The Changing Dynamics of the Global High Tech Industry

An analysis of key segments and trends
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Introduction

In the quest for recovery, companies in the global high tech industry are competing against each other to increase their market presence while continuing to face challenges like slim operating margins, high capital expenditure, shortening product lifecycle and managing a global supply chain.

However, high tech manufacturers are trying to overcome these challenges through innovations, launching new products and services, forging new partnerships, and acquiring new capabilities through mergers and acquisitions. Despite rapid change, the industry is poised to grow in the future fueled by factors like price erosion, higher per capita income and consumer attachments to iPads, tablets, smart phones and other mobile devices.

The global high tech industry has a broad reach, so it can be defined in a number of ways. Capgemini’s definition of the industry comprises consumer electronics, semiconductors and solar, print and imaging, computer and peripherals, and software.

This Capgemini research study assesses the global high tech industry and identifies both the challenges and opportunities the market presents for manufacturers. The report examines the five key industry segments listed above. In addition, it provides an analysis of the high tech value chain. Also contained in the report are key market observations, substantiated by relevant market sizing and forecast figures. And an overview of future trends and recommendations is designed to inform and inspire manufacturers as they develop their go-to-market strategies.
Industry Overview

The global economic meltdown of 2009 had a massive impact on the manufacturing industry. According to Economist Intelligence Unit data, global industrial production decreased 9.2% in 2009 after increasing just 0.1% in 2008. JP Morgan’s Global Manufacturing Purchasing Managers Index (PMI) showed a sharp decrease in output beginning in mid 2008 as companies slashed inventory. The decline reached its bottom in January 2009, followed by an improvement. By mid 2010, manufacturing output showed some increase.

The world economy expanded at an annual rate close to 5% in the first half of 2010. IMF estimated world industrial production registered growth rates of about 15%, and global trade recovered at rates over 40% during this period. The key reasons for the improvement were a sudden increase in inventory levels and fixed investment accounts.

From 1995 to 2007, high tech manufacturing output in terms of gross value added (GVA) registered higher growth when compared to the total manufacturing output. The United States, the European Union and few of the Asian economies were experiencing growth closer to the world average, whereas Japan’s output declined from 27% to 11% during the period.

Figure 1: Manufacturing GVA as % of Total GVA

Source – UNCTADStat
http://unctadstat.unctad.org/TableViewer/tableView.aspx?ReportId=95
China’s growth in high tech manufacturing output outpaced the world average from US$19 billion in 1995 to US$167 billion in 2007. The US share of the global value-added pie in terms of high tech manufacturing was stable over the decade until the economic downturn.

With the economy reviving, the manufacturing industry is once again back on track with the high tech segment leading the recovery. According to Manufacturers Alliance for Productivity & Innovation (MAPI), US high tech industrial production rose at a 2% annual rate from the first quarter to the second quarter of 2011. MAPI is also anticipating this sector to increase by 9 percent in 2011 and show 11% growth in 2012.

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**Figure 2: High Tech Manufacturing Production**

![High Tech Manufacturing Production Graph](source)

**Figure 3: High Tech and Electronics Industry Worldwide Revenue and Net Profit Margin Trends**

![High Tech and Electronics Industry Graph](source)
High Tech Industry Value Chain

Overall the high tech industry value chain can be classified between semiconductors and contract manufacturers and Original Equipment Manufacturers (OEMs). Traditionally semiconductor companies supply manufacturers with thousands of other components to manufacture a device. Then the software companies or embedded software providers develop the platform or software that is later installed in systems to provide life to the device.

In addition, there are thousands of other suppliers responsible for providing basic components required by OEMs, which exist higher in the value chain. However, with the changing dynamics in the industry these suppliers are gradually becoming partners in the design and production phase to large OEMs.

Generally, the high tech industry is affected by shorter technology lifecycles. The value chain faces the challenge of being too asset heavy (semiconductors), brand heavy (consumer electronics) and complex in terms of technology (computer and telecom equipment). This often adds to the already increasing complexity, particularly for companies that span multiple sub-segments.

At the bottom end high tech companies effectively manage complex sales channels through distributors, resellers and partners.

Consumer Electronics

With the global economic recovery, the global consumer electronics market is expected to grow 10.4% in 2011 to US$964 billion, according to the Consumer Electronics Association’s retail forecast\(^2\). In 2010, worldwide sales of consumer electronics products grew 13% to US$873 billion from 2009. In 2009 the total retail sales of consumer electronics goods fell 9% amounting to US$771 billion in the midst of the recession.

The segment forecast for 2011 is more than twice as strong as the world’s gross domestic product (GDP), a measure of the size of the total economy. The world GDP is expected to register growth of 4.5% in 2011. With these positive numbers a sense of optimism is back among enterprises spanning from the smallest start-ups to the biggest conglomerates to keep investing for continued growth.

In 2010 the revival of the consumer electronics industry was apparent around the world, with nearly every region registering sales growth. The only region facing growth challenges was Japan, but in China consumer electronics sales grew by 25% and in Africa the growth was 70%, albeit from a lower base. By comparison, all the regions of the world witnessed much lower sales in 2009 when compared to 2010. In 2011, North American sales are predicted to grow by 15%, Western Europe to grow by 23%, China by 15% while Japan is predicted to garner 8% growth.

