KEY ISSUES FOR IT EXECUTIVES 2004

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Executive Summary

In the summer of 2004, the Society for Information Management (SIM) once again commissioned a formal survey to uncover the opinions of its members on three important topics: key management concerns, application and technology developments, and IT - business alignment. We received 182 responses, which were analyzed in several categories: industry, revenue, years of experience in the IT field, and job title (CIOs versus Other IT Executives).

The top five management concerns were:

1. *IT and business alignment*
2. *Attracting, developing, retaining IT professionals*
3. *Security and privacy*
4. *IT strategic planning*
5. *Speed and agility*

The top six application and technology developments were: (1) Security technologies, (2) business intelligence, (3) business process management, (4) Web Services, (5) customer portals, and (6) data synchronization. Half of these technologies were new to the list of top developments.

Some 70% of the respondents perceived their IT-business alignment maturity to be at a Level 2 or 3, using a 1 (lowest alignment) to 5 (highest alignment) Likert Scale. This low score is probably why IT-business alignment remains such a major management concern. The maturity assessment can serve as both a descriptive and prescriptive tool to help organizations identify opportunities for narrowing the alignment gap.

Other important insights from the survey respondents: 51% of 2004 budgets are greater than 2003; 43% of 2005 budgets will be greater than 2004; on average, 40% of an IT budges goes toward staffing, 18% toward software and 19% toward hardware; 77% of respondents expect to have the same or increased headcount in 2004 as 2003; and, 68% are NOT using offshore outsourcing. This article discusses these findings and their managerial implications.[2]

TAKING THE PULSE OF IT MANAGEMENT ISSUES

Since 1980, the Society for Information Management (SIM) has sought to uncover and publish the key is-sues facing its IT executive members. Ball and Harris conducted the first survey and produced a list of 18 issues in 1982.[3] Subsequent surveys were taken in association with the MIS Research Center at the University of Minnesota in 1983[4], 1986[5], 1990[6], and 1994[7].

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[3] Ball, L. and R. Harris, "SIM Members: A Membership Analysis," *MIS Quarterly,* (6:1), March 1982, pp. 19-38.

[4] Dickson, G.W., R.L. Leitheiser, J.C. Wetherbe, and M. Nechis, "Key Information Systems Issues for the 1980's," *MIS Quarterly* (8:3), September 1984, pp.135-159.

Figure 1: Management Concerns

2004 Rank	Issue (2003 rank)
1	IT and business alignment (1)
2	Attracting, developing, and retaining IT professionals (4)
3	Security and Privacy (3)
4	IT Strategic planning (2)
5	Speed and agility (9)
6	Government regulations (17)
6	Complexity reduction (8)
8	Measuring the performance of the IT organization (6)
9	Creating an information architecture (7)
10	IT governance (10)
11	Business process reengineering (11)
11	Measuring the value of IT investments (5)
13	Evolving the CIO leadership role (13)
14	Introducing rapid business solutions (12)
15	Managing outsourcing relationships (15)
16	Globalization (18)
17	IT asset management (14)
18	Leveraging the legacy investment (16)
19	Salary for IT staff (not in 2003 survey)
20	Offshore outsourcing impacts on IT careers (19)
21	Staff reduction (not in 2003 survey)
22	Social implications of IT (20)

In 2003, the SIM Executive Board authorized the sixth formal survey[8]. Given the great interest in the insights presented, the study was sponsored once again in 2004. The objective was to identify the current concerns and compare them with the results of previous years.

As in 2003, the 2004 survey focused on three important areas: management concerns, application and technology developments, and IT-business alignment. Participants were asked to rate 22 managerial issues (Figure 1), rate 25 technical issues (Figure 13), and identify which level of strategic alignment maturity they believed best represented their organization (Figure 18). As in the past, we predicted before the survey that "IT and business alignment" would rank high. The purpose of the alignment maturity question was to explore this important issue further.

The following three sections recount the findings for the three segments of the 2004 survey. These findings are based on 182 responses from SIM members. A more detailed description of the survey plan is in the Appendix.

FINDINGS FOR SECTION 1: MANAGEMENT CONCERNS

The responses of the SIM executives (both IT and business executives) in 2004 and 2003 are shown in Figure 1. The top ten management concerns from 1980 to 2004 are shown in Figure 2.

The Top Ten Management Concerns

While the relative rankings of the top management concerns for summer 2004 differ from 2003, all but one remain on the top-ten list. Measuring the value of IT investments moved from number five in 2003 to being tied for number eleven in 2004. New to the top ten list in 2004 is government regulations. It is interesting to note what moved closer to the top (number one), what stayed the same, and what moved further away from number one.

[5] Brancheau, J.C. and J.C. Wetherbe, "Key Issues in Information Systems Management," *MIS Quarterly* (11:1), March 1987, pp. 23-45.
[6] Niederman, F., J.C. Brancheau, and J.C. Wetherbe, "Information Systems Management Issues in the 1990's," *MIS Quarterly* (15:4), December 1991, pp.474-499.
[7] Brancheau, J.C., B.D. Janz, and J.C. Wetherbe, "Key Issues in Information Systems Management: 1994-95 SIM Delphi Results," *MIS Quarterly* (20:2), June 1996, pp. 225-242.
[8] Luftman, J.N., McLean, Eph R., "Key Issues For IT Executives," *MIS Quarterly Executive*, June 2004, Vol. 3, No. 2.

Figure 2: Top Ten Management Concerns - Ranking of Importance Based on All Respondents(Number of Respondents Shown in Parentheses)

	2004 (182)	2003 (301)	1994 (108)	1990 (104)	1986 (68)	1983 (54)	1980 (417)
IT and business alignment	1	1	9	7	5	7	-
Attracting, developing, and retaining IT professionals	2	4	8	4	12	8	7
Security and privacy	3	3	-	19	18	14	12
IT strategic planning	4	2	10	3	1	1	1
Speed and agility	5	9	-	-	-	-	-
Government regulations	6	17	-	-	-	-	-
Complexity reduction	6	8	-	-	-	-	-
Measuring the performance of the IT organization	8	6	-	-	-	-	-
Creating an information architecture	9	7	4	1	8	-	-
IT governance	10	10	-	-	-	-	-

IT and business alignment once again, is the top-ranked issue. In addition, 70% of the re-spondents assessed their organization at a level 2 or 3 (using a 5-point Likert scale where 5 indicates the highest level of alignment). Alignment means applying IT in an appropriate and timely way, in harmony with business strategies, goals, and needs. It is synonymous with such terms as integration, cohesion, fusion, fit, match, and linked.

The continued high ranking of alignment supports the need to explore it further. With the results from this SIM survey and the over 100 organizations doing more detailed assessments, clearly defined steps have been identified to better integrate IT and business organizations. These options are discussed in Section 3, which explores alignment maturity in some detail.

Attracting, developing, and retaining IT profession-als, ranked fourth in 2003, moved up to number two in 2004. In previous years, it was not even near the top ten.

Responses in this year's survey indicate that 51% of 2004 budgets are higher than 2003 (Figure 3), while 43% of 2005 budgets will be higher than 2004 (Figure 4). Hence, IT budgets are on the rise. This increase

plays an important role in attracting, developing, and retaining staff because 40% of these budgets are allocated toward staffing (Figures 5 and 6).

Even though these are relative numbers, budgeted percentages for staffing are decreasing, as can be seen by comparing 2004 with 2005. The pie is larger because budgets have increased overall, but the slices for staffing and hardware are 1% smaller than those for software and services.

