
Investigating the successful strategies of marketing and the export of technical and engineering services

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Abstract

The aim of this research is to investigate the successful strategies of marketing and export of technical and engineering services. *The research method:* for testing hypotheses and investigating the confirmatory factor analysis the structural equation modeling (model of measurement) will be used; among the correlation researches this one is a correlation matrix analysis or covariance. The active companies in the field of the engineering and technical services constitute the statistical population of this research the number of which amounts to 300 companies in Iran; also the least number of 7200 people are employed in this field. Therefore, 750 questionnaires were distributed as the total sample size and 750 questionnaires were collected. *The results of research:* for ranking each of the factors influencing export and marketing and the successful strategy with approach of international market including (12 cases) in the present status the Friedman test was used. *Test of hypothesis in the present status:* there is a significant difference between the present status of the twelve factors influencing export and marketing on the one hand and the successful strategy with the approach of the international market on the other. Therefore, we can formulate the following statistical hypotheses: there is not any significant difference between the present status of the twelve factors influencing export and marketing on the one hand and the successful strategy with the approach of the international market on the other. There is a significant difference between the present status of the twelve factors influencing export and marketing on the one hand and the successful strategy with the approach of the international market on the other.

Key Words: export, engineering and technical services, the successful strategies, marketing

Introduction

Paying special attention to the export of technical and engineering services requires a support for domestic manufacturers and the use of the funds that have been invested since the recent years in the country (Babai, 2009). During the last few decades, the increasing share of services trade represents, particularly in developing countries, the increasing importance of the international exchanges in this

field, beside the product trade. Due to its effects on the process of production, employment and economic development, this section is of a special importance for many countries compared with other sections such as agriculture and industry. Based on the facts and information reported by UNCTAD, the world service exports have been increased from \$ 391 billion in 1980 to \$ 3765 billion in 2010. During these periods the service export has not only amounted to 9.5 as much, but its share from total export has been increased from 16.2% to 19.8%. Also, based on the World Bank 2 statistics in 2010, the share of the added value of the service section from the world's GDP has been equal to 71 percent. At the same time, in this year the share of the industrial section has constituted 26% from the world's GDP and the share of the agricultural section only 3% from it. In this regard, the export of technical and engineering services, as one of the services subsection can directly satisfied a part of the country's foreign exchange needs, also may indirectly help through improving the goods export the country's foreign exchange earnings improvement in line with improving the trade level, productive and sustainable employment and economic growth. On the other hand, it seems that one of the most important factors in constructive interaction with the international economy depends on the Iranian ability to export services, in particular technical and engineering services to the regional and global markets. Therefore, the identification of the region's markets, according to the export performance and the relative benefits of export of technical and engineering services, along with factors affecting the development of the export of this section could be bright prospects for the development of the commercial policies with trading partners. In this study, also the members of the Organization of Islamic cooperation (OIC) have been considered as the major trading partners of Iran in the field of export of technical and engineering services. (Ahmadzadeh et al, 2012). The results of the studies conducted in this field, the results of the

study of Sadeghi Foroushani (2006) show that, despite that the export of technical and engineering services in a diamond model of Porter has a capable condition in terms of four conditions of Porter model, the other establishing national factors, including government department expansiveness and low productivity have caused thereby to be not flourished the competition in this industry and finally its little share in the world. In line with ranking factors affecting the development of the export of technical and engineering services to CIS countries, the results of the study of Hosseini (2008) indicate that the role of the State in establishing the international interaction and as supplier of the political infrastructures in establishing multilateral relations in commercial diplomacy has the first priority. Other indicators, such as facilitating the project financing, advanced machinery etc. have the next priorities. Ahmadzadeh (2009) has investigated the background of the development of trade of technical and engineering services among Islamic countries in line with the country's 20-year Outlook Document. It studies the capacities and performance of this field in the mentioned countries. Babaei, "Review of the Export of Iranian Technical and Engineering Services from 2001 to 2008". Furthermore, the contribution of different activities to the export of technical and engineering services indicates the negligible contribution of software activities to such exports. The development of software-oriented activities plays a vital role in generating added value and boosting the export of technical and engineering services, and in turn, non-oil products. Therefore, necessary actions should be taken to promote the contribution of knowledge-based products to the export of non-oil products including: facilitating the relationships of institutes intermediating between state, industry and universities such as science parks and collegiate companies, establishing risk-taking financial and educational organizations and predicting mechanisms for converting a portion of oil incomes to knowledge-generating assets. In addition, it is necessary to predict required rules for supporting intellectual property right in order to promote the interaction of innovators in the framework of networks. Ramazanian et al (2012) "Prioritizing the Target Markets for the Export of Iranian Technical and Engineering services"; according to the result of studies conducted by screening method and market potential indicators, Ireland, the U.S., India, China and Germany are the top five countries in the world

