ISLAMIC DEVELOPMENT BANK
ISLAMIC RESEARCH AND TRAINING INSTITUTE

ENGINEERING GOODS INDUSTRY FOR MEMBER COUNTRIES : COOPERATION POLICIES TO ENHANCE PRODUCTION AND TRADE

DISCUSSION PAPER

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ENGINEERING GOODS INDUSTRY FOR MEMBER COUNTRIES : COOPERATION POLICIES TO ENHANCE PRODUCTION AND TRADE

by
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FOREWORD

The Islamic Research and Training Institute (IRTI) of the Islamic Development Bank (IDB) has been established in 1401H (1981) "to undertake research for enabling the economic, financial and banking activities in Muslim countries to conform to *Shari'ah*". This is in implementation of the article (2) of the Articles of the Agreement establishing the bank, which has been ratified by 51 Islamic countries. In order to discharge its responsibilities, IRTI pays special attention to basic and applied research in the areas of Islamic economics, banking and finance and economic cooperation among OIC member countries.

IRTI researchers carry out research activities on various important issues of Islamic economics , Islamic banking and finance and economic cooperation and development. The Institute also encourages and promotes research activities by outside scholars. It invites eminent economists and *Shari'a* scholars to deliver lectures on various issues of interest. It organizes research seminars, workshops and training courses. It also awards an international prize that alternates between Islamic economics and Islamic banking every year.

Engineering goods industry plays a catalytic role in developing the manufacturing sector of the developed world. This industry accounts for a vast economic expansion and tremendous material progress in these countries. It has a great role in fostering the technological innovation through the process of technology diffusion. The Muslim world which has so far lagged behind in this industry experiences and envisages the establishment of a strong base for this industry. The engineering goods sector is regarded by most economists as the engine of economic growth. It helps reduce the dependence upon the developed world and bridge the existing wide gap between the two worlds in this vital sector.

The present research on *"Engineering Goods Industry for Member countries : Cooperation Policies to Enhance Production and Trade* " is undertaken as part of IRTI' s annual research program. The study investigates the issue of cooperation policies to enhance trade and production of the engineering goods industry in member countries. First, it discusses the importance of this sector in the light of the present world economic environment and the role that this industry plays in enhancing the economic development of the member countries. Second, it analyses the trade patterns and the economic relations of the most advanced OIC member countries in the field of engineering goods. In addition, the paper examines the trade evolution of

engineering products by broad categories. Based on the empirical findings the study proposes concrete cooperation policies to enhance production and trade of the engineering goods industry in member countries. Finally, the study draws conclusions and proposes recommendations that are useful for policy makers as well as those scholars who are working in this area.

It is hoped that the publication of this monograph would encourage and lead to similar efforts so that future developments in this area induce more empirical investigation and discussion.

MABID ALI AL- JARHI
Director, IRTI

I

INTRODUCTION

The engineering goods industry had a catalytic role in developing the manufacturing sector of the developed world. This very industry accounts for a vast economic expansion and tremendous material progress in many countries there for half of the last century. The Muslim world, which has so far lagged behind in this industry, experiences and envisages a sharp onward march into a far reaching information era with all its wide and varied vistas in the new millenium far beyond the industrial era. It was in this backdrop that a number of Muslim countries initiated to establish a strong base for developing the engineering goods industry through the last few decades of the 20th century.

Several members of the OIC have taken the challenge and ventured ambitious programs in order to enter into engineering goods sector. By this they hope to bridge the wide gap between them and the developed world with respect to engineering goods. OIC member countries namely, Malaysia, Indonesia, Pakistan, Egypt, Algeria and Iraq took the lead in this area. This sector has a great role in fostering the technological innovation through the process of technology diffusion. A detailed discussion on the subject can be found in Keller Wolfgang (1997); Jaumotte Florence (1998); D. Hakura and F. Jaumotte (1999). It may be regarded as the engine of economic growth which can reduce dependence upon the developed countries. The OIC member countries have raised in its various forums their concern about the sustainability and enhancement of engineering goods industry.

The Islamic Development Bank (IDB) established the "Export Financing Scheme" (EFS) in order to foster intra-trade among the member countries. The scheme has started recently evaluating its performance. EFS is now more geared to bring into its fold the non-traditional exports of manufactured items instead of improving export volume in the light of the recent review. The scheme has been engaged in identifying those manufactured exports of member countries whose export need experience[1].

Below are listed some crucial elements that concerned countries may need to consider in order to sustain and enhance this vital sector:

[1] See Minutes of the Special Policy Committee Meeting held on 17 Dhul Hijja 1419H (3.4.1999) on the Export Financing Scheme (EFS) of IDB. (Final Report).

1. The existence of a larger market domestically, regionally and internationally to sell its engineering products.
2. Capacity to stand high competition imposed by the developed countries under the new trade regulations imposed by the World Trade Organization (WTO)[2].
3. Availability of necessary funds to be invested in this particular sector to expand it and to promote research and development (R&D) to create new engineering products capable of competing in the new economic environment raised by WTO.

The cultivation of a larger market[3], the acquisition of high competition and the attraction of funds for the engineering goods industry do stand as major impediments for the OIC member countries to promote this vital sector.

Virtually cooperation constitutes one of the best options for the OIC member countries to overcome these problems. The design of sound and realistic optimal cooperation policies will enhance trade and production of the engineering goods industry and lead to a gradual process of an economic integration between the concerned Muslim countries.

Muslim countries themselves independently as a large economic group will form a big market for the products of this sector which are produced there. Moreover, the cooperation process will allow the diffusion of engineering based technology through intra-trade in engineering goods industry trade[4]. The process of diffusion of technology associated with the enhancement of trade

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2 The WTO regulations imply that more competition will be facing the engineering goods industries of these countries since their markets will be open to foreign competitors. The high prevailing competition imposed by these foreign engineering firms at that time will likely drive the domestic engineering firms out of the market. The domestic engineering goods industry will then be forced by the forces of the market to close its door putting thousand of people jobless .

3 Bhagwati argues that it may be necessary for firms to "Invest in cultivating a market" in a competitive situation in which case externalities exist and government subsidy is justified for the "Infant export industry". For the latter case, Bhagwati (1968) says not all arguments in support of export subsidies are invalid, he explained the lack of attention by trade theorists with the remark "Catch hold of any trade theorist and he is certain to rule them (export subsidies) out as first best policies".

4 The rationale behind this; is that a country is more likely to absorb the innovations embodied in foreign technology when it is already engaged in producing and exporting goods from the same product category as those it is importing. (See Hakura and Jaumotte ,1999, Keller, Wolfgang 1997 for more detail on diffusion technology)

through cooperation will improve the "know-how" and lead to the production of better quality engineering products which will stand strong international competition[5]. In addition, proper cooperation policy designed to enhance trade and production of engineering goods will attract more funds to this sector. This policy plays a key role in developing the manufacturing goods, which are considered as the engine of the economic development.

However, in order to design the right cooperation policies to enhance trade and production of engineering goods industry, first we need to investigate where intra-trade cooperation with respect to engineering goods between Muslim countries stands. Based on the findings of this investigation we shall try to recommend cooperation policies as to how trade and production of this sector may be enhanced and boosted up.

The later part of the paper is organized as follows. Section II defines engineering goods, discusses the importance of the engineering good industry as one of the vital sectors for the OIC member countries to promote. It also discusses the data collection. Section III assesses and analyses the trade patterns and trade relations in the engineering goods sector for the most advanced OIC member countries. Section IV investigates the main obstacles to intra-trade in engineering goods among the OIC member countries in the sample, and lays down the possible cooperation policies that enable to enhance the trade and production of engineering goods industry among OIC member countries in the light of the findings of section III. In addition, it examines the possible role that the Islamic Development Bank may play in enhancing this sector in Muslim countries. Finally, section V draws conclusions from the results obtained in the study.

5 For more discussion on importance and incentives of engineering goods see Raja Abdul Rehg

II

DEFINITION, IMPORTANCE AND DATA COLLECTION

2.1 DEFINITION

Engineering goods are defined in this paper as those manufactured goods under the categories listed in Appendix E and according to the mentioned four digit SITC codes in the same appendix.

Engineering goods are defined to include the following three main categories: Basic Manufactures, Machines and Transport Equipment; and Misc. Manufactured Goods[6]. From each category we have selected the groups that are related to engineering products. For instance, from the second category we have selected engineering groups such as power generating equipment (with 71 as SITC code) machines for special industries (with 72 as SITC code), electrical machinery (with 77 as SITC code) road vehicles (with 78 as SITC code) etc.

2.2. IMPORTANCE OF THE ENGINEERING GOODS' INDUSTRY

As it has been defined, engineering goods industry is an important part of the manufacturing industry. Its development will, therefore, enhance the development of the latter sector and most particularly the capital goods industry. The capital goods industry is an important segment of the engineering goods industry and regarded as the barometer of the economic development of a country.

Manufacturing industry as a whole and more particularly engineering goods industry are based on technology advancement, which has accounted for the bulk of many developed countries' productivity gains during the last half of the past century, spawned entire industries, created millions of jobs ,and has been a primary source for the ability of developed nations to maintain their citizens'[7] high standard of living. It follows then that the importance of the

6 The three categories have SITC codes 6,7,and 8.It is known when going in detail into the Trade Analysis System ITC/UNSD.SITC code , the products related to engineering goods are those included in the categories included in Appendix E..

7 Economic growth depends on capital which embodies technology. Engineering goods industry is on the other hand a primary source in fostering technology skills ,capacities and productivity. This positive relationship between economic growth and engineering goods industry has accounted for the material well being of many societies in the developed world.

engineering goods sector stems from the importance of fostering technology, which is considered as the engine to economic growth since the economic performance and the international influence rest, in large part, on the technology base of the country.

Moreover, it is known and well established that all manufacturing units depend heavily upon the engineering goods industry, which contributes to skill, capability and productivity in the area of technology. Engineering goods industry stands as the core of technological innovation. This industry focuses upon socio-economic change and serves as a symbol of self reliance by curtailing dependence on imports and gives a boost to the exports of manufacturing goods. Its expansion leads to the contraction of imports of semi-manufactured goods as well as of primary goods. This happens because the promotion of engineering goods industry enhances the demand for primary goods and semi-finished manufactured products. This will add a value to the new manufactured goods creating, therefore, new jobs and more competitiveness for manufactured goods of the country.

The development of this important industry requires among others, large investment funds, qualified and skilled engineering oriented manpower, and a large market, foreign or domestic to absorb the surplus domestic demand. Most of the OIC member countries chosen in the study if not all, face more than one of these impediments. Whereas skilled labor in engineering may not be a major problem for some Muslim countries such as Pakistan, the mobilization of resources, domestic or foreign for the enhancement of this industry, the limited domestic market, the high international competitive market, the WTO regulations, stand to be some of the major difficulties. The concerned policy makers should place high priority and pay special attention to invest in this vital sector instead of exporting raw materials and semi-finished goods.

Muslim countries have to give the priority to the development of this vital sector of the economy whose proceeds are used as intermediate products in many manufacturing units to upgrade the existing engineering goods and to produce more advanced ones. This, of course, cannot be achieved without devoting resources to basic research in this field[8].

Muslim countries face nowadays a great challenge. They have to prepare themselves for high competition with a positive vision guiding their economic policies. Their economic future depends on their capacity not only to

[8] Basic research includes basic sciences, engineering education and research and development (R&D). Resources should be allocated to basic research on a priority basis ,based on the availability of the resources of the country and on its research policy and this because of the limited resources of the Muslim countries.

invent and master the new technologies of the future but also to ensure that these ideas move rapidly to market in order to spur growth, create new jobs and strengthen their industrial performance.

Scale economies are in general significant for this type of industry and may enhance the competitiveness of the various activities of this important sector in the concerned countries. The expansion and the technological advancement of this sector gives the chance to the concerned Muslim countries to improve their cooperation in this field through exchanging their respective expertise and via increasing trade of the engineering products. Moreover, the expansion of this sector will ask for a higher demand of skilled labor and will give a boost to the employment promotion through the appropriate technology acquired domestically or imported.

