KEY ISSUES FOR IT EXECUTIVES 2005[1]

MIS QUARTERLY EXECUTIVE

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Executive Summary

In the summer of 2005, the Society for Information Management (SIM) once again commissioned a formal survey to uncover the opinions of its members on four important topics: key management concerns, application and technology developments, organizational considerations (CIO reporting, headcount, retention, and budget), and enablers and inhibitors of IT and business alignment. We received 105 responses, which were analyzed in different categories: industry, revenue, and over time.

The top five management concerns were:

- *IT and business alignment*
- *Attracting, developing, and retaining IT professionals*
- *Security and privacy (tied with above)*
- *IT strategic planning*
- *Business process reengineering*

The top six application and technology developments were: (1) security technologies, (2) system integration (new to the survey in 2005), (3) business intelligence, (4) mobile and wireless applications, (5) data synchronization, and (5) enterprise resource planning.

As an organization, IT is seeing its budget rise, with headcount accounting for over 40% of its spending. Some 70% of IT organizations are centralized, 42% of the CIOs report to the CEO, and 50% of the CIOs have been in their current position for at least four years.

The top five enablers of alignment were: (1) IT understands the firm's business environment, (2) senior executives support IT, (3) IT and the business have a close partnership, (4) IT demonstrates strong leadership, and (5) IT's plans link to business plans.

Conversely, the top five inhibitors of alignment were: (1) ineffective business communication with IT, (2) poor clarity and predictability of corporate goals/directions, (3) inadequate influence of headquarters' leadership, (4) lack of business commitments of budgets to IT investments, and (5) insufficient business commitments of staff to support IT investments. This article discusses these findings and their managerial implications.

TAKING THE PULSE OF IT MANAGEMENT ISSUES

For almost a quarter of a century, the Society for Information Management (SIM) has published the key issues facing its members: IT executives. Ball and Harris conducted the first survey and produced a list of 18 issues in 1982.[2] Subsequent surveys were taken in association with the MIS Research Center at the University of Minnesota in 1983,[3] in 1986,[4] in 1990,[5] and in 1994.[6]

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3 Dickson, G.W., Leitheiser, R.L., Wetherbe, J.C., and Nechis, M., "Key Information Systems Issues for the 1980s," *MIS Quarterly* (8:3), September 1984, pp.135-159.
4 Brancheau, J.C. and Wetherbe, J.C. "Key Issues in Information Systems Management," *MIS Quarterly* (11:1), March 1987, pp. 23-45.
5 Niederman, F., Brancheau, J.C., and Wetherbe, J.C., "Information Systems Management Issues in the 1990s," *MIS Quarterly* (15:4), December 1991, pp.474-499.
6 Brancheau, J.C., Janz, B.D., and Wetherbe, J.C., "Key Issues in Information Systems Management: 1994-95 SIM Delphi Results," *MIS Quarterly* (20:2), June 1996, pp. 225-242.

Figure 1: Management Concerns	
2005 Rank	**Issue (2004 rank in parenthesis)**
1	IT and business alignment (1)
2	Attracting, developing, and retaining IT professionals (2)
2	Security and privacy (3)
4	IT strategic planning (4)
5	Business process reengineering (11)
6	Introducing rapid business solutions (14)
7	Measuring the value of IT investments (11)
7	True return on IT investments (not in 2004 survey)
9	Complexity reduction (6)
10	IT governance (10)
10	Project management capabilities (not in 2004 survey)
12	Speed and agility (5)
13	Measuring the performance of the IT organization (8)
14	Government regulations (6)
15	Creating an information architecture (9)
16	Evolving the CIO leadership role (13)
17	Salary for IT staff (19)
18	Globalization (16)
18	Leveraging the legacy investment (18)
18	Managing outsourcing relationships (15)
21	Offshore outsourcing impacts on IT careers (20)
22	IT asset and configuration management (17)
23	Software licensing (not in 2004 survey)
24	Social implications of IT (22)
24	Staff reduction (21)

Since 2003, Luftman has conducted the survey, with others.[7] Given the interest in the insights presented, the study was sponsored once again in 2005. The objective was to identify the current trends and compare them with the results of previous years.

The 2005 survey focused on four areas: management concerns, application and technology developments, organizational considerations (CIO reporting, headcount, organizational structure, budget, and retention), and enablers and inhibitors of IT and business alignment. Participants were asked to rate 25 managerial issues (Figure 1), rate 35 application and technology issues (Figure 6), and prioritize a list of "enablers" and "inhibitors" that affect IT and business alignment (Figures 17 and 18). It was predicted before the survey that "IT and business alignment" would be highly ranked, as it had been in the past. The purpose of the enabler and inhibitor questions was to explore this important issue further, as well as compare results from previous years.

The following four sections recount the findings for the 2005 survey. These findings are based on 105 responses from SIM members. The survey process is described in the Appendix.

SECTION 1 OF THE SURVEY: MANAGEMENT CONCERNS

The responses of the SIM executives in 2005 and 2004 are shown in Figure 1.

In Figure 2, the top 10 management concerns of 2005 are compared with the previous surveys dating back to 1980. The numbers in the cells indicate each issue's ranking in that year. Cells without numbers indicate that those questions were not asked that year.

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7   Luftman, J., and McLean, E.R.,"Key Issues For IT Executives," *MIS Quarterly Executive*, June 2004, Vol. 3, No. 2, pp 89-104; Luftman, J., "Key Issues For IT Executives," *MIS Quarterly Executive*, June 2005, Vol. 4, No. 2, pp. 269-286.

Figure 2: Top 10 Management Concerns—Ranking of Importance Based on All Respondents (Number of Respondents Shown in Parentheses)							
	(105)	(182)	(301)	(108)	(104)	(68)	(54)	(417)
	2005	**2004**	**2003**	**1994**	**1990**	**1986**	**1983**	**1980**
IT and business alignment	1	1	1	9	7	5	7	-
Attracting, developing, and retaining IT professionals	2	2	4	8	4	12	8	7
Security and privacy	2	3	3	-	19	18	14	12
IT strategic planning	4	4	2	10	3	1	1	1
Business process engineering	5	11	11	2	-	-	-	-
Introducing rapid business solutions	6	14	-	-	-	-	-	-
Measuring the value of IT investments	7	11	5	-	-	-	-	-
True return on IT investment What is true return and why was it newly listed this year?	7	-	-	-	-	-	-	-
Complexity reduction	9	6	8	-	-	-	-	-
IT governance	10	10	10	-	-	-	-	-
Project management capability	10	-	-	-	-	-	-	-

The Top Management Concerns

While the relative rankings of the top management concerns for summer 2005 differ from 2004, all but four remain on the top-10 list. Speed and agility moved from number five in 2004 to number 12 in 2005. New to the top-10 list in 2005 are "true return on IT investment" and "project management capabilities." It is interesting to note which management concerns moved closer to the top, which stayed the same, and which moved further away from number one.

1. IT and Business Alignment

As predicted, "IT and business alignment" is the top-ranked issue. It means "applying IT in an appropriate and timely way, in harmony and collaboration with business needs, goals, and strategies."

Despite management's desire to better align business and IT for more than 20 years, this goal remains elusive. Its continued high ranking supports the need to explore it further. With the results from this SIM survey, clearly defined steps have been identified to better integrate IT and business organizations. Many of these steps were introduced in last year's article describing the results of the 2003 SIM Survey.