importing Iranian technical and engineering services. The numerical taxonomy method and market attractiveness indicators revealed that Singapore, Kazakhstan, India, Australia and Sweden are the best fit target markets for the export of Iranian technical and engineering services. Among countries currently importing Iranian technical and engineering services, Kazakhstan, Syria, India, Lebanon and Afghanistan are respectively the top five countries serving as the target markets for such services. Ahmadzade et al (2012), "Evaluation of the Influential Factors of Service Export, Case Study: Export of Technical and Engineering Services"; the estimations of export performance indicators as well as the comparative advantage of engineering and technical services reveals the rise of Iran rank among the studied countries in the time scope of 1994-2010. In addition, the variables of production per capita, actual effective exchange rate, entrance of foreign capitals, communicational infrastructures and the membership of the mentioned countries in the trade blocks of ECO and D8 have a positive and significant effect on total export of service as well as the export of technical and engineering services of the elected countries. Therefore, public and private sectors should pay considerable attention to the necessity of developing plans for further development of this field. Hoseini and Aliabadi (2013), "Investigation and Identification of Challenges Associated with Development and the Export of Technical and Engineering services in oil and gas field"; weakness in the export of technical and engineering services, associated with oil and gas field, wastes national development opportunity on the one hand and serves, in long-term, as a threat on the other hand. The reason is that if we rely only on the export of energy, as we do right now, and do not use related knowledge for the expansion of engineering and technical knowledge abroad, Iran will be changed, according to estimations, from a pure exporter of energy to an importer of energy in near future. Development of export of technical and engineering services of oil and gas and creating income through it makes not only possible the maintenance of this energy in long term, but also it increases the power of employment, upgrading technology and technical knowledge, improving political relations and issuing the culture and civilization. But despite the many efforts for the development of technical knowledge, this path confronts with the innumerable obstructions. In this article, based on the library studies and qualitative

semi-structured interviews with the elite and with the thematic analysis approach, it has been explained a conceptual model which has discussed the analysis of deficits of technical and engineering development of the oil industry. Also, we can refer to the identification of obstacles in three areas: background, behavior and structure as achievements of this article. In the World Bank Arnold et al (2007) embarked upon the test of some governmental policy makings, such as the existence of the relationship between reforms of service section, industrial productions and tendency to export. Based on the effects of such a policy, the existence of strong and positive relationship between the India Government's reform in the transportation section, communication and banking on the one hand and the economic agencies' productivity on the other is confirmed. Rostmaji's research (2008) regarding the trade of technical and engineering services of the South Africa indicate that the infrastructures and their development for investment in this country are among its attractions for flourishing the export of construction and engineering services.



Conceptual model of the present research, the source of researcher's experience

Research method

For testing hypotheses and investigating the confirmatory factor analysis the structural equation modeling (model of measurement) as research method will be used; among the correlation researches this one is a correlation matrix analysis or covariance. The active companies in the field of the engineering and technical services constitute the statistical population of this research the number of which amounts to 300 companies in Iran; also the

least number of 7200 people are employed in this field. Therefore, for calculating the sample size the following equation has been used:

$$n = \frac{N \times Z^2 \alpha^2 / 2 \times P(1 - P)}{\epsilon^2 (N - 1) + Z^2 \alpha^2 / 2 \times P(1 - P)}$$

where,

P: is a estimation of variable attribute, (P = 0.5)

Z: the unit normal variable value, corresponding with confidence level of 95%, ($Z_{\alpha/2} = 1.96$)

ε: licit error value, (ε = 0.05)

N: the limited population size equal to 750 people.

Definition of N: The sample of this research is the consultant engineers. They are those engineers whose role is to create a technical and specialized balance between the investor (employer) and the contractor.

