

**IMPACT OF E-COMMERCE AND USE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY ON PROMOTION
AND DEVELOPMENT OF INTRA-OIC TRADE**

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This paper analyses the current situation of e-commerce and use of information and communications technology (ICT) in the OIC countries. Essentially, e-commerce and the use of ICT have grown rapidly as a result of the rapid expansion of the Internet in the developed countries in the late 1990s, a process through which their economies benefited immensely. Lately, the number of countries that recognise the importance of the Internet is rising since more of them take action every day to spread it on a wider scale. However, in most developing countries, including OIC members, low technological base, high Internet usage costs, low GDP per capita, lack of appropriate financial and legal frameworks and low education level are important impediments to the growth of the Internet. Finally, the paper proposes some recommendations for OIC countries to deal with these important issues with a view to promoting intra-OIC trade after having made the required progress.

1. INTRODUCTION

Electronic commerce (E-commerce) is exchange of goods and services by means of the Internet or other computer networks. In e-commerce, traders reach each other through a personal computer (PC) that has an access to the Internet. E-commerce offers buyers and sellers convenience in many ways. Buyers can make business transactions 24 hours a day and seven days a week, which enables them to compare prices and make purchases without having to leave their homes or offices. For sellers, e-commerce offers a way to reduce costs and expand their markets. Automated order tracking and billing systems decrease additional labour costs, and if services can be downloaded, there are also no distribution costs. Trading over the Internet gives sellers the opportunity of marketing their products or services globally without any physical barriers.

The Internet, through interconnected computer networks, allows companies, individuals and institutions to communicate with one

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another effectively and inexpensively. The rapid expansion of the Internet in the late 1990s led to explosive growth in e-commerce. Industrial analysts reported that North American business-to-consumer (B2C) e-commerce transactions grew from \$11.5 billion in 1998 to \$44.5 billion in 2000 (Microsoft, 2003, p.6). By the end of the twentieth century, retail transactions (B2C) made up the largest part of the e-commerce. Consumers purchased computers, airline tickets, hotel rooms, automobiles, clothing, electronics and countless other commodities over the Internet. On the other hand, business-to-business (B2B) commerce represents the fastest growing segment of e-commerce in recent years. In this type of e-commerce, businesses order supplies and coordinate projects electronically (Microsoft, 2003, p.7). The main e-commerce takes place between enterprises. The estimates for the next few years, although different in quantification, clearly indicate that B2B will amount to around 95 percent of global e-commerce (UNCTAD, 2002, p.8).

The world's largest e-commerce market, USA, experienced an economic slowdown in 2001. The performance of the other major developed economies has been poorer than expected and also several emerging-market economies in East Asia and Latin America recorded negative growths in the same year. Despite these unfavourable economic conditions, the number of hosts networked in the Internet, the number of people using the latter around the world and the value of goods and services traded on-line kept growing at a rapid pace. This confirms the view that the changes affected by the Internet in business, government and many other aspects of society stem from long-term considerations rather than short-term economic crises (UNCTAD, 2002, p.3).

The widespread availability and convergence of information and communication technologies (ICT) –computers, digital networks, telecommunication, television, etc.– have led to the creation of an unprecedented capacity for dissemination of knowledge and information. Although the impact of this information age is felt in education, research, medicine, government, business and entertainment in many parts of the world, its benefits have reached only about 5 percent of the world's population. The new technological advancements in the use of ICT have widened the digital divide between and within the societies of a nation (Arunachalam, 2002, p.2). Consequently, substantial efforts are required by governments to increase the awareness of using new technologies. To

increase the applications of new technologies, the educational level of the society has to be raised. However, this measure on its own is not enough if it is not supported by a strong national strategy for developing awareness in using ICT and also taking additional appropriate measures based on the specific needs of the society.

This paper attempts to assess the present situation of e-commerce and information technology in the OIC countries and suggests a set of policy measures in this important area to create a productive environment for the development of e-commerce and ICT. The SESRTCIC conducted the present study based upon the relevant data on the subject collected from the OIC member countries¹ through a questionnaire (Annex B) and international sources such as the International Telecommunications Union (ITU), United Nations and World Bank (WB).

The second section reviews the level of ICT infrastructure and accessibility to the Internet in OIC countries by evaluating the relevant indicators. In addition, it discusses the legal and financial framework required for e-commerce and the enhancement of ICT in OIC countries. The third section presents an overview of intra-OIC trade and discusses the prospects and challenges for ICT development, particularly the e-commerce in OIC member countries. The fourth section refers to the OIC Plan of Action and cooperation activities in this field and proposes some measures required for increasing intra-OIC trade through enhancing e-commerce. The paper concludes with some remarks on the subject and recommendations to increase the impact of e-commerce and use of ICT in the promotion of intra-OIC trade.

2. ICT AND PROSPECTS FOR ENHANCING E-COMMERCE IN OIC COUNTRIES

2.1. Internet Use, Infrastructure and Access Capacity

The number of Internet users worldwide was about 500 million at the end of 2001 (Table 1), representing about 26 percent increase as compared to 2000. The rate indicates an enormous jump over the

¹ Azerbaijan, Kuwait, Kyrgyzstan, Lebanon, Malaysia, Maldives, Mali, Pakistan, Qatar, Saudi Arabia, Sudan, Tunisia and Turkey.

previous year, especially when one considers that the year 2001 witnessed a recession. Furthermore, the highest increase was realised in the developing countries in 2001. Some specialists believe that Internet user penetration² in the developed countries approaches saturation level and, therefore, demand for new Internet access will be stabilised in the near future. This suggests that most of the growth is expected to be realised in the developing countries. In 2001, the developing countries accounted for almost one third of new Internet users worldwide (UNCTAD, 2002, p.3).

Table 1: Internet Users by Region, 2000-2001 (In Thousands)

Region	2000	2001	% Change
Africa	4540.2	6781.2	49.4
Asia	118336.9	156897.8	32.6
Europe	112922.9	147269.2	30.41
Americas	156001.2	182942.2	17.3
Oceania	7562.7	8467	12
World	399363.8	502357.6	25.8
OIC Countries*	15257.5	22769.4	49.2

Source: ITU Database 2002.

* Table A7 in Annex A.

Internet users in OIC countries amounted to approximately 22.8 million in 2001, increasing by 49.2 percent over the previous year (Table 1). Against such a high growth in the number of Internet users, OIC countries still account for only 4.5 percent of users worldwide. In 2001, the number of Internet users was the highest in Malaysia with 6.3 million, Indonesia with 4 million, Pakistan with 3 million, Turkey with 2.5 million and Saudi Arabia with 1 million (Table A7, Annex A). In some OIC countries, the figure is very low.

Furthermore, a more indicative statistic in this regard is the Internet user penetration rate, which is measured as the number of Internet users as a percentage of the total population. This rate is below 0.5 percent in 24 OIC countries and below 1 percent in 28 of them (Table A8, Annex A). The figures are not promising from the point of view of e-commerce and the use of ICT for development of trade in the OIC countries. However, in some OIC countries, this rate indicates the existence of a good potential. For example, it is 33.96 percent in U.A.E., 26.66 percent in Malaysia, 20.03 percent in Bahrain, 14.68 percent in Kuwait, 10.91 percent in Guyana, and 10.29

² The number of Internet users as percentage of the total population.

percent in Brunei (Table 2). On the other hand, the same rate is 50.1 percent in the United States, 45.5 percent in Japan and 40 percent in the United Kingdom. Low levels of Internet user penetration rate in the OIC countries, as compared to those of the developed ones, indicate the urgent need for developing the basic ICT infrastructure and activating Internet access in order to promote e-commerce in such countries.

Table 2: Internet User Penetration in Descending Order and the Corresponding Number of Internet Service Providers (ISP), Local Telephone Costs and GDP Per Capita in the OIC Countries, 2001

	Internet User Penetration (%)	Number of Operational ISPs (2000)	Local Telephone Costs for 3 Minutes (\$)	GDP Per Capita (\$)
U.A.E.	33.96	1	0.00	19750
Malaysia	26.66	5	0.02	3700
Bahrain	20.03	1	0.05	12068
Kuwait	14.68	2	0.00	14260
Guyana	10.91	3	0.00	828
Brunei	10.29	2	0.00	12447
Lebanon	7.30	9	0.07	4988
Saudi Arabia	4.67	27	0.01	8343
Oman	4.58	1	0.07	7903
Jordan	4.52	5	0.02	1701
Tunisia	4.24	9	0.02	2061
Maldives	3.70	1	0.02	1905
Turkey	3.65	104	0.11	2233

Source: Table A8 in Annex A.

N/A: Not Available.

Fixed telephone lines and appropriate terminals to access the Internet constitute the essential part of the ICT physical infrastructure. PCs are the most common terminals used and, together with the main telephone lines, play a significant role in providing access to the Internet. The methods to connect to the Internet are analog systems, Integrated Services Digital Network (ISDN), Digital Subscriber Line (DSL), Asymmetric Digital Subscriber Line (ADSL) and cable. Analog systems, such as 56K modems, and ISDN connectivity require dial-up access. This means that a user of analog and ISDN modems must dial a telephone number to secure a connection. On the other hand, DSL, ADSL and cable connections provide immediate access to the Internet without having to dial any numbers. DSL, ADSL and Cable are known as broadband connections and they use the same wiring with cable televisions. The main characteristic of ADSL is that downloading is faster than uploading and is thus preferable regarding web contents and its applications.

