of the oil industry.

- Preventing energy loss, such as insulating pipes and heat sources, cleaning heat transfer surfaces, preventing water from evaporating

- Preventing leakage of energy, such as prevent leakage of water, steam, air or heat.

- Prevention of waste and irrational use, such as proper regulation of temperature, pressure, use of intelligent thermostats, photocell lighting, engine speed controllers, use of high efficiency equipment, heat and steam recycling, use of more efficient production processes

- Avoiding unnecessary consumption, reducing the demand for special useful energy, improving efficiency, energy recovery, use of renewable energy sources

- Strengthening a culture of responsibility in employees can be another way to be optimal. Many extravagances will be avoided if we put the optimal consumption pattern on the agenda of ourselves and others.

- Changing consumer tastes and how goods are consumed as a more difficult task than producing low-consumption cars. People need to learn to make the most of energy as a valuable commodity.

- reviewing architectural standards and criteria in urban and rural areas and using traditional architecture and using less materials such as iron and glass. Use the building covering including all the parts that separate the inside of the building from the outside environment and windows, walls, foundation, foundation materials, roof, roof

and use insulation, PVC, and the use of double-glazed windows, sealed windows, and so on.

- Cooling and heating of the building space: Cooling and heating of the energy-efficient building space in the buildings is achieved by using automatic controls, ventilation, drainage systems and advanced technologies.

- Water heating in the building space: Energy efficient heating in terms of water energy along with water efficiency devices (consumption), saves water consumption, energy and money.

- Building Lighting: Sulfur lamps, compact fluorescent light bulbs, and other efficient lighting technologies save energy and money.

- Optimizing the consumption of petroleum products in the transportation sector

- Finding new applications for materials that do not currently have a specific application

- Heat recovery from flue gases: For this purpose, a method of using heat exchangers can be used.

## Conclusions

The oil, gas and energy industry is currently one of the most important industries in the world. All aspects of development need a theoretical background for scientific solutions, and in relation to the role of human communication and sustainable development, various theories can be considered by scientists and theorists to provide the easiest way for the scientific application of human communication in tourism industry applied, such as Evert Hagen's theory of social transformation or Parsons' theory of action, as well as Samuel Huntington's theory of political development and William Agburn's theory of cultural backwardness.

The purpose of communication is to create a platform for the exchange of ideas. In human life, no communication behavior is as extensive and effective as verbal communication, and no communication phenomenon is so intertwined with human life. There have always been

communication problems in connection with the development of hotel managers and interpersonal relationships, especially in the non-verbal dimension, and by addressing this dimension of human communication, communication barriers can be partially removed through the development of education. Creating and continuously employing creativity and innovation Oil, gas and energy industry requires the creation of institutional infrastructure, including systematic training at various levels and functions, formulating supportive laws, and providing facilities to start-ups. One of the areas of creativity and innovation is marketing and its components. In this process, businesses and destinations will try to differentiate between their products and other products by practicing creative approaches in identifying needs and meeting them through the marketing process. One of these important parts of the marketing process is marketing, which has benefited greatly from creativity and innovation.

Macro-management in the discussion of tourism and hotel industry is one of the most important components of success in this emerging industry. Due to short-term and superficial management, the industry will not be responsible in this case and will not bring it to the stage of profitability; therefore, government management and the views of government systems will not meet the needs of this industry. In the hotel industry, creating the necessary infrastructure with short-term and long-term planning can make this industry flourish, so government managers are not able to ameliorate the situation due to the short life of their responsibilities and managerial changes at all organizational levels. Long-term planning, successive changes of managers also disrupt the implementation of short-term plans, and most importantly, the lack of competition among government managers prevents the tourism industry from developing and, in addition to negative economic effects, adversely affects history, art, environment and nature.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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