2.3 DATA

For the empirical section, two sources are used. First, desegregated data on exports and imports on engineering goods are obtained from TARS (Trade Analysis System) 1992-1996 published by the International Trade Center UNCTAD/WTO[9]. Second, the data on the composition of engineering goods by broad categories are obtained from the 1997 International Trade Statistics Yearbook, United Nations. The sample consists of five most technologically advanced OIC member countries. These countries have been selected on the basis of the availability of statistics on trade of engineering products. Other countries such as Iran, Algeria have been included in the sample. However, no data was available for these countries. According to these criteria, we have chosen member countries, Egypt, Indonesia, Malaysia, Pakistan and Turkey.

Based on the availability of data, only a sample period of five years is considered. For most countries the years included are 1992-96. For some countries, however a shorter sub-period was included for lack of data. The data on trade are classified by the Standard International Trade Classification (SITC) at the 4 digit levels of aggregation. In the study we have focused our attention on engineering goods only (SITC 6, 7 and 8) to include three categories of Basic Manufactures, Machines, Transport Equipment and Miscellaneous Manufactured Goods. The first, second and third categories include three groups, nine groups and three groups respectively. These groups include selected 4 digit SITC classification as given in appendix E. We had to go to four digit SITC classification because the data were not available at less than that. The extraction of the selected data on engineering goods as defined in

[9] The data are published by the ITC/UN Statistics Division, UNCTAD/WTO 1997.

Appendix E was time consuming because of the long list of items included in the engineering goods definition .

III

MOST ADVANCED OIC MEMBER COUNTRIES IN ENGINEERING GOODS INDUSTRY, TRADE PATTERN AND ECONOMIC RELATIONS

3.1 THE TRADE PATTERN

Total exports of the 5 most advanced OIC member countries (in the sample) in engineering goods including intra-trade between these countries amount to about US$ 24.6 billion in 1992 and go on increasing to reach US$ 58.6 billion in 1996 (Table 2). Exports grew by more than 138% in terms of US dollars (Nominal) over the period 1992-96. On the other hand, the total exports between the members of the sample increased from US$ 2.54 million in 1992 to reach US$ 1.157 billion in 1996, which represents an increase of 335% over the same period as shown in Table 1. In terms of percentage of total exports between the countries of the sample and the total exports of the countries, the percentage grew by more than 90%.

The pattern of the MA OICs (most advanced OIC member countries) trade appears uneven. It varies drastically from one country to another as shown in Charts 1 and 2. The trade patterns can easily put in three distinct groups according to their exports performance during the whole period 1992-96. Group 1 comprises Malaysia alone while Group 2 and Group 3 comprise Indonesia and Turkey on one side and Egypt and Pakistan on the other side respectively. Looking now closely at Malaysia's total exports of engineering goods, it amounts to about US$ 19.5 billion in 1992 and goes on increasing to reach US$ 46.4 billion in 1996 (Table 2). In term of percentage, exports of engineering goods grew by more than 138% in US dollar over the period 1992-96. On the other hand, Malaysia's imports of the same product increased from US$ 26 billion in 1992 to US$ 54.2 billion in 1996, an increase of 108% in US dollars during the same period(Table 4).

In Group 2, Turkey’s total exports of engineering goods increased from US$ 2607 million in 1992 to 5162 million in 1996, whereas Indonesia’s total exports increased from US$ 2345 million in 1992 to US$ 6514 million in 1996. The increase in percentage terms are 98% for Turkey and 177% for Indonesia respectively between 1992 and 1996. Comparing Group 1 and Group 2, the total export of engineering goods of Group 2 represents less than 7.5% of total exports of Group 1 in 1992 and less than 14% in 1996, which shows the large

difference existing between the progress made by Malaysia compared to other OIC member countries.

On the other hand, Group 3's total exports of engineering goods is almost insignificant compared to Group 1's total exports as depicted in Chart 1 and Chart 2 below. It represents less than 1% of the total exports of Group 1 and less than 7.5% of the total exports of Group 2 over the whole period 1992-96. These figures show clearly the existing large differences between the three groups under study. The existing differential may be due to the different economic policies taken by these countries and their strict implementation. It may also be due to the level of corruption and its negative impact on the economies of these countries. Even though some progress has been made by the last two groups, a lot of efforts and cooperation between the groups is needed to narrow the existing gap.

MA OIC total exports of engineering goods, however, increased steadily over the period (Chart 1 and Chart 2), with an annual growth rate varying between 35.5% and 8.6% and with an annual average growth rate of 24.6% (Table 3). Individual country's growth rate, however, varies from one country to another and from one year to another as shown in Table 3. It is also clear from Table 3 that the exports' annual growth rate of engineering goods for Indonesia decreased over the whole period, starting with an annual growth rate of 40% and then decreased continuously to 21%. The other countries have an exports annual growth rate that fluctuates from one year to another, getting negative growth rates in some years for Egypt and Pakistan. The ratios of exports of engineering goods over total exports and of the ratios of exports of engineering goods over manufacturing production in these countries as calculated and presented in Tables B1,B4,B6,B7,B9 under Appendix B give an overview of the trends of the exports of engineering goods .By looking at the trend of these ratios we arrive at the same conclusion that policy makers should pay more attention to the engineering goods industry which plays a crucial role in enhancing economic growth.

Moreover, the low level of exports of engineering goods for some of these countries included in the sample may be due to the following reasons:

1. Lack of finance to enhance this sector.
2. Shortage of skilled labor in engineering goods industry
3. Difficulty in protecting this infant industry because of inability of subsidizing this new industry.
4. Lack of coordination and cooperation among the Muslim countries and lack of a global vision .

Table 4 and Chart 3 describe the evolution over the period 1992-96, of the imports of the MA OIC member countries. Total imports increased steadily over the same period from around US$ 55 billion in 1992 to reach US$ 103 billion in 1996, with an annual average growth rate of 17.5%. Chart 3 shows clearly the existing dichotomy of the same three groups mentioned in the analysis of the evolution of exports of engineering goods. Comparing Chart 1 and Chart 2 describing the exports with Chart 3 describing imports, we notice the existence of positive relationship between exports and imports of engineering goods for the same country. The existence of such relationship may imply that these countries have some comparative advantage for engineering goods that they are exporting while they do not possess this advantage for those products that they are importing .This same correlation suggests that there is an increasing demand for the imported engineering products which are used as a semifinished goods in the different activities of this sector. Moreover, Table 2 and Table 4 show that the MA OIC member countries' trade account balance registered a deficit during the whole period 1992-1996. The deficit as indicated by the last row in Table 4, increased steadily from US$ 30.285 billion in 1992 to reach US$ 44.6 billion in 1996. These figures show the importance that these countries attach to the development of this vital sector, and that they believe in the theory of technology diffusion through the import-export process and in its central role in enhancing the process of economic development [10.]

Table 1.1 and Table 1.2 below give respectively the trends of imports and exports of engineering goods of the entire Muslim world from and to the World as well as from and to the developed economies.

Table 1.1
Evolution over time of Imports of Engineering
Goods of the entire Muslim World
(in US$ Million)

	1992	**1995**	**1996**	**Sum of 5 Years**
World	69728	114918 *(64.8%)*	121056 *(5.34%)*	473081
Developed Economies	51459	82391 *(60.1%)*	85726 *(4%)*	341192

Source: Calculated by the author from Trade Analysis System ITC/UNSD 1997.

10 Research on technology diffusion may be seen in Nelson and Phelps (1966) Jovanovie and Rob (1989), Grossman and Helplam (1991) (Chapter 11 and 12), Segeistrom (1991)

Total imports of the entire Muslim world increased steadily over the 5 years' period from both the world as well as from the developed economies as shown by the growth rate given between parentheses in Table 1.1. The ratio of import of engineering goods from developed economies over the import from the world by the Muslim world is equal to 72.12%. This means that the remaining almost 38% of import of engineering goods of the entire Muslim world are imported from the non developed economies.

Table 1.2
Evolution over time of Exports of Engineering
Goods of the entire Muslim World
(in US$ Million)

	1992	**1995**	**1996**	**Sum of 5 Years**
World	59663	101603 *(70.3%)*	109913 *(8.2%)*	425334
Developed Economies	36216	60252 *(66.4%)*	63409 *(5.24%)*	251523

Source: Calculated by the author from Trade Analysis System ITC/UNSD 1997.

The percentage of export of engineering goods from developed economies over the export from the world by the Muslim world is equal to 59.13%. The remaining 40.87% of the export of engineering goods is done between the Muslim world and the non developed economies. This could also imply that part of the export is done between the most advanced Muslim countries in engineering goods and the rest of the Muslim countries.

The ratios between parentheses inside the tables indicate the growth rates of imports and of exports respectively. Similarly, by looking closely at Table 1.2 exports of engineering goods of the entire Muslim world to the developed economies and to the world has also increased over the period 92-96. The export to the world and to the developed economies has increased over the first four years by 70.3% and 66.4% respectively. This increase continued from 95 to 96 by an annual growth rate of 8.2% to the world and 5.24% to the developed economies as shown by the figures given between parentheses in Table 1.2.

3.2 COMPARATIVE ANALYSIS

In order to assess the position of the MA -OIC member countries with respect to the industrialized world, we need to make some comparative analysis. Table 5 and Chart 4 below describe the evolution over time of exports of engineering goods of six developed countries, namely ,USA, Japan, Germany,

France, United Kingdom, and Spain. Chart 4 clearly classifies the six countries in three distinct groups over the period 1992-1996[11].

As shown in Chart 4, Group 1 includes Japan, USA and Germany, the second group consists of France and United Kingdom and finally, the third group is composed of Spain alone. Chart 4 and Table 1 indicate that the exports of engineering goods of the three groups mentioned have positive trends and that these three trends look almost parallel . This means that the slopes of these trends are almost equal indicating that the growths in the exports of engineering goods for the three groups are close to each other . These facts are shown by the first three rows in Table 1 in terms of ratios. The ratio of Group 1 to Group 2 is given by row 3, which shows that this ratio is close to 2.5 over the period 92-96, on the average, meaning that the total exports of engineering goods of the first group is on the average two times and half the volume of exports of the second group for the same products. The ratio of group two to group three indicated by row 2 Table 1 stayed on the average constant over the same period 92-96 and close to three, meaning that the volume of exports of engineering goods of group two is almost three times the volume of exports of group three for the same products over the whole period. Row 4 in Table 1 gives a good indication of where Malaysia stands compared to the developed countries . The ratio of exports of engineering goods for Malaysia to the exports of the same products for Spain registered a continuous rise during the period under study. The ratio came close to unity

Table 1
Export Ratios of Engineering Goods[12]

Ratio per year	1992	1993	1994	1995	1996
USA/ Spain	6.98	7.76	7.2	6.54	6.25
France/Spain	3.32	3	3.38	2.96	2.65
Japan/France	2.46	3	2.88	2.6	2.35
Malaysia/Spain	0.58	0.79	0.89	0.94	0.88

11 Spain has been selected because it is one of the least developed countries in the European Community group . Comparing OIC member countries with Spain will give an indication on how far these countries are from the industrial countries in terms of advancement in the engineering industry.

12 Table 1 represents the exports' ratios of engineering goods for some developed countries in addition to the ratio of exports of engineering goods of Malaysia to the exports of engineering goods of Spain. Table 1 has been computed using Table 2 and Table 5.

by the end of the period which indicates that Malaysia and Spain became closer and closer in terms of exports of engineering goods over time. Most particularly, the volume of exports of engineering products came close to unity in 1995. This is also illustrated in Chart 5. It follows then, that Malaysia has made considerable progress in the engineering goods industry which plays a crucial role for the economic development of the country in general and of the manufacturing sector in particular. Even though, Spain is considered as one of the least developed countries compared to the developed ones, the progress made by Malaysia in this sector may then be considered as significant. On the other hand, Malaysia may be considered as a leader in this sector for the Muslim world and its experience may then benefit the other Muslim countries.