Table 3: OIC Countries with Highest Number of Internet Users in Descending Order, 1999-2001

	1999	2000	2001
Malaysia			
Internet Users (Thousands)	2004	4977	6345
<i>Annual Growth (%)</i>		148.35	27.49
Internet Users as a Percentage of Total Population (%)	8.83	21.36	26.66
PCs (Thousands)	1800	2200	3000
<i>Annual Growth (%)</i>		22.22	36.36
Main Telephone Line Subscribers (MTLS) (Thousands)	7140	9983	12186
<i>Annual Growth</i>		39.82	22.07
MTLS as a Percentage of Total Population (%)	31.45	42.85	51.20
Indonesia			
Internet Users (Thousands)	900	2000	4000
<i>Annual Growth (%)</i>		122	100
Internet Users as a Percentage of Total Population (%)	0.44	0.94	1.86
PCs (Thousands)	1900	2100	2300
<i>Annual Growth (%)</i>		11	13
MTLS (Thousands)	6080.2	6662.6	7949.3
<i>Annual Growth</i>		9.58	19.31
MTLS as a Percentage of Total Population (%)	2.96	3.14	3.70
Pakistan			
Internet Users (Thousands)	1000	2000	3000
<i>Annual Growth (%)</i>		100	50
Internet Users as a Percentage of Total Population (%)	0.74	1.42	2.07
PCs (Thousands)	580	590	600
<i>Annual Growth (%)</i>		1.72	1.70
MTLS (Thousands)	2985.5	3124.5	3340.2
<i>Annual Growth</i>		4.66	6.90
MTLS as a Percentage of Total Population (%)	2.22	2.21	2.30
Turkey			
Internet Users (Thousands)	900	1500	2500
<i>Annual Growth (%)</i>		66.7	66.7
Internet Users as a Percentage of Total Population (%)	1.36	2.23	3.65
PCs (Thousands)	2200	2500	2700
<i>Annual Growth (%)</i>		13.6	8
MTLS (Thousands)	18054	18395	18904
<i>Annual Growth</i>		1.89	2.77
MTLS as a Percentage of Total Population (%)	27.24	27.28	27.59
Iran			
Internet Users (Thousands)	250	625	1005
<i>Annual Growth (%)</i>		150	60.8
Internet Users as a Percentage of Total Population (%)	0.40	0.98	1.56
PCs (Thousands)	3500	4000	4500
<i>Annual Growth (%)</i>		14.3	12.5
MTLS (Thousands)	8371.2	9486.3	10346.8
<i>Annual Growth</i>		13.32	9.07
MTLS as a Percentage of Total Population (%)	13.34	14.90	16.03

Source: Derived from Tables A2, A3, A5 and A7 in Annex A.

Statistics on the number of Main Telephone Line Subscribers, number of PCs, and Internet Service Providers (ISP) provide a reliable measure of a country's Internet access capacity (Minges, 2000, p.3). Internet bandwidth or Internet connection speed and Internet access costs are also indicators to measure a country's potential for the future progress in using the Internet. Low ICT use, low Internet user penetration, relatively high Internet access costs, and slow connection speeds indicate a decrease in the number of Internet users and, hence, have a negative influence on e-commerce.

Table 4: Maximum Internet Bandwidth in Some OIC Countries

	< 56 Kbps	56 Kbps	57-384 Kbps	385 Kbps - 1.5 Mbps	1.6-45 Mbps	> 45 Mbps
Azerbaijan		X				
Kuwait						X
Kyrgyzstan				X		
Lebanon		X				
Malaysia					X	
Maldives			X			
Mali	X					
Pakistan					X	
Qatar					X	
Saudi Arabia						X
Sudan					X	
Syria				X		
Tunisia					X	
Turkey						X

Source: Questionnaire replies received from OIC Member States.

Table 4 shows maximum Internet bandwidth in some OIC countries. Kuwait, Saudi Arabia and Turkey have Internet bandwidths above 45 Mbps (Table 4). It is also evident from the level of Internet user penetration in these countries that high Internet bandwidth contributes positively to the number of Internet users in that country.

Table 5 shows the methods used to access the Internet in some OIC countries. Dial-up and leased lines are being used in all of these countries. The mobile (GSM) and satellite systems are also among the most commonly used methods by countries in Table 5. The use of other technologies such as cable, ISDN, DSL, ADSL, etc. are not commonly used in the mentioned OIC countries.

ISPs that deliver access to the Internet are mostly private companies. However, in some countries where telephone services are state-owned,

ISPs will be controlled by the states (Microsoft, 2003a, p.1). It is an advantage to have private ISPs as competition between them in a country will not only improve the services provided but also have a positive impact on the cost of services provided. Low cost of telephone calls and services provided by ISPs will allow a larger proportion of the population to benefit from these services. The most important factors for doing business on-line are full accessibility, speed and quality of Internet connection. In this respect, besides the services provided by ISPs, the networks that are used for data transfer are to be at high-speed levels. Thus, the physical infrastructure available in a country is very important and the proliferation of ISPs is dependent not only on the creation of competitive environment but also on the policies of the governments to support such activities.

Table 5: Methods Used to Access the Internet in Some OIC Countries

	Dial-up Line	Leased Line	Cable TV	Mobile (GSM)	Satellite	ISDN	DSL	ADSL
Azerbaijan	X	X						
Kuwait	X	X		X	X			
Kyrgyzstan	X	X	X	X				
Lebanon	X	X		X	X			
Malaysia	X	X		X	X			
Maldives	X	X		X	X			
Mali	X	X						
Pakistan	X	X	X	X	X			
Qatar	X	X						
Saudi Arabia	X	X		X	X			X
Sudan	X	X			X			
Syria	X	X						
Tunisia	X	X		X	X			
Turkey	X	X	X	X	X	X	X	

Source: Questionnaire replies received from OIC Member States.

The rapidly increasing number of Internet users in a country implies that there is a continuous demand for Internet services and that the Internet users are, in general, satisfied with the services provided by the ISPs in that market. It also indicates that Internet access costs are affordable.

In the OIC countries, the very fast Internet connections through making use of broadband services are not being sufficiently utilised. This is mostly due to the high investment cost required for upgrading the network and low levels of GDP per capita in these countries.

It is not a surprise that those OIC countries with high GDP per capita, such as U.A.E., Malaysia, Bahrain, Kuwait and Brunei have, at

the same time, high rates of Internet user penetration. These countries also have affordable telephone costs.

On the other side, the OIC countries with low levels of per capita GDP have considerably lower levels of Internet user penetration, a limited number of ISPs, and higher communication costs.

Consequently, the lack of financial resources to develop necessary physical ICT infrastructure appears to be the most important impediment to improve Internet services, including e-commerce, in the OIC countries.

Countries with poor ICT infrastructure and higher communication costs will not be able to provide their business communities with a viable competitive environment for e-commerce. As a result, those countries will not be able to witness an increase in their e-commerce volumes, will not be able to even keep their overall competitiveness worldwide and may start losing their traditional export markets.

Nevertheless, better prospects can be achieved in the OIC countries as the Internet further develops and, especially, as ISP companies provide their customers with high quality services at more competitive prices.

On the other hand, improving the level of education is another important aspect of developing ICT and e-commerce in the OIC countries. In this regard, the survey results show that the general trend in schools and universities that have access to the Internet is that Internet access is more limited in primary schools and more accessible in secondary ones (Table 6). Thus, as a preliminary step, a computer-assisted teaching and learning programme has to be implemented in all primary schools. Additionally, some donations can be made for helping schools buy computers, with the contribution of either the government or the public sector in the relevant OIC country.

Moreover, all schools and universities should provide Internet access to their students. On the other hand, tertiary schools and universities have Internet access in the range between 76 and 100 percent in the OIC countries (Table 6). Internet access is between 76 and 100 percent in all schools and universities in Kuwait, Lebanon and Saudi Arabia.

Table 6: Percentage of Schools and Universities that have Access to the Internet in Some OIC Countries

	Primary				Secondary			
	<25%	26-50%	51-75%	76-100%	<25%	26-50%	51-75%	76-100%
Azerbaijan	X					X		
Kuwait				X				X
Kyrgyzstan		X					X	
Lebanon				X				X
Malaysia	X				X			
Maldives						X		
Mali	X							
Pakistan	X				X			
Qatar			X					X
Saudi Arabia				X				X
Sudan	X				X			
Syria					X			
Tunisia	X							X
Turkey		X						X
Tertiary/University								
	<25%	26-50%	51-75%	76-100%				
Azerbaijan				X				
Kuwait				X				
Kyrgyzstan				X				
Lebanon				X				
Malaysia				X				
Maldives								
Mali				X				
Pakistan	X							
Qatar				X				
Saudi Arabia				X				
Sudan		X						
Syria				X				
Tunisia				X				
Turkey				X				

Source: Questionnaire replies received from OIC Member States.

2.2. Legal and Financial Framework

Enhancing the prospects of e-commerce in the OIC countries will serve to increase intra-OIC trade whose volume is still low. However, this requires an appropriate legal and financial framework that builds confidence in new technologies and encourages the wider use of the Internet and e-commerce. The legal and financial framework must provide the guiding principles, rules and regulations for e-commerce and enhance the existing ICT infrastructure in order to provide Internet services on a broader level. The existing divergent rules in the OIC

countries are an obstacle to the enhancement of e-commerce and the legal framework. Consequently, OIC member countries need to establish standardised rules and practices to provide an efficiently working legal and financial framework.

As electronic transactions on the Internet increase, authentication issues such as the legality and scope of electronic signatures (e-signatures), secure settlement procedures, liability of network operators, enforcement power of Intellectual property agencies, and types of patents allowed in technological and software processes, will be important issues to address under a legal framework (Bridges Web Site, 2003, p.4). On the other hand, all issues requiring support from financial services and payment systems need to be addressed under a separate financial framework. There is also a need for financially strong banking sectors, capable of handling electronic payments securely and across national borders for a positive development of e-commerce.

E-commerce transactions require on-line payments which necessitate establishing settlement of fund transfers in electronic form in OIC countries. Taxation issues need to be addressed under an appropriate financial framework. Moreover, if taxes are applied to products and services traded online between OIC countries, Internet users in OIC member countries would increase security on all customs-related requirements for e-commerce by using relevant technologies. The Electronic Data Interchange (EDI) will simplify all customs-related requirements for e-commerce transactions and the Electronic Service Delivery (ESD) Scheme will provide a wide range of public services through the Internet and support government electronic procurement in many other ways (APEC, 2002, p.3-4). In this respect, following policy guidelines that will transform OIC governments into electronic governments (e-government) will be most useful. E-government projects are an excellent opportunity for establishing new partnerships with the private sector, which can contribute both financial resources and experience in e-commerce (UNCTAD, 2002a, p.23).

