

Investigating the *main variable of price marketing-mix* Effect on the Minerals' Exports

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ABSTRACT

Minerals are the pillars of sustainable development in any country 's economy infrastructure and industry of community. Human from the very beginning of his creation and during the history, depending on needs and the identification of minerals, exploits the minerals in various ways. [1] The amount and variety of mineral deposits in our country is truly amazing and in this respect the potential capabilities in Iran are far more, compared to many other countries around the world. There are over 68 types of minerals which in addition to domestic needs, is considered to be an advantage for mineral exports and increasing the *foreign trade balance*. [2] We should also pay attention to the export of *processed minerals* and increasing the investment in new equipment and technologies of processing and we should not neglect the mineral raw material exports . The necessity of planning in this sector to access the international markets, using the key elements of marketing mix (4p) and secondary (*derivative*) variables related to these elements is necessary and inevitable. *Price element* (factor) with the relative-frequency distribution of 95.6 and *confidence coefficient* of 95 % had an effect on the *export of minerals and secondary variables* as following:

1 – Comparing the minerals with minerals of other countries

2 –The effect of establishing *Free Trade*

3 –The effect of *Competitive pricing*

KEY WORDS: marketing mix, minerals, exports.

INTRODUCTION

According to many specialists and experts from the mining sector, still many undiscovered reserves are in our countries. Iran's abundant mineral resources includes gold, zinc, copper, iron ore, chromite, coal, and... That also in addition to overcome the internal needs, has the ability to export out of the country. In recent years, exports of minerals with higher value added has been seriously considered by authorities and the private sector. [3] The private sector in mining sector was more muted in recent years , The private sectors, now with the recent proclamation of Leader of Iran about Article 44, provides their presence in large mines. Hitherto, Our God-given blessings (minerals) are not used the correctly for any reason and investments which have been performed in the mining sector in other parts of the country is less. This should provide a good opportunity for the private sector to be entered the industries that were previously monopolized by the government. There a high potentials of minerals in Iran. For example when we compare the *Sarcheshme* copper after investments which have been done in *Songon* copper mine, we observe that it has more advantages than *Sarcheshme* copper. In Iron ore the current rate of exploitation cannot be compared with previous years and about the zinc and lead, has been exported raw materials of them (Mineral Soil) . Now, its export is as *ingot* and in the near future, the exploitation of bar also will be created and we have same state about the gold. These advantages show that in each part of mineral materials that an investment is there, our cost were low and economical. [4] Investment in mining sector for optimum utilization from the mines of country and mineral products processing in addition to provide the employment of indigenous people in different parts of country , will also bring a high added value that underlie the development of the country . The export of minerals during the previous decade had a desired process. For example, we saw a better growth since the release time of cement exports. The important point that is considered less , is this that fewer goods must be exported , but we should achieve more money. Generally , the countries that have the mass production such as china , japan and other European countries, need the raw materials. While , the most of these countries that have mass production and abundant exports, don't have the raw materials and use of *other countries raw materials* like us (Iran) . hence , we must during the exploitation of raw materials of our country , don't export them in a raw form and export them with more added

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value minimally by making processes on the raw materials. To escape from *single-product economy* based on oil exports and diversify the production and exports in order to sustain economic growth and prosperity, mining industry development seriously can be considered as a basic guideline. In most countries, minerals is accounted as the main product of production project and its consumption is one of the certain standards of evaluating the industrial and economic prosperity and development of each country, because the mineral products are applied in most of the agricultural, industrial products. [5] One of the main factors in determining the production amount of each country is existence of a greater market. One part of this market is the internal market that along with the economic development process will be growing, but gaining more market share in the external market, specially increase of foreign exchange earnings and more positive balance of foreign payments also has the special importance in growth of production rate. [6]

If today, our country in its five-years program claims to get rid of the single-product economy of oil, therefore must identify and used the minerals and obtain the global markets of exports products. therefore, the necessity of research in the field of minerals export as one of the effective sectors on the growth and development of marketing mix elements effect (price elements) and its sub-variables on the minerals exports of Iran, can be observed as an essential issue.

