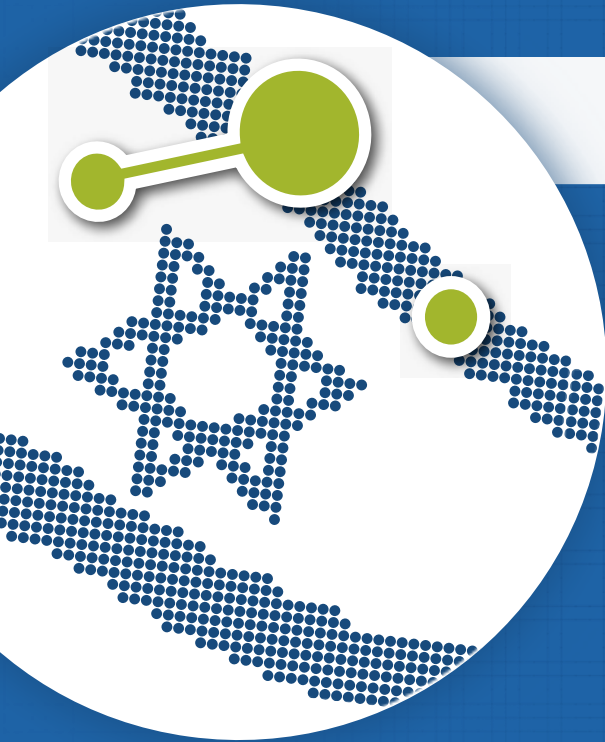


The

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Impact of the internet  
on the Israeli economy



# PREFACE

This report is, to the best of our knowledge, part of the first attempt to evaluate the impact of the internet on the Israeli economy.

The approach used in this report addresses the macro aspects of the internet economy by quantifying their effect on GDP and then assessing some of the benefits to Israelis beyond what is captured in the GDP calculation. We then discuss three sectors (SMBs, banking, and travel) in more detail to illustrate the impact of the internet on the Israeli economy. We conclude with a comparison of Israel's internet performance relative to its peers in the OECD.

For the purpose of this report, we have chosen an extensive definition of the internet economy which includes all internet transactions and all the access devices and infrastructure which enable internet and intranet networks.

McKinsey & Company is responsible for the analysis and conclusions of this independent report, which was commissioned by Google, in order to advance the understanding of the internet's role in shaping the Israeli economy. While this report was not conceived as a rigorous academic report, we have received significant assistance, support and insight from numerous resources and over 40 experts' interviews. Among those we include CBS, Bank of Israel, Israel export institute, Pitango, IAB, MGI, OECD, WEF and many others. We would like to extend a special acknowledgement to Professor Asher Tishler - Dean, faculty of management of the Tel Aviv university - for his extensive support on this effort.

## EXECUTIVE SUMMARY

The internet is changing the State of Israel, and being changed by it as well. Israel has embraced the internet at all levels of society and rivals many of its OECD peer countries in both benefit from and contribution to the local and global internet economies. Still, there has not been much analysis of the Israeli internet economy. This report takes a significant step in both describing and quantifying it. Among the report's findings:

**In 2009, the Israeli internet economy accounted for an estimated NIS 50 billion, or 6.4% of GDP**

- The Information and Communication Technologies (ICT)<sup>1</sup> sector accounts for two-thirds of this value through investment and net exports – with internet-related net exports around NIS 20 billion, same as the Israeli balance of trade in 2009
- Internet-related employment in Israel comprises ~120,000 jobs and is growing twice as fast as overall employment

**The internet economy is likely to reach NIS 85 billion by 2015, or 8.5% of GDP**

- The internet economy is expected to grow at an annual rate of 9% – more than twice the pace of the overall economy
- It will account for approximately 10% of the expected GDP growth till 2015
- The pipeline of skilled employees may become the primary barrier to this growth

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<sup>1</sup> ICT sector includes technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the internet, wireless networks, cellular phones, and other communication media.

### The internet in Israel is leveraged well by both individuals and businesses

- When compared to the OECD, Israel emerges as a leader in both individual and business internet usage. For example, about 60% of bank customers have online accounts and nearly 75% of customers who research travel purchases online, well above the OECD average
- Israeli consumers are amongst the most frequent internet users who research online purchase offline (ROPO). The value of products researched online and then purchased offline is estimated in the order of magnitude of NIS 20 billion
- Half of the small and medium businesses (SMBs) in Israel are actively leveraging the web and have shown higher growth than those that don't. About 80% of the jobs created in the sector over the last three years came from the web-active.

### The internet has the potential to contribute even more to the Israeli economy once certain issues are addressed

- Israeli e-commerce is estimated around NIS 4 billion and as a portion of GDP (0.5%) significantly lags other developed countries. Even in the travel sector, which is known to be an attractive market for online transactions, only 5% of sales are conducted online. Moreover, only less than 2% of SMBs accept online payments
- Israel's internet infrastructure is ranked below the OECD average (ranking 20 out of 34) mostly as a result of low average bandwidth per user
- To prevent the pipeline of new employees becoming a barrier to the internet economy's growth, additional sources of employees should be encouraged (e.g. increasing the participation of Orthodox Jews and Arabs in the ICT sector))
- There are clear regional differences in internet activity of SMBs, with around 35% of those businesses in the South and Jerusalem considered web-active while over 60% in the Sharon and Central regions have embraced the channel.



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# SIZING THE ISRAELI INTERNET ECONOMY

## GDP's (inter)net effects

### Preface

*The internet has had a substantial impact on the Israeli economy over the past decade, driven mainly by Israel's large Information and Communication Technology (ICT) sector. Looking forward, it is also seen as a key export and one of the main growth engines of its high-tech industry.*

*While some of the benefits of the internet are directly reflected in Israel's GDP, there are certain additional benefits that cannot be directly measured as a part of GDP. These benefits are addressed in another chapter titled Gross Domestic Well-Being.*

## Methodology

The internet economy is comprised of two main elements: The first refers to goods and services purchased over the internet, globally referred to as “e-commerce”. The second refers to the share of the ICT sector (both services and equipment) that we believe should be attributed to the internet. We have broken down the ICT sector into relevant sub-sectors, such as software, electronic components, and communication equipment, and attributed a varying share of each sub-sector to the internet.<sup>2</sup>

When measuring the impact of the internet on Israel’s GDP, it is important to distinguish between two possible effects: The internet could create new or incremental transactions, which would not have taken place without the internet. Or, the internet could allow substitution of a current transaction with an online transaction, mainly for the sake of convenience. This report presents both, or the gross impact of the internet.

When calculating GDP, we have adopted the expenditure method, measuring the total spending on final goods and services.<sup>3</sup> The expenditure method allows us to assess the contribution of private consumers, businesses and the government to the internet economy. Four elements comprise the expenditure method calculation of the internet’s contribution to GDP:

- **Private consumption:** includes business-to-consumer e-commerce and spending on internet access
- **Investment:** includes private and government capital investment in fixed assets related to the internet
- **Government expenditure:** includes internet-related public expenditure (including wages)
- **Net exports:** includes total e-commerce export and a relevant portion of ICT equipment, less comparable import items

Since employment is not directly calculated in the expenditure approach (it is calculated when using the income approach), we included a section reviewing the employment in the internet-related economy in Israel.

<sup>2</sup> Overall, the average proportion of ICT equipment and services attributable to the internet is in the range of 40-50% (depending on the category). We estimated a higher proportion allocated to software and computer services than to ICT equipment / hardware.

<sup>3</sup> Other methods to calculate GDP are the income method and the output method, both of which were partly used for triangulation, but not as the leading approach



In addition to the direct contribution to GDP, the internet also indirectly effects the economy. We have included these effects in the *Gross Domestic Well-Being* chapter.

*(See Appendix for more details about data limitations, the underlying assumptions, and calculations of the internet's contribution to GDP.)*

## Internet's Share Of GDP

We estimate the size of the internet economy in Israel in 2009 at ~NIS 50 billion or ~6.4% of Israel's GDP. This figure implies that the internet has gained a substantial foothold in the Israeli economy. The internet's share of Israel's GDP is probably one of the highest in the world and comparable to that of the United Kingdom, a world-leading internet economy due to a highly developed e-commerce market.<sup>4</sup> Comparing Israel's internet economy to those of the United Kingdom and France (**see Exhibit 1**) reveals that Israel has a lower share of e-commerce, but a higher share of investment and net exports. Overall, the relative size of Israel's internet economy is slightly lower than that of the United Kingdom (7.2%), but significantly higher than that of France (3.2%).<sup>5</sup>

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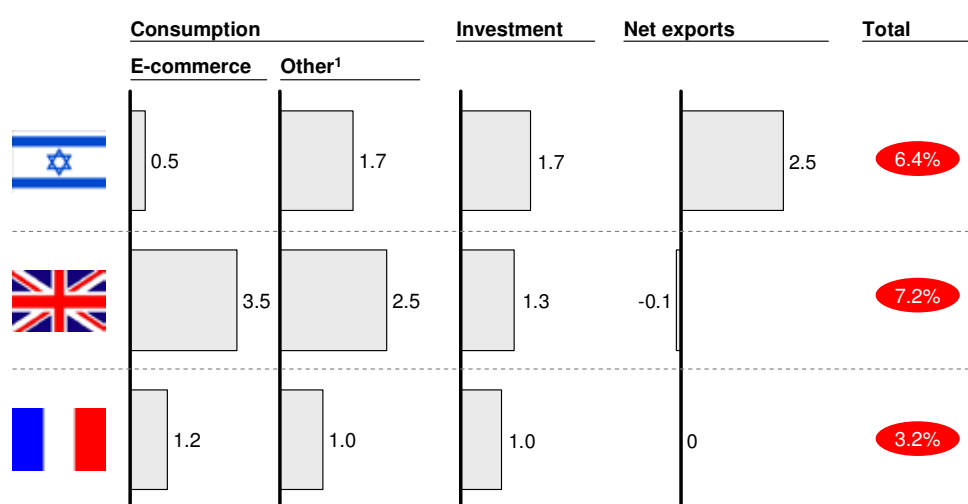
4 "The Connected Kingdom", the report on the UK's internet economy

5 As a percentage of the country's GDP

## Exhibit 1

### While Israel lags the UK in consumption, its internet economy has a greater share of investment and net exports

Breakdown of internet economy, 2009  
% of total GDP



<sup>1</sup> Including expenditure on access and government expenditure

SOURCE: Google report on UK internet economy ("The Connected Kingdom"); McKinsey report on French internet economy; McKinsey team analysis

A breakdown of Israel's GDP into the different expenditures reveals an interesting story. For various reasons (see sidebar *Why is Our E-commerce so Low*), Israel has a limited scale of e-commerce. However, Israel's high levels of investment and exports of ICT, which are closely linked to the internet, result in a significant contribution from the internet to Israel's GDP. (see Exhibit 2)

We estimate consumer **e-commerce** in Israel at approximately ~NIS 4 billion (~0.5% of GDP), small when compared to most international benchmarks.<sup>6</sup> This figure includes the value of all goods and services purchased online,<sup>7</sup> along with the relevant banking fees for online transactions.<sup>8</sup>

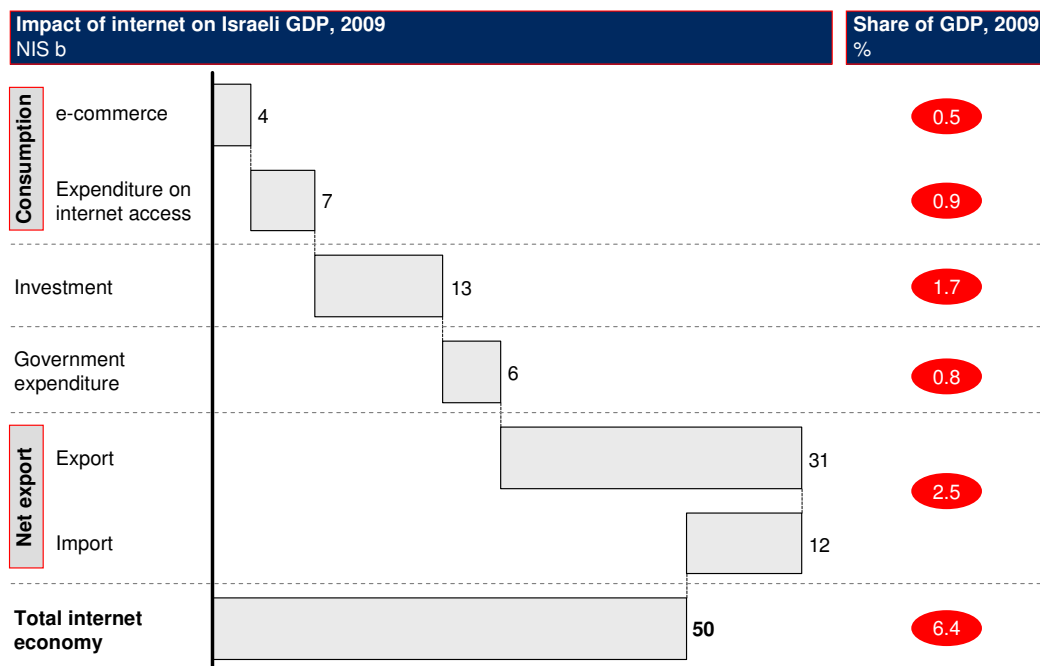
<sup>6</sup> See e-xpenditure parameter under The e<sup>3</sup> Index

<sup>7</sup> Despite the likelihood that a significant part of these transactions would have happened off-line (see methodology chapter)

<sup>8</sup> We have addressed the online payment of bills, which is relatively high, in the Gross Domestic Well-Being section, as we believe that it does not reflect genuine online transactions.