Some 77% of the respondents will have the same or increased headcount in 2004 over 2003 (Figure 7). Again, although the relative slice of the IT budget is smaller, the numbers are higher.

It appears that the economy has turned, albeit not at break-neck speed, and the IT job market is improving. These budget increases, along with the higher ranking of attracting, developing, and retaining IT professionals, are encouraging. IT executives may be taking a longer-term view of investing in their professional staff.

Also, some companies may be concerned that neglecting their employees during the downturn in the early part of this decade may cause large-scale defections as the economy further improves. It might be too late to
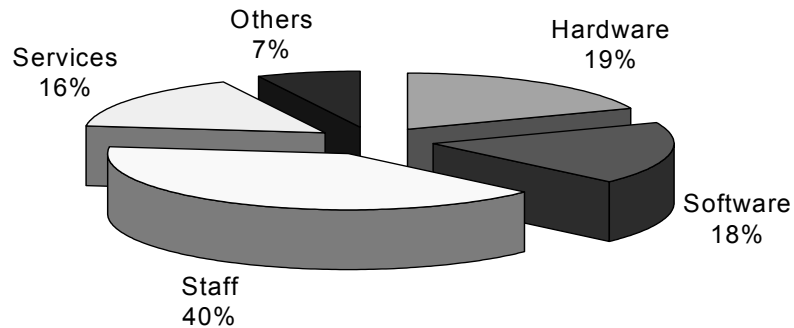
Figure 3: 2004 IT Budget In Comparison to 2003

2004 less than 2003	2004 equal to 2003	2004 greater than 2003
20%	29%	51%

Figure 4: 2004 IT Budget In Comparison to 2005

2004 less than 2005	2004 equal to 2005	2004 greater than 2005
43%	33%	24%

Figure 5: 2004 IT Budget Allocation

Others
7%

Services
16%

Hardware
19%

Software
18%

Staff
40%

be proactive, but some IT executives are investing more in staffing.

A second issue encompasses the globalization of the IT function. 32% of the respondents are using offshore outsourcing; see Figure 8. Managing IT work performed all around the world requires new skills, which are extremely scarce. Thus, "attracting, developing, and retaining IT professionals" has taken on new meaning–and new urgency. IT staff are increasingly called upon to work with remote external partners. Again, the higher ranking of this issue indicates that IT executives have recognized the need to retool their IT organization for this evolving environment.

Also, it should be pointed out that while attracting,

Figure 6: 2005 IT Budget Allocation

Others
7%

Services
17%

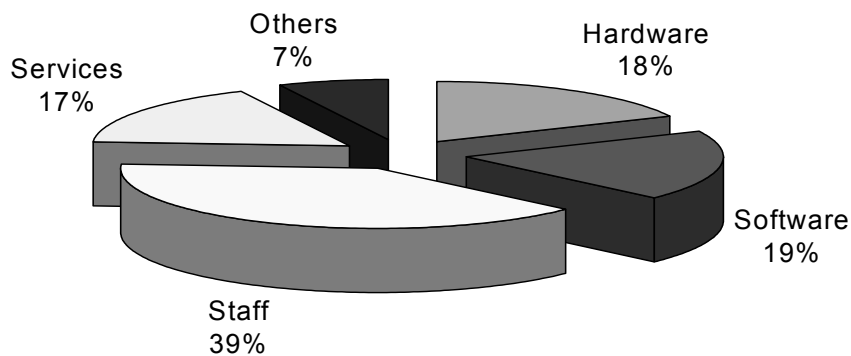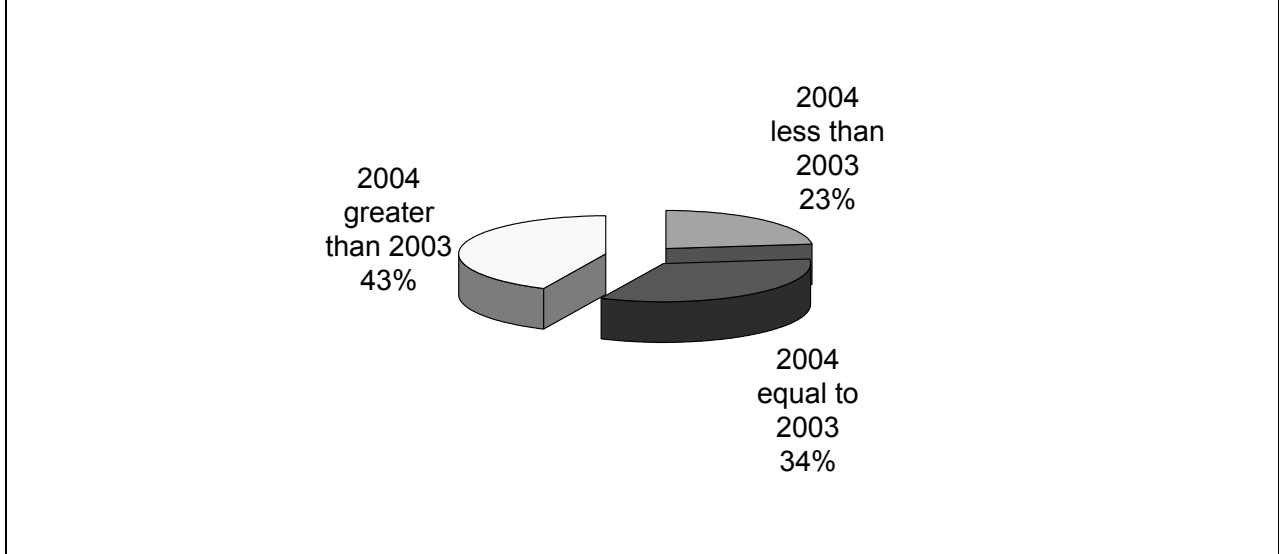Hardware
18%

Software
19%

Staff
39%

Figure 7: 2004 IT Headcount in Comparison to 2003

developing, and retaining IT professionals was ranked number two, salary for IT staff is ranked nineteen and staff reduction is ranked twenty-one.

Security and privacy is once again ranked third. Additionally, security technologies are ranked as the number one application and technology development (Figure 13) this year. The tragedy of 9/11, global threats, and continued news of sophisticated security breaches (e.g., U.S. federal government, Western Union, Seibel, Bank of America, major credit card companies, AOL) continue to reinforce the importance of information systems in the United States and their vulnerability to viruses, worms, hackers, phishing, and terrorists. At the same time, the public continues to demand greater protection from identity theft and other privacy threats. Security and privacy will likely remain important concerns of IT executives for some time to come.

IT strategic planning. The relative importance of security and attracting/retaining personnel has pushed

the essential area of IT strategic planning down from number two in 2003 to number four in 2004. Not having an effective staff in a safe environment would preclude an organization's ability to carry out their strategy.

Strategic planning is about creative thinking to identify new business opportunities or to address business problems and improve business processes. Hence, the focus should be on the value the strategy has in meeting business goals. This value focus implies that IT and the business need to work together to create an effective strategic plan. Such a plan ensures that the strategy has an appropriate business sponsor and champion(s), the business has committed to how it will attain value from the strategy, and a governance process is in place to monitor implementation of the strategy.

