

THE SELECTION OF TARGET MARKETS FOR TURKISH OLIVE OIL BY MULTI CRITERIA DECISION TECHNIQUES

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Abstract

The production of Turkish olive oil will increase due to new olive trees planted in the recent 10 years. Although there has been a sharp rise of olive oil consumption within in Turkey, Turkey will have a big amount of olive oil surplus in the following years. Turkey olive producers have to find export markets for their surplus. In this research the would-be target countries are found by using AHP. The outcome is compared with a group company targets and target markets for the olive producers are recommended.

Propose

Worldwide olive oil consumption still is a very small part of total oil consumption. However, increasing health awareness, the fact that olive oil is actually a kind of fruit juice (not chemically modified) and the increase in the purchasing power of developing countries will increase the demand for olive oil in the future (Siskos, 2001).

From the sectoral view, it is seen that the 5,5 billion \$ olive oil market is dominated by the big players such as Spain and Italy but for the future it seems that they won't be able to deliver all the demand from developing countries by themselves. In particular, there is no increase in the number of olive trees and area of olive orchards (Table 1) in these countries and periodicity due to the changing weather behavior influences the productivity in a negative manner. These countries has been solving that problem by reexporting, which means that first they import from the olive oil producer countries and then export the imported olive oil to the big markets under their labels. Basically they use the other producers as their suppliers (Kavallari, 2006).

Table 1. Top Olive Producers in terms of Area of the Orchards

Countries	2008	2009	2010	2011	2012
World	9.982.000	9.436.000	9.771.000	10.113.000	10.201.000
Spain	2.483.000	2.449.000	2.475.000	2.503.000	2.427.000
Tunusia	2.400.000	1.900.000	2.300.000	1.600.000	1.700.000
Italy	1.167.000	1.161.000	1.180.000	1.190.000	1.144.000
Morocco	547.000	665.000	830.000	900.000	968.000
Greece	806.000	815.000	834.000	913.000	934.000
Turkey	707.000	727.000	742.000	786.000	805.000
Syria	617.000	635.000	647.000	684.000	695.000
Lebanon	56.000	57.000	53.000	56.000	57.0000
Portugal	347.000	344.000	343.000	343.000	345.000
Algeria	263.000	276.000	282.000	295.000	310.000
Libya	200.000	189.000	205.000	216.000	205.000
Argentina	61.000	56.000	59.000	62.000	64.000
Jordan	64.000	60.000	60.000	62.000	62.000

For the last decade the number of olive trees in Turkey has increased from 90 million to 160 million (Table 2). It is expected that the olive oil production will have reached 500 thousand tones by 2023. Turkey's performance is not satisfactory with 141 million dollar export of olive oil. Turkey's top performing export countries for olive oil is given supplement A. The quality and labelling is insufficient and the production of the small and medium sized companies is too low and to supply the big amount of olive oil demanded by the giant companies such as Metro, Real, Wallmart, Carrefour (Tunalioglu, 2011). Unless Turkey wants to be trapped by Italy and Spain, Turkey has to find its own markets, where Turkey can gain more added values and find sustainability in the export.

Table 2. Turkey Olive Oil Tree Existence

(Million Trees)	2005	2006	2007	2008	2009	2010	2011	2012	2013
Fertile	96	97	104	106	109	111	117	120	129
Not Mature	16	31	40	45	44	45	37	37	37
Total	113	129	144	151	153	157	155	157	167

Turkey's olive oil export has been quite variable for the last decade and the quantity depends on the demand from Spain and Italy or Spain's total supply. Unless there is a supply problem (weather condition) in these countries, Turkey is not good in exporting olive oil. In Table 3 and Figure 1 (in terms of 1000 \$) we can see the trends and numbers of Turkey olive oil export. Turkey olive oil increased only in the years when there was a demand from Italy and Spain. In 2005 the %65 of export goes to Spain and Italy. When there is no demand from Italy or Spain, total export cannot exceed 100,000,000 \$.

