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The Study on Potential Usage of Iran Southern Ports as a Regional Transit Terminal for Grain by Use of AHP Method

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ABSTRACT

Major transit corridors pass through Iran. Since Iran islocated between Persian Gulf and Caspian countries,its access to these strategic regions is quick and easy. This makes Iran as a short, cheap, accessible and safe grain transit routeto target markets in the Persian GulfandSouth Africa countries. In order to conduct this research, required information on south commercial portsof Iranwere gathered.The indicatorshave been weightedthrough distributed questionnaires. Using SPSS specified those ports which have the potential for grain transit terminal.In next step, to determine the priority degree of each indicator, the EXPERT CHOICEhas been used. Then compared to each indicator, the affectedness and attraction of portshave been gained.Finally the optimum port for grain regional transit terminal has been identified.Results by SPSS show that ports of Imam Khomeini (BIK), Bandar Abbas and Chabahar have the potentials for grain transit terminal. Results by EXPERT CHOICE show that the importance of the road and rail hinterlands indicator is 35.6 %, storage capacity is 26.9 %, grain berth is18.6 %, equipment is 11.1 % and distance from north ports is 7.9 %. The grains attraction rate in BIK is 46.5 %, Bandar Abbas is 27 %, Chabahar is 9.9 %, Khorramshahr is 9.5 % and Bushehr is 7.1 %. Consequently compared to south ports, BIK is the best for grain regional transit terminal.

KEYWORDS: Transit - internal Transit - external transit - port - Transit port- Grain - grain silo

INTRODUCTION

Transportation includes the activities that leads to transferring human and freight, in addition to performing the economical activity that leads to production, services and employment, it causes production of goods and services have relative and certain advantages in other areas. As a result, the role of transportation is important in economic, management and geographical planning. Basically, the communities where have high level at economic development include the efficient and developed transport system. Transport is primarily the inductor of economic activities that developing it can lead to dividing labor and therefore more production, by following it investment, employment, increasing income and eventually lead to the greater welfare of societies. International Organization such as GATT and the world trade organization directly affect the economic development and continuous growth of trade between different countries. Other factors have influenced the development of world trade, the most important of them are: prompting the use of IT technology, containerized shipping method, shipping specialization, advanced equipment loading and unloading of goods at ports (Hasanzadeh, 2011, p.108).

Obviously, according to the restriction of economic resources and economic costs and underlying macro-economic costs of transportation methods the considered planning should have the firm economic evidence.

Principles for the transit of goods

A successful goods transit shall be on the following principles:

1- The international transit: The transit requires certain customs regulations, specific traffic regulations, regulations for entry and exit of people and goods. If these are inconsistent with the local regulations, should be amended or revised. (Jamshidi, 2000, p 108)

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2- The transit affordability
3- Goods transit facilities: Facilities and infrastructure should be available at inlet and outlet boundaries such as ports, airports and terminals and also road facilities such as transit road and rail networks, infrastructures such as warehouses, stations and other facilities throughout the routes are needed.
4- Appropriate transport: anappropriate transportation depends on Speed (time), cost, availability, safety and level of service to customer.
Lower costs make economical transit and so the owners will be encouraged to transport their cargoes on these routes. Convenient facilities and absence of the complex and cumbersome transport regulations cause to increase the speed. Regulations should be developed in such a way that the goods transport should be done smoothly, quickly and minimally physical control by manpower.Obviously, goods transit must be delivered to destination in a high quality. The State must provide the necessary security in the entries, routes and equipment and also foreign personnel.(Ibid)

Economic – commercial functions of ports integrated systems:
Nowadays, ports are defined as multi-purpose markets and industrial areas. They not only transport passengers and cargo through different transportation systems, they are the places for categorization, assimilation, completion, maintenance and also production and distribution of products. This makes a considerable added value. Portsare considered as rings of international integrated transport or global supply chains. Based on location, distance to major shipping lines as well as economic and technological development of hinterland,they supply a wide range of services which leads to added value and macroeconomic benefits. Ports as major nodes in the chain of integrated business support play an important role in international trade services.