2. Security and Privacy

"Security and privacy" is tied for second with "attracting, developing, and retaining IT professionals." Additionally, security technologies are ranked as the number one application and technology development (Figure 6) this year.

We continue to hear about companies that have experienced security breaches with significant economic consequences. For example, ChoicePoint (www.choicepoint.com) retrieves, stores, analyzes, and delivers data to businesses and governments. Identity thieves set up 50 fictitious businesses and duped the company into granting access to 150,000 consumer data profiles. Each of the fake businesses collected just enough data to remain unnoticed. The consumers did not realize they were victims until the company alerted them.

Such security threats continue to reinforce information systems' vulnerability to hackers, viruses, worms, phishing, and terrorists. At the same time, the public continues to demand greater protection from identity theft and other privacy concerns. It is anticipated that security and privacy will remain important concerns of IT executives for some time to come.

2. Attracting, developing, and retaining IT Professionals

"Attracting, developing, and retaining IT professionals" tied for second and is discussed in Section 3, Organizational Considerations.

4. IT Strategic Planning

The high importance of security and attracting and retaining personnel has kept IT strategic planning

ranked fourth for the second year in a row. Not having an effective staff nor a safe environment would preclude IT's ability to carry out its strategy.

Strategic planning is about creatively identifying new business opportunities or addressing business problems and improving business processes. The value of the IT strategy is its alignment with the business's goals.

In early 2005, British insurance company Norwich evaluated nearly 5,000 customers by placing GPS receivers in the trunk of their cars to determine their driving habits. The gathered data was used to determine premiums month-to-month, based on how often, when, and where the vehicle was driven. The device calculated factors such as time and place of car trips. Every 24 hours the data was reported to Norwich Union via cellular technology. Norwich Union hopes to change its customers' driving behaviors to increase safety and reduce premiums. Such changes would lead to fewer accidents and higher profits. This value focus implies that IT and the business need to work together to create an effective strategic plan.

Too often, strategic plans (IT included) are not enacted. Or worse, they are enacted and the results turn 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 and business alignment.

5. Business Process Reengineering

"Business process reengineering," eleventh in 2004, moved to number five in 2005. Business process reengineering is a systematic and structured approach to enhancing business processes to improve their performance measures, such as productivity, quality, cycle time, or cost. For example, before processes were reengineered at C.R. England & Sons, the large trucking company, the cost to send an invoice was $5.10. After reengineering, the cost dropped to just 15 cents[8]. IT was engaged from the start of the reengineering project and led the process redesign effort. Many such efforts fail because of lack of management commitment and leadership, unrealistic scope and expectations, and resistance to change. For business process reengineering to succeed, it needs top management support, a shared vision, executive participation, and proper funding.

6. Introducing Rapid Business Solutions

"Introducing rapid business solutions" has moved to number six from number 14 in 2004. Clearly, CIOs are pressured to deliver IT projects successfully in less time. The goal is to deliver information and services to end customers, employees, and vendors so that they can produce results quickly. By introducing rapid business solutions, organizations can increase productivity, enhance efficiencies and, at the same time, reduce costs.

ATB Financial implemented the IBM Middleware Solution for Banking Branch Transformation, which is comprised of off-the-shelf software, to quickly respond to a business demand for improved customer service. By implementing this solution, ATB's branch employees were able to quickly and effectively sell new products to existing and new customers based on the wider array of information available to them about each customer. This solution also helped minimize the time and expense of employee training because the product had automated attributes and analytic capabilities.

7. Measuring the Value of IT Investment

"Measuring the value of IT investment," ranked eleventh in 2004, is tied for seventh place in 2005. Measuring the value of IT investment gauges the overall contribution of IT investment to organizational productivity and profitability. For more than 40 years, IT executives have faced such questions as, "Are we getting value for our IT spend;" "Is our IT organization providing business value in its IT undertakings;" and "Can we measure IT's contribution in a meaningful way?"

Historically, measuring the firm-level business impact of IT investment has been difficult due to confounding factors (e.g., macroeconomic changes can change a company's stock performance in ways that have nothing to do with its IT investments). More recently, management literature has begun to demonstrate a positive link between higher IT investment and higher total factor productivity (TFP). TFP measures the marginal impact of technology improvements on a firm's total productivity.[9,10] Also called the "Solow Residual," TFP is most accurate in comparing the

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8   Davidson, Elizabeth J. "Technology Frames and Framing: A Socio-Cognitive Investigation of Requirements Determination." *MIS Quarterly* (26:4), December 2002, pp. 269-286.

9   Solow, R. and Baily, M., "International Productivity Comparisons Built from the Firm Level," *The Journal of Economic Perspectives*, Summer 2001, 15 (3), pp. 151-172.
10   Dedrick, J., Gurbuxani, V., and Kraemer, K., "Information Technology and Economic Performance: A Critical Review of the Empirical Evidence," *ACM Computing Surveys*, 2003, (35) 1, pp. 1-28.

impact of IT investments within an industry, rather than across industries.

IT balanced scorecards can be used in measuring the impact of IT investment, but care must be taken when defining cause-and-effect relationships between IT investments and business results. For example, providing education and training to IT professionals can lead to better quality application systems. This can help increase business users' satisfaction, which can lead to higher business value of IT.

7. True Return on IT Investment

"True return on IT investment" is tied for seventh place with "measuring the value of IT investment." The two are closely related. This question was added as a complementary question because CIOs are also tasked with demonstrating the value of individual IT investments. Senior management now wants to know IT's overall impact on profitability and productivity at the company level as well as the positive economic return on individual IT investments.

"True return" on IT investments must take into account the cross-functional impacts of introducing new IT, such as the costs of training or re-skilling employees in "ancillary" (or supporting) business functions, the costs of developing and implementing (and documenting) new business processes, the costs (and benefits) of modifying technology supported by the new IT investment, the costs of maintaining and retrieving archival data (if needed), and so forth. "True return" on IT investments looks beyond the direct ROI calculations associated with acquiring and deploying an IT investment. It also takes into account potential business impact (direct and indirect).

As effective deployment of IT becomes increasingly critical for organizations to compete, executives must reevaluate their approach for calculating returns on specific IT investments. Without a doubt, ROI is an important tool for decision making in IT investment. But care must be exercised in examining all the data—including that data not readily available. In calculating "true return," organizations should consider the business outcomes along with operational performance improvements, and collaborate with the business to add value to achieve such outcomes.

Internacionale, a home interior and fashion group, calculates true return on individual IT investments. Every IT project is measured by a predefined set of costs and benefits based on the company's strategic plans. This analysis helps senior management become familiar with the technology as well as

understand operational metrics. For complex projects, Internacionale supplements its ROI analysis with other techniques, such as service-level agreements, to monitor cost and quality.

9. Complexity Reduction

"Complexity reduction," which ranked sixth in 2004, has dropped to ninth place in 2005. It can be linked to architecture, ranked fifteenth. Reducing complexity is not easy. As organizations automate processes, complexity increases. To remain competitive, business partners must work with IT to find ways to reduce complexity. Organizations that have established common IT platforms and standard configurations have reduced complexity and have benefited from a streamlined information architecture. In addition, well-defined standards that are followed enterprise-wide also improve IT operational efficiency and effectiveness.

Fidelity Investments was able to reduce IT complexity by moving its corporate data to a standard XML format. In doing so, Fidelity eliminated translation protocols and message buffers and 75 of its 85 mid-tier network servers.