Table 3. Turkey's Olive Oil Export

	Total Export	Other Countries	Italy and Spain	Italy (A)	Spain (B)	% (A+B)
2005	299,999	104,442	195,557	126,944	68,613	65.19
2006	179,388	102,195	77,193	66,348	10,845	43.03
2007	134,580	99,956	34,624	28,933	5,691	25.73
2008	71,066	66,088	4,978	4,978	-	7.00
2009	96,202	79,343	16,859	14,464	2,395	17.52
2010	64,232	59,524	4,708	3,767	941	7.33
2011	49,409	49,231	178	178	-	0.36
2012	76,773	67,367	9,406	4,088	5,318	12.25
2013	294,543	194,011	100,532	39,402	61,130	34.13
2014	87,977	87,283	694	694	-	0.79
Average Price	3,380 \$	3,655 \$	3,010\$	3,180	2,892	

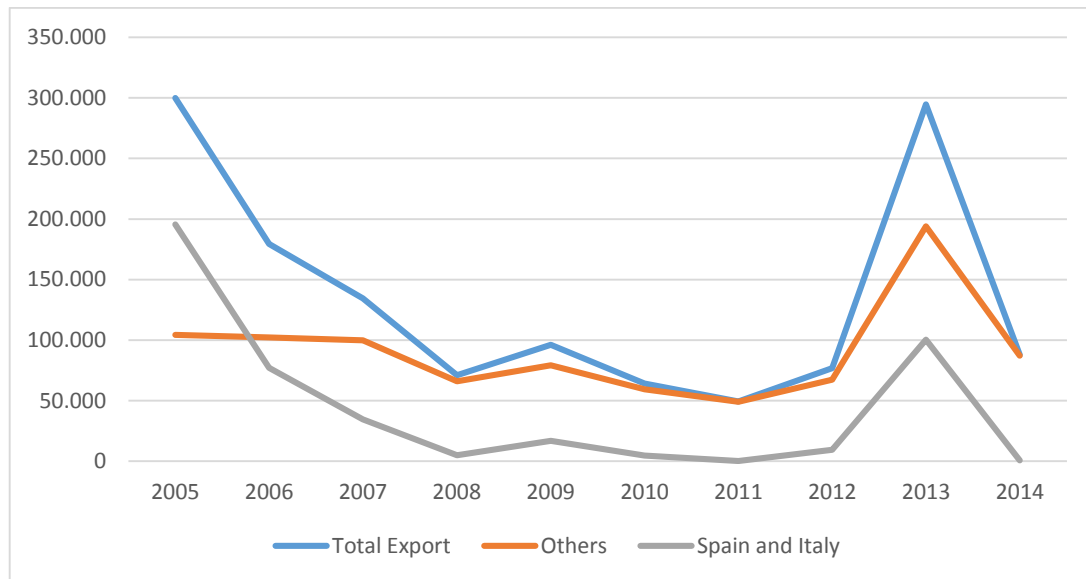


Figure 1. Turkey's Olive Oil Export Trend

As a result we can say that Turkey's olive oil production will increase in the future due to the increase in Olive Trees. However, Turkey's export capacity is quite limited because of quality problems, bad branding and supply variation. Turkey's current situation shows that Turkey only can export if dominant players cannot supply. Turkey must find the export countries to market its own olive oil for better economic outcome. That means Turkey must discover target markets for olive oil. Since there are a lot of conflicting criteria's to determine the target markets, multi criteria techniques are useful to fulfill this job.

Literature Research

Toksari (2008) investigated in his research to determine the target markets for durable goods producers in Interior Anatolia region Turkey. In the research the region was divided into 4 sub-region and 5 main criteria groups to compare these alternatives. MCDM (Multi Criteria Decision Making) were used for ordering the sub-regions.

Zhao (2011) tried to explore the target regions for China's textile export by using fuzzy AHP. They use 5 main criteria groups and 5 clustered region for target markets. The criteria's used in this research are not only related with market quantity but also economic variables and political stability. MCDM were used for ordering the country clusters.

Nowak (2012) made a descriptive research for the target countries for olive oil. In the report, the countries are ordered according to 4 main criteria's (market size, unit price, quantity of import, market grow). Since these criteria's are in conflict, they need to be weighted and ordered in general, but the research is limited with descriptive results.

Buerki (2014) developed a methodology to explore the export potential of the countries. In this research number of criteria's are developed to order the countries and whether there is a significant difference among country clusters.

Miencinskine (2013) made a research by using MCDM for determining export targets in Europe. The criteria's are weighted by experts and then normalized country values for criteria's are multiplied by wiegths.

Ozturk (2015) also developed a list of criteria's to compare the countries, but it is just a literature review of the past academic research. MCDM is not used for and ordering.