The main commercial ports in the South of Iran:
Bandar Imam (BIK) Special Economic Zone:BIK is one of the major ports of regional transportation. It has a great attraction of investing in the construction of dedicated terminals, storage of goods, oil tanks, edible oils, grain silos, conversion industries factories, assembly, packaging and distribution of goods, and etc. In order to expedite unloading of graininBIK, this port has a700000 ton transit warehouse connected to the railways network with special facilities. (PMO Portal, 2012)

Khorramshahr port free zone: Due to neighboring to Iraq, Port of Khorramshahr as a part of Khuzestan Province is a strategic area in terms of trade, economic and political. This port is located on the last point of west frontier of Khuzestan and its dock is onShat Al Arab.To develop the port, the length of the berths, from 1000 m to 1350 m will be extended. (Ibid)
Bandar Abbas Special Economic Zone: Bandar Abbasis one of the most important ports in the Middle East that has the capacity of the largest container ships in the world with 14 thousand TEU. The port ranking in volume of container operations is 49. Due to necessary infrastructure and superstructure such as berths and warehouses, appropriate tariff system, flexibility and competitiveness in the domestic and regional demand and consumption markets, this port has the potential to become the third generation port (Ibid).
Bushehr Special Economic Zone: the ancient and historical port of Bushehr has a five- thousands years history. Following the closure of Khorramshahr and BIK during the Iran and Iraq war, in spite of lack of loading and unloading facilities and berth but great docks with high potential and neighboring to consumption markets, this port carried out loading and unloading operation more than its capacity. This caused to resume its former prosperity through a new attitude. (Ibid)
Chabahar Special Economic Zone: Chabaharisone of the most important ports in the north-south corridor. Due to its strategic position and access to international waters, it is considered as a most strategic port of the region in the field of transit and increasing regional and international cooperation. (Ibid.)

Types of port terminals
According to the type of goods loaded and unloaded, port terminals are classified.
1- Break bulk cargo terminals: These terminals are also known as general cargo terminal where goods as boxes, barrels, pallets, sacks and bags are loaded and unloaded. (Hassanzadeh, 2011, p 241)
2- New bulk cargo terminal: cargoes are loaded and unloaded by vehicles or containers. Timber, paper, steel and cars are examples of these bulk cargoes.
3- Container terminal: Due to the specific benefits, container shipping is rapidly increasing. These benefits include less damage to the goods, high speed loading and unloading operations, safety and protection of goods against theft and sabotage, less cost forthe increased tonnage of loading and unloading. (Ibid, p 247).

4- Liquid bulk terminal: Crude oil and petroleum products have the largest share of liquid bulk cargo trade. According to the separation of production and consumption markets of these goods, construction and operation of oil terminals at the international level is essential. Liquid edible oil, liquid natural gas, molasses, water, petrochemical derivatives, acids, methyl and ethanol are the liquid bulk cargoes. (Ibid, p 266)
5- Dry bulk cargo terminals: To import and export a particular cargo, special terminals are needed. The cargo mainly is carried by rail or truck to terminal for export or import. Grain, iron ore, clinker, phosphate, etc. are some of these cargoes. Loading and unloading of such cargoes is done by use of special equipment such as grub, conveyor belts, loading hopper and vacuum towers and unloaders (ibid, p 268)

The number and type of berths in southern ports:
Based on the own potential and the type of cargoes, ports are moving towards specialization in the loading and unloading. Considering the advantages, each port hasspecificberthsto imported and exported cargoes, which are provided in the table below.

ports berth type	Chabahar	Bushehr	Khorramshahr	Bandar Abbas	BIK
Ro-Ro	0	1	1	0	**0**
Grain	0	0	0	0	**2**
Multipurpose	5	6	10	12	**13**
Refrigerated	0	3	0	0	**0**
Oil	1	1	0	2	**1**
Container	0	2	4	11	**5**
liquid Bulk	0	0	0	0	**2**
solids Bulk	0	0	0	3	**15**
Barge	0	1	0	1	**0**
Specialty	0	0	0	4	**0**
Freight and passenger	0	0	0	0	**0**
Service	0	1	0	0	**0**

