

## ***Technological Development and Export Challenges in The Arab Countries***

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*Received: 22/11/2020*

*Accepted: 15/12/2020*

*Published: 21/05/2021*

### ***Abstract:***

*The contemporary economy is characterized by the growing role of technology, as an essential element in most economic activities, especially in the field of export and foreign trade in developing countries, in general, and the Arab countries in particular. This has resulted in major challenges to catch up with developed economies, which has negatively affected the exports sector and the balance of payments in most of these countries, which requires the Arab countries to strengthen the basic pillars necessary for the development of productive and export efficiency, and to avoid as far as possible from transport and technological dependency.*

***Keywords:*** *Technological Development; Export Challenges; Arab Countries*

***Jel Classification Codes :*** *O33; O32*

## **Introduction**

The twenty-first century economy is characterized by the emergence of the importance of technology and the knowledge-based economy, which poses radical changes and many challenges affecting the Arab countries in various fields, which have generated increasing importance for international competition in production, industry and foreign trade. This was reflected in the increase in the proportion of exports of technological content in total exports for developed countries as well as the increase in knowledge services, the importance of education and the development of personnel to cope with the current global changes has increased, as technological development leads to the creation of an environment conducive to sustainable development, through increasing the competitiveness of the foreign trade sector as well as generating added value in industrial production, and generating an increase in productivity for most economic sectors. This will require the gradual development of technology and innovation for developing countries, in general, and the Arab countries, in particular. It requires adopting a policy or strategy based on adopting a system based on creativity or to efficiently localize technology to catch up with advanced industrial economies, and create a favorable investment climate that increases knowledge assets, and promotes the economic development.

### Research hypothesis

The policies adopted in the Arab countries with regard to technological development were based on the transfer of imported technology in order to increase production capacities and achieve economic objectives in a manner that led to increased dependence on the outside world in the localization of technology, and thus reduced the export potential of manufactured goods and increase the deficit in the balance of payments to those countries, in general.

### Research problem

The current shifts in the global economy require major efforts by the Arab countries to provide the main pillars for the development, promotion and diversification of industrial goods destined to export and improve its quality and content of knowledge to be able to penetrate global markets and reduce the deficit in the trade balance in order to mitigate the external shocks resulting from the concentration of production in most Arab countries.

### Research Goal

The research aims to clarify the most important issues related to technological change, and its effects on the export sector in particular, and the necessity of providing a suitable environment for the effective localization of technology in the Arab countries in order to cope with the current developments in the world economy.

### Research Method

The research was based on combining the descriptive inductive method with the analytical method of some data of the Arab countries, and the variables under consideration.

### Research Structure

The research included four sections, the first explains what technology is, its stages and its importance. The second section shows the importance of technological transfer and the most important reasons for technological dependency. The third section discusses the relationship of technology with foreign trade. The fourth section discusses the role of technology and its role in influencing the size of Exports in Arab Countries. Finally, conclusions and recommendations were presented.

### **The first section**

#### **What is technology and technological progress**

Technology can be defined as scientific, engineering and managerial knowledge by which to conceive, design and develop the production and distribution of different materials and services, or all kinds of scientific knowledge and technical skills required by the development of machinery, methods of production, design and production of goods in accordance with economic rules. (1) The researchers believe that the technology went through four stages:

- 1 - the stage of the transition of work tools from simple craft tools to more sophisticated and complex tools, which led to the emergence of the machine.
- 2 - the stage of the arrival of the machine to the degree of technical allowed the production of machines by machines.
- 3 - the stage of the transition from automatic mechanics to automatic devices
- 4-stage production of automatic devices.