Brewer (2007) designed a model to predict the export promising countries for Australia. The research uses a statistical method whether a country is good export market or not.

Cavuslugil (2004) developed two phases for export markets. First 10 country clusters are created and then each cluster is assessed according to own merits, which are normalized country economic and sociologic variables.

Atalay (2012) used MCDM to decide the export markets for Turkey's timber and timber products. 5 main and 32 sub criteria's are designed to order the alternative countries.

Selection of Criteria's

In this research, the target markets for the export growth of the olive oil of Turkey are chosen by using MCDM techniques. The criteria's are selected not only from the current potential of the olive oil consumption but also from the future potential of the olive oil consumption. There are 4 main criteria's including 15 sub criteria's. The criteria's are collected from the literature and discussed with a group expert consisting of 10 people from producers, academicians and non-government organizations. The hierarchy among the criteria's are shown below (Figure 2).

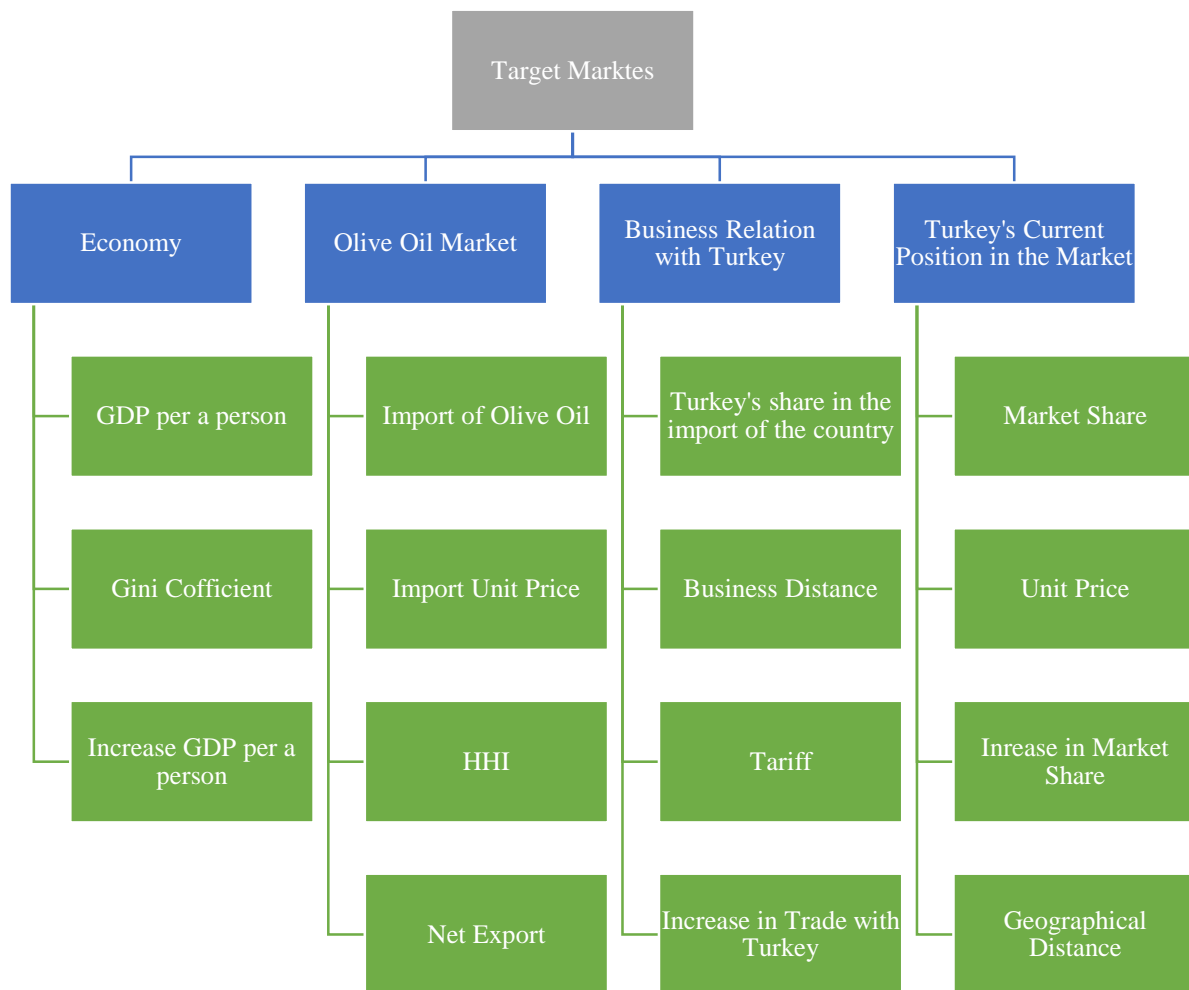


Figure 2. Hierarchy of Criteria's

Weight of Criteria's

The weights of the criteria's are calculated by using Analytical Hierarchy Process. The pairwise comparisons are determined by the individuals in the group. The comparisons are united by using geometric mean. First main criteria's are compared and then sub criteria's are compared within each main criteria. The final weight are found by multiplying the main criteria and sub criteria weight. In Table 4, the weight of the criteria's are given. No threshold for conformity are exceed in each comparison. A sample is given below Table 5.

	1	2	3	4	Weights
1. Economic	0,14	0,12	0,18	0,13	0,14
2. Olive Oil Market	0,35	0,30	0,31	0,27	0,31
3. Business Relation with Turkey	0,22	0,27	0,28	0,32	0,27
4. Turkey's Current Position in the Market	0,29	0,31	0,24	0,28	0,28

Table 4. The Weight of the Criteria's

Main Criteria	Weight	Sub Criteria	Weight	Final Weight
Economic	0,141	GDP per a person	0,387	0,055
		Gini coefficient	0,388	0,055
		Increase GDP per a person	0,224	0,032
Olive Oil Market	0,307	Import of Olive Oil	0,323	0,099
		Import Unit Price	0,390	0,120
		HHI	0,106	0,033
		Net Export	0,181	0,056
Business Relation with Turkey	0,267	Turkey's share in the import of the country	0,200	0,053
		Business Distance	0,364	0,097
		Tariff	0,149	0,040
		Increase in Trade with Turkey	0,288	0,077
Turkey's Current Position in the Market	0,282	Market Share	0,234	0,066
		Unit Price	0,174	0,049
		Increase in Market Share	0,390	0,110
		Geographical Distance	0,201	0,057