Some of the features of the main commercial ports in the South of Iran:
The following table shows some of the features of the ports that can contribute to grain transit. (Portal PMO, 2012)

features	Chabahar	Bandar Abbas	Bushehr	Khorramshahr	BIK
Year of built		1355	5000	1300	1307
Area	230	2400	53	230	3438 hectares
Number of berths	5	24	15	20	40 post
Domestic rail	0	23	0	15	135 km
Port capacity	2.5	70	5	350000	40 MT
Reception capacity	70000	70000			150000 T
draught of berths	9	15	12	6	15 m
Distance from Tehran	1961	1563	1100	997	920 km
Roofed storage area	33200	246700	31733		507000 m2
dock area	213000	193095	234020		2000000 m2
vacuum tower	0	4	2	0	9
Unloader	0	2	0	0	4
Major cargo		container, minerals	grains, bag cargoes, fruit and vegetable container	spare parts, household appliances, machinery, fruit and vegetable	grain, bag cargoes, minerals, container, liquid bulk

Grain production and consumption markets in the region:
North and neighboring countries of Iran, known as the CIS, and in particular Russia and Kazakhstan, with the problem of farness from major consumption markets. In contrast, the states of the Persian Gulf face to the main challenges of food supply due to geographical restrictions on the agricultural sector, dominated by subtropical high pressure system on most days of the year and the arid climate.(PMO portal, 2012).

Top grain-producing countries (FAO):

Top wheat-producing countries between 2005 to 2010 (tons)						
country	**2010**	**2009**	**2008**	**2007**	**2006**	**2005**
China	115180303	115115364	112463292	109298296	108466271	97445196
India	80710000	80680000	78570200	75806700	69354500	68636900
Russia	41507600	61739800	63765100	49368000	44926900	47697500
U.S.A	60102600	36570060	68016100	55820400	49216000	57242000
France	38207000	38332200	39006400	32763500	35363600	36885500
Canada	23166800	26847600	28611100	20054000	25265400	25748100
Germany	24106700	25190300	25988600	20828100	22427900	23692700
Pakistan	23310800	24033000	20958800	23294700	21276800	21612300
Australia	22138000	21656000	21420200	13569400	10821600	25173000
Ukraine	16851300	20886400	25885400	13937700	13947300	18699200
Turkey	19660000	20600000	17782000	17234000	20010000	21500000
Kazakhstan	9638400	17052000	12538200	16466900	13460500	11198400
UK	1487800	14076000	17227000	13221000	14747000	14863000
Iran	15028800	13484500	7956650	15886600	14663700	14308000
Poland	9487800	9789590	9274920	8317270	7059670	8771430
Egypt	7177400	8523000	7977050	7379000	8274230	8140960
Argentina	14914500	8851180	8508160	16486500	14662900	12722000
Uzbekistan	6730400	6637700	----------	6197400	6099300	6057200
Italy	6900000	6341000	8855440	7170180	7181720	7717130

The importance of grain trade

The population growth rate in the world is about two millions that focus lies mostly on three continents, Africa, Asia and Latin America. This rate is more than grain production.Increased transportation costs, decreased level of the world reserves and the dollar, increased in per capita grain consumption, especially in India and China, using the grain to produce bio-fuel and livestock of infectious diseases such as flu, lead to give importance to world grain trade and pay special attention to the accessible transit routes in the form of processed grains, swap and re-export. In many Asian and African countries, more than 80% of the food is supplied from grain directly. The share of Europe is 45 to 55 percent and the United States is approximately 20 to 30 percent.Therefore the supply of grains as a strategic product for these countries is important. (Abbaszahde, 2010, p 56)

Top wheat-exporting countries between 2005 to 2009 (tons) (FAO)					
country	**2005**	**2006**	**2007**	**2008**	**2009**
USA	27178600	23377200	32946900	30093400	21942200
Canada	13925000	18497800	17551700	15781400	19279100
Australia	13914500	14975500	14684200	8278010	17528300
France	16022500	16580500	14386400	16292600	16872200
Russia	10319600	9704620	14444100	11720200	16821200
Ukraine	6009480	4671320	1055890	7511300	12882600
Germany	4627030	6105950	4646040	7037570	9687780
Argentina	10431100	9697360	9645490	8772260	5118010
Kazakhstan	1899000	4194800	6178070	4950760	3229020
UK	2494780	2116510	1911500	2765720	2533100
Check Republic	1468020	987940	802438	911597	1775330
Belgium	800593	885870	863090	975384	1771180
Hungary	1641970	2095340	1591990	2112600	1660680

Gain imports of Persian Gulf states (ibid.)