The research objectives:

Investigating the effect of main element of price and sub-variables related to the minerals exports of Iran :

Research hypothesis :

Important hypothesis : the price element is one of the effective factors in the minerals exports.

Sub-hypothesis : the establishment of free trade has the most effect on the minerals exports amongst the constitutive sub-variables of price element .

Research scope :

Place : this study has been done in the whole country, companies and institutes which were related somewhat with minerals and mineral industries and have a role in the production and distribution of minerals that include the whole industries, training and academic centers, companies and public and non-public institutions that are somewhat effective on the production and sales and exports or supplying the parts and machineries of industries.

Time : the start of the research project in this field was from early 2009 and about 2 years will be continued.

Objective: in this research, we study, analyze and prioritize in field of marketing mix of the price element and its other constitutive element .

METHODOLOGY

The method used in this study is descriptive-analytical such that during the description of achieved data, we will analyze them and we have a field research. [7] Meanwhile, statistical population of this research includes whole individuals that in our country have an experience in the field of minerals such that have a role in the production, distribution and exports of minerals and they are about 400 individuals.

Sampling and sample size determining method:

Our considered method of sampling in this research is stratified-accidental type. Therefore, the whole companies and manufacturing and policy making centers in the minerals sector and associated scientific and academic centers that have a role in the development of *our country mineral industries*, have been identified and listed and experts of it also identified and based on the importance and size of statistical population, some questionnaires were sent to them.

Determining the sample size :

We here use the ratios method, such that initially a primary sample about 20 cases should be distributed and by coding the elements (factors) and marketing mix variables (price) and determining the more and many more answers as the success ratio (prosperity ratio) and for the marketing mix variable, this ratios was achieved about 85%. With the confidence level of 95% and error of 5% and considering the following formula, the sample size is calculated as follow:

$$N \geq \frac{z^2 \cdot p \cdot q}{d^2} \quad \text{or} \quad N \geq \frac{z^2 \cdot p \cdot q}{(z \cdot d)^2}$$

Therefore, the desired number of samples was achieved that was 138 individuals and according to this about 175 questionnaire were sent in which 160 questionnaire were true and acceptable and its results were investigated and used.

Data collecting method:

To collect data we used of questionnaire such that its questions includes 15 questions in which those are for measuring the effect of the *price factor sub-variables* on the minerals exports.

The measured variables:

To calculate the main marketing mix variable effectiveness of price on the minerals exports totally 15 sub-variables were considered such that for each one of the variables was presented a question that has an acceptable relation with the main factor.

Scaling :

To calculate the aforementioned variables were used of Likert scale (5 -points) such that the range of very high to very low were considered for the question, then will be graded in a range from 1 to 5 and in measuring the main variables is used of the constitutive variables average and then will be encoded as the following:

- A) From 1 to 2 converted to 1, titled as very low
- B) From 2 to 3 converted to 2, titled as low
- C) From 3 to 4 converted to 3, titled as high
- D) From 4 to 5 converted to 4, titled as very high

The validity and reliability of questionnaires:

To authenticate the questionnaires validity, the variables and gauge indices of marketing mix elements have been identified and in this regard, simple and understandable questions were prepared with collaboration of experts and the project and research process using the experts opinions were reviewed and modified and for final controlling about 20 questionnaires were sent and ambiguities were resolved.

External validity of questionnaires through an overview [8] has been done such that in this case also about 20 cases of questionnaires sent and in an interval of 20 days as the number of respondents again answered the questionnaires and obtained results were matched and compared with each other such that statistical analysis showed a correlation between groups of questionnaires about 85 % that this can confirm the validity of questionnaires.

Descriptive and statistical analysis method:

Descriptive: in this part by stating the relative frequencies, given responses to each question and in achieving the marketing mix element, was considered and described the average of all constitutive variables and such that the data description was in two forms and in the range of very low to very high and in the other one in the range of very low to medium and high to very high.