Table 2

Export Country Profile Tables of Engineering Goods, Period 1992-1996
Based on the UNSD Com Trade Database System, Quantity in Unit X 1000[13]
(Value in US $ Million)

EXPORTS IN US $ MILLION						QUANTITIES IN 1000						
Country	**1992**	**1993**	**1994**	**1995**	**1996**	**Sum of 5 years**	**1992**	**1993**	**1994**	**1995**	**1996**	**Sum**
Egypt	0	0	381.64	405.59	299.08	1086.29	0	0	616.236	550.125	264.810	1431.171
Indonesia	2344.752	3258.642	4226.713	5376.585	6513.984	21706.77	1274.41	1664.655	1485.217	1715.679	1664.533	7804.494
Malaysia	19513.364	24787.318	33756.736	43577.063	46407.041	1.68E05	466E03	545E03	119E04	111E04	0 (NA)	331E04
Pakistan	155.377	167.057	145.078	157.264	191.676	816.452	99770.545	1.37E05	1.04E05	1.21E05	4.65E05	9.27E05
Turkey	2607.249	2981.067	3750.075	4420.824	5162.778	18921.993	3712.136	4961.288	6500.581	5346.707	6868.186	27388.898
Total	24620.7	31194.1	42260.24	53937.32	58574.55		570756	688626	1302602	1238612	473797	

[13] Source: Computed by the author from the Trade Analysis System ,Copyright ITC/UNSD.SITC code ,5 years time series, International Trade enter UNCTAD/WTO

, United Nations Statistics Division

Table 3
Annual Growth Rate of Exports of Engineering Goods for the Most Advanced OIC Member Countries

Country	1992-1993	1993-94	1994-95	1995-96
Egypt			6.3	-26
Indonesia	40	29.7	27	21
Malaysia	27	36	29	6.5
Pakistan	7.7	-13	8	22
Turkey	14.3	25.8	17.8	16.8
Total	26.7	35.5	27.6	8.6

Table 4

Import Country Profile Table of Engineering Goods ,during the Period 1992-1996
Based on the UNSD Com Trade Database System, Quantity in Unit X 1000)
(Value in US $ Million)

IMPORTS IN US $ MILLION							QUANTITIES IN 1000					
Country	**1992**	**1993**	**1994**	**1995**	**1996**	**Sum of 5 years**	**1992**	**1993**	**1994**	**1995**	**1996**	**Sum**
Egypt	0	0	3712.016	4101.761	4628.614	12442.391	0	0	1402	1903	2339	5704
Indonesia	14737.4	15107	16435.7	20123.1	21403.5	87806.7	3375.75	3492.4	3858	16698.5	4724.1	32148.7
Malaysia	26067.1	30101	41072.8	53642	54231.7	205000	145.E04	13 E05	212E04	192E04	0 (NA)	678E04
Pakistan	3853.5	4058.3	3121	4122.5	4050	19205.3	434E03	258E03	278E03	343E03	616E03	193E04
Turkey	10247.8	14153.6	9735.4	14959.2	18861.6	67957.6	2677	4328	2572	4260	4389	18226
Total	54905.8	63419.9	74076.9	96948.5	103175.4							
Annual Growth Rate	15.5	16.8	30.9	6.42								
Deficit	30285.1	32225.8	31816.66	43011.18	44600.85							

Table 5

Export of Engineering Goods Country Profile Tables for some Developed Countries Period 1992-1996
Based on the UNSD Com Trade Database System
(Value in US $ Million)

	1992	1993	1994	1995	1996	Sum over 5 Years
United Kingdom	94707.436	87307.082	1.03E05	1.26E05	1.39E05	5.5E05
Japan	276663	295802	322941	356751	327320	1579497
Spain	33817	31553	37892	46415	52588	202270
Germany	256998	220623	250238	306815	306858	1341541
USA	236263	244742	272443	303363	328859	1385670
France	112378	96886	111926	137212	139508	597900