Exhibit 2

## Investment and export account for most of the Israeli internet economy



NOTE: Some amounts may not add up to the numbers shown because of rounding

SOURCE: McKinsey team analysis

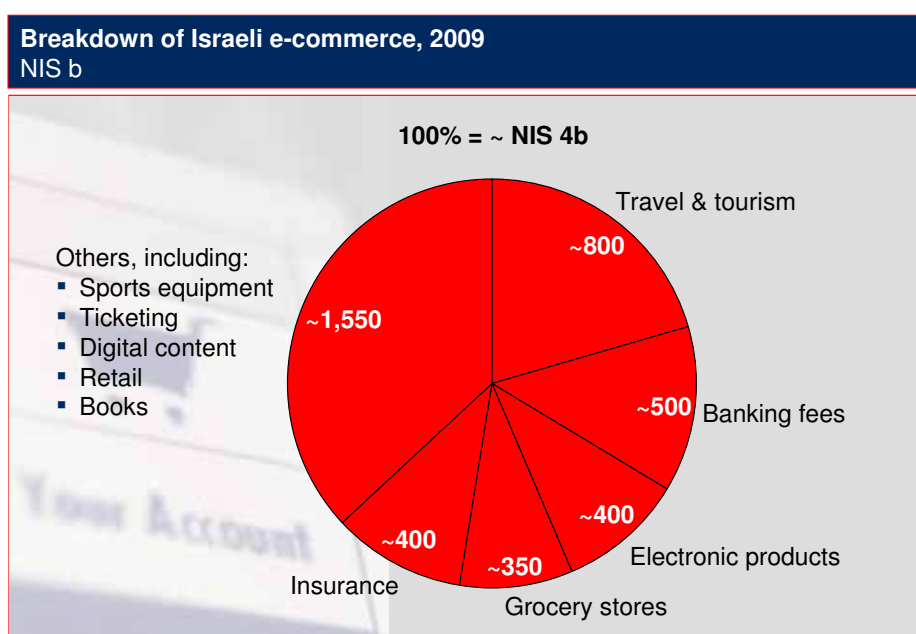
In our estimates, e-commerce is mainly comprised of *travel and tourism* (almost NIS 800 million, with the majority of it deriving from flights), *banking fees* (~NIS 500 million), insurance (~NIS 400 million), *electronic products* (~NIS 400 million, with a relatively high share of e-commerce of 7-8%), *grocery products* (~NIS 350 million, less than 1% of total sales<sup>9</sup>) and others (see Exhibit 3). On the other hand, B2B e-commerce, while not reflected in the GDP calculation because it comes earlier in the value chain of production, is actually of much larger magnitude than traditional e-commerce (can reach a factor of 5-10 as seen in other developed countries).<sup>10</sup>

9 Almost all of it driven by the two leading retailers – Shufersal and Mega

10 B2B e-commerce covers a growing list of business activities, including e-procurement and online payments. Given the high internet usage in Israel's business sector relative to other developed countries, we estimate B2B e-commerce here to be much larger than classic e-commerce. One example is the Israeli Government Portal (gov.il) where online payments have doubled in size in one year reaching NIS 13 billion with the majority (~90%) attributed to business transactions.

## Exhibit 3

### Travel, banking fees, electronic products, insurance and grocery are main contributors to Israeli e-commerce



SOURCE: CBS; McKinsey team analysis

We estimate consumer expenditure on internet access, including payments to internet providers, as well as on devices to access the internet (e.g., personal computers) at ~NIS 6.5 billion, or 0.8% of Israel's GDP. Relative to other countries, Israelis spend a similar amount on internet access.

Israel's investment in internet-related technology (including a proportion of telecom infrastructure and related ICT companies investments) represents a significant part of the internet economy, as we estimate this investment to be ~NIS 13 billion, which represents ~10% of total investment, or ~1.7% of Israel's GDP. We earlier noted that this relatively high figure is not surprising as Israel has the highest relative size of its ICT sector within the OECD group of countries. The rising share of internet-related technologies out of total ICT is well apparent in the rising share of investment in software, which is closely related to the internet. Software has been the main growth driver of ICT, with its share of ICT rising from 41% in 2005 to 51% in 2009. In addition, a significant share of the current investment in communication equipment and infrastructure in Israel is strongly related to the internet (e.g., high-speed Next Generation Networks).

Government expenditure is also affected by the rising spend on internet-related products and services. We estimate total internet-related government spending to be ~NIS 6 billion, which represents ~3% of total government expenditure, or 0.8% of Israel's GDP, which includes both civilian and defense spending:

- The most significant element of this expenditure is the **civilian** portion of internet-related goods and services, which amounts to NIS 4.3 billion. This figure includes spending on internet-related personnel, both for in-house and outsourced personnel
- We estimate the **defense** internet-related portion to be ~NIS 1.7 billion, though this might be conservative. Assessing the relevant share of defense internet-related spending is a complex challenge, as information is classified. However, drawing from various public sources and by comparing international benchmarks on defense ICT expenditure, we estimate the portion of defense expenditure which is internet-related to be slightly above the civilian portion.<sup>11</sup>

Our estimate of Israel's internet-related **exports and imports** reflects a significant amount (~NIS 19 billion) of net exports: ~NIS 31 billion in exports of internet-related goods and services, against ~NIS 12 billion of internet-related respective imports. Internet-related net exports represent ~2.5% of GDP, making net exports the most significant contributor to the Israeli internet economy. Given the high share of advanced ICT companies in Israel and the very small size of the local market, Israel's significant position as an internet-related exporter is not a surprising one. Internet-related exports are mainly comprised of internet-related goods and services, rather than significant e-commerce traffic. The effect of the internet on exports is again apparent when measuring the closely related relative share of computer and R&D services in total ICT exports. The share of computer and R&D services out of total ICT exports has increased from 27% in 1997, to 44% in 2008, and we expect these figures to continue to increase in the coming years.

In less than a decade, the internet has made an unprecedented imprint on the economy and GDP. But what lies ahead? In the remainder of this chapter, we explore how Israel is likely to fuel the internet growth engine.

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<sup>11</sup> Out of total government expenditure of ~NIS 185 billion, ~NIS 135 billion is civil and ~NIS 50 billion is defense

## Why is our e-commerce so low?

Given Israel's high internet usage, it is quite surprising that only 0.5% of GDP could be allocated to online transaction of goods and services. This share of GDP is relatively low when compared with most other developed countries. Certain reasons have been put forth for this phenomenon with some being inherent issues that are difficult to address – such as geography and climate – and others, which are more evolutionary and possible to change with time – such as culture and confidence.

Many experts we interviewed point to the Israeli **culture** as a reason for this low figure. The Israeli consumer likes interacting with the seller to build trust and potentially bargain for the best deal. In addition, the Israeli consumer has the desire to “see and touch” a product before purchasing as demonstrated by the 70% of respondents in a TNS survey who cited it as a deterrent to online shopping.<sup>1</sup> who cited it as a deterrent to online shopping. Moreover, the habit of physically going to stores to shop is well ingrained in the Israeli consumer as demonstrated by the 50% of respondents who cited this habit as the reason for not shopping online. While some may argue that culture is, in fact, a fundamental barrier that is difficult to change, we believe that over time even culture becomes an evolutionary variable.

Another cited deterrent to e-commerce is the **price and offering**. Prices are perceived to be, and often times actually are, higher on the internet than in a physical location or on the phone. This is demonstrated by the 30% of respondents in the TNS survey citing “too high price” as a factor discouraging online purchases. In addition, the selection offered online is seen as “too limited” with 34% of respondents citing this as a main reason for not shopping online. Also, 23% of respondents in the TNS survey cited an “inability to utilize coupons/promotions online” as a deterrent to online shopping. Finally, the online system is not seen as user friendly. These issues, however, can be driven both by supply and demand, with

suppliers not finding the incentive to provide better prices, bigger selections or more payment options because the consumer base is not large enough.

Lack of **confidence** in the Israeli order and delivery infrastructure also plays a role in our low e-commerce. While credit card security was previously cited as a main concern in online shopping, it has since become a less-prominent issue. Yet, the Israeli consumer is still not very confident in the delivery network with concerns about receiving products on time and the ability to return unwanted products remaining major barriers to online shopping.

In addition to these barriers, a few other inherent Israeli characteristics have been offered by industry experts for the low penetration of e-commerce. Often cited is **geographic reach** because as a small country with the majority of the population within close driving distance to of any major retailer, ordering online and having the item shipped to you is not very high is not a strong value proposition. Another reason often offered is that due to **political conflict**, Israel does not trade with the majority of its neighbors, making it challenging for any logistics center in Israel to leverage scale by serving as a hub for the entire Middle East region or for Israel to be served from a hub in a neighboring country. Another reason mentioned is that Israel's year-round **pleasant climate** does not provide consumers with the same incentive to stay indoors and shop online as it does in other, less-temperate countries.

While these last three barriers are more inherent and difficult to influence, we believe the often-cited first three, if addressed correctly, could improve e-commerce penetration in Israel. Specifically, increasing competition in several consumer product segments is likely to help resolve these issues and enhance e-commerce in Israel. Even with this potential growth in e-commerce, however, we do not expect Israel to reach the levels of the US or UK in the near future.<sup>2</sup>

<sup>1</sup> TNS Teleserker Ltd., 2010

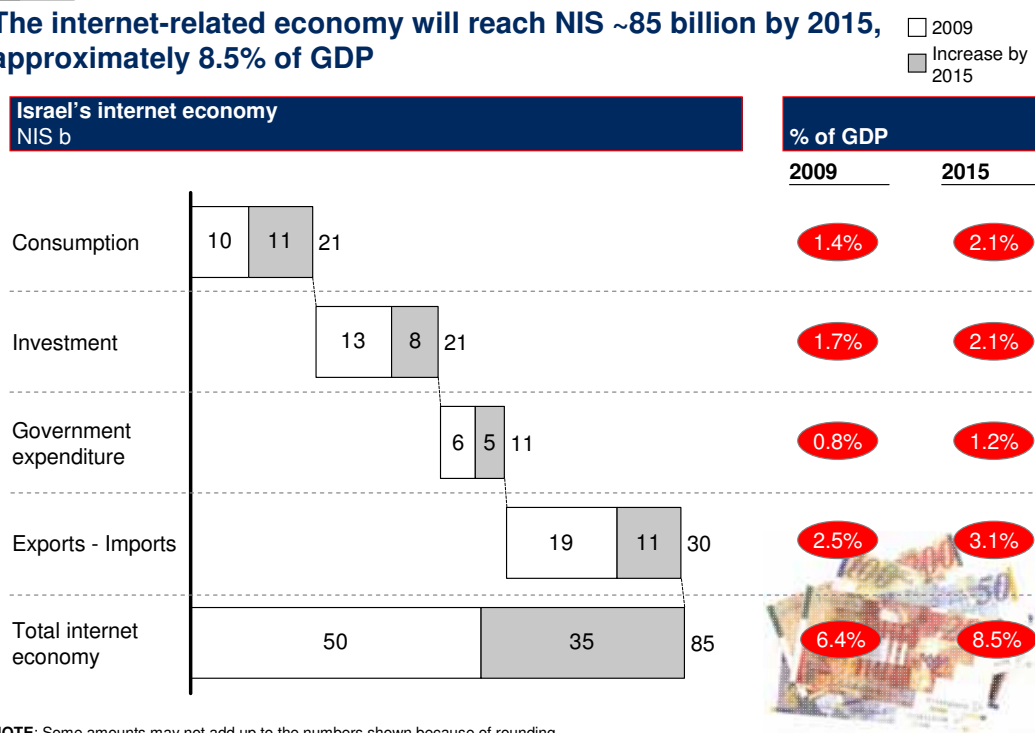
<sup>2</sup> See “Keep on(line) growing” section for analysis of future e-commerce penetration

## Keep on(line) growing

The internet-related economy has been one of the major growth engines in Israel. From being nearly non-existent in the early nineties, it now represents 6.5% of Israel's GDP. Looking forward, the well-established internet economy still has significant growth opportunities across all the components of GDP. We project that the Israeli internet economy will grow at a rate of 9% per year and reach ~NIS 85 billion in 2015. If we assume GDP growth of 4% per year, the internet economy's relative share of GDP will grow from 6.4% to 8.5%. (see Exhibit 4 for details on the sources of this growth)

Exhibit 4

**The internet-related economy will reach NIS ~85 billion by 2015, approximately 8.5% of GDP**



SOURCE: CBS; Israel Accountant General; WMM Global Insights; McKinsey team analysis

One question now looms large: “What part of the internet economy’s growth is actually contributing to overall economic growth?”

Given the unique characteristics of the Israeli economy and its large high tech sector, we have assumed that the majority of investment and net exports are contributing to overall economic growth while a smaller portion of consumption and government expenditure contributes directly to economic growth. This leads us to conclude that the internet economy will account for approximately 10% of the expected GDP growth between 2009 and 2015.

We built our growth projections on data drawn from historic trends and growth forecasts, comparative country analyses and expert interviews. For a more-detailed description of the methodology please refer to the Appendix. We have been conservative in making our growth calculations, basing them only on existing information. We have not, for example, considered transformational applications – such as on-board car information systems or home entertainment systems that run on Internet Protocol (IP) – which could substantially increase the size of the internet economy. However, we do understand that technological developments, along with behavioral evolution and policy changes, will have an unpredictable influence on the growth and value of the future internet economy.

### Consumption on the rise

We expect e-commerce to double in value, reaching ~NIS 8 billion by 2015, representing 0.9% of GDP compared to about 0.5% today. This is still lower than the current levels of e-commerce in other developed economies.<sup>12</sup> Given the relatively small value of e-commerce we have today, however, it comes as no surprise that even with many consumption categories doubling and all others growing, the relative share of e-commerce in GDP will remain small. Given our assumptions, we expect to see the majority of e-commerce growth coming primarily from services providers including tourism, insurance, and also consumption of digital content.<sup>13</sup> We expect goods providers to grow at a much slower pace with the only exception being the faster-growing groceries category.

Internet access-related expenditures (NIS 6.5 billion) today account for 0.8% of GDP. Given our assumptions about broadband penetration and increased internet usage through mobile phones and tablets, we expect to see this ratio increase to 1.3% of GDP.

