International Review of Management and Marketing

ISSN: 2146-4405

available at http: www.econjournals.com

International Review of Management and Marketing, 2017, 7(4), 186-190.

Reviewing the Factors Influencing New Policy Petrochemical Plants Over the Last Decade (Case Study: Petrochemical Special Economic Zone of Mahshahr)

SalamatAhvazi Maryam*

Department of Educational Management, Islamic Azad University, Ahvaz, Iran. *E-mail: ahvazi1358@gmail.com

ABSTRACT

Petrochemical industry is an important source for meeting the needs of country's domestic industries and it is an important source of exchange. We can reduce the raw material imports and increase the exporting of production with high added value and we save the exchange by the establishment of the petrochemical complexes. This study is a retrospective research and the policy making for the establishment of petrochemical plants has been examined. The objective of the study is to criticize and review the factors affecting the policy-making for the establishment of the new petrochemical plants over the past decade. The method of study is descriptive-survey. The data were collected by reviewing the documents and resources. The study population consisted of all highly qualified staff, experts and specialists who work in petrochemical special economic zone of Mahshahr. The researcher- made questionnaire with high and proper reliability and validity was randomly distributed among samples. The data were analyzed. The compiled results using AMOS and SPSS software revealed that three aspects of rules and regulations, market and structure had significant effect on the policy-making for the establishment of economic zone of Mahshahr.

Keywords: Review and Analysis, Policy, Petrochemical Industry
JEL Classification: O2

1. INTRODUCTION

Petrochemical industry is one of the important sources of meeting many needs of local industry and an important source of exchange and it is of great importance for the country. Setting up petrochemical complexes, on the one hand, reduces or cuts the imports of raw materials for downstream industries which have considerable foreign exchange savings for the country and on the other hand pit the country among the among the countries exporting petrochemical products and downstream industries (Mehregan et al., 2011). In recent years, essential steps have been taken to increase the petrochemical industry, to increase the production and to enhance value added crude oil, is under construction. And large projects are is under construction. Major polymer units provide much of the raw material of the petrochemical industry. Considering the growing demand for polymer products, there is requirement to maintain position in the market competition and this is possible by higher added value in the petrochemical industries (Khuong, 2017). In order to accelerate the developmental processes, the governments have recognized their relative native merits and they try to create competitive advantage by making policy in this global arena (Salami et al., 2009). One of these advantages is natural resources. Due to the rich oil and gas resources, this industry has the comparative advantage in Iran and in order to be transformed into competitive advantage, it requires for policy making in oil fields, specially, by being away from selling crude oil and by attending to the petrochemical products (Jafari et al., 2007). Petrochemical plant is an industry with a very broad range of products and it accounts for a high proportion of World trade. On the other hand, investment in this industry requires observing some hints that without considering them, we cannot hope for the effectiveness of the investment. Developed countries has the their own policy making approach to use this industry as a driving force for other different industries. Policy making in developing countries and the Third World, especially those who own vast oil resources and gas, usually follows and also is affected by the policies of industrialized countries. The overall policy of the oil ministry in the perspective of petrochemical industry in 1404

is to become the first manufacturer of materials and petrochemical products in terms of value in the region. Major petrochemical production value in the document of 20-year-old perspective is expected to be 52 billion dollars (Jahromi and Taherifard, 2012). The capacity of petrochemical establishment can transform the future of the Mahshahr's economic zone and we can indicate the ability to produce to methanol from the natural gas and its conversion to propylene, polyethylene, polypropylene, ethylene glycol and other products. The polypropylene doesn't have any substitution and it can replace most of polymer materials. This problem causes high added value and avoids crude selling of propylene and ethylene. Easy access to sources of raw materials, access to international roads and railways and creating direct and indirect employment direct benefits for about thousand people are among the benefits which have been obtained by the establishment of petrochemical plants in the economical region of Mahshahr (Yousefianpour, 2008). The Mahshahr special economic zone is one of the most important points where several petrochemical plants have been built on it over the past decade. In this study, after reviewing existing literature on public policy and establishing policy petrochemical plants over the past decade, various aspects of the research will be clarified. In the section of data analysis, the required data will be analyzed. At the end of the study, after discussion and conclusion, suggestions to improve the policy making of establishing new petrochemical plants in Iran will be indicated.