This means that technology is the emergence of a more sophisticated state of production and organizational processes, or is a set of skills and knowledge that may be tangible and embodied in machinery and equipment, or may be intangible: the skills directed to the production process, which is the diversification of products and change their characteristics. In the sense that there are types of technology are as follows (2):

#### 1. According to the material embodiment:

It is embodied technology or hardware (solid), which is reflected in the form of physical capital in the form of equipment and capital equipment, while the disembodied technology or software (soft), which does not take physical forms, but reflected within the framework of knowledge associated with the use, maintenance and development of embodied technology, and convert scientific research into practical applications in the form of innovations in economic activities.

#### 2. According to the percentage of spending on research and development:

It is the traditional technology that does not require the discovery of new scientific principles, and represents the traditional field of skills acquired in the past, in addition to new technology characterized by the possibility of controlling the human mind, and the intensity of high investment in research and development activities, the most important of which are information and

communication technology, biotechnology, engineering technology and manufactured materials technology, as well as computer technology, microelectronics, renewable energies.

3. According to the functional vision of technology:

which is reflected in the application of scientific knowledge to social and other issues.

4. According to the behavioral vision of technology:

A set of interrelated economic relations that guide the integration of inputs (such as capital, intermediate products and human skills) to obtain the desired outputs.

Science is closely related to technology and technological development, as access to development or technological advancement is the final outcome of the interaction between them. Technology involves technique or tactics that accompany the use of different means in production methods. Technological development results in the use of new inputs or renewal or modernization in the use of means of production, which is reflected in reducing costs and increasing productivity, which is fully linked to the development of knowledge, on the one hand, and the development of industry, on the other hand, i.e., technological development must be accompanied by increased knowledge and profitability capabilities for the project.

Therefore, the importance of technology highlights in achieving balanced developments in the environment of economic sectors, and increase economic growth rates in various sectors of the economy, in addition to increasing the volume of production and development of key industries in the process of development such as petrochemical, iron and steel industries, and it supports the economic position in access to foreign markets, through improving The quality of goods produced, and give them a competitive power.

### **The second section**

#### **Technological transfer and the reasons for technological dependency**

The decline in technological capabilities and capacities in developing countries has forced them to resort to technology transfer, embodied in the transfer of technology (whether machinery, equipment, information and technical knowledge) from technologically empowered economies to another that uses and attempts to acquire the technology transferred, and this is reflected in the competitive position of exports of developing countries, which are almost exclusively in energy and raw materials, and have added a new dependency, which is technological dependency, because modern technologies have led to more possibilities to replace the inputs of modern raw materials with each other. This led to a decline in the share of energy and raw materials from international trade, in addition to the transfer of some of the assembly processes from developing to developed countries to benefit from the proximity of markets and cost savings, resulting from the central location of the production process thanks to existing technologies, and thus deprived developing countries of the opportunity to export their products, leaving only the transfer of technology from their sources to benefit from them, as a result of the narrow production base of these countries.

Technology can only be developed through trade, and brain drain has, no doubt, added new obstacles to the development of its productive capacity.

Developing countries are also facing new difficulties in adopting advanced technology, such as the difficulty of obtaining the necessary information from technology, and the lack of experts and skills, in addition to the difficulty of choosing between technology characterized by labor-intensive or capital-intensive, so developing countries are now heavily dependent on the import of technology from abroad to provide the requirements of development, which has established technological dependency, because of the lack of availability of cadres that absorb the knowledge to apply them. The features of technological dependency emerged through several manifestations that established this dependency (3):

1. Importing technology in an exaggerated way, not according to the needs of the country or economic sector that we wish to develop.
2. Lack of ability to share knowledge and skills with the outside world.
- 3 - Lack of potential in the management and development of imported knowledge in the technological field.
- 4 - control of the developing country on a small part of the production process, which cannot promote the technological reality of its own.
- 5 - lack of scientific competencies required in this area.
- 6 - neglect the minds of its members, including many of the creators, and thus increasing dependence on abroad, and achieve the theory of dependency sought by the countries of the West.
- 7- The lack of specialized educational institutions to direct and commercialize (market) the researches towards the relevant economic sectors, and the weak use of scientific research properly. Moreover, most scientific institutions and research centers operate under severe financial constraints, so their contribution is limited, which undermines technology to achieve development.
- 8- The dependence of most developing economies, in general, and the Arab, in particular, on the revenues (rents) of natural resources, including oil, which weakened interest in the development of non-oil exports, and reduced attention to the knowledge economy and infrastructure projects, in addition to the absence of the role of the private sector in the field of scientific research and technological development, and the control of government institutions on funding in this area, with a low rate of scientific productivity of these countries.