Together, the two components of e-commerce and access which make up consumption will represent about 2.1% of GDP in 2015 compared to 1.4% today.

### Investment follows historic growth rates

We expect to see an annual growth rate of about 8% in internet-related investment, representing about 2% of GDP in 2015. This is based on our assumption that internet-related investment will continue to grow at historic

<sup>12</sup> The UK is ~3.5%, US is ~4%, France is ~1.3%

<sup>13</sup> Digital content here refers to music, videos, software, etc., that is paid for and downloaded online. It is currently small in value (~NIS 100m) but expected to double between now and 2015



growth rates (2005 – 2009) with a shift in the investment mix moving more towards software. It also assumes that Israel can maintain the same rate of foreign investment in its internet sector and that there will be an available pipeline of talent to fill internet-related jobs.

While some government ministries have significantly increased their internet-related activities,<sup>14</sup> other areas in the public sector (e.g., local authorities, education sector) are still in the early stages of adoption. Looking forward we expect to see the government narrowing this internal gap and supporting the increase in government spending on internet-related activities as a portion of total government expenditure from 3% to 5%.<sup>15</sup> This is reflected in the overall growth of government internet-related expenditure from 0.8% of GDP today to 1.2% of GDP in 2015.

Finally, although overall net exports in Israel do not portray a consistent trend, the internet sector tells a different story. From 2002 until 2009, Israel was a net exporter of internet-related products. Internet imports, while maintaining an upward trend, fluctuated quite heavily over those eight years but exports grew consistently resulting in approximately 8% annual growth in the positive balance of trade. Expert discussions suggested that recent historic growth rates were a good proxy for the change in net exports. Applying historic growth rates, we arrive at net internet-related exports of NIS 30 billion in 2015 representing 3% of GDP.

Having seen the current size of the Israeli internet economy and where we expect it to go, the analysis now requires an exploration of the internet's effect on employment. Employment is not directly calculated in the expenditure approach of GDP, which we used, but is calculated when using the income approach. To ensure that the contribution of the internet to employment is not overlooked, we have included the following section to explore internet-related employment in Israel.

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14 The Tehila Project responding to the growing need of government ministries to be connected to the internet is an example. Another is the gov.il site with almost NIS 7 billion of online transactions

15 Nearly half of government's ~NIS 2.5 billion IT expenditures are for direct and indirect labor

## On the job

With its high share of ICT-related investment and net exports, the internet's significant impact on the Israeli economy is evident. But for a country with a diverse and growing work-age population, an equally important metric is the number of jobs that the sector creates. We estimate that a total of 110,000-130,000 people are directly employed in jobs that can be considered part of the internet economy, representing ~4% of all Israeli employment. This group includes mainly computer and electronic engineers or technicians, system analysts and relevant production employees – a wide range of positions from a manufacturing floor worker in one of Intel's Fabs to a computer programmer in a small start-up.

Most internet economy's jobs (~80%) are driven by ICT-type companies, and only a small number come from the non-ICT sector. We have used two methods to calculate this figure. First, based on data from Israel's Central Bureau of Statistics (CBS), we calculated the total number of jobs in the ICT sector. Second, in order to include internet-related jobs at non-ICT employers, we aggregated the relevant occupations in the Israeli market regardless of the economic sector.<sup>16</sup>

ICT-related jobs have grown twice as fast as non-ICT jobs since 2002, driven in large part by the internet (despite a slight decrease in 2009 due to the global economic turndown). (see Exhibit 5) The main engine of ICT-related job growth was computer services jobs, which represent less than half of ICT jobs, but two-thirds of the growth. We expect similar growth patterns to continue, with internet economy jobs still driving the expansion of ICT jobs.

ICT sector employees are different from their peers in the rest of the business sector – they are younger, more likely to be men and typically earn more. In fact, ICT employees earn twice as much as their peers elsewhere in the business sector despite being younger – a gap that has increased in recent years.<sup>17</sup> As a result, ICT-related jobs and among them, internet-related jobs, represent a larger share (almost double) of total compensation (in the case of internet-related jobs, ~4% of the jobs generate ~7.5% of total compensation).

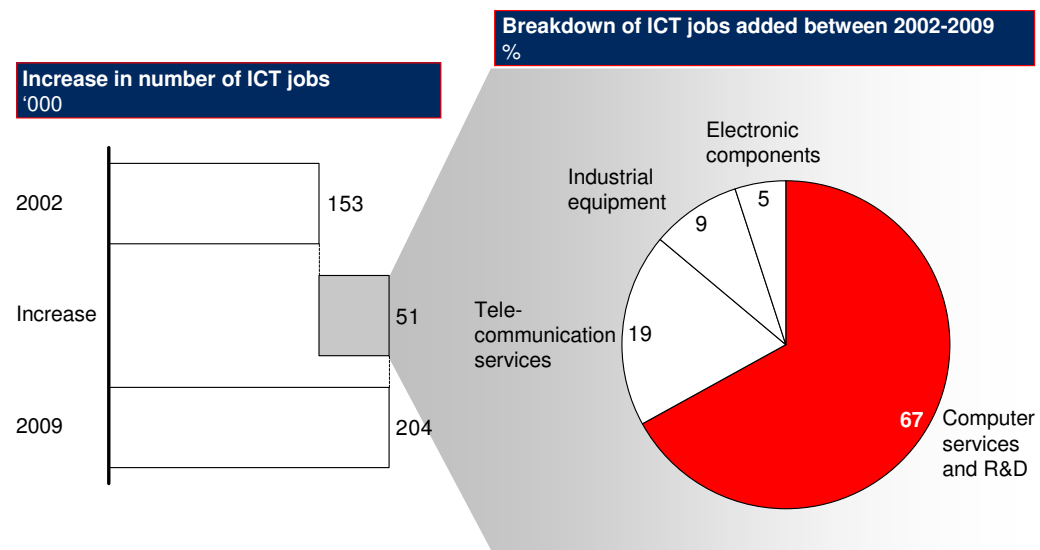
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<sup>16</sup> Based on a breakdown of the ICT jobs into the different sectors and occupations, assessing the relevance of each to the internet and applying the appropriate factor, we reached the number of jobs which we consider to be part of the internet economy. This factor is higher in the computer or software-related positions and lower in the general technicians/engineers and production roles

<sup>17</sup> In 2005 ICT employees earned 78% more than other employees, while in 2009 this gap increased to 101%

Exhibit 5

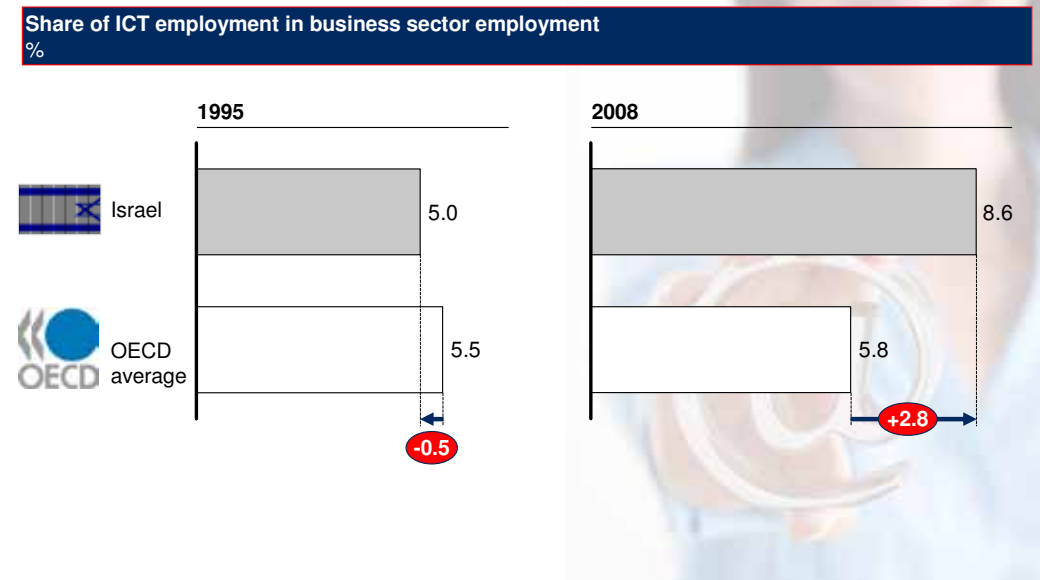
### Computer services and R&D jobs accounted for two-thirds of ICT employment growth



SOURCE: CBS; McKinsey team analysis

Exhibit 6

### The internet has pushed Israel's share of ICT employment ahead of other OECD countries



SOURCE: OECD; CBS; McKinsey team analysis

Not surprisingly, Israel has a very large share of ICT employment, representing ~8.6% of total business sector employment. This puts Israel well above the OECD average, ranking it second of all OECD countries. When comparing to 1995 data (when the internet was less dominant, but ICT was already a large sector), the impact of the ICT sector growth in Israel is clear whereas the relative size of the ICT sector in the OECD has only increased slightly since 1995. (see Exhibit 6)

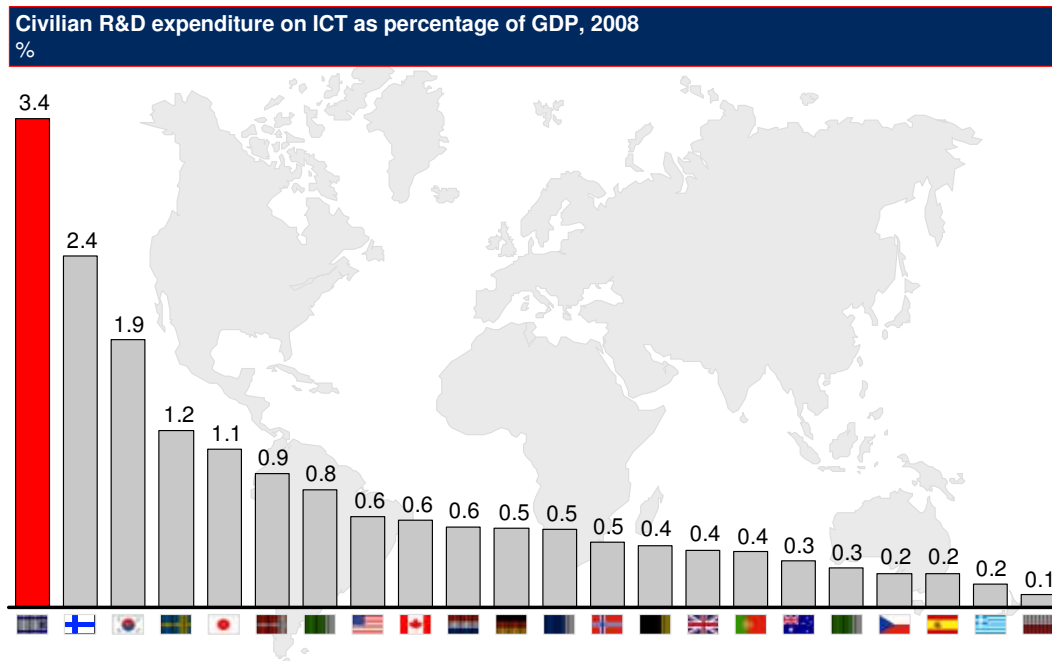
## Heavy R&D influence

The Central Bureau of Statistics differs from the OECD in its inclusion of the R&D sector in its ICT definition due to several unique characteristics of R&D in Israel. A significant share of Israel's R&D is software related and even when deducting the very significant military R&D, Israel still has a considerably higher share of civilian ICT-related R&D than any other OECD country. (see Exhibit 7)

Based on official data from CBS, we estimate that ~25,000 people are employed in ICT-related R&D, either in local start-up companies whose business is software development, or in R&D centers established by foreign companies, which recognize Israel's relative strength in human resources

Exhibit 7

### Israel has the highest relative expenditure on civilian ICT-related R&D



SOURCE: OECD; CBS; McKinsey team analysis

in this field. Determining the exact number of employees in internet start-ups is somewhat difficult, as a significant number of them work in small and non-formal companies, and might not be taken into account in official data. Based on the CBS definition, which includes start-up companies as part of R&D figures, we estimate that a range of 5,000-10,000 employees work in internet economy start-ups. However, since many of the startups are not officially measured, we believe that the number could actually be double.

R&D is a key driver for the creation of new businesses (and industries) and strongly supports the innovation of the Israeli ICT industry. It should be mentioned that in early stage ICT companies and R&D centers, the ratio of engineers/scientists to other general employees (e.g., sales, administration) is about 1:1 whereas in more developed ICT companies it could reach 3-5 general employees for each engineer/scientist.<sup>18</sup> This higher ratio is one of the reasons to encourage more start-ups to evolve into mature Israeli companies thereby increasing the number of employees within the Israeli internet economy (while relying on the same number of engineers).

## A steady flow of computer-related graduates is crucial

As previously mentioned, computer engineers and computer programmers represent the majority of the relevant job growth.

Beginning in the early 1990's, a pipeline of qualified computer-savvy employees flowed into the economy. First, the massive immigration from Russia brought in an unprecedented number of PhD's, and qualified engineers and programmers. Next, a large number of potential employees came out of the IDF, equipped with alternative training and experience. Finally, universities created additional slots for prospective students which were quickly filled by qualified applicants. However, since the early 1990's immigration has become a less-relevant contributor. As well, the army seems to have reached a peak of relevant positions and may slow that growth. Finally, there is no concrete plan for a significant increase in relevant graduates from the higher education system. As a result, the rate of which new, skilled employees are trained may become one of the main risks for the future evolution of the internet economy.

Looking forward, the growth drivers, which are required to support the historical growth rates, are not clear at this point, and may become one of the main risks for the future evolution of this sector.

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<sup>18</sup> According to the Israeli National Economic Council

## An opportunity for new sectors

It is the employment alternatives presented by the internet that may prove most intriguing. The fast-growing internet economy employment has created an opportunity to increase employment in certain sectors, such as the ultra-Orthodox and Arab sectors.