2. LITERATURE REVIEW

What is more important in the public policy - making is making decisions and policies that various institutions and the public sectors such as parliament, government and judiciary will offer in order to protect the public interest (Birkland, 2005). Public policy is principles that orient the decisions. Public policy is major policy which is exercised for alignment and consolidation of goals held in the society and it reflects the values that society and government are committed to them Moran et al. (2008). The coordinating tasks in public policies and the establishment of new petrochemicals are common but the establishment of strategies petrochemical plants are superior than making policies. This this strategy has been started from the observation of the environment and society and continued with the development of the future prospects and finally it resulted in beginning of the work by the provision of strong reasons (Phaal and Muller, 2009). It should be noted that the policy is normative choice in the the possible future. This choice is also associated with enforcement (Johnson, 2008). Therefore, policy making and evaluation of policy are the main methodologies for analyzing and evaluating the reasons of the establishment of new petrochemical plants. On the other hand, the increasing number of stakeholders and decision-makers in the process of formulating policies for establishment of new petrochemical plants has been challenged. So, one of the reasons for the malfunction or failure of making policy is the lack of information of decision-makers and complexity of partnerships between them (Salami et al., 2009).This process is more challenging for developing countries (Erickson and Weber, 2008). Developing countries don't have any adequate understanding of the advantages and disadvantages, opportunities and risks. They delay in making decision as a habit (Lee et al., 2008).

Numerous factors and the various actors in policy making of the new petrochemical plants have made the policy making as a very complex activity (Heckert et al., 2007). Because of this complexity, this study investigates some important factors in Policy making in establishment of petrochemical plants including: (1) Structure, (2) market, (3) rules and regulations. The multiplicity of stakeholders in the field of policy making policy in establishment of petrochemical plants influences the increasing complexity of them. Identifying stakeholders in the field of policy and having efforts to ensure their interests may increase the acceptance of imposed policies. Moran et al. (2008), in their research work in the public policy making have specially emphasized on two categories of beneficiaries. They introduced two groups of policy-makers and decision-makers and they argued that the increased interaction between them ensures success in policy-making in general. According to the earlier studies, polices taken to establish petrochemical plants, led to 15% of added value of 8% of job creation and 2% of labor productivity of in industrialized countries and these figures for the developing countries like Singapore are 25.3, 6.2 and 4.3 respectively (Khoung 2017). Given the importance of the establishment petrochemical plants, the establishment factors will be considered. In the field of structure, Wang (2003), have recognized the importance of creating and strengthening of cultural development and right attitudes. They have considered the structural changes for organizations emphasize the global markets in their studies. Hyakushima (1998) in his study about the reformation of Petrochemical industry structure in Japan over the past decade concluded that Japanese companies, by the structure reformation, simultaneously follow the policy of convergence by the integration and the divergence by separating the base materials. This issue leads to the coordination of policies for production of base materials and derivatives (complementary industries) which play an important role in the profitability of this industry. From the perspective of market, policy making is line with improvement of competitiveness and economical added value. A policy is considered successful when its output in market has the capability of competitiveness and this issue in developing countries, due to the lack of adequate infrastructure markets, has caused multiple problems in the markets (Phaal and Muller, 2009). National competitiveness refers to the production of goods and services that can be entered to the international market through one country. Iran, the world's fourth largest oil producer and world's second largest gas reserves, supplies 80% of its export earnings from oil and gas. Using frameworks such as industry structure, value chain and general strategies, market-based competitiveness approach are the basis for determining the competitive advantage and designing strategies outside the organization. In fact, the emphasis is on competition and the attention is not paid to the company and its resources (Mehregan et al., 2011). Iran's relative advantage in accessing to the raw materials and especially to the raw gas materials in the production of basic products has increased the capabilities the country's competitiveness in the production and export of petrochemical products compared to other regions. Increased production of basic materials in Iran will result in increase of polymeric productions and in the exports of the significant part of their polymer products. This advantage requires investment and careful policy making in the establishment of petrochemical plants (Jafari et al., 2007).