The grain imports of the Persian Gulf states in 2005, 2009 (tons)					
country	**2005**	**2006**	**2007**	**2008**	**2009**
KSA	0	0	0	249333	1300920
Qatar	59119	21488	100487	114203	5000
Kuwait	307796	326068	248023	10904	365822
Oman	121349	193860	242306	248268	174739
Bahrain	83333	14443	0	66076	63497
Iraq	2535530	2838810	2423710	2963320	3050410
UAE	1576630	919606	631346	775473	1324340

Benefits of being grain transit center:

The grains producer countries are located in the north, and the consumer countries are in the south of Iran. If Iran is able to play the role of an intermediary in thesecountries, itwill serve as the central figure of an active grains transit trade. Iran can use the potential of empty mills, the transport companies for appropriate logistics and the transport of processed products to thementioned countries.Iran thus gains added value and many benefits. The following benefits for the country are desired.

1 - Foreign currency income
2- Value added
3- Job opportunities
4 - Regional and national security
5 - Development of regional and international
6 - Domestic and foreign investmentattraction
7 - Cost of sales reduction
8 - Increase the competitiveness
9 - Reduce the delivery time of grains
10 - The key role in the entrepreneurship process
11 - The act of a transit route for grains swaps

Analytic hierarchy process (AHP):

The analytic hierarchy process (AHP) is a structured technique for organizing and analyzing complex decisions. Based on mathematics and psychology, it was developed by Thomas L. Saaty in the 1970s and it has been extensively studied and refined since then.This gives administrators the ability to evaluate different scenarios and it is one of the most efficient techniques for decision making with multiple indicators. It is used to choose one option among several options,according to indicators that are determined by the decision maker. AHP enables the combination of qualitative and quantitative criteria simultaneously. This process uses the paired comparisons of variables and the decision making criteria. (Moshiri,2001)

ThestepsofA.H.P:

By specifying the elements, making decision and giving priority to them, AHP will be started. These elements include different methods of performance and giving priority to items or features.

First step: make a hierarchical tree
Second step: determining the coefficient importance ofcriteria sub-criteria and weighting to the alternatives
Third step: combining the coefficient importance of the options and combining the weights
Fourth step: compatibility Test

Illustrating the hierarchy tree:

Hierarchy tree consists of three main levels which are objectives, criteria and options. The objective is the main research question orit isthe problem we want to solve.The criteria in fact are the items which measure the objective. In this levelwe can illustratethe required number of criteria on a horizontal surface. (Ibid)

Detection, identification and classification of the criteria and sub criteria and alternatives:

In this section, at least one person who is experienced in the field of research and objective and is mastered in the methodology should be applied to detect, identify and classify the criteria and sub criteria and alternatives. To carry out this, he should use his knowledge, complementary studies, field studies and interviews. Finally, he gathers the criteria and alternatives associated with the objective, and he classifies precisely and justifiably and then defines them.

Weightingtofactors:

1- Use of expert's knowledge: In this methodconsidering the field of study,the experience and knowledge of expertsare usedand the factors are determined and weighted.
2- Use of dataknowledge: Data knowledge is based on the available information about the answer of research question. By use of the available answersin the location question and the measurement of the dependency of each factor to the answer, the weight of each factor can be determined.
3- Using a combination of expert knowledge and data: In this method, the weights are determined through expert knowledge and data separately. Then the optimal weights are determined by comparing the obtained values. (Ghodsipoor,1379)

The criteria and indicators of the research:

In the AHP software, major ports in the south of Iran include Chabahar, Bandar Abbas, Bushehr, BIK and Khorramshahrare specified as the effective target, indicator and alternative ports in grains transit. This is performed by experts and specialists as below:

1- Southern port distance to the northern ports of Anzali and Amir Abad

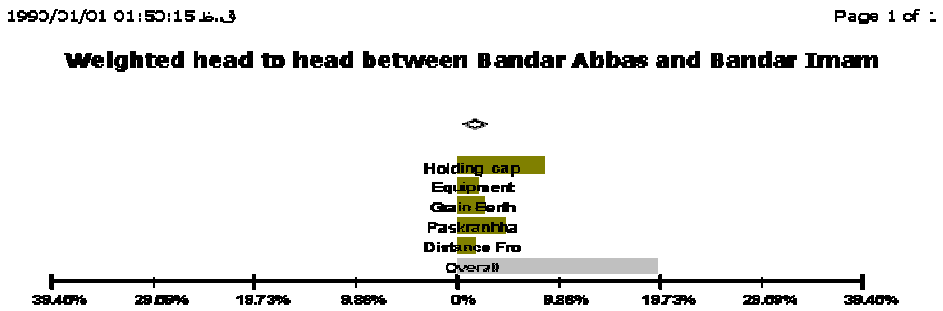
2- Marine,loading and unloading grains equipment
3- Berths for grains
4- Grains storage capacity
5- Access to major road and rail routes

The sub- criteria or sub-indicators of the research:

1- Marine, loading and unloading grains equipment include: grub, conveyor belts, unloader, vacuum towers and tug.
2- Distance to Northern ports, include: the ports of Anzali and Amir Abad.
3- Berths for grain include: length, draught and capacity.
4- Grain storage capacity include: silo, warehouse and dock.

Research options

1 - Bandar Imam Khomeini(BIK)
2 - Khorramshahr
3 - Bushehr
4 - Bandar Abbas
5 – Chabahar



Objectives Names

Holding cap	Holding capacetl
Equipment	Equipment
Grain Berth	Grain Berth
Paskranhha	Paskranhha
Distance Fro	Distance From The Northern P ORTS

Alternatives Names

Khorramshahr	Khorramshahr
Bushehr	Bushehr
Bandar Abbas	Bandar Abbas
Chabahar	Chabahar
Bandar Imam	Bandar Imam

Paired comparisons of the indicators between BIK and Bandar Abbas:

The above diagram illustrates thepaired comparisons between BIK and Bandar Abbas. Indicators are storage capacity, equipment, berth grains, rail and road hinterland and the distance from northernports.As the above figureshows that the amount of indicator attraction on the right side of the diagram is greater. Itmeans that it is shifted towardsBIK. Overall, compared to Bandar Abbas, BIK has taken 19.7% of the indicators. Then BIK for grain regional transit terminal is more important.

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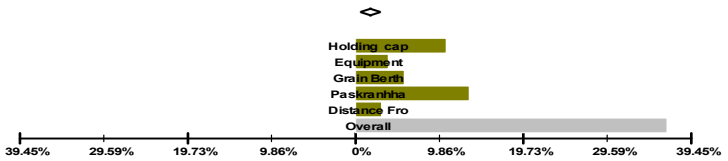
Weighted head to head between Chabahar and Bandar Imam



Objectives Names

Holding cap	Holding capaceti
Equipment	Equipment
Grain Berth	Grain Berth
Paskranhha	Paskranhha
Distance Fro	Distance From The Northern P ORTS

Alternatives Names

Khorramshahr	Khorramshahr
Bushehr	Bushehr
Bandar Abbas	Bandar Abbas
Chabahar	Chabahar
Bandar Imam	Bandar Imam

Paired comparisons of the indicators between BIK and Chabahar port:

The above diagram illustrates the paired comparisons between BIK and Chabahar. Indicators are storage capacity, equipment, berth grains, rail and road hinterland and the distance from northern ports. As the above figure shows the amount of indicatorattraction on the right side of the diagram is greater. It means it is shifted towards BIK. Overall, compared to Chabahar, BIK has taken about 38% of the indicators. Then BIK for grain regional transit terminal is more important.