The value of P has been considered to be equal to 0.5; because if P is equal to 0.5, n finds its possible maximum value. This causes the sample be adequately large. (Azar & Momeni, 2001, p. 32)

Therefore, the sample size needed for the research is approximately $n \approx 750$; for being highly confident 750 questionnaires were distributed and 750 questionnaires were collected.

Findings

4-2-1 Smirnov-Kolmogorov

Investigating the normality hypothesis of data by the use of Smirnov-Kolmogorov test (K-S)

For the use of statistical techniques should first be determined whether the collected data have a normal or non-normal distribution. For in the case that the distribution of collected data is normal, we can use the parametric tests for testing hypotheses and in the case of being non-normal the non-parametric tests. For this purpose, at this stage we investigate the results of Kolmogorov–Smirnov test on each of the dependent and independent variables and based on the results, we select the appropriate tests for truth and falsity of the hypotheses.

H₀: The data of i variable have a normal distribution.

H₁: The data of i variable have not a normal distribution.

According to the results of the following table, if the value of significance level is greater than the value of the error level, we conclude hypothesis zero and if the value of significance level is less than the value of the error level, we conclude hypothesis one.

Table 4-6: the result of variable normality test

| Factor | Error amount | Significance level | Conclusion |
|---|--------------|--------------------|------------|
| Export & marketing & successful strategy with the approach of the international marketing | 0.05 | 0.000 | Normal |

According to the results of the above table, because the value of significance level for all components is greater than the value of the error 0.05, consequently these variables have a normal distribution. According to normality of the research components in the test we use the method of single-sample T.

4-2-2 the single-sample T method

The research first question) how we can increase the market share of the export of engineering technical services? The statistical indicators for the investigation of the market share factor can be seen in the table below.

Table 4-7: statistic indicators of investigating the market share factor

| Standard deviation | Average | Distance estimation of the average of market share factor with the confidence level of 95% | Confidence |
|--------------------|---------|--|------------|
| | | Confidence high limit | |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the market share factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the market share components is lower than average. H₀: $\mu < 3$

Point of the market share components is higher than average. H₁: $\mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-8: results of Student T-test of the market share components

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test result |
|----------------|-------------|--------------------|----------------|--------------|----------------------------|
| Market share | 0.03479 | 0.000 | 749 | 70.554 | H ₀ is rejected |

Considering that the significant level is less than error level, so the hypothesis H₀ is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H₀. Therefore, with confidence of 95% we can say that the market share component is higher than average.

The second research question) how we can identify the successful domestic and foreign competitors in the field of export of technical and engineering services?

Statistical indicators for investigating the successful competitors factor can be seen in the following table.

Table 4-9: statistic indicators of investigating the factor of successful competitors

| Standard deviation | average | Distance estimation of the average of successful competitors factor with the confidence level of 95% | Confidence low limit |
|--------------------|---------|--|----------------------|
| | | Confidence high limit | |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the successful competitors factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the successful competitors components is lower than average. $H_0: \mu < 3$

Point of the successful competitors components is higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-10: results of Student T-test of components of successful competitors

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test result |
|------------------------|-------------|--------------------|----------------|--------------|-------------------|
| Successful competitors | 0.03479 | 0.000 | 749 | 70.554 | H_0 is rejected |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the successful competitors component is higher than average.

The third research question) by what methods we can model the successful strategies of domestic and foreign competitors and implement them?

Statistical indicators for investigating the successful strategies factor can be seen in the following table.

Table 4-11: statistic indicators of investigating the factor of successful strategies

| Standard deviation | average | Distance estimation of the average of successful strategies factor with the confidence level of 95% | |
|--------------------|---------|---|----------------------|
| | | Confidence high limit | Confidence low limit |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the successful strategies factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the successful strategies components is lower than average. $H_0: \mu < 3$

Point of the successful strategies components is higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-12: results of Student T-test of the successful strategies component

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test result |
|-----------------------|-------------|--------------------|----------------|--------------|-------------------|
| Successful strategies | 0.03479 | 0.000 | 749 | 70.554 | H_0 is rejected |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the successful strategies component is higher than average.

The fourth research question) how the export of technical and engineering services lead to high value added and increase in profitability?