Samba Center[1] (2009), in its report, analyses the production status petrochemical industry in Saudi Arabia and declared that the major problems facing the industry were ethane shortage and serious competition with Chinese manufacturers. In the field of laws and regulations, many studies and experiences have shown that the establishment of the petrochemical plants doesn't have any attractiveness for private sector and the competitive and attractive environment can be created by rules and regulations (Salami et al., 2009). Other researchers have described the role legal incentives as prominent and they considered the formulation of laws conforming to the petrochemical establishment as necessary (Serkesian, 2005). The government seeks to equalize the amount of income from the petrochemical industry with the income from oil exports and it avoids from exporting oil in its raw form a far as possible. The laws and regulations that should be approved, prepared and implemented include encouraging and supporting the foreign investment in the construction projects of oil and petrochemical industries.

3. METHODOLOGY

3.1. Overview of the Research Methodology

The present study is pragmatic and its approach is inductive (from component to the whole). The present study is the case study which is done in a given period of time. The aim of the study was applied one and this study was done in a survey form. The method of data collection is historical approach. Data were gathered by referring to the printed resources (books and articles) and software resources (valid digital books and articles). The researcher - made questionnaire was used for gathering information about the relevant and important variables.

3.2. The Population and the Sample Size

The study population included all highly qualified staff, experts and specialists of special economic zone of Mahshahr's petrochemical plant. A sample of 150 participants was selected based on the Cochran formula. The participants of study were selected by convenient sampling method and the questionnaire was distributed among them. Finally, the questionnaire was analyzed. The independent variables consisted of laws and regulations, organizational structure and the market. The dependent variable in this research is policy-making in petrochemical plants.

3.3. Research Hypotheses

1. The organizational structure influences the establishment of petrochemical plants over the past decade.
2. Market influenced the policymaking in the establishment of petrochemical plants over the past decade.
3. Laws and regulations influenced the policy making of new petrochemical plants over the past decade.

3.4. Material Used in this Study and its Validity and Reliability

External validity of the questionnaire (reliability): The purpose of this study is to assess the reliability and stability of the questionnaire is that if the study is done by another person or by the same author in other times and spaces, similar results with current results will be achieved. Cronbach's alpha coefficient is used for the reliability of the questionnaire. For this purpose, the researcher made questionnaire was distributed among 30 individuals.

Cronbach's alpha coefficient is calculated as follows:
In which:
n: Number of test questions
si: Variance of the question i
st: Variance of total test.

In order to measure alpha coefficient, SPSS software is used. The alpha value is calculated as 0.87. It was found out that the questionnaire is valid because the alpha coefficient is higher than acceptable level for practical purposes that is 70% higher. It could be argued that the questionnaire has acceptable reliability.

3.5. Tests and Techniques Used in Research

In this study, the data were analyzed in two sections. The first section dealt with demographic analysis and frequency statistics and mean were used. Structural equation tests were used in the inferential section.

4. DATA ANALYSIS

In this section, the factor analysis is performed and the next, main model of study will be examined. Finally, the hypotheses will be tested. In order to study and analyze the hypothesis, structural equation modeling will be used by Amos software.

This method makes it possible to verify the hypotheses to show the significance of coefficients.

4.1. Descriptive Statistics Demographic Variables

In order to better understand the society that has been studied in this research, it is necessary to describe the statistical data. However, the data description is an step towards the diagnosis of the dominant and basic pattern to explain the relationship between variables that are used in research.

The demographic variables of the study will be examined.

4.1.1. Gender

The number of respondents was 150. In terms of gender, 64% were male and 36% were female.

4.1.2. Age

Among the respondents to the questionnaire, 14% were <30 years, 53.3% were between 31 and 40 years old, 20% between 41 and 50 years and 7.12% were 51 years or older.

4.1.3. Levels of education

Among the respondents to the questionnaire in terms of education, 36% were undergraduate and 64% were graduate and there was not any under educational qualification among the respondents.

4.1.4. Job experience

Among the respondents to the questionnaire in terms of job experience, 16% have <5 years, 24% have 5-10 years old. 18% have 10-15 years, 7.12% has 15-20 years and 3.29% have more than 20 years of job experience.