10. IT Governance

"IT governance" is ranked tenth this year, as in 2004. IT governance is a process and set of metrics and controls that focus on what, who, why, and how IT decisions are made. It is another essential element in IT and business alignment. Despite the evidence that IT is an integral part of the business, IT governance is still an issue in many organizations. There is no "one size fits all" on how to organize and govern IT. Many IT executives are struggling with the various options.

Involving business leaders in the management of IT requires getting them involved in governance mechanisms, such as steering committees and executive councils. Figure 3 lists governance mechanisms where CIOs can involve business managers and executives. Many firms require business managers to be involved in the IT decision making that affects their business units.

10. Project Management Capabilities

"Project management capabilities" tied for tenth place. This item was added to the survey this year because of the increased emphasis on PMI (Project Management Institute) certification. One St. Louis-based staff augmentation firm reports that its Fortune 500 customers have a pressing need for capable project

Figure 3: Governance Alternatives

Budget process: Are IT projects treated as investments?
Career crossover: Opportunities for IT to work in business area
CIO-CEO: Where does the CIO report?
Communicate/market/negotiate: How effective is IT?
Competitive enabler/driver: Is IT applied to strategic business initiatives?
Education/cross-training: Opportunities for IT to learn about the business and the business to learn about IT
Liaison: Do relationship managers facilitate IT-business rapport?
Location: Do IT and business reside together?
Organization: Does IT application support report to the business?
Partnership/alliance management process: Is there a formal process in place to enhance alignment?
Service-level management: How effectively are SLAs coordinated?
Shared risks, responsibilities, rewards, and penalties: Does IT take all of the risks?
Value measurement: How effectively is IT's contribution assessed?
Steering committee: Are decisions made with business and IT at all levels?

- Strategic
- Tactical
- Operational

Figure 4: Percentage of Respondents by Industry

Industry Classification	Survey Percentages
Financial	15.2%
Manufacturing	12.4%
Education	10.5%
Information Technology	10.5%
Consulting	8.6%
Healthcare	7.6%
Retail	6.7%
Services	5.7%
Transportation	3.8%
Chemicals	3.8%
Pharmaceutical	2.9%
Utility	2.9%
Travel & Tourism	2.9%
Government	1%
Publishing	1%
Others	4.5%

managers. To ensure a level of quality, these customers frequently request PMP (Project Management Professional) certification from PMI. This request represents a significant shift in demand from the previous five years, when customers pressed more for technical certifications. To be certified PMP, candidates must have a baccalaureate degree and 4,500 hours of project management experience in at least five project management process groups. If the candidate does not have a baccalaureate degree, certification requires 7,500 hours of project management experience. In addition, candidates must have 35 contact hours of project management education and pass a 200-item examination. After obtaining certification, PMPs must continue to satisfy additional requirements to retain their certification.

Analyses by Categories – Management Concerns

As in previous years, we analyzed the rankings by two categories: industry and over time.

Figure 5: Management Concerns—Ranking of Importance Based on Industry				
All Respondents	**Financial (15%)**	**Manufacturing (12%)**	**Information Technology (11%)**	**Education (11%)**
1. Alignment	1. Alignment	1. Alignment	1. Alignment	1. Alignment
2. Staffing	2. Staffing	1. Planning	2. Staffing	1. Security
2. Security	2. Security	1. True Return on IT Investments	2. Planning	3. Planning
4. Planning	4. Government Regulations	4. Security	4. Governance	4. Business Process Reengineering
5. Business Process Reengineering	5. Project Management Capability	4. Complexity	4. Agility	4. Governance
6. Rapid Business Solutions	6. Planning	6. Business Process Reengineering	6. Security	6. Staffing
7 Value of IT Investments	6. Rapid Business Solutions	6. Rapid Business Solutions	6. Rapid Business Solutions	6. CIO Leadership
7. True Return on IT Investments	6. Governance	6. Value of IT Investments	6. True Return on IT Investments	8. Rapid Business Solutions
9. Complexity	6. Agility	9. Software Licensing	9. Government Regulation	8. Complexity
10. Governance	6. Performance of IT Organization	10. Staffing	9. Information Architecture	8. Information Architecture
10. Project Management Capability				8. Legacy Investment
				8. Salary

Analysis by Industry

Responses vary somewhat by industry. Figure 4 shows the percentage of respondents by industry. The four top responding industries are financial, manufacturing, information technology, and education; they comprise 49% of the responses.

Their rankings for the top ten management issues are shown in Figure 5. All four industries agree that alignment is the top management issue. Manufacturing industries rank alignment, planning, and true return on IT investment as their top management concerns, while education ranks alignment and security as the top management concerns. The top two rankings among all respondents show the importance of alignment and staffing.

Analysis over time

Figure 2 shows how the importance of the issues has changed over the seven previous surveys. 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 2005 survey appeared in all of the previous surveys (with the exception of "security and privacy" in 1994 and "IT and business alignment" in 1980), which indicates their continuing importance to senior IT executives.

SECTION 2 OF THE SURVEY: APPLICATION AND TECHNOLOGY DEVELOPMENTS

The second part of the survey looked at the leading application and technology areas. Figure 6 shows the top 32 rankings for 2005, 2004, and 2003 surveys.

The Top Six Application and Technology Developments

The 2005 survey has once again taken an in-depth look at technology developments, to compare with past data. New technologies continue to fuel the development of new products and services for organizations of all sizes. This section compares 2005 rankings with 2004 and 2003 rankings (Figure 6).

Figure 6: Application and Technology Developments		
2005 Rank	**2004 Rank**	**Issue (2003 Rank)**
1	1	Security technologies (not in 2003 survey)
2	n/a	System integration (not in 2003 survey)
3	2	Business intelligence (1)
4	7	Mobile and wireless applications (11)
5	6	Data synchronization (not in 2003 survey)
5	9	Enterprise resource planning (ERP) (9)
7	n/a	Service-oriented approach (SOA) (not in 2003 survey)
8	4	Web services (4)
9	12	XML (not in 2003 survey)
10	8	Enterprise application integration/management (EAI/EAM) (3)
11	3	Business process management (not in 2003 survey)
12	n/a	Corporate performance management (not in 2003 survey)
12	5	Customer portals (7)
12	11	E-business strategies (6)
12	15	Voice-over IP (not in 2003 survey)
16	17	RFID (not in 2003 survey)
17	14	Infrastructure developments (2)
17	15	Supply chain management (SCM) (12)
19	20	Java (not in 2003 survey)
19	n/a	Open system technology (not in 2003 survey)
21	n/a	Product life cycle management (not in 2003 survey)
22	10	Customer relationship management (CRM) (8)
22	13	Knowledge management (5)
24	19	Employee portals (10)
24	18	Online forms processing (not in 2003 survey)
26	n/a	Business authentication (not in 2003 survey)
27	21	Linux (not in 2003 survey)
27	n/a	Storage virtualization (not in 2003 survey)
29	23	Speech/voice recognition (not in 2003 survey)
30	25	Language translation (not in 2003 survey)
31	n/a	Utility computing (not in 2003 survey)
32	23	GRID computing (not in 2003 survey)
32	22	Supplier portals (13)
32	n/a	Video E-mail (not in 2003 survey)
32	n/a	Video/Optical computing (not in 2003 survey)

1. Security Technologies

"Security technologies" once again tops the list. Also, security is ranked as the second management concern (Figure 1) in 2005 and third management concern in 2004.