Too often, strategic plans (IT included) are never enacted. Or worse, they are enacted and the results turn

Figure 8: Percent of Outsourcing Done Offshore

Percent of outsourcing done offshore	% of respondents
0	68%
<10	13.7%
<20	3.3%
<30	5.5%
<40	0.5%
<50	0.5%
<60	0.5%
<75	0.5%
>75	1.1%

Figure 9: Management Concerns – Ranking of Importance Based on Job Title (Number of Respondents Shown in Parentheses)

	Job Title	
	CIOs (55)	Other IT Executives (126)
IT and business alignment	1	1
Attracting, developing, and retaining IT professionals	2	2
Security and privacy	3	3
IT strategic planning	10	4
Speed and agility	4	6
Government regulations	8	5
Complexity reduction	6	7
Measuring the performance of the IT organization	6	9
Creating an information architecture	5	10
IT governance	12	11

Note: Respondents not specifying a job title were not included in this analysis; there were 182 respondents overall.

out to be a waste of resources. Companies most successful in carrying out their strategic plans tie them to our perennial number one concern, IT–business alignment. Again, this benefit of alignment is why we address it more fully later in this article.

Speed and agility, ninth in 2003, moved to number five in 2004. Today's faster business pace and improving economy demand IT organizations to respond quickly and effectively. Activities that used to be measured in years are now measured in months or even weeks. As this high ranking of speed and agility attests, being able to "sense and respond" has become even more critical.

Hackensack University Medical Center in New Jersey is a leader in its quest to increase its speed and agility. Examples of its use of IT include:

- Internal Web that stores all medical images produced by x-rays, MRIs, and CT scans (created within the hospital or outside the hospital)

- Wireless pocket PCs for doctors to pull up medical records and order medication or tests from anywhere in the hospital

- Mobile laptops for nurses to record patient symptoms, vital signs, and medications

Figure 10: Management Concerns – Percentage of Respondents by Industry

Industry Classification	*Survey Percentages*
Manufacturing	20%
Financial	13%
Services	9%
Education	7%
Healthcare	7%
Pharmaceutical	7%
Consulting	5%
Government	4%
Transportation	4%
Utility	4%
Information Technology	4%
Retail	3%
Publishing	1%
Travel & Tourism	1%
Chemicals	1%
Others	11%

- Flat panel TVs in hospital rooms so that patients can log onto the Web, learn about their condition, and find ways to take care of themselves

- Robotic pharmacy that automates the process for filling prescriptions.

Naturally, attaining these successes has required close relationships among IT, hospital administration (willing to invest in these projects), doctors, nurses, insurers, and patients. The hospital has attained a leadership role in its use of IT.

Government regulation has moved to number six (tied with "complexity reduction") from number seventeen in 2003. Clearly, IT is feeling the impact of needing to comply with new regulations, such as the Sarbanes-Oxley (SOX) Act, Health Insurance Portability and Accountability Act (HIPAA), and Gramm-Leach-Bliley Act. These bills are confusing and expensive–and will likely be amended.

Many companies have found the cost of compliance far exceeds its value. Others say they have learned valuable lessons about automating controls and improving processes. For instance, SOX has had a significant impact on how IT manages compliance data and business processes. SOX requires businesses to assure the quality of their financial reports as well as their internal control policies. With all of the financial data recorded, accumulated and processed by IT systems, IT bears a large portion of responsibility for building the controls to ensure the integrity and validity of the data. In addition, IT security management and critical access controls are crucial to organizations' ability to reduce the risk of fraud, another element of SOX.

Complexity reduction, ranked eighth in 2003, is tied for sixth place in 2004. It can be linked to architecture, ranked ninth. Companies that have established common IT platforms and standard configurations have reduced complexity and benefited from a streamlined information architecture. In addition, well-defined standards that are followed throughout the enterprise reduce complexity.

Some IT efforts to simplify its environment include eliminating unneeded software and applications, enforcing compliance to standards, reducing the number of vendors, consolidating data centers, and using thin client and/or grid computing.

The current importance of reducing complexity is reflected in the SIM Working Group on this topic. This group is focusing on ways to not only reduce complexity in their own organizations but, more importantly, reduce the complexity of the products they buy. The continual changes and upgrades from vendors–some of

which appear to be just for the sake of change and to increase vendor revenues–serve little business purpose. But they increase training and conversion costs. If vendors can be convinced to lengthen their product release cycles, buyers can realize substantial savings. Although this may be unlikely in the near term, the SIM working group is delving into this issue.

Measuring the performance of the IT organization has dropped from sixth in 2003 to eighth in 2004. Likewise, "measuring the value of IT investments" (which is closely linked to measuring the performance of the IT organization) has dropped from fifth in 2003 to being tied for eleventh in 2004.

For over two decades, IT executives have faced the questions, "Is our IT organization providing business value in our IT undertakings?" "Are we delivering these applications in a cost-effective fashion?" "Are we doing a good job for the company?" and "Can we measure our contributions in meaningful ways?" The answers have not been easy to come by, and they vary by company and industry.

It is surprising to see that measuring the performance of the IT organization, which tends to focus on service level agreements (SLA's) and service level management, is considered more important than demonstrating financial contributions of IT to the business. Be that as it may, it is key to have an agreed-on scorecard that shows IT's effectiveness and efficiency in meeting strategic, tactical and operational services.

Wal-Mart's IT organization has business-driven success measures. CIO Linda Dillman notes, *"We do not want to be known by our technology; but we do want to be known by what our technology has done for the business."* She sees business metrics as key to mature IT-business alignment.

Creating an information architecture is ranked ninth in 2004, down from seventh in 2003. Moreover, infrastructure developments dropped from second position in application and technology developments (Figure 13) in 2003 to fourteenth in 2004. An information architecture describes how the many pieces of a firm's infrastructure–processors, networks, software, PCs, databases, applications, etc.–work together to support the business. As these components become more numerous and varied, an effective architecture becomes more difficult, yet more important.

Figure 11: Management Concerns – Ranking of Importance Based on Industry

All Respondents	*Manufacturing (20%)*	*Financial (13%)*	*Services (9%)*
1. Alignment	Alignment	Alignment	Alignment
2. Staffing	Security	Staffing*	Staffing
3. Security	Staffing	Govt. Regulations	Planning
4. Planning	Planning	Asset Management	CIO Leadership
5. Agility	Agility	Security	Security
6. Govt. Regulations	Governance	Complexity	Govt. Regulations
7. Complexity *	Complexity	Performance	Rapid Business Solutions
8. IT Performance	CIO Leadership	Architecture	Governance
9. Architecture	Govt. Regulations	Planning	Agility
10. Governance	Business Process Reengineering	Governance	Complexity

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Figure 12: Management Concerns – Ranking of Importance Based on Years in the Information Technology Field (Number of Respondents Shown in Parentheses)

	Years in IT			
	0-10 (18)	11-20 (63)	21-30 (73)	30+ (24)
IT and business alignment	1	1	1	1
Attracting, developing, and retaining IT professionals	10 *	2	2	2 *
Security and privacy	2	3	3	4
IT Governance	10 *	17	4	5
Measuring the performance of IT organization	5	11	5	13
Evolving CIO leadership role	15	14	6	10
Government regulations	10 *	10	7	6
Measuring the value of IT investments	10 *	13	8	8
Speed and agility	8	7	9	7
IT strategic planning	6	5	10	2 *

* Ties

Notes:

Rankings are based on means.

The top ten issues are listed and sorted based on respondents with 21-30 years in IT (the largest subgroup).

Respondents do not sum to 182 (total number of respondents); if the respondent did not specify the number of years in IT, the response was removed from the analysis.