Without certain key standards, such as Internet protocols, communications and business between countries will be costly and difficult to encourage the wider use of the Internet. Thus, providing financial standards, electronic payments and settlements, general transparency and solvency, and international and automated fund transfers,

credit verification and encryption will be the most important issues to be addressed in the financial framework. Moreover, product identification and software interoperability are also among the key issues for standard setting. Therefore, these issues need to be taken into consideration by the OIC governments in addressing their legal and financial frameworks.

Much of the success in the development of e-commerce in industrial countries has come through the convergence of a set of principles related to e-commerce. The World Intellectual Property Rights Organisation (WIPO), United Nations Commission on International Trade Law (UNCITRAL) and Organisation for Economic Cooperation and Development (OECD) developed internationally accepted principles for e-commerce, all of which are all well recognised in North America, Europe and some other industrial countries.

Furthermore, OIC countries need to take into consideration specific World Trade Organisation (WTO) agreements governing trade in goods, trade in services or trade-related intellectual property that apply to electronic transmissions. Additionally, the legal framework should establish a dispute settlement mechanism applicable to the OIC jurisdictions concerning on-line trading and its required activities to avoid any likely future disputes from e-commerce transactions between the different parties. Nonetheless, a different regulatory environment in the OIC countries will discourage Internet users from engaging in e-commerce. Therefore, adopting internationally accepted principles for e-commerce is important to overcome this problem and fulfil other requirements stemming from regulatory issues in the OIC countries.

3. IMPACT OF ICT AND E-COMMERCE ON INTRA-OIC TRADE

3.1. Intra-OIC Trade: Overview

The growth in world output and trade in 2000 was the highest in more than a decade, with all regions benefiting from the stronger world economy. Like many other countries in the developing world, the OIC countries recorded the highest level of exports (\$531.5 billion) in 2000. Yet, while these countries accounted for more than one fifth of the world total population in that year, their total exports accounted for only 8.3 per cent of the world total. Moreover, it is observed that the bulk of the

total OIC countries' exports are still concentrated in few countries. In this context, it is also observed, as shown in Table 7, that 7 out of the 10 major exporting countries of the OIC are well-known as oil exporting countries. In 2000, the total exports of these 10 countries accounted for 75.3 per cent of the total OIC countries' exports.

Table 7: Intra-OIC Exports and Major Exporting Countries of the OIC (2000, Billion US \$)

	Total Exports	Intra-OIC	%	Developed Countries	%	Developing Countries	%
Total OIC countries	531.5	52.2	9.8	293.9	55.3	218.2	41.1
Major OIC Exporters							
Malaysia	98.2	4.8	4.9	50.2	51.1	47.9	48.8
Saudi Arabia	74.7	10.1	13.5	41	54.9	33.7	45.1
Indonesia	62.1	3.1	5.0	33.8	54.4	28.3	45.6
U.A.E.	41.1	5.7	13.9	17.2	41.8	18.4	44.8
Turkey	27.8	3.5	12.6	18.4	66.2	7.8	28.1
Iran	27.6	2.7	9.8	12.4	44.9	11.8	42.8
Nigeria	21.4	1.8	8.4	15.7	73.4	5.7	26.6
Algeria	20.5	1.4	6.8	17.1	83.4	3.4	16.6
Iraq	14.1	1.1	7.8	11.8	83.7	2.3	16.3
Libya	12.7	1.2	9.4	11.2	88.2	1.5	11.8
Total	400.2	35.4	8.8	228.8	57.2	160.8	40.2
% of total OIC	75.3	6.7		43.0		30.1	

Source: Derived from Table A1 in Annex A.

When the figures on the direction of the OIC countries' exports are considered, it is obvious that the bulk of those exports (55.3 per cent) goes to developed countries. In contrast, the share of intra-OIC exports (i.e. exports from and to OIC member countries) remained at the very low level of 9.8 per cent of the total OIC countries' exports. Similarly, it is observed, as shown in Table 8, that the share of Intra-OIC exports of the major OIC exporting countries, as a group, was also very low (8.8 per cent of their total exports and 6.7 per cent of total OIC exports). In contrast, the majority of their exports (43 per cent) goes to developed countries. The countries with the highest share of intra-OIC exports in their total exports are found to be the U.A.E. with 13.9 per cent, followed by Saudi Arabia with 13.5 per cent, and Turkey with 12.6 per cent. However, the total intra-OIC exports of those countries together accounted for 67.8 percent of the total intra-OIC exports (\$35.4 billion out of \$52.5 billion).

On the other hand, a similar situation is observed on the side of the imports of the OIC countries. In 2000, the total OIC countries' imports amounted to \$56.3 billion, corresponding to only 6.4 per cent of the world

total. Similar to exports, the imports of the OIC countries were also concentrated in few countries (almost the same major exporting countries, see Table 8). In 2000, the total imports of the 10 major importing OIC countries accounted for 75.5 per cent of the total OIC countries' imports. When the figures on the direction of the OIC countries' imports are considered, it is also observed that the bulk of those imports (55.1 per cent) came from developed countries. In contrast, the share of intra-OIC imports (i.e. imports from and by OIC member countries) remained at the very low level of 13.4 per cent of the total OIC countries' imports.

**Table 8: Intra-OIC Imports and Major Importing Countries of the OIC
(2000, Billion US \$)**

	Total Imports	Intra-OIC	%	Developed Countries	%	Developing countries	%
Total OIC countries	420.6	56.3	13.4	231.9	55.1	179.4	42.7
Major OIC Importers							
Malaysia	82.2	4.1	5.0	43.2	52.6	37.5	45.6
Turkey	54.5	6.3	11.6	33.9	62.2	18.9	34.7
U.A.E.	39.6	8.1	20.5	19.1	48.2	20.4	51.5
Saudi Arabia	36.2	4.4	12.2	25.1	69.3	11.0	30.4
Indonesia	33.5	4.8	14.3	15.8	47.2	17.5	52.2
Egypt	21.7	2.2	10.1	13.3	61.3	7.0	32.3
Iran	16.2	1.7	10.5	7.1	43.8	7.1	43.8
Morocco	12.4	1.0	8.1	8.9	71.8	2.1	16.9
Pakistan	11.0	0.7	6.4	3.6	32.7	7.5	68.2
Algeria	10.1	0.8	7.9	7.8	77.2	2.3	22.8
Total	317.4	34.1	10.7	177.8	56.0	131.3	41.4
% of total OIC	75.5	8.1		42.3		31.2	

Source: Derived from Table A1 in Annex A.

Similarly, it is observed, as shown in Table 9, that the share of Intra-OIC imports of the major importing OIC countries, as a group, was also very low (10.7 per cent of their total imports and 8.1 per cent of total OIC exports). In contrast, the majority of their imports (56 per cent) came from developed countries. The countries with the highest share of intra-OIC imports in their total imports were U.A.E. with 20.5 per cent, followed by Indonesia with 14.3 per cent, and Turkey with 11.6 per cent. However, the total intra-OIC imports of those countries together accounted for 60.6 percent of the total intra-OIC imports (\$34.1 billion out of \$56.3 billion).

Taking the above analysis into account and considering the discussion in section 2.1, it is clear that the major trading countries of the OIC (those mentioned above) are those who have really built

relatively appropriate levels of ICT and e-commerce infrastructures. In this context, it is also important to mention, as we shall see later on, that most of those countries have significantly increased their spending and investment in the ICT and other related technologies over the last decade. This implies that the progress in ICT, and consequently, the promotion of e-commerce activity has a significant positive impact on OIC trade, including the intra-OIC trade.

3.2. Developing ICT and Promotion of E-Commerce: Prospects and Challenges

Prospects of promoting and developing intra-OIC trade via e-commerce depend on creating an environment conducive to the rapid development of the ICT sector. Those countries that have increased the capacity of their ICT infrastructures and other technological systems have benefited more from e-commerce. Therefore, OIC governments will achieve more progress in e-commerce by increasing the capacity of their ICT infrastructure and enhancing the related legal framework.

On the other hand, those countries that are mostly witnessing an increase in e-commerce are either producers of IT or have enough expertise in the field of IT. In either case, their success has come along with implementing market-oriented reforms advocated by international organisations that hold tasks in a variety of areas. By encouraging its members to enact laws and regulations on trade-related issues, the WTO aims to transpose a non-competitive market to a competitive one without imposing restrictions on the latter. Thus, it is essential for the OIC countries to be prepared for such emerging challenges.

International standard-setting organisations generally have an impact on the business environment through their role in influencing governments to enact appropriate regulation on various fields of direct concern to them and relevant with their objectives. To show conformity with WTO agreements, one of the requirements of its members is to enact laws and regulations for uninterrupted growth of ICT in their markets. Moreover, ITU and WB are key standard-setting organisations in the area of ICT-related standards. Implementing standards developed by such organisations will help financial markets to adopt new technologies which will encourage the wider use of the Internet and e-commerce in the OIC countries.

As the e-commerce volume increases, there will be more investments in the ICT sector in OIC countries. Consequently, the ICT sector in the OIC member countries will grow faster. Prospects of promoting and developing intra-OIC trade by e-commerce and the use of ICT will become higher as more products in stocks are displayed on the web sites and new ones generated on it.

As more people gain education in IT and expertise to use technologies that support e-commerce development in OIC member countries, the transformation of those countries into an Information Society will be quicker. This will increase the prospects of promoting and developing intra-OIC trade by e-commerce and the use of ICT. In this respect, suppliers and consumers will share experience in ICT and related fields and gain an insight on how the Internet can facilitate their commercial transactions to take place in a better way by participating in the activities that will help them to focus on these issues.

