

Corporate IT Investment and Internet Usage Gain Momentum

— *The NLI Survey of Business Conditions*

by the Business Conditions Survey Team
Economic & Industrial Research Group

Introduction

While consistently lagging behind the U.S. in the adoption of information technology (IT), Japan's recent surge in Internet use has propelled e-commerce activities and triggered the growth of information technology (IT) related industries to a new level. Moreover, the strength of IT related investment in an otherwise uninspired investment climate has brought to light the macroeconomic significance of corporate IT programs as well.

To examine the status of corporate IT programs in Japan, Nippon Life Insurance Co. and NLI Research Institute jointly conducted the Nissay Business Conditions Survey in January and February, covering 4,034 companies nationwide. We found an aggressive stance toward IT related investment, with over 30% of companies increasing IT related investment spending in fiscal 2000 over the previous year. In addition, approximately 60% have made IT investments in accounting operations in the past three years, while over half have already set up web sites.

However, progress has not been uniform: a quarter of the companies (27.5%) have no more than one personal computer for every five employees, and only about 10% are engaged in e-commerce. This may be attributed to two major concerns shared by many companies: the lack of specialized personnel, and the unproven effectiveness of IT investment.

1. IT Related Investment

(1) Disparities in Software Development and Orders by Company Size

In fiscal 1999, with the exception of a minority of 3.9% of companies, all companies invested in information technology (Figure 1).

The most common areas of investment spending were computer related purchases (52.8%),

followed by network construction (47.9%), computer related leasing or rentals (46.8%), and systems maintenance (43.2%).

Overall, large companies tend to invest in IT more aggressively than second tier and small and mid-sized companies. This tendency is especially pronounced in advanced IT areas such as software development and orders, and outsourcing of systems operation and development.

Figure 1 IT Investment Categories by Company Size (Fiscal 1999)

(%)

	Overall	Large	2nd tier	Small & med.
Computer purchases	52.8	52	54.5	52.1
Computer lease/rental	46.8	58.1	53.9	42.8
Software purchases	39.9	51.6	43.6	37.3
Software dev./orders	26.2	47.7	31.1	22
Systems outsourcing (oper./dev.)	10	19.4	12	8.3
Network construction	47.9	55.2	54.3	44.8
Systems maintenance	43.2	55.2	50.4	39.2
Not investing	3.9	0.7	1.9	5.1

Note: Numbers do not add up to 100 due to multiple responses.

(2) 30% Plan to Increase IT Investment in Fiscal 2000

With regard to IT investment plans for fiscal 2000, the largest segment of companies plans to spend the same amount as in the previous year (46.6%), while 31.2% plan to increase spending and 11.9% plan a decrease. The diffusion index of 19.3 (DI; percent of companies planning increase minus those planning decrease) thus indicates that many companies will invest actively in IT in fiscal 2000 (Figure 2).

By industry, the DI for IT investment intentions appears strong among companies in information services (DI = 40.9), personal services (39.5), publishing and printing (26.3), and food products (25.4). On the other hand, the DI is non-positive for utilities (-8.5) and oil and glass and ceramics (0.0), indicating a more restrained investment stance.

By region, companies in the Tohoku (DI = 23.5), Kanto (22.8), Tokai (22.3), and Hokkaido (21.3) areas appear to have a positive stance toward IT investment, while those in the Shikoku (5.8) and Koshinetsu/Hokuriku (9.1) areas appear to be less enthusiastic.

Figure 2 IT Related Investment Plans for Fiscal 2000

(%)

	Increase	No change	Decrease	Don't know	DI
All industries	31.2	46.6	11.9	9.3	19.3

Industry

Oil, glass & cer.	18.8	52.2	18.8	10.1	0
Food products	35	42.9	9.6	12.4	25.4
Publishing/printing	35.1	40.4	8.8	12.3	26.3
Information services	43.5	47.8	2.6	3.5	40.9
Personal services	49.4	33.3	9.9	6.2	39.5
Utilities	12.8	55.3	21.3	6.4	-8.5

Company size

Large	31.2	52	10.8	5.4	20.4
2nd tier	31.5	48.7	11.9	6.6	19.6
Small & med.	31.1	45.3	2	10.7	19.1

Note: Numbers may not add up to 100 due to incomplete responses.

(3) IT Investment is Concentrated in Accounting

In the past three years (fiscal 1997-99), the most common category of IT investment has been accounting (58.3%), followed by sales and customer management (43.3%), marketing (39.7%), and personnel and payroll (39.7%; Figure 3).

By industry, IT investment in accounting is led by real estate (78.8%) and restaurants (69.6%), sales and customer management by retailing (71.0%), marketing by the financial industry (65.4%), personnel and payroll by restaurants (53.6%), production management by electrical machinery (59.9%), and R&D by information services (34.8%).