Chart 1

Exports Trends of Engineering Goods
for the 5 OIC Member Countries :Period 92-96

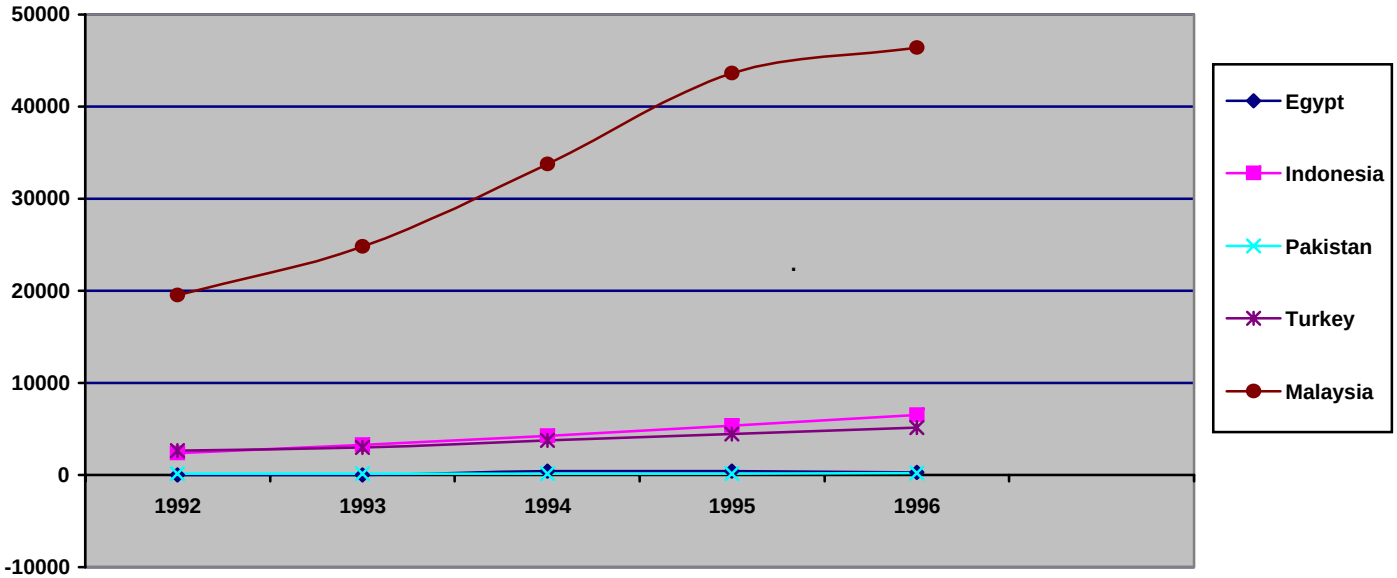


Chart 2

Exports Trends of Engineering Goods
for 4 OIC Member Countries Period:1992-96

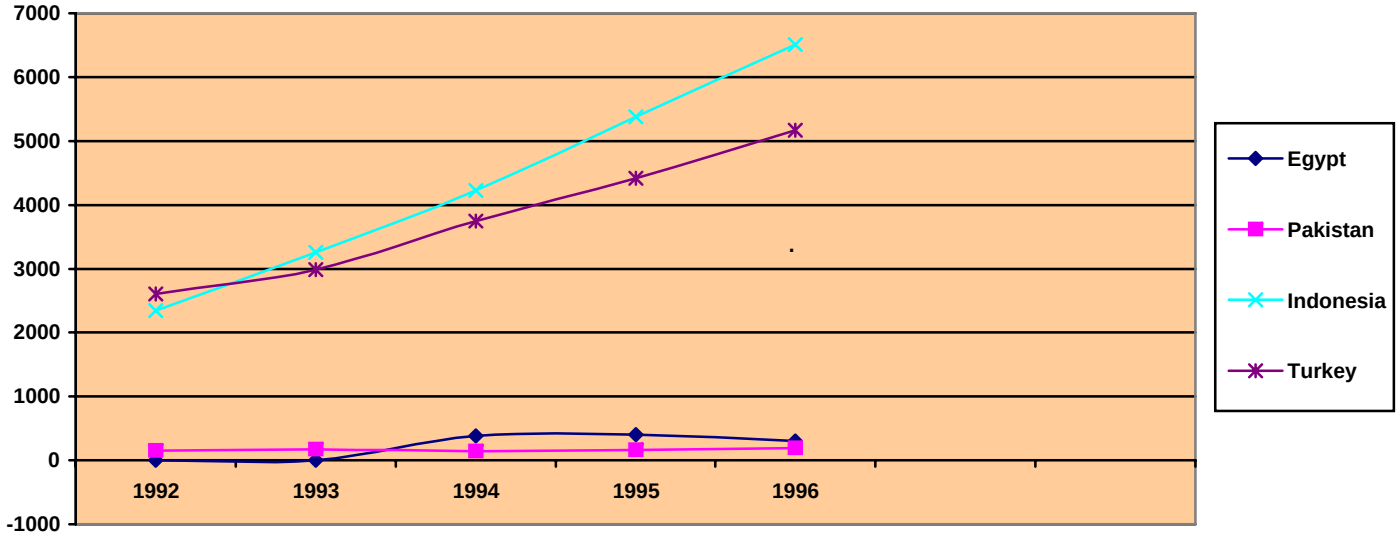


Chart 3

OIC Member Countries Imports' Trends of Engineering Goods

Period 1992-96

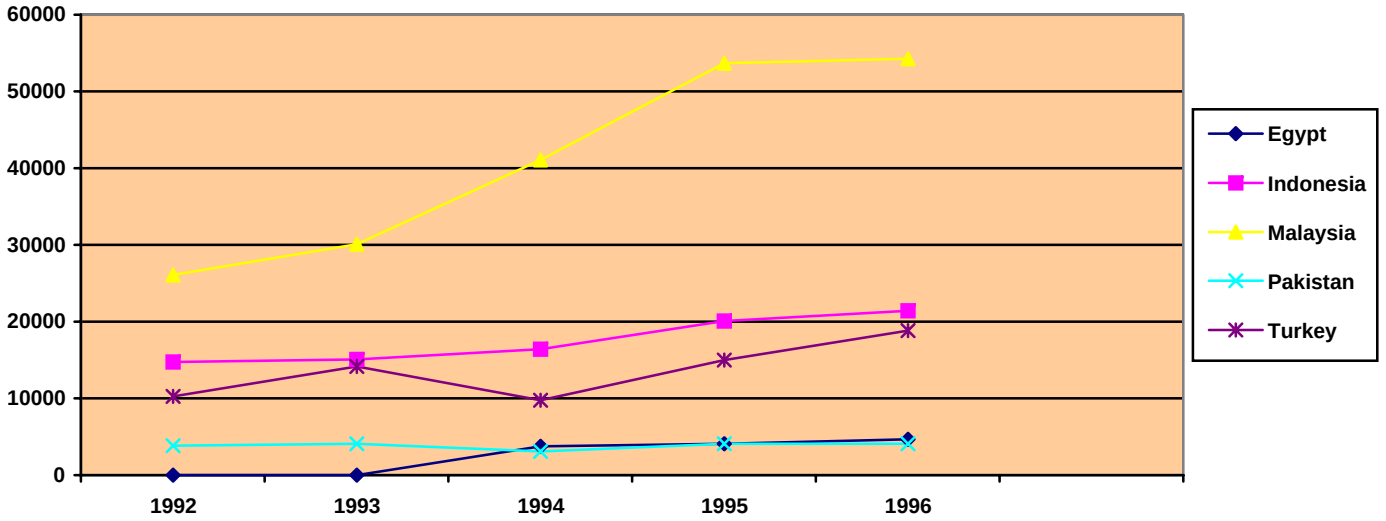


Chart 4

Exports Trends of Engineering Goods
for 6 Developed Countries Period 1992-96

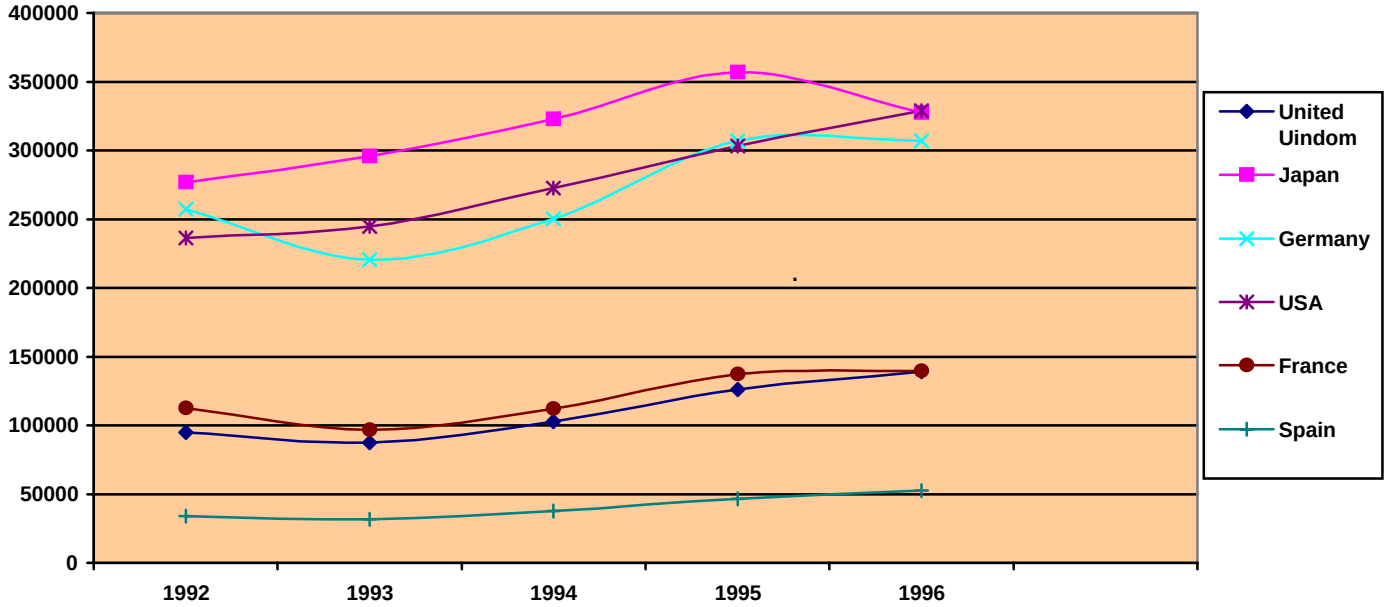
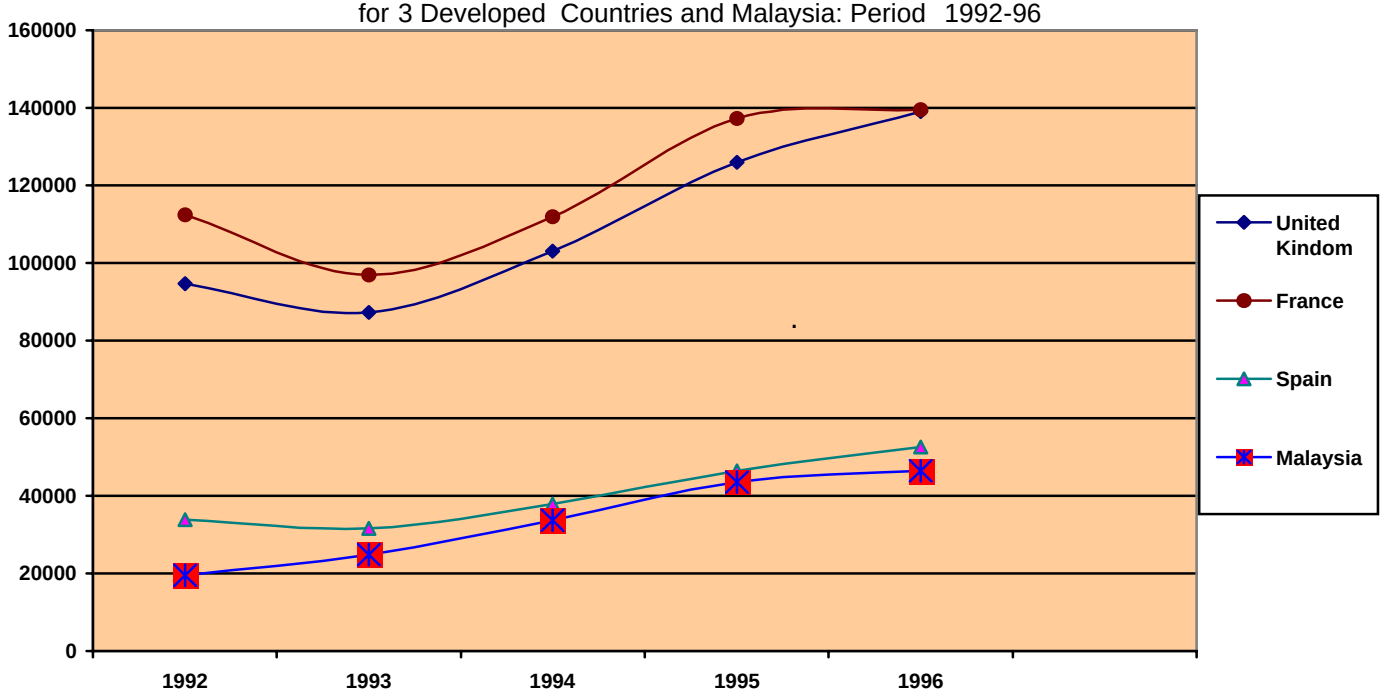


Chart 5

Exports Trends of Engineering Goods
for 3 Developed Countries and Malaysia: Period 1992-96



3.3 ECONOMIC RELATIONS WITHIN THE MA OIC MEMBER COUNTRIES

Intra-MA OIC member countries' exports of engineering goods is small compared to the total exports of this product. During the period 1992-96, the intra-trade of engineering goods did not in fact exceed 2% of the total trade as shown in table 6 below, over the whole period. In 1992, it represented only 1.03 percent of the total exports of engineering goods (which amounts to about US$ 24.6 billion in the same year). Then it increased slowly and continuously over the period 1992-96 to reach 1.96 percent in 1996 as shown in Table 6 below, with a volume of US$ 1.157 billion, whereas the total exports of engineering goods industry reached the value of US$ 58.574 billion the same year. Exports within these countries grew by more than 138% in US dollars terms over the period 1992-96, whereas the total exports of engineering goods increased from US$ 254 million in 1992 to reach US$ 1.157 billion in 1996, an increase of 355% over the same period.

Table 6[14]

Trends of the Total Exports of Engineering Goods within the Group and of the Group during the period 92-96 expressed
(in US $ Million)

Year	1992	1993	1994	1995	1996
):Total Exports of engineering goods within the Group	254.042	387.012	617.056	881.295	1157.222
):Total Exports of the Group	24620.742	31194.084	42260.242	53937.326	58574.559
Percentage of(1)/(2)	1.03	1.24	1.46	1.63	1.97

In terms of percentage, total exports of engineering goods between the countries of the sample and the total exports of the countries of the same products grew by more than 90%.

Table 7[15]:

[14] Calculated by the author from Tables A1-A5 Appendix A and Table 3.
[15] Table 7 is computed by the author from Table A1 – A5 Appendix A.

Intra-Trade of exports of Engineering Goods between the countries of the sample
(in US $ thousands)

Year/ Country	1992	1993	1994	1995	1996	Sum of 5 Years
Egypt	994	1114	9935	6763	11081	29887
Indonesia	69720	101857	226772	356615	515064	1270028
Malaysia	172015	237769	263704	348804	387771	1410063
Pakistan	1484	1180	1140	2824	2042	8670
Turkey	9829	45092	115505	166289	241264	577979
Total exports	254042	387012	617056	881295	1157222	

The biggest exporting countries in intra-MA OIC member countries' trade are Malaysia and Indonesia with US$ 1.41 billion and US$ 1.27 billion respectively over the 5 years and then comes Turkey in the third position with a value of US$ 557.979 million. The intra-MA OIC member countries' trade with Egypt and Pakistan is insignificant compared to the three other members of the group under study. Their total values over the whole period did not exceed US$ 30 million for Egypt and US$ 10 million for Pakistan.

However, on individual basis there is a clear tendency towards an increase in intra-trade of engineering goods, even though the value of intra-trade of engineering goods stayed small for some countries like Pakistan and Egypt (Table 7). Relatively speaking, the volume of exports in intra-MA OIC member countries' trade of engineering goods has increased by more than 10 times over the 5 years for Egypt; by more than 37% for Pakistan; by more than 24 times for Turkey, by more than 6 times for Indonesia and, by more than 125% for Malaysia respectively as illustrated in Table 7 above.

The largest exporting countries in intra-MA OIC member countries' trade of engineering goods in 1992 are Malaysia and Indonesia, which account for 68 percent and 27 percent of the total, respectively. In 1994, Turkey comes into picture with a share in intra-MA OIC member countries trade of 19 percent of the total. In the last 3 years of the period under study, Turkey has joined the two first countries(Malaysia and Indonesia) in the intra-MA OIC member countries' trade of engineering goods. Their shares account for 42 percent, 37 percent and 19 percent in 1994; 40 percent, 40 percent and 11 percent in 1995 and finally 34 percent, 44 percent and 21 percent in 1996 of the total, respectively. The shares in intra-MA OIC member countries trade of the two other member countries of the sample, Egypt and Pakistan are insignificant and

do not exceed 2 percent of the total over the whole period (Chart 6 and Chart 7).

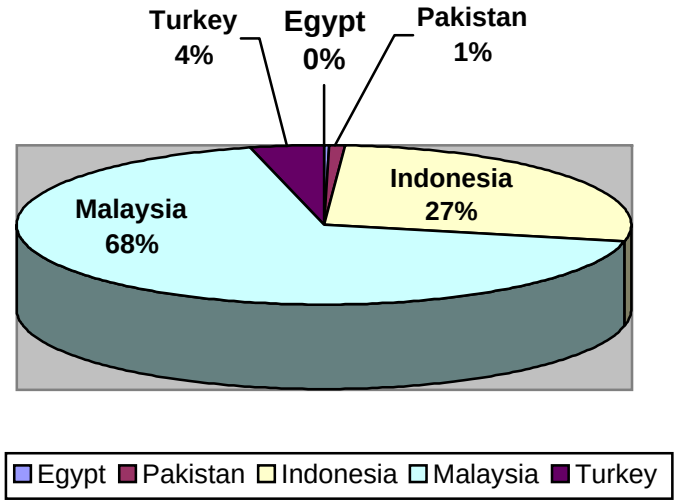
On the average, over the five years (1992-96), the classification of the countries for intra-MA OIC member countries trade stayed the same with Malaysia coming first with 42 percent, Indonesia with 39 percent and then Turkey with 18 percent respectively (Chart 8). Intra-regional trade of engineering goods in general remain small compared to the total exports of engineering goods of the 5 countries over the period of 5 years.

The total intra-MA OIC member countries' exports trade amount over the whole period (1992-96) to US$ 3.297 billion whereas the total exports of engineering goods amount to more than US$ 210.5 billion over the same period. The intra-MA OIC member countries' trade accounts less than 1.6% of the total exports. Even though, the intra trade has increased in volume over the years,it still remains very small.

Chart 6

Intra-Regional Engineering Goods Trade, 1992 (in percent)

Intra-Regional Engineering Goods Trade, 1994 (in percent)



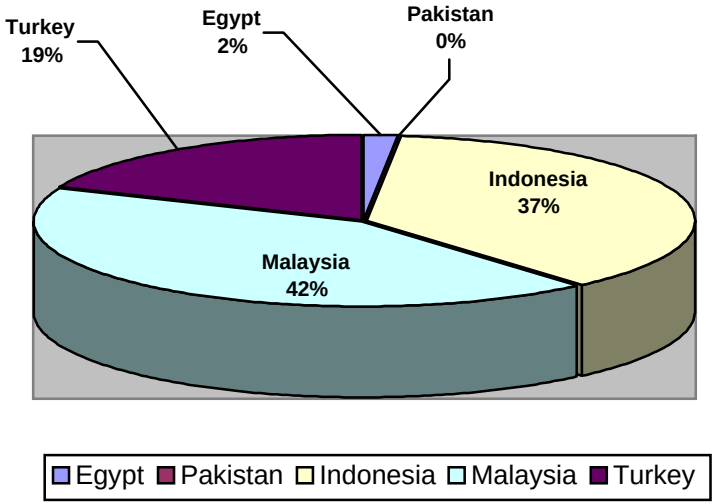
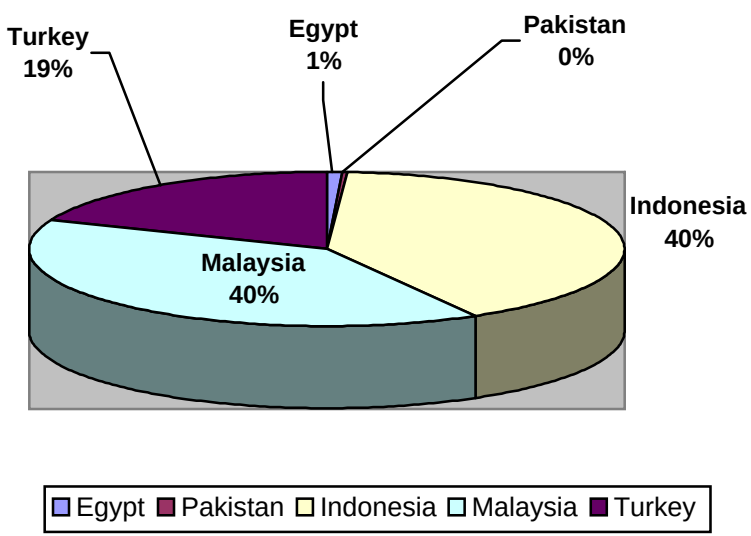