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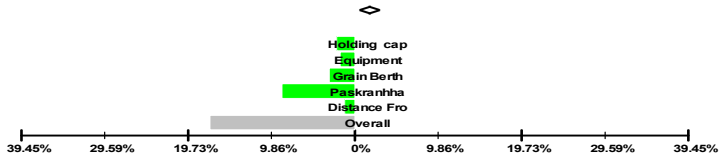
Weighted head to head between Bandar Abbas and Chabahar



Objectives Names

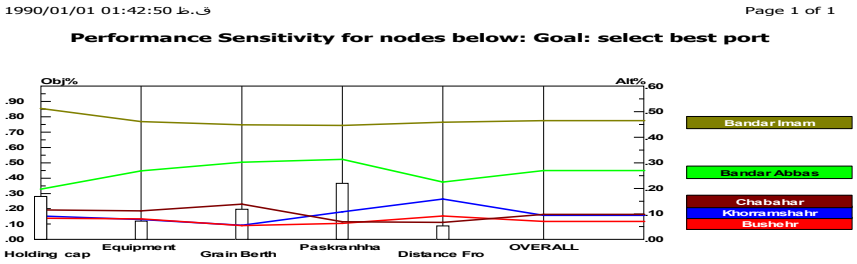
Holding cap	Holding capaceti
Equipment	Equipment
Grain Berth	Grain Berth
Paskranhha	Paskranhha
Distance Fro	Distance From The Northern P ORTS

Alternatives Names

Khorramshahr	Khorramshahr
Bushehr	Bushehr
Bandar Abbas	Bandar Abbas
Chabahar	Chabahar
Bandar Imam	Bandar Imam

Paired comparisons of the indicators between Bandar Abbas and Chabahar:

The above diagram illustrates the paired comparisons between Bandar Abbas and Chabahar. Indicators are storage capacity, equipment, berth grains, rail and road hinterland and the distance from northern ports. As the above figure indicates, the amount of indicator attraction on the leftside of the diagram is greater. It means it is shifted towards Bandar Abbas. Overall, compared to Chabahar, Bandar Abbas has taken about 18% of the indicators, then for grain regional transit terminalis more important.



Objectives Names

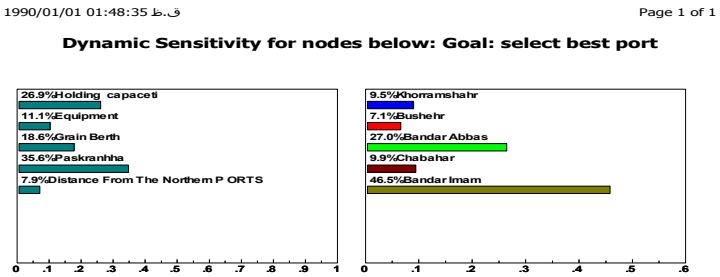
Holding cap	Holding capaceti
Equipment	Equipment
Grain Berth	Grain Berth
Paskranhha	Paskranhha
Distance Fro	Distance From The Northern P ORTS

Alternatives Names

Khorramshahr	Khorramshahr
Bushehr	Bushehr
Bandar Abbas	Bandar Abbas
Chabahar	Chabahar
Bandar Imam	Bandar Imam

Sensitivity analysis of the indicators performance compared to the alternatives:

Thisdiagram shows the relative importance of each option compared to other options in terms of the criteria and overall objective.By observing the intersection pointon“Overall” vertical line and reading the numbers on the rightY axis, the priority of each option in terms of the overall objective is determined.Byobserving the intersection point on vertical line of the relevant criteria and reading the numbers on the leftY axis, the priority of each option in terms of the criteria is determined.



Objectives Names

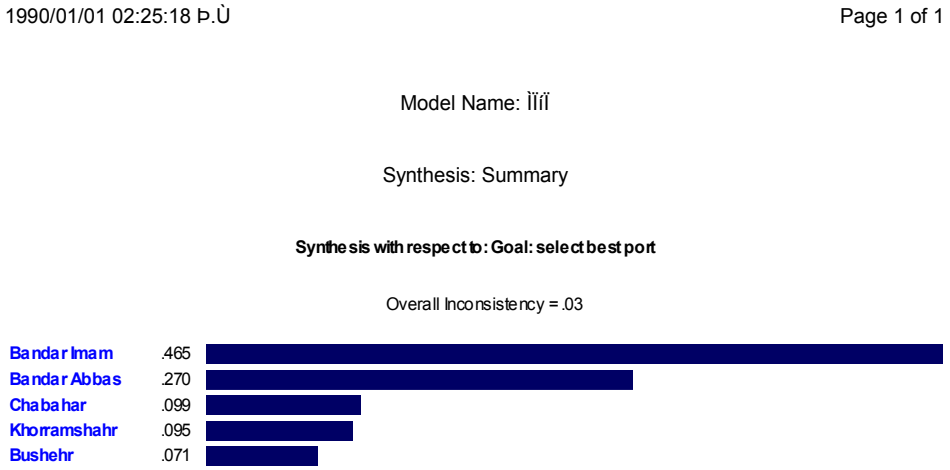
Holding cap	Holding capaceti
Equipment	Equipment
Grain Berth	Grain Berth
Paskranhha	Paskranhha
Distance Fro	Distance From The Northern P ORTS