Overall, according to the Consumer Electronics Association, the US in particular will continue to drive the

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Figure 5: Consumer Electronics Global Retail Sales Revenue, 2008 – 2011


\(^2\) Consumer Electronics Association retail forecast

global consumer electronics industry with the EU close behind. However, this growth pattern is expected to shift as demand from developing nations rises and the Asia Pacific region emerges as a major influencer.

The Indian consumer electronics industry is expected to grow at a Compound Annual Growth Rate (CAGR) of about 19% in 2010-2013. Among all products the highest growth in 2010 was booked by smart phones, which registered a 51% year-on-year growth. In the near future, smart phones are expected to continue dominating the growth curve followed by mobile and personal computers (PC). At the same time, video game sales dropped in 2010 for the second consecutive year due to the relative demand saturation. Moving forward, digital technologies related to connectivity and mobility will be crucial in further accelerating the consumer electronics industry’s growth.

Growth in terms of products comes primarily from smart phones, netbooks, laptops, ethernet-connected TVs, high-definition camcorders, LED TV players, eBook readers and Blu-ray players. In the near future, consumers will continue to move beyond high-definition video on TVs to web-connected TVs.

In the recent past, there was a gap in the market for devices with screens ranging between 5 inches and 15 inches. With an eye to bridge the gap, manufacturers launched a number of smart books, eBook readers and netbooks. However, netbooks are more “consumerized” now with vendors finally able to break into mass markets.

**Tablet PCs will drive the global consumer electronics market**

Despite the fact that tablet PCs are not new and have existed for quite some time the market was transformed with Apple’s launch of the iPad in mid 2010. This market is at a nascent stage with many players launching products. These devices are typically of similar hardware specifications, following the latest trend for netbooks and other small devices.

Players like Apple have experienced tremendous success in the consumer market and are likely to post even stronger growth in the recent future. Moving forward, the tablet PC market is predicted to be highly competitive with many new entrants in 2011 and the coming years. According to IDC the worldwide media tablet shipments expected to grow from 7.6 million units in 2010 to more than 46 million units in 2014, representing a CAGR of 57.4%.

**TVs will continue to evolve as ‘smarter’**

Television is getting smarter with the addition of features like web

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surfing, downloading videos, live streaming of games from websites, and downloading news and traffic updates. Although smart TVs made up a small portion of overall sales last year, the number is growing, as consumers recognize the vast amount of web-based content available to them.

From Google to Samsung, electronics and technology players are betting on web content delivered directly to TV sets. Samsung has also upgraded its Internet@TV feature to include Samsung Apps from leading service providers like Associated Press, Blockbuster, Fashion TV, Twitter, Netflix and YouTube. LG has also launched “Smart TV” in the market with features like network-enabled HDTV features, wi-fi-like DLNA support, 150 TV Apps (free and premium – i.e.Netflix, Hulu Plus, VUDU, etc.) and a web browser.

According to DisplaySearch estimates, 21% of all TVs shipped in 2010 have internet connectivity, and the segment is expected to grow at double-digit rates over the next four years, reaching 122 million units by 2014.

**Evolution of user interfaces**

The evolving user interface represents a key challenge for designers of consumer electronics. It requires mapping the complex user actions to create a spontaneous yet productive experience. With all of their senses, users are on one side of this paradigm while the device is on the other. Touchscreens are now integrated into a wide range of products spanning from Microsoft’s Surface tablets to everyday cell phones. As technology continues to evolve, multi-touch all-point technology is expected to bring touchscreens to the next level with rich applications and increasing reliability.

Microsoft is planning to launch Project Natal, which has camera-based sensors and the ability to detect full body movements, for the Xbox 360. It will be interesting to see the consumer’s response to these new control schemes, and how soon software is developed that can take advantage of it.

With such user interfaces, interactive 3D gaming, keyboard entry and map manipulation are some of the applications that will gain increasing traction. This multi-touch all-point technology will provide OEMs with opportunities to better understand their users and ultimately help them to create the next generation of user interfaces and devices.

**Key Takeaways**

- The global consumer electronics market is expected to grow close to 10% in 2011.
- Consumer electronics demand from US and Europe and developing economies like India and China is expected to fuel the growth.
- Increasing digitization of consumer electronics goods along with falling prices of these goods in several regions are some of the key reasons consumers are spending more on consumer electronics.
- Other key growth drivers include the advent of mobile broadband along with portable media players, high-definition recording and display products, and continuous automation.
- Key players in the market include Sony, Apple, Sharp, LG, Samsung, Matsushita, Koninklijke Philips and SANYO.
Semiconductors and Solar

Semiconductors

Affected by the global economic recession, sales in the global semiconductor market declined by 10.4% from US$255 billion in 2008 to US$228 billion in 2009. However, in 2010 worldwide semiconductor revenues increased 30.9% to reach US$299 billion, according to the latest Gartner semiconductor spending forecast.

The industry’s recovery was strong and sustainable across all the key market verticals, regions and device categories. Applications, increasing traction of smart phones, media tablets and eReaders, automotive infotainment, notebook PCs, data center servers, and wireless and wired communication infrastructure are driving the robust consumption of semiconductors worldwide.