We used of the ratios test in the statistical analysis of test table, and in the two spectral classification i.e. low and very low, the percentage of high and very high responses to each question as the prosperity ratio (P) was considered and this ratio is analyzed as the following.

Basis and criteria for decision making is the maximum acceptable ratio in the statistical population with confidence of 95 % and according to this, ranking priority of each part in comparison with other parts and each variable with other constitutive sub-variables and each determined element (factor) and this ranking as a criteria for decision making management were considered and was calculated as the following.

The ratio test:

As we knew in some cases, the researchers is interested to study the specific ratio in the population, therefore for this purpose is necessary a sample to be taken and desired ratio () to be calculated in this ratio and then it is claimed about the ratio of population that must be tested and evaluated to be confirmed with the confidence of 95 %, therefore, we do the following for this purpose:

First step: research hypothesis and its reciprocal hypothesis:

Claims materialized in the statistical population as the following:

- A-
H : $P \leq P$.
H1: $P > P$.
- B-
H: $P > P$.
H1: $P < P$.
- C-
H : $P \neq P$.
H1: $P = P$.

Test statistics:

When n is greater than 30 or in other words, np and nq are both greater than the number 15, The test statistic has an approximate normal distribution and is calculated using the following way:

$$Z = \frac{p - p_o}{\sqrt{\frac{p_o \cdot q_o}{n}}}$$

The maximum acceptable ratio in the statistical population:

When the researcher want to compare together the role of various factors in the research based on the statistical error and obtain the maximum acceptable ratio in the population, therefore should Z be selected such that we to be placed in a boundary that the assumption of zero not to be rejected and this value is the ratio of p (the maximum 5 percent i.e is 5.15 % that its Z according to the following formula is 1.63 slightly lower than 1.64 .

$$q_o = 1 - p_o$$

$$Z = \frac{p - p_o}{\sqrt{\frac{p_o \cdot q_o}{n}}}$$

In the following formula P_o is unknown and smaller root of below equation is the maximum acceptable ratio.

$$P_o = \frac{-z^2 - 2np \pm \sqrt{z^4 + 4nz^2 p - 4npz^2}}{-2z^2 - 2n}$$

Research limitations and problems:

- 1- Achieving the statistics and requisite information can be done strongly
- 2- The information often is old and not updated
- 3- Available information is dispersed and island form and have not logical and accurate relation with each other.
- 4- Lack of accurate relation of mining sector and universities and scientific centers about the role and place of minerals in development of non-oil exports.

RESULTS AND FINDINGS

Table 1: questions related to the price element

N= numbers	Relative frequency (percentage)					Question title	Question number
	Very low	low	medium	high	Very high		
160	20.4	4.8	8.6	40.4	47.1	Comparing the price of minerals in Iran with other countries	1
160	1.3	4.8	8.2	46.2	39.5	Effect of establishing the free trade	2
157	2.6	9.4	9.7	45.9	32.4	Effect of competitive pricing	3
160	5.1	7.4	12.3	46.7	28.5	Effect of Iran steel pricing in dollar	4
160	2.3	6.3	21.2	39.8	30.4	A variety of discounts effect	5
160	3.2	5.9	24.6	39.8	26.5	Effect of installment sales	6
160	1.2	7.2	25.4	34.5	31.7	Effect of establishing the validity for buyers	7
160	2.3	14.5	17.4	42.7	23.1	Effect of discriminatory pricing method	8
160	5.3	8.2	21.4	30.3	34.8	Effect of dominating prizes	9
159	3.6	16.4	19.8	25.4	34.8	Effect of government political support	10
160	5.8	8.6	25.8	29.7	30.1	Effect of desired industrial accounting	11
160	4.5	7.4	29.7	20.5	37.9	Effect of government financial support	12
160	2	19.5	24.6	28.8	25.1	Effect of considering the subsidies	13
160	4.7	20.5	30.2	22.5	22.1	Effect of desired financial provisions	14
160	7.9	20.4	45.3	14.4	11.8	Effect of goods for goods transactions	15

