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REPORT ON THE ISRAELI INFORMATION TECHNOLOGY (IT) MARKET

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THE ISRAELI INFORMATION TECHNOLOGY (IT) MARKET AT A GLANCE - 1995

Israeli IT Market	US$ est. 2 billion
Total Sales of Software	US$ 950 million
Export of Software	US$ 250 million
Import of Software	US$ 100 million
Import of Hardware	US$ 500 million
Leading Software Houses	85
Computer Professionals	est. 15,000
Computer professionals Working in Software Houses	est. 8,000
Number of Installed Mainframes	131
Number of Installed PCs	750-800,000
Internet users	est. 40-50,000
Import of IT products from Canada	US$ 4.2 million
Export of IT products to Canada	US$ 2.3 million

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EXECUTIVE SUMMARY

The IT market in Israel includes all the import of computer hardware and software, local software development, software projects and auxiliary services of the computer industry. In 1995 the Israeli IT market was evaluated at US$ 2 billion, 0.5% of the world market.

Hardware import amounts to US$ 506.3 million and software imports, to US$ 100 million. The total Canadian import amounts to 0.007%. The export of software was US$ 250 million, about 26% of sales. The share of Canada was less than 1%.

Sixty percent of hardware imports consist of PCs. Israel is following the worldwide trend of "downsizing" the consequence of rapid development of price-performance ratio, software development for distributed processing and networking capabilities. There are about 200 software houses, 85 being members of the Israeli Software Association. The total sales of the industry in1995 reached US$ 950 million with an export share of 26%. The leading software houses are listed in the Tel Aviv and/or the New York stock exchanges. Since 1991, eight Israeli software houses completed initial public offerings in the US stock market, raising a total of US$ 20 million. Customers such as Electronic Data Systems, the Central Bank of Japan and France, HP, Air France, Club Mediterranean, are just some of the prestigious corporations using Israeli developed software. Both Business Week and Newsweek, in recent issues, compare Israeli High-Tech Industry with Silicon Valley. Israeli start-up companies developed sophisticated software for verbal communications, 3D graphics, and network security for Internet users.

Today the Israeli IT industry faces two main problems:

1. Lack of devaluation of shekel vs the US$.

2. An acute shortage of computer science graduates.

As a result of the above mentioned problems, there is a decrease in the profitability of the IT industry in Israel.

According to D&B the leading vendors in Israel (hardware and software) are the following in 1994:

	No. of Employees	Sales in US $ (mil.)
IBM Israel	840	269.0
OREK Group	250	190.0
D.E.C.	386	135.6
H.P.	170	75.1
Clal	500	70.0
I.A. Mittwoch	469	65.0
FORMULA	250	63.2

PROFILE OF THE ISRAELI IT MARKET

The IT market includes all the import of computer hardware and software, local software development, software projects and auxiliary services of the computer industry. The Israeli IT market in 1995 is evaluated at US$ 2 billion; the world market is evaluated at US$ 400 billion.

Israel's share in the world market, as noted above, is relatively small, approximately 0.5%. About 75% of the world market is concentrated in just five OECD countries (USA, Japan, Germany, France, UK).

Although there is, as yet, little evidence of saturation, the growth rate in the world IT market has slowed significantly since 1990. No doubt cyclical factors have contributed, but a significant contributory factor has been "downsizing". Downsizing has been the consequence of rapid improvements in the "price performance" ratios, software development for distributed processing and networking capabilities of lower range computers. Production has shifted away from larger systems characterized by proprietary architectures to much cheaper, increasingly versatile workstations and PCs which match computing performances previously available only from mainframes.

This trend can be observed in the Israeli hardware installations: there is a significant shift from large systems to workstations and PCs with networking capabilities.

There is no computer hardware industry in Israel for scientific and data-processing and the hardware and operating systems are imported from abroad. There is a large import of on-shelf software. The hardware export consists mainly of dedicated equipment (mainly for printing) and peripherals. The extent of foreign trade in hardware and software is shown in Table 1.

Table 1: Export and Import of Computer Hardware and Software (in million US$)

	1994	1995
Export		
Software	197.8	251.3
Hardware	150.5	143.2
to USA	53.0	47.2
to Canada	1.2	2.3
Import		
Software	81.0	100.0
Hardware	420.0	506.3
from USA	136.8	183.0
from Canada	1.8	4.2

Source: Central Bureau of Statistics, Foreign Trade Department, Israel

In Israel there are 200 software houses. The largest 85 of them are members of the Israeli Software Houses Association (ISHA). The total sales of the industry in 1995 reached US$ 950 million, including the export of some US$ 250 million of software. The leading software houses are listed in the Tel Aviv and/or US stock exchanges, mainly New York's NASDAQ. Since 1991, eight Israeli software houses completed initial public offerings in the US stock market, raising a total of US$ 120 million.