The largest category of the semiconductor market is all “general-purpose” standard semiconductor products, which was estimated at US$196.8 billion in 2010. This figure is expected to reach US$259.5 billion in 2015, reflecting CAGR of 5.7% during the period 2010 to 2015.

All application-specific devices emerges as the second fastest growing category with a CAGR of 6.1%, higher than the overall semiconductor growth figure of 5.9% for the period 2010 to 2015.

Finally, non-optical sensors remains an important space and emerges as the fastest growing category. Gartner estimates this segment will grow from US$4.0B in 2010 to US$7.2B in 2015, representing CAGR of 12.5%.

Figure 8: Revenue from the Consumption of Semiconductors Forecast, 2009 – 2015

Source – Gartner, Inc.: “Gartner Market Databook, 2Q11 Update,” Richard Gordon, Peter Kjeldsen (Telecom), Kathryn Hale (IT Services), Jonathon Hardcastle (Computing Hardware) and Colleen Graham (Software), 29 March 2011

4 Gartner, Inc.: “Gartner Market Databook, 2Q11 Update,” Richard Gordon, Peter Kjeldsen (Telecom), Kathryn Hale (IT Services), Jonathon Hardcastle (Computing Hardware) and Colleen Graham (Software), 29 March 2011
Semiconductor consumption in China continues to outpace the rest of the world. In 2009, China’s share of the semiconductor market was 41% while the Americas and Japan were at 17% and 16.9%, respectively.

In terms of market share, Intel continues to lead the market with close to 14% market share, followed by Samsung at 9.4%. Other leading chip suppliers are Texas Instruments, Toshiba and STMicroelectronics. Together, the top 10 vendors represent 49% of overall market revenues.

**Growth of media tablets and eReaders will continue to fuel demand for semiconductors**

According to Electronics.ca, media tablet and eReader semiconductors registered growth of over 2,000% to reach US$3.3 billion in 2010. The semiconductor suppliers continue to enable OEMs to bring new products to the market. The starting point was the launch of the iPad after which the market has shown a high degree of optimism. Further, sales of the Android Honeycomb Media Tablet and eReader semiconductor are expected to grow by over 100% in 2011.

Semiconductor firms often enable tablets with features like touchscreen controllers and sensors, baseband modems, wi-fi chipsets and related integrated circuits (ICs). In the recent past growing interest among consumers has created unlimited opportunities for semiconductor suppliers in developing new chips and software platforms that will enable these products and will provide a better user experience. Beyond...
semiconductors, these suppliers are also targeting opportunities to provide OEMs with system software as well as access into app stores thereby reducing the product lifecycles. According to the IDC report\(^5\), “Worldwide Media Tablet and Semiconductor Forecast: The Explosion of an Opportunity,” the appeal of media tablets will drive the semiconductor revenue opportunity to a live year CAGR of 31%.

**Automotive will be the next pillar of growth for semiconductor suppliers**

The automotive industry has transformed over the last couple of years with rapid integration of semiconductors into vehicles resulting in improved overall performance and efficiency. The advent of semiconductors in the automotive industry has enabled many vehicle manufacturers to implement applications on a single chip and avoid unnecessary complexities. According to a report published by Frost & Sullivan, arrival of the concept of integrated electronics solutions was one of the primary drivers of growth. However, after experiencing stiff decline in vehicle demand from 2008 automotive semiconductor sales are back on track with the revival of the global economic outlook in 2011.

According to Semicast, the market volume for automotive semiconductors is forecasted to grow

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**Figure 11: Worldwide Semiconductor Market Share, 2010**

![Figure 11: Worldwide Semiconductor Market Share, 2010](http://www.idc.com/getdoc.jsp?containerId=prUS22777311)
at double the rate—from US$20 billion in 2010 to US$39 billion in 2014, on a global basis registering an average annual growth rate of almost 20%. The recent surge in automotive semiconductor demand is primarily due to the growth in light vehicle production in the emerging markets, particularly in China, Brazil, Russia and India.

The rise of environmentally friendly vehicles like hybrid electric and battery electric cars is expected to create new revenue opportunities for semiconductor suppliers. Production of hybrid vehicles is expected to increase from 3 million in 2010 to 47 million in 2017. This will also drive the power train industry, which is forecasted to grow at a higher rate when compared to the overall segment. Entertainment systems are also expected to impact growth in automotive semiconductors. In-vehicle entertainment systems are growing in complexity and functionality as consumers demand a “digital home” experience in their cars.

**Wireless Local Area Network (WLAN) chipset market set to outpace the average semiconductor industry growth**

According to iSuppli, WLAN chipset shipments are projected to reach 738.9 million units in 2011, representing a sharp growth of 101.5% from 366.8 million units in 2010. By 2014, chipset shipments are expected to increase to more than 2 billion units.

In addition to WLAN chips 802.11n wi-fi standard, other emerging connectivity technologies are also gaining traction in the daily lives of consumers such as Wireless Personal Area Networking (WPAN), which encompasses disparate technologies like Bluetooth and near-field communications. In both WLAN and WPAN technologies, radio waves transmit and exchange data over short distances between devices. Demand for these technologies is growing due to ease of use and increased interest in mobility.