In terms of administrative reasons, most research and development institutions are characterized by an unstable administrative structure and weak administrative organizations, which reflected on the efficiency and effectiveness of research and development institutions. Here, we must also take into consideration the social aspect, which was represented by the increase of knowledge poverty, the absence of transparency in the exchange of information and the absence of a spirit of development and innovation, which led to a low level of confidence in research and development of public and private sector institutions, all of which reinforced the widening of the technological gap between developed and developing countries, and encouraged the reliance on international technology transfer represented by technology transfer from a developed country to a less developed country, which is called Horizontal transfer, which differs from Vertical transfer, which differs from the vertical transfer that the latter is embodied in the transfer of technology at the national level through

the process of converting innovative scientific research abstracts carried out by research centers and universities into products, services and production methods embodied in capital goods, intermediate and consumer goods produced in these ways. Transportation methods also vary between direct methods through foreign direct investment, or through indirect methods such as licensing contracts, educational programs, consultancy services contracts, scholarships, etc. (4)

Thus, international differences in technology levels have led to different comparative advantages, which in turn reflected on the structure of foreign trade and the emergence of the technological gap model, which is one of the main justifications for the implementation of the TRIPS Agreement within the framework of the World Trade Organization, in order to continue this gap between developing and developed countries, as long as possible, through the protection of intellectual property in patents, trademarks and industrial designs within a period of time specified by the Convention between (20-50) years, which makes industrial countries enjoy the growth of their trade in knowledge-intensive goods and maintain competitive advantages in this aspect.

### **The third section Technology and foreign trade**

Working conditions have changed due to globalization and technology, and this has been reflected in the patterns of trade, investment and growth. In the last ten years, the volume of trade in goods and services for Arab countries doubled to \$ 21 trillion in 2016 from \$ 13 trillion in 2005. The digital components of this trade movement have also increased. Knowledge has become mainly in production and even in manufacturing, as finished goods have become more and more valuable from the content of knowledge. In spite of this, we find that the proportion of Arab trade fell between 2014 and 2016, and the Arab trade surplus shifted from \$ 238 billion to a deficit of \$ 66 billion during the same period, a decline of 165%, and saw the share of Arab trade in goods and services of the total world trade down from 5.4% in 2014 to 4.6% in 2016. (5)

There are few manifestations of the power of human creativity that have caused in society the wide and rapid transformation that the scientific and technological revolution has brought about.

Structural changes have been taking place in the economies of countries, especially those stemming from the essence of the scientific and technological revolution, which is flexible automation. The continuous improvement of this automation indicates that all the means of production will be replaced by the necessity of electronic and programmed means of production of the computer. Here, we will deal with its effects in the structure of the national economy through three axes are (6): 1. Industrial sector 2. The structure of the workforce 3. The structure of resources.

#### 1. The industrial sector

As a result of the information and communication revolution, the sectoral structure is changing, and the industrial structure is evolving as a result of technological changes. It has taken on several dimensions: increasing the share of manufacturing industries, and a relative decrease in mining industries in most Arab countries, due to the increase in the production of alternative raw materials, in addition to the increasing trend towards the use of processes of automation, which led to the



expansion of large-scale production, also began to emerge new industries, such as atomic energy, electronic machinery and petrochemicals.