MAIN SECTORS OF THE ISRAELI IT MARKET

A. The Hardware Market

The hardware market can be divided into three sections: 1. Mainframes; 2. Minicomputers; 3. PCs.

1. Mainframes: Mainframe computers are priced above US$ 1 million. Mainframes serve all the Israeli banks, Israel Defense Forces, government offices, insurance companies, and other similar institutions. In 1994, 31 mainframe computers were sold. The revenue to the suppliers totaled US$ 90 million for basic hardware (CPU), not including peripherals and operating systems. IBM was the main supplier of mainframes and only one system was supplied by Hitachi Data Systems (HDS). UNISYS is also active in the Israeli market, represented by Clal Systems. Today there are about 130 installations of mainframes in Israel, 80% being IBM computers.

2. Minicomputers: The minicomputer market is divided into two segments: a) Medium scale systems which include traditional supermin-class computers and some systems classified by their vendors as small mainframes. The computers in this category are in the price range (average) of US$ 100,000 to 1 million. B) Small scale systems which typically range from US$ 10,000-100,000. IBM is the leading competitor for both markets.

For the medium scale systems, the total market income is evaluated at about US$ 23 million; distributed between IBM (31%), Digital (29%) and others. The small scale systems are evaluated at US$ 45 million. In 1995 the market was shared by IBM (34%), Digital (32%) and others. Additional vendors in these markets, with a much smaller market share included Data General, Hewlett Packard, Tandem, and AT&T's computer division, GIS.

IBM increased the sales of the RS/6000 system. The new line of these computers is based on PC Tower chips and operates with UNIX programs and NT Windows. They can act as servers for smaller computers.

SUN leads the workstation market with 32% of the total sales for an income of US$ 77 million. Other contenders for the market are Hewlett Packard, Digital and IBM, with 23%, 19% and 11%, respectively, of the market sales in 1995.

During 1995 two super computers based on parallel computer were sold to Israel, one by Cray, to the Interunivesity Computer Center and the second to the Weizmann Institute.

3. The PC Market: Personal computers are general purpose, single-user, microprocessor based machines capable of supporting attached peripherals, and can be programmed in high level languages. In 77% of large and medium-sized companies, PCs are interconnected by local area networks (LAN). In smaller companies, less than 50% are interconnected by local area networks. The LAN market is dominated by NOVELL software. However, lately there has been an increase in Microsoft NT Windows software.

The Israeli PC market is characterized by strong price competition and by transfer to brand name computers in the home and education market. A very large number of vendors compete for small market slices. In 1994, 153,000 PCs were sold, totaling US$ 273 million. As mentioned earlier, there is a transfer to brand name computers mainly by large organizations. As in the electronics industry, the tenders require brand name computes. This paves the way for other organizations to require the same quality of computer.

The leaders of brand name computers in Israel are IBM, APPLE, Packard Bell, Digital and Olivetti. Their combined share in the PC market is about 37%. Other brands include Compaq, AST, Dell, Acer, SamSung, Hewlett Packard, UNISYS, with a share of 11%. The two largest importers of mother boards and components are EIM and YAD Electronics. In 1994 IBM was the leader of PC sales (10.2% of the market=15,600 computers). In this new field, IBM has continued to succeed in its traditional markets: government, education, insurance companies, production sectors. IBM was one of the large brand name companies that was awarded the Ministry of Education tender and sold 1,300 PCs to schools. Packard Bell took second place and Digital third place. Apple was in fourth place in 1994, selling mainly in the preprinting and desktop publishing market. Olivetti was in fifth place and sold mainly to banks; they are the leading vendor of PCs to Bank Leumi, Israel's second largest bank. At the end of 1995 the number of installed PCs reached 750,000-800,000.

B. The Israeli Software Industry

It is estimated that Israel has over 200 software houses, ranging in size from a dozen professionals to several hundred. The number of computer professionals is estimated at 15,000; half of them work in software houses.

Eighty-five of the largest software houses are members of the Association of Software Houses. In 1995 the total sales of the industry reached US$ 950 million. The export of software came to US$ 250 million (compared with only US$ 5 million in 1984).

The activities of the Israeli Software Houses encompass defense, business, education and software development tools. The defense sector has been, and continues to be, a major consumer of software, especially in real-time applications, avionics software, communications systems and command/control applications. Educational software represents another sector in with Israeli software houses have succeeded, mainly due to strong government support. In the business sector, most Israeli firms have fully computerized their management infrastructure. Many of these firms are already in their second generation of computerization, office automation, on-line production control, CAD/CAM applications and communication networks.