Statistical indicators for investigating the technical and engineering services companies can be seen in the following table.

Table 4-13: statistic indicators of investigating the factor of technical and engineering services companies

| Standard deviation | average | Distance estimation of the average of technical & engineering service companies factor with the confidence level of 95% | |
|--------------------|---------|---|----------------------|
| | | Confidence high limit | Confidence low limit |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the factor of technical and engineering services companies is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the components of technical and engineering services companies are lower than average. $H_0: \mu < 3$

Point of the components of technical and engineering services companies are higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-14: results of Student T-test of the technical and engineering service companies component

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test result |
|--|-------------|--------------------|----------------|--------------|-------------------|
| Technical & engineering services companies | 0.03479 | 0.000 | 749 | 70.534 | H_0 is rejected |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the component of technical and engineering services companies is higher than average.

The fifth research question) how the export of technical and engineering services causes to increase the abilities in the global standards?

Statistical indicators for investigating the successful strategies factor can be seen in the following table.

Table 4-15: statistic indicators of investigating the factor of global standards

| Standard deviation | average | Distance estimation of the average of global standards factor with the confidence level of 95% | Confidence level |
|--------------------|---------|--|------------------|
| | | Confidence high limit | |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the global standards

factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the global standards components are lower than average. $H_0: \mu < 3$

Point of the global standards components are higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-16: results of Student T-test of the global standards components

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test result |
|------------------|-------------|--------------------|----------------|--------------|-------------------|
| Global standards | 0.03479 | 0.000 | 749 | 70.534 | H_0 is rejected |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the global standards component is higher than average.

The sixth research question) do the active companies in the field of export of technical and engineering services have a high growth rate compared to domestic markets?

Statistical indicators for investigating the factor of active companies can be seen in the following table.

Table 4-17: statistic indicators of investigating the factor of active companies

| Standard deviation | average | Distance estimation of the average of active companies factor with the confidence level of 95% | Confidence level |
|--------------------|---------|--|------------------|
| | | Confidence high limit | |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the active companies

factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the active companies components are lower than average. $H_0: \mu < 3$

Point of the active companies components are higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-18: results of Student T-test of the active companies component

| Component name | Error level | Significance level | Freedom degree | calculated T | Test result |
|------------------|-------------|--------------------|----------------|--------------|-------------------|
| Active companies | 0.03479 | 0.000 | 749 | 70.554 | H_0 is rejected |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the active companies component is higher than average.

The seventh research question) how the export of technical and engineering services causes to continue the economical activities in spite of reduction of the construction budget and stopping of weakening the development of infrastructure and activities in the foreign markets?

Statistical indicators for investigating the construction budget factor can be seen in the following table.

Table 4-19: statistic indicators of investigating the factor of construction budget

| Standard deviation | average | Distance estimation of the average of construction budget factor with the confidence level of 95% | |
|--------------------|---------|---|----------------------|
| | | Confidence high limit | Confidence low limit |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the construction budget factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the construction budget components are lower than average. $H_0: \mu < 3$

Point of the construction budget components are higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-20: results of Student T-test of the construction budget components

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test result |
|---------------------|-------------|--------------------|----------------|--------------|-------------------|
| Construction budget | 0.03479 | 0.000 | 749 | 70.554 | H_0 is rejected |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the construction budget component is higher than average.

The eighth research question) how activity in the global markets causes to improve and increase the technical abilities of the engineering units and all related ones?

Statistical indicators for investigating the global market factor can be seen in the following table.

Table 4-21: statistic indicators of investigating the factor of global market

| | | | |
|--------------------|---------|---|----------------------|
| Standard deviation | average | Distance estimation of the average of global market factor with the confidence level of 95% | |
| | | Confidence high limit | Confidence low limit |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the global market factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the global market components are lower than average. $H_0: \mu < 3$

Point of the global market components are higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-22: results of Student T-test of the global market components

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test res |
|----------------|-------------|--------------------|----------------|--------------|-----------------|
| Global market | 0.03479 | 0.000 | 749 | 70.554 | H_0 is reject |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the global market component is higher than average.

The ninth research question) how the export of technical and engineering services leads to achieve the global or regional fame and expand the activities?

Statistical indicators for investigating the global fame factor can be seen in the following table.

