Pharmaceutical Exports of Iran in OIC Region and Entering International Markets

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Abstract

Background There are various pharmaceutical companies in Iran with high potential. Due to the lack of business with international markets for exports, Iranian pharmaceutical products are mostly traded in domestic markets. Despite numerous studies on pharmaceutical exports in the literature, the performance of Iran in pharmaceutical exports to the Organization of Islamic Cooperation (OIC), remains yet to be evaluated. The novelty of the present work lies in filling this research gap and helping develop policies to expand pharmaceutical exports of Iran.

Materials and Methods Analysis of results on the current performance of Iranian pharmaceutical exports indicated groups of factors. The most significant factors were product quality and government policies according to questionnaire survey.

Results Analysis of results on the current performance of Iranian pharmaceutical exports indicated groups of factors. The most significant factors were product quality and government policies according to questionnaire survey.

Conclusion It was concluded that supervision regulations of pharmaceutical exports were not developed to motivate the expansion of exports. Supervision and control of Iranian pharmaceutical industries would enhance the quality of pharmaceutical products and strongly contribute to the expansion of pharmaceutical exports. It was also found that the quality improvement of pharmaceutical products was a key factor in increasing pharmaceutical exports to international markets.

Keywords Pharmaceutical Industry Performance, OIC Region, Pharmaceutical exports, Iran exports, Medicine products, Export market diversification

Introduction

The pharmaceutical industry has particularly focused on the expansion of exports in recent years; however, some challenges in the expansion of pharmaceutical exports to international markets are yet to be tackled through efficient and effective policies. The share of pharmaceutical products in world exports has grown. It was 1.7% in 2000 which has increased to 2.6% in 2005 [1]. The Organization of Islamic Cooperation (OIC) is the second-largest intergovernmental organization after the UN with 57 member states in four continents [2]. The enhancement of Iran's pharmaceutical position among OIC member states should be considered to be a key strategy. Evidently, focusing on exports to neighboring countries of Iran (OIC) can be the most productive at the lowest cost [3]. According to weak production capacity and limited pharmaceutical technology in OIC, majority of member countries are unable to locally produce sufficient amounts of pharmaceuticals needed to meet their countries need. Accordingly, they have to import the medicines from other countries so OIC pharmaceutical imports have witnessed an enhanced trend and increased from US$ 13 billion in 2005 to US$ 19 billion in 2009 [4]. Halal industry is expanded to conclude pharmaceuticals, health products, and medical devices and the market growing at the estimated annual rate of 20% [5].

Iran has enjoyed significant achievements in the production of pharmaceutical products. However, it has had poor performance in pharmaceutical exports. Iran's bureaucratic legal system has long and time-consuming procedures with domestic and serious consequences

Partnerships with foreign countries and sometimes Western pharmaceutical companies are reluctant to cooperate with Iran [6].

Pharmaceutical exports of Iran

The pharmaceutical exports of Iran have declined in recent years, despite the presence of suitable international markets. Chinese and Indian pharmaceutical products are the main explanation for the reduced pharmaceutical exports of Iran. China and India have been upward trends for important sources of pharmaceutical imports for low- and middle-income countries [7].

Of the total domestic supply, 96% of medicines are manufactured and only 4% need to be imported. However, in terms of value, 55% of the market belongs to local producers and 45% to imported goods [8]. It seems that any renovation activities of local manufacturing facilities will accompany improving GMP standards, which will increase the potential for exports, especially to countries in the region. With a relatively large local market, Iranian pharmaceutical companies have ample opportunities to export their products [9]. The major importers from Iran's pharmaceutical market were Iraq, Afghanistan. However, Pakistan, Syria, Armenia, UAE, Tajikistan, Uzbekistan, Azerbaijan, and some other countries are as potential target markets for Iran's pharmaceutical exports [10].

According to Table 1, value of Iran's exports in OIC region has grown relatively from 2010 to 2017.

Material and Methods

The present study is applied research in terms of objectives and uses a descriptive-survey methodology. A literature review was conducted, selecting relevant participants from the statistical population. Then, the methodology was developed. Data were collected through questionnaires. The analysis of the data provided findings. This study adopted purposive sampling. The optimal selection of participants was carried out based on two criteria: (1) export performance and (2) amounts of exports among Iranian pharmaceutical companies. Export volume and export growth are important factors to evaluate export performance [12]. The top ten exporting pharmaceutical companies were selected to evaluate the current Iranian pharmaceutical exports. Theoretical foundations and the pharmaceutical export regulations of OIC member states were reviewed. Data collection is a crucial phase of research. Researchers discover facts based on the collected data. This study adopted two methods to collect data, literature review and field study. This study evaluated the pharmaceutical industries of Iran and OIC member states using a literature review. Then, export performance and its determinants were evaluated through field studies and interviewing pharmaceutical export experts. Finally, a questionnaire was developed based on the expert views.