While internet usage within the ultra-Orthodox sector has significantly increased in recent years, driven by increased availability of supervised or censored internet services and content, there has also been an increase in internet economy employment in this sector. By enabling remote and work-from-home arrangements, the internet has opened up jobs that allow an attractive work-life balance for the ultra-Orthodox.

Recent developments include the creation of job placement websites operated by employment agencies specifically targeting ultra-Orthodox employees. One of Israel's leading companies in this area, Manpower, has gone as far as establishing a specific manpower company for ultra-Orthodox employees.<sup>19</sup> This segment of the population is still under-represented in the high-tech sector, with only ~2% of employees (compared to ~10% of population), and only a small portion employed in pure high-tech jobs such as engineers and programmers. As opposed to the rest of the ICT sector, comprised of 64% male employees, 75% of ultra-Orthodox employees are females.<sup>20</sup> Some lack of formal academic education in the ultra-Orthodox sector may be partially compensated with short and specific trainings. While employment levels in the sector are still lower versus other sectors, the internet, coupled with government subsidies, could create significant growth in Orthodox employment.<sup>21</sup>

The internet economic evolution has not yet had the same impact on the Arab sector as on the Jewish one. Despite accounting for 20% of the population, Israeli Arabs are estimated to account for only 8% of economic activity. Even with a relatively high internet penetration amongst Arabs, we still do not see a high participation in internet-related employment.<sup>22</sup> Part of this gap may be attributed to differences in education preferences: about 70% choose non-business related subjects, including teaching, social

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<sup>19</sup> Called "Manpower-Bereshit"

<sup>20</sup> From Manpower-Bereshit CEO Chaim Guggenheim

<sup>21</sup> The Ministry of Industry, Trade and Labor has recently announced an allocation of NIS 100 million to encourage ultra-Orthodox employment, promising up to NIS 1,000 per month for employers for each employee, for a period of 30 months

<sup>22</sup> While some estimates place it at 60%, in most locations, it is in fact closer to the national average of 80% but brought down by low internet usage among Arabs in the Negev (10-15%).

sciences, medicine and pharmacology.<sup>23</sup> Another often-cited reason is the inability to relocate from the Galilee, where 60% of the Arab population resides, to the Center where most of the jobs are located.

The question is: *Can internet-related employment help reduce the gap in the Arab sector's economic contribution?*

According to Tsofen, an Israeli non-profit organization established in 2008 to integrate Arabs into the Israeli high-tech sector, thousands of Arab university graduates with relevant high-tech education cannot find employment in Israeli high tech companies while at the same time the Israeli high-tech industry is facing a shortage of accessible, quality talent. Tsofen's data suggest that only about 3.5% of those employed in the high-tech sector are Arabs and that Arabs account for an even-smaller portion (~0.5%) of those employed in software engineering, which may explain their low participation in internet-related employment.<sup>24</sup>

Despite these difficulties, we see some early stage employment solutions in the several joint initiatives between Jews and Arabs to create high-tech employment in the Israeli Arab sector. Two examples in the ICT sector are Galil Software and Babcom. Galil Software, based in Nazareth, is the largest high-tech company operating in the Israeli Arab sector, offering software services to clients all over the country. Babcom is a leading service provider located in the Galilee providing business solutions – from call centers to software and translation services – to clients around the country. Its vision is to integrate the Arab and Jewish sectors by creating a network of centers of excellence in the Galilee that will enable women and men of both Arab and Jewish communities to start a career in professional services.

These initiatives point to the growing realization that leveraging the potential of the Arab community for the high-tech sector in Israel can reap benefits to both Arabs and Jews in Israel.

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23 Irit Tamir, lawyer and general manager of Kav Mashveh (Equal Measure), an organization set up by the Manufacturers Association, quoted in <http://www.globes.co.il/news/article.aspx?did=1000613569>

24 Smadar Nehab, executive director of Tsofen quoted in <http://www.globes.co.il/news/article.aspx?did=1000613569>

# GROSS DOMESTIC WELL-BEING:

## The Internet's Contribution Beyond GDP

*The internet provides value to consumers and society above and beyond what is captured through GDP. While financial and employment indicators are the typical measures of economic performance and living standards, it is worthwhile to assess the internet's contribution to society beyond GDP, that is, to contemplate factors beyond the reach of traditional metrics. In this section we focus on the surplus captured by consumers through the various available internet services and we further explore the value of goods researched online but purchased offline (ROPO) and the added benefits of this search activity. In doing so, we hope to broaden the discussion of the internet's role in Israeli society.*



## Consumers' additional economic benefits

### Capturing Consumer Surplus

The surplus captured by consumers from internet services can be seen in many different areas from saved time and money to higher consumer satisfaction and well-being, and to increased information. A recent study conducted for IAB Europe by McKinsey & Company explored the value of internet services to consumers in three main clusters: communication, information services, and entertainment.<sup>25</sup> The study found that consumers' net benefit from using the internet was significant and worth six times more than the value a consumer would be willing to spend to avoid any advertising disturbances or risks associated with using the internet.<sup>26</sup>

- **Communication:** A large portion of consumer surplus comes from the communication aspect of the internet, particularly access to e-mail, instant messaging and social networks. Israel has approximately 3 million Facebook users with an online population penetration of 59% - very similar to that of the US. One benefit to consumers of this high level of social connectedness is seen in businesses' reactions to consumer complaints. Many of the major corporations in Israel today continuously monitor the web for complaints about services or products and address them proactively – a major benefit to consumers that could not have existed at the same level without the internet.<sup>27</sup>
- **Information services:** Another source of value to consumers comes from information services. This includes the ability to view maps as well as create and read blogs, access knowledge and directories, and price comparison websites. In fact, information services websites such as Blogger.com, Wikipedia, and Google maps are some of the top visited sites in Israel and the world.<sup>28</sup> In addition, comparison shopping on sites such as zap.co.il, allows Israelis to compare product prices among 600 stores, many of which are small stores that otherwise would not be noticed

<sup>25</sup> Established in 1998, IAB Europe exists to support and promote the growth of the European digital and interactive marketing industry. Representing 30 National IABs and Partners across Europe and over 5,500 companies, IAB Europe is the trade association of the European digital and interactive marketing industry.

<sup>26</sup> While this study was conducted on the US and Europe, the findings noted that consumer surplus of internet service is surprisingly similar across countries. For more information see the report "*Consumers Driving The Digital Uptake*" [http://iab europe.eu/media/39559/whitepaper%20\\_consumerdrivingdigitaluptake\\_final.pdf](http://iab europe.eu/media/39559/whitepaper%20_consumerdrivingdigitaluptake_final.pdf)

<sup>27</sup> For further details please see "A Traditional Business is e-shaped" in "Business e-voles" chapter

<sup>28</sup> [www.alexa.com](http://www.alexa.com)

- **Entertainment:** Free entertainment services via the internet are another value driver for consumers. It is now possible for consumers to watch movies for free, download music at no cost, and play games online, among many other services. One potential downside of this, however, is the increased rate of piracy and intellectual property rights violations. Israel is often cited as a country with very high media piracy and intellectual property theft
- One final area not included in the GDP analysis is online bill payments. We estimate the value of online bill payments in Israel at NIS 2 – 3 billion.<sup>29</sup> Online bill payments save consumers time and money by reducing trips to physical locations for payment and reducing phone calls and time spent on hold. Online bill payment also enables better tracking of expenses (mostly through banking websites) and can help consumers avoid unwanted delays in making payments

## Research Online, Purchase Offline

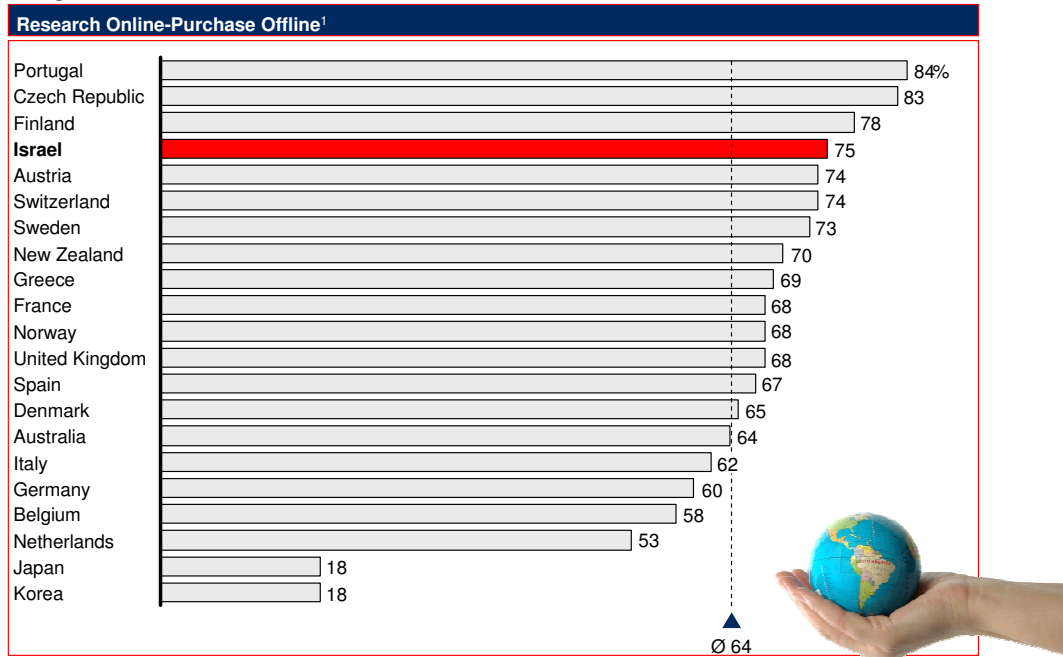
As one of the countries with the highest rate of broadband penetration and internet usage in the world, it's not surprising that Israeli consumers use the internet extensively to research products. Nevertheless, while retailers are increasingly using the internet as a marketing channel, actual online sales are not materializing as evidenced in the low rate of e-commerce in Israel.<sup>30</sup> Instead, Israeli consumers have embraced the practice of research online, purchase offline. (see Exhibit 8)

<sup>29</sup> Estimate based on the Israeli Government Portal, local authorities, and Israel Electric Corporation

<sup>30</sup> See sidebar "Why is our e-commerce so low?" for more detailed analysis on e-commerce in Israel

Exhibit 8

### A high proportion of Israelis research products online but then purchase offline



<sup>1</sup> The base for the following survey results was consumers purchasing a product within selected category in the 12 months prior to interview

SOURCE: Consumer Commerce Barometer, McKinsey team analysis

We calculated the value of ROPO in Israel at ~NIS 20 billion – almost five times the size of the e-commerce market. We did this by taking the percentage of consumers who research products online in various categories before purchasing them in a store, and then calculating their average spend in each category.

Consumers benefit from the ability to research products in several ways. First, conducting research online is faster than offline and saves time. Second, heightened price awareness increases competition amongst retailers potentially leading to lower prices or at least lower price variability – a surplus captured almost entirely by the consumer. This also feeds in to the cultural need for verifying that one is indeed receiving the best price available. Finally, the ability to read and post reviews about products online allows consumers to make better-informed purchase decisions and incentivizes retailers to provide good quality products and customer service to avoid facing damaging reviews online.

## Internet's social benefits

With change come pros and cons, benefits and detriments. Even though the internet is occasionally criticized for having negative effects on society, it undeniably also provides significant benefits. This section explores the impact of the internet along eight dimensions used to define quality of life and well-being and examines in more detail the four which we believe to have been most affected by the internet.<sup>31</sup>

**HEALTH.** Undoubtedly, health is a primary concern influencing quality of life. In Israel, in particular, health is often cited as a primary concern for families, even more than economic issues.<sup>32</sup> The internet has transformed the healthcare industry in Israel as elsewhere, making access easier and information more widely available. Healthcare providers now have websites where patients can research doctors, make online appointments, and obtain test results within hours. The websites also provide an important channel for healthcare providers to reach out to members with updates as well as health and lifestyle guidance.

**EDUCATION.** Education is a fundamental pillar for the advancement of society and the advent of the internet has made education accessible to more people. Whether registering for a class online, submitting an assignment, checking a grade, or simply sharing knowledge, a student's life in Israel revolves around the internet. The Open University of Israel relies on it even further with distance learning as its primary method of instruction. Despite doubts about the reliability of the internet as a source of information, Wikipedia and other open sources are now replacing traditional encyclopedia and other reference books. An interesting example can be seen in Tmurot, an Israeli school of Chinese medicine whose website offers extensive content pages including the unique feature of an herbal medicine search engine.<sup>33</sup>

**SOCIAL CONNECTIONS AND RELATIONSHIPS.** Many studies have shown that friends and socializing can help people live longer and improve

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31 In 2009, Dr. Joseph Stiglitz led France's Commission on the Measurement of Economic Performance and Social Progress to explore the limits of GDP as an indicator of economic performance and social progress, and to identify additional information that might be required for the production of more-relevant indicators of social progress. The commission cited eight dimensions to be considered in defining quality of life and well-being. Although the report's eight indicators are not internet specific, they provide a good framework for exploring the internet's impact on society beyond what can be measured through GDP.

32 US Centers for Disease Control and the Pew Global Attitudes Project. For detailed report see <http://www.cdc.gov/healthmarketing/ehm/databriefs/israel.pdf> and <http://pewglobal.org/files/pdf/259.pdf>

33 For more details on Tmurot, refer to the "Small Businesses – Huge Opportunities" in the "Business e-volves" chapter

their quality of life. With the introduction of social networks on the internet, it has become much easier for people to connect with each other, receive updates, share experiences, and organize outings among many other options. Israel has a very active online social network reflected by the high share of Israeli internet users who have a social network profile. This high share of social network activity has also facilitated the connection of the Israelis abroad with many expatriates and foreign students finding a “taste of home” away from home thanks to online social networks.