International organisations such as the WTO, ITU, OECD and WB are all active participants in providing market-driven standards. WTO, WB and ITU play an important role in creating and maintaining a market-driven environment. Moreover, ITU, OECD, and WTO play an important role in facilitating the effective implementation of the WTO Agreement on basic telecommunications, which includes market opening commitments and commitments on regulatory principles of the participating countries to this agreement (WITSA, 2002, p.16-17). The WTO agreement will have an impact in the promotion and development of intra-OIC trade depending on the extent to which markets of OIC countries have made commitments to fulfilling the WTO agreement and completing the adoption of regulatory principles.

Through its members, the European Telecommunications Standards Institute (ETSI) unites administrations, network operators, manufacturers, service providers, research centres and users. ETSI, which has more than 900 members from 54 countries, produces telecommunications standards that will be used in the decades ahead. Consequently, to achieve the same level of progress with European countries in the development of e-commerce and use of ICT, one of the main challenges for OIC countries will be to implement the same standards.

On the other hand, worldwide IT spending is being led by the telecommunications sector, which represented 58.4 percent of IT

spending in 2002 (Gartner Group Inc., 2002, p.1). IT services was in the second position, with end-user spending forecast totalling \$557.5 billion, followed by hardware spending at \$323.3 billion (Table 9).

**Table 9: Worldwide End-User Spending on IT Products and Services
(Billion US \$)**

Segment	2001	2002	2003
Hardware	327.4	323.3	338.8
Annual Growth (%)	-13.1	-1.3	4.8
Software	74.2	76.9	81.8
Annual Growth (%)	-5.7	3.6	6.5
IT Services	542.3	557.5	597.1
Annual Growth (%)	4.1	2.8	7.1
Telecom	1,282.9	1,344.6	1,445.4
Annual Growth (%)	1.9	4.8	7.5
Total Market	2,226.7	2,302.1	2,463.1
Annual Growth (%)	-0.4	3.4	7.0

Source: Gartner Dataquest (September 2002).

IT services end-user spending grew by less than 5 percent in 2001 whereas hardware end-user spending was down about 13 percent during the same year. Hardware is expected to recover at a fast pace as growth in PC continues to take place in the following period. In 2001, the PC market accounted for 53 percent of the total computer hardware market (Gartner Group Inc., 2002, p.2).

Except in few of them, ICT spending is considerably low or even non-existent in OIC countries. According to WB database, among the OIC countries, only Egypt, Indonesia, Malaysia and Turkey have statistics on ICT spending (Table 10). Thus, another emerging challenge for OIC countries is to increase allocations for IT spending.

The level of ICT spending is compared among Egypt, Indonesia, Malaysia and Turkey to determine their overall prospects (Table 10). In Turkey, ICT spending, as percentage of GDP, increased from 1.6 percent in 1995 to 3.6 percent in 2001, i.e. more than double in 6 years (Table 10). Although there has been a surge in ICT spending as a percentage of GDP in Malaysia from 1995 to 2001, total ICT spending in 2001 did not exceed that of Turkey's. Meanwhile, total ICT spending increased in Egypt from \$1.1 billion in 1995 to approximately \$2.4 billion in 2001. ICT spending as percentage of GDP increased from 1.9 percent to 2.5 percent during the same period. On the other hand, total ICT spending in Indonesia fell from around \$4.3 billion in 1995 to \$3.5

billion in 2001 whereas ICT spending as a percentage of GDP increased slightly from 2.1 percent to 2.2 percent.

Table 10: ICT Spending in Some OIC and Other Countries, 1995 and 2001

	Total ICT (\$, million)		ICT as % of GDP		ICT per capita (\$)	
	1995	2001	1995	2001	1995	2001
OIC Countries						
Egypt	1101	2383	1.9	2.5	18.8	36.8
Indonesia	4337	3540	2.1	2.2	22.3	16.6
Malaysia	4438	6325	5	6.6	220.7	262.1
Turkey	2777	9313	1.6	3.6	44.4	142.7
Some Other Countries						
Argentina	9414	11642	3.6	4	270.7	310.3
Chile	2719	5715	4.2	8.1	190.5	371
Czech Republic	3094	4954	5.9	9.5	299.4	483.3
Russian Federation	6188	9908	1.8	3.3	41.8	68.2
Some Developed Countries						
United States	557252	812635	7.5	7.9	2118.5	2923.8
Japan	279798	413772	5.3	9.6	2228.2	3256.2
Germany	125825	154645	5.1	7.9	1537.9	1880.4
United Kingdom	85484	137726	7.6	9.7	1460.4	2318.6

Source: Development Data Group, World Bank Web Site.

Moreover, when some of the emerging economies such as Argentina, Chile, Czech Republic and the Russian Federation are compared with some of the OIC countries such as Egypt, Indonesia, Malaysia and Turkey, it is detected that both groups show similar trends in ICT spending (Table 10). In 2001, with 3.6 percent and 4 percent, ICT spending as percentage of GDP was almost the same in Turkey and Argentina. With approximately \$9.3 billion and \$9.9 billion, the ICT spending of Turkey and the Russian Federation in 2001 were close to each other. From 1995 to 2001, the ICT spending increased more than threefold in Turkey and two thirds in the Russian Federation. However, ICT spending as percentage of GDP did not vary in Turkey and the Russian Federation during the same period. Furthermore, with a difference of 0.8 percent, Egypt's ICT spending as percentage of GDP in 2001 was somewhat close to that of the Russian Federation's, increasing from 0.1 percent in 1995 (Table 10).

With only 0.3 percent difference, ICT spending as percentage of GDP was higher in Indonesia than in the Russian Federation in 1995. On the other hand, ICT spending in Indonesia was lower than in the Russian

Federation for the same year. Although ICT spending as percentage of GDP increased by 0.1 percent from 2.1 percent in 1995 to 2.2 percent in 2001, ICT spending fell by approximately \$0.8 billion from \$4.3 billion to \$3.5 billion for the same years. Consequently, ICT spending per capita in Indonesia fell from \$0.22 billion in 1995 to \$0.17 billion in 2001. This amount is about one quarter of the one encountered in the Russian Federation in 2001 (Table 10).

ICT spending as percentage of GDP accounted for almost the same value in the Czech Republic and Malaysia in 1995 and much higher in the Czech Republic than in Malaysia in 2001. However, ICT spending increased by the same level in both countries in 2001 and higher in Malaysia than in Chile and the Czech Republic in 1995. However, growth rates in ICT spending and ICT spending per capita from 1995 to 2001 in Chile and the Czech republic surpassed that in Malaysia (Table 10).

When we analyse and compare the level of IT spending in those countries to that of developed countries such as the United States, Japan, Germany and the United Kingdom, we notice that the progress of these countries needs to be further enhanced (Table 10). If allocations for IT spending in those countries are not increased sufficiently at a time when developed countries constantly achieve progress and enhance their ICT levels, the gap between emerging and developed countries will widen. Thus, when we take into account that the general trend of ICT spending in the OIC countries is considerably low, if OIC countries, including Egypt, Indonesia, Malaysia and Turkey, fail to make progress today, they will face a greater challenge to strengthen their ICT levels in the future. This possible outcome also shows that OIC cooperation in the area of ICT is instrumental for strengthening the ICT level in the OIC countries, including those with poor prospects.

4. OIC COOPERATION IN TRADE AND TECHNOLOGY

The current 57 OIC member countries are dispersed over a large area on four continents, extending from Albania (Europe) in the north to Mozambique (Africa) in the south, and from Guyana (Latin America) in the west to Indonesia (Asia) in the east. As such, the OIC countries as a group account for one sixth of the world area and one fifth of its total population. The OIC member countries also constitute a significant part (one fourth of the total population) of the world developing countries.

Thus, being at varying levels of development and despite the similarities in the production and export structures in many of the OIC countries, there are also certain inherent complementarities amongst them. As a group, the OIC countries are well endowed with potential economic resources in different fields and sectors such as agriculture and arable land, energy and mining, human resources, and a vast strategic trading region. Yet, as the discussion in the above two sections shows, the combined inherent potential of the OIC countries, as a group, does not manifest itself in the form of reasonable levels of trade (including intra-OIC trade) and technology in the majority of them.

In the case of trade, this is due, among other things, to the lack of diversification in production in the individual countries and similarities among groups of OIC countries. Many of them, especially the least developed group, produce a limited range of primary commodities as their main exports. This, which is also true for the group of OIC oil exporting countries, puts a serious limit on expanded trade relations with other OIC trade partners. In contrast, the problems facing the OIC countries in the area of technology, particularly the ICT, are diverse as each country has its own national priorities and level of development. These problems range, in the case of many OIC countries, from the lack of appropriate educational infrastructure and technological base and insufficient investments to the lack of appropriate legal, financial and administrative frameworks.

However, in spite of these problems, it is believed that there still is a wide scope for the development of reasonable levels of trade and technology in the OIC countries. Overall, this requires an adoption of long-term strategies as well as medium to short-term plans and programs at both the national and regional levels and creating a supportive OIC cooperation and coordination environment. In this context, trade and technology have been identified among the ten priority areas of cooperation in the Plan of Action to Strengthen Economic and Commercial Cooperation among the Member Countries of the OIC.

The OIC Plan of Action deals with each of these two areas under three broad headings, namely “Problems and Issues”, “Objectives”, and “Programmes of Action”. Under ‘*Problems and Issues*’, the Plan puts those two issues in the OIC countries in the perspective of rapid growth of their counterparts in the world. It also tries to identify the

shortcomings and problems which need to be overcome in those two areas. Under '*Objectives*', the Plan incorporates certain general objectives on which attention of the member countries needs to be focused. These objectives are intended to serve as policy guidance for the member countries in each of these areas. Under '*Programmes of Action*', the Plan identifies, in a general manner, certain actions which are meant to serve as an operational complement of the Strategy to Strengthen Economic Cooperation Among the OIC Member Countries.