Another connectivity technology, ZigBee, is trying to gain momentum in the home automation and smart utility monitoring applications segment. ZigBee is an IEEE 802.15.4 standard for data communications with business and consumer devices. It is designed around low-power consumption allowing batteries to essentially last forever.

The ZigBee standard provides network, security and application support services operating on top of the IEEE 802.15.4 Medium Access Control (MAC) and Physical Layer (PHY) wireless standard. ZigBee is penetrating the next-generation automated manufacturing industry with small transmitters in every device on the floor, allowing for communication between devices to a central computer. This new level of communication is creating opportunities for remote monitoring and manipulation.

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**Figure 12: Global Silicon Solar Cell Market Sizing, 2010 – 2013**

- **Source:** GTM Research, 2011
Global solar power market

After registering substantial growth, the photovoltaic (PV) industry slowed for a brief period in 2009 due to the global economic downturn. Sluggish demand resulted in increasing inventory levels, ranging from raw material silicon and PV cells to complete PV systems.

Massive capacity and limited utilization pulled down the prices of crystalline silicon solar cells, panels and modules in most of the markets. According to Global Industry Analysts Inc. (GIA), this drop in prices was also attributable to a sharp decline in silicon prices to as low as US$50 per kg. The falling prices, however, ushered in a period of cost-effective solar systems, bringing down the cost of entire PV systems.

However, the PV market rebounded quickly, backed by the economic upturn in the developing countries of Asia, including China and India, as well as industrial subsidy policies across most of the countries and the expansionary monetary policy adopted by the central banks. The increasing prominence of Asia in the sector is primarily attributed to solar cell production in China and Taiwan, which together accounted for 49% of the global solar cell production in 2008. Going forward, the global photovoltaic market is poised for robust growth, owing to the rapid adoption of solar energy across various regions.

In terms of production, China has emerged as the world’s largest producer of solar cells replacing Japan, which had massive solar cell capacity worldwide until 2007. Chinese solar companies established new manufacturing facilities and invested huge sums in production facilities since 2005, and emerged as a strong market contender by 2008. China’s solar cell output totaled 2,278.6 MW in 2008, making it the number one producer in the world.

However, Chinese solar manufacturing companies have yet to move their surplus inventory created during the recession. These companies over-produced solar panels in 2007 and 2008 with the expectation that the solar markets would thrive during 2009. As a result, low-cost panels are available, which in turn lowers the up-front costs of solar power generation for customers. Panel prices have fallen from the high range of $3.50 to $5.00 a watt during 2008 to an expected $1.36 per watt in 2011. According to GTM Research, average solar cell prices per watt are expected to decrease from US$1.36/watt in 2010 to US$0.92/watt in 2013. In 2013, the global solar cell market value is expected to reach US$18.7 billion.

Key Takeaways

- 2010 was a rebound year for the overall semiconductor market. After enduring considerable challenges during the global recession of 2008 – 2009, the semiconductor market segment experienced double-digit growth rates during 2010.

- Semiconductor companies are exploring emerging technologies that will help them drive economies of scale; some of the key locus areas for semiconductor vendors are:
  - Investments in system-on-chip (SoC) design capability
  - Focus on customer-driven solutions
  - Reduce system cost by offering highly integrated devices
  - Development of Intellectual Property

- The top 10 players are Intel, Samsung Electronics, Toshiba, Texas Instruments, STMicroelectronics, Renesas Electronics, Hynix Semiconductor, Micron Technology, Qualcomm and Broadcom.

- Decreased demand from solar power-generation firms in European countries will reduce industry revenue for solar panel manufacturers. In turn, these manufacturers will lower prices to meet slowing demand and seek out other markets in which to sell their products. Solar markets outside of Europe (such as the US) lack generous subsidies. As a result, relatively slow growth in these other solar markets will also serve to lower panel prices.

- The top 10 global solar cell manufacturers in 2010 were First Solar, Suntech Power, Sharp, Q-Cells, Yingli Green Energy, JA Solar, Kyocera, Trina Solar, SunPower and Gintech.
Print and Imaging

Print and imaging market

Emerging markets continued to outperform in the hardcopy peripherals space, growing at an average of 13% year-over-year compared to worldwide shipment growth of 7.2% in the first quarter of 2011 (1Q11). According to the International Data Corporation (IDC) Worldwide Quarterly Hardcopy Peripherals Tracker, the worldwide hardcopy peripherals (HCP) market recorded more than 30 million unit shipments in the first quarter of 2011. Similar to the last two quarters, monochrome laser led the pack in terms of growth with close to 8.5 million units shipped and 22% year-over-year growth.

IDC expects the earthquake and tsunami in Japan will have little to no impact on the global imaging market and that the negative impact will be felt more strongly for laser devices than for inkjet.

Technology highlights in the print and imaging market

• Losing share to laser technology, inkjet registered at 63% of overall shipments in 1Q11, down 4 points from a year ago, while laser devices grew 3 points to 33% share over the same period in 1Q10. All regions except Japan saw year-over-year growth in laser shipments with Asia/Pacific (excluding Japan) and Latin America (LA) seeing the highest growth at 29% each.