By company size, significant differences do not occur for investment in accounting (60%), and for sales and purchase orders (both 30%). However, company size is a significant factor in the areas of marketing, personnel and payroll, and distribution.

Figure 3 IT Related Investment in the Past Three Years

	Marketing	Personnel/payroll	Accounting	Orders mgt.	Sales/customer mgt.	Purchasing mgt.	Production mgt.	Distribution	After-sales service	R&D	Other
All industries	39.7	39.7	58.3	31.5	43.3	29.8	27.3	12.9	3.1	8.9	8.3
Selected industries											
Elec. machinery	30.2	41.3	59.5	37.2	31.8	40.9	59.9	10.3	3.3	16.1	7.9
Real estate	20	33.8	73.8	10.8	44.6	9.2	4.6	0	3.1	0	12.3
Retail	52.6	39	55	21.4	71.0	30.4	2.4	14.1	5.4	1.4	3.3
Restaurant	40.6	53.6	69.6	21.7	36.2	46.4	4.3	10.1	4.3	1.4	5.8
Inform. services	31.3	35.7	57.4	20.9	39.1	22.6	12.2	2.6	7.8	34.8	11.3
Finance	65.4	34.6	57.7	0	53.8	11.5	0	0	7.7	3.8	26.9
Company size											
Large	50.9	47.7	58.8	32.6	48.4	28.7	30.1	23.3	5	12.9	8.6
Second tier	42	43.4	57.4	32.5	42.5	28.7	32.2	16.3	3.8	11.2	9.6
Small & med.	37.8	37.5	58.7	31.2	43.1	30.4	25.2	10.5	2.7	7.6	7.8

Note: Numbers do not add up to 100 due to multiple responses.

(4) Penetration of Personal Computers Varies by Industry

Overall, the most common ratio of regular employees per personal computer is five to one (27.4%), followed by two to one (24.9%). Only 17.3% have a one-to-one ratio or better (Figure 4).

By industry, the one-to-one ratio is highest in information services (78.3%), followed by communications (51.4%) and specialized services (49.0%). On the other hand, almost one-half (46.6%) of companies in the retail industry have five or more persons per PC.

By company size, the proportion of companies with no more than one person per PC tends to increase with company size.

By region, the one-to-one ratio is high in the Kanto (28.1%) and Hokkaido (18.1%) regions, and low in the Tokai (10.6%), Shikoku (11.6%) and Chugoku (11.7%) regions.

Figure 4 Ratio of Employees to Personal Computers

(%)

Persons per computer	1	2	3	4	5 or more
All industries	17.3	24.9	17.3	11.5	27.4
Selected industries					
Electrical machinery	21.1	31.8	17.4	9.5	19
Communications	51.4	14.3	14.3	11.4	8.6
Real estate	30.8	20	18.5	10.8	16.9
Retail	8.1	18.7	14.1	11.4	46.6
Information services	78.3	11.3	1.7	1.7	4.3
Specialized services	49.0	24.5	6.1	6.1	6.1
Company size					
Large	25.1	27.6	17.2	6.8	21.5
Second tier	17	28.6	17.5	9.4	26.2
Small & medium	16.6	23.3	17.3	12.8	28.4

Note: Numbers may not add up to 100 due to incomplete responses.

(5) IT Expertise Shortage Limits Investment

The large majority of companies are confronting problems in implementing IT investment. Only about 20% cite no problems in particular (Figure 5).

The largest bottleneck to IT investment appears to be a lack of IT experts (29.7%), followed by inadequate employee training & development regarding IT (28.7%). However, another obstacle is pessimism regarding IT: almost one in four companies (23.6%) expects IT investment not to produce significant efficiency and earnings improvement.

By industry, the lack of IT expertise is particularly acute in business services (38.2%) and steel (37.8%). Inadequate employee training & development regarding IT is most cited in personal services (35.8%), and the high cost of hardware and information services in electric power, gas and water utilities (29.8%).

By company size, the lack of IT expertise increases in importance as company size decreases, and is most acutely felt among small and mid-sized companies.

Figure 5 Problems Encountered in Implementing IT Investment

(%)