There have been numerous recent examples of companies experiencing infrastructure capacity preparedness problems. These include Delta Air Lines, which advertised new discount fairs and incentives to book online tickets; Red Cross, in supporting the tsunami relief effort; Amazon's pre-Christmas volumes; Walgreen's pre-Christmas volumes; and Hallmark's Valentine's Day online requests. These examples of lost business due to system overload should cause IT and business executives to ensure they have an appropriate capacity planning process in place.

IT governance continues to be ranked tenth this year. IT governance is a process and set of metrics and controls that focus on what, who, why, and how IT deci-sions are made. It is another essential element in IT-business alignment. There is no single answer for how best to organize and govern IT. So IT executives are struggling with the numerous options.

Many firms, especially in the financial services industry, now have IT executive steering committees that apply techniques, such as portfolio management and options pricing, to prioritize their IT initiatives.

Analyses by Categories

To delve into the data, we analyzed the rankings by four categories: job title (CIOs vs. Other IT Execu-tives), industry, tenure in the field, and over time.

Analysis by job title. To a large degree, the rankings by respondents with different job titles are fairly consistent; 55 of the respondents identified themselves as CIOs, and 126 as Other IT Executives. Respondents not indicating their job title were not included in this analysis. A comparison of their management concerns rankings is shown in Figure 9. The main difference between the two is that the CIOs rank "IT strategic planning" tenth, while the other IT executives rank it fourth. Other IT Executives ranked architecture tenth, while CIO's ranked it fifth.

Analysis by industry. Responses also vary somewhat by industry. Figure 10 shows the percentage of respondents by industry. The top three responding industries are manufacturing, financial, and services, comprising 42% of the responses. Their rankings for the top ten management issues are shown in Figure 11. Although the order differs slightly, all three industries agree on the top five issues, with the exception of the financial industry, which surprisingly does not include agility, but does include asset management. The services industry includes CIO leadership in its top five, but does not include agility.

Analysis by tenure in the IT field. Another analysis is by the number of years the respondents have worked in IT. Figure 12 shows the top five issues for those with less than 10 years, 11 to 20 years, 21 to 30 years, and over 30 years in the field. The table shows two interesting trends. First, as managers mature in the field, IT governance increases in importance. Second, younger respondents consider attracting, developing and retaining IT professionals less important.

Analysis over time. Figure 2 shows how the importance of various issues in the seven previous surveys has changed over time. The numbers in the table indicate where each issue ranked. For example, "IT and business alignment" ranked ninth in 1994, seventh in 1990, fifth in 1986, seventh in 1983, and unranked in 1980.

The four top-ranked issues in the current 2004 survey appeared in all of the previous surveys (with one exception "security and privacy" in 1994), which indicates their continuing importance to senior IT executives. These top four issues highlight IT leaders' most intractable issues.

FINDINGS FOR SECTION 2: APPLICATION AND TECHNOLOGY DEVELOPMENTS

The second part of the survey looked at the application and technical areas of IT. Figure 13 shows the top 25 rankings for 2004 and 2003.

The Top Six Application and Technology Developments

Technology advances continue to alter and shape the nature of all of our organizations. With the economy turning and business executives becoming more aware of the impact of IT on their firms, this topic persists. The 2003 survey had the most in-depth section on technology developments, when compared to all of the previous SIM surveys. The 2004 survey continued to look at the important applications and technologies being considered by organizations. This section compares 2004 rankings with the past, and most extensively with 2003 rankings (Figure 13).

Of the top six application and technology developments identified in 2004, half are new to the survey from 2003. None appeared in the previous lists because all appeared on the market after 1994.

Many of the 2004 top applications and technologies relate directly to the top management concerns (Figure 1). This is a reassuring sign.

Security technologies, which is new to the survey, comes out on the top, supplanting "infrastructure developments," which was number two in 2003, number one in 1994, and number six in 1990. Also, security has been the number three management concern (Figure 1) in both 2003 and 2004.

As major vendors such as Microsoft, Cisco, Hewlett-Packard, McAfee, Sun and IBM continue to offer new security products, information security officers must prioritize and justify which projects will be implemented. Important criteria include strategic importance, ROI (hard and soft) and risk management. Risk management (which has become the most common vehicle for assessing security projects) requires information security, IT, internal audit, and business executives to provide significant input. Risks should be based on the business value of the business assets that might be compromised.

Figure 13: Application and Technology Developments

2004 Rank	Issue (2003 rank)
1	Security technologies (not in 2003 survey)
2	Business intelligence (1)
3	Business process management (not in 2003 survey)
4	Web services (4)
5	Customer portals (7)
6	Data synchronization (not in 2003 survey)
7	Mobile and wireless applications (11)
8	Enterprise application integration/management (EAI/EAM) (3)
9	Enterprise resource planning (ERP) (9)
10	Customer relationship management (CRM) (8)
11	E-business strategies (6)
12	XML (not in 2003 survey)
13	Knowledge Management (5)
14	Infrastructure developments (2)
15	Supply chain management (SCM) (12)
15 *	Voice over IP (not in 2003 survey)
17	RFID (not in 2003 survey)
18	Online forms processing (not in 2003 survey)
19	Employee portals (10)
20	Java (not in 2003 survey)
21	Linux (not in 2003 survey)
22	Supplier portals (13)
23	GRID computing (not in 2003 survey)
23 *	Speech/voice recognition (not in 2003 survey)
25	Language translation (not in 2003 survey)

Business intelligence drops from number one in 2003 to number two in 2004. "Business intelligence" deploys applications to a large number of front-line employees to help them leverage their information to make better and faster business decisions. It combines such technologies as customer relationship management (CRM) (ranked tenth this year), data warehousing and mining (data synchronization is ranked sixth this year), and knowledge management (ranked thirteenth). Many firms are replacing disparate reporting tools with newer vendor products because they must now meet the need for more timely and accurate financial data to be in regulatory compliance (ranked sixth in top managerial concerns).

As an example, a non-profit organization is making business loans to 20-30,000 tsunami victims in Southeast Asia fishing villages. In Africa, they are adding 11,000 clients in their struggle with the AIDS epidemic. To quickly and accurately respond to these needs, this organization must be able to track the status of these loan portfolios. Business intelligence helps management better assess organizational performance and improve operational efficiencies.

Business process management, which is new to the survey as well, is in third place in 2004. Business process reengineering (the management side of this technology) is tied for number eleven on the 2004 management concerns (Figure 1).

Business process management aims to identify and eliminate business process bottlenecks, decrease transaction cycle times, monitor work activities, reduce operations costs, etc.

In the early years business process management initiatives aimed to close gaps in ERP projects. After more than ten years, it appears that technologies to support this important area are available and being applied. To deliver process-centric environments that give business managers ways to improve business processes, organizations are using established products (e.g., SAP, PeopleSoft) and products and outsourcing services from many large vendors (e.g., Microsoft, IBM, Oracle, HP).

Figure 14: Application and Technology Developments- Ranking of Importance Based on Job Title (Number of Respondents Shown in Parentheses)

		Job Title	
		CIOs (54)	Other IT Executives (124)
Rank			
1.	Security technologies	5 *	1
2.	Business intelligence	2	2
3.	Business process management	3	3
4.	Web services	4	4
5.	Customer portals	1	10
6.	Data synchronization	7	5
7.	Mobile and wireless applications	5 *	12
8.	Enterprise application integration/management (EAI/EAM)	8	7*
9.	Enterprise resource planning (ERP)	9	6
10.	Customer relationship management (CRM)	11	7*

* Ties

Notes:
a. Rankings are based on means.
b. Issues are sorted based on those with a job title of CIO.
c. Respondents do not sum to 181 (total number of respondents). If the respondent did not specify the number of years in IT, the response was not included in this analysis.