Security vendors say it takes as little as six to fifteen seconds for software-driven attacks to find and infect an unprotected computer connected to the Internet. Every day, AT&T analyzes more than 1.7 petabytes of information that pass through its IP backbone.

Its goal is to spot new attacks so that it can teach its network to identify and combat them using proprietary algorithms, without human intervention. Also, Cisco is working with more than a dozen IT vendors to build a business network where each device's security software only permits user access to the network when this software is up-to-date.

2. System Integration

"System integration" is new to the technology survey. It is no surprise that executives rate system integration as an important concern. In the current business environment, IT can no longer afford to deliver stovepipe systems (focused only on a particular department or product). IT must provide systems that support end-to-end processes across organizational boundaries. To achieve this, IT solutions need to be easy to integrate with legacy applications, resilient to change, and deliver value quickly. Most organizations have too many disconnected systems. These inhibit business processes and organizational integration.

Dell Computers has integrated not only its own disparate systems but also the systems of its suppliers, business partners, and customers. Suppliers have real-time access to Dell's information, allowing them to track products and components that they supply. They can also ship products on demand, rather than wait for a purchase order from Dell. By integrating systems, Dell helps its suppliers better manage their inventory (at Dell) while it avoids missing out on sales opportunities. Integration lets Dell keep its inventory low—four days' worth—compared to competitors' 10 to 15 days. Without system integration, Dell also could not give its customers up-to-date information, such as order status and billing information.

3. Business Intelligence

"Business intelligence" drops from number two in 2004 to number three in 2005. Business intelligence gives front-line employees the applications they need to leverage information and make better and faster business decisions. It can thus improve business performance.

BI combines such technologies as customer relationship management (CRM) (ranked twenty-second this year), data warehousing and mining (data synchronization, ranked fifth this year), and knowledge management (tied at twenty-second)—all of which help organizations leverage their information. Many firms are replacing disparate reporting tools with newer products that help them comply with the new regulations for more timely and accurate financial data.

Avnet, Inc., based in Phoenix, Arizona, used SAP BW (business information warehouse) to integrate SAP data sources and non-SAP legacy systems used by the companies Avnet acquired as it accelerated its growth. Business intelligence systems have provided Avnet with better OLAP performance and reliability and have created a rich reporting system that lets managers drill down to all kinds of detailed information they need but was not formerly available.

When combined with service-oriented architecture (SOA) (ranked seventh) and Web services (ranked eighth), both of which offer ways to interconnect applications, BI promises to give business units and customers better ways to manage their information environment.

4. Mobile and Wireless Applications

"Mobile and wireless applications" ranks fourth, moving up from seventh in 2004. Businesses will continue to increase their use of mobile and wireless applications to cut costs, increase flexibility, and create new products and services. Numerous studies have shown that wireless applications increase workers' productivity and output.[11]

A study conducted by Ipsos Reid (Ipsos-na.com) found that teams using Blackberry™ wireless devices reported a 29% increase in efficiency. If people and data are accessible at any time and place, employees spend less time trying to contact people or access information. Onstar™ is a good example of a wireless application. It is available in General Motors' vehicles. It provides onboard navigation, e-mail, stolen vehicle tracking, and accident assistance.

5. Data Synchronization

"Data synchronization" has moved to fifth place in 2005, from sixth in 2004. It provides the ability to synchronize a single set of data between two or more devices within and between organizations. As a result, people work from the same data. For example, Wal-Mart requires its suppliers to use UCCnet (Uniform Code Council) to synchronize data. Incompatible data cannot be sent over EDI links between trading partners, thereby eliminating costly invoicing errors and shipping discrepancies. Data synchronization is fundamental for compliance and business process

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11   "Enhancing Productivity by Using Tablet PCs at Microsoft," technical case study, published by Microsoft, January 27, 2006.

Figure 7: Technology Developments—Ranking of Importance Based on Industry				
All Respondents	**Financial**	**Manufacturing**	**Information Technology**	**Education**
1. Security technologies	1. Business intelligence	1. Security technologies	1. XML	1. Security technologies
2. System integration (new to 2005 survey)	2. Web services	2. System integration	2. RFID	2. System integration
3. Business intelligence	3. Security technologies	2. Business intelligence	3. Security technologies	2. Enterprise resource planning
4. Mobile and wireless applications	3. System integration	2. Enterprise resource planning	3. System integration	4. Mobile and wireless applications
5. Data synchronization	3. Service-oriented approach	5. RFID	3. Business intelligence	4. Customer portals
5. Enterprise resource planning	3. Infrastructure developments	5. Product life cycle management	3. Mobile and wireless applications	6. Business intelligence
7. Service-oriented approach	7. Data synchronization	7. Data synchronization	3. Service-oriented approach	6. Web services
8. Web services	7. XML	7. XML	3. Voice-over IP	6. EAI/EAM
9. XML	7. EAI/EAM	7. Employee portal	3. Open system technology	6. Voice-over IP
10. EAI/EAM	7. Open system technology	7. Linux	10. Data synchronization	6. Employee portal
	7. Product life cycle management		10. Web services	6. Online form processing
			10. Business process management	
			10. Customer portal	
			10. E-business, infrastructure development	
			10. Java	
			10. Knowledge management	
			10. Online form processing	

improvement (e.g., CRM, SCM), but it is not easy—especially between organizations.

5. Enterprise Resource Planning & Data Synchronization

"Enterprise resource planning (ERP)" is tied for fifth place with "data synchronization" in 2005. It has moved up from ninth in 2004. These packaged applications integrate various business activities

across departmental boundaries and are sold by major software companies, such as Microsoft, Oracle, and SAP, among others. To satisfy organizations' unique business needs, they often must adapt their processes to the package, not vice versa. The line between ERP, CRM, and SCM will blur as ERP vendors expand the functionality of their products and redefine their packages.

For example, Brose Group supplies automotive windows, doors, and other products to customers

Figure 8: 2005 IT Budget in Comparison to 2004
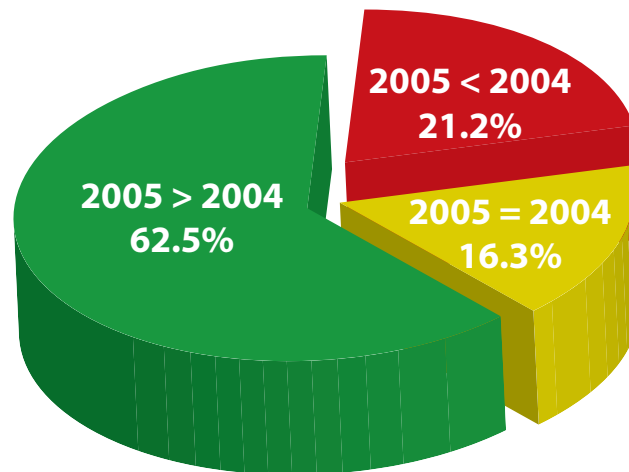
like GM, Ford, Toyota, and Honda. In 1994, its existing information system was unable to support the company's expanding needs. So management decided to use SAP's ERP application suite. The conversion increased productivity. The 1994 sales were 541 million euros, with 2,900 employees, or 186,000 euros per employee. By 2004, Brose's sales were 2 billion euros, with 8,200 employees, or 240,000 euros per employee. Similarly Microsoft implemented SAP's financial accounting module. Before installing the module, monthly financial statements took three weeks to assemble. After installing the module, they only took three days. Microsoft saves some $25 million a year due to ERP.