Chart 7

Intra-Regional Engineering Goods Trade, 1995 (in percent)

Intra-Regional Engineering Goods Trade, 1996 (in percent)


Turkey
19%
Egypt
1%
Pakistan
0%
Indonesia
40%
Malaysia
40%
Egypt
Pakistan
Indonesia
Malaysia
Turkey

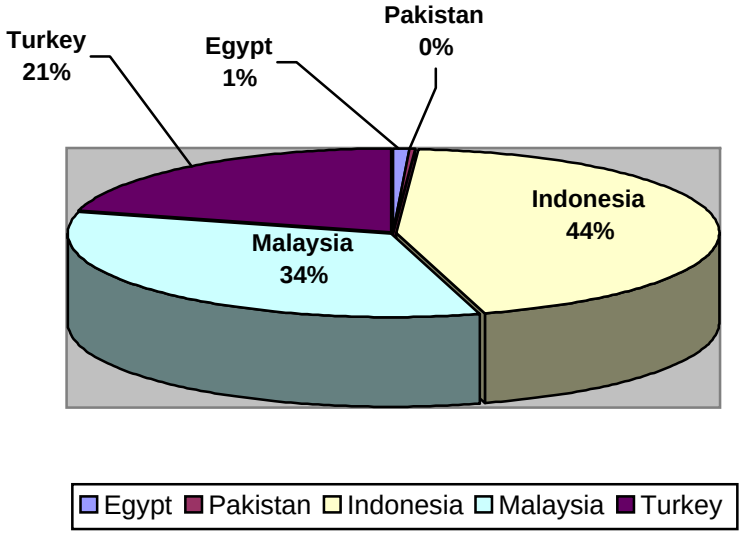
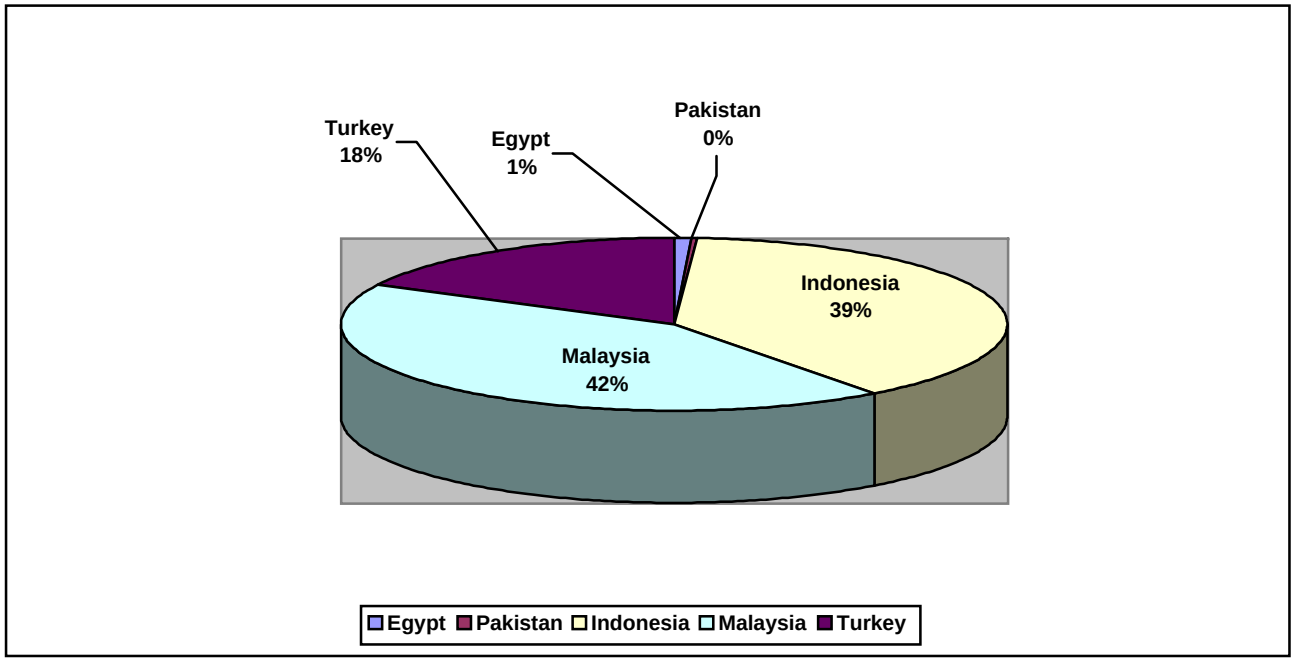

Turkey
21%
Egypt
1%
Pakistan
0%
Indonesia
44%
Malaysia
34%
Egypt
Pakistan
Indonesia
Malaysia
Turkey

Chart 8

Intra-Regional Engineering Goods Trade, Sum of 5 Years, 1992-96
(in percent)

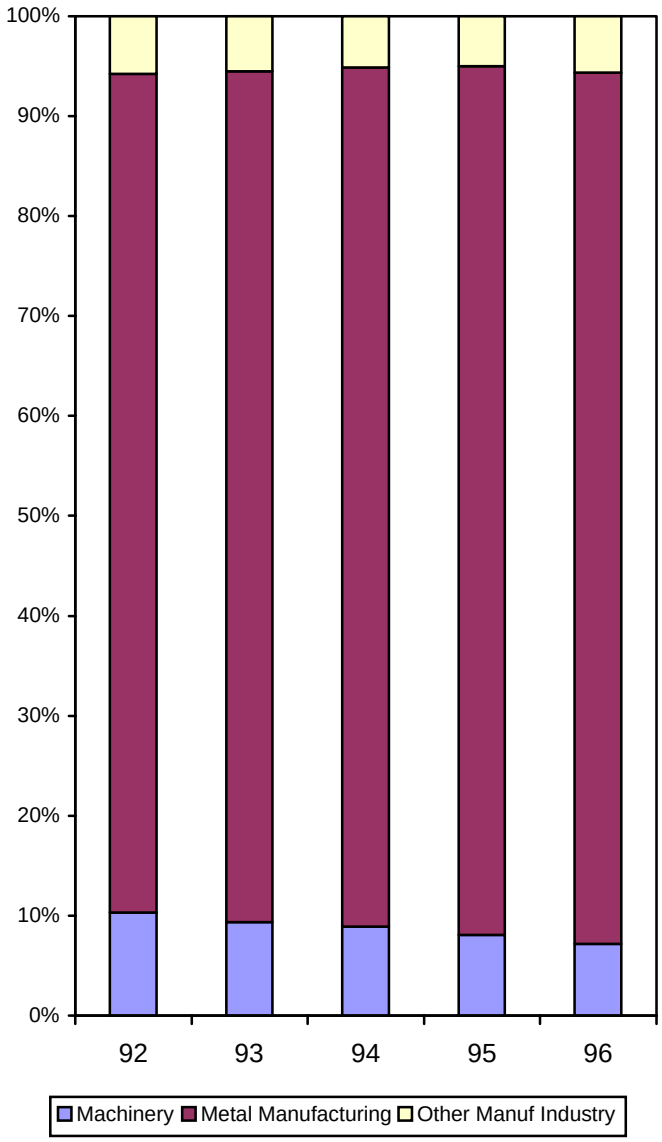


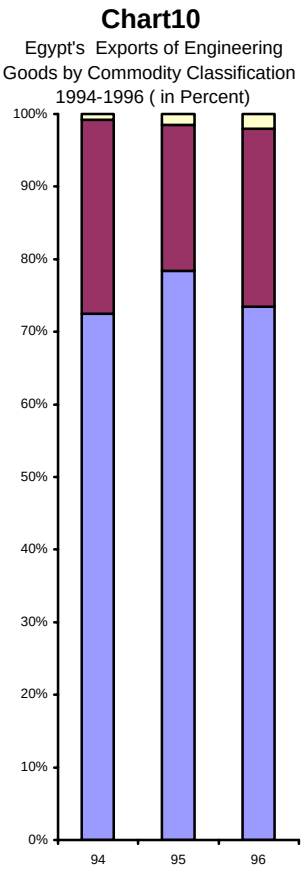
3.4 TRADE PATTERN OF ENGINEERING GOODS BY BROAD CATEGORIES

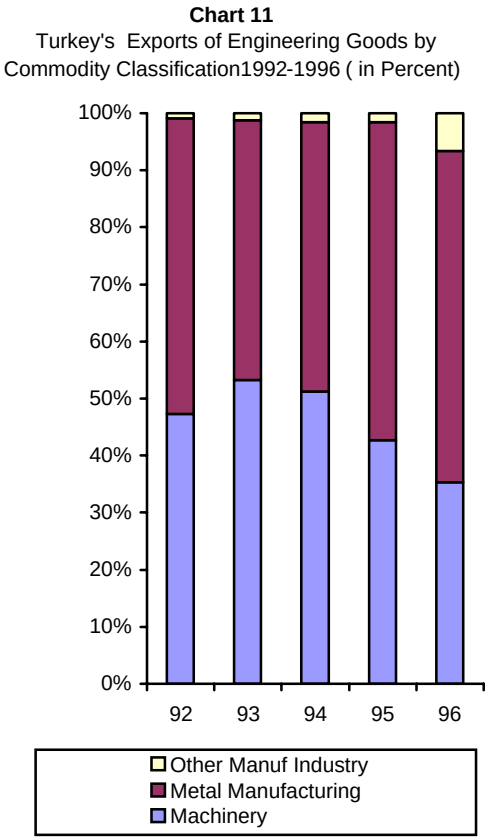
Looking at the exports trade pattern of engineering goods by broad categories, we notice that the exports pattern of engineering goods include mainly the category "metal manufacturing" over the whole period under study (Chart 9) . The total exports of engineering goods belonging to this category exceeds, on the average, 83 percent of the total exports of these countries whereas the total exports of the category "Machinery" does not go beyond 10 percent over the whole period. On the contrary, it decreased continuously from 10.3 percent in 1992 to reach 7.2 percent in 1996 as shown in Chart 9.

Looking closely at the tables in Appendix C we find that Turkey's and Egypt's exports of engineering goods are quite different from the others. Their exports are in fact more balanced between the two first categories, "Machinery' and "Metal Manufacturing" as shown by Chart 10 and Chart 11 below. It is clear that these two countries are focusing more on exporting machinery and metal manufacturing in terms of percentage ,than the other countries in the sample. We may then conclude that these two countries have a comparative advantage with respect to the first category of engineering goods " machinery" that may be beneficial to the rest of the Muslim countries. In other words ,given the fact that these countries export more of the first item (machinery), it implies that they possess a comparative advantage with respect to the technology embodied in this item .Even though, Turkey and Egypt have a comparative advantage in machinery and metal manufacturing, Muslim countries did not take advantage a lot of that. This may have several reasons. Among these reasons we may quote the problem of distance and its related high cost of transportation, the problem of competitiveness with the industrial world in addition to the lack of high cooperation between Muslim countries. The enhancement of intra-trade between these countries will allow the diffusion of this particular technology at a low cost. The increase in cooperation among the OIC member countries decreases the dependence with respect to the industrial world and gives a boost to the process of learning by doing in these countries.