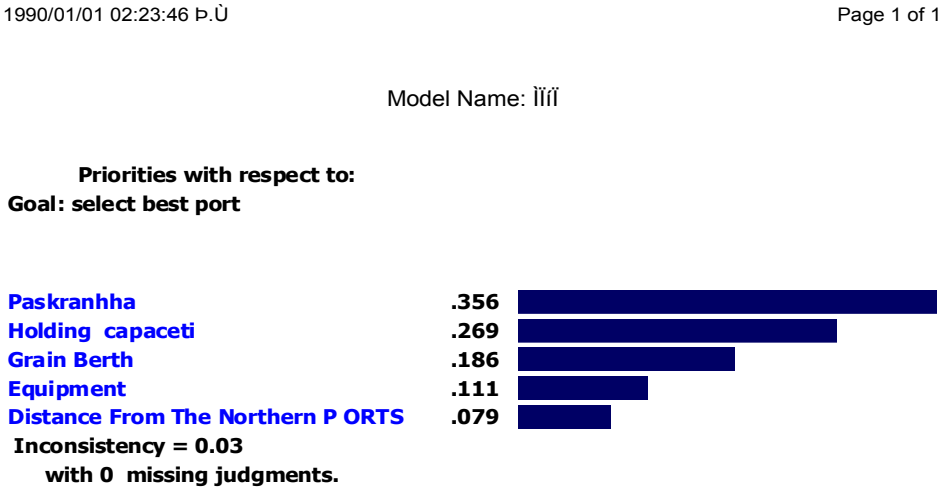
Alternatives Names

Khorramshahr	Khorramshahr
Bushehr	Bushehr
Bandar Abbas	Bandar Abbas
Chabahar	Chabahar
Bandar Imam	Bandar Imam

Dynamic sensitivity of the indicators and alternatives:

This diagram indicates the dynamic sensitivity of the indicators and alternatives in two separate sections as thepercentage, importance and weight coefficient.The right side of the diagram shows the alternatives or objectives. This shows thatBIK has owned 46.5% of the weight coefficients of importance which is the most.Respectively Bandar Abbas has owned 27%, Chabahar 9.9%, Khorramshahr 9.5%, and Bushehr 7.1%. The leftside shows the amount and weight coefficients of the indicators affecting the selection of the southern ports as the regional transit terminal for grain. The rail and road hinterland has owned 35.6% which is the most weight.Respectively grain storage capacity took 26.9%, grain berth 18.6%, equipment 11.1%, and distance from northern ports 7.9%.According to the results, access to rail and road hinterland and grain storage capacity are the most important indicators affecting the selection of optimal port for grain transit.





The percentage and degree determination of the indicators importance and alternatives:

Based on the result of paired comparisons of the indicators andtheir impact on alternatives, BIK has owned 46.5% of the weight coefficient of indicators, BandarAbbas27%, Chabahar 9.9%, Khorramshahr 9.5% and Bushehr7.1%. It means that BIK and Bushehrhave taken, respectively, the highest and the lowest percentage of attraction of the affecting indicators. According to the result, compared to the other major commercial ports in the south, BIK is more optimal for grain regional transit terminal.

