

ICT

Information and Communication Technology

Overview

The Information and Communications Industry — Japan's Largest Industry

The market size (real GDP) of Japan's information and communications (ICT) industry in 2010 was 98.8 trillion yen. The ICT industry accounted for 10.7% of 922.7 trillion yen for the total of all industries, representing the largest.

The ICT industry also displayed a steady increase in growth rate. The average annual growth rate between 1995 and 2010 was 3.0%, higher than the 0.3% for all industries. Even when compared with other industries—2.8% for the electrical machinery industry and 1.4% for the transport machinery industry—the ICT industry showed the highest growth rate of all industries.

Chart 1 Contribution to real GDP by industry (2010)

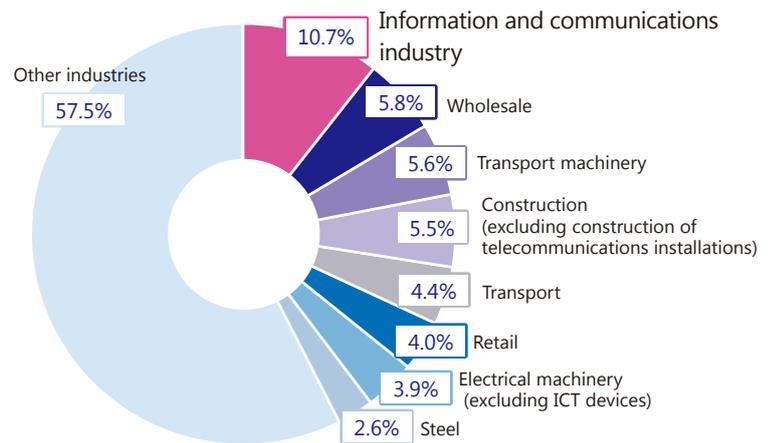
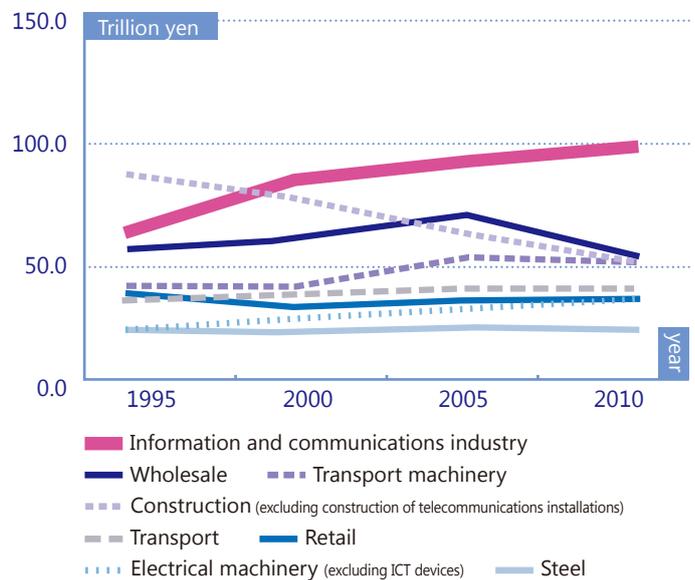


Chart 2 Changes in real GDP for ICT industry and general industries



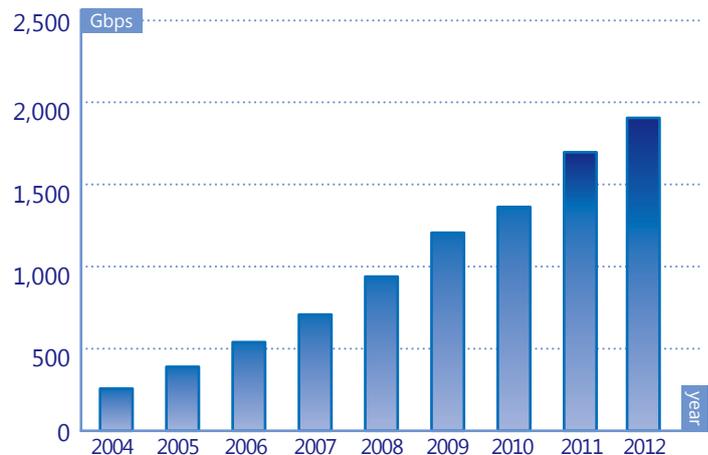
Source of chart 1-2 Economic Research Office, Information Policy Division, Global ICT Strategy Bureau, Ministry of Internal Affairs and Communications, "Survey on Economic Analysis of ICT (2011)"

Proliferation of Broadband

—Expanding Data Traffic (Communication Volume)

With the proliferation of broadband, Internet traffic (communication volume) has continued to increase in Japan. The traffic was 1,905 Gbps in 2012, up more than 7-fold in 8 years from 257 Gbps in 2004.

Chart 3 Changes in total traffic (preliminary calculation) of broadband subscribers in Japan



*The above traffic (communication volume) data was collected in November of each year.