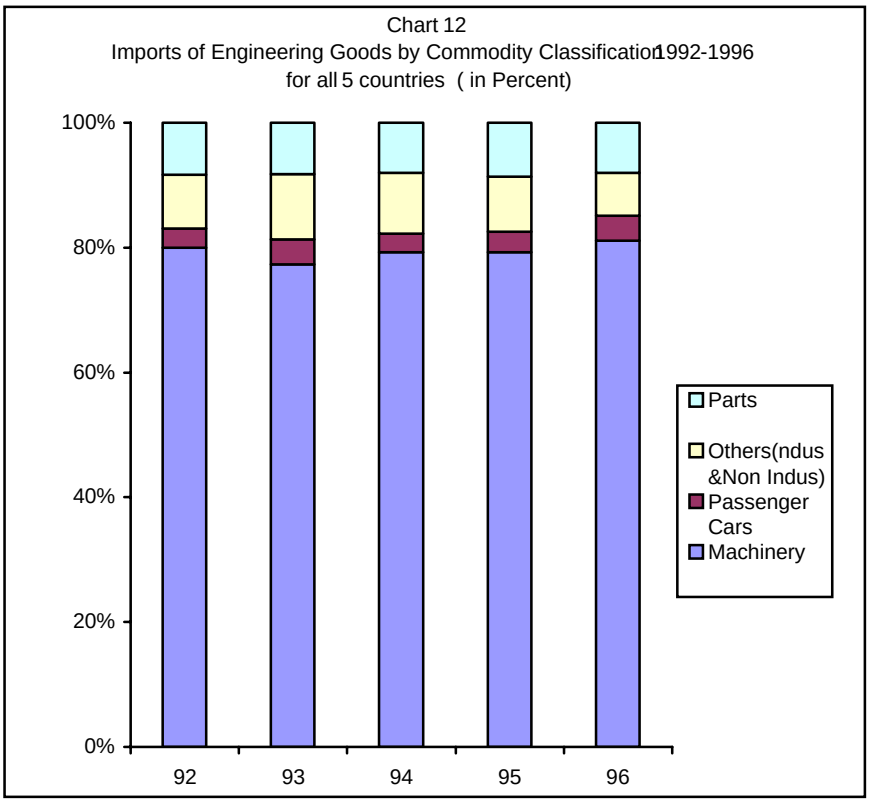
Chart 9
Export of Engineering Goods by Commodity
Classification 1992-1996 for the 5 countries of the sample
(in Percent)







On the other hand, by looking at the imports trade patterns of engineering goods by broad categories as shown in Chart 12 below and Tables D1-D5 in Appendix D , it follows that the imports pattern of engineering goods include mainly the category "Machinery" over the whole period under study ,with an average percentage exceeding 80% of the total imports of engineering goods, whereas , the total import of the other three categories did not exceed 20% of the total imports of engineering goods altogether over the whole period. It is not in fact surprising because the total export of this category did not go beyond 10% over the whole period for these countries.



By looking closely at the figures (See tables D1-D5, Appendix D) we conclude that the imports of this category occupied a large part of the total imports of engineering goods for all countries in the sample , which shown, two important things: First, it shows the importance that this specific category of engineering goods occupies in the structure of imports of these countries. Second, these countries import in general large quantities of machinery as indicated in Fig 12 below which shows the economic and technological dependence of these countries on the industrial world as long as this specific category is concerned.

Two other categories namely, "Industrial and Non Industrial" and "Parts" as shown in Chart 12 ranked second in terms of volume of imports of engineering goods with an average percentage close to 8% of the total imports of the engineering products over the period 92-96.

3.5 MAIN FINDINGS

The main findings of this chapter may be summarized as follows:

1. The pattern of the MA OIC member countries' exports of engineering goods appears uneven .The total exports and total imports of engineering goods differ drastically from one country to another in terms of volumes. The study specifically shows the existence of differences between the countries and clearly classifies them into three distinct groups with Malaysia as Group 1, Indonesia and Turkey forming Group 2, and Pakistan and Egypt forming Group 3. However, overall, the volume of exports of engineering goods has increased steadily over the period 92-96, for the five countries.
2. The study shows a large gap in terms of exports between Malaysia and the two other groups[16] (Group 2) for Turkey and Indonesia. The total exports of engineering products did not exceed 14% of Malaysia's total exports of engineering goods all over the period 92-96 , whereas, Egypt and Pakistan's total exports of engineering goods is even less and represents less than 1% of Malaysia's total exports of engineering goods. These figures indicate a clear progress made by Malaysia in this sector compared to the rest of the countries. This technological progress may in fact benefit Malaysia as well as the other Muslim countries by enhancing intra-trade in this sector based on cooperative spirit.

The enhancement of intra-trade of this particular sector will diffuse technology of this industry to the OIC member countries at a lower cost and will boost their economies. The diffusion of technology via cooperation process will profit all the countries. Malaysia will benefit in finding a larger market for its engineering products which increases its revenues and hence, gives a boost to its economic development by creating more employment. The other countries will benefit from the diffusion process of this technology and also from the process of "learning by doing". Moreover, they will decrease gradually their economic dependence on the developed countries by producing their engineering goods domestically with the help of the former

16 One has to be careful in interpreting the statistics. The volume of trade should not be interpreted as 100% Malaysian products . A large part of it is produced in fact by foreign companies and most particularly Japanese and Korean companies. Even though this is what is going on , Malaysia has succeeded in attracting foreign companies to invest in the country and particularly in the field of engineering goods. Malaysia may therefore, benefit through the technology diffusion process and the process of learning by doing .Moreover, many other problems may find their solutions. In fact ,unemployment may decline, R&D may benefit from the presence of such big firms Malaysian workers may get more perfection in their respective specialization etc..

country. However, this does not mean that Muslim countries will stop importing from non-Muslim countries. By keeping importing from non Muslim countries, Muslim countries will benefit from the development of new technologies that will take place in these countries and will also have to keep a good standard of competitiveness in order to survive.

3. Exports of engineering goods of the most technologically advanced Muslim countries continue to be small. In addition, the intra-MA OIC member countries' exports of engineering goods is almost insignificant .It represents less than 2% of the total trade of engineering goods over the whole period. This fact shows the present existing lack of cooperation between these countries. It indicates also the lack of vision in terms of economic integration and want of common economic strategy for cooperation.

4. The exports' trade pattern of engineering goods by broad categories of the countries in the sample, includes mainly "Metal manufacturing". The study shows that the total exports of this category exceeds, on the average, 83% of the total exports of engineering goods whereas the exports of "Machinery" does not go beyond 10% over the whole period. On the other hand, the study reveals that the total imports of engineering goods include in the first place the category "Machinery" with an average percentage exceeding 80% of the total imports of engineering goods over the period 92-96.

VI

COOPERATION POLICIES TO ENHANCE TRADE AND PRODUCTION OF ENGINEERING GOODS

In this section we shall first discuss the main reasons that might have caused the low level of intra-trade in engineering goods between the MA OIC member countries. The reasons may be disparities in economic development, or to the lack of an adequate institutional framework, or divergences in economic policies, or structural features.

Second, we shall argue that sound and pragmatic cooperation policies may be one of the solutions to enhance trade and production of engineering goods in member countries. The goals of technology reciprocity, reduction and elimination of barriers to enhance reciprocal cooperation may be considered among the major goals to be pursued by policy makers for the engineering goods.

4.1 OBSTACLES TO THE DEVELOPMENT OF ENGINEERING GOODS INDUSTRY IN THE MUSLIM WORLD

4.1.1 Structural Nature and Disparities in Economic Development

The low level of trade among the most technologically advanced OIC member countries may be due partly to their country production structures which are competitive rather than complementary, given their early stage of economic development and more particularly to the sector of engineering goods.

Intra-MA OIC member countries' trade may also be constrained by customs procedures in some member countries. Regulations often are abundant with lack of clarity and are uncoordinated between the local and national levels. The relatively low level of development of financial instruments; the high level of corruption; the risk of political instability and the undeveloped standardization and quality control in some of these countries affect trade negatively.

The five MA OIC member countries in the engineering sector are at different levels of development as shown in the previous chapter; with Malaysia being at fairly advanced stage with respect to other countries, then come Turkey and Indonesia, in the second position. As a result, these countries face the problem of economic polarization. While the infrastructure law may be fairly well developed in individual countries, the links between the countries remain inadequate, partly because of the long distances separating them, and partly because of the regulatory requirements regarding transit etc. Integrating

their infrastructures calls for sizable financial outlays, which can be justified only to the extent that trade potentials promise.

4.1.2 Divergences in Economic Policies and Lack of Institutional Framework

Significant differences in the area of domestic taxes and incentives have also indirectly affected the momentum for intra-trade. Bilateral trade agreements between these countries should be pursued to offset the effect of existing "duty exemption" regimes. However, a greater effort is needed to harmonize the tax system in general, which faces significant resistance, given that it necessitates tax reduction in some member countries unable to compensate for them. Consequently, intra-union trading arrangements have to be reviewed on a regular basis.

In addition, the MA OIC member countries in engineering goods may lack in the proper and efficient institutional framework. A proper and efficient institutional framework improves the efficiency of the enterprises of the member countries at the regional level through the implementation of regional export program of engineering products and of major engineering projects.

4.1.3 Other Impediments

The low level of intra-trade between the most advanced Muslim countries in the engineering goods sector may be due to other reasons than the lack of cooperation. The actual low level of intra-trade may be due to the low level of saving in the country or to the negative impact of some socio-educational factors.

A country with low level of saving can hardly be able to invest in general and in the sector of engineering goods, which requires a lot of funds, in particular. The inability to invest reduces the ability to produce in general and more particularly ,in vital sectors such as the engineering goods sector.

In addition, the socio-educational factors may play a role in enhancing or hindering the production in the sector of engineering goods industry. A proper educational system helps the process of learning by doing. For example, a worker in the engineering goods industry should have the proper education to take care of the tools he uses. In addition, he should have the level of consciousness and seriousness of his mission, which consists in acquiring high competition leading to higher productivity of better quality goods. The socio-educational system, if not well developed, may play a negative role in the enhancement of any sophisticated sector of the economy. The socio-educational system has to be originated and promoted internally, based on the set of values generated in the society.

4.2 COOPERATION POLICIES

4.2.1. Why work toward technology reciprocity?

In order for the OIC member countries to continue with maturity and development they must have increasing cooperation with comparable contributions and mutual opportunities for mutual benefits. Such collaboration is advisable for the following reasons:

a) When a country like Pakistan licensed production of Malaysian engineering goods this will provide an income to Malaysian companies and helps amortize government research and development (R&D) costs . The contributing resources can then be reinvested in developing new technologies. Moreover, this kind of cooperation is necessary to spur competition with others.

b) Asymmetries in capabilities and institutions for technology and industrial development may lead to country X (Malaysia)- country Y (Pakistan differences in preferences regarding the cooperative mechanism. These asymmetries include country X (Malaysia) - country Y (Pakistan) disparities in engineering goods research and development (R&D) spending, in government industry relationship and in the overall approaches toward technology and engineering goods industry development. Hence, the government support of country X (Malaysia) for transfer of commercial technologies in the field of engineering goods for example, could help facilitate greater cooperation between engineering goods industries of these countries. The common link between engineering goods industries and their heavy reliance on research and development (R&D) lead relatively to low cost of production. Companies reliant on engineering goods industries argue that in order to continue with innovations and improving their engineering products, larger and larger amounts of R&D are a must. However, if engineering industry 'innovators fail to profit from the developments , they loose the incentive to spend large amounts on R&D. As a result of this, the industry stagnates. On the other hand, importing countries will benefit from cooperation policies through the diffusion process of technology by organizing joint training programs.

c) The protection and enforcement of cooperation on trade policies should contribute to the promotion of technological innovation and to the transfer and dissemination of technology a greater mutual advantage of producers and

users of technological knowledge in a manner conducive to social and economic welfare.

d) Unwillingness of Country X (say Malaysia) industry and government to cooperate technologically on the same conditions is definitely a real barrier. For instance, the same export control policies should be applied to both industries. Positive incentives to encourage one industry to industry cooperation are expected to contribute to this cooperation. These efforts are often undermined by a lack of consistency and coordination between the two countries in most of the OIC member countries.

e) Engaging country X (Malaysia) - Country Y (Indonesia) for instance is critically important to build reciprocal technology cooperation to meet mutual growing demands for engineering goods.

4.2.2. Reducing and Eliminating Barriers to Cooperation

The government of country X, for example should seek to reduce or eliminate barriers to technology flow, which come from country Y policies. A joint committee from interested countries may be formed to promote engineering goods industry. The committee may work with the public as well as private sector in these countries. The committee may work as well to develop new mechanism for technical cooperation among concerned companies of these countries. It may also be advisable for the committee to identify common engineering goods needs. One promising approach would be to create a joint Fund for engineering goods industry Research and Development (R&D) specific enabling technologies - including the adaptation of commercial technologies - targeted to be applicable in the future. This program jointly funded and managed could be launched with the help of Islamic Development Bank. In cooperation with different governments, such a committee should coordinate to build capabilities of monitoring and managing foreign sources of critical technologies. Such a coordination will help members get access. Since dependence on foreign sources of products and technologies for engineering goods industry will be a continuing process, ensuring access will remain a challenge with a long term focus. The correct approach to managing dependence on each other and on foreign sources will depend on specific cases. One may pursue understanding with different governments and industries to build production facilities.