**ENVIRONMENT.** The internet offers some ways to reduce harm to the environment.<sup>34</sup> First and foremost, it increases awareness about environmental issues. In addition, electronic communication reduces the use of paper and the destruction of forests. Paper-less billing, particularly in banking and other service sectors, reduces both paper use and the environmental impact of transporting those bills for mail delivery. In turn, online bill payments reduce the need to physically go and pay a bill, thus reducing traffic and pollution. The internet can also potentially reduce companies’ carbon footprints. With its nascent *iPost* effort – offering electronic scanning and email as an alternative to physical delivery of some mail – the Israeli Post Office is seeking to reduce its environmental footprint.

The internet has, by and large, also been a force for good in economic performance and social progress. Of the four remaining dimensions, *material living standards* are influenced by how the internet facilitates the process of finding a job, with many companies posting positions online and others providing interview training on the web. In the area of *personal activities*, the internet improves quality of life by reducing time spent on tedious activities – for example, apps that provide traffic updates can reduce commuting time– and facilitating leisure activities with options such as online exercise programs, online food recipes, free reading material and information on travel and shopping. The internet also improves *political voice and governance* by providing people with the ability to make their opinion known through talkbacks and blogs, for example, and by ensuring accountability of officials and public institutions because information now travels faster and is more difficult to conceal. As for *security*, the internet allows the quick spread of information and aid which can help countries during times of natural disaster. During the recent Carmel Forest fire, the government and local authorities used the internet as both a source and a distribution channel for information. Used the internet as both a source and a distribution channel for information.<sup>35</sup>

34 Although there are concerns regarding the environmental impact of the internet – e.g. related energy consumption or disposal of used equipment -- it is undeniable that there are benefits as well. This is not a cost benefit analysis but an attempt to show in what ways the internet can be used to improve or at least reduce the harm to the environment.

35 <http://www.pmo.gov.il/PMOEng/Communication/EventsDiary/eventpress041210.htm>

# BUSINESS E-VOLVES

## How the internet is reshaping Israeli businesses

### Preface

*Technological breakthroughs have historically reshaped and redefined traditional industries, and this has been evident in our analysis of the impact of the internet on Israel's economy. To better understand the impact of the internet on traditional industries, we have looked closely at three subsets of the Israeli economy: two traditional industries – banking and travel – and the small and medium businesses sector.<sup>36</sup> All have been and continue to be reshaped by the internet revolution.*

*Our definition of the internet economy captures only a share of the internet impact. The internet has a significant impact on both productivity and consumer surplus (as described in the “Gross Domestic Well-Being” chapter). The impact of the internet on productivity is a complex subject and a topic of much research, with some showing a clear link between the internet and productivity. A recent study by the EU IT and Innovation Foundation noted that “...money spent on computing technology delivers gains in worker productivity that are three to five times those of other investments”. While we do not intend to analyze the impact of the internet on productivity we will see examples of it along the stories of the three sectors.*

*While both the banking and the travel industries have seen changes in the way companies operate and engage customers, the bigger change is on the consumer side. The accessibility and availability of information revolutionized consumer decision-making processes. Better-informed clients are developing new buying behavior patterns and demand new products, services and capabilities, forcing companies to adapt to the new demand or fall behind.*

*For small and medium businesses, the internet offers many opportunities to improve operations. We see clear evidence that the internet is an enabler of growth for SMBs choosing to adopt it.*

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<sup>36</sup> Small and medium businesses in Israel are businesses with fewer than 100 employees and less than NIS 100M annual revenues

## Banking - a conservative business is e-shaped

Once perceived as a conservative business, nearly every aspect of banking in Israel – as in most other developed countries – has been affected by the internet. The transformation can be seen in the services offered, marketing, consumer habits, and even in the physical layout of bank branches around the country.

### A significant channel has emerged

When it comes to e-banking, Israel's banking system entered the 21st century behind its peers in other developed countries. It has now closed the gap and is standing shoulder to shoulder with global leaders. The level of online interaction now stands around 50-60% of customers and is steadily increasing. At this level, Israel's online customer share matches that of the most developed countries (central Europe 50-60%, US 56%) and is slightly below northern Europe (70-80%), where weather is recognized as one of the drivers of online banking growth.

The internet's share of certain types of transactions is significant. For example, about two-thirds of the transactions related to capital markets trading and almost half of fund transfers between accounts are originated online. Still, there is room to grow. Despite the high share of customers engaged in online banking, only a small portion of the overall transactions are actually completed online. Cash and checking-related transactions are still the core banking activities in Israel, for which the internet is not yet relevant.

For the majority of online customers, there are still a significant number of transactions where a visit to the physical branch is either required or simply preferred. The share of customers willing to move to an all-direct channel is relatively low and only a number of the domestic banks offer this type of service.

## A change in customer consumption

The most significant change in banking has been in the way customers consume banking services. The internet has enabled the transition from limited banking hours to 24/7 availability and given customers access to accounts anytime and from anywhere. According to banking industry executives, many online customers log in to their account daily. The internet has also enabled access to a broader range of investments available in global markets and driven greater transparency in comparative pricing and fee structures available to customers. In some of the areas, mainly mortgages, competition begins online, reflecting ROPO behavior noted in earlier chapters of this report.

There have also been measurable savings for customers in the e-volution of banking. With the bank now as close as a laptop or a smartphone, the internet has saved online customers hours of travel and waiting in line. Additionally, regulatory changes have lowered fees for online customers to a range of NIS 1.35-2.90 versus NIS 5.5-7.00 for similar in-branch transactions.

The banking industry has also embraced the internet as a channel to help customers build financial skills and enable greater account visibility through new money management tools and financial education. For example, nearly 20% of customers (representing about a third of online customers) regularly receive real-time SMS updates on balances and transactions.

## Reshaped but not replaced

Leading local banks see the internet as a new channel that, while not replacing existing channels, completely reshapes the interaction with customers. The internet has allowed banks to grow operational volumes and raise service levels without significantly increasing costs

The internet is now part of a multi-channel offering where customers have several contact points with their bank. At the same time, the actual change for most bankers is not as significant as it is for their customers. Branch networks continue to grow - though serving less traffic and reflecting some changes in branch size and design (e.g., branches without tellers). Core activities noted earlier (checks, cash, etc.) continue to be behind the majority of transactions.



The internet has also become a core driver of public perception of banks, with over 25% of marketing budgets now directed to digital channels.<sup>37</sup> This puts banks at the higher end of online marketing expenditure.<sup>38</sup> Banks have embraced the web to better track customer sentiment. However, just as the viral nature of the internet presents opportunities, it is also fraught with risks to image and reputation. Israel's banks now actively monitor the web, including social networks, forums, talkbacks, and blogs, responding to comments and if needed even reaching out to customers who post complaints or questions.

### Mobile banking is next step in e-volution

While branches are unlikely to disappear in the near future and PC-based online banking will continue to grow – both in share of customers and number of transactions – the next step in the banking e-volution is mobile banking.

Leveraging the penetration of smartphones, many of Israel's banks have already launched account interface applications for leading operating systems (iPhone, Android, Blackberry). Downloads already number in the tens of thousands and are growing daily.

Through mobile banking, there is an inevitable increase in the intensity of data access and transactions. Global trends analysis already shows that mobile customers – with anywhere/anytime account and data access – perform more transactions than regular online customers. Mobile payments, whereby mobile phones are replacing credit cards, is expected to be the next big thing, though a widespread deployment is likely to take at least a few years.

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<sup>37</sup> Including related labor costs

<sup>38</sup> Significant part of online marketing budget goes to online advertising. Online advertising industry experts in the country estimate that online advertising in Israel is around 15% of total advertising spend and value local online advertising to be \$200-250M (This includes both search and display online advertising). However, significant part of online advertising spend in Israel is spent abroad and is almost double the value of the local spend at approximately \$400M

## Travel takes-off

The travel-and-tourism sector is a significant contributor to the Israeli economy. It is also a highly relevant sector for the internet economy. The internet allows access to up-to-date information regardless of physical distance, and with travel purchases being typically intangibles – hotel nights, flight tickets– the travel sector is highly attractive for e-commerce. The story in Israel, however, is somewhat different. Consistent with what we have seen in other parts of the economy, e-commerce is still quite low in the travel sector whereas research online is extremely high.

The travel industry is relatively complex. In our analysis, we chose to focus only on local companies, divided to two types: Suppliers (e.g., air carriers, hotels, etc.) and Travel Agents (both traditional and online travel agents [OTA]).

### ROPO is huge

The internet has supplanted nearly all other sources of travel information. Every aspect of travel information – from destination research and updates, to price comparisons, to maps and photo-sharing – has changed. Nearly three-quarters of Israeli internet users cited the internet as the first place they usually go when researching travel purchases.<sup>39</sup>

But as with other e-commerce transactions, many transactions are initiated online, but sealed person-to-person (and with an OTA usually over the phone). Similar to other spend categories, technological, regulatory and cultural barriers hold back e-commerce and drive the ROPO activity.

On the technology side, the low level of integration between electronic ordering systems prevents the online transaction in many cases. Also, there is room for user interface improvement in many of the websites, with some suppliers and OTAs already making these upgrades. From the regulation side, complexities in consumer protection laws put most of the risk on travel agents. While the consumer may cancel the deal and pay a very small fine, the travel agents need to pay the full cancellation fees to the supplier. (For a deeper analysis of the cultural barriers to e-commerce, please see sidebar *“Why is Our e-Commerce so Low?”*)

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39 Consumer commerce barometer survey, April 2010

## e-commerce in early stages but has high potential

The evolution of the Israeli travel industry began with the emergence of direct sales travel agencies began focusing on remote service over the phone. When the internet arrived, many became what we know today as OTAs. These travel agents operate without the need and costs of a bricks-and-mortar branch network. This evolution is well reflected in the decline in the number of travel agencies from over 600 in 2000 to ~450 in 2010, as smaller, one-location agencies succumbed to low margins and higher cost structures on the one hand, and call center competitors grew on the other. Still, traditional travel agencies serve the majority of the market; OTAs are hardly present in some of the main segments, such as business and group travel. Even in the private segment where OTAs have strong presence, the majority of OTA transactions (about 80%) are still completed over the phone.

Suppliers have been relatively late entrants to the online channel. For example, El Al started selling tickets over the internet in 2007, and since then reached almost US\$ 100 million in online revenues. The online channel accounts for 6% of El Al's 2010 passenger revenues, mostly driven by foreign passengers, accounting for ~40% of the traffic but ~60% of e-commerce activity (see exhibit 9). This ratio is still below industry average but the gap is closing. For other flag carriers, share of online revenues is usually 10-15%, with some reaching even higher levels (e.g., 20% of British Airways' revenues come from the online channel and 33% of tickets are sold over the online channel).<sup>40</sup>

As a result, the share of e-commerce in the local travel market is still low, accounting for the 5-6% of relevant spend.<sup>41</sup> However, due to the generally low e-commerce penetration in Israel and the size of this spend category, it represents the largest share of e-commerce at about NIS 800M, accounting for one-fifth of overall e-commerce.

<sup>40</sup> Part of this gap can be explained by the low share of domestic flights in El Al operations – e-commerce is usually higher on domestic than on international flights.

<sup>41</sup> Total annual domestic spend based on industry interviews is NIS 13.5-15.5B

## Industry is still reshaping

Looking forward, estimates are that e-commerce's share of travel could significantly rise. According to industry experts, in the last three years it has nearly doubled. Nearly half (49%) of internet users are purchasing at least some travel products online.<sup>42</sup> Also, driven by generally low margins and the attractiveness of lower labor costs associated with online transactions, some OTAs are eager to push the entire transaction loop online. As a result, these OTAs are aggressively directing customers towards online transactions and away from phone interactions. Suppliers are also looking to increase the share of direct sales. As mentioned earlier, El Al is investing in its online channel and many hotel chains are doing so as well. As a significant share of their bookings originates from foreign passengers, hotels can actually leverage the evolution that already happened in mature markets, regardless of local cultural barriers.

The future is likely to see the introduction of price comparison engines to the travel segment, looking to capture a share of the value chain (as happened in the US and Europe). This is likely to put pressure on the local OTAs as they cannot compete with suppliers on price on one hand nor offer a richer selection of products than aggregators. OTAs will need to find new ways to create value for their customers as their peers have in the US and elsewhere, offering dynamic packaging – real-time packaging of travel products (e.g., flight, hotel and car rental) per customer demand. This is not yet the case with many local OTAs, but it is very likely that we will see them move in that direction.

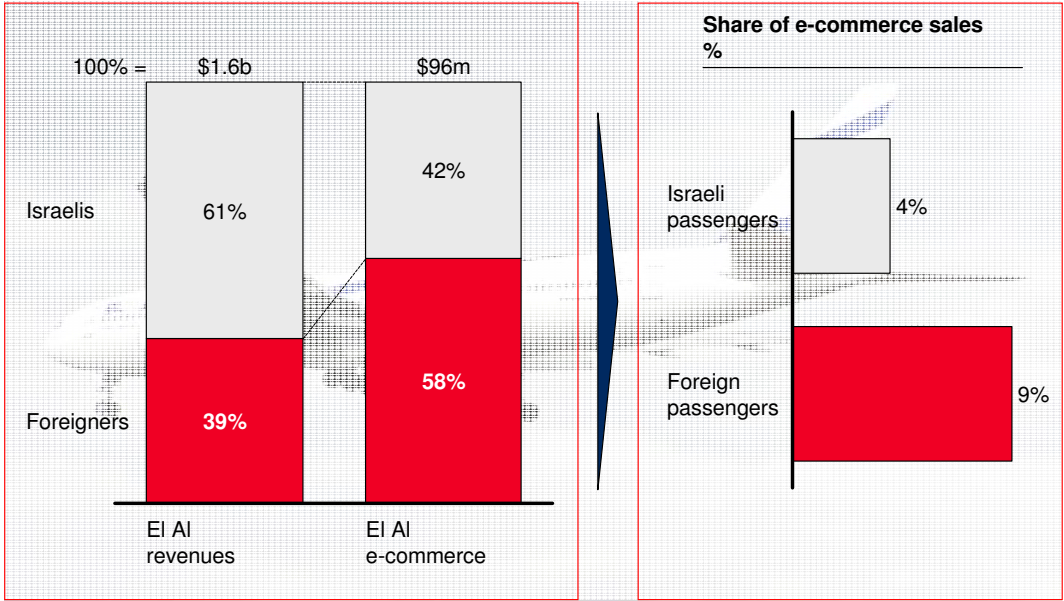
While in many ways reshaped, Israel's domestic travel sector has so far staved off many of the changes that rocked the sector elsewhere. The online channel is in its infancy and overall market share of the OTAs is still relatively low. However, similar processes that have led to consolidation and vertical integration in the travel and tourism sector in many countries may well drive changes in Israel in the coming years.