Table 2 : The relative frequency distribution of response to the sub-variables of price element

(N)=Numbers	Very low to medium	High and very high	Question title	Question number
160	14.8	87.5	Comparing the price of minerals in Iran with other countries	1
160	14.3	85.7	Effect of establishing the free trade	2
157	21.7	78.3	Effect of competitive pricing	3
160	24.8	75.2	Effect of Iran steel pricing in dollar	4
160	29.8	70.2	A variety of discounts effect	5
160	33.7	66.3	Effect of installment sales	6
160	28.8	66.2	Effect of establishing the validity for buyers	7
160	34.2	65.8	Effect of discriminatory pricing method	8
160	34.9	65.1	Effect of dominating prizes	9
159	39.8	60.2	Effect of government political support	10
160	40.2	59.8	Effect of desired industrial accounting	11
160	41.6	58.4	Effect of government financial support	12
160	46.1	53.9	Effect of considering the subsidies	13
160	55.4	44.6	Effect of desired financial provisions	14
160	73.6	26.4	Effect of goods for goods transactions	15

Table 3: the maximum acceptable ratio (to the high and very high answers) with the confidence of 95 % and sub-variables rank of the price element

Rank	Maximum ratio in the population with confidence of 95 %	Title of sub-variables	Question number
1	83.54	Comparing the price of minerals in Iran with other countries	1
2	81.44	Effect of establishing the free trade	2
3	74.89	Effect of competitive pricing	3
4	73.21	Effect of Iran steel pricing in dollar	4
5	72.68	A variety of discounts effect	5
6	63.78	Effect of installment sales	6
7	64.14	Effect of establishing the validity for buyers	7
8	63.85	Effect of discriminatory pricing method	8
9	63.79	Effect of dominating prizes	9
10	58.70	Effect of government political support	10
11	57.80	Effect of desired industrial accounting	11
12	56.95	Effect of government financial support	12
13	52.14	Effect of considering the subsidies	13
14	42.35	Effect of desired financial provisions	14
15	25.55	Effect of goods for goods transactions	15

Graph 1: the maximum acceptable ratio for sub-variables of price elements

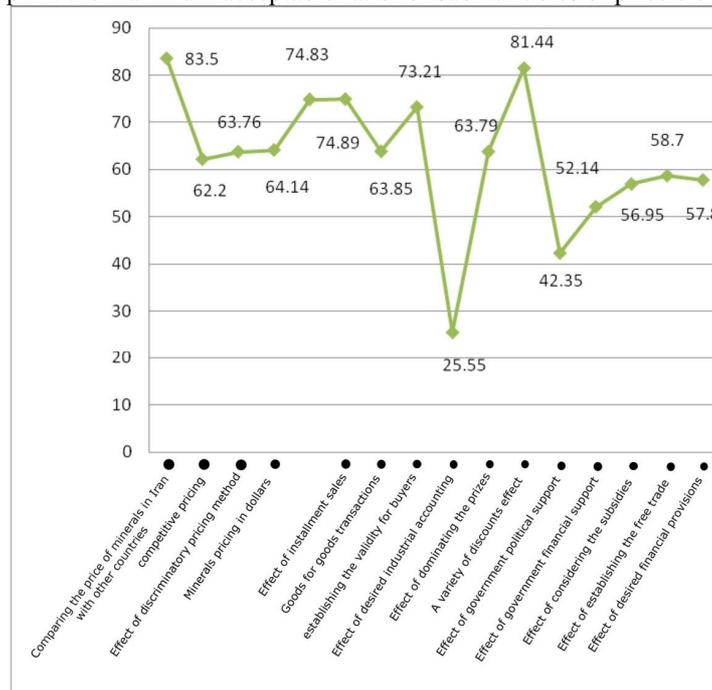


Table 4 :Table of relative distribution frequency of price score among the marketing mix factors

Relative frequency percent	Class	Number
4.4	Low to medium	1
95.6	High to very high	2
0	Without response	3
100	Column total	
	N=160	

The analysis of sub-variables of price factor in order of priority in the minerals exports :

1- In response to the question of comparing the price of Iran minerals with other countries

87.5 % of respondents considered the effect of offered prices of Iran minerals compared with the global market prices , high and very high and 7.2 % of them considered it low and very low.