As shown in Table 1, if we consider the number 3 on the Likert Scale, the mean of most questions is near to 3 and its standard deviation is close to value of 1. Therefore, we can consider the data distribution as symmetrical or in other words "normal". Therefore, we can use some software such as Lisrel or AMOS in order to analyze the data. In this study, structural equation modeling with Amos 23 software is used.

4.1.5. Investigating the theoretical model of research

In order to test the validity of theoretical models and calculate the impact factor, structural equation modeling with Amos software was used. Structural equation modeling is an overall multivariate analysis technique and it is derived from the family of regression and in other words it is extended family of "general linear model". It allows the researcher to examine a set of regression equations simultaneously. Structural equation modeling is a comprehensive approach to test hypotheses about the relationship of observed and hidden variables. Among all the multivariate analysis approaches, only the method of structural equation modeling analysis uses multiple regression and factor analysis simultaneously. What makes structural equation model a powerful and useful approach among researchers, is that, in addition to its graphical frontend that makes it easy to interpret, this method can calculate a set of relations among variables simultaneously. Hare believes that "none of the previous methods could not calculate both the measurement model and the causal relationships simultaneously". In general the structural equation modelings reveal the internal relations variables through a series of equations similar to the multiple regression equations. So in order to answer the main question of this study, structural equation modeling with AMOS 23 software is used.

4.2. Finding

This section aims at testing the hypotheses using structural equation modeling. The path coefficient of market and policy is obtained as 46.0. The path coefficient of structural dimension and policy making is 0.26. The path coefficient between the dimension of regulation and policy making is fixed. The path coefficients are meaningful at the significant level of 95% and 99% (P = 0.000). Now, we can summarize the results of testing hypotheses in the following table.

It was found out that the impact factor of market (0.46), impact factor of structure (0.26) and the impact factor of regulation influence the policy making for establishment of new petrochemical plant.

5. DISCUSSION

Petrochemical industry is one of capital-intensive industries, which means that this industry, compared to most industries, requires investing much in order to create any job opportunity. On the other hand this industry is energy-intensive and it has abundant resource in the country. And finally the development of this industry under certain conditions and strategies can be effective in a high exchange. Iran's petrochemical industry, compared to many countries, has comparative advantage as follows:

1. Accessibility to the rich resources of gas and gas condensate with an appropriate competitive price,
2. Accessibility to international waters,
3. Possessing the beaches for the construction F exporting ports,
4. Locating the feedstock gas resources on the shores of the Persian Gulf,
5. Geographical location in terms of proximity to Asian markets, including China, India and Europe via Turkey,
6. The population of the country in terms of domestic demand capacities and low consumption of polymeric materials per capita compared to the international standards,
7. Human resources with experience and,
8. Suitable tax regime which is consistent for exporting (exemptions for export).

There are numerous challenges in this industry including:

1. Although the industries that are at the end of the value chain are acceptable in terms of quantity but they are at the low level in terms of quality in the competitiveness capability and customer orientation.
2. The petrochemical complexes didn't pay attention to the downstream needs of their industries.
3. Lack of attention to issues such as after-sales service, product variety, production of customized products, timely delivery of product and optimal pricing.

The overproduction, disturbance and corruption of prices at the level of regions' producers. In this study, the effect of laws and regulations, structure, policy on the policy making of petrochemical market has been examined in Mahshahr. The results showed that all three aspects of the laws and regulations, structure and market had significant effect on the policy making for the establishment of petrochemical plants. The path coefficient shows that market factors, laws and regulations and the structure had the greatest impact on the policy making. In explaining the effect of laws and regulations, market and structure on the policy making for the establishment of petrochemical plants over the past decade, the results of the study are in line with the studies of Jahromi and Taherifard (2011), Salami et al. (2009), Mehregan et al (2011), Jafari et al. (2007), Yousefianpour (2008), Khuong (2017), Phaal and Muler (2009), Eriksson and Weber (2008), Moran et al., (2008). In other words, this study showed that important factors such laws and regulations could result in the structural factors according to the documents, the emphasis on stakeholder interests, the correction of relations between institutions, specialized acceptance policy makers, social acceptability of policymakers. The emphasize on the competitiveness in research structure could lead to the increase of attractiveness in establishment of petrochemical plants for policy makers in economic zone of Mahshahr over the past decade. In addition, market factors such as increasing national competitiveness, being responsive to market needs, attending to the commercialization and industrialization, accepting the role of firms, networking, orienting to the market