IT INDUSTRY HIGHLIGHTS - MAIN COMPANIES

In Israel there is a large and sophisticated market for both imported and locally developed software. The latter accounts for approximately one half of market demand. In an attempt to maximize their leverage in an aggressively competitive market, Israeli software houses were forced to package their software for repetitive sales. Consequently, there is a wide selection of locally developed software packages which range from business management software, graphic and CAD/CAM packages, to highly sophisticated packages for specific industries.

In addition to these software packages there is also a large number of Israeli developed software packages which have been created specifically for the export market. Among these packages are data base managers for large systems and PCs, application generators for PCs and minis, job schedulers for mainframes and several communication packages. In fact, there is virtually no computer application for which an Israeli package does not exist.

Targeting Overseas Markets

In the past few years, due to the limited size of the local market, and as a result of strong affiliations with international companies, Israeli software houses have developed expertise in marketing packaged software.

Furthermore, this software is accompanied by user documentation that fully complies with the standards demanded by the international marketplace.

The following are a few examples of Israeli software packages which have been successfully sold internationally:

- Production and Management System for the Yellow Pages Telephone Directories - implemented in the United States, Australia and in several European countries.
- Comprehensive Data Base Management Systems installed in many large installations in Europe.
- Banking Communication Systems - sold to over 100 international banks, including Japanese-based banks.
- Application Generators for PCs and UNIX based computers sold to thousands of users worldwide.
- On-Line Systems Repair/Diagnostic Tools - installed in over 250 large installations in the United States and Europe.
- Job Scheduler for Mainframes - sold to users throughout the world.

International Recognition

The capabilities of the Israeli software industry have been recognized by some of the world's largest computer companies such as Microsoft, IBM and Digital Equipment. They have all chosen to establish research and development facilities in Israel. Electronic giants such as Motorola, Intel and National Semiconductors have set up large design centers in Israel.

Customers such as Electronic Data Systems, the central banks of Japan and France, HP, Air France, Club Mediterranean, are just some of the prestigious corporations using Israeli developed software.

International recognition for Israeli software has not only come from the industry and its customers but also from the international financial community. Already, 72 high-tech Israeli firms are listed on the US stock exchanges, mostly New York's NASDAQ, more than from any other foreign country except Canada. Since 1991, eight Israeli software houses successfully completed initial public offerings in the US stock market.

Both Business Week, in its August 21, 1995 issue, and Newsweek, in its April 8, 1996 issue, compare the Israeli high-tech industry with Silicon Valley.

Internet Services and Software Development

There are 40-50,000 users connected to Internet, with about half of them gaining access via providers. The largest one is Netvision with about 10,000 accounts. Additional access providers include Dataserve, Actcom, Shani, Kav Manhe, and IBM. A recent evaluation suggests that as many as 80,000 people may actually be using the web through university, business and personal accounts.

Among Internet software developers, we have to mention Vocal Tec, the developer of verbal communication software, Ubique, a maker of 3D graphics for the WWW and Checkpoint, who developed a network-security software.

Details for nine leading software houses are given in Table 2.

Table 2: Leading Software Houses

Company	Turnover in millions of US$	Employees
ATL	28.5	430
Contahal	13.5	260
Edusoft	8.8	75
Formula	26.6	400
4D	23.0	170
International Software Group	14	230
Liraz	17.5	350
Malam	25	250
Sapiens	64	350

Data: ISHA 1995

CURRENT PROBLEMS FACED BY THE IT INDUSTRY

The Israeli industry faces two main problems: 1) Lack of devaluation of the shekel vs the US$, and 2) acute shortage of computer science graduates.

Lack of Devaluation of the Shekel vs the US$

In 1995 there was virtually no devaluation of the shekel against the US$. In fact, for a large part of the year the shekel strengthened against the dollar and the rate of shekel devaluation against the basket of currencies (mainly European currencies) was limited. This contributed to the slow growth of export and to the decrease of the profit margin in export and to the decrease of the profit margin in export led industries, including the IT industry.

Acute Shortage of Computer Science Graduates

Since the beginning of the 1990s, the IT industry, as a part of Israeli science-based industries, has suffered from a shortage of computer science graduates and experience programmers. The actual shortage in software houses is estimated at about one thousand professionals. This is in spite of an increase of intake in the Computer Science Department of Universities and intensive retraining courses. The shortage has already caused substantial salary increases and a further decrease in the profits of the IT industry.

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