Analysis by Industry—Application and Technology Developments

Analysis by industry

Figure 7 compares the rankings of application and technology developments by respondents from the financial, manufacturing, information technology, and education fields. Of the top 10 issues ranked by all respondents, six to eight issues have been identified as the top issues by executives from these industries. Figure 7 also shows, for instance, that business intelligence is the top issue for the financial industry, while XML is the top issue for the information technology industry. Security technologies remain the top issue for manufacturing and education.

SECTION 3 OF THE SURVEY: ORGANIZATIONAL CONSIDERATIONS

IT Staffing and Budgets

"Attracting, developing, and retaining IT professionals" ranked second in 2005, tied with security and privacy. It was also number two in 2004. Finding and retaining IT professionals became important on the 2004 survey. Before that, it was no higher than fourth. This current high ranking is consistent with the continued low ranking of staff reduction; now last on management's concerns (Figure 1). IT executives have raised the need to focus more on HR.

After the lean years in the early part of this decade, there is good news for IT budgets. Some 62.5% of the respondents in this year's survey indicated that their 2005 budget was higher than in 2004 (Figure 8), while 51% indicated that their 2006 budget will be higher still (Figure 9). IT budgets are on the rise. This increase plays a major role in attracting, developing, and retaining staff because 41% of IT budgets are spent on staffing. It is the largest single component (Figures 10 and 11).

Some 77.5% of the respondents had the same or increased IT headcount in 2005 over 2004 (Figure 12). Only 22.5% reduced IT headcount. These results appear to confirm reports that the economy has turned upward, even if not at a break-neck speed. The IT job market appears to be improving. These budget increases, along with the higher ranking of
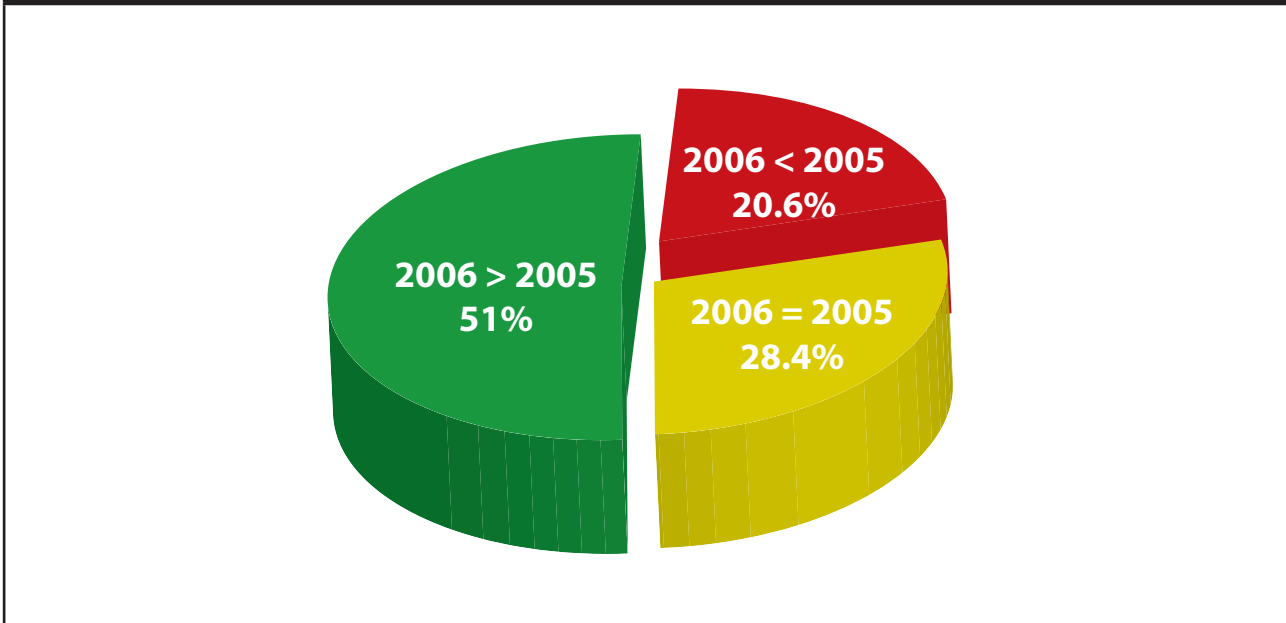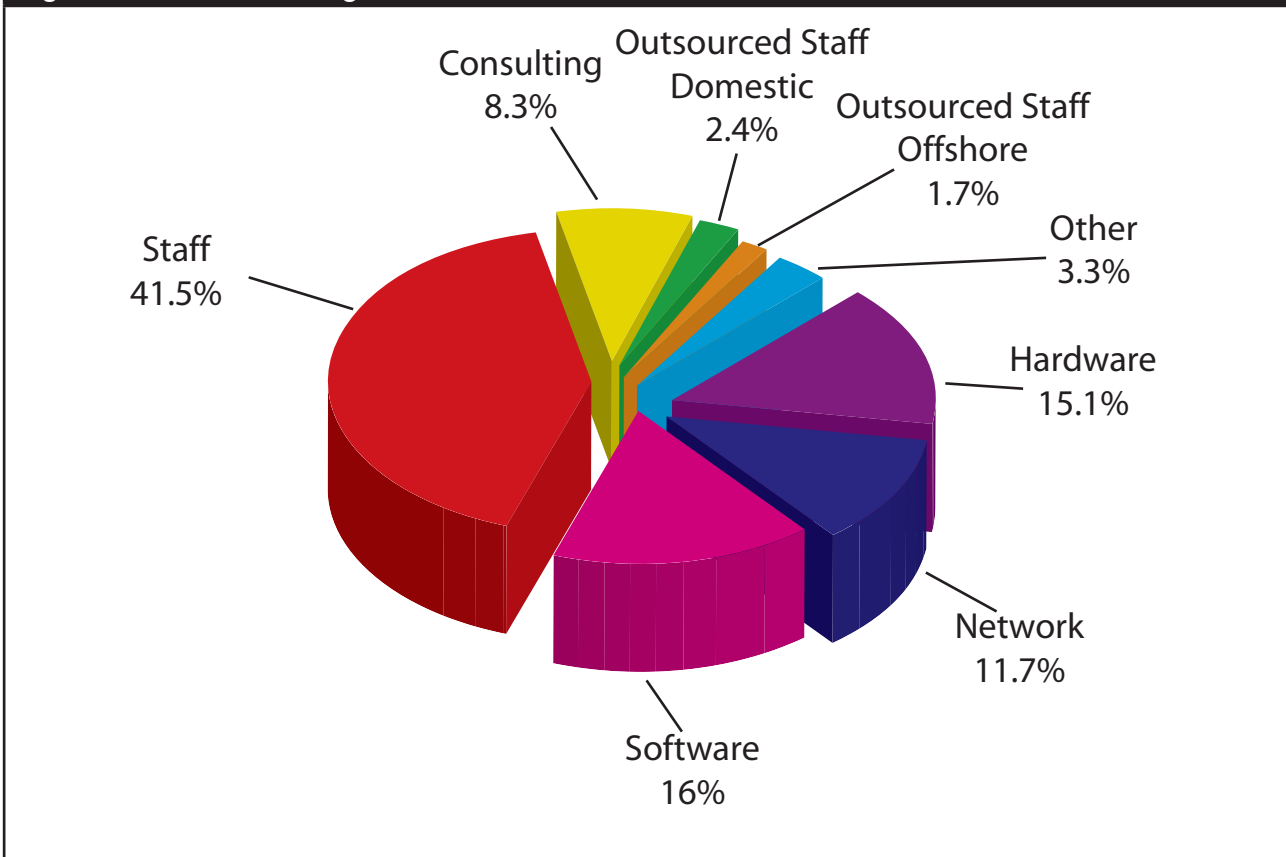
Figure 9: 2006 IT Budget Compared to 2005