In the light of the '*Objectives*' and the '*Programmes of Action*' identified in the OIC Plan of Action under the relevant sections of "Foreign Trade" and "Technology and Technical Cooperation", some broad indicative actions for strengthening OIC cooperation in these two important areas may be underlined as follows:

Trade:

1. Endeavour to diversify the production and exports structures in individual member countries to enhance trade flows among the OIC countries.
2. Encouragement and support of trade promotion activities and joint action within the OIC countries at the bilateral, regional and multilateral levels through, inter alia, expediting the implementation of the Trade Preferential System Among the OIC Countries and making use of IDB programs and mechanisms in the area of trade financing.
3. Endeavour to promote and encourage the establishment of free trade areas, customs unions, and/or any other forms of economic and trade integration schemes among the member countries as basic and transitory stages towards full economic integration, including the eventual establishment, in a step-by-step manner, of an Islamic Common Market.

Technology:

1. Giving high priority to science and technology in formulating the national educational plans and programs.

2. Strengthening of national institutions operating in the area of technology with a view to enhancing and building up their capacities and capabilities to facilitate developing the national science and technology base with an enhanced role for research and development (R&D).
3. Creating appropriate legal, financial and administrative frameworks to strengthen public and private national institutions and establishments in order to enhance and develop creative environment and capacity for absorption, adaptation and development of technology.
4. Ensuring and securing appropriate financial resources for investment in technological infrastructures to create new capacities and facilities in this field with a view to reducing the gap between member countries and other countries in the region.
5. Promoting, expanding and developing technical and technological cooperation activities and programs among the member countries and inviting the relative institutions to increase their allocation in this regard.

In this context, it is worth mentioning that the First Euro-Asian Conference on Advances in ICT, held last year in Shiraz, Iran, on 29-31 October 2002, demonstrated a good example of how technical and technology-related cooperation can be promoted between countries. At the same time, the Conference became a vehicle for the enhancement of scientific and economic cooperation in the field of ICT. Organising activities in the ICT field needs to be part of the national strategies developed in the OIC member countries. This will enhance and complement the efforts of those member countries that aim to promote the active participation of OIC countries in the global e-commerce and enable all participants to acquire skills to use ICT and other related or new technologies.

Similarly, as the World Summit on the Information Society (WSIS), which will be held in Geneva on 10-12 December 2003 and Tunis in 2005, will focus on all themes related to the Information Society, it will draw the world's attention to providing access to basic ICTs in developing countries, including OIC members. In this respect, as the

Conference will provide an opportunity to focus on the application of new technologies, including the Internet and e-commerce, further cooperation will be encouraged in this field and the ICT sector itself will remain a focal point.

5. CONCLUSION AND RECOMMENDATIONS

Access to information and telecommunications is believed to change many aspects of our daily lives since it has a broad impact on the society as a whole. Recently, the international community has given more importance to increasing access capacity with a view to making better use of new and advanced technologies, particularly to increasing e-commerce.

The insufficient technological base of ICT in some OIC member countries requires them to take initiatives to strengthen it in order to benefit from it in promoting intra-OIC trade. To this end, an efficient ICT infrastructure needs to be developed to provide open access to international and national network.

Since demand for better services is increasing all over the world, some adjustments are required to enable people to connect faster and stay longer on the Internet. If ISPs upgrade their current networks, they will be able to meet an increasing demand from Internet users. In this respect, the use of technological advancements will help the available infrastructure in a country to improve maximum connection speed provided by ISPs.

Measures to attract more investments in IT and related fields will provide an environment for encouraging the wider use of the Internet and e-commerce. In this context, using state-of-the-art technologies will enhance productivity and efficiency as well as improve the quality of services for Internet users and develop e-commerce.

Increasing the level of education in IT and related sectors will ensure a larger percentage of the population in the OIC member countries to use the Internet and benefit from e-commerce in developing intra-OIC trade. In this respect, providing new facilities will help promote ICT training and computer-aided training at all levels of education, starting from the primary level.

Moreover, safety measures for on-line commercial transactions are needed to build confidence for the wider use of the Internet and e-commerce. Therefore, the security of electronic transactions should also be ensured through appropriate regulations which need to be defined under an appropriate legal and financial framework.

Finally, enacting laws and regulations for uninterrupted growth of ICT, in conformity with the WTO agreements, will help OIC countries make more progress in this sector. Implementing standards related to e-commerce and use of ICT is a major challenge for those OIC countries that have not yet been able to promote sufficient confidence in Internet usage and e-commerce. Thus, by working together to create an electronic trade network among them, OIC countries will increase the impact of e-commerce and use of ICT in the promotion and development of intra-OIC trade. On the other hand, cooperation between the public and private sectors is essential to achieve this progress. To this end, creating an electronic trading system that is supported by a strong backbone network will ensure the interest of OIC countries to increase the impact of e-commerce and use of ICT in the promotion of intra-OIC trade by increasing trade volumes to substantial levels between OIC member countries.

In addition to the points underlined so far on promoting the background for a stronger ICT and e-commerce infrastructure it is suggested that along those measures the steps toward easing the way for increasing the intra-OIC trade are also to be taken. Sticking to the objective of removing the obstacles in front of intra-OIC trade will serve to boost the enhanced ICT structure to be built in the OIC area toward creation of trade between the member countries. Hence, at this point of the study it should be fruitful to remember a few of the related suggestions made to this end at the 17th COMCEC. These are urging member states to adopt Harmonised Commodity Description and Coding System; promoting recognition of quality standards and conformity certifications by the countries; and ensuring the elimination of dumping measures and easing non-tariff restrictions among member countries. Implementing those suggestions, mostly concerned with standardisation and the elimination of trade barriers, in the OIC area with the same determination and pace of laying the ICT infrastructure will guarantee the increase of the currently modest intra-OIC trade level.

The problems facing the OIC countries in the area of ICT, particularly in promoting and developing an appropriate level of e-commerce to enhance intra-OIC trade, are diverse as each country has its own level of development and national priorities and policies. Those problems range, in the case of many OIC countries, from the lack of appropriate educational infrastructure and technological base and insufficient investments to the lack of appropriate legal, financial and administrative frameworks.

However, in spite of those problems, it is believed that there still is a wide scope for the development of a sustainable ICT and e-commerce sector in the OIC countries. Overall, this requires an adoption of long-term strategies as well as medium to short-term plans and programs at both the national and regional levels and creating a supportive OIC cooperation and coordination environment. In this context, the paper proposes the following broad recommendations to serve as policy guidelines on which attention of the member countries needs to be focused:

- Giving high priority to science and technology, particularly the use of ICT, in formulating the national educational plans and programs.
- Strengthening of national institutions operating in the area of ICT with a view to enhancing and building up their capacities and capabilities to facilitate developing the national science and technology base with an enhanced role for research and development (R&D).
- Creating appropriate legal, financial and administrative frameworks to strengthen public and private national institutions and establishments in order to enhance and develop creative environment and capacity for absorption, adaptation and development of ICT.
- Ensuring and securing appropriate financial resources for investment in ICT-related infrastructures to create new capacities and facilities in this field with a view to reducing the gap between the OIC members and the developed countries.
- Endeavour to ensure the adoption and implementation of the relevant internationally accepted principles and procedures for the use of ICT, particularly in e-commerce activity, in the member countries.

- Endeavour to ensure the adoption of rules and regulations which facilitate the protection of the users of the ICT and e-commerce activity and the simplification of the customs procedures to products traded on-line in the member countries and from other OIC countries.
- Endeavour to ensure the adoption of rules and regulations which protect consumer rights by obliging e-commerce companies to provide full information to the customers who have a problem or question to ask as well as to return products within a specified time period if consumers are not satisfied with it.
- Endeavour to establish a dispute settlement mechanism applicable to e-commerce and related activities.
- Endeavour to establish inter-banking payment systems in electronic form in the member countries.
- Promoting, expanding and developing technical and technological cooperation activities and programs among the member countries and inviting the relative institutions to increase their allocation in this regard.

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ANNEX A**TABLE A1: INTRA-OIC TRADE, 2000 (Million US \$)**

	EXPORTS				IMPORTS			
	Intra-OIC	Developed Countries	Developing Countries	Total Exports	Intra-OIC	Developed Countries	Developing Countries	Total Imports
Afghanistan	49	53	80	133	195	118	519	636
Albania	4	247	14	261	78	851	214	1065
Algeria	1374	17068	3399	20468	834	7803	2287	10078
Azerbaijan	177	1141	605	1745	307	435	737	1036
Bahrain	816	959	2341	8090	1366	1637	1926	3580
Bangladesh	237	4228	544	5590	971	2348	5071	8993
Benin	44	75	134	210	212	631	835	1470
Brunei	40	1946	1215	3161	299	480	937	1420
Burkina Faso	25	68	97	167	306	255	251	524
Cameroon	109	1712	665	2386	344	1028	530	1592
Chad	8	58	27	85	45	102	80	181
Comoros	0	12	4	16	8	30	29	60
Côte d'Ivoire	954	1936	1582	3519	808	1235	1429	2666
Djibouti	122	13	131	143	156	220	380	614
Egypt	781	3441	1585	5633	2196	13330	7007	21660
Gabon	51	2869	879	3963	80	1232	165	1403
Gambia	1	29	6	35	39	119	182	300
Guinea	57	538	318	856	107	444	238	683
Guinea-Bissau	0	5	89	94	15	50	32	93
Guyana	5	458	183	650	9	273	237	535
Indonesia	3053	33771	28293	62102	4785	15750	17462	33511
Iran	2671	12374	11800	27551	1676	7135	7130	16176
Iraq	1113	11834	2262	14097	348	1700	1046	2746
Jordan	683	129	1125	1284	1210	1909	2169	3671
Kazakhstan	645	2805	6333	9138	356	1486	3534	5052
Kuwait	2289	9929	7824	17752	738	4143	1542	5685
Kyrgyz Rep.	155	209	293	502	205	147	407	554
Lebanon	322	259	446	714	850	6228	2211	6206
Libya	1185	11190	1486	12688	617	2770	1324	4095
Malaysia	4810	50189	47937	98153	4103	43151	37501	82195
Maldives	1	181	136	318	128	68	415	484
Mali	17	100	85	190	306	390	840	1310
Mauritania	48	368	103	477	77	412	149	618
Morocco	486	6052	1566	8228	967	8856	2146	12412
Mozambique	3	126	164	364	33	294	555	1158
Niger	84	97	88	187	92	121	141	273
Nigeria	1798	15659	5731	21392	671	5167	3644	8831
Oman	1771	2375	8167	10542	2131	2411	2964	5375
Pakistan	1807	5377	3777	9156	5077	3596	7452	11049
Qatar	839	5881	4520	11527	693	2010	1242	3252
Saudi Arabia	10140	40992	33658	74688	4393	25103	10960	36191
Senegal	227	369	408	841	65	875	677	1553
Sierra Leone	0	27	4	31	31	47	252	336
Somalia	116	2	118	120	131	47	252	336
Sudan	287	445	1322	1768	361	594	846	1440
Suriname	12	438	72	510	10	312	156	471
Syria	1427	3163	1677	4981	764	2179	2169	5345
Tajikistan	186	293	491	784	303	117	558	675
Togo	128	57	308	387	190	374	848	1225
Tunisia	647	4799	956	5986	910	6753	1713	8593

