

INFORMATION TECHNOLOGY AND SOFTWARE EXPORT

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Abstract - In the new millennium, Information Technology (IT) has become very effective and this is becoming evident in both developed and developing countries. These areas are especially within the fields of information gathering, in the broadest sense, and of developing and strengthening networks both internal and external to the surrounding environment. Today, more and more companies, organizations and government offices are using the Internet to publicize or sell information about their particular area of expertise. Moreover, the speed with which information can be exchanged, e.g. between subsidiaries in a conglomerate , makes it attractive for the companies to tie these together and form networks in which experience, knowledge and resources can be easily shared across borders. Furthermore, access to a computer, a telephone line and a modem is what an ever increasing proportion of the society can afford. In this paper, we will discuss the impact of IT on Software Export, by using the experience of some developing countries such as India, ... that have expanded their investment on IT and Information & Communication Technology (ICT). And finally, we will explain both external and internal software export barriers and give some suggestions for overcome the barriers, and expanding IT in Less Developing Countries (LDCs) like Iran.

Keywords – Information Technology, Software Export, Information & Communication Technology (ICT), E-Commerce.

INTRODUCTION

Information and Communication Technology is a very broad concept that covers all aspects of, for example, production of the necessary hardware such as computers, wires, telephones, modems, ..., as well as setting up the infrastructure, etc. Also, the software, which makes it possible to share information, conduct e-commerce, browse the Internet, etc. is covered by the concept.

On the other hand, the Information Technology covers all aspects of tools and techniques that would improve and support active systems based on knowledge and information. It is also a degree based on electronic accessing into information for people's needs. In fact, the Information Technology would increase the human learning ability enormously.

Last but not least, IT industry is expanding all over the world, especially in developing countries such as India, where its software export has increased from US \$ 128 million in 1991 to over US \$ 6 billion in 2000. It is also forecasted that software export would reach US \$ 87 billion by the year 2005 and create 2.2 million new jobs in India.

Today, big companies like AOL, British Airways, Dell, General Electric and Amazon, which are listed in 500 Fortune, have transferred their Call Centers to India. Also, other big companies such as Microsoft, Yahoo, and Sun are in process of transferring their Call Centers into India. All these facts, will increase both employment and Foreign Direct Investment (FDI) in a country such as India.

Recently, many countries have invested in IT. In South Korea, they have invested over 40% of their total investment in IT and Information System. In Philippines, investment in IT, during the past two years, resulted in 9% of economic growth in 2002. Also, in Italy over 1.2 million jobs were created by IT in 2001. All these figures show that almost 80% of new jobs in developed nations, directly or indirectly are related to computer, Internet and IT. Different countries contributed differently in IT's world market in 2002: U.S.A., 42%; Europe, 29%; Japan, 13% and the rest of the world, 16% (Figure 1).

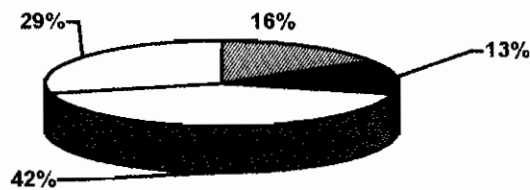


Figure 1: World-wide IT market by region, 2002
Source: [1]

Moreover, the part played by different countries in ICT world market in 2002 was as follows: U.S.A., 34%; Europe, 29%; Japan, 12% and the rest of the world 25% (Figure 2). Also, in Western European Market, ICT had a value of over 678 billion Euro in 2002: UK, 21%; Germany, 21%; France, 15%; Italy, 11%; Spain, 6%; Netherlands, 5% and the rest of the Western Europe 21% (Figure 3).

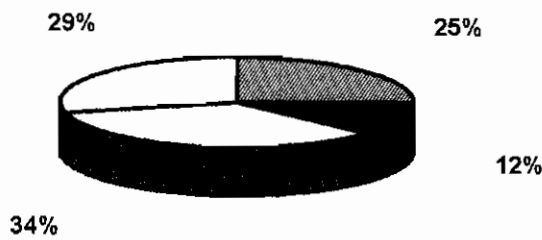


Figure 2: World-wide ICT market by region, 2002

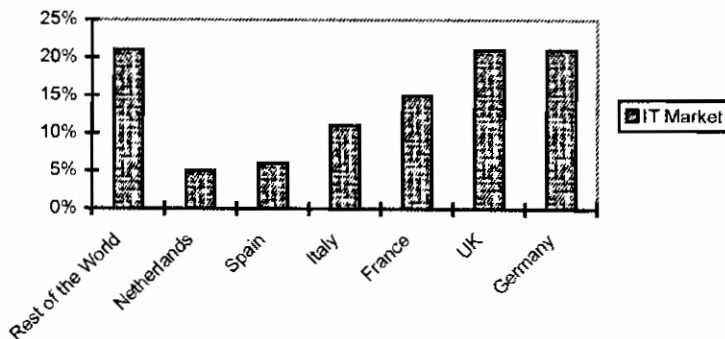


Figure 3: Western European ICT market by country, 2002
Source: [1]