4.2.3 Integrating Enhanced Technology Cooperation

The OIC member countries and particularly, the most technologically advanced, should institutionalize an enhanced comprehensive policy for economic and technological relationship.

Deregulation and more open competition between Muslim countries in the engineering goods industry are envisioned to improve efficiency through market based principles.

Restrictive trade and foreign direct investment policies limit cooperation by restricting imports and inhibiting capital inflows. Protection also reduces the profitability of exporting to other Muslim countries, serving the small domestic market. It further blunts incentives to adopt international standards of product quality and process efficiency.

The availability and proper maintenance of an adequate economic infrastructure such as telecommunications and transports facilities are essential for the enhancement of engineering goods. High quality communications are also essential for countries that aim to participate in globalizing production structures established by multinational corporations, to respond promptly to the rapid changes in the market. High transport costs derived from domestic trade policies may constitute a serious impediment. Telecommunications is, therefore, an indispensable part of the infrastructure of a modern economy providing the means to both transmit and process information related to sale and purchase of engineering products.

4.3. THE ROLE OF THE ISLAMIC DEVELOPMENT BANK (IDB)

The Islamic Development Bank (IDB) has a lot to do for boosting the sector of engineering goods in member countries. The Bank is already involved in financing trade, in general, among member countries. However, this special sector needs special attention.

The Bank may consider launching a project to construct a trade performance index[17], which will give the ranking of export performance of OIC member countries in the engineering goods sector. This trade performance index computed for the most advanced countries in the field of engineering

[17] Trade Performance Index is an annual assessment of trade performance of a sample of countries . It uses five criteria to evaluate a given year export performance in a number of sectors for each country. The five criteria used are net exports, per capita exports, share in world trade; product diversification; and market diversification. It also measures shifts in export performance over a given period of time, in order to evaluate change in a country's competitive position for each sector. Source : the International trade center (ITC) UNCTAD/WTO which is the technical cooperation agency of the World Trade Organization and the United Conference on Trade and Development for operational and enterprise oriented aspects of international trade development uses this index extensively.

sector may be put on a web site in the form of graphs and tables to be used by all countries interested in purchasing or selling engineering products. The web site may also be designed to point out the demand of engineering products from the various Muslim countries that the most technologically advanced Muslim countries can meet. The web site will of course be available to all Muslim countries that they use to purchase their needed engineering products.

IDB may also think to set up an effective trade promotion program to expand the exports and imports of OIC member countries' operations of engineering goods with a special window for engineering goods. A trade map for engineering goods may be developed by IDB for the OIC member countries most advanced in engineering goods as part of its research. This map will enable the OIC member countries to choose and buy the engineering products from the most advanced member countries through electronic mail. In other words, engineering goods produced in the most advanced OIC member countries will be available on a web site with all their characteristics, such as performance, prices, etc.. giving the opportunity to the interested buyers to select the product they want and to order on the spot through internet any quantity they want. IDB by financing such a program may extend a great help to the OIC member countries. The member countries buyers and sellers (producers) of engineering goods will get the chance to have a larger market of engineering products available to them. This enhances the production of this particular sector and promotes cooperation among the OIC member countries in general and in the engineering goods sector, in particular.

CONCLUSION

The study investigated the issue of cooperation policies to enhance production and trade of the engineering goods industry in member countries. It discussed first, the importance of this sector in the light of the present world economic environment and showed the importance of the role that this industry played in enhancing the economic development of the member countries. Having discussed the importance of engineering goods, the paper studied the trade pattern and the economic relations of the most advanced OIC member countries in the field of engineering goods. The study found that the pattern of the most advanced OIC member countries' exports of engineering goods is uneven and that the total exports and total imports of engineering products differ drastically from one country to another. More particularly, the study showed the existence of a large gap between Malaysia and other countries in the sample .It showed that the total exports of engineering goods of the latter countries did not exceed 14% of that of Malaysia. The intra-trade evolution of engineering goods has been investigated and a comparative analysis with some developed countries was made. The study found that the gap between Malaysia and the developed world is closing over time. The paper has also examined the trade pattern of engineering goods by broad categories and identified the most important engineering products these countries are exporting and importing. The study revealed that the category "Metal Manufacturing" for exports and the category "Machinery" for imports represents more than 80 % of the total exports and of the total imports of engineering goods respectively over the period 92-96 .On the basis of the findings of this last empirical section, the study examined and showed that cooperation policies among member countries constitute one of the best policies that may enhance production and trade of the engineering goods sector.

In the light of the preceding discussion, the study recommends the following:

1. The countries that are technologically advanced should set up a scheme of incentives to encourage one industry to one industry cooperation, in the same country as well as between the industries of different countries. This will build reciprocal technology cooperation, which will meet the mutual growing demands for the engineering goods.

2. A joint committee from the interested countries should be formed to represent the public as well as private sector in these

countries. The committee will be designed to develop new mechanisms for technical cooperation among concerned companies in these countries and identify needs for common engineering goods needs. The committee in cooperation with the governments of interested OIC member countries will coordinate to build capabilities for monitoring and managing foreign sources of initial technologies.

3. The study suggests a joint fund be established to support research and development (R&D) in the area of engineering goods industry. The fund may be designed to enhance new technologies which will be commercially viable for future application. The IDB may consider launching such a joint Fund for the interested member countries.

4. The most advanced countries in the field of engineering goods should institutionalize a comprehensive policy to enhance economic and technological relationship. The availability and proper maintenance of an adequate economic infrastructure such as telecommunications and transports facilities are essential to further the cause of this sector.

5. The Islamic Development Bank (IDB) should help the OIC member countries to launch a project to build a trade performance index for engineering goods. This trade performance index, which gives the annual assessment of trade performance of the countries may be installed on a web site in graphical and tabular form.

6. IDB may also consider developing a trade map for engineering goods produced by the most advanced OIC member countries. Different buyers and sellers through this trade map will have an easy access into a larger market of engineering goods.

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APPENDICES

Appendix A

Table A1

Egypt Exports Estimation of Engineering Goods to the Member Countries:
Selected period 1992-96 Computed from UNSD COMTRADE DATABASE System
(Values in US $ thousand unless specified)

Time/Country	1992	1993	1994	1995	1996	Sum of 5 Years
Indonesia	173	114	604	796	2	1689
Malaysia	0	1000	2629	392	541	4562
Pakistan	0	0	32	0	587	619
Turkey	821	0	6670	5575	9951	23017
Total	994	1114	9935	6763	11081	29887
Asia West(Excluding Turkey)	2752	270	1442	1346	5862	11672
Maghreb	6528	6247	9561	15356	11183	48875
Developed Countries (in Million)	444.5	270.5	464	313.5	221	1767

Source: International Trade Center UNCTAD/WTO, United Nations Statistics Division; Trade Analysis System 1998.

Table A2

Pakistan Exports Estimation of Engineering Goods to the Member Countries
Selected period 1992-96 Computed from UNSD COMTRADE DATABASE System
(Values in US $ thousand unless specified)

Time/Country	1992	1993	1994	1995	1996	Sum of 5 Years
Egypt	0	0	357	835	278	1470
Indonesia	360	132	204	1041	478	2215
Malaysia	202	80	177	163	586	1208
Turkey	922	968	402	785	700	3777
Total	1484	1180	1140	2824	2042	8670
Asia West	90	98	57	100	141	486
Maghreb	309	556	690	583	409	2547
Developed Countries (in Million)	99.514	99.855	82.509	95.697	107.612	485.187

Source: International Trade Center UNCTAD/WTO, United Nations Statistics Division; Trade Analysis System 1998.

Table A3

Indonesia Exports Estimation of Engineering Goods to the Member Countries
Selected period 1992-96 Computed from UNSD COMTRADE DATABASE System
(Values in US $ thousand unless specified)

Time/ Country	1992	1993	1994	1995	1996	Sum of 5 Years
Egypt	0	0	1471	2160	4416	8047
Malaysia	63220	89320	218718	340145	496249	1207652
Pakistan	4326	10407	4809	11389	5678	36609
Turkey	2174	2130	1774	2921	8721	17720
Total	69720	101857	226772	356615	515064	1270028
Asia West	414	638	1395	1433	1178	5058
Maghreb	336	920	3554	2269	3040	10119
Developed Countries (in Million)	2614.218	3490.056	4911.35	6274.312	8027.676	25317.612

Source: International Trade Center UNCTAD/WTO, United Nations Statistics Division; Trade Analysis System 1998.

Table A4

Malaysia Exports Estimation of Engineering Goods to the Member Countries
Selected period 1992-96 Computed from UNSD COMTRADE DATABASE System
(Values in US $ thousand unless specified)

Time/ Country	1992	1993	1994	1995	1996	Sum of 5 Years
Egypt	0	0	7947	11363	9421	28731
Indonesia	151865	217357	234849	296715	329511	1230297
Pakistan	12803	11542	14535	25472	22458	86810
Turkey	7347	8870	6373	15254	26381	64225
Total	172015	237769	263704	348804	387771	1410063
Asia West	20462	26977	27100	46770	45331	166640
Maghreb	1447	8008	7516	14670	17702	49343
Developed Countries (in Million $)	1730.791	15136.706	19879.146	26889.065	29605.806	103000

Source: International Trade Center UNCTAD/WTO, United Nations Statistics Division; Trade Analysis System 1998.

Table A5
Turkey Exports Estimation of Engineering Goods to the Member Countries
Selected period 1992-96 Computed UNSD COMTRADE DATABASE System
(Values in US $ thousand unless specified)

Time/ Country	1992	1993	1994	1995	1996	Sum of 5 Years
Egypt	0	0	50375	68880	119318	238573
Indonesia	1996	2077	7981	7321	13957	33332
Malaysia	2823	25767	38835	56645	70699	194769
Pakistan	5010	17248	18314	33443	37290	111305
Total	9829	45092	115505	166289	241264	577979
Asia West						
Maghreb	55690	100096	136390	137870	177658	607704
Developed Countries (in Million)	2891.706	2337.27	3296.334	5091.892	5525.17	19142.372

Source: International Trade Center UNCTAD/WTO United Nations Statistics Division; Trade Analysis System 1998.

Table A6

Evolution over time of the Gross National Product and of the Gross National Product Per Capita during the period 1992-96

Time/Country	1992		1993		1994		1995		1996	
	GNP	GNP Per Capita	GNP	GNP Per Capita	GNP	GNP per Capita	GNP	GNP Per Capita	GNP	GNP Per Capita
Egypt	34.514	650	36.679	660	40.95	710	45.507	790	64.275	1080
Indo-nesia	122.825	680	136.991	810	167.632	880	190.105	980	213.384	1080
Mala-ysia	51.917	2830	60.061	3160	68.674	3520	78.321	3890	89.8	4370
Pakistan	49.477	420	53.25	440	55.564	440	59.991	460	63.567	480
Turkey	114.234	2030	126.33	2970	149.002	2450	169.452	2780	177.53	2830

1. GNP is in Billion US Dollars.
2. GNP Per Capita is in US Dollars.

Source : Statistical Monograph No . 18 . Major Socio economic indicators of member states of the organization of the Islamic conference . 1998

Appendix B

EGYPT

Table B1

Evolution over time of Engineering Goods[18]
Exports during the period 1992-96 in %[19]

Exports	1992	1993	1994	1995	1996
3 Manufacturing	50.3	47.4	64.3	65.8	66.1
3.7 Machinery	11	8.8	8.7	10.5	7.2
3.8 Metal Manufacturing.	3.9	3.4	3.2	2.7	2.4
3.9 Other Manuf. Ind.	0.1	0.1	0.1	0.2	0.2
%of E.G out of Total Export	15	12.3	12	13.4	9.8
%of E.G out of Manufacturing	30	26	19	20	15

Table B2

Evolution over time of Imports of Engineering Goods
During the period 1992-96 in %[20]

Imports	1992	1993	1994	1995	1996
4 Machinery Equip.	20.7	23.5	20	18	19.3
4.1 Capital Equip.	16.7	19.4	16.5	15.1	16.2
4.2 Parts	4	4.1	3.5	3	3.1
5 Transport	6.6	7.5	9.2	7.3	6.5
5.1 Passenger Cars	1.4	2	2.2	1.8	1.5
5.2 Others	1.2	1.2	2.5	1.5	1.4
5.21 Industrial	1.2	1.2	2.5	1.5	1.4
5.22 Non-Industrial	0	0	0	0	0

[18] Source These tables on imports and exports are from 1996 International Trade Statistical Yearbook, United nations Vol.1,1997.