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Turkey	3529	18432	7787	27768	6317	33858	18925	54501
Turkmenistan	575	576	1891	2505	600	386	1294	1788
U.A.E.	5740	17241	18369	41068	8114	19149	20432	39584
Uganda	17	241	79	320	30	270	622	892
Uzbekistan	451	539	1587	2126	472	718	1393	2111
Yemen	115	500	3463	4076	193	771	1307	2323
Total OIC Countries	52231	293875	218224	531526	56322	231918	179364	420606
% of total OIC	9.8	55.3	41.1	100	13.4	55.1	42.6	100

Source: SESRTCIC 2003, "Implications of Establishing an Islamic Common Market: Gradual Integration and Possible Consequences".

TABLE A2: POPULATION OF THE OIC COUNTRIES, 1999-2001 (Million US \$)

	1999	2000	2001
Albania	3.85	3.91	3.97
Algeria	29.95	30.88	31.14
Azerbaijan	8.02	8.08	8.14
Bahrain	0.67	0.68	0.70
Bangladesh	128.10	129.69	131.27
Benin	5.94	6.10	6.45
Brunei	0.32	0.33	0.34
Burkina Faso	11.11	11.94	12.22
Cameroon	14.69	15.09	15.20
Chad	7.27	7.65	8.13
Comoros	0.68	0.69	0.73
Côte d'Ivoire	14.53	14.79	16.35
Djibouti	0.62	0.64	0.64
Egypt	62.43	63.43	64.55
Gabon	1.20	4	4.5
Gambia	1.27	1.30	1.34
Guinea	7.80	7.90	8.02
Guinea Bissau	1.17	1.20	1.23
Guyana	0.85	0.86	0.87
Indonesia	205.50	212.09	214.84
Iran	62.74	63.66	64.54
Jordan	4.90	5.04	5.18
Kazakhstan	16.27	16.22	16.09
Kuwait	2.11	2.19	2.18
Kyrgyz Rep.	4.85	4.89	4.93
Lebanon	4.00	4.05	4.10
Libya	5.47	5.61	5.58
Malaysia	21.70	23.30	23.80
Maldives	0.27	0.27	0.27
Mali	10.03	10.25	10.47
Mauritania	2.48	2.65	2.75
Morocco	27.87	28.35	30.43
Mozambique	16.55	19.68	20.19
Niger	10.40	10.73	11.23
Nigeria	108.95	113.86	116.93
Oman	2.46	2.54	2.62
Pakistan	134.51	141.26	144.97
Palestine	3.02	3.19	3.31
Qatar	0.56	0.58	0.60
Saudi Arabia	20.20	20.80	21.40
Senegal	9.28	9.52	9.66
Sierra Leone	4.77	4.85	4.87
Sudan	28.88	31.10	31.81
Suriname	0.43	0.43	0.44
Syria	15.89	16.32	16.72
Tajikistan	6.10	6.13	6.13
Togo	4.51	4.63	4.66
Tunisia	9.46	9.56	9.67
Turkey	66.29	67.42	68.53
Turkmenistan	4.38	4.46	4.84
Uganda	22.19	22.21	22.53
U.A.E.	2.40	2.61	2.65
Uzbekistan	24.31	24.65	25.26
Yemen	17.49	18.35	19.11
Total	1182.69	1222.61	1249.08

Source: ITU Database 2003 and Questionnaire replies received from OIC Member States.

TABLE A3: NUMBER OF PCs IN THE OIC COUNTRIES, 1999-2001 (In Thousands)

	1999	2000	2001
Albania	20	25	30
Algeria	180	200	220
Bahrain	93	95	100
Bangladesh	130	200	250
Benin	9	10	11
Brunei	20	23	25
Burkina Faso	12	15	17
Cameroon	40	50	60
Chad	10	11	12
Comoros	2	3	4
Côte d'Ivoire	80	90	118
Djibouti	6	7	7
Egypt	750	800	1000
Gabon	11	12	15
Gambia	10	15	17
Guinea	27	29	32
Guyana	21	22	23
Indonesia	1900	2100	2300
Iran	3500	4000	4500
Jordan	90	150	170
Kuwait	220	250	320
Kyrgyz Rep.	14.6	18.1	64.1
Lebanon	225	242	260
Malaysia	1800	2200	3000
Maldives	2.2	3.4	3.4
Mali	N/A	13	14.5
Mauritania	20	25	27
Morocco	300	350	400
Mozambique	50	60	70
Niger	4	5	6
Nigeria	700	750	800
Oman	65	80	85
Pakistan	N/A	N/A	N/A
Qatar	N/A	N/A	N/A
Saudi Arabia*	800	1000	1200
Senegal	140	160	180
Sudan	85	100	115
Suriname	N/A	N/A	20
Syria	240	330	360
Togo	50	70	100
Tunisia	154	197	255
Turkey	2200	2500	2700
Uganda	55	60	70
U.A.E.	300	400	420
Yemen	30	35	37
Total	14365.3	16705.5	19418

Source: ITU Database 2003 and Questionnaire replies received from OIC Member States.

N/A: Not Available.

*Estimate.

TABLE A4: TV SETS AND CABLE TV SUBSCRIBERS PER 1000 PEOPLE IN THE OIC COUNTRIES, 1999-2000

	TV Sets Per 1000 People		Cable TV Subscribers Per 1000 People	
	2000	1999	2000	1999
Afghanistan	14			
Albania	123	113		
Algeria	110	107		
Azerbaijan	259	254	0.3	0.1
Bangladesh	7	7		
Benin	45	11		
Burkina Faso	12	11		
Cameroon	34	34		
Chad	1	1		
Côte d'Ivoire	60	70		
Egypt	189	183		
Gabon	326	251	8.4	8.3
Gambia	3	3		
Guinea	44	44		
Indonesia	149	143	0.2	
Iran	163	157		
Iraq	83			
Jordan	84	83	0.2	0.1
Kazakhstan	241	238		
Kuwait	486	480		
Kyrgyz Rep.	49	47		
Lebanon	335	351	5.9	1.4
Libya	137	136		
Malaysia	168	174		5.2
Mali	14	12		
Mauritania	96	96		
Morocco	166	165		
Mozambique	5	5		
Niger	37	27		
Nigeria	68	68		
Oman	563	575		
Pakistan	131	119	0.1	0.1
Saudi Arabia	264	263	4	
Senegal	40	41		
Sierra Leone	13	13		
Somali	14			
Sudan	273	173		
Suriname		66		
Syria	67			
Tajikistan	326	328		
Togo	32	22		
Tunisia	198	190		
Turkey	449	332	13.4	11
Turkmenistan	196	201		
Uganda	27	28		
U.A.E.	292	252		
Uzbekistan	276	276	3	
Yemen	283	286		

Source: World Development Indicators, 2001 and 2002, and ITU's *World Telecommunication Development Report 2001*.

TABLE A5: NUMBER OF MAIN TELEPHONE LINE SUBSCRIBERS IN THE OIC COUNTRIES, 1999-2001 (In Thousands)

	1999	2000	2001
Albania	140.4	152.7	197.5
Algeria	1600	1761.3	1880
Azerbaijan	730	801.1	864.8
Bahrain	165.4	171	173.9
Bangladesh	433	471.8	514
Benin	43.7	51.6	59.3
Brunei	79.1	80.5	88.4
Burkina Faso	47.3	53.2	57.6
Cameroon	94.6	95	101.4
Chad	9.7	10	11
Comoros	6.5	7	8.9
Côte d'Ivoire	219.3	263.7	293.6
Djibouti	8.8	9.7	9.9
Egypt	4686.4	5483.6	6688.4
Gabon	38	39	37.2
Gambia	29.2	33.3	35
Guinea	21.1	24.3	25.5
Guinea Bissau	6.1	11.1	12
Guyana	64	68.4	79.9
Indonesia	6080.2	6662.6	7949.3
Iran	8371.2	9486.3	10346.8
Jordan	565.3	620	660
Kazakhstan	1759.8	1834.2	1939.6
Kuwait	449.3	467	472.4
Kyrgyz Rep.	294.9	294.7	304.5
Lebanon	N/A	N/A	N/A
Libya	550	605	610
Malaysia	7140	9783	12186
Maldives	N/A	N/A	N/A
Mali	N/A	N/A	N/A
Mauritania	16.5	19	N/A
Morocco	1471	1425	1191.3
Mozambique	78.1	85.7	89.5
Niger	18.9	20.1	21.7
Nigeria	410	492	500
Oman	220.4	266.9	235.3
Pakistan	2985.5	3124.5	3340.2
Palestine	211.8	252.8	256.9
Qatar	154.9	160.2	167.5
Saudi Arabia	N/A	N/A	N/A
Senegal	165.9	205.9	237.2
Sierra Leone	18.2	19	22.7
Sudan	251.4	386.8	453
Suriname	70.8	75.3	77.4
Syria	1588	1667	1811
Tajikistan	212.5	218.5	223
Togo	38.2	42.8	48.1
Tunisia	N/A	955	1056
Turkey	18054	18395	18904
Turkmenistan	358.9	364.4	387.6
Uganda	57.2	61.7	63.7
U.A.E.	975.2	1020.1	1052.9
Uzbekistan	1599.4	1655	1663
Yemen	284.3	346.7	423.2
Total	62874.4	70600.5	77832.1

Source: ITU Database 2003 and Questionnaire replies received from OIC Member States.