Through the above, we find that the increase of production and a qualitative breakthrough in the industrial sector is linked to the acquisition of machinery and equipment that is technologically advanced in order to cope with the rapid developments in technology, which necessarily generated major challenges to achieve these goals, the most important is the technological knowledge and the huge development in the information and communication systems and the accompanying expansion of the activity of electronic commerce and its commercial transactions, in addition to the high demand for products of high technological level, and its decline for raw materials significantly.

## 2. Labor Force Structure

Radical changes in the structure of the labor force have begun due to changes in the industrial sector, as the demand for skilled and professional labor is increasing, and the demand for manual workers is declining, as the adoption of modern technology has led to the elimination of many labor, but at the same time requires a high quality of work with skills, education and training, so the technology generated employment opportunities for highly qualified and professional, and as a result has generated structural unemployment in most economic sectors, because of capital intensive condensation with modern technology.

## 3. Resource structure

Information and technological progress have become the basis of wealth in society rather than natural resources, fuel and labor, a renewable and constantly changing resource that can produce new industrial materials and commodities and production alternatives were not previously known, which reduced the importance of comparative advantage in the economy. This has had a negative impact on the traditional industries in the Arab countries. With regard to the international economy, technology and the scientific revolution have led to the structure of the national economy through the new pattern of division of international labor, the domination of developed countries in the field of scientific and technological progress, in addition to the change in the pattern of international trade represented in the radical change in the components of foreign trade, and the emergence of new forms of protection imposed by developed countries on commodity flows and international trade with developing countries, which restricted the latter at a narrow angle as an exporter of raw materials and raw materials and a market for the discharge of industrial products, especially in light of unequal competition in foreign markets. High competitiveness of industrialized countries. (7)

Technology contributes to indirect effects on economic growth in various sectors such as transport and energy, the Internet has become an important part of the infrastructure, and a factor of production in modern economies, and gives small enterprises more ability to participate in global trade, so it leads to inclusiveness that makes it capital is more productive, accelerates competition, increases efficiency, and thus stimulates innovation. Through the process of technological transfer, it is becoming increasingly apparent that trade significantly affects technological growth in developing countries, and with the acceleration of technological development and means of communication and other inventions. There were two means of linking trade and the spread of modern technology:

1. Dependence on the specialization of the developing country, if it has specialized in goods with high knowledge potentials, here it is faster learning. To produce more technologically complex goods when measuring production technology or product quality, trade thus creates a technological classification of products if countries face incentives to specialize in high-tech products than they are based solely on local resources and self-sufficiency.

2. The second method is related to gathering information from foreign markets or learning from imported goods that can be imported or obtained through proliferation by trading with more advanced technology partners.

These two methods make imported technology easier and cheaper, provided that new types of external and technological diversified inputs are imported, and that generate opportunities for learning. Therefore, trade affects the choice of investment, especially through foreign investments, which are affected in their flows on the capacities and productive capacities of local companies, providing them with an easier way to access foreign markets and help them in marketing distribution and service products in the global market, and although the existing industries in developing countries are industries with low-quality technology, but the monopolistic nature of developed countries has cost developing countries large sums when imported, where trade relations were characterized by technological monopoly by the developed countries, represented by the dependence of most developing countries on the capital market in technological commodity trade, in addition to the control of multinational companies on the international technological market, and then control their prices, which contributed to the deterioration or deficit of the balance of payments of developing countries.

Table (1) shows the evolution of the Arab trade balance of goods and services (billion dollars) for the years (2014,2015,2016)

Table (1): evolution of the Arab trade balance of goods and services for the period 2014-2016 billion dollar

Country	2014	2015	2016
Jordan	-5.1	-9.5	-8.6
Lebanon	-6.0	-13.5	-10.9
Morocco	-8.3	13.5	-7.9
Iraq	-	10.3	-10.9
Algeria	14.9	-7.9	-25.6
Egypt	-12.1	-23.9	-34.3

Source: IMF, April 2017, [www.imf.org](http://www.imf.org)

It is clear from the above table that the trade deficit in most Arab countries is high, especially in 2016.