[19] Manufacturing include in addition of those defined as engineering goods the categories 3.1,3.2,3.3, 34, 3.5 and 3.6 which represent respectively food beverage and tobacco; textiles; wood &product; chemicals; no metal mineral.

[20] Machinery include the categories 4.1 and 4.2 which represent capital equipment and parts respectively.

INDONESIA

Table B3

Evolution over time of Engineering Goods Imports in %
During the period 1992-96

Imports in %	**1992**	**1993**	**1994**	**1995**	**1996**
4 Machinery Equip.	36.6	35.1	30.8	29.6	32
4.1 Capital Equip.	33.1	31.4	27.1	26.4	28.8
4.2 Parts	3.5	3.7	3.7	3.2	3.1
5 Transport	7.1	8.4	11.9	11.1	9.6
5.1 Passenger Cars	0.6	0.7	0.3	0.4	0.5
5.2 Others	1.9	1.8	2.5	1.8	1.5
5.2.1 Industrial	1.9	1.8	2.5	1.8	1.5
5.2.2 Non-Industrial	0	0	0	0	0
5.3 Parts	4.6	5.9	9.1	8.9	7.6

Table B4

Evolution over time of Engineering Goods
Exports in % during the period 1992-96

Exports	1992	1993	1994	1995	1996
3 Manufacturing	58.1	62.1	62.3	62.5	63.1
3.7 Machinery	2.5	2.1	2.4	3	2.5
3.8 Metal Manuf.	6.9	9.5	11.2	11.9	13.5
3.9 Other Manuf.	1.1	1.7	2.7	2	2.5
%of E.G out of Total Export	10.5	13.3	16.3	16.9	18.5
%of E.G out of Manufacturing	18	21.5	26	27	29.4

MALAYSIA

Table B5

Evolution over time of Imports Engineering Goods by Broad Category
During the period 1992-96 (in % of total Value)

Imports	1992	1993	1994	1995	1996
4 Machinery	45.4	47.3	50.3	51.6	52.9
4.1 Capital Equip.	26.7	26.5	26.9	26.1	25.1
4.2 Parts	18.7	20.8	23.4	25.5	27.8
5 Transport	9.3	8.4	9.6	9	8.1
5.1 Passenger Car	1.7	1.7	1.9	2.2	2.2
5.21 Industrial	4.9	4.5	5.8	4.9	3.7
5.3 Parts	2.6	2	1.7	1.7	2.1

Table B6

Evolution over time of Exports of Engineering Goods by Broad Category
(Percentage of Total Value) during the period 1992-96

Exports	1992	1993	1994	1995	1996
3 Manufacturing	79.9	84.6	88.5	89.6	89.1
3.7 Machinery	2	1.9	1.7	1.7	1.8
3.8 Metal Manuf.	47.6	52.6	57.7	59.4	59.8
3.9 Other Manuf.	2.9	2.7	2.4	2.8	2.7
Total % of E.G.[21] out of total exports	52.5	57.2	61.8	63.9	64.3
Total % of E.G. out of Manufacturing	65	67.6	69.83	71.3	72

[21] For Instance, in 1992 the exports of engineering goods represent 52.5% of the total exports and 65% of the manufacturing .

PAKISTAN

Table B7

Evolution over time of Exports of Engineering Goods by Broad Category
(Percentage of Total Value) during the period 1992-96

Exports	1992	1993	1994	1995	1996
3 Manufacturing	87.6	91.8	95.3	94.1	91.8
3.7 Machinery	0	0	0	0	0
3.8 Metal Manuf.	2.7	2.9	2.3	2.4	2.5
3.9 Other Manuf.	2.5	3	3.6	3.2	3.2
%of E.G out of Total Export	5.2	5.9	5.9	5.6	5.7
%of E.G out of Manufacturing	6	6.5	6.1	6	6.2

Table B8

Evolution over time of Imports Engineering Goods by Broad Category
During the period 1992-96 (in % of total Value)

Imports	1992	1993	1994	1995	1996
4 Machinery	25.6	21.4	21.9	23.6	20.6
4.1 Capital Equip.	23.5	19.6	19.2	21.9	18.7
4.2 Parts	2	1.8	2.7	1.7	1.9
5 Transport	8.6	14.1	7.1	5.5	7.1
5.1 Passenger Cars	2.2	4.2	2.0	1.9	2.1
5.2 Others (Indus & Non Industrial)	3.7	6.6	2.6	1.6	2.1
5.3 Parts	2.8	3.3	2.5	2.1	3

TURKEY

Table B9

Evolution over time of Exports of Engineering Goods by Broad Category
during the period 1992-96
(Percentage of Total Value)

Exports	1992	1993	1994	1995	1996
3 Manufacturing	83.2	83.1	85.4	88	88
3.7 Machinery	10.4	12.9	12.9	10.6	9.6
3.8 Metal Manuf.	11.4	11	11.9	13.8	15.8
3.9 Other Manuf.	0.2	0.3	0.4	0.4	1.8
%of E.G out of Total Export	22	24.2	25.2	24.8	27.2
%of E.G out of Manufacturing	26.5	29.1	29.5	28.1	31

Table B10

Evolution over time of Imports of Engineering Goods by Broad Category
during the period 1992-96
(Percentage of Total Value)

Imports	1992	1993	1994	1995	1996
4 Machinery Equip.	24.9	24.2	24	21.8	25.2
4.1 Capital Equip.	20.2	20.1	19.9	18.6	21.8
4.2 Parts	4.7	4.1	4.1	3.2	3.4
5 Transport	11.3	15.1	10.2	11.4	10.9
5.1 Passenger Car	1.6	2.5	1	0.9	2.4
5.2 Others	4.7	7.9	5.6	6.3	4.6
5.21 Industrial	4.6	7.8	5.5	6.3	4.5
5.22 Non-Industrial	0.1	0.1	0.1	0	0.1
5.3 Parts	5	4.7	3.7	4.2	4

Appendix C

Table C1
Total Exports of Engineering Goods by Broad Category Year 1992
(in $ US Million)

	Egypt	Indonesia	Malaysia	Pakistan	Turkey	Total	%
3.7: Machinery	N.A	558.27	743.4	0	1232.5	2534.17	10.3
3.8: Metal Manufacturing Industry	N.A	1540.84	17692	80.67	1351	20664.51	83.92
3.9: Other Manufacturing Industry	N.A	245.63	1077.88	74.7	23.7	1422.2	5.78

Table C2
Total Exports of Engineering Goods by Broad Category 93
(In $ US Million)

	Egypt	Indonesia	Malaysia	Pakistan	Turkey	Total	%
3.7: Machinery	N.A	514.5	823.35	0	1589	2926.85	9.38
3.8: Metal Manufacturing Industry	N.A	2327.6	22793.7	82.11	1355	26558.4	85.14
3.9: Other Manufacturing Industry	N.A	416.5	1170	84.94	36.95	1708.4	5.48

Table C3
Total Exports of Engineering Goods by Broad Category Year 94
(In $ US Million)

	Egypt	Indonesia	Malaysia	Pakistan	Turkey	Total	%
3.7: Machinery	276.69	622.34	928.6	0	1919.64	3747.27	8.9
3.8: Metal Manufacturing Industry	101.77	2904.24	31517.2	56.53	1770.83	36350.57	86
3.9: Other Manufacturing Industry	3.18	700.13	1311	88.47	59.52	2162.3	5.1

Table C4

Total Exports of Engineering Goods by Broad Category Year 95
(In $ US Million)

	Egypt	**Indonesia**	**Malaysia**	**Pakistan**	**Turkey**	**Total**	**%**
3.7: Machinery	317.81	954.42	1159.3	0	1889.55	4321.08	8.04
3.8: Metal Manufacturing Industry	81.72	3785.88	40508.2	67.4	2460	46903.2	86.96
3.9: Other Manufacturing Industry	6.05	636.28	1909.5	89.86	71.3	2712.99	5

Table C5

Total Exports of Engineering Goods by Broad Category Year 96
(In $ US Million)

	Egypt	**Indonesia**	**Malaysia**	**Pakistan**	**Turkey**	**Total**	**%**
3.7: Machinery	219.7	880.3	1299	0	1822.2	4221.2	7.2
3.8: Metal Manufacturing Industry	73.23	4753.5	43159.3	84	2999	51069	87.18
3.9: Other Manufacturing Industry	6.1	880.3	1948.7	107.6	341.66	3284.36	5.62

Appendix D[22]

Table D1

Total Imports of Engineering goods
by Broad Category for the Year 92
(In $US Million)

Item\Country	Egypt	Indonesia	Malaysia	Pakistan	Turkey	Total	%
4. Machinery	NA	12342.99	21674.8	2876	7048.9	43942.7	80
5.1 Passenger Cars	NA	202.3	811.6	247	452.9	1713.8	3.1
5.2 Others (Industrial and Non Industrial)	NA	640.75	2339.3	415.7	1330.5	4726.25	8.6
5.3 Parts	NA	1551.3	1241.3	314.5	1415.5	4522.6	8.3

Table D2

Total Imports of Engineering goods
by Broad Category for the Year 93
(in $ US Million)

Item\Country	Egypt	Indonesia	Malaysia	Pakistan	Turkey	Total	%
4. Machinery	NA	12189.7	25653.6	2446.4	8715.4	49005.1	77.3
5.1 Passenger Cars	NA	243	922	480.1	900.3	2545.4	4
5.2 Others (Industrial and Non Industrial)	NA	625	2440.6	754.5	2845.1	6665.2	10.5
5.3 Parts	NA	2049	1084.7	377.2	1692.7	5203.6	8.2

[22] these tables have been computed by the author from Table 5 and from tables in Appendix B

Table D3

Total Imports of Engineering goods
by Broad Category for the Year 94
(In $ US Million)

Item\Country	Egypt	Indonesia	Malaysia	Pakistan	Turkey	Total	%
4. Machinery	3005.7	11855.26	34605.7	2356.9	6812	58635.56	79.15
5.1 Passenger Cars	330.6	115.47	1307.2	215.2	283.8	2252.27	3
5.2 Others (Industrial and Non Industrial)	375.7	962.3	3990.3	279.8	1589.45	7197.55	9.75
5.3 Parts	0	3502.7	1169.58	269	1050.2	5991.48	8.1

Table D4

Total Imports of Engineering Goods
by Broad Category for the Year 95
(In $ US Million)

Item\Country	Egypt	Indonesia	Malaysia	Pakistan	Turkey	Total	%
4. Machinery	3238.23	14635	45826.6	3355.48	9822.6	76877.91	79.3
5.1 Passenger Cars	323.8	197.8	1953.85	270.1	405.52	3151	3.25
5.2 Others (Industrial and Non Industrial)	269.86	890	4351.75	227.49	2838.64	8577.74	8.84
5.3 Parts	269.86	4400.4	1509.79	298.58	1892.42	8371	8.61

Table D5

Total Imports of Engineering Goods
by Broad Category for the Year 96
(In $ US Million)

Item\Country	Egypt	Indonesia	Malaysia	Pakistan	Turkey	Total	%
4. Machinery	4024	16464.23	47107.7	3001	13130.2	83727.13	81.15
5.1 Passenger Cars	312.74	257.25	1959	305.9	1250.5	4085.39	3.96
5.2 Others(Industrial and Non Industrial	291.9	771.76	3294.9	305.9	2396.8	7061.26	6.84
5.3 Parts	0	3910.25	1870	437	2084	8301.25	8.05

Appendix E

Categories

6 Basic Manufactures

67 Iron Steel
68 Non-Ferrous Metals
69 Metal Manufactures

7 Machines, Transport Equipment

71 Rower Generating Equipment
72 Machines for Special Industries
73 Metal Working Machines
74 General Industrial Machinery
75 Office Machines, ADP Equipment
76 Telecomm., Sound Equipment
77 Electrical Machinery, etc.
78 Road Vehicles
79 Other Transport Equipment

8 Misc. Manufactured Goods

87 Precision Instruments
88 Photo Equipment Optical Goods etc.
89 Misc. Manufactured Goods

Note : the SITC code related to Engineering goods have been selected from these broad categories .These include the following four digit SITC code :

6731-6795	7471-7939
6825-68	8110,8121
69 - 6935	8711- 8821
6993- 6999	8843-8921
7111- 7459	