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42 Consumer commerce barometer survey, April 2010

Exhibit 9

Foreigners are more active *e-consumers* than Israelis on El Al's website, 9% vs 4%, respectively  
2010, \$



SOURCE: El Al trade department

## Small businesses – huge opportunities

A study of the internet's impact on the Israeli economy would not be complete without exploring small and medium-size businesses (SMBs). These businesses account for 55% of the country's jobs.<sup>43</sup> For the purpose of this report, we adhered to the Central Bureau of Statistics standard which defines an SMB as a company employing fewer than 100 people and generating annual revenues under NIS 100M. In Israel, this includes over 99% of all businesses.

It is important to keep in mind that the vast majority of SMBs employ much fewer than 100 employees. One striking statistic for the sector is that 86% of small and medium Israeli businesses have no more than five employees (including the owner) and less than 1% employ more than 50 people.<sup>44</sup>

Many consider the SMB sector to be one of the highest potential growth engines for the Israeli economy. Although this sector in Israel is somewhat less significant than in other developed countries (OECD average share of employees in the SMB sector is 67% due, in part, to the definition by many European countries of an SMB as having <250 employees), SMBs here are an important source of stable and sustainable job creation.

Small and medium businesses have traditionally focused on meeting local needs and supporting larger businesses. The internet allows them to both increase productivity and efficiency and reach beyond their geographical boundaries to engage new customers. As a sector considered both nimble and innovative, SMBs are well situated to gain from all that the internet has to offer. It can help them overcome some of the traditional challenges facing SMBs, including: tools and resources (such as enterprise software now available in the cloud), training and learning alternatives, and elimination of bureaucratic barriers.

This potential led us to examine how Israeli SMBs have already adopted and adapted to the internet revolution. We surveyed 401 Israeli SMBs and interviewed either their owners or relevant decision-makers.<sup>45</sup> In addition, we conducted nine in-depth interviews with companies we chose as case studies to illustrate the different opportunities the internet offers to SMBs and how those companies use them to their advantage.

<sup>43</sup> Source: "SMBs in Israel and developed countries", The Knesset research center, 2007

<sup>44</sup> Source: Israel CBS, Statistical abstract of Israel 2010

<sup>45</sup> Dedicated survey of 401 small and medium businesses, performed by Geocartography, Dec. 2010.

## The impact of internet usage on small and medium-size businesses

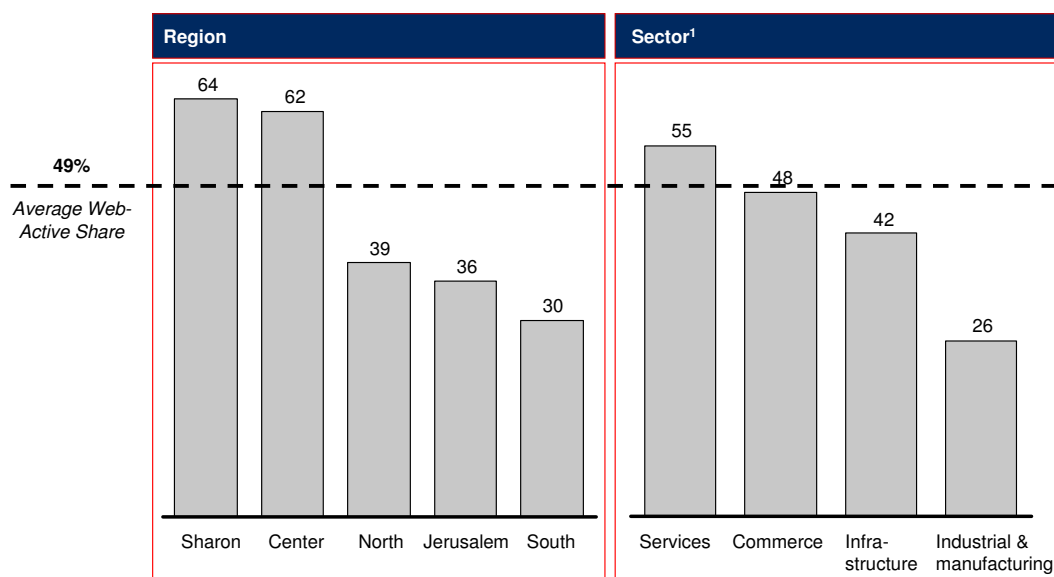
We have divided SMBs into two groups which our survey suggests are equally divided:

- **Web-active:** businesses that either own a website or engage in online marketing or selling
- **Non-web:** Any business that is not in the previous category (though most likely does use the internet more typically for email or similar activities)

However, there is a clear difference in the share of *web-active* businesses across different regions as evidenced by the mere 30% share in the South and 35% in Jerusalem compared to over 60% in the Sharon and Central regions (see Exhibit 10). We also see a variation between sectors with the services sector having the highest share of *web-active* businesses as expected.

Exhibit 10

### Web-active businesses share differs among regions and among sectors



<sup>1</sup> Total of 24 businesses that did not belong to any of the given four sectors were defined as "other" and had 78% web active businesses

SOURCE: Geocartography dedicated survey of 401 Israeli SMBs, December 2010

More interestingly, we see a strong correlation between being "web-active" and success. Nearly 80% of the jobs created over the last three years by the SMBs surveyed come from *web-active* businesses. Moreover, nearly

a third of *web-active* businesses reported an increase in employment over the last three years, compared to only half that amount for non-web active businesses.<sup>46</sup> The idea that the internet is an enabler for revenue growth is also supported by the one-third of web-active businesses surveyed that reported growth over the last three years, compared to about one-quarter of the non-web-active businesses.

The real and perceived importance of the internet to SMBs is significant. In our survey, almost one-third of all businesses indicated that the internet is either *very important* or *mandatory* for their day-to-day operations, while over 40% of web-active businesses had a similar response.

### A “web of opportunities”

The internet connects people and businesses **across geographical boundaries** and allows businesses to create presence in far-flung markets without the need for physical presence. For smaller businesses previously unable to expand beyond their local reach, the internet offers alternative channels. The combination of a low-cost channel with significantly lower fixed costs allows these businesses to expand while limiting risk. Doing this, however, requires certain knowledge, and in fact, according to a survey conducted by the Israeli Export Institute, over 70% of exporting SMBs realized the need for training in effective usage of the internet.

One SMB, *Pe'er HaSTaM*, sells Judaica and other Israeli-related goods around the globe. The internet is virtually its only marketing and sales channel to markets from the US to Hong Kong.

When it started in 1997, *Second Opinion* offered a service providing a second medical opinion from top medical experts around the world, regardless of the patient's physical location by utilizing what was then state-of-the-art technology – digital scanners and video conferencing. While back then equipment costs for opening a new branch in a new geography were over US \$150,000, today the internet infrastructure enables expansion at a much lower cost - all that's needed is a US \$1,000 PC and a broadband connection.

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<sup>46</sup> In this calculations self-employed and companies that do not employ were dropped, as they did not grow by definition



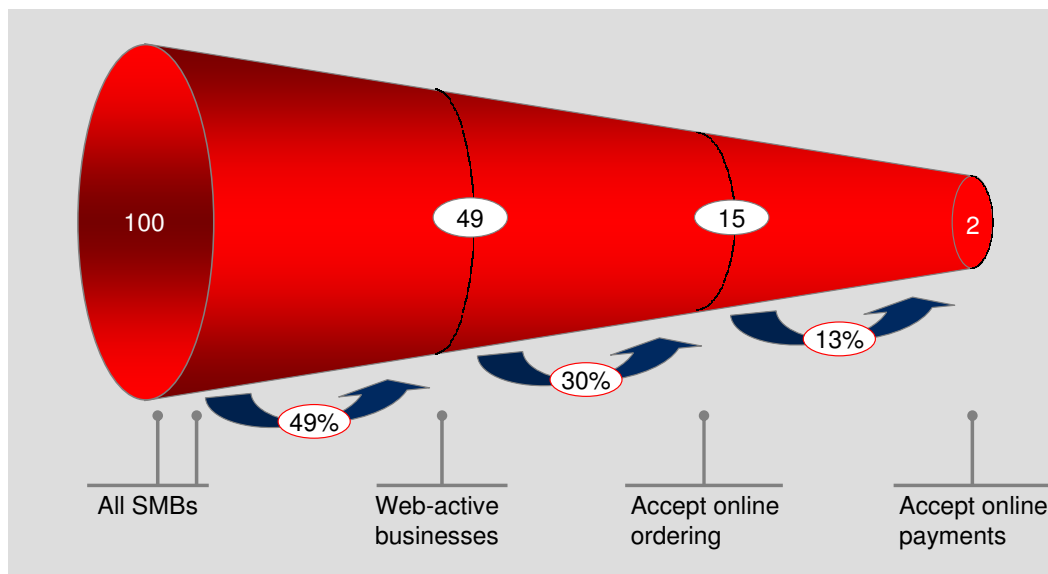
**Online marketing** has also lowered the entry barriers for SMBs. With lower costs and new levels of sophistication for better budget control, segmentation and tracking of results, the internet channel has become a significant advertising medium for the SMB sector. According to our survey results, web-active businesses invest an average of 24% of their marketing budget in digital channels, and 22% of those businesses spend more than 40% of their marketing budget in these channels.

One area where the adoption seems low is online payments. Less than 2% of businesses in our survey allowed customers to order and pay online (see **Exhibit 11**). This is consistent with the overall picture we saw in the GDP chapter, in which e-commerce penetration in Israel is low.

**Exhibit 11**

### **Less than 2% of SMBs accept online payments**

Share of businesses, %



SOURCE: Geocartography dedicated survey of 401 Israeli SMBs, December 2010

The internet also brings new levels of **data management and information exchange** allowing businesses to create more efficient processes and collaborate with both suppliers and customers. Online systems and tools offer any smaller business access to capabilities that once required large investment. Changes in business models, such as the recent move to cloud computing and software-as-a-service, further eliminate a category of fixed costs, and provide broader services and capabilities to SMBs without the need to invest upfront in an era of tight financing.

*10Bis* offers companies dining solutions for their employees. Its web-based solution provides employers full transparency and control over budget and dining locations. The internet-based data management system is a core component of the process.

Another business that integrates the internet into its day-to-day operations is the school for Chinese medicine *Tmurot*, which offers its students an online exam preparation system, thereby simplifying life for the students and improving the learning process.

As we demonstrated in the industry sectors deep dive of this report, the internet serves as a disruptive force, **reshaping industries** and rules of the game. SMBs that are by definition smaller and more agile and nimble are taking advantage of these changes, and sometimes even leading them. *IMScouting* is just one example, transforming the way international soccer clubs are trading players.

Beyond reshaping industries, the internet is also enabling the creation of **new economic sectors** with their own value chains and business opportunities. *Marimedia* is an online ad network taking an active part in the revolution the internet sparked in the advertising field, operating in a market that did not exist a decade ago.

## Stories of Nine SMBs:

### Ajudaica – The journey of a shofar from Bnei Brak to Baghdad

[www.ajudaica.com](http://www.ajudaica.com) is an internet site selling Judaica and other Israeli-related goods all over the world. It is managed by Pe'er HaSTaM – a company with nine employees operating from a 120-square-meter warehouse in the middle of Bnei Brak. Pe'er HaSTaM is using the internet almost as its sole marketing and sales channel.

Pe'er HaSTaM is a great example of an SMB that takes advantage of the internet. It sells online to far-flung customers accessible only by digital channels. While the majority of clients are in the US (roughly 85%), Pe'er HaSTaM ships products all over the world – from the UK to Singapore, to Indonesia, and recently shipped a shofar to a customer in Iraq.

In the picture: Yosef Belz, CEO

Website: [www.ajudaica.com](http://www.ajudaica.com)



### Second opinion – Virtual clinic, Real innovation

Second opinion, an 18-employee company, started in 1997 by offering a service that was integrated into insurance policies. Whenever a policy-holder needed a second medical opinion, the company provided it from the best experts in the world, regardless of the individual's physical location. Second opinion today continues to embrace the internet with a virtual clinic serving millions of customers worldwide.

The virtual clinic is fully customizable and its service offering is flexible. It uses the internet to allow customization and personalization of the service at both the policy type and the individual customer level. A new child is born in the family? Within moments the customer can get access to the relevant services for a new-born. The internet eliminates the fixed costs associated with traditional physical platforms, providing flexibility to both the insurance companies and their customers to act and react according to the changed environment.

In the picture: Eldad Levi and Hila Ofek, Owners  
Website example: [www.myhealthportal.co.uk](http://www.myhealthportal.co.uk)



### IMScouting – Finding the next Lionel Messi

IMScouting, a 12-person company based in Ramat-Gan, set out to change the way professional soccer players are transferred between clubs. Despite intense fan interest and media scrutiny, there is little visibility or transparency in the market where billions of Euros and hundreds of players are exchanged every year. IMScouting offers knowledge management and scouting services that cross geographies. The company maintains a unique internet-based knowledge repository on ~50,000 professional soccer players worldwide, and is already working with nearly 50 clubs. The website features a testimonial from Israeli football agent Pini Zehavi, who describes IMScouting as “a unique and valuable resource for professionals in the world of football looking to be ahead of the curve in an increasingly global game. IMScouting provides all the tools needed to make the most informed decision in the quickest time”.