	Lack of IT experts	Lack of funds	Employee resistance	Poor employee T&D	Limited benefits	Needs not met	High cost	Speed of change	Unsure where to use	Preoccupied elsewhere	No problems
All industries	29.7	5.8	2.9	28.7	23.6	8.7	11.1	6.5	6.3	9.1	19.7
Selected industries											
Steel	37.8	4.1	2.7	28.4	18.9	9.5	14.9	5.4	9.5	13.5	12.2
Restaurant	26.1	13.0	4.3	29	21.7	13.0	14.5	4.3	2.9	5.8	20.3
Specialized serv.	22.4	6.1	0	22.4	24.5	12.2	6.1	10.2	6.1	10.2	22.4
Business serv.	38.2	6.6	1.5	27.2	19.9	6.6	8.1	8.8	8.1	8.8	20.6
Personal serv.	25.9	7.4	3.7	35.8	25.9	7.4	14.8	2.5	3.7	4.9	18.5
Utilities	25.5	10.6	0	23.4	19.1	4.3	29.8	6.4	6.4	6.4	21.3
Company size											
Large	16.5	7.5	1.1	23.7	22.2	12.5	14.7	9.3	5	8.6	24.4
Second tier	24.5	6.1	2.8	29.9	25.3	10.3	12.4	8.7	4.8	9.8	19.7
Small & med.	33.2	5.6	3.1	28.8	23.1	7.6	10.1	5.3	7	8.9	19.2

Note: Numbers do not add up to 100 due to multiple responses.

2. Internet Use

(1) Over Half Have Set Up Web Sites

Over one-half of companies (51.2%) have completed setting up a home page on the Internet. Combined with the companies now considering doing so, the proportion rises to 75.3%, or three out of four companies who are at some stage of establishing a web site (Figure 6). Thus as the Internet grows, companies are increasingly regarding an Internet presence as a condition for business.

By industry, web presence is strongest in communications (91.4%), followed by information services (91.3%) and publishing and printing (82.5%).

Disparities are pronounced by company size. Whereas four out of five large companies have already set up web sites, only 40% of small and mid-sized companies have done so. More-

over, approximately 30% of small and mid-sized companies presently have no plans for the immediate future.

Figure 6 Status of Web Site Setup

(%)

	Completed (A)	Under study (B)	No plans	Completed +Under study (A+B)
All industries	51.2	24.1	23.8	75.3
Selected industries				
General/precision machinery	58.3	26.4	14.9	84.7
Publishing/printing	82.5	10.5	5.3	93
Communications	91.4	8.6	0	100
Retail	53.7	24.7	20.6	78.4
Information services	91.3	2.6	2.6	93.9
Specialized services	73.5	12.2	12.2	85.7
Personal services	66.7	18.5	13.6	85.2
Company size				
Large	81.7	9.3	7.5	91
Second tier	67	18.9	13.5	85.9
Small & medium	42	27.7	29.6	69.7

Note: Numbers do not add up to 100 due to multiple responses.

(2) Only 12% are Engaged in E-Commerce

Only 12.4% of companies are presently enabled for e-commerce on the Internet. Combining the companies now considering entering e-commerce, the proportion still amounts to only about 30% (Figure 7). On the other hand, over 65% have no plans in the immediate future. Thus despite the expansion of IT investment, progress in e-commerce remains slow. However, since e-commerce is expected to grow at an accelerating rate once it begins to spread, the potential exists for rapid growth in the future once the companies now considering e-commerce implement their plans.

By industry, current e-commerce use has advanced most in publishing and printing (29.8%), information services (27.0%), and personal services (22.2%). By company size, small and mid-sized companies lag behind significantly, with approximately 70% having no plans to enter e-commerce in the immediate future.

Figure 7 Status of E-Commerce Activity

(%)

	Completed (A)	Under study (B)	No plans	Completed +Under study (A+B)
All industries	12.4	20.6	65.4	33
Selected industries				
General/precision machinery	14.9	19.1	65.5	34
Publishing/printing	29.8	17.5	50.9	47.3
Communications	20	8.6	71.4	28.6
Retail	13.8	28.7	55.3	42.5
Information services	27.0	35.7	33.9	62.7
Specialized services	20.4	18.4	55.1	38.8
Personal services	22.2	27.2	48.1	49.4
Company size				
Large	21.9	23.7	51.6	45.6
Second tier	15.3	23.4	60	38.7
Small & medium	10.3	19.1	69.0	29.4

(3) 80% of E-Commerce is B2B

Among companies already engaged in (or considering) e-commerce, 79.5% are engaged in business-to-business (B2B) e-commerce, while 45.8% are engaged in business-to-consumer (B2C) e-commerce (Figure 8). Included in both categories are the 27.0% of companies engaged in both B2B and B2C. This strong B2B orientation can be largely attributed to the uncertainties surrounding B2C e-commerce, compared to the significant cost reductions expected from B2B e-commerce.

By industry, the B2B orientation is strongest in non-ferrous metal and metal products (98.4%), followed by steel (95.3%), information services (91.7%), and business services (91.4%). On the other hand, the B2C orientation is strongest in retail (83.4%) and food products (69.8%), which are closely associated with final consumption goods.

By region, the B2B orientation is strong in Kyushu (87.5%) and Koshinetsu/Hokuriku (86.8%) regions, while the B2C orientation is strong in Hokkaido (88.0%).