2006 < 2005
20.6%

2006 > 2005
51%

2006 = 2005
28.4%

Figure 10: 2005 IT Budget Allocation

Consulting
8.3%

Outsourced Staff
Domestic
2.4%

Outsourced Staff
Offshore
1.7%

Other
3.3%

Staff
41.5%

Hardware
15.1%

Network
11.7%

Software
16%

attracting, developing, and retaining IT professionals, is encouraging. They show that IT executives appear to be taking the 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 now cause large-scale defections as the economy improves. It might be too late to be proactive, but these numbers suggest that IT executives are investing more in staffing.

A second staffing issue relates to the globalization of the IT function. Some 35.6% of the respondents are

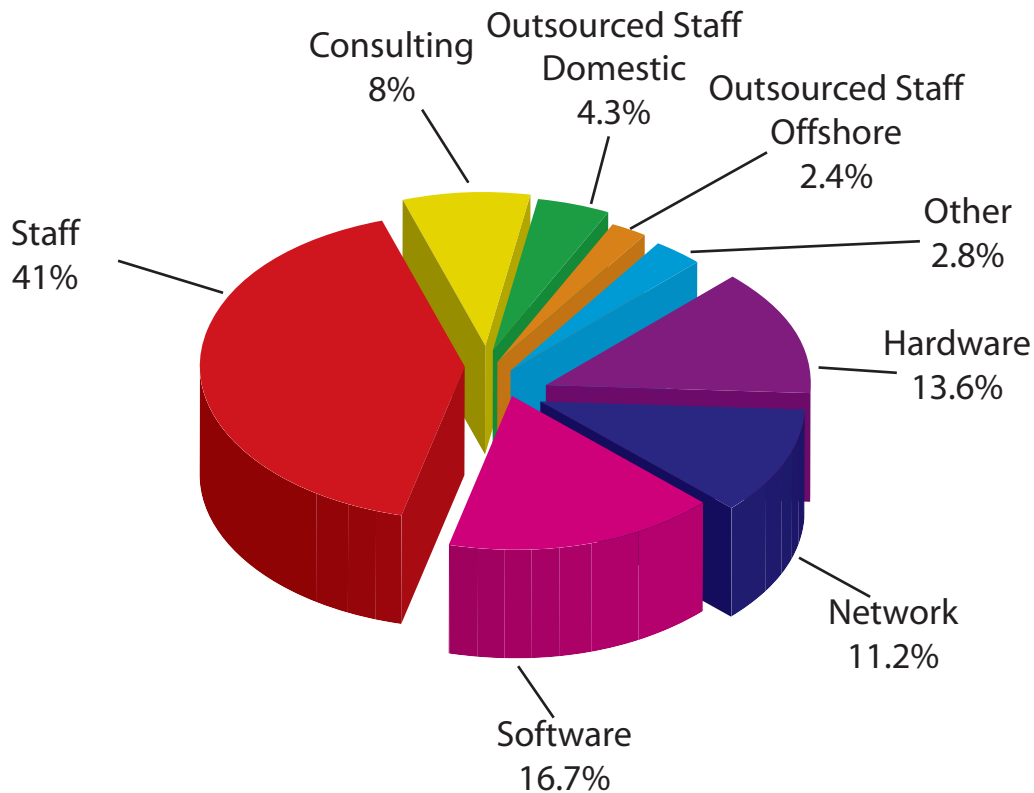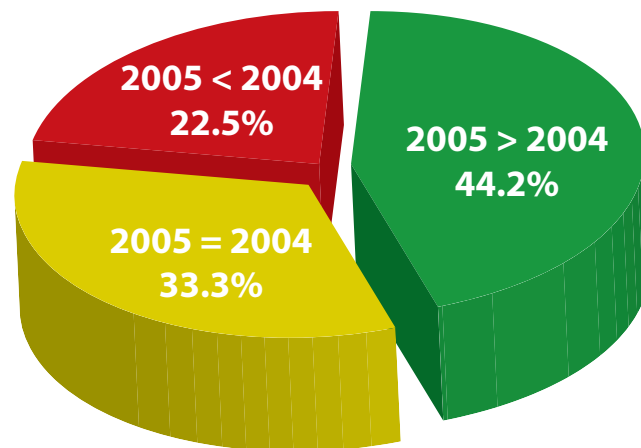**Figure 11: 2006 IT Budget Allocation**

- Consulting 8%
- Outsourced Staff Domestic 4.3%
- Outsourced Staff Offshore 2.4%
- Other 2.8%
- Hardware 13.6%
- Network 11.2%
- Software 16.7%
- Staff 41%

Figure 12: 2005 IT Headcount Compared to 2004

- 2005 < 2004 22.5%
- 2005 = 2004 33.3%
- 2005 > 2004 44.2%

using offshore outsourcing; see Figure 13. Managing IT work performed around the world requires new skills, which are scarce. Thus "attracting, developing, and retaining IT professionals" has taken on new meaning–and a new urgency.

Naturally, the dynamic business environment and changes in technology continue to place resource demands on IT organizations. However, these changes have always been part of IT, but the focus on IT resources has only recently appeared on the top list of IT concerns.

Also, it should be pointed out that while attracting, developing, and retaining IT professionals is ranked second, salary for IT staff is seventeenth, and staff reduction is twenty-fourth.

Figure 13: Percent of IT Budget Allocated for Offshore IT Outsourcing	
Percent of Outsourcing Done Offshore	**% of Respondents**
0	64.4%
<5	21.7%
<10	5.0%
<20	5%
<30	2.0%
>75	1.1%