The main criteria's to order the countries are economic situation, olive oil market, economic relation and culture differences and Turkey's position in olive oil market. In general, the criteria's are not only related with the current position of the market but also the criteria's chosen are also related with the future of the market. From that point of view, the research is successful to find the markets with a future potential. When the weights of main criteria's are compared, all of them expect economic situation criteria's have the same weight. The current olive oil market with 30.7% is the most important main criteria. The trade and cultural closeness criteria %26.7. The current situation of Turkey in the market is 28.2%. Economic situation of the country is only 14.1% respectively. The most important sub criteria is the unit price of olive oil paid by the country (%12).

Finding Alternatives

Though in the beginning all countries are supposed to be would-be target markets, the experts discussed that the assessment of the countries which imports less than 30 million \$ from Turkey are not necessary. The countries are filtered according to this assumption and totally 130 countries are found above the limit. For these 130 countries, the value of each criteria are found from internet data bases and normalized with respect to selected suitable normalization method. The summary of internet data bases and normalization methods used for each criteria is given below Table 6.

Table 6. Data Sources and Normalization Methods

Main Criteria	Sub Criteria	Data Source	Normalization ¹
Economic	GDP per a person	www.imf.org	$X_{country}/X_{max}$
	Gini coefficient	www.worldbank.org	$(1/X_{country})/(1/X_{max})$
	Increase GDP per a person	www.imf.org	$X_{country}/X_{max}$
Olive Oil Market	Import of Olive Oil	http://www.trademap.org/	$X_{country}/X_{max}$
	Import Unit Price	http://www.trademap.org/	$X_{country}/X_{max}$
	HHI	http://www.trademap.org/	$(1/X_{country})/(1/X_{min})$
	Net Export	http://www.trademap.org/	$X_{country}/(X_{max} - X_{min})$
Business Relation with Turkey	Turkey's share in the import of the country	www.tuik.gov.tr	$X_{country}/X_{max}$
	Business Distance	http://geert-hofstede.com	$(1/X_{country})/(1/X_{min})$
	Tariff	www.tuik.gov.tr	$X_{country}/(X_{max} - X_{min})$
	Increase in Trade with Turkey	www.tuik.gov.tr	$(1/X_{country})/(1/X_{min})$
Turkey's Current Position in the Market	Market Share	http://www.trademap.org/	$X_{country}/X_{max}$
	Unit Price	www.tuik.gov.tr	$X_{country}/(X_{max} - X_{min})$
	Increase in Market Share	http://www.trademap.org/	$X_{country}/X_{max}$
	Geographical Distance	http://www.timeanddate.com http://www.trademap.org/	$X_{country}/X_{max}$