Priority and importance of the commercial ports in the south of Iran is as follow:

1- BIK
2- Bandar Abbas
3- Chabahar
4- Khorramshahr
5- Bushehr

Solutions and Recommendations

The supply chain of grain and its products can be reinforced through integrating the regional transportation in the fields of rail, road and sea and providing the relevant infrastructures. The grain trade can be improved in the form of the regional processed clusters.To reduce tariffs, eliminate the tariff barriers, facilitate transit, improve the transportation infrastructure in the rail, road, air and sea sectors, facilitate banking transactions, develop the financial support, renew the transport fleet and cooperate with organizations such as the International Grain Council,WTO, UNCTAD, OPEC Fund, Islamic Development Bank and the Asian Development Bank which have played an important role in the business streamlining, it is required for countries to have a close cooperation in the regional and national levels.To improve transport infrastructure,internal coordination with the Ministry of Economy and Finance, Customs, banks and insurers is essential. Alsoto avoid the disadvantageous and threatening commercial opportunities, the irreparable challenges should be met, the international and legal instruments and bilateral or multilateral agreements should be placed on the agenda and the environmental considerations of the grain trade in framework of the relevant conventions should be considered.

Recommendations based on the grain storage capacity alternativeand indicator:

The results show that grain storage capacity is one of the most important items affecting grain transit. It has owned 26.9% of importance.Its importance isdue to storage and streamlining the grain transit.To create and promotethis advantage, the followings are recommended:

1- use of horizontal silos
2- use of the temporary wind silos, especially in the summer
3- creation of appropriate and conduciveconditions for private sector investment to construct mechanized silos using Bot
4- construction of temporary warehouse to save space and reduce demurrage

Recommendations based on the equipment alternative and indicator:

The results show that to have mechanized equipment, more investment is required.It is recommended that Iran Ports and Maritime Organization make every effort to buymodern equipment for loading grain like mechanical unloaders and vacuum towers through private sector. In the marine sector, this port currentlypossesses sufficientmarine equipment but in future years it is required to be equipped by 4400hp tugs.

Recommendations based on the grain berth alternative and indicator:

Due to the specific geographical position, access to Khur-musa natural channel with appropriate depth for navigation of the cape size ships, having approximately eleven thousands hectares hinterland and two berths which are150000-tons-capacity and364-meter-long with appropriate draught, BIK has the best potential to transit grains. Since the size of the ships has direct relation to reduction of the shipping and port costs of grain transit, to berth the cape size ships, keeping the proper draught of the berths, equipping the access channel with modern navigation aids and maintaining them should be placed on agenda. In BIKberth constructionfor grains is not needed for some next years.

Recommendations based on the hinterland alternative and indicator:

One of the factors which can help the developmentand growth of the marine transportation industry is a rail network in port and hinterland area that lead to quick cargo transport. This can help the use of rail transport of grain between the ports of northern countries and the southern ports in form of Dore To Dore. In Amirabad port(northern port) rail cars are loaded shipboard and also in BIK the rail cars can enter to the silos and discharge the cargo.Thus, the rail transport transit project can be very effective.

1- Compared to the road transport, rail transport could have much capacity for grain transportation and also its cost is much lower.Considering that BIK possesses the rail infrastructures that cover almost all of the area and hinterland, it is recommended to establish a specific rail shunting yard for grains.

2- Due to steady increase in cargo volume, double track railway of Ahvaz - BIK is essential that is in the development plans of the railway. In the outside routes of port to major cities, there is a lack of capacity (especially in Andimeshk - Azna block).SinceAndimeshk-Khorramabad-Azna line has taken building permits and also Isfahan-Ahvaz line is under study, then this remarkably can help to increase the rail routes led to BIK. To optimal use of the

BIK transit capacities, PMO managers should negotiations with the railway managers to execute the project as soon as possible.

Recommendations based on research findings:

1- Establishment a world grain organization with a common interests approach for the exporters and importers
2- Becoming PMO as a marine transportation organization and establishment of a specialized maritime bank.
3- Establishment an integrated management and making working groups on grain transit and holding relevant conference
4- Investment in the agricultural sector in the countries which have agricultural potential, such as CIS and African countries.
5- Preferential tariff agreements in the field ofgrains in the region
6- Increase the grains traffic and transit and activating the North – South corridorfrom Kazakhstan and Russia to other countries of the world including African countries, creation the supply chain through investment
7- Creation the common markets among the countries which are concerned and creation the international stock of grains in the region
8- Use of the swaps to reduce shipping costs
9- Codification of a roadmap todevelopthe units of conversion,supplementary and packaging industries in the field of grain trade and downstream industries along the borders
10- Codification of a spatial planning in the field of grain trade through creation the transit, shipping, logistic, supply network, appropriate warehouses, loading and unloading facilities infrastructures

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