In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high responses) in the studied statistical population with confidence of 95 % and maximum ratio of 83.54 % was in the first place of the ranking. Therefore, it has the most effect on the minerals exports.

2- In response to the effect of establishing the free trade on the minerals export:

85.7 % of respondents considered the effect of establishing the free trade in the increase of minerals exports in Iran , to some extent high and very high and 6.1 % of them considered it low and very low.

In the statistical analysis of test table, the maximum acceptable ratio (to the high and very high responses) in the studied statistical responses with the confidence of 95 % and maximum ratio of 81.44 % was in the second place of the ranking. therefore, establishing the free trade is effective in the increase of minerals exports.

3- In response to the competitive pricing effect on the minerals exports in Iran

78.4 of respondents found the competitive pricing method effect on the increase of minerals export in Iran , high and very high and 12 % of them found it , low and very low. In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high responses) in the studied statistical population with the confidence of 95 % and maximum ratio of 74.89 % was in the third place of ranking. Therefore , the competitive pricing is effective in the increase of mineral exports of Iran.

4-In answer to the pricing effect of minerals based on dollar or other currencies on its exports.

Most of respondents(to the high and very high responses) say that the effect of pricing of mineral in Iran based on dollar value or other global currencies on increase of minerals exports in Iran is high , very high, 12.5 percent , low and very low. In statistical analysis of test table, the maximum acceptable rate to the answers of high and very high in the studied statistical population with 95 % of confidence and maximum rate of 73.21 % was in the fourth place of rating.

5-In response to the effect of a variety of discounts on the exports of country

70.2 % of respondents considered the effect of considering a variety of **discounts in prices, high and very high** in the increase of *Iran minerals exports and its position in the global market* and while it was described low by 6.3% of respondents .

In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high responses) in the studied statistical population with confidence of 95 % and maximum ratio of 68.12 % has taken the place of 5th in the ranking . Therefore, **the role of discount types** in the increase of minerals exports is effective.

6-In response to the question of the effect of accepting the **minerals price payment by** installments on the country exports:

66.3 % of respondents considered the effect of accepting the the **minerals price payment by installments** in the increase of Iran exports , high and very high and 9.1% of them considered it low and very low.

In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high responses) in the studied statistical population with the confidence of 95 % and maximum ratio of 63.78 was in the 6th place of the ranking . therefore , the role of competitive price in the increase of minerals exports is effective.

7- In response to the effect of establishing the validity for buyers on the *country exports*:

66.2 % of respondents considered the effect of establishing the validity of buyers in the increase of minerals exports , high and very high and 8.4 % considered it , low and very low.

In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high responses) in the statistical population with the confidence of 95 % and maximum ratio of 64.14 % was in the 7th place of ranking. Since the most of commercial sales , both domestic and export sales will be done by the

form of increase of validity , therefore the role of *increasing the validity* for buyers in the increase of minerals exports has not a great effect.

8 – In response to the question of discriminatory pricing of minerals exports in Iran

16.8 % of respondents found it low and very low and 65.8 % found it high and very high in the effects of discriminatory pricing method application in the increase of minerals exports in the country. In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high responses) in our studied statistical population with the confidence of 95 % and the maximum ratio of 63.85 has took the 8th place of ranking . Therefore this factor is not effective in increase of minerals exports.