Figure 15: Application and Technology Developments - Ranking of Importance Based on Years in the Information Technology Field (Number of Respondents Shown in Parentheses)

	Years in IT			
	0-10 (18)	11-20 (63)	21-30 (73)	30+ (24)
Business Intelligence	5 *	2	1	2 *
Data Synchronization	10 *	6	2	19
Enterprise application integration/ management (EAI/EAM)	10 *	10	3	12
Business process management	2	3 *	4	2 *
Security technologies	5 *	1	5	1
Mobile and wireless applications	-	11	6	4
Knowledge	10 *	14	7	15
Web services *	5 *	2	8 *	4
Infrastructure developments *	10 *	17	8 *	12
Customer portals *	2	3 *	10 *	6
Enterprise resource planning (ERP) *	5 *	7	10 *	8

* Ties

Notes:
a. Rankings based on means and, if necessary, standard deviations.
b. Top ten issues are listed and sorted based on those with 21-30 years in IT (largest subgroup).
c. Respondents do not sum to 181 (total number of respondents). If the respondent did not specify the number of years in IT, the response was removed from the analysis.

Milwaukee Electronic Tool Corp. implemented a business process management solution to streamline its accounts payable (A/P) business processes and integrate A/P with its enterprise business system.[9] Milwaukee Electronic can now capture electronic images of invoices and automate various stages of the approval cycle. The result has been a dramatically more efficient A/P process. With 1,100 invoices processed each day, the invoice processing turnaround time is greatly shortened.

Web services is in fourth place in 2004, like 2003. These Web-based applications allow organizations around the world to become more effective and efficient by facilitating the integration of IT applications and customer/client and partner services. In less then a decade, the Web has reached about 800 million people, and is projected to reach more than a billion people by 2007. It is rapidly becoming the world's infrastructure for linking people. In addition to the many benefits, Web services is the foundation of many new considerations, including security, data synchronization, and appropriate infrastructure.

Wells Fargo has Web-enabled its 6,200 ATMs (and 3,000 online branch stations) in 23 states. The bank is now able to maintain its entire network remotely, such as adding new languages or enabling new client features. Wells Fargo plans to integrate all its marketing channels (e.g., automated tellers, phones, stores).

Customer portals, which was ranked seventh in 2003, is ranked fifth in 2004. Airlines, such as Continental, American, and United, are using airport kiosks, personal Web pages, and their customer databases to let passengers receive flight status alerts, speed check in, select meals and in flight entertainment, and upgrade seats or give up seats on overbooked flights. These new services add to airlines' use of customer profiles to select seats and food selection, both of which are now common services. As airlines establish partnerships, these privileges will be honored by other companies.

Data synchronization, which is also new in 2004, ranks sixth. Software that merges data or information from multiple disparate technologies or systems underlies business intelligence, Web services, and portals (customer, supplier, and employee). Data synchronization is fundamental to business process improvement (e.g., CRM, SCM), and compliance projects as well.

The technologies that dropped significantly in 2004 are infrastructure development (from number two in 2003 to number fourteen in 2004), knowledge management (from five to thirteen), e-business strategies (from six to eleven), employee portals (from ten to nineteen), and supplier portals (from thirteen to twenty-two).

Analyses by Categories

Again, we analyzed the data by categories: job title and tenure in the industry.

Figures 14 and 15 repeat the analyses of Figures 9 and 12, but on technical issues. Figure 14 compares rankings by CIOs and Other IT Executives. It shows, for instance, that CIOs rank customer portals much higher than non-CIOs, while non-CIOs rank security much higher than CIOs. Figure 15 compares rankings by number of years in the IT industry. It shows quite a discrepancy in the ranking of data synchronization, customer portals and Web services.

FINDINGS FOR SECTION 3: IT AND BUSINESS ALIGNMENT MATURITY

For over 20 years, IT-business alignment has ranked as a top management concern. Why is it still ranked so high? Is it because the issue has not been solved, or is it because the CIO's role has matured and the emphasis in this area has evolved? The answer appears to be a combination of both.

It is clearly worthwhile to explore, "How can companies achieve, improve, and sustain alignment?" The enablers and inhibitors to alignment were covered in the 2003 survey results, and are highlighted here (Figure 16). For 2004 we focus on assessing the business-IT alignment maturity using an abbreviated version of Luftman's formal assessment tool.[10]

As noted, alignment means applying IT in an appropriate and timely way, in harmony with business strategies, goals and needs. This definition addresses both how IT is aligned with the business and how the business should/could be aligned with IT.

A Brief History: Previous Findings on Alignment

IT and business executives are continually looking for best practices to help them align their IT and business organizations. Alignment seems to grow in importance as organizations strive to link IT and business in light of dynamic business strategies and continuously evolving technologies. Many have wanted a "silver bullet" answer.

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[9] Ryan, D. P., Achieving Rapid Success with Business Process Management, KM World, 14(1), pp. 10-11, 2005

[10] Luftman, J., *Competing in the Information Age: Strategic Alignment in Practice*, New York: Oxford University Press, 1996.

Figure 16: IT and Business Alignment Inhibitors (2003 SIM Survey Versus 1993-1997 Surveys)	
2003 SIM Inhibitors	**1993-1997 Inhibitors**
Lack of senior executive support for IT	IT and business lack close relationships
Lack of influence of headquarters' leadership	IT does not prioritize well
Lack of business communication with IT	IT fails to meet its commitments
Lack of business commitment of budgets for IT investments	IT does not understand business

In the early years, IT organizations focused on implementing leading technology. While technology is an important part of IT's mission, it is not enough to improve the IT-business relationship. IT next focused on the skills and agility of the organization. Again, both are important, but not enough. So IT and business organizations then focused on improving their communications with each other. This focus too often caused more problems than it addressed. Partnerships between IT and business organizations were the next means to enhance alignment, but they were still not enough. Next was IT governance, which ranks tenth on top concerns for this year. It helps, but by itself, it is not sufficient. Today, metrics to demonstrate IT's contribution are receiving a lot of attention.

The point is that it is the COMBINATON of these approaches that improves alignment, NOT any ONE approach.

The Strategic Alignment Maturity Assessment Tool

Luftman's research since the early 1990s has identified alignment trends and established an alignment benchmarking tool: the strategic alignment maturity assessment.[11] The survey data for that work evolved from executives who attended classes at IBM's Advanced Business Institute from 1993-1997. They helped identify enablers/inhibitors to alignment.

This assessment approach evaluates all the factors noted above, and has been applied to over one hundred global 2,000 firms (and dozens of smaller organizations). The 2004 SIM survey asked members to do a quick assessment of where they thought their organization ranked using a 5-point Likert scale.

The assessment tool stemmed from the original research on enablers/inhibitors to alignment, which was again asked in last year's survey. The rankings of the enablers and inhibitors has remained relatively consistent since the first survey in 1993. Other articles pre-

sent the detailed findings of the enablers-inhibitors study.[12] Figure 16 shows the 2003 and 1993-1997 enablers and inhibitors respectively. Once again, what is striking is that the same factors–communications, value measurements, governance, partnership, technology scope, and skills–show up in both. The rankings differ, but the top five are relatively consistent. The consistency of the top five reinforces their importance.

Research on enablers/inhibitors and the continued high rank of alignment as a major concern led to building the Strategic Alignment Maturity Assessment. It is modeled after the Capability Maturity Model (CMM) developed by Carnegie Mellon's Software Engineering Institute. The CMM model has proven to be a powerful tool for managing application development, but it has not been applicable to strategic business practices.