ORIGIN AND DEFINITION OF THE INTERNET

The U.S. Department of Defense Advanced Research Project Agency made the first experiments in 1966, which later became known as the Internet or Information Highway. Twenty years later, in '86, the National Science Foundation created the first network backbone and allowed universities in the United States to access, and feed into, it. By 1990, commercial activities were supported by the Internet and the same year the first prototype web browser was created [2]. Evidently, the time span in which the Internet has developed in the West has been extremely short considering the great impact it has had on every part of our social and economic lives. In only 14 years what began as a backbone between universities in the United States developed into a world-wide network of computers and servers exchanging and sharing data on an instant basis.

Different attempts have been made to define the Internet or Information Highways. Some researchers like [3] cut to the bone and focused on the physical structure of the Internet and defined the Information Highways as the convergence of computer and communication technologies. Another way to define the Information Highways is as the individual technological innovations that affect our everyday life, such as the Internet, interactive television and electronic banking. From an infrastructural perspective, some view it as a seamless and transparent network of networks capable of transmitting a full range of interactive, audio, video and data services [3]. Whichever focus is adopted, the fact remains that the information highways make readily available an unprecedented amount of information, services and contacts to those who are connected in a network, where no person, company, government or organization has ultimate control [2]. In other words, the Information Highways can be described as a platform, where potentially everyone can meet, share, exchange, sell, buy and acquire information.

Coming to this realization, we are getting nearer to the core of how LDCs can benefit from the Information Highways. Two factors seem to be important if we are to connect to, and extract full benefit from, the Internet successfully. The first pertains to the infrastructure or physical attachment to the Internet, i.e. getting connected to the world-wide network of computers with sufficient speed and reliability to make it commercially viable. Bhatnagar [4] highlights the essence of this factor and considers two elements to be important for the diffusion of IT: the supply of telecom services as well as cheap IT equipment and access for users. Bhatnagar is forgetting a third and, to me, the most important factor, which is the ability of individuals, companies, organizations and governments to acquire, disseminate and make use of the possibilities that the Information Highways have to offer. In other words, the challenge for the LDCs is to set up systems that facilitate and support the individual to harvest the fruits of the Information Highways.

INFORMATION AS SOLUTION TO SOFTWARE EXPORT BARRIERS

In the context of this report, where information obtained through the Internet is in focus, it becomes necessary to explore the extent to which this information can be of use for entrepreneurs, industries and governmental institutions in LDCs. First of all, is the information on the Internet relevant? Generally, there is a big gap between the information

available and the information needed. In other words, there is a lack of proximity between sender and receiver

This is largely because the Internet is a Western 'invention' adopted, influenced and further developed by the developed world without much consideration for LDC needs. The richness of the information is considered to be a threat, because most of it comes from western culture and is full of western patterns of thought. It is also suggested that just another wave from the West will inundate non-western cultures. This fear seems to be based on an assumption that traditions and cultures, in LDCs, are too weak to sustain attacks from western cultures. This idea might be right that IT can also be a tool that empowers the cultures and revitalizes local knowledge and traditional societies. But, the way to do that is not to produce websites that provide local content, so that the rest of the world would get an opportunity to learn about societies and cultures. Again, the underlying assumptions seem to be that the strong western cultures, if they learn about LDC cultures, would try to influence them less. In other words, it depends on the West how much culture in LDCs is influenced. In contrast, some believe that all cultures are dynamic and each has its own way of adapting or embracing change.

EXTERNAL EXPORT BARRIERS

Regarding access to the Information Highway and its influence on the external export barriers, it is hard to see how IT can have any direct influence. The LDCs would still be at a disadvantage in trade negotiations, since their dependence on trade with the West for foreign exchange, etc. is far bigger than is the case the other way around. Similarly, the non-tariff barriers, such as quotas, are likely to stay unaffected by the fact that LDCs are connected to the Information Highway.

Indirectly, though, diffusion of IT into a LDC context could have several advantages related to trade negotiations. The increased access to information might be an advantage when we try to get an overview of the issues involved and identify the best strategy to adopt to negotiations through the Internet, which allows large volumes of information to be acquired more quickly and cheaply.