N/A: Not Available.

**TABLE A6: TOTAL NUMBER OF TELEPHONE SUBSCRIBERS IN THE OIC COUNTRIES,
1999-2001 (In Thousands)**

	1999	2000	2001
Albania	151.4	182.5	547.5
Algeria	1672	1847.3	1980
Azerbaijan	1100	1231.2	1485.5
Bahrain	298.8	376.7	473.4
Bangladesh	582	750.8	1034
Benin	50.9	107.1	184.3
Brunei	145.1	175.5	225.4
Burkina Faso	52.4	78.5	132.6
Cameroon	100.6	243	411.4
Chad	9.7	15.5	33
Comoros	6.5	7	8.9
Côte d'Ivoire	476.4	713.7	1022.1
Djibouti	9.1	9.9	12.9
Egypt	5167.3	6843.5	9482.2
Gabon	46.9	159	295.3
Gambia	34.5	38.9	90.1
Guinea	46.2	66.4	81.2
Guinea Bissau	6.1	11.1	12
Guyana	66.8	73.4	155.2
Indonesia	8301.2	10331.9	13252.2
Iran	8861.6	10448.9	12983.9
Jordan	683.7	1008.9	1534
Kazakhstan	1809.3	2031.5	2521.6
Kuwait	755.6	943.1	1350.3
Kyrgyz Rep.	373.2	385.1	415.2
Lebanon	1277	1424.5	1541
Libya	580	645	660
Malaysia	7140	9783	12187
Maldives	25.1	32.1	46.1
Mali	344.5	49.6	95.2
Mauritania	16.5	26.1	137.7
Morocco	1840.2	3767	5963.1
Mozambique	90.3	136.8	259.3
Niger	20.6	21.9	23.5
Nigeria	435	522	830
Oman	344.5	389.8	559.8
Pakistan	3264.9	3402.9	4200
Palestine	328.8	537.8	556.9
Qatar	239.3	281	346.2
Saudi Arabia	3542.8	4340.6	5761.6
Senegal	253.8	456.1	628
Sierra Leone	18.2	30.9	49.6
Sudan	264.4	409.8	558
Suriname	88.3	116.4	161.4
Syria	1604.4	1705.2	1910
Tajikistan	213.1	219.7	224.6
Togo	55.2	92.8	168.4
Tunisia	905.6	1074.2	1445.4
Turkey	26175.6	34528.6	38900.9
Turkmenistan	362.9	373.9	395.8
Uganda	113.6	250.2	386.5
U.A.E.	1807.4	2448.2	2962.2
Uzbekistan	1639.8	1708.2	1725.7
Yemen	312	378.7	575.2
Total	84111.1	107233.4	360838

Source: ITU Database 2003.

**TABLE A7: NUMBER OF INTERNET USERS IN THE OIC COUNTRIES,
1999-2001 (In Thousands)**

	1999	2000	2001
Albania	2.5	3.5	10
Algeria	20	50	60
Azerbaijan*	50	80	110
Bahrain	30	40	140.2
Bangladesh	50	100	150
Benin	10	15	25
Brunei	25	30	35
Burkina Faso	7	10	21
Cameroon	20	40	45
Chad	1	3	4
Comoros	0.8	1.5	2.5
Côte d'Ivoire	20	40	70
Djibouti	0.8	1.4	3.3
Egypt	200	450	600
Gabon	3	15	17
Gambia	9	12	18
Guinea	5	8	15
Guinea Bissau	1.5	3	4
Guyana	28	52	95
Indonesia	900	2000	4000
Iran	250	625	1005
Jordan	120	127.3	234
Kazakhstan	70	100	100
Kuwait	220	250	320
Kyrgyz Rep.	9.7	19.6	54.2
Lebanon	150	250	300
Libya	7	10	20
Malaysia	2004	4977	6345
Maldives	3	6	10
Mali	6	8	10
Mauritania	3	5	7
Morocco	50	200	400
Mozambique	10	12	30
Niger	3	4	12
Nigeria	100	200	N/A
Oman	50	90	120
Pakistan	1000	2000	3000
Palestine	N/A	35	60
Qatar	9	10.5	13.5
Saudi Arabia**	250	580	1000
Senegal	30	40	100
Sierra Leone	2	5	7
Sudan	5	30	56
Suriname	8.7	11.7	14.5
Syria	4	8	28
Tajikistan	2	3	3.2
Togo	30	40	50
Tunisia	90	260	410
Turkey	900	1500	2500
Turkmenistan	2	6	8
Uganda	25	20	60
U.A.E.	400	735	900
Uzbekistan	7.5	120	150
Yemen	10	15	17
Total	7214.5	15257.5	22769.4

Source: ITU Database 2003 and Questionnaire replies received from OIC Member States.

N/A: Not Available.

* Average.

** Estimate.

TABLE A8: INTERNET PENETRATION RATE, NUMBER OF ISPs, LOCAL TELEPHONE COSTS AND GDP PER CAPITA IN OIC COUNTRIES IN DESCENDING ORDER, 2001

	Internet Penetration (%)	Number of ISPs (2000)	Local Telephone Costs for 3 Minutes (\$)	GDP Per Capita (\$)
U.A.E.	33.96	1	0.00	19750
Malaysia	26.66	5	0.02	3700
Bahrain	20.03	1	0.05	12068
Kuwait	14.68	2	0.00	14260
Guyana	10.91	3	0.00	828
Brunei	10.29	2	0.00	12447
Lebanon	7.30	9	0.07	4988
Saudi Arabia	4.67	27	0.01	8343
Oman	4.58	1	0.07	7903
Jordan	4.52	5	0.02	1701
Tunisia	4.24	9	0.02	2061
Maldives	3.70	1	0.02	1905
Turkey	3.65	104	0.11	2233
Suriname	3.30	2	0.04	1921
Qatar	2.25	1	0.00	27494
Pakistan	2.07	40	0.01	387
Indonesia	1.86	24	0.02	695
Palestine	1.81	N/A	0.04	N/A
Iran	1.56	8	0.01	5876
Gambia	1.34	N/A	0.30	333
Morocco	1.32	8	0.07	1162
Niger	1.07	1	0.10	170
Togo	1.07	3	0.09	269
Egypt	0.93	50	0.01	1528
Kazakhstan	0.63	N/A	N/A	1370
Uzbekistan	0.59	42	0.01	463
Djibouti	0.52	1	0.19	894
Côte d' Ivoire	0.43	N/A	0.05	563
Benin	0.39	1	0.15	370
Gabon	0.38	1	0.15	4136
Libya	0.36	1	0.02	6207
Comoros	0.34	1	0.14	303
Guinea Bisseau	0.33	1	0.14	179
Cameroon	0.30	1	0.05	615
Uganda	0.27	2	0.13	224
Mauritania	0.25	5	0.08	360
Albania	0.25	7	0.02	940
Algeria	0.19	2	0.01	1784
Guinea	0.19	1	0.10	381
Sudan	0.18	1	0.23	396
Burkina Faso	0.17	1	0.08	200
Turkmenistan	0.17	N/A	0.03	988
Syria	0.17	2	0.02	1185
Mozambique	0.15	8	0.06	202
Sierra Leone	0.14	1	0.03	346
Bangladesh	0.11	10	0.03	346
Niger	0.11	1	0.10	170
Chad	0.00	1	N/A	194
Mali	0.26	1	0.07	236
Tajikistan	0.00	8	0.01	129
Yemen	0.00	1	0.01	384

Source: Derived from Tables A2, A7, A9 and A10 in Annex A and ITU Database 2003.

N/A: Not Available.

TABLE A9: TOTAL NUMBER OF OPERATIONAL ISPs IN THE OIC COUNTRIES, 1999-2001

	1999	2000	2001
Afghanistan	N/A	1	N/A
Albania	2	7	N/A
Algeria	1	2	N/A
Azerbaijan	7	9	12
Bahrain	3	1	N/A
Bangladesh	6	10	N/A
Benin	N/A	1	N/A
Brunei	1	2	N/A
Burkina Faso	1	1	N/A
Cameroon	N/A	1	N/A
Chad	1	1	N/A
Comoros	1	1	N/A
Côte d'Ivoire	N/A	N/A	5
Djibouti	N/A	1	N/A
Egypt	31	50	N/A
Gabon	1	1	N/A
Gambia	2	N/A	2
Guinea	N/A	1	N/A
Guinea Bissau	N/A	1	N/A
Guyana	2	3	N/A
Indonesia	24	24	N/A
Iran	1	8	N/A
Iraq	1	1	N/A
Jordan	8	5	N/A
Kuwait	2	2	2
Kazakhstan	N/A	N/A	N/A
Kyrgyz Rep.	10	11	12
Lebanon	15	9	7
Libya	N/A	1	N/A
Malaysia	3	5	6
Maldives*	1	1	1
Mali*	5	9	13
Mauritania	N/A	5	N/A
Morocco	27	8	N/A
Mozambique	2	8	N/A
Niger	1	1	N/A
Nigeria	5	11	N/A
Oman	1	1	N/A
Pakistan	5	40	79
Palestine	N/A	N/A	N/A
Qatar	1	1	1
Saudi Arabia	31	27	25
Senegal	4	1	N/A
Sierra Leone	N/A	1	N/A
Sudan	1	1	N/A
Suriname	1	2	N/A
Syria	1	2	1
Tajikistan	N/A	N/A	N/A
Togo	1	3	N/A
Tunisia	9	9	12
Turkey	92	104	86
Turkmenistan	N/A	N/A	N/A
Uganda	3	2	N/A
U.A.E.	1	1	N/A
Uzbekistan	1	42	N/A
Yemen	1	1	N/A

Source: Questionnaire replies received from OIC Member States and
<http://www.outfo.org/almanac/index.html>.