**The Fourth section**  
**Technology and export capacity in Arab countries.**

In terms of exports, technology is usually reflected in increasing productivity, and increasing the added value of manufactured goods. For Arab countries, their reliance on modern technology is slowing, because of the weak development of local skills. Exports of renewable goods continue to contribute very little to provide financing for economic development, and technological development is almost limited to outsourcing, and R&D spending does not exceed 2%, which is very modest.

It is noteworthy that increasing the share of exports from manufacturing is a basic part of the structural change in developing countries. Therefore, many developing countries have moved towards this pattern of exporting manufactured goods, through their integration with the global economy. Exports of industrial goods give higher added value, encouraging developing countries to shift from commodities to industrials. The export growth rate reached 11.5% of manufacturing industries in these countries from 2005 to 2015. (8)

The manufacturing sector is the main sector for productivity growth, i.e., labor productivity increases due to the increase in the amount of in-kind capital employed in the production facility, and the use of more inventions that occur due to technological advances with the increase in the size of the capital of the enterprise and achieving dynamic savings. In other words, the growth of the manufacturing industry is closely linked to its ability to diversify and proliferate new products, the development of the industry leads to growth and that the high growth rate of demand for the products of the manufacturing industry exceeds the growth rate of GDP, which is reflected by the elasticity of internal demand for products of the sector.

Therefore, the industrial renaissance stimulates the export capacity to meet the increasing demand for consumer industrial imports, and products needed by industrial activities and foreign commodity and service inputs for investment activity, and thus achieve surplus or reduce the balance of payments deficit.

If export growth is not gradually linked to technology, such exports will lose growth or may decline in the future. (9)

Table (2) shows the share of high and medium-tech manufactured exports relative to the total manufactured exports of developed and developing countries for the period 2005-2015.

Table (2): share of high and medium-tech manufactured exports relative to the total manufactured exports of developed and developing countries for the period 2005-2015 (percent)

Countries group	2005	2010	2015
Developing countries	5.6	5.5	6.7
Industrial developed countries	65.9	63.7	64.8

source: NelsonCorrea and FoteiniKanatsouli, industrial development in least develop countries, WP26, UNIDO, 2018, p.18.

Although the proportion of exports of technical content in developing countries is lower than that of industrialized countries, the proportion of these exports increased very slightly between 2005 and 2015, as shown in the table above.

The top three exporters of manufacturing in the developing economies group are China, Mexico and India, which account for 62.1 percent of the total number of developing countries, indicating the rapid growth of these countries and the growing gap for smaller economies. Despite the emergence of some progress for the least developed countries and Arab countries in particular, the exposure of these countries to political tensions and the lack of proper infrastructure, hampered efforts to support the manufacturing industry, as these countries recorded the least developed share in manufacturing exports, usually focused on products manufactured with non-advanced technology. Technological change has tended to reduce the cost of production elements or factors, and improve production efficiency, which contributes to the generation of added value that leads to lower costs, and reflects positively on economic growth in general, and encourages towards increasing exports. The value added index in the manufacturing sector as a percentage of GDP is the most important indicators that reflects the technological development in the economy of a particular country, but nevertheless we find that there is a clear decline in this indicator for most Arab countries, except Lebanon and Morocco, as shown in the table (3) below, which reflects the dependence on technologically advanced countries in the provision of many goods, and lack of self-development in this area.

Table (3): the value added in the industrial sector as a percentage of GDP for a number of Arab countries for the period (2005-2015) %

Country	2005	2010	2015
Algeria	59.7	53.9	39.0
Egypt	36.3	37.5	36.3
Jordan	28.6	30.7	29.6
Lebanon	16.1	14.9	16.6
Morocco	29.0	28.6	29.2
Saudi Arabia	62.1	58.5	45.9
Sudan	27.7	28.4	2.6
Tunisia	29.3	31.5	28.2

Source: Arab Planning Institute, Arab Development Report, Economic Diversification: An Approach to Correcting the Path and Establishing Sustainability in Arab Economies, Third Edition, Kuwait, 2018.