Ordering Countries

The target markets are ordered by using Simple Additive Weighting Methods. The results are compared also with the expectation of the 20 companies' top fours. Table 6 shows the ranking of the countries according to general points they collected from MCDM. In Table 7 and Figure 3 company target markets and MCDM results are given. In Figure 3 vertical axis is the rank of MCDM and horizontal is the result of the company surveys. The line in the middle creates two spatial. The spatial below shows the countries with good company results but relatively bad MCDM results. The spatial above shows the countries with good MCDM results good but relatively bad company results.

¹ $X_{country}$ is the value of investigated country in this criteria, X_{max} is the maximum value in this criteria, X_{min} is the minimum value in this criteria

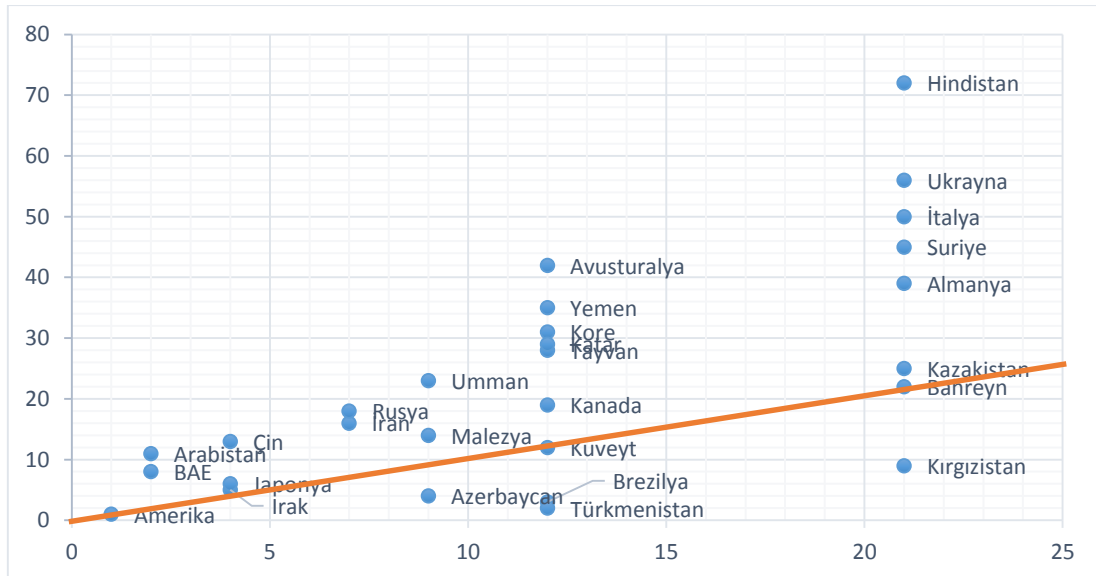
Table 6. Rank of the Countries

Countries	General	Rank	Economy	Rank	Market	Rank	Relation with Turkey	Rank	Turkey's Position	Rank
1. USA	0,52	1	0,08	4	0,24	1	0,10	54	0,09	76
2. Turkmenistan	0,50	2	0,06	31	0,09	81	0,19	1	0,17	3
3. Brazil	0,50	3	0,06	24	0,18	6	0,16	4	0,09	81
4. Azerbaijan	0,49	4	0,07	9	0,05	120	0,18	2	0,19	1
5. Iraq	0,48	5	0,04	108	0,09	70	0,17	3	0,18	2
6. Japan	0,47	6	0,06	34	0,19	4	0,10	51	0,12	27
7. Switzerland	0,47	7	0,08	6	0,17	7	0,10	49	0,12	30
8. UAE	0,46	8	0,10	2	0,14	12	0,12	25	0,10	54
9. Kirgizstan	0,44	9	0,04	107	0,10	47	0,15	8	0,14	10
10. Saudi Arabia	0,43	11	0,08	5	0,12	22	0,12	28	0,12	35