• 1Q11 marked the fourth consecutive quarter where monochrome laser surpassed color laser in terms of year-over-year growth, with close to 8.5 million units shipped producing a 22% gain. Monochrome laser printers remain the dominant type of laser in the office, accounting for 62% share of all monochrome devices.

Vendor highlights

• HP remains the undisputed leader in the global HCP market with 42.4% market share in 1Q11. The vendor grew 10.5% “year-over-year”, the second highest among the top 5 print and imaging players. With the exception of Japan, the vendor posted positive year-over-year growth across all regions.

• Canon continues to be a distant second-ranked vendor with 17.4% market share and over 5.3 million units shipped. Canon enjoyed an 11.3% year-over-year gain, the highest among the top 5, due to double-digit growth in emerging markets, including Asia/Pacific (excluding Japan), Central Europe, Middle East, Africa (EMEA) and Latin America.

• Epson continues to hold the third place ranking with 14.1% share and close to 4.4 million units shipped. With the exception of Latin America and Asia/Pacific (excluding Japan), Epson saw year-over-year declines in unit shipments across all regions. Latin America was Epson’s best performing region with 27% year-over-year growth, followed by Asia/Pacific (excluding Japan) with 2% growth.
Samsung and Brother ended 1Q11 in a statistical tie for the fourth position with shipments of roughly 1.8 million units and year-over-year growth of 1.1% and 4.2%, respectively.

**Imaging, digital cameras, high definition and single-lens reflex cameras (SLR)**

The global economic downturn impacted the digital imaging market negatively, with volume shipments declining significantly. The fallout was also attributed to the fact that customers are settling for low-margin models while manufacturers sought to stimulate sales by reducing prices.

However, sales have been picking up since late 2009 and early 2010, driven by a strong demand for single lens reflex (SLR) cameras and robust growth in emerging markets. The increased demand for touchscreen and high-definition (HD) cameras has also contributed to the rise in sales of compact digital cameras. But experts warn that the impact on revenues will come slowly, as customers aren’t yet prepared to invest in high-end or expensive models, which are the major revenue drivers.

**Regional highlights in imaging, digital cameras, high definition and single-lens reflex cameras (SLR)**

According to new research conducted by Global Industry Analysts Inc., the US, Asia Pacific and Europe together accounted for the biggest share of the market. Although the US, Europe, Middle East and Africa were hit the hardest by the economic downturn, the Asian market has displayed

<table>
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<th>Vendor</th>
<th>1Q 2011 Unit Shipments</th>
<th>1Q 2011 Market Share</th>
<th>1Q 2010 Unit Shipments</th>
<th>1Q 2010 Market Share</th>
<th>1Q 2011/1Q 2010 Growth</th>
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<tr>
<td>Brother</td>
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resilience, due to the relatively lower levels of saturation in the SLR market.

Going forward, Russia, China and India are expected to be the growth markets for manufacturers of digital cameras. Purchase considerations will hinge on consumers’ interest in new and novel technologies such as touchscreen user interface, HD video, wireless connectivity and advanced image detection capabilities.

SLR cameras are the fastest-growing category of HD digital cameras, due to the better quality of pictures. China, India and the Eastern European countries are the fastest-growing emerging markets, whereas growth has been adversely affected in Japan and US markets. According to the market research firm GfK, the Middle East and Asia Pacific regions experienced growth of around 20%, while Eastern Europe grew by about 19%.

Convergence of print and photocopy machines

The global multi-function printers (MFP) business developed from the convergence of the printing and photocopying machines industries and experienced robust growth over the last decade. The adoption of technologies enabled OEMs in both industries to streamline production and consolidate the functions of printers and photocopy machines into a single unit. As a result in 2010, unit shipments of MFPs were 125.2 million globally.

International compliance and managed print services

Environmental concerns and accompanying activism have affected the procurement of parts and led OEMs to develop products that are energy efficient and that help reduce the industry’s carbon footprint. The European Union’s Restriction of Hazardous Substances (RoHS) and Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) have been particularly influential.

In recent years there has been a trend among Multi-function printers (MFP) Original Equipment manufactures (OEMs) to promote their Managed Print Services (MPS) instead of selling MFP hardware. This trend is more pronounced in mature markets such as the United States and Europe. However, the OEMs have been trying to expand MPS operations in the developing markets in Asia. By 2013, MPS is expected to contribute up to 35% of revenues in the global MFP industry.

Digital single-lens reflex cameras (DSLR) led growth in emerging markets

The digital camera market has grown tremendously in recent years and the Digital SLR cameras have been instrumental in driving this growth. Digital SLRs hold immense potential in the future with their ease of usage, digitization, major innovations in technology and growth in emerging markets.

This will also have a positive effect on accessories such as interchangeable lenses that are dedicated for SLRs. The market for interchangeable lenses is expected to grow as a result of the rapid market penetration of digital SLR cameras.