Data Analysis

Kolmogorov–Smirnov test and statistical inference

Data normality was evaluated using the Kolmogorov-Smirnov test. A p-value larger than 0.05 represents normal data, and the parametric binomial test is used. However, a p-value smaller than 0.05 stands for non-normal data (significant data), and the non-parametric Friedman test is employed [13].

Null hypothesis: sig.>0.05, data distribution is normal, and there is no difference between the data frequency and expected frequency.

Alternative hypothesis: sig.<0.05, the data distribution is not normal, and there is a difference between the data frequency and expected frequency.

According to Table 2., Since the p-value was lower than 0.05 for all the variables, it can be said that the variables had a non-normal distribution. To evaluate the variables, the nonparametric Friedman test was employed.

Friedman test

The Friedman test was used to rank variables in each group.

Null hypothesis: sig>0.05, the variables do not have a significant difference in importance

Alternative hypothesis: sig.<0.05, the variables have significant differences in importance

As shown in Table 3, the mean had a range of 1-5. A comparison of the sub-variables of the export capabilities of pharmaceutical companies suggests that technical capabilities had the highest mean (4.38), while marketing had the lowest mean (2.44). This implies that the technical capabilities of pharmaceutical companies for exporting products would be the most important variable. Financial capabilities (5.00), scientific capabilities (4.78), product quality (19.4), product price (4.07), licensing capabilities (3.40), and marketing (1.31) had the second-seventh ranks, respectively.

According to Table 4, the chi-square was found to be 153.160 at a significance level below 0.05. This verifies that the Friedman test was significant for capabilities of pharmaceutical companies.

According to survey, marketing knowledge had the highest mean (2.34), while export-oriented shareholders had the lowest mean (1.78), among the "human resource capabilities of companies" variables. This indicates that marketing knowledge is the most important human resource variable in export of pharmaceutical products. Competitive spirit (2.59), effective export management (2.39), and export-oriented shareholders (2.04) had the second-fourth ranks, respectively.

According to Table 5, the chi-square was calculated to be 19.922 at a significance level below 0.05. Hence, the Friedman test was significant for the human resource capabilities of pharmaceutical companies in exporting products.

As data observed, concerning government performance, supportive and motivational policies had the highest mean (2.23). This suggests that supportive and motivational policies of governments have the highest contribution to the improvement of pharmaceutical exports. Strategy development (2.16) and handling political challenges (1.61) had the second and third ranks, respectively.

As shown in Table 6, the chi-square was 20.589 at a significance level below 0.05. Thus, the Friedman test was significant for the government performance variables.

According to survey, Concern company performance variables, product quality and final price had the highest and lowest means (4.94 and 4.46), respectively. This implies that product quality (2.42) has the highest effect on pharmaceutical exports. Production over domestic demand (1.88) and final price (1.70) had the second and third ranks, respectively.

According to Table 7, the chi-square was found to be 28.364 at a significance level below 0.05. Therefore, the Friedman test was significant for company performance.

Moreover, according to survey, marketing and competitive spirit had a higher mean (4.64) than transportation challenges (3.04).

A comparison of variables indicates that marketing and competitive spirit had the highest mean (1.98), whereas transportation challenges had the lowest mean (1.02). Therefore, marketing and competitive spirit had a greater effect than transportation challenges on pharmaceutical exports.

As can be seen in Table 8, the chi-square was obtained to be 48 at a significance level below 0.05. Thus, the Friedman test is concluded to be significant for transportation challenges and human resource performance (marketing and competitive spirit).

Concerning external factors, international sanctions and registration regulations in target countries had means of 4.06 and 3.48, respectively.

As a result of questionnaire observes, International's sanctions had a higher mean (1.74) than registration regulations in the target countries (1.26). Hence, international sanctions have a greater impact on pharmaceutical exports.

According to Table 9, the chi-square was 20.571 at a significance level below 0.05. This verifies that the Friedman test was significant for external factors.

According to Figure 1, technical capabilities and marketing had the highest and lowest importance among company-related variables, respectively.

According Figure 2, marketing knowledge and export-oriented shareholders were the greatest and smallest human resource-related determinants of pharmaceutical exports.