Figure 8 B2B Versus B2C E-Commerce

	Corporate customers (A + C)	Consumers (B + C)	Customer segment		
			Corporate only (A)	Consumer only (B)	Both (C)
All industries	79.5	45.8	52.5	18.8	27
Selected industries					
Steel	95.3	14.3	81	0	14.3
Non-ferrous metal	98.4	23.4	75	0	23.4
Food products	65.7	69.8	26	30.1	39.7
Retail	50.9	83.4	14.6	47.1	36.3
Information services	91.7	44.4	55.6	8.3	36.1
Personal services	91.4	40	60	8.6	31.4
Company size					
Large	74	49.6	49.6	25.2	24.4
Second tier	78.4	47	51.1	19.7	27.3
Small & medium	80.8	44.5	53.7	17.4	27.1

Note: Numbers do not add up to 100 due to multiple responses.

(4) 80% Use E-Commerce in Sales and Marketing

Among companies engaged in (or considering) e-commerce, the most common application area by far is sales and marketing (78.8%), followed by procurement (33.9%) and accounting and administration (20.6%; Figure 9).

By industry, application in sales and marketing is highest in communications (100.0%) and finance (100.0%), while application in procurement is highest in transport equipment (58.8%) and electric machinery (54.4%).

Large companies tend to implement procurement applications, while second-tier and small and mid-sized companies tend to implement (or consider) applications in accounting and administration.

Figure 9 E-Commerce Applications Being Used (or Considered) by Department

	Sales / marketing	Development / design	Procurement	Adminis- tration	Other
All industries	78.8	17.6	33.9	20.6	4.4
Selected industries					
Electric machinery	67.8	23.3	54.4	22.2	1.1
Transport equipment	62.7	27.5	58.8	21.6	3.9
Communications	100.0	10	0	10	0
Real estate	90.9	0	18.2	18.2	0
Wholesale	90.7	6.3	39	19.5	3.4
Specialized services	47.4	52.6	26.3	15.8	5.3
Finance	100.0	0	0	0	16.7
Company size					
Large	78	18.1	39.4	15	6.3
Second tier	79.1	18.7	37.1	21.4	4.4
Small & medium	78.9	17	31.6	21.1	4

Note: Numbers do not add up to 100 due to multiple responses.

(5) 70% Use E-Commerce for Purchase Orders

Among companies engaged in (or considering) e-commerce, the most common function is processing of sales and purchase orders (69.2%), followed by sales promotion and product information (47.3%), and back office order processing for delivery (27.9%; Figure 10).

Figure 10 E-Commerce Applications Being Used (or Considered) by Work Function

	Issuing / receiving purchase orders	Sales negotia - tions	Dev./ design negotia - tions	Order process - ing	Settle - ment	Fulfill - ment	Promo - tions/ product info.	Other
All industries	69.2	20.3	16.1	27.9	16.8	11.3	47.3	4.7
Selected industries								
Electric equip.	76.7	21.1	27.8	33.3	17.8	7.8	35.6	3.3
Transport equip.	70.6	27.5	39.2	31.4	17.6	3.9	33.3	2.0
Communications	30.0	10.0	10.0	20.0	10.0	10.0	40.0	10.0
Real estate	18.2	9.1	0.0	9.1	9.1	18.2	72.7	9.1
Wholesale	82.4	24.9	9.8	30.2	17.1	14.1	52.7	2.0
Specialized serv.	47.4	15.8	36.8	15.8	10.5	5.3	36.8	10.5
Finance	33.3	16.7	0.0	0.0	66.7	33.3	83.3	33.3
Company size								
Large	65.4	18.9	15.7	26.8	18.9	12.6	45.7	4.7
Second tier	71.7	21.6	16.0	28.0	17.4	10.6	48.2	6.1
Small & medium	68.3	19.8	16.4	28.2	16.3	11.4	47.1	4.0

By industry, the most common function is sales and purchase orders in wholesale (82.4%), followed by sales promotion and product information in finance (83.3%) and real estate (72.7%). By company size, with the exception of transactions settlement and delivery of product/service, second-tier and small and mid-sized companies are slightly more involved in implementing (or considering) e-commerce functions.

Nissay Business Conditions Survey

Survey period: Mid January to late February 2000

Number of valid responses: 4,034

1. By company size

	No. of companies	Composition (%)
Large	279	6.9
Second tier	1,053	26.1
Small & mid-sized	2,687	66.6
Total	4,034	100.0

2. By region

	No. of companies	Composition (%)
Hokkaido	94	2.3
Tohoku	277	6.9
Kanto	1,093	27.1
Koshinetsu/Hokuriku	351	8.7
Tokai	517	12.8
Kinki	943	23.4
Chugoku	350	8.7
Shikoku	86	2.1
Kyushu	193	4.8
No answer/other	130	3.2
Total	4,034	100.0