The alignment assessment tool allows organizations to evaluate how well their IT and business organizations are working together, and it provides a roadmap for identifying ways to improve. It examines six components. Each is rated on a scale of 1 (lowest) to 5 (highest). Figure 17 summarizes the six components in each of the five IT-business alignment maturity levels.[13]
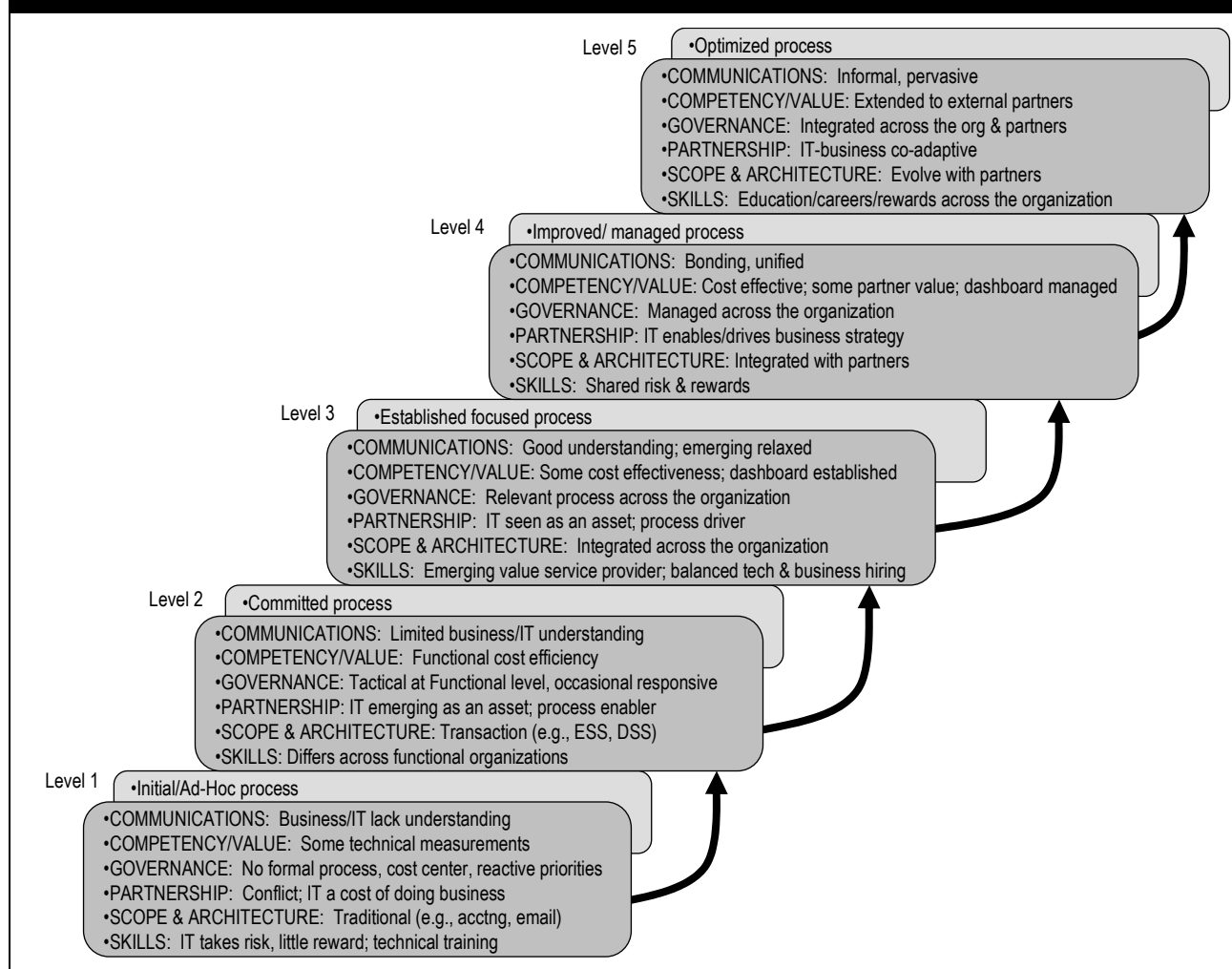
The six components are:

Communications maturity. How well do the IT and business folks converse and understand each other? Do business and IT staff connect easily and frequently? Does the IT organization communicate effectively with external consultants, vendors, and partners? Does IT disseminate organizational learning internally?

Competency/value measurement maturity. How well does the organization measure its own performance and the value of the projects it invests in? After

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[11] Luftman, J. and T. Brier, "Achieving and Sustaining Business-IT Alignment," *California Management Review*, (24:1), 1999.

[12] Luftman, J., R. Papp, and T. Brier, "Enablers and Inhibitors of Business IT Alignment," *CAIS*, (1:11), March 1999.

[13] Luftman, J., *Competing in the Information Age: Align in the Sand,* New York: Oxford University Press, 2003.

Figure 17: Strategic Alignment Maturity Assessment Summary

Level 5
- •Optimized process
  - •COMMUNICATIONS: Informal, pervasive
  - •COMPETENCY/VALUE: Extended to external partners
  - •GOVERNANCE: Integrated across the org & partners
  - •PARTNERSHIP: IT-business co-adaptive
  - •SCOPE & ARCHITECTURE: Evolve with partners
  - •SKILLS: Education/careers/rewards across the organization

Level 4
- •Improved/ managed process
  - •COMMUNICATIONS: Bonding, unified
  - •COMPETENCY/VALUE: Cost effective; some partner value; dashboard managed
  - •GOVERNANCE: Managed across the organization
  - •PARTNERSHIP: IT enables/drives business strategy
  - •SCOPE & ARCHITECTURE: Integrated with partners
  - •SKILLS: Shared risk & rewards

Level 3
- •Established focused process
  - •COMMUNICATIONS: Good understanding; emerging relaxed
  - •COMPETENCY/VALUE: Some cost effectiveness; dashboard established
  - •GOVERNANCE: Relevant process across the organization
  - •PARTNERSHIP: IT seen as an asset; process driver
  - •SCOPE & ARCHITECTURE: Integrated across the organization
  - •SKILLS: Emerging value service provider; balanced tech & business hiring

Level 2
- •Committed process
  - •COMMUNICATIONS: Limited business/IT understanding
  - •COMPETENCY/VALUE: Functional cost efficiency
  - •GOVERNANCE: Tactical at Functional level, occasional responsive
  - •PARTNERSHIP: IT emerging as an asset; process enabler
  - •SCOPE & ARCHITECTURE: Transaction (e.g., ESS, DSS)
  - •SKILLS: Differs across functional organizations

Level 1
- •Initial/Ad-Hoc process
  - •COMMUNICATIONS: Business/IT lack understanding
  - •COMPETENCY/VALUE: Some technical measurements
  - •GOVERNANCE: No formal process, cost center, reactive priorities
  - •PARTNERSHIP: Conflict; IT a cost of doing business
  - •SCOPE & ARCHITECTURE: Traditional (e.g., acctng, email)
  - •SKILLS: IT takes risk, little reward; technical training

projects are completed, does the organization evaluate what went right and wrong? Does the post-implementation evaluation improve internal processes to make the next project better?

Governance maturity. This dimension deals with how well the organization connects its business strategy to IT priorities, technical planning, and resource allocation. Do IT projects undertaken flow from an understanding of the business strategy? Do they support/drive the business strategy? If not, there may be a conflict between the IT and business organizations.