IMScouting is an example of how businesses can use the internet as a platform to increase transparency and reduce information asymmetries.

In the picture: Zeev Reznik, Founder  
Website: [www.imscouting.com](http://www.imscouting.com)



## 10Bis – 150,000 hungry customers

10Bis was launched in 2000 as a website for online food ordering and quickly became a solution for companies providing meals to employees. A year later, 10Bis was offering payment cards under its brand name. The 10Bis solution was revolutionary, as it replaced the paper coupons used at the time with a sophisticated online system. Whether employees ordered food from the website or went to the restaurant and paid with their 10Bis card, all data was manageable and accessible from a single source. Companies and employees could control budget limits, set time and geographical boundaries and receive real-time feedback on accounts.

Today, 10Bis has ~90 employees and works with over 1,600 restaurants across Israel, serving 150,000 customers each day. 10Bis uses the internet to improve its working processes as well as the user experience. Company representatives chat online with the customers and the customers post restaurant comments on the 10Bis website. The company's platform is now being sold for similar use outside of Israel.

In the picture: Nurit Shaked, VP, Amit Merin, CTO  
Website: [www.10bis.co.il](http://www.10bis.co.il)



## Marimedia – Opportunities in the new world

Marimedia is an online ad network. The company buys 8 billion ad exposures on a monthly basis from over 2000 different websites and sells them to its hundreds of advertisers. Some 80% of its activity comes from outside Israel, mainly in Europe but also in countries like New Zealand and even Saudi Arabia and the UAE. In 2007, Ariel Cababie and Maia Shiran started Marimedia at home with a single personal computer. Today, Marimedia has 35 employees, and has aggressive plans to grow further in 2011.

In the picture: Maia Shiran and Ariel Cababie, Owners  
Website: [www.marimedia.com](http://www.marimedia.com)

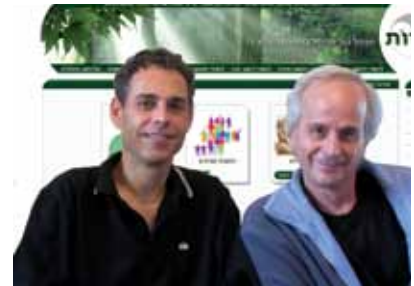


## Tmurot – The Israeli team of integrated medicine

Tmurot is a school for Chinese medicine, integrating western medicine concepts with traditional Chinese practices. The Tmurot website serves both as a content center for students, alumni and the public, as well as a marketing tool for the school. The website contains over 15,000 content pages including unique features such as an herbal medicine search engine, an exam preparation system (with over 2,000 questions and detailed answer guides), and more.

In the picture: Dr. Nir Amir, Giora Licht, Founders

Website: [www.tmurot.org.il](http://www.tmurot.org.il)



## Gamila Secret – From a Galilee village to the global market

Ancient knowledge of herbs, passed through generations, was the source of the formula developed by Gamila Hiar to make her unique soap in a small store underneath her house in the Galilee village of Peqiin. Today, Gamila manufactures soap bars and other cosmetic products in a 40-employee plant in the Tefen industrial center and sells them in over 20 countries. Gamila Secret has internet websites in 16 countries. Over 20% of worldwide sales are online, and 25% of its total marketing budget goes to digital channels.

In the picture: Gamila and Fuad Hiar

Website: [www.gamila.com](http://www.gamila.com)



## Targetraining – physical exercise with virtual platform

*Targetraining* is giving its customers personal nutrition counseling and physical training programs. Targetraining's website functions both as a content center and as a platform for the trainers and the customers to communicate. Each customer has his own personal file on the website in which both he and the company's professionals can access and update the data, monitor progress, or communicate changes.

In the picture: Lior Shenhav, Owner

Website: [www.targetraining.co.il](http://www.targetraining.co.il)



## Eli's Pub – The power of social networks

Established in 2004, Eli's Pub in Haifa employs 15 people. With almost 3,000 Facebook friends, the pub's page includes videos of the weekly jam sessions, pictures and more. Owner Eli Ifrah, who updates it on a daily basis describes social networking as "the best marketing tool out there".

In the picture: Eli Ifrah, Owner

Website: [www.facebook.com](http://www.facebook.com) , "Eli's Pub"



## THE e<sup>3</sup> INDEX:

### Benchmarking Israel's Internet Performance

*Israel – which has earned the name “the start-up nation” – has the highest number of start-ups in the world after the US.<sup>47</sup> Very well-known for its ICT sector as shown by its share in GDP (see GDP chapter), Israel trails only the US and Canada in the number of its companies listed on the NASDAQ.*

*These characteristics, however, do not necessarily imply that Israel is leading the world in its national internet connectivity. To measure the country's internet connectivity and to show how Israel fares compared to other countries, McKinsey has developed a multi-dimensional index. The index may also enable us to identify best performers in each of the different dimensions and to learn from their experiences how to improve the position of Israel's internet economy.*

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47 Dan Senor and Saul Singer “Start-up Nation: The Story of Israel's Economic Miracle”



## Key parameters

To assess Israel's performance, we conducted a comprehensive benchmarking of the Israeli e-economy compared with other countries along 17 key indicators within three parameters:

- **e-ngagement** measures the actual internet usage by an economy's main stakeholders – individual, business, and government
- **e-nvironment** measures the extent to which the infrastructure of a given country is conducive to internet economy development
- **e-xpenditure** measures the online e-commerce and online advertising spend by consumers and businesses

In creating this e<sup>3</sup> index, we reflected the high importance of the *e-ngagement* and *e-nvironment* parameters by assigning 40% weight to each. The *e-xpenditure* element represents the remaining 20% of the overall score. The score of each of the three parameters is determined by a simple average of all the indicators included within. (See Exhibit 12). The e<sup>3</sup> index draws on 11 internet-oriented indicators from the World Economic Forum's "Networked Readiness Index" (NRI) and several additional indicators using data from the OECD and other publicly available sources. The relevant comparison group we have chosen for Israel is the developed world and, more specifically, the 34 OECD countries.<sup>48</sup>

## Israel's global performance

Measured by the e<sup>3</sup> index, Israel's overall rank on internet connectivity is 19 out of 34 OECD countries - slightly better than Israel's rank (23) on GDP/capita amongst OECD countries. Israel's internet performance places it ahead of countries such as Belgium, Ireland and New Zealand, yet trailing countries such as Denmark, the United States, and Korea. Israel performed best on *e-ngagement*, ranking in between Japan, Finland, Luxembourg and Iceland. Israel's *e-nvironment* performance was average, positioned between Belgium, Japan, Ireland, and New Zealand. It emerged weakest in *e-xpenditure*, ranking in the lower third of the OECD but comparable to Switzerland, Luxembourg, and Italy. (see Exhibit 13)

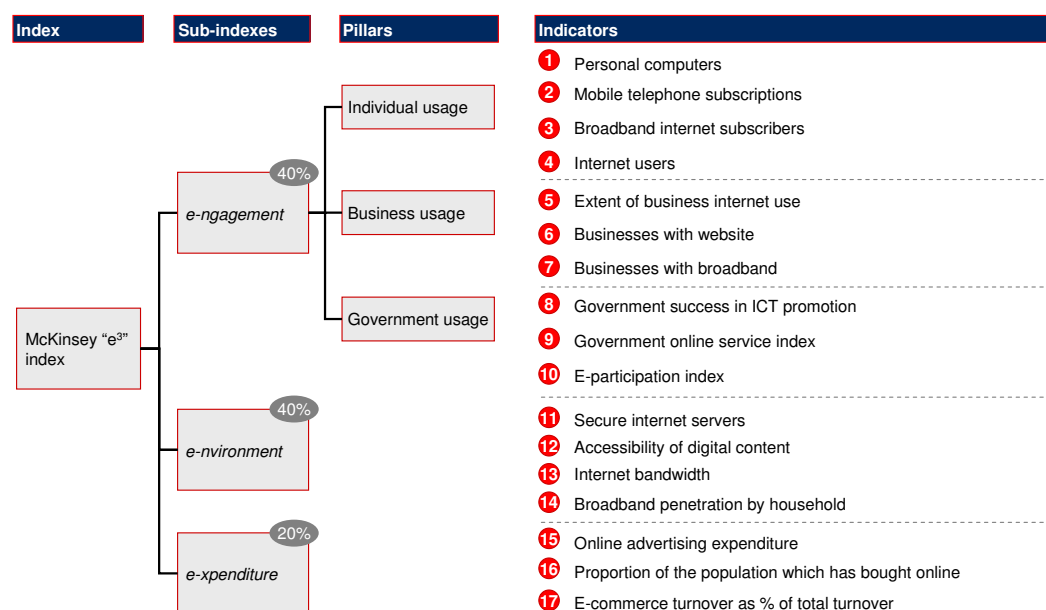
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<sup>48</sup> The original NRI was introduced in 2002 as a tool for comparing countries on factors enabling national stakeholders to fully benefit from information and communications technologies. We introduced several additional indicators – including household broadband penetration, e-commerce turnover and online advertising among others – using data from the OECD

Exhibit 12

## The McKinsey “e<sup>3</sup>” index measures Israel’s relative position on internet connectivity

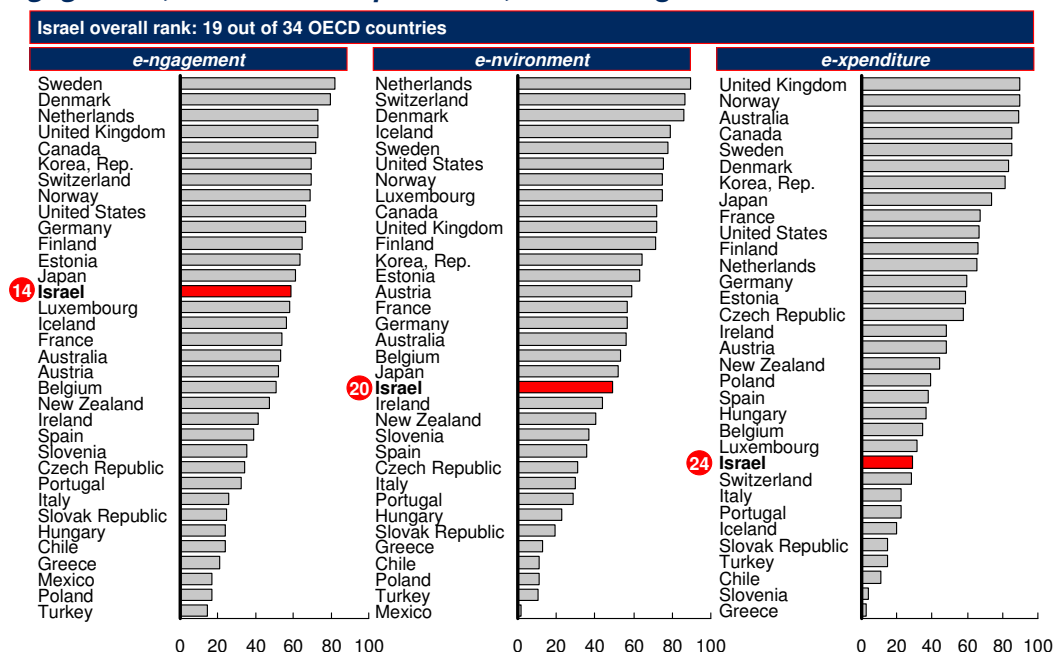
xx Weight in overall score



SOURCE: Global Technology Report 2009-2010

Exhibit 13

## Israel ranks 19 out of 34 in the OECD and emerges strongest in e-engagement, weakest in e-xpenditure, and average in e-nvironment



SOURCE: WEF Global Info. Technology Report; Forrester Research; OECD; The Internet Economy 25 years later 2010; Pyramid Tracker; McKinsey team analysis



*e-ngagement* (#14). Israel ranked in the top half of OECD countries in this parameter, driven mostly by individual and business usage. Israel ranked particularly high on personal computers per person (#7), business internet usage (#6), and businesses with broadband (#3). In fact, a recent survey by TNS found that 80% of internet users in Israel log on to the internet at least once a day compared to the international average of 61%.<sup>49</sup> In government usage, on the other hand, Israel ranked closer to the middle of OECD countries (#18). As recently shown by the Knesset Research Center, the number of computers per student in public schools was much lower than the average in developed nations.<sup>50</sup> Nevertheless, the high rankings on the business and individual usage indicators helped offset Israel's relatively lower position on government internet usage.

*e-nvironment* (#20). Israel ranks 20th on this parameter. The leaders in this category were the Netherlands, Switzerland, and the US. While household broadband penetration in Israel is amongst the highest (#4), the overall score was brought down substantially by the 'internet bandwidth' parameter where Israel came in second to last, followed only by Mexico.

While many OECD countries have widely deployed next-generation network (NGN) technologies, Israel has not. However, with the completion of HOT's Docsis 3 roll-out at the end of 2010 and Bezeq's NGN nearing expected completion by the end of 2011, Israel's position on *e-nvironment* should improve but will continue to trail East Asian leaders (e.g., Japan, Korea, Singapore) with fiber-to-the-home (FTTH) roll-outs.

*e-xpenditure* (#24). Israel ranked in the lower third of the OECD (24) on this parameter mostly due to very low e-commerce penetration. Although Israel ranked relatively high on online advertising (#9), the e-commerce indicator placed Israel near the bottom of the 21 countries with available data (#19). This implies that while retailers are increasingly using the internet as a marketing channel, sales are not actually materializing online. We see the discrepancy between high internet usage and low e-commerce explained in the percentage of ROPO (research online-purchase offline) consumers: 75% of consumers research a product on the internet before purchasing it in a store.