Key Takeaways

- Multi-function printers (MFPs) will lead worldwide growth of printing devices at the expense of single-function devices. This is attributable to the strong growth in emerging markets and to a certain extent Latin America.
- Inkjet printers remain the largest-selling printing technology as compared to laser printers.
- HP, Canon and Epson are the top three vendors with 42.4%, 17.4% and 14.1% market shares, respectively, in 1Q 2011.
- The economic downturn had a negative effect on the digital imaging market, but sales have been picking up slowly since late 2009 and early 2010.
- Emerging markets are posting strong growth led by SLRs, touchscreen and HD cameras.
- However, this spurt in sales is unlikely to alter profitability significantly as customers aren’t willing to invest in top-of-the-line, expensive models.
- The printing and photocopier industries have converged through adoption of technologies by OEMs in both industries.
Computers and Peripherals

Personal computers

According to IDC Worldwide Quarterly PC Tracker, 2Q2011, Worldwide PC shipments increased 2.6% in the second quarter of 2011 (2Q11). The results are just short of IDC’s May 2011 projections for 2.9% growth, a letdown from the over 20% growth seen in H1 2010. This was primarily due to competition from smartphones, other consumer products and pressure from lackluster economic conditions.

The U.S. PC market continued to contract in 2Q11, largely as a result of three factors. The first is an ongoing contraction in the mini notebook (Netbook) market and related inventories. The second is the impact of 2Q10’s difficult-to-sustain 12% growth. And third, demand has softened as corporate buyers continue to focus on increasing share of their IT budget in new IT solutions such as cloud and virtualization, and consumer interest shifts to media tablets.

### Figure 14: Market Share Worldwide PC Shipments (by Region/Q2 2011)

Source: http://www.idc.com/getdoc.jsp?containerId=prUS22937811

### Figure 15: Hardcopy Peripherals Market Share and Growth Rates, 2Q 2010

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<td>HP</td>
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<td>Dell</td>
<td>10,927</td>
<td>12.9%</td>
<td>10,626</td>
<td>12.9%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Lenovo</td>
<td>10,276</td>
<td>12.2%</td>
<td>8,363</td>
<td>10.2%</td>
<td>22.9%</td>
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<tr>
<td>Acer Group</td>
<td>9,160</td>
<td>10.9%</td>
<td>10,190</td>
<td>12.4%</td>
<td>-10.1%</td>
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<tr>
<td>ASUS</td>
<td>4,468</td>
<td>5.3%</td>
<td>4,216</td>
<td>5.1%</td>
<td>6.0%</td>
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<tr>
<td>Others</td>
<td>34,320</td>
<td>40.7%</td>
<td>34,070</td>
<td>41.4%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Total</td>
<td>84,413</td>
<td>100%</td>
<td>82,289</td>
<td>100%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>


7 IDC: Worldwide Quarterly PC Tracker, 6th June - 2011
http://www.idc.com/getdoc.jsp?containerId=prUS22861211
Regional highlights in personal computers

United States: With a decline of 4.2% year over year, the market was still downcast from a combination of exuberant consumption a year ago and a tenuous economic recovery, but the quarter also marked substantial growth from 1Q11, and total shipments topped over 17.8 million.

Europe, Middle East, Africa (EMEA): The EMEA PC market continued to contract in 2Q11, in line with IDC’s forecast, as sustained high levels of inventory prevented stronger sell-in, particularly in Western Europe, where budget cannibalization from media tablets and smartphones continued to contribute to weak consumer demand and slow stock depletion. However, Central and Eastern Europe (CEE) and the Middle East and Africa (MEA) continued to expand and enjoyed positive growth overall.

Japan: The impact of the earthquake on PC buying proved to be limited, thus the market produced stronger results than expected, with 3% growth. Many commercial projects commenced as earlier fears of inventory shortage did not materialize. Coupled with continued average selling price (ASP) declines since the beginning of 2011, consumer shipments also fared better than expected.

Asia/Pacific (excluding Japan): The region returned to double-digit growth of just over 12% as the market came in slightly above forecasts. A weak consumer market weighed down India, but other key markets like China continued their momentum to help offset this, despite the ongoing inflation challenges there.

Server market

According to IDC’s Worldwide Quarterly Server Tracker, factory revenue in the worldwide server market increased 12.1% year over year to $11.9 billion in the first quarter of 2011 (1Q11). This is the fifth consecutive quarter of year-over-year revenue growth, as server market demand continued to improve around the world. Server unit shipments increased 2.5% year over year in 1Q11 to 1.9 million units, which is the second highest quarterly total ever reported in the first calendar quarter of any year.

Improved market conditions were seen across all three server classes — volume, midrange enterprise,
and high-end enterprise. Volume systems experienced an 8.7% year-over-year revenue increase, the sixth consecutive quarter of positive growth for the segment. Midrange enterprise demand improved for the third time in the past four quarters, with a sharp 28.3% year-over-year revenue increase. Finally, the improving market conditions extended to the high-end enterprise segment, as quarterly revenue increased 14.2% when compared to 1Q10. This is the first time in eight quarters that all three segments of the server market have experienced a year-over-year revenue increase in the same quarter.

HP held the number 1 position in the worldwide server market with 31.5% factory revenue share for 1Q11. HP’s 10.8% revenue growth was led by improved demand for both x86-based ProLiant servers and Itanium-based Integrity servers. IBM held the number 2 spot with 29.2% share for the quarter as factory revenue increased 22.1% compared to 1Q10 and gained 2.4 points of share from a year ago.