research, shortages of competitors in manufacturing certain products and creating new markets and new products lead to the generation of more wealth in line with the increase of the added value, of Labor and higher productivity, which contribute to the national and regional development. Concerning the causes of rules and regulations, legal infrastructure, acceptance of incentives, designing incentives, supporting the entrepreneurship, designing for the support and supervision of rules, legally supporting of policies have been legal obstacles in the way of other sectors and in the legal coordination of effective decision-makers in policy making for the establishment of petrochemical plants over last 10 years. We can suggest further studies for examining the effects both actors and stakeholders in policy making for establishment of petrochemical plants and we can investigate the effects of these policies after implementation of these projects.

REFERENCES

Birkland, T.H.A. (2005), Policy Process: Theories, Concepts, and Models of Public Policy Making. 2nd ed. Armonk, NY: M.E. Sharpe.

Eriksson, E.A., Weber, K.M. (2008), Adaptive foresight: Navigating the complex landscape of policy strategies. Technological Forecasting and Social Change, 75, 462-482.

Hyakushima, T. (1998), The Slow Consolidation of the Petrochemical Industry, "NWW Research" NHI Research Institu NO:۱۱۸.

Jafari, M., Sayeban, M.H. (2007), Perspectives of Petrochemical Industry in Iran, Region and World, Iran's First Petrochemical Conference, Tehran.

Jahromi, J., Taheri, F.A. (2012), Requirements for achieving the objectives of the prospectus of the petrochemical industry. Journal of Parliament and Strategy, 71, 26-35.

Johnson, B.D., Ulmer, J.T., Kramer-Criminology, J.H. (2008), The social context of guidelines circumvention: The case of federal district courts. Criminology, 46, 737-783.

Khuong, V.M. (2017), Structural change and economic growth: Empirical evidence and policy insights from Asian economies. Structural Change and Economic Dynamics, 41, 64-77.

Koh, T.H., Wong, P.K. (2003), Competing at the Frontier: The Changing Role of Technology Policy in Singapore's Economic Strategy, Managing Emerging Technologies in Asia (METiA) Conference, 2-3 November 2003, in Singapore. Lee, H., Lee, C., Seol, H., Park, Y. (2008), On the R&D priority setting in technology foresight. International Journal of Innovation and Technology Management, 5, 201-209.

Mehregan, M.R., Asgharizadeh, A., Safari, H. (2011), Identification of approach of Iran petrochemical industries in the field of company's competitive capacity using structural equation modelling method, paired comparison logic, analytical hierarchy process. Scientific Journal of Behavior in Daneshvar, 18, 2.

Moran, M., Rein, M., Goodin, E.R. (2008), The Oxford Handbook of Public Policy. USA: Oxford University Press.

Phaal, R., Muller, G. (2009), An architectural framework for roadmap pin towards visual strategy. Technological Forecasting and Social Change, 76, 39-49.

Report Saudi American Bank (SAMBA) Financial Group. (2009).

Salami, R., Taghavi, F.M., Sultanzadeh, J. (2009), Identifying the factors affecting science and technology policy (case study of Iran national petroleum refining and distribution company). Scientific-Research Series of Management and Human Resources in Oil Industry, 4, 13.

Serkesian, L. (2005), Technology Policy: Principles and Concepts. 1st ed. Tehran: Publication of the Center for Modern Industries.

Stephensens, J.C, Peterson, T.R., Wilson, E. (2014), Socio-political evaluation of energy deployment (SPEED): A framework applied to smart grid. UCLA Law Review, 61, 1930.

Yousefianpour, A. (2008), Integration and Value Creation in Petrochemical Industries, Iran's First Petrochemical Conference, Tehran.