Table 7. Data Sources and Normalization Methods

Country	Frequency by Companies	Rank for Frequency	MCDM Ranks
Çin	5	5	13
İran	4	7	16
Umman	3	8	23
Malezya	3	8	14
Rusya	3	8	18
Azerbaycan	3	8	4
Avusturalya	3	8	42
Kanada	2	13	19
Tayvan	2	13	28
Kore	2	13	31
Brezilya	2	13	3
Türkmenistan	2	13	2
Katar	2	13	29
Yemen	2	13	35
Kuveyt	2	13	12
Almanya	1	21	39
Kazakistan	1	21	25
Kırgızistan	1	21	9
İtalya	1	21	50
Ukrayna	1	21	56
Hindistan	1	21	72
Suriye	1	21	45
Bahreyn	1	21	22

Figure 3. Comparison of Company Selection and MCDM Results



Result

The research shows that instead of exporting developed markets, Turkey has to choose the markets, where economic activity has been increasing and where the taste of the olive oil has been recently discovered. Especially the countries with the similar business culture, close trade relations and GDP growth can be selected as target markets for the future. The olive oil production companies still feel that their target markets should be today's markets. That means, they are much oriented with the high consumption markets in the world. On the other hand, the research shows that the Turkish companies should try to approach the developing markets, because there is a big tendency of the olive oil consumption increase in those countries and they really pay high prices for the olive oil.

The rich Middle East countries should also be target markets because they pay high prices and Turkey has the advantage of logistic costs and business experience. Even though the consumption of Turkic republics are very limited today, their economic performance indicates that they could be consumers with the high prices of the future and Turkey's close relation with these countries is a clear competitive advantage. BRIC (Brazil, Russia, India, China) countries should be very attractive for Turkey, because of high economic growth and olive oil consumption potential. European countries are not seen very attractive in this research because they protect Italy and Spain by holding high tariffs on Turkey. Even though Spain and Italy are the top importers, they are also not seen attractive for export market due to their reexport policy.

The most important fact that is revealed in this research is that the future of the Turkey's export is the olive oil consumption of the developing countries. The consumption of the developed markets has increased just 200 million dollar from 4.4 billion to 4.6 billion dollar for the last decade. Turkey has limited chance in those markets because they were conquered by Italy and Spain and high tariffs are in effect for Turkish olive oil. On the other hand, the consumption of the developing countries has tripled from 300 million dollar to 1 billion dollar. As the results show, developing countries should be direction of Turkish olive oil export.

Supplement A: Turkey's Export Performance for Olive Oil According to Value in \$

Importing Countries	2013 Export (\$)	2013 Net Export (\$)	Share in Turkey's Export (%)	2013 Export Quantity (tone)	2013 Unit Price (\$/ton)	2009 – 2013 Growth % (\$)	2009 – 2013 Growth % (tone)	2012 - 2013 Growth % (\$)	Rank of importing country in \$ in the World	Share of importing country in \$ in the world	Tariff (%)
Total	<u>141.079</u>	<u>140.811</u>	<u>100</u>	<u>42.354</u>	<u>3.331</u>	<u>30</u>	<u>35</u>	<u>198</u>			
1. USA	36.721	36.566	26	11.034	3.328	50	60	282	2	14,3	0
2. Spain	27.567	27.567	19,5	9.532	2.892			1.498	4	6	39,9
3. Saudi Arabia	18.233	18.233	12,9	5.376	3.392	21	22	40	22	0,6	5
4. Japan	13.463	13.463	9,5	3.571	3.770	15	17	134	8	3,8	0
5. Iran	9.245	9.245	6,6	3.083	2.999	109	119	509	33	0,2	50
6. Italia	5.844	5.815	4,1	1.838	3.180	214	156	12.887	1	26,5	39,9
7. China	3.880	3.880	2,8	956	4.059	32	29	21	9	3,1	10
8. Canada	3.485	3.485	2,5	959	3.634	18	21	168	11	2,4	0
9. UAE	2.573	2.573	1,8	717	3.589	-1	-1	42	23	0,3	5
10. Yemen	2.484	2.484	1,8	692	3.590	88	88	775	72	0	5

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