Partnership maturity. To what extent have business and IT departments truly collaborated? Is this collaboration based on mutual trust and sharing of both risks and rewards?

Scope and architecture maturity. To what extent has the IT organization evolved to be more than simply back-office business support? How has it helped the business grow, compete, and thrive?

Skills maturity. Does the IT staff have the competence and skills to be effective? How well does this staff understand business drivers and speak the language of the business? How well does the business staff understand and explain relevant IT concepts? How well does everyone understand user-centered design principles and their importance?
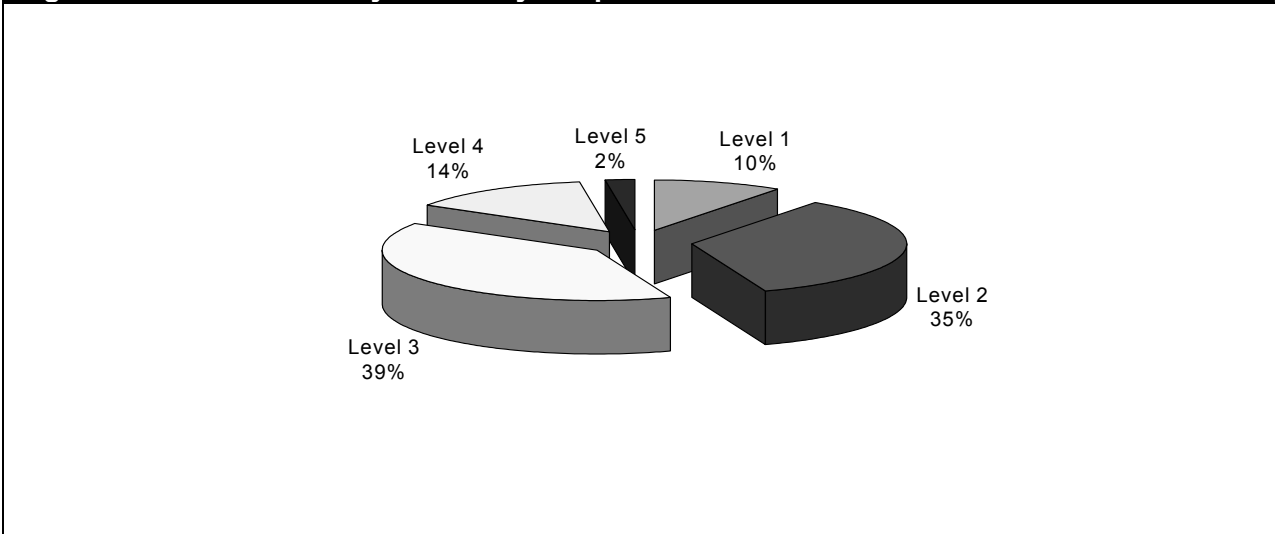
The Overall 2004 IT-Business Alignment Maturity Survey Findings

The Strategic Alignment Maturity Assessment was used as one of the questions in the 2004 SIM survey to help uncover additional insights pertaining to alignment.

Over 70% (Figure 18) of the respondents indicated that their IT-business alignment maturity is at a Level 2 or 3. Perhaps this is why alignment is still high on the list

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[15] If you are interested in participating in assessing your organization's alignment maturity, please contact the author.

Figure 18: Overall Maturity Levels By Respondents

of management concerns. The results of the quick evaluation by respondents are consistent with the results of the more rigorous alignment assessments made by almost 100 Global 2,000 companies, where 75% of the organizations assessed their alignment maturity at a Level 2 or 3.

Many of these firms have used the next-higher level of maturity to identify how their IT and business can work together to improve organizational harmony. To gauge improvement, several of these firms have formally assessed themselves a year or two after their initial assessment. In each case, they found marked improvement. In essence, each had ensured that the business and IT shared responsibility for increasing the maturity level.

For example, one financial services firm improved its overall assessment from 2.6 to 3.2 in one year's time. After prioritizing their alignment goals, they used the description of the next higher level of maturity as a roadmap to focus their efforts. The key, though, was that the business and IT leaders shared responsibility for accomplishing these changes. Their determination and leadership paid off.

Several companies also used the maturity assessment to evaluate the relationships between central IT and decentralized, local IT groups. They all found these IT-to-IT relationships to be at a lower maturity level than the maturity level between IT and the business. This significant finding, albeit in a small number of cases, makes for very interesting future research.

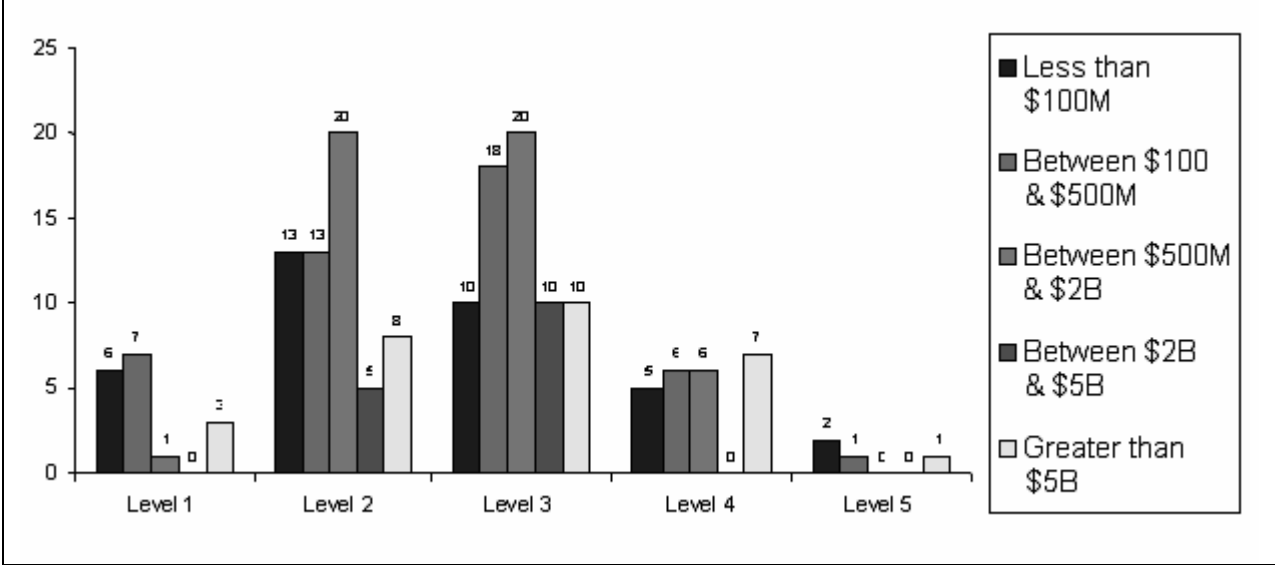**Fig 19: Strategic Alignment Maturity By Company Revenue**