Alvarez divided companies export challenges into internal, domestic, and external [14]. The determinants of Iranian pharmaceutical exports were divided into two groups: (I) internal factors and (II) external factors, each with various variables, as shown in Figure 1 and Figure 2,

included government performance (supportive and motivational policies, strategy development, and handling political barriers), transportation challenges, company performance (product quality, production over domestic demand, final price), and human resource performance (marketing and competitive spirit). The latter, on the other hand, included international sanctions and the registration regulations of the target countries.

According to Figure 3, pharmaceutical product quality and transportation challenges had the highest and lowest importance, respectively. As shown in Figure 4, international sanctions had higher importance than registration regulations in the target countries among the external variables.

Results

Discussion

Conclusions

Despite its multiple pharmaceutical companies, production rates, and technical capabilities, Iran has poor performance in pharmaceutical exports. A comparison of Iranian exports to the main competitors and major pharmaceutical exporters within the OIC region in 2018 indicated that Iran had the eleventh rank in pharmaceutical exports, with a total export worth of 105030 USD, after the UAE, Turkey, Jordan, Indonesia, Saudi Arabia, Egypt, Malaysia, Pakistan, Morocco, and Bangladesh (Oman had the twelfth rank [15]. Despite the increased worth of Iran's pharmaceutical exports, the share of Iran from international drug markets has declined. The Food and Drug Administration of the Islamic Republic of Iran directs Iranian pharmaceutical companies. It supports the sales of pharmaceutical products in the domestic market, and pharmaceutical companies do not need to offer their products to international markets and compete with international corporations. In fact, with a guaranteed domestic market, the pharmaceutical companies of Iran have insignificant motivations

to enter international markets. This has reduced pharmaceutical exports and weakened the competitive spirits and marketing skills of Iranian pharmaceutical companies.

It was also found that product quality is a crucial determinant of pharmaceutical exports to international markets. Iranian companies should improve the quality of their products to offer their products to international markets; countries have strict policies and would not permit the imports of pharmaceutical products of poor quality. OIC member countries need to take action to make OIC capital markets more attractive and the regulatory regime should focus on main areas such as new market, supervision of practitioners, and listing standards [16].

The impacts of internal factors on pharmaceutical exports were found to be in the order of product quality (2.42) as the most important factor, supportive and motivational government policies (2.23), strategy development (2.16), marketing and competitive spirit (1.89), production over domestic demand (1.88), final product price (1.7), handling political barriers (1.61), and transportation challenges (1.02). Concerning external factors of pharmaceutical exports, international sanctions had higher importance (1.74) than registration regulations in target countries (1.26).

Ethical Considerations
Voluntary participation, informed consent, and confidentiality were considered for attendees.

Conflict of Interest
authors declare no potential conflicts of interest in conducting the study and publishing the article.

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No funding was received to assist with the preparation of this manuscript.

Authors' contributions
All the participants accepted enrolment in the study.

Tables

Table 1 - Worth of Iranian pharmaceutical exports to OIC member states[11]

Year	2010	2011	2012	2013	2014	2015	2016	2017
Value (million IRR)	99.61	122.68	125.88	108.17	138.15	98.46	98.40	148.4

Table 2 - Kolmogorov-Smirnov test

Variable			Z-value	P-value	Result
Pharmaceutical export performance	Capabilities of pharmaceutical companies	Technical capabilities	0.401	0.000	Non-normal
		Scientific capabilities	0.329	0.000	Non-normal
		Financial capabilities	0.451	0.000	Non-normal
		Licensing capabilities	0.328	0.000	Non-normal
		Product quality	0.370	0.000	Non-normal
		Marketing	0.283	0.000	Non-normal
		Product price	0.256	0.000	Non-normal
	Human resource capabilities of companies	Marketing knowledge	0.286	0.000	Non-normal
		Effective export management	0.300	0.000	Non-normal
		Export-oriented shareholders	0.347	0.000	Non-normal
		Competitive spirit	0.256	0.000	Non-normal
Determinants of exports	Government performance	Supportive and motivational policies	0.461	0.000	Non-normal
		Handling political challenges	0.394	0.000	Non-normal
		Strategy development	0.442	0.000	Non-normal
		Transportation challenges	0.415	0.000	Non-normal
	Company performance	Production over domestic demand	0.380	0.000	Non-normal
		Product quality	0.539	0.000	Non-normal
		Final price	0.360	0.000	Non-normal
	Human resource performance	Marketing and competitive spirit	0.411	0.000	Non-normal
	External factors	International sanctions	0.363	0.000	Non-normal
		Registration regulations in the target countries	0.356	0.000	Non-normal