**Top technology findings**

- Unix servers experienced the first quarter showing year-on-year factory revenue improvement in 11 quarters, growing 12.5% when compared to 1Q10. IBM, HP, and Oracle all experienced improvement in Unix server revenue in the quarter, as worldwide Unix revenues were $2.6 billion, representing 21.8% of quarterly server revenue.
- IBM’s System z servers running z/OS experienced the third consecutive quarter of positive revenue growth, with 41.1% year-over-year growth in 1Q11 to $1.0 billion, representing 8.8% of quarterly server revenue worldwide. This was the third consecutive quarter that z/OS system revenue exceeded $1 billion.
- Linux server demand increased for the sixth consecutive quarter in 1Q11, with revenue growing 16.6% to $2.0 billion when compared with the first quarter of 2010. Linux servers now represent 16.9% of all server revenue, up 0.7 points over 1Q10.
- Microsoft Windows server demand also continued to show strong demand as Windows based hardware revenue increased 10.1% year-over-year. Quarterly revenue of $5.8 billion for Windows servers represented 48.5% of overall quarterly factory revenue and 75.2% of all quarterly server shipments.

**x86 industry standard server market dynamics**

Demand for x86 servers continued to improve in 1Q11, with revenues growing 12.0% in the quarter to $7.9 billion worldwide as unit shipments increased 2.6% to 1.9 million servers.

HP led the market with 37.7% revenue share based on 11.6% growth over 1Q10. Dell retained second place, securing 23.5% revenue share, while IBM now holds 16.4% revenue share.

Overall, 1Q11 was the eighth consecutive quarter with year-over-year increases in average selling prices for x86 servers as both the mix of systems and average system configurations continue to move up-market, driving generally higher product margin for x86 ecosystem players. Additionally, this was the sixth consecutive quarter of year-over-year factory revenue growth for x86 servers with particular strength in Asia/Pacific and Central and Eastern Europe, the Middle East and Africa.

**Bladed server market dynamics**

The blade market continued its strong growth in the quarter with factory revenue increasing 23.8% year over year, with shipment growth increasing by 5.4% compared to 1Q10. Overall, bladed servers, including x86, EPIC, and RISC blades, accounted for $1.8 billion in revenues, representing 15.2% of quarterly server market revenue. Nearly 90% of all blade revenue is driven by x86-based blades, which now represent 20.5% of all x86 server revenue. HP maintained the number 1 spot in the server blade market in 1Q11 with 50.0%
revenue share, while IBM finished with 20.2% revenue share. Cisco and Dell rounded out the top 4 with 9.4% and 8.4% factory revenue share, respectively.

**Consumer segment to lead the PC business in mature markets**

According to a Gartner Report⁸, "the consumer segment has led PC (desktop and mobile) and will continue to lead the growth in mature markets during the next five years as a growing number of households acquire multiple PCs."

According to the same report, "In the past five years, an ongoing price decline has led to increased consumer demand for PCs in North America and Western Europe. In these regions, families have moved from having one PC in the household to multiple PCs per household. This is a significant change. In 2006, consumers accounted for only 40% of PCs purchased; in 2010, the consumer share will reach 54%. Consumers models are scaled down or low-specification PC models."

The Gartner report⁸ also highlighted "As consumers purchase their second, third or fourth PC and buy multiple PCs for the household, the desire for ‘latest and greatest’ and ‘fastest’ specifications will decrease. Opportunities for “good enough” and commoditized products will increase, with “good enough” determined by the usage model."

**Green IT**

Globally green IT is gaining immense traction in the market. According to Forrester¹⁰, 45% of IT organizations are implementing or creating a green IT strategy, with an additional 34% considering it.

As green IT continues to evolve from the concept of “Green for IT” to “IT for green”, the industry’s initial ongoing green IT efforts are set to shift from data center to other infrastructure like servers and PCs.

Adoption of desktop or server virtualization will help enterprises reduce energy footprints significantly thus saving operational costs per annum.

**Personal computers will not be personal anymore; they will be shared computers**

With an increasing number of users opting for mobile PCs, the desk-based PC market is set to undergo a paradigm shift. In the years to come, the market will evolve to a profitable niche segment with a unique form factor. The all-in-one desktop concept, a PC that will be integrated with a monitor, is expected to grow in the next five years, particularly in the mature consumer market.

Users will select mobile PCs as a primary device, and desk-based PCs will remain as a hub system shared by multiple users at home. For this reason, the desk-based PC is not so much a “personal” computer anymore but a “shared” computer for a family.

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8, 9 Gartner, Inc.: “Predicts 2011: Opportunities for Growth Still Exist in PC Market,” Mikako Kitagawa, Annette Jump, Charles Smulders, Tracy Tsai & Angela McIntyre, 23 November 2010

10 “Green IT Plans And Activities Persist In 2010 Despite Lack Of Formal Budgets And Priorities,” Forrester Research Inc., July 27, 2010
Enterprise Software

According to Forrester11, “The total market volume for software will increase from $432.4 billion in 2011 to $481.9 billion in 2012, representing 11.5% growth over 12 months. A number of trends will drive this rapid growth, including cloud computing, smart computing, advanced analytics, and collaboration.”