N/A: Not Available.

*Number of Available ISPs.

TABLE A10: LOCAL AND INTERNATIONAL TELEPHONE COSTS FOR 3 MINUTES IN THE OIC COUNTRIES, 2000 (US \$)

	Local	International
Albania	0.02	4.59
Algeria	0.01	4.70
Azerbaijan	0.28	6.89
Bahrain	0.05	3.39
Bangladesh	0.03	4.14
Benin	0.09	6.90
Brunei	0.00	5.29
Burkina Faso	0.08	11.00
Cameroon	0.05	3.39
Comoros	0.14	N/A
Côte d'Ivoire	0.05	7.68
Djibouti	0.19	4.73
Egypt	0.01	3.33
Gabon	0.15	N/A
Gambia	0.30	6.18
Guinea	0.10	9.04
Guinea Bisseau	0.14	N/A
Guyana	0.00	N/A
Indonesia	0.02	4.20
Iran	0.01	7.65
Jordan	0.02	N/A
Kazakhstan	N/A	2.68
Kuwait	0.00	5.41
Kyrgyz Rep.	N/A	9.84
Lebanon	0.07	4.45
Libya	0.02	N/A
Malaysia	0.02	2.37
Maldives	0.06	11.72
Mali	0.07	12.64
Mauritania	0.08	N/A
Morocco	0.07	4.50
Mozambique	0.06	N/A
Niger	0.10	9.03
Oman	0.07	N/A
Pakistan	0.01	3.60
Palestine	0.04	0.61
Qatar	0.00	4.45
Saudi Arabia	0.01	5.20
Senegal	0.10	2.23
Sierra Leone	0.03	N/A
Sudan	0.23	7.79
Suriname	0.04	2.26
Syria	0.02	20.04
Tajikistan	0.01	8.16
Togo	0.09	7.90
Tunisia	0.02	6.47
Turkey	0.11	3.30
Uganda	0.13	8.60
U.A.E.	0.00	3.51
Uzbekistan	0.01	13.95
Yemen	0.01	4.45

Source: World Development Indicators, 2002.

N/A: Not Available.

ANNEX B**QUESTIONNAIRE FOR COLLECTION OF DATA ON
ELECTRONIC COMMERCE AND INFORMATION TECHNOLOGY
IN OIC MEMBER COUNTRIES**

*Kindly complete and return by 15 April 2003 at the latest, preferably by
e-mail: oicankara@sesrtcic.org or by fax: (90-312) 4673458
(Please make use of the Definitions and Concepts attached to this
Questionnaire)*

1. Total midyear population

Years	Total Midyear Population
1998	
1999	
2000	
2001	
2002	

2. Total number of main telephone lines and telephone subscribers

Total Number of Main Telephone Lines and Telephone Subscribers (in thousands)					
	1998	1999	2000	2001	2002
Main Telephone Lines					
Telephone Subscribers					

3. Total number of personal computers (PCs)

Total Number of PCs (If estimate, please indicate) (in thousands)				
1998	1999	2000	2001	2002

4. Total number of Internet Users

Number of Internet Users				
1998	1999	2000	2001	2002

5. Total number of Internet service providers (ISPs)

Total Number of ISPs					
	1998	1999	2000	2001	2002
Available					
Operational					

6. Which of the following are used to access Internet in your country?
(Please indicate one or more)

Dial-up telephone line

Leased lines

Cable TV

Mobile (GSM)

Satellite

Other (Please Specify):

7. Total number of cable TV and cable TV Internet subscribers

Total Number of Cable TV and Cable TV Internet Subscribers					
	1998	1999	2000	2001	2002
Cable TV Subscribers					
Cable TV Internet Subscribers					

8. Please indicate the highest Internet connection speed supported by
your infrastructure available to the users:

< 56 Kbps

56 Kbps

57-384 kbps

385kbps-1.5 Mbps

1.6-45 Mbps

>45 Mbps

9. Which connection speed is predominantly used to access the Internet via cable network?

64 Kbps
128 Kbps
256 Kbps
>256 Kbps

10. Which connection speed is predominantly used to access the Internet via leased line?

64 Kbps
128 Kbps
256 Kbps
512 Kbps
1 Mbps
>1 Mbps

11. Pricing method predominantly charged by ISPs to connect to the Internet on a dial-up basis

Minutes of Use Please indicate the average cost:

Flat-rate Please indicate the average cost:

Other Please specify:

12. Is there any legislation relating to e-commerce in your country?

Yes
No

13. Does that legislation allow electronic settlement of e-commerce transactions between countries?

Yes
No

14. Has your country acceded to the WTO Information Technology Agreement (ITA)?

Not a WTO member
Member of WTO but not an ITA signatory
Implementing ITA with delays
Fully implementing ITA

15. To which extent is your country's position on the extension of the WTO Standstill on e-commerce tariffs?

Not a WTO member
The government has not yet taken a position regarding the extension of the WTO Standstill on e-commerce tariffs
The government opposes the extension of the WTO Standstill on e-commerce tariffs
The government supports the short-term extension of the WTO Standstill on e-commerce tariffs
The government supports making permanent of the WTO Standstill on e-commerce tariffs

16. Is there any computer and/or IT-related education as part of the curriculum in the following?

Primary education	Yes	No
Secondary education	Yes	No

17. Is your country taking initiatives to integrate the Internet and e-commerce into its education and training policy?

No
Yes, Please specify:

18. Percentage of schools and Universities that have access to the Internet

<u>Primary</u>	<u>Secondary</u>	<u>Tertiary/University</u>
<25%	<25%	<25%
26-50%	26-50%	26-50%
51-75%	51-75%	51-75%
76-100%	76-100%	76-100%

19. Is your country taking initiatives to increase access of schools and Universities to the Internet?

No

Yes, Please specify:

ANNEX C**ACRONYMS AND DEFINITIONS**

Backbone	The top level of a hierarchical network. The main pipes along which data is transferred.
Bandwidth	The amount of information or data that can be sent over a network connection in a given period of time. Bandwidth is usually stated in bits per second (bps), Kilobits per second (KBps), or megabits per second (Mbps).
Broadband	A frequency band divisible into several narrower bands so that different kinds of transmissions such as voice, video, and data transmission can occur at the same time.
Cable TV Subscribers	Households that subscribe to a multichannel television service delivered by a fixed line connection.
Dedicated Line	A telecommunications line that is reserved for a singular purpose, for example providing a data connection between two computers.
Digital	A device or method that uses discrete variations in voltage, frequency, amplitude, location, etc. to encode, process, or carry binary (zero or one) signals for sound, video, computer data or other information. Digital communications technology generally permits higher speeds of transmission with a lower error rate than can be achieved with analog technology. When analog signals are received and

amplified at each repeater station, any noise is also amplified. A digital signal, however, is detected and regenerated (not amplified). Unlike amplification, any noise (less than a valid signal) is eliminated by digital regeneration.

Dial-up	A temporary connection between computers established over a telephone line or to establish a temporary connection to another computer.
Domain (top-level)	A top-level domain name is either an ISO country code or one of the generic domains (com/org/net/etc). It should be noted that there is not necessarily any correlation between a country code and where a host is actually located.
Domain Name	The domain name identifies a web site.
EDI (Electronic Data Interchange)	A technology used to allow access from different locations for transmitting orders, invoices and payments electronically, with a high level of security.
E-signature (Electronic Signature)	Signature in digital form.
Host	A computer providing Internet access or serving files.
Internet	It is a worldwide network of networks that all use the IP/TCP communications protocol and share a common address space. First incarnated as the ARPANET in 1969, the Internet has metamorphosed from a military internetwork to an academic research internetwork to the

current commercial internetwork. It commonly supports services such as e-mail, the World Wide Web, file transfer, and Internet Relay Chat. The Internet is experiencing tremendous growth in the number of users, hosts, and domain names.

Internet Users

People with access to worldwide network.

Interoperability

The ability of different telecoms networks and/or devices to work together to provide a seamless service for users. More noted for its absence – a simple example of non-operability is if an ISP does not support connection from the type of modem being used, or a caller's number on one network is not presented in a way that can be recognised by the called line on another network.

IP

Internet Protocol.

IP Address

The specific numerical location of a server.

ISP (Internet Service Provider)

A business that delivers access to the Internet, usually for a monthly fee or a business that provides Internet services, such as web site hosting, or web site development.

ITA (WTO Information Technology Agreement)

WTO Ministerial Declaration on Trade in Information Products held in Singapore on 13 December 1996. It provides for the elimination of customs duties and other duties and charges on information technology products.

Leased line	A two-way link for the exclusive use of a subscriber regardless of the way it is used by the subscriber (e.g. switched or non-switched subscriber, or voice or data). They can be either national or international in scope.
Main Telephone Line	A telephone line connecting a subscriber's terminal equipment to the public switched network and which has a dedicated port in the telephone exchange equipment.
Modem	A modulator/demodulator. A device that converts analogue signals to digital and vice versa. Can be used to connect computers via the phone lines. It can be used to connect them through cable networks, etc.
Network	A configuration of data processing devices and software connected for information interchange.
On-line	Being connected to another computer or network.
Public Switched Network	Networks in which analog or digital technology is used to provide voice grade services to users that access the network via an analog interface.
Server	A computer that makes its files available to a client via a network.
Systematic Bandwidth Services	Services where the available bandwidth for upload and download are equal.
PC (Personal Computers)	Self-contained computers designed to be used by a single individual.

TCP	Transmission Control Protocol and the basis for the Internet traffic. It works with IP to ensure that packets of information travel safely on the Internet.
TCP/IP	The protocols on which the Internet was founded.
WTO (World Trade Organisation)	International organisation dealing with the global rules of trade between nations. Its main function is to ensure that trade flows as smoothly, predictably and freely as possible.
WTO Standstill Agreement for Tariff	During the Geneva Ministerial Declaration on Global Electronic Commerce held in May 1998, the Ministers declared that members would continue their current practice of not imposing customs duties on electronic transmissions.