Table 3 - Fridman test result for the capabilities of pharmaceutical companies

Variable	Frequency	Mean	S.T.	Min.	Max.
Technical capabilities	50	4.38	0.49031	4	5
Scientific capabilities	50	4.20	0.60609	3	5
Financial capabilities	50	4.28	0.45356	4	5
Licensing capabilities	50	3.62	0.56749	3	5
Product quality	50	3.96	0.53299	3	5
Marketing	50	2.44	0.67491	1	4
Product price	50	3.90	0.70711	3	5

Table 4 - Fridman test significance for capabilities of pharmaceutical companies

No.	50
Chi-square	153.160
Degree of freedom	6
Sig.	0.000

Table 5 - Fridman test significance for human resource capabilities for companies

No.	50
Chi-square	19.922
Degree of freedom	3
Sig.	0.000

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Table 6 - Fridman test significance for government performance

No.	50
Chi-square	20.589
Degree of freedom	2
Sig.	0.000

Table 7 - Fridman test significance for company performance

No.	50
Chi-square	28.364
Degree of freedom	2
Sig.	0.000

Table 8 - Fridman test significance for human resource performance and transportation challenges

No.	50
Chi-square	48.00
Degree of freedom	1
Sig.	0.000

Table 9- Fridman test significance for external factors

No.	50
Chi-square	20.571
Degree of freedom	1
Sig.	0.000

Figure
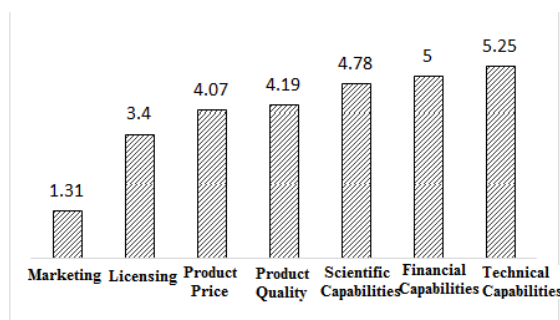
Figure 1 Capabilities of pharmaceutical companies in exports
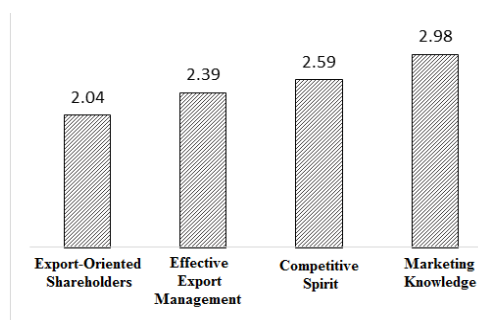

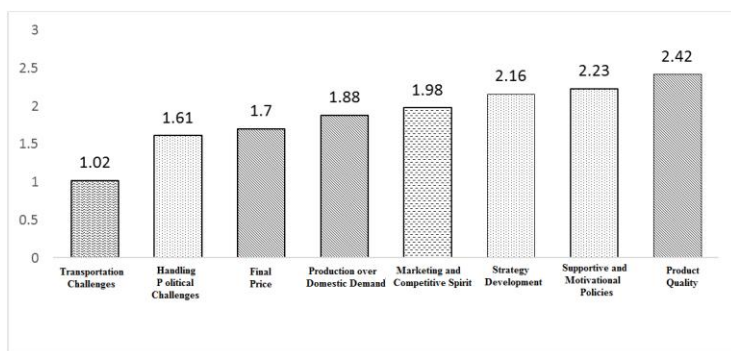**Figure 2 Human resources of pharmaceutical companies in exports**

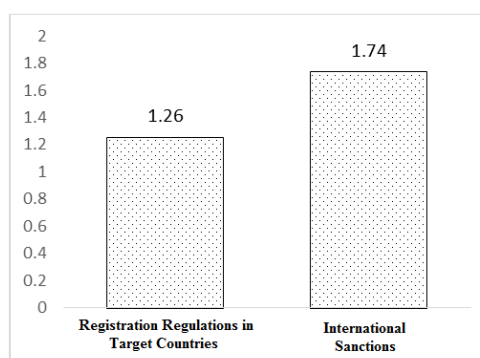**Figure 3 Ranks of internal factors for pharmaceutical exports**

Figure 4 Ranks of external factors for pharmaceutical exports

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