The largest segment of the global software market is applications, which was estimated at $135.3 billion, or 48.7%, of the market in 2010. This figure is expected to reach $326.6 billion in 2015, reflecting a 51% market share, and a CAGR of 10.7% during this period.

Middleware emerges as the second fastest growing segment with a CAGR of 10.2%, higher than the overall software growth figure of 9.6% for the period 2010 - 2015. In 2010, the segment accounted for 32.7% share of the market, or $132.4 billion, and is expected to rise to $214.8 billion in 2014, representing nearly 33.5% of the marketplace.

Figure 17: Global Business and Government Purchases of Software

Finally, operating system remains to be an important space for vendors to have a strong presence. This segment will remain at an approximate between 5% and 6% of the total market until 2015, although growing from $25.9 billion in 2010 to $34.2 billion in 2015, representing a CAGR of 5.7%.

The Forrester report also highlighted “With ongoing operational costs eating up a major part of corporate IT budgets, there is usually very little left for organizations to spend on new initiatives or true innovation.

Cloud computing to evolve over the next few years

Cloud computing is a result of the evolution of how software and services are delivered to enterprises, over the past 15 years, and a continuing trend toward the industrialization of IT. This is, in part, due to the popularity of outsourcing and hosting of increasingly industrialized service definitions, cost structures, and pricing. The cloud computing model is enabled by the ongoing standardization of underlying technologies like virtualization, service-oriented architecture (SOA), and Web 2.0.

Over the next few years, the delivery models of software will transform from the fundamental concepts of on-premise to just-in-time, pay-per-use, abstracted and simplified resources, and composite applications. Customers will be interested in less cost, more availability and agility, as well as managed risk.

Hybrid software landscape to emerge

In the near future, both on-premise and on-demand models will continue to co-exist in the market, effectively leading to an environment of ‘hybrid’ software landscapes that need to be integrated by vendors. The hybrid approach will also create additional services and options for enterprises willing to maintain their existing infrastructure but want to use services in the cloud to help them boost security and maximize their existing set-up.

Collaborative analytics will transform the business intelligence space

A combination of market forces is creating a new set of challenges for enterprises all sizes. These challenges are making it imperative to provide greater access to real-time data and insights. Legacy BI tools are not becoming able to support and meet expectations of an increasingly dispersed sales team. Even with the data traditional BI tools made available, distribution via file servers and email impeded effective conversations and collaboration around what the data showed.

Collaborative analytics describes the process of users engaged in a collaborative and iterative goal seeking approach to problem solving. It is a mesh of reporting, analytics, workflow and collaboration services that aids knowledge workers’ decision productivity. Collaborative analytics will continue to evolve and gradually get embedded as part of the business intelligence solution portfolio.

Key Takeaways

- The total market volume for software will increase from $432.4 billion in 2011 to $640.5 billion in 2012, representing 9.6% growth over next 5 years.
- Cloud computing, smart computing, advanced analytics and collaboration are expected to gain traction in the market.

Conclusion

The fast-paced global high tech industry is not without its own distinct and complex challenges. Every player in the industry is striving to gain and maintain competitive differentiation by adopting new approaches or by realizing latent sources of success in existing operations. However, while each of the sub-segments faces specific challenges, smart high tech companies should embrace four key strategies in order to thrive:

**Contain costs; it's essential:** Lacking short-term ways to stimulate demand and sales growth, many companies remain focused on preserving their bottom lines by holding down costs.

**Deliver top-notch customer service:** High tech companies have done what they can during the downturn to satisfy the customer – even when service and cost are competing priorities.

**Respond quickly to changes in supply or demand:** For years, many high tech firms focused on forecasting but lacked adaptability or flexibility if their assumptions turned out to be wrong.

**Focus on product development; it matters more than ever:** High tech companies are intent on getting their internal houses in order, focusing on core capabilities and core markets.

In this increasingly competitive environment high tech companies more than ever must excel in key strategic areas by taking the following actions:

**Shift from products to services:** Most high tech companies are making a shift from a product-based model to a services-based model. The companies that provide excellent service to their customers will be the ones that will stand tall in the future.

**Rapid product innovation:** Rapid innovation and faster time-to-market are key business success factors for manufacturing organizations. Solutions in this area can help companies implement product and plan changes faster and more cost efficiently.

**Operational excellence:** Optimize and harmonize global supply chain, rationalize the supplier base and undertake integrated business and inventory planning. Global harmonization programs address these challenges and help manufacturers achieve a reduced operational cost basis.

**Reduce cost without compromising on the quality:** Cost reduction techniques can help manufacturing companies improve their bottom line. This can be done by offshoring of the manufacturing processes to low-cost countries. Business Process Outsourcing and/or co-sourcing approaches also help drive significant cost reduction and enable manufacturers to focus on their core activities.

This report gives an overview of key trends in the high tech sub-segments. There are many techniques and tools that can be applied to your organization to make you stand tall in the market. For additional information about how Capgemini can help you address the trends and challenges, please visit our high tech practice website at: [www.capgemini.com/high-tech](http://www.capgemini.com/high-tech)
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