Table 4-23: statistic indicators of investigating the factor of global fame

| | | | |
|--------------------|---------|---|----------------------|
| Standard deviation | average | Distance estimation of the average of global fame factor with the confidence level of 95% | |
| | | Confidence high limit | Confidence low limit |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the global fame factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the global fame components are lower than average. $H_0: \mu < 3$

Point of the global fame components are higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-24: results of Student T-test of the global fame components

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test result |
|----------------|-------------|--------------------|----------------|--------------|-------------------|
| Global fame | 0.03479 | 0.000 | 749 | 70.554 | H_0 is rejected |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the global fame component is higher than average.

The tenth research question) what is the effect of the export of technical and engineering services on entering the new technologies and skills that are necessary for the country's development?

Statistical indicators for investigating the new technology factor can be seen in the following table.

Table 4-25: statistic indicators of investigating the factor of new technology

| | | | |
|--------------------|---------|--|----------------------|
| Standard deviation | average | Distance estimation of the average of new technologies factor with the confidence level of 95% | |
| | | Confidence high limit | Confidence low limit |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the new technology factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the new technology components are lower than average. $H_0: \mu < 3$

Point of the new technology components are higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-26: results of Student T-test of the new technology components

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test |
|----------------|-------------|--------------------|----------------|--------------|-------------------|
| New technology | 0.03479 | 0.000 | 749 | 70.554 | H_0 is rejected |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the new technology component is higher than average.

The eleventh research question) is the expansion of engineering units markets that during the resources limitation in the domestic market can subsist, effective?

Statistical indicators for investigating the factor of resources limitation can be seen in the following table.

Table 4-27: statistic indicators of investigating the factor of resources limitation

| | | | |
|--------------------|---------|--|----------------------|
| Standard deviation | average | Distance estimation of the average of resources limitation factor with the confidence level of 95% | |
| | | Confidence high limit | Confidence low limit |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the resources limitation factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the resources limitation components are lower than average. $H_0: \mu < 3$

Point of the resources limitation components are higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-28: results of Student T-test of the resources limitation components

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test result |
|------------------------|-------------|--------------------|----------------|--------------|-------------------|
| rejection of resources | 0.03479 | 0.000 | 749 | 70.554 | H_0 is rejected |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the resources limitation component is higher than average.

The twelfth research question) what factors are effective in quality and evaluation of the technical and engineering services?

Statistical indicators for investigating the quality can be seen in the following table.

Table 4-29: statistic indicators of investigating the factor of quality

| | | | |
|--------------------|---------|---|----------------------|
| Standard deviation | average | Distance estimation of the average of quality factor with the confidence level of 95% | |
| | | Confidence high limit | Confidence low limit |
| 0.95280 | 2.4547 | 2.5230 | 2.3864 |

According to the above table, we can say that with confidence of 95% the mean of the quality factor is between +2.3864 and +2.5230. In other words it is more than average.

The statistical hypotheses of the above test are as follows:

Point of the quality components are lower than average. $H_0: \mu < 3$

Point of the quality components are higher than average. $H_1: \mu \geq 3$

The results of the analysis of questionnaire data have been summarized in the following table.

Table 4-30: results of Student T-test of the quality components

| Component name | Error level | Significance level | Freedom degree | Calculated T | Test re: |
|----------------|-------------|--------------------|----------------|--------------|---------------|
| Quality | 0.03479 | 0.000 | 740 | 70.554 | H_0 is reje |

Considering that the significant level is less than error level, so the hypothesis H_0 is rejected. In other words, at confidence level of 95% it can be said that the sample data do not implicate a sufficient confirmation of H_0 . Therefore, with confidence of 95% we can say that the quality component is higher than average.

4-2-3 the test of Friedman variance analysis

For the purpose of ranking each of the factors influencing export, marketing and successful strategy with the approach of the international market including 12 cases in existing status, the Friedman test was used.

Test of the hypothesis in the existing status:

There is a significant difference among the existing status of the twelve factors influencing export,

marketing and successful strategy with the approach of the international market.

Therefore, we can formulate the following statistical hypotheses:

There is not any significant difference among the existing status of the twelve factors influencing export, marketing and successful strategy with the approach of the international market.