9- In response to the question of *prizes preparation (donation) effect* for exporters on the minerals exports:

The most of respondents (65.1 %) considered the effect of competitive pricing method on the increase of minerals exports in Iran , high and very high and 13.5 % of them considered it low and very low. In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high responses) in the studied statistical population with the confidence of 95 % and maximum ratio of 63.79 % was in the 9th place of the ranking. Therefore, prizes donation for exporters are effective on the minerals exports.

10- in response to the question about the *government political support of exporters* effect on the minerals exports in Iran

60.2 % of respondents found the *government political support effect* of exporters on the minerals exports in Iran , high and very high and 3.8 % of them found it low.

In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high answers) in the studied statistical population with the confidence of 95 % and the maximum ratio of 58.70 % , has taken the 10th place of ranking. Therefore , the *political support of government role* in increase of the minerals exports is very effective.

11- in response to the question of the usage effect from good industrial accounting in the minerals exports of Iran

59.8 % of respondents knew that the effect of desired industrial accounting system for calculating the total price of minerals on increase of minerals exports in Iran (high and very high and 14.4 %) , is low and very low. In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high answers) in the studied statistical population with confidence of 95 % and maximum ratio of 59.80 % achieved the rank of 11th . Therefore , use of desired industrial accounting can be effective in the increase of minerals exports of Iran.

12- in response to the question of effect of government financial support on the minerals exports of Iran

58.4 % of respondents considered the effect of government financial support on the increase of minerals exports in Iran , high and very high and 11.9 % of them considered it low and very low.

In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high responses) in the studied statistical population with the confidence of 95 % and maximum ratio of 56.95 % was in the 12th place of the ranking. Therefore , the financial support role of government in the increase of minerals exports is effective.

13- in response to the question of considering the subsidies for the minerals exports:

53.9 % of respondents considered the effect of subsidizing on the increase of minerals exports in Iran , high and very high and 19.5 % considered it low and very low.

In the statistical analysis of test table , the maximum acceptable ratio (to the high and very high responses) in the studied statistical population with the confidence of 95 % and maximum ratio of 52.14 % was in the 13th place of the ranking . Therefore , considering the subsidies for the minerals exports is effective.

14- in response to the question of the effect of desired financial provisions about the exports of minerals in Iran

44.6 % of respondents considered that the effect of desired financial provisions in increase of minerals exports in Iran is high and very high and 20.5 % considered, it is low.

In statistical analysis of test table ,the maximum acceptable ratio (to the high and very high answers) in the considered statistical population with the confidence of 95 % and maximum ratio of 42.35 % , has the 14th place in the ranking. Therefore , the role of structure modification and desired financial provisions in the increase of minerals export is very effective.

15- in response to the question of mutually beneficial goods for goods exchange transactions effect in increase of *foreign buyers number of Iran minerals* :

26.4 % of respondents considered the effect of **goods for goods** exchange transactions with other countries in the increase of foreign buyers and minerals exports of Iran , high and very high and 28.3 % found it low and very low. In the statistical analysis of test table , maximum acceptable ratio (to the high and very high responses) in the studied statistical population with confidence of 95% and maximum ratio of 25.55% was in the 15th place of ranking. Therefore, the mutually beneficial goods for goods exchange transactions in increase of minerals exports in Iran is *not effective*.

As is observed in the relative frequency distribution of price factor , 4.1 % of respondents considered the role of price in the marketing mix , low to medium and 95.6 % of them considered it high and very high . Therefore , this factor has an effective role on the minerals exports and will confirm the main hypothesis of our research.

Therefore, according to the statistical analysis and above table, the comparison of Iran minerals price with other countries with 83.54 % of the maximum acceptable ratio in the *first effectiveness ranking place* on the minerals exports and establishing the free trade with the maximum acceptable ratio of 81.44 % in the second place of ranking and the competitive pricing variable with the maximum acceptable ratio of 74.89 % in the third place of *effectiveness ranking* on the minerals exports , were placed. Therefore , sub-hypothesis of our research will reject the establishing of free trade as the *first place of effectiveness rank* on the minerals exports.

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