E-commerce in Israel is low due to fundamental factors -- such as a temperate climate and geo-political isolation -- but also for reasons we have termed "evolutionary" because they may change over time, such as a cultural tendency to want to see and touch an item before purchasing. *(For a deeper analysis on e-commerce in Israel, see sidebar "Why is Our e-commerce so Low?")*

49 TNS – Digital Life Survey 2010

50 <http://www.knesset.gov.il/mmm/data/pdf/m02438.pdf>

## POINTS FOR REFLECTION

In conducting the analyses and developing the insights contained in this report, we sought to provide a foundation for the discussion of What can Israel do to ensure it leverages the full potential of the internet?

Given the fast pace of changes in the internet economy, the answer to this question will continue to evolve and must be addressed by both the public and private sectors. Today, we focus on its currently most pressing components.

- ***What should be done to ensure continued ICT sector growth?*** In recent years the ICT sector was one of the main growth engines of the Israeli economy. With increasing global competition (mostly from the East) and declining venture capital investment, the challenge of sustaining this growth only increases.
  - One of the key enablers to support ICT growth is the talent pipeline (both finding and retaining) which brings employees and skills to this industry. The absence of evident growth drivers (as mentioned in the employment chapter) puts at risk the ability to support the ICT sector's growth.
  - Another relevant factor to employment is incorporating the minorities of the population into the ICT sector. Representation of Arabs and ultra-Orthodox Jews in the ICT sector, for example, is improving and this could reap benefits for the entire economy
- ***How can Israel best help SMBs to leverage the web as a growth engine?*** We've seen that the internet is a growth engine for SMBs and has many benefits to offer if leveraged correctly. Certain areas, if addressed, could potentially increase internet usage in SMBs and drive their growth, including training tools over the web, incentives to use the web, and services provided on the web.
- ***What can Israel do to address barriers to e-commerce?*** e-commerce is low in Israel for various reasons, some of which are inherent and more difficult to address. Education, changes in regulation, competition and improved transportation infrastructure can help address some of the key barriers (primarily cultural and consumers' confidence level) and place Israel on the right track to improving its e-commerce penetration.

- *What can the government do to improve its internet usage?* Both individual and business internet usage are relatively high in Israel, while government usage lags behind. Moreover, the gap in ICT spending between the central government and the other public sectors (e.g., municipalities, education system) is relatively large. Narrowing this gap can support improving the public sector's productivity and offering a better service level to citizens and businesses.
- *How can Israel upgrade its internet infrastructure?* While Israel is relatively advanced in broadband and computer penetration, its bandwidth speed has significantly hindered its relative infrastructure (*e-nvironment*) position. The current deployment of HOT's Docsis 3 and Bezeq's NGN will improve bandwidth in the near future. However, only larger infrastructure investment, such as Fiber-to-the-Home (FTTH), can allow Israel to join the top tier of global infrastructure leaders (e.g., Japan, S. Korea).

# APPENDIX

## Additional Notes on Methodology

### General

*Availability of data is challenging in such research, particularly in measuring e-commerce. While similar reports in Western countries base their findings on official governmental or OECD data, relevant Israeli data is still partial, despite Israel's recent admittance into the OECD. For example, while complete data on the extent of e-commerce is publicly available in Europe, absent a comparable source, we have calculated a bottom-up estimate based on household expenditure because Israel's credit card processing infrastructure cannot accurately measure the value of online transactions.<sup>51</sup>*

*Despite the relative lack of information, Israel's Central Bureau of Statistics (CBS) is by far the most professional and reliable source of information. We have based most of our findings on CBS sources, with relevant assumptions and adjustments to the internet economy, based on additional data and market estimates from relevant stakeholders in the business and government sectors. We also based our work on available data and on market estimates provided by numerous interviews with key players in the industry. We believe that the results obtained present a good proxy for the size of the internet economy in Israel.*

*We have used 2009 numbers for this report. Since the 2009 economic downturn had a relatively limited impact on the Israeli economy, when comparing 2009 data to previous years, we found them consistent with the trend, and believe that they present an accurate picture.*

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<sup>51</sup> Israel's credit card processing system is based on a protocol ("Ashrait 96") which does not allow the breakdown of online credit card transactions and phone transactions

## GDP

We have used the expenditure method for calculating GDP. The expenditure method measures the total spending on finished goods and services, and is comprised of four main pillars:

- **Consumption:** is comprised of private online spending, which includes online purchasing of goods and services (e-commerce), including purchase of digital content, and payments of financial fees for online transactions (e.g., for online money transfer). We have used two methods to estimate the private online spending: Following a top-down approach, we have interviewed key players from the credit card processing sector. These players handle the majority of credit card transactions, and together we estimated the relevant share of credit card transactions completed online. In addition, we have used a bottom-up approach, based on the comprehensive household expenditure survey conducted by the Israeli CBS. This survey breaks down household expenditure into a detailed list of items, for each we applied the appropriate share of online purchase or payments. We have based our assumptions on various sources, including CBS surveys, international surveys (e.g., Consumer Commerce Barometer) and interviews with various industry experts. In addition, we have estimated the spending on internet access, by examining household expenditure on internet provider services and infrastructure as well as a proportion of spending on interface devices and mobile services.
- **Investment:** We have examined the total investment in ICT equipment and software, based on CBS data. We then estimated the internet-related share of ICT investment, by breaking down the investment into the different elements, such as software, electronic components, communication equipment etc. We then applied a specific internet-related factor for each type of investment based on the relevance of the internet for each element.
- **Government expenditure:** We have examined the total government expenditure on ICT equipment and services, based on CBS data and based on interviews with government officials. We then estimated the internet-related share of ICT expenditure by breaking the expenditure into the different elements and applying the appropriate internet-related factors. In addition, we have examined the total military investment and expenditure. As detailed data of military ICT expenditure is classified and thus unavailable, we used the civil rate of ICT, and applied a slightly higher ratio, as we estimate the army to be more technology driven. We then applied similar factors to identify the internet-related expenditure. The result of military expenditure was also triangulated with international benchmarks on ICT related military expenditure.

- **Net exports:** looking at both exports and imports, we have examined separately goods and services in each. We used CBS data to identify the relevant exports and imports of ICT equipment and services and broke down each to the relevant sub-elements (e.g., computer services, communication equipment). Based on interviews with government officials, including both the chairman and the CEO of the Israel Export & International Cooperation Institute, as well as market experts, we have allocated a specific share of internet-related exports and imports out of ICT equipment and services. The low size of e-commerce in Israel is also reflected in this area. We estimated the size of e-commerce imports and exports based on estimates of the credit card processing sector. We found it insignificant when compared to the relevant share of ICT exports and imports that already include all computers and electronic devices, which make up a substantial part of e-commerce imports.

## GDP growth

**e-Commerce:** We estimated growth in e-commerce by dividing e-commerce into various categories and making assumptions (based on past trends, comparative analysis with other countries, and expert interviews) of how each of those categories would grow between now and 2015. We also took into account household broadband penetration increasing from 77% today to 85% in 2015.

**Access:** We began with the assumption that smartphone penetration will increase in 2015 and then attributed 50% of its use to the internet instead of 25% as we do today. We then took into account the growth in broadband penetration.

**Investment:** Estimates of growth in investment are based on the assumption that internet-related investment will continue to grow at historic rates with a shift in the investment mix towards software. Another underlying assumption is that Israel can maintain the same rate of foreign investment in its internet sector and that there will be an available pipeline of talent to fill internet-related jobs.

**Government:** We estimated growth in government internet expenditures based on the assumption that the government will close part of the gap between those areas that were spending a higher portion of their budget on IT and those that were not. Closing this gap would imply a 50% increase in the relative share of GDP.

**Exports-Imports:** The net export forecast is based on historic growth rates of the Israeli ICT sector's exports and imports taken from the Central Bureau of Statistics. We grew the 2009 numbers by the annual growth rate of exports and imports from 2002 to 2008 to arrive at the 2015 net export forecast. The reason for this is that the drop in 2009 is not indicative because it was due to the economic downturn. However, the impact was permanent therefore we applied the 2002-2008 growth rates to 2009 numbers. The same internet factors for 2009 were applied to 2015 because the historic analysis showed that the shift among the mix of export and import components was never large enough to influence the proportion of internet-related exports and imports out of total net ICT exports.

## Beyond GDP-ROPO

The value of research online and purchase offline is derived from our estimates of the portion of the population that researched a product online but purchased it offline in 27 categories and the average spend per household in each category. The proportion of consumers who research online and purchase offline comes from a Google Consumer Commerce Barometer survey. We understand, however, that surveys tend to inflate results since it is enough for a person to have researched one product one time to be included in the ROPO group of consumers. After comparing e-commerce survey data with real data we saw that inflation was in the order of 50%. To account for this statistical discrepancy we reduced the ROPO number we received by 50%. Our ROPO estimate therefore, while not precise, is a good proxy for this market. When compared to France, for example, who have a higher e-commerce but lower ROPO than Israel, our total amounts of ROPO + e-commerce account for the same proportion of GDP: ~3%.

## The e<sup>3</sup> Index

Our international benchmarking e<sup>3</sup> index provides a weighted average of a country's scores on three key parameters: *e-ngagment*, *e-nvironment*, and *e-xpenditure*. We have reflected the high importance of the *e-ngagement* and *e-nvironment* parameters by assigning 40% weight to each. The *e-xpenditure* element represents the remaining 20% of the overall score. The score of each of the three parameters is in turn determined by a simple average of the score of all the indicators included within.

To arrive at the scores for each indicator, we collected raw data on each and then normalized the scores from 0% to 100%. For example, if Iceland had the highest number of secure servers per 100 people and Mexico had the lowest, then Iceland would receive a score of 100% and Mexico a score of 0%. We then computed the average of the variables within each parameter of *e-ngagement*, *e-nvironment*, and *e-xpenditure*. Since data were not available for every single country on every single indicator, we computed the average for countries with missing data based only on the variables with available data. (For detailed results see Exhibit A)

#### Exhibit A

### Israel emerges strongest in e-ngagement, weakest in e-xpenditure, and average in e-nvironment

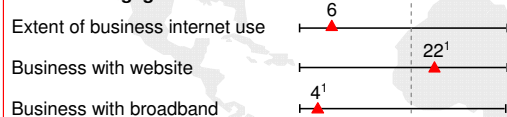
Israel overall rank: 19 out of 34 OECD countries

#### e-ngagement - ranked 14

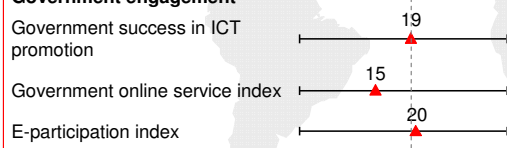
##### Individual engagement



##### Business engagement

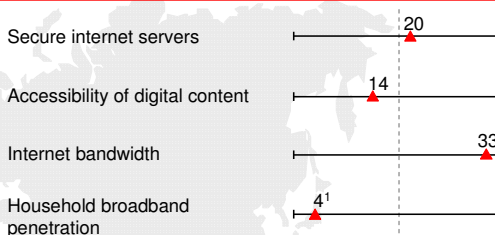


##### Government engagement

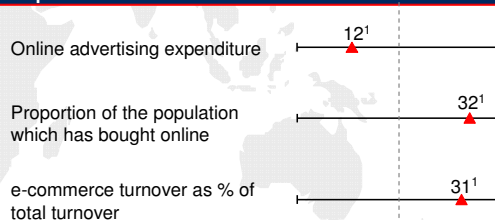


Israel overall rank **19**

#### e-nvironment – ranked 20



#### e-xpenditure - ranked 24



Israel overall rank **19**

<sup>1</sup> For these indicators data was not available on all 34 countries; rank here is extrapolated based on relative rank out of countries with available data

SOURCE: WEF Global Info. Technology Report; Forrester Research; OECD; The Internet Economy 25 years later 2010; Pyramid Tracker; McKinsey team analysis

Eleven of the indicators were taken from the World Economic Forum's Networked Readiness Index and the remaining six from other sources. Most of the indicators are based on hard data (e.g., penetration rates, number of servers) but others are the results of administered surveys. (For a description of each variable please see Exhibit B)



## Exhibit B

## Indicator Description

## e-engagement

## Individual

- **Personal computers:** Personal computers per 100 population
- **Mobile telephone subscriptions:** Mobile telephone subscriptions per 100 population
- **Broadband internet subscribers:** Total broadband internet subscribers per 100 population
- **Internet users:** Internet users per 100 population

## Business

- **Extent of business internet use:** To what extent do companies within your country use the internet for their business activities? (e.g., buying and selling goods, for interacting with customers and suppliers) (1=not at all; 7=extensively)
- **Businesses with website:** Percent of registered businesses with a functional website
- **Businesses with broadband:** Percent of registered businesses with access to broadband

## Government

- **Government success in ICT promotion:** How successful is the government in promoting the use of information and communication technologies in your country? (1 = not successful at all; 7 = extremely successful)
- **Government online service index:** In your country, online government services such as personal tax, car registrations, passport applications, business permits, and e-procurement are (1=not available, 7=extensively available): This index assesses the quality, relevance, usefulness, and willingness of government websites for providing online information and participatory tools and services to the people
- **E-participation index:** This index assesses the quality, relevance, usefulness, and willingness of government websites for providing online information and participatory tools and services to the people

## e-nvironment

- **Secure internet servers:** Secure internet servers per million population
- **Accessibility of digital content:** In your country, how accessible is digital content (e.g. text and audiovisual content, software products) via multiple platforms (e.g. fixed-line internet, wireless internet, mobile network, satellite, etc.)? (1= not accessible at all; 7= widely accessible)
- **Internet bandwidth:** International internet bandwidth (Mb/s) per 10,000 population
- **Broadband penetration by household:** Percentage of household with access to broadband

## e-xpenditure

- **Online advertising expenditure:** Online advertising spend as a % of total advertising spend in country
- **Proportion of population which has bought online:** Online buyers as proportion of total population
- **E-commerce turnover as % of total turnover:** Percentage of enterprises' total turnover attributed to e-commerce

SOURCE: WEF Global Info. Technology Report; McKinsey team analysis