This may be further illustrated by the value-added ratio in the manufacturing sector (as in the table below), which shows the modest levels of that ratio for many Arab countries, in addition to its decline between 2010 and 2015, especially in Egypt, Jordan and Qatar.

Table (4) shows the value added in the manufacturing sector as a percentage of GDP for the period (2010-2015) for a number of Arab countries.

Table (4): the value added in the manufacturing sector as a percentage of GDP for the period (2010-2015) for a number of Arab countries. %

Country	2010	2015
Egypt	16.9	16.9
Jordan	19.2	18.2
Lebanon	8.3	9.1
Morocco	17.4	18.0
Qatar	12.5	9.7
Saudi Arabia	11.0	12.3
Tunisia	18.0	16.9
Kuwait	5.5	6.2

Source: Arab Planning Institute, Arab Development Report, Economic Diversification: An Approach to Correcting the Path and Establishing Sustainability in Arab Economies, Third Issue, Kuwait, 2018.

Strategies aimed at achieving high levels of productive capacities, and developing their economic sectors, require the development of its industrial policy through the adoption of advanced technology, and changing production structures to ensure the presence of new elements contribute to raising the qualitative level of goods and production, and thus provide a magnet for those goods in foreign markets, and increase the export potential and competitiveness. The Arab countries are required to make these changes due to the restrictions of the World Trade Organization, and adherence to the rules of intellectual property rights, which impose great challenges for these countries to catch up with this process or path.

Table (5) show evaluation of manufacturing performance and its contribution to exports to Arab Countries for the year 2015.

Table (5): evaluation of manufacturing performance and its contribution to exports to Arab Countries for the year 2015 (%)

countries	Share of high and medium technology goods in the value-added manufacturing	ratio Proportion of high and medium-tech goods from manufacturing exports	Contribution of manufacturing exports to total world manufacturing exports
Saudi Arabia	41	35.7	0.5
United Arab Emirates	13	22.6	0.3
Bahrain	24	12.0	0.1
Kuwait	29	9.2	0.22
Oman	48	36.0	0.07

Qatar	62	0.9	0.05
Tunisia	20	46.8	0.11
Morocco	28	48.9	0.15
Egypt	20	34.4	0.14
Jordan	28	42.0	0.04
Algeria	27	1.8	0.15
Lebanon	20	37.6	0.02
Syria	22	22.7	0.05
Yemen	2	22.7	0.002
Iraq	7	2.7	0.004

Source: International Industrial Competitiveness Index, United Nations Industrial Development Organization (UNIDO), 2017, p. 103.

The ratio of manufacturing exports to total exports, and the technological content of these exports, is an important indicator that shows the quality of exports in the Arab countries, and generally we find that countries that have economic diversification in their production are usually the countries that have a high share of manufacturing to total exports, such as The Gulf countries in general, as can be seen from the table, in addition to Egypt, Jordan, Tunisia and Morocco, which are characterized by the diversity of their production and progress in re-export activities, while Iraq has decreased those ratios, because of its dependence on a single commodity in the export of oil, and its production concentration, as shown in the table above, these Arab countries are witnessing a tangible development in the adoption of advanced technology in production, and in the technological content of their exported goods (such as Saudi Arabia, Oman, Tunisia, Morocco, Jordan and Egypt), despite the low rates, compared to international countries. This did not show improvement in countries such as Iraq and Yemen, due to the slowdown in achieving the goals of economic development, and low support and adoption of high technology.

Through the Arab Development Report 2018, which referred to some international sub-indicators of innovation that are related to the development of the business environment, and the level of knowledge and technological outputs, which are shown in the table below.