There is a significant difference among the existing status of the twelve factors influencing export, marketing and successful strategy with the approach of the international market.

SPSS output includes two tables. In the first table, the average ranks of each variable are presented and in second table the statistical characteristics and statistic χ^2 . According to SPSS output the value of significance number (sig) is zero and is less than standard significance level (1%). Therefore, the assumption H_0 in the confidence level of 99% is rejected. Therefore, it can be said that the factors affecting export and marketing and successful strategy with the approach of the international market have not the same ranks. In the following the related tables are provided.

Table 4-31: average ranks in Friedman test for investigating factors influencing export and marketing and the successful strategy with approach of international market

| factors influencing export and marketing and the successful strategy with approach of international market | Average rank |
|--|--------------|
| Market share | 6.14 |
| Successful competitors | 5.34 |
| Successful strategies | 4.34 |
| Technical & engineering services companies | 7.17 |
| Global standards | 7.87 |
| Active companies | 7.14 |
| Construction budget | 5.94 |
| Global market | 6.31 |
| Global fame | 6.64 |
| New technologies | 5.34 |
| Limitation of resources | 8.24 |
| quality | 7.14 |

Table 4-32: significance of Friedman test

| Statistic indicators | Calculated values |
|---------------------------|-------------------|
| Number | 750 |
| χ^2 | 5.495E3 |
| Freedom degree | 12 |
| Significance number (sig) | .000 |

As it can be seen in the above table, the highest rank is related to the resources limitation (8.24) and the lowest one to the successful strategies (4.34).

Discussion and conclusion

For ranking each of the factors influencing export and marketing and the successful strategy with approach of international market including (12 cases) in the present status the Friedman test was used.

Test of the hypothesis in the present status:

There is a significant difference between the present status of the twelve factors influencing export and marketing on the one hand and the successful strategy with the approach of the international market on the other.

Therefore, we can formulate the following statistical hypotheses:

There is not any significant difference between the present status of the twelve factors influencing export and marketing on the one hand and the successful strategy with the approach of the international market on the other.

There is a significant difference between the present status of the twelve factors influencing export and marketing on the one hand and the successful strategy with the approach of the international market on the other.

SPSS output includes two tables. In the first table, the average ranks of each variable have been presented and in second table also the statistic characteristics and statistic χ^2 . Regarding the SPSS output the significance value (sig) is zero and is less than the standard significance level (1%). Therefore, the hypothesis H0 in the confidence level of 99% is rejected. Thus it can be said that the factors affecting export and marketing and successful strategy with

the approach of international market have not the same ranks. In the following the relevant tables are provided. The results of this research correspond with the results of question 1 of the present research, Sadeghi Foroushani (2006), Ahmadzadeh et al (2012). The results of this research correspond with the results of question 2 of the present research, Ramazanian et al (2012), Ahmadzadeh et al (2012). The results of this research correspond with the results of question 3 of the present research, Ramazanian et al. (2012), Hosseini, Ali Abadi (2013). The results of this research correspond with the results of question 4 of the present research, Hosseini (2008), Babai (2009). The results of this research correspond with the results of question 5 of the present research, Hosseini (2008). The results of this research correspond with the results of question 6 of the present research, Ahmadzadeh (2009), Babai (2009). Hosseini, Ali Abadi (2013). The results of this research correspond with the results of question 7 of the present research, Hosseini (2008), Ramazanian et al (2012), Ahmadzadeh et al (2012), Rostmachi (2008), Samo et al (2008). The results of this research correspond with the results of question 8 of the present research, Hosseini (2008), Ramazanian et al (2012), Ahmadzadeh et al (2012), Hosseini, Ali Abadi (2013). The results of this research correspond with the results of question 9 of the present research, Hosseini (2008), Ramazanian et al (2012), Ahmadzadeh et al (2012), Hosseini, Ali Abadi (2013). The results of this research correspond with the results of question 10 of the present research, Hosseini (2008), Hosseini, Ali Abadi (2013), Arnold et al (2007). The results of this research correspond with the results of question 11 of the present research, Hosseini (2008), Ahmadzadeh (2009), Hosseini, Ali Abadi (2013). The results of this research correspond with the results of question 12 of the present research, Hosseini (2008), Ahmadzadeh et al (2012), Hosseini, Ali Abadi (2013).

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