Figure 14: CIO Reporting Structure
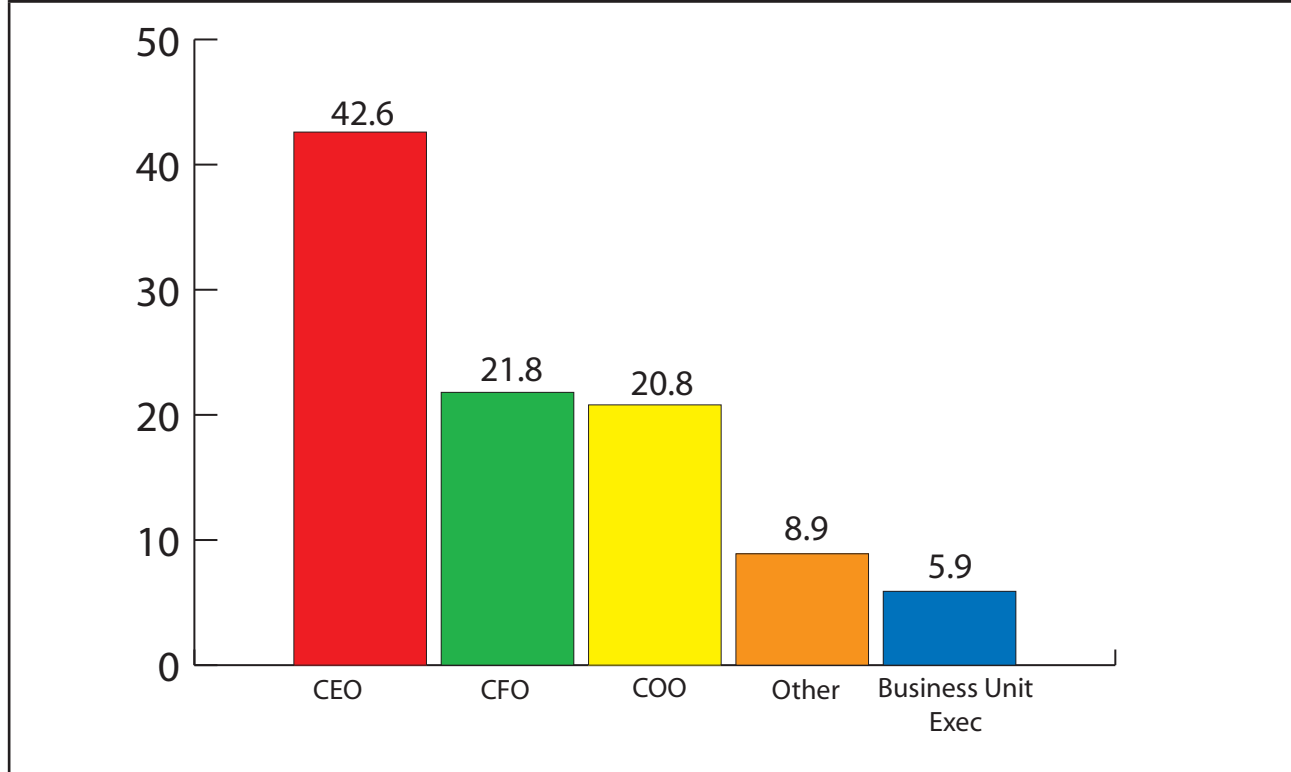
CIO Reporting Structure

Figure 14 shows the CIO reporting structure. Nearly 43% of the CIOs report to the CEO, which shows the importance of IT to the business. Nearly 22% report to the CFO and nearly 21% report to the COO. Some 6% report to a business unit executive.

The study sheds light on CIO reporting structure based on size. Some 80% of the CIOs who report to the CEO have a centralized IT structure, while only 9% have a decentralized IT structure, and only 9% have a federated/hybrid IT structure.
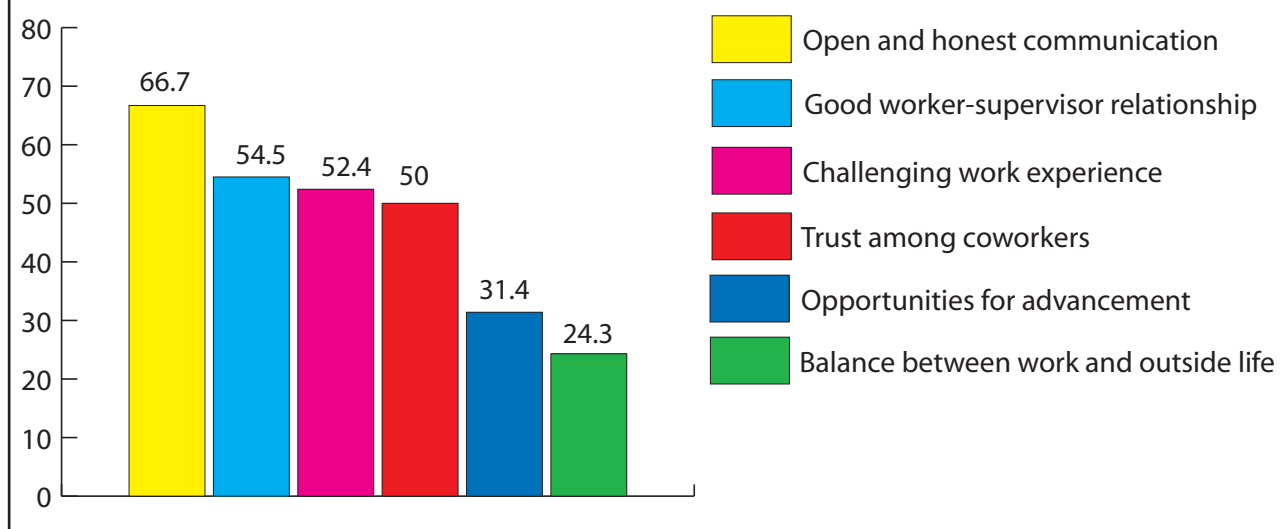
IT Staff Retention

With the economy improving, organizations are faced with keeping IT professionals from being lured away by competitors. Organizations that do not have retention as a high priority will have a tough time. Figure 15 shows the top six vehicles the respondents state are important for retaining IT staff.

Concerns about turnover have led organizations to create retention programs designed to keep IT employees from leaving. Nearly 67% of the respondents said that open and honest communication is the key to retaining IT staff. Such communication between IT professionals and their supervisors creates a safe working environment for the staff, which is important in this "outsource IT" environment. Likewise, the 54.5% who noted that having a good worker-supervisor relationship helps retention are probably also concerned with communication issues. IT staff have always wanted challenging work experiences, as 52.4% note. Yet, they do not all want to advance, evidenced by the low 31.4% response.

Figure 15. Top Six Vehicles for Retaining IT Staff

Legend:
- Open and honest communication
- Good worker-supervisor relationship
- Challenging work experience
- Trust among coworkers
- Opportunities for advancement
- Balance between work and outside life

Bar values: 66.7, 54.5, 52.4, 50, 31.4, 24.3

Finally, a balanced work-home life may be important, but only 24.3% of respondents listed it as important to retention..

Today's IT jobs generally require strong technical skills, as they have in the past, but they now also need knowledge of the business and the industry, and skills in communicating, marketing, and negotiating because more IT jobs deal with working with the business or an outsourcer or supply chain partner. A significant challenge for IT management is retaining talent and fostering the new blend of skills as IT becomes more important to business strategy.

Organizational Structure

Figure 16 shows the responses to the IT organizational structure question. Some 72.3% of the participants stated that their IT organization is centralized. The principal benefit of having a centralized structure is consistency and standardization of IT standards and management practices. Fewer than 10% of the respondents have a decentralized structure. In this structure, the small corporate IT function serves headquarters only; the autonomous business units handle their own IT. And 15.8% of the respondents state that their IT organization has a federated structure. The federated structure blends centralization and decentralization. Often, shared services, such as telecommunications, data centers, and standardized applications, are centralized, while functions that directly support a business unit's unique requirements report to that business unit head.

SECTION 4 OF THE SURVEY: ENABLERS AND INHIBITORS OF IT AND BUSINESS ALIGNMENT

For over 20 years, IT and business alignment has been ranked as a top management concern by consultants, academics and research organizations. Judging from the 2005 survey results, it is clearly a persistent and pervasive challenge. 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 meaning of "alignment" has evolved? The answer appears to be a combination of both.

The definition of alignment addresses both how IT is aligned with the business and how the business should/could be aligned with IT. Luftman reported that the degree of personal relationship between IT and business executives is a major factor influencing alignment.[12] One way to explore this question, "How can companies achieve, improve, and sustain alignment?" is to examine alignment's enablers and inhibitors.

A Brief History: Previous Findings on Alignment Enablers and Inhibitors

Since the early 1990s, Luftman's research has identified alignment trends and established an alignment benchmark for enablers and inhibitors.[13] The survey data for the work in the 1990s came from the

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12 Luftman, J., *Competing in the Information Age: Align in the Sand*, New York: Oxford University Press, 2003.
13 Luftman, J. and Brier, T., "Achieving and Sustaining Business-IT Alignment," *California Management Review.* (24:1), 1999, pp. 109-122.

Figure 16: Organizational Structure
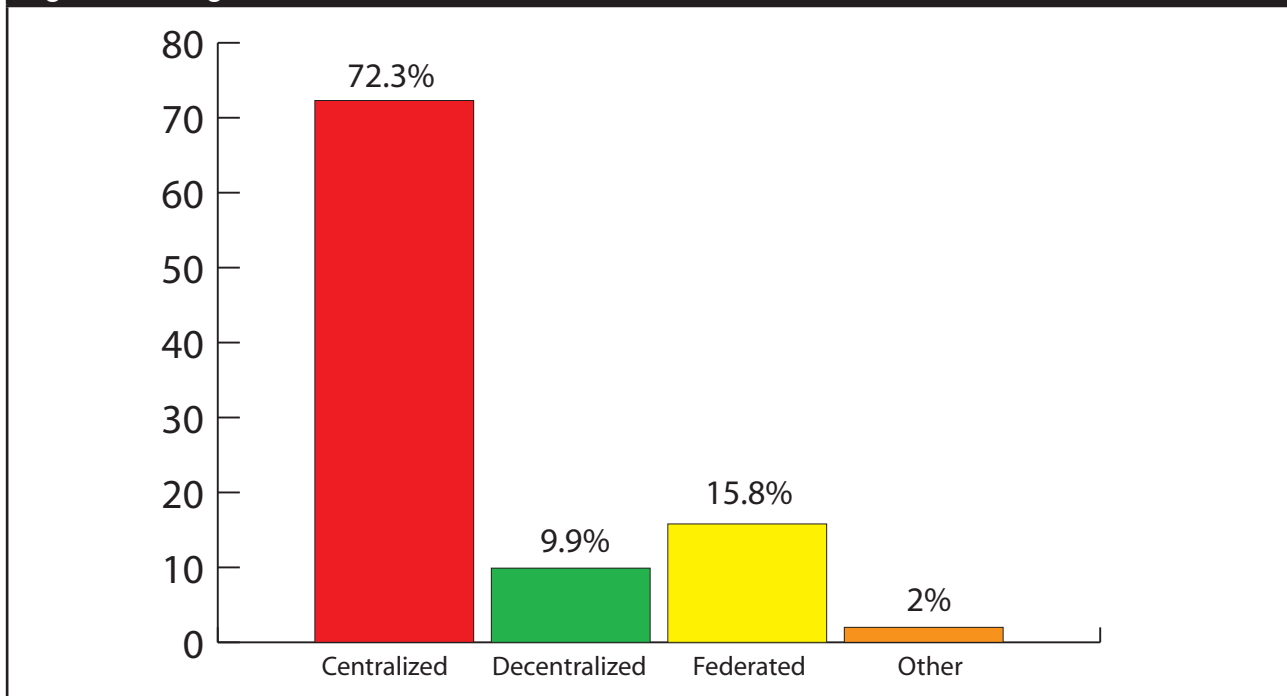
executives who attended IBM's Advanced Business Institute from 1993 to 1997. They represented over 500 firms in 15 industries. Their ranking of enablers and inhibitors remained consistent throughout the 1990s. A 1999 study presented detailed findings of alignment enablers and inhibitors.[14]

The Overall 2005 Enabler-Inhibitor Survey Findings

Questions on alignment enablers and inhibitors are now asked every other year. The questions for the SIM 2003 and 2005 surveys were based on the questions used since 1993. The goal is to analyze whether or not the enablers and inhibitors changed. The SIM 2003 and 2005 surveys asked respondents to indicate the extent to which each item enabled or inhibited business and IT alignment in their organization. The response choices ranged from "greatly inhibiting" to "greatly enabling." A "not applicable" choice was also included.

Figures 17 and 18 show the list of enablers and inhibitors ranked by the respondents. A high ranking in Figure 17 (enablers) means that the factor "greatly enables" (fosters) alignment. A high ranking in Figure 18 (inhibitors) means that the factor "greatly inhibits" (is a roadblock to) alignment.

Figure 17 shows the enablers from the 2005, 2003, and 1993-1997 surveys. The top five enablers remain relatively consistent in all three surveys, with some minor differences in their ranking.

Figure 18 shows the top inhibitors from the 2005, 2003, and 1993-1997 surveys. Several inhibitors received higher rankings in 2005 than in prior years, but the overall feedback was consistent. As with the enablers, the similarities reinforce the importance of the top inhibitors.

Addressing enablers and inhibitors is not a simplistic, one-answer solution; it is complex and ongoing. The IT business alignment maturity assessment study, sponsored by SIM and The Conference Board, has helped identify alignment problems and opportunities, and has established the direction for improving alignment.

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 consistently 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 2005, have been in the top ten for the entire 24 years of

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14   Luftman, J., Papp, R., and Brier, T., "Enablers and Inhibitors of Business-IT Alignment," *CAIS* (1:11), March 1999, pp 1-32.

Figure 17: Enablers—Ranking of Importance		
2005 Survey	**2003 Survey**	**1993-1997**
1. IT understands the firm's business environment	IT understands the firm's business environment	Senior executives' support for IT
2. Senior executive support for IT	Close partnership between IT and business	IT involvement in strategy development
3. Close partnership between IT and business	Senior executive support for IT	IT understanding of the business
4. IT demonstrates strong leadership	IT plans linked to business plans	Business-IT partnership
5. IT plans linked to business plans	IT demonstrates strong leadership	Well-prioritized IT projects
6. IT and business have close relationship	IT and business have close relationship	IT demonstrating strong leadership
7. IT meets commitments	IT meets commitments	
8. IT involved in business strategy development	Good IT-business communication	
9. Good IT-business communication	IT involved in business strategy development	
10. Clear ownership of IT-business alignment	IT efforts are well prioritized	
11. Goals and visions are defined	Goals and visions are defined	
12. IT efforts are well prioritized	IT achieves its strategic advantage	
13. IT achieves its strategic advantage	IT resources shared	
14. IT resources shared		

surveys. This consistency reinforces the importance for IT executives to (1) understand the business and industry in which they participate and (2) work toward aligning the IT activities they lead with the businesses they support.

A host of changes and new technical developments have taken place over these 24 years. In the 2005 list of application and technology developments (Figure 6), ten were new to the list compared with the 2004 survey, and 22 were new to the list compared with the 2003 survey.

Yet, while faced with dynamic technology and business environments, CIOs continue to contend with perennial managerial issues. Attracting, developing, and retaining IT professionals remains a concern. IT professionals help businesses identify opportunities to leverage IT. IT managers need to retain staff for this