Source of chart 3	Computer Communications Division, Telecommunications Business Department, Telecommunications Bureau, Ministry of Internal Affairs and Communications, "Aggregation and Preliminary Calculation of Internet Traffic in Japan"
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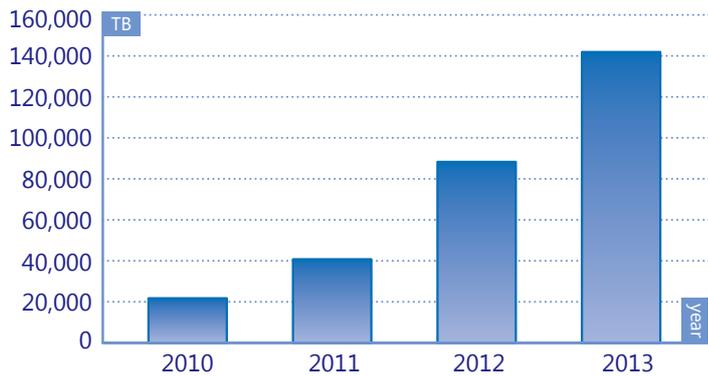
Penetration Rate of Mobile Internet

— Leading the World

According to the Ministry of Internal Affairs and Communications, the penetration rate of mobile Internet in Japan as of 2010 was 89.5% (Note), the highest in the world. Mobile traffic (communication volume) has also rapidly increased, more than doubling in the one year between 2011 and 2012.

Note: Source: Ministry of Internal Affairs and Communications, "Information and Communications in Japan (2012)," White Paper.

Chart 4 Changes in mobile traffic in Japan



*The above traffic data was collected in June of each year. (Except for 2013, when collected in March)

Source of chart 4	Ministry of Internal Affairs and Communications, "Current status of mobile communications traffic"
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To relieve such exploding mobile traffic, mobile phone operators have proactively taken an action called "offload," where the traffic is routed to public wireless LAN services instead of mobile phone lines. For new entries to the market, the Ministry of Internal Affairs and Communications developed "Wireless LAN business guidelines," consisting of notes to which public wireless LAN service providers should pay attention.

Recovery in IT Investment by Japanese Companies

In recent years, trends of IT investment in Japan have been affected by the world economy, especially financial situations. However, enterprise IT investment, which slumped in the wake of the Lehman shock, is now in an uptrend with the overall improvement in business sentiment.

Chart 5 Changes in IT market size for private sector in Japan



Source of chart 5	Yano Research Institute, "Trends in Domestic IT Investment and Future Outlook (2012)"
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Attractive Markets

As broadband has proliferated and mobile communications have risen due to the rapid growth of smartphones, the data volume has steadily increased. Under these circumstances, fields such as "Data center" and "Big data" are likely to be promising markets in Japan. Now that enterprise IT investment is rebounding from the recession caused by the Lehman shock, the ERP (Enterprise Resource Planning) market could also be attractive with high future growth potential.

This report describes the three markets to the right as promising:

(1) Data Center Market

—Expanding Market for Hardware and Software

The data center market has been growing for both hardware and software.

For hardware, the total floor area of data centers is expected to continue to increase due to data center investment by IT businesses.

For software, the compound average growth rate (CAGR) for data center services from FY 2010 to FY 2016 is expected to be 5.4% and the market size is likely to reach 1.0559 trillion yen in FY 2016. In this promising data center market, there will likely be a stable demand for data centers in Japan for the following four reasons:

a Companies increasingly want to have external data centers manage their increased number of servers for continued data growth.

b Since the Tokyo Metropolitan Government's "Improve the Urban Environment and Protect the Health of Citizens Ordinance" took effect, a growing number of companies have considered using external data centers to reduce their electricity use.

c After the Great East Japan Earthquake in 2011, there has been an increase in the number of companies that want to use data centers, which are highly robust, for business continuity.

d The proliferation of cloud computing has accelerated companies to shift from "owning" to "using" IT equipment. Now, there is a growing demand not only for "housing services," where companies bring their own servers and network devices to the data center and the data center operator provides them with a space for server rack installation, electricity and lines, but also for "hosting services," which allows customers to use external servers.



Chart 6 Changes in total floor area of data centers

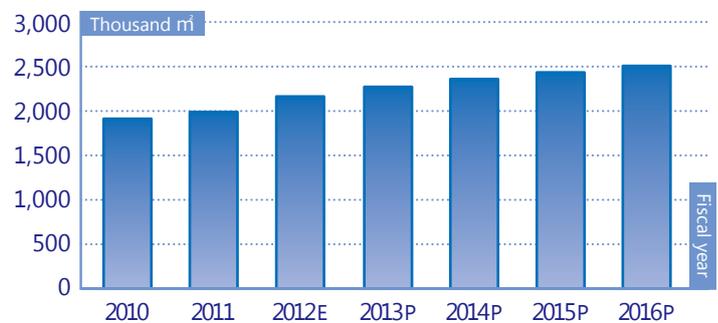


Chart 7 Changes in market size of data center services



Source of chart 6-7 Yano Research Institute, "Current Status and Investment Trends in Data Center Business (2013)"

The data center market in Japan includes foreign-affiliated companies such as Verizon Japan Ltd., KVH Co., Ltd., Equinix Japan K.K., and IBM Japan, Ltd..