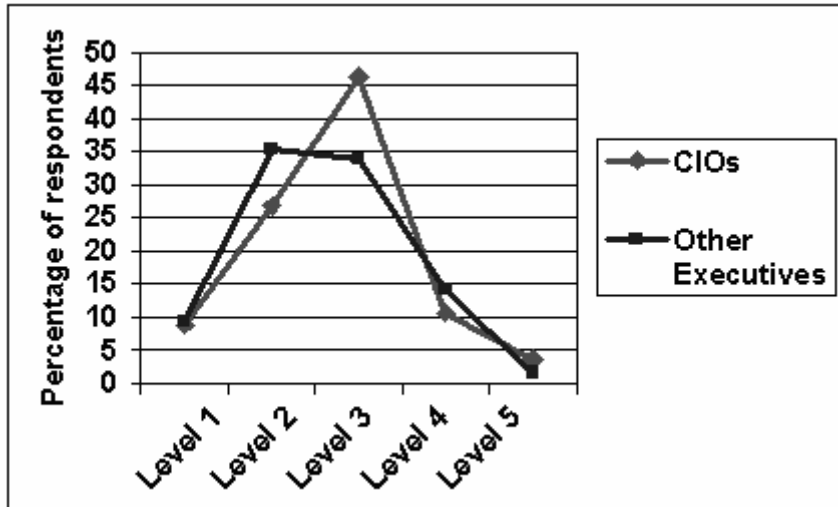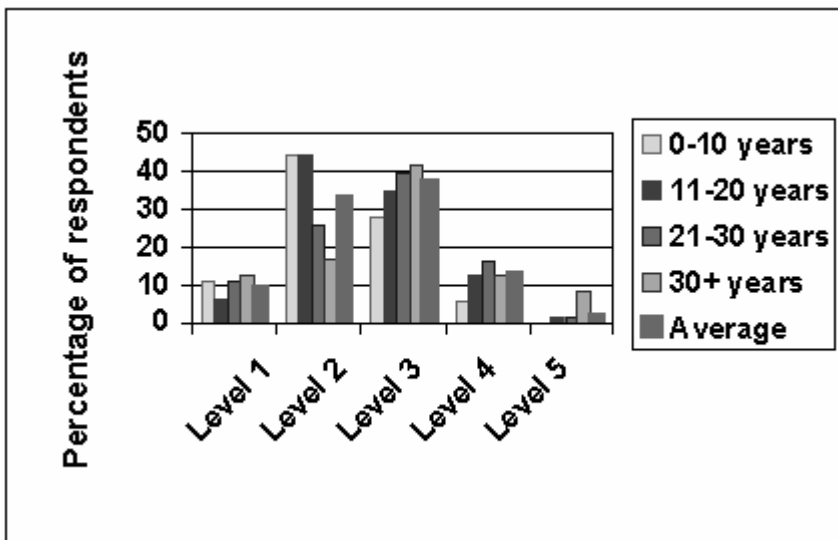**Figure 20: Maturity levels rated by CIO's and other executives**

Fig 21: Maturity levels rated by years of industry experience

Maturity level by company revenue is shown in Figure 19. Interestingly, it looks like a normal distribution, although skewed toward the lower maturity levels. Again, this finding indicates the need for improvement.

The difference between Level 4 and Level 5 companies is that Level 4 companies tend to do things very well within their own company, while Level 5 companies extend their leadership to their customers/clients and key partners. With 2.2% of the SIM firms assessing themselves a Level 5 (compared to 1.3% of the companies doing the complete assessment), the distribution is across industries. The level 5 companies (from the complete assessments) fall in the Consulting, Information Technology, Manufacturing, and Financial Services industries; most are from companies that you have read about. The organizations identifying themselves as Level 1 (from the complete assessment)

fall across all industries with Consulting and Government having a larger percentage.

Figure 20 compares assessments by CIOs and non-CIOs. The evaluations are about the same for Levels 1, 4, and 5. However, at Levels 2 and 3, CIOs have a higher opinion of their IT organization's maturity than Other IT Executives. More CIOs rate their organizational maturity at Level 3 and fewer rate it at Level 2 than Other IT Executives. This finding is again consistent with the finding from the more in-depth studies. This finding is important because it indicates disparate thinking within firms. When CIOs and Other IT Executives do not agree on their starting level, they will have difficulty agreeing on how to move forward.

Figure 21 illustrates how executives with different number of years' experience assess alignment. It shows that executives with 0-20 years' experience assess their organizations a bit lower than their more

senior counterparts. Is this because they are not as wise, or do they have a different perspective, or are they more honest in their assessment?

The Strategic Alignment Maturity Assessment provides a vehicle to evaluate the maturity of an organization's business-IT alignment and lays out a roadmap on how to improve that alignment. The careful assessment of an organization's alignment maturity is important.[15]

SUMMARY

So once again, the IT managerial challenges remain fairly constant over the years. Four items–"IT and business alignment," "IT strategic planning," "security and privacy," and "attracting, developing, and retaining IT professionals"– have been major IT management concerns since the first SIM survey in 1980 (save one or two years). In particular, "IT and business alignment" and "IT strategic planning," which are number one and four in 2004, have been in the top ten for the entire 24 years. This consistency reinforces the importance for IT executives to (1) understand the businesses of which they are a part and (2) work toward planning for, and achieving, an alignment between the IT activities they head and the businesses they serve.

A host of changes and new technological developments have taken place over these 24 years. In the 2004 list of application and technology developments (Figure 13), half of the top six were not on previous surveys. Yet, while faced with dynamic technology and business environments, CIO's continue to contend with the same managerial issues.

ABOUT THE AUTHOR

Dr. Jerry Luftman (jluftman@stevens.edu) is associate dean and a distinguished professor for the graduate information systems programs at Stevens Institute of Technology. His 22-year career with IBM included strategic positions in IT management, management consulting, information systems, marketing, and executive education. Dr. Luftman played a leading role in defining and introducing IBM's Consulting Group. As a practitioner, he has held several positions in IT, including CIO.

Dr. Luftman's research papers have appeared in several professional journals and he has presented at many executive and professional conferences. His book, *Competing in the Information Age: Align in the Sand,* recently published by Oxford University Press, has been well received by industry and academia. His doctoral degree in information management was earned at Stevens Institute of Technology. He is currently SIM vice president of chapter relations and president of the SIM New Jersey chapter.

APPENDIX: THE PLAN OF THE STUDY

The 2004 survey was similar to the 2003 study in methodology and process.

Determine the participants and survey process. Like 2003, for the 2004 study the SIM Board decided to survey a broad audience in a single round, similar to the original 1980 study, believing that (1) members would resist a multi-round Delphi study, and (2) the rankings from one survey would be virtually identical to the rankings from a three-round Delphi study.

Identify management and application/technology priorities. The SIM Executive Board decided to once again ask participants about two issues – "Management Concerns" and "Application and Technology Developments" – rather than require them to trade one off against the other. Participants were asked to rate 22 managerial (Figure 1) and 25 application/technical issues (Figure 13).

The 2004 survey used many of the same questions and choices as in 2003. It updated some based on (1) similar lists from trade publications, (2) inputs from SIM Board members, and (3) the author's experience.

Explore the alignment issue. The 2003 survey added a list of IT and business alignment "enablers" and "inhibitors" because it was predicted that "IT and business alignment" would again be a highly ranked management concern. Alignment had been in the top ten since 1983, and the author believed it would be valuable to uncover additional insights pertaining to alignment. The 2004 survey explored the issue of IT-business alignment again. The respondents quickly assessed the maturity of their IT-business alignment using a summary of the formal maturity assessment tool. This use allowed the author to compare the findings with his other research findings.[16]

The survey process. The survey was sent both electronically and in hard copy to all SIM members (not just corporate members) in the summer of 2004. By September, 182 responses had been received and a preliminary presentation of the results was made at the SIM annual conference (the "SIMposium") in Chicago in September. That brief presentation generated considerable interest and was cited in a number of trade publications.

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[16] Op.cit, Luftman, 1999, 1999. 2003