Furthermore, over time IT, in its capacity as an instrument for frequent and unhindered communication, might strengthen the ties and relationships, among the developing nations. This again, may help LDCs to enforce unity in trade negotiations and, thus, gain a stronger voice. Of course, many other factors influence the unity, or lack of same, but IT could pull in the right direction.

An external barrier that was considered most significantly in one of the earlier mentioned surveys, namely foreign product standards, might also indirectly be positively affected. Even though IT will not enable the LDCs to change the product standards of the various countries, it will supply companies and trade promotion organizations with an overview, and even detailed descriptions, of the required standards for export. Thus, it will make it easier to understand and adapt to the required product standards. Also, new product ideas may quickly be received; complaints readily communicated and training related to knowledge and technology transfer more readily engulfed.

Finally, a well functioning IT network among the LDC business communities in different parts of the world is likely to develop new areas of trade and export, not yet explored, as well as facilitate South-South trade instead of the attractive but problematic North-South trade. Such trade could also be stimulated by the online databases that are presently spawning making available updated market information, company outlooks, financial projections, etc. for an increasing number of emerging markets [5].

INTERNAL EXPORT BARRIERS

Turning to the internal export barriers, the likelihood that IT may have direct influence on many of them is much more eminent. First of all, access to and sharing of information are two main characteristics of IT. Based on surveys on SMEs in LDCs, four types of information have been identified to be of particular importance [6]. These are information on: customers and markets; product design; process technology (including operation, maintenance and new technology developments) and finally financing sources. It appears that these four types of information are those most commonly recognized as representing the best example of the value of the Internet for developing countries. This is a very narrow and myopic view of the benefits and influences that IT will have on LDCs. We have exemplified this by going through export barriers earlier.

CONCLUSIONS

In sum, Information Technology can be applied in a variety of ways to support customer service and sales operations. Moreover, Internet services and call center services are being combined whereby Internet users can click on an icon and either initiate or call or request the call center to contact them at the number that they input on the screen.

Furthermore, we can see that the global online trade will expand to US \$ 12.8 trillion by 2005, while global software production was US \$ 240 billion in 2002. Therefore, if we have a goal of one percent of employment of the world's software market, it would reach over Iran's present non-oil exports. By looking at India's contribution of software exports to its total exports, we can see it has increased from 13.8%, in 2001 to 16.50% in 2002 and it should reach 18.60% of its total exports by the end of 2003. (Figure 4).

Finally, considering the Relative Comparative Advantage (RCA) of software industry, compared to other industries, we can conclude that expansion of IT, and especially software export, is very essential for the nation, taken the fact that software products have five requirements in today's market as follows: writing, sales, education, customization and implementation.

In addition, by looking at the Information Technology Agreement (ITA), and the 4th protocol of WTO related to liberalization of basic telecommunications, e-commerce, i.e. hardware and software, etc., we can see behind them the rationale, which is based on empirical data and statistical evidence. In fact, this empirical data and statistical evidence show a relationship between low custom duties and telephone charges, on the one hand and the rise in Internet users, on the other. For example, by 2005, Internet users will reach one billion [7].

Thus, according to Cassiolato (1997) the nature of IT is such that the full benefit from it can only be achieved when the user has developed its own capacity to understand technologically all activities related to it [8]. So, it is recommended to have a broad vision on IT, set the objectives and outline the strategies that have to be implemented.

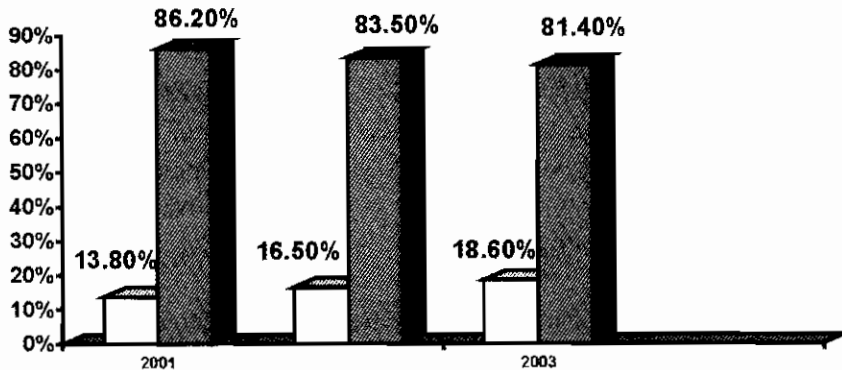


Figure 4: Contribution of India's software export to its total export, 2001-3

Source: [9]

ENDNOTES

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