(2) Big Data Market

—Expecting Future Market Growth

Analyzing big data for marketing is now drawing attention. For this reason, the big data market is largely comprised of BI (business intelligence) services, where a large amount of a company's data is used for its decision-making after being stored, analyzed, and processed. The market size of big data in FY 2011 was estimated to be 190 billion yen, including software license, system architecture, hardware, and support.

The positioning and role of big data are likely to change in the short, medium, and long term, and the market size will expand accordingly. With active use of big data for company business, in the long run, the market size is predicted to become 630 billion yen in FY 2017, more than 3 times the current size, and to exceed 1 trillion yen in FY 2020, more than 5 times of what it is today.

The big data market includes many foreign-affiliated companies, such as IBM Japan, Ltd., Hewlett-Packard Japan, Ltd., and SAP Japan Co., Ltd..

(3) ERP Market

—Expecting Future Revitalization of the Market

The ERP package license market plunged due to the Lehman shock in 2009, followed by the Great East Japan Earthquake and the floods in Thailand, and its growth rate remained in the single digits until 2011.

However, the market seems to have recovered from the economic downturn in 2012 and is back in a full uptrend. With a steadily increasing number of projects to newly install ERP for replacement of aging systems, business enhancement, and improvement of operating processes, the market has now been revitalized.

Generally, IT investment has a slight lag time to economic trends. However, if the economy continues to improve in 2013 and beyond, companies could spend more on IT investment, including ERP. In addition, the need for implementation of ERP overseas could drive the market for the time being. In particular, Japanese companies expanding their business into international markets have a strong intention of using IT for enhancement of overseas operations and optimization of supply chains. Therefore, they have accelerated their moves to implement ERP overseas and integrate ERP globally.

High-priority ERP investment target systems include SCM (supply chain management), production

Chart 8 Forecast of Big Data market size

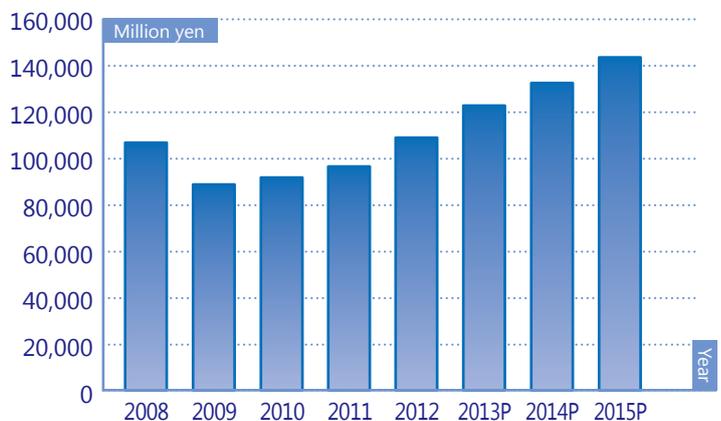


The above chart is based on the following possible scenarios:

- a . Short term (FY 2011): Stimulate investment mostly in data analysis for sales improvement and economy of speed.
- b . Medium-term (around FY 2015): Promote investment in the use of big data for a competitive advantage, leading to industry structural change.
- c . Long term (around FY 2017): Use the big data technology for the infrastructure of smart cities, optimizing waste and excess in society.

Source of chart 8 Yano Research Institute, "Big Data Market 2012"

Chart 9 Changes in ERP market size(based on end-user prices)



Source of chart 9 Yano Research Institute, "Current Status and Future Prospects of ERP Market (2012-2013)"

management systems, and accounting systems. This can be because there is a need for global production, inventory management, distribution optimization, and quick understanding and management of business information.

The ERP market includes foreign-affiliated companies such as SAP Japan Co., Ltd., Oracle Corporation Japan, and Microsoft Japan Co., Ltd..

Governmental Efforts

Promoting Regulatory Reforms

In a cabinet meeting on June 14, 2013, the government approved the "Regulatory Reform Implementation Plan," which is designed to steadily proceed with regulatory reforms in various areas. Based on this plan, a number of reforms will be advanced, including the following for ICT:

1 Establishing guidelines for the use of big data

It has been said that one of the reasons that keeps companies from using big data is a problem resulting from the "Personal Information Protection Law." In order to clarify the criteria of how much modification of personal data is required to prevent breaching the "Personal Information Protection Law," the reforms include establishing of guidelines.

2 Promoting the use of ICT in medicine

To promote the use of ICT in medicine, reforms include reviewing regulations on sales of over-the-counter drugs through the Internet, promoting remote medical care, and digitizing medical charts and prescriptions.