Table (6): Some Global Indicators of Innovation in the Arab Countries for the year 2017

countries	International Innovation Index	Business Environment	Cognitive and Technological Outputs	Innovative Outputs
United Arab Emirates	43.2	47.8	20.9	36.1
Qatar	37.9	28	23.1	34.5
Saudi Arabia	36.2	35	21.6	28.4
Bahrain	34.7	26.8	20.8	29.0
Morocco	32.7	20.5	20.3	29.4

Tunisia	32.3	23.2	21.0	28.3
Oman	31.8	17	15.6	24.8
Lebanon	30.6	33.5	19.1	27.5
Jordan	30.5	24.7	19.3	28.6
Egypt	26.0	21.1	17	21.6
Algeria	24.3	21.0	14.4	16.7
Yemen	15.6	19.5	6.8	11

Source: Arab Planning Institute / Arab Development Report, Kuwait,2018, p. 137

It is clear that some Arab countries are making great efforts in the field of innovation and technological development, which is reflected in one way or another in the industrial and production policies of these countries, especially the United Arab Emirates, which is the first and always leading in the adoption of technological changes, followed by the Gulf States in general, and the lowest country Yemen, and the disappearance of Iraq from the list of innovation and knowledge development.

From the foregoing, we believe that achieving the objectives of economic development requires real transfer and localization of technology in order to pave the way for its domestic production. Arab countries should concentrate on absorbing and generating technology and avoiding as much as possible from the wrong methods of transferring technology, such as the purchase of advanced technological machinery and equipment that do not increase production capacities. Therefore, these machines will become obsolete over time due to continuous technological development, and become the goods resulting from these machines are not able to compete globally, and then these countries return to buy technological machines again in order to increase the export capacity, which means increasing the technological dependency abroad. It is necessary to provide a strategy that supports technological development in all fields, especially in supporting the research and development process, and providing the necessary funding for it, in addition to establishing research units in industrial production institutions that study, monitor and develop production processes continuously, and assess technology and its socio-economic impacts on society.

There are many challenges facing the export sector in the Arab countries to cope with the global environment surrounding, the most important of these is the weak funding to support progress and develop the quality of goods and services produced, as well as the lack of infrastructure, weak environment and the general investment climate of most Arab countries, which led to the transfer of financial resources towards political and military aspects, and away from economic issues that support economic growth, and improve production and industry, not to mention administrative and economic corruption. In addition to the customs barriers set by the advanced industrial countries that lead to the high price of exported goods and thus reduced the competitiveness and ability to export of the country.

## **Conclusions**

- 1 - Technological change in the Arab countries is characterized as a phased goal that ends after the import of modern machinery, and that is an incorrect method, as it must continue to develop and innovate, and achieve interaction between scientific progress and development requirements.
2. Increased reliance on technology transfer without skill development and reduced incentive for creativity and innovation, resulting in technological dependency that has led to increased import volumes and higher balance of payments deficits.
- 3 - Importing technology randomly, and may be ready factories do not contribute to support the local production capacities of the country.
- 4- Decrease in the ratio of manufacturing exports to total exports, which reflects the decline in self-development of technological production capabilities, which reflects the decline in export commodities with technological content.
- 5 - Low value added ratios in manufacturing industries that reflect a decrease in productivity, and necessarily reflect the adoption of means of production is not developed enough to support the production process.

## **Recommendations**

- 1 - Transfer of technology appropriate to the conditions of the local economy, and appropriate to local potentials.
2. Providing the necessary funding to encourage research and development, and linking it with productive institutions and economic sectors in order to develop them and achieve development goals.
3. Develop development plans that stimulate the mobilization of technological capabilities and resources within the framework of international competition.
- 4 - Encourage foreign direct investment and give it incentives within the economic activities, that contribute to the development of local expertise and capabilities, and help in the rehabilitation and training of workers.
- 5 - Cooperation between Arab countries in the field of technological development, and in the field of research and development, which allows the establishment of joint projects that develop productive capacities and competencies and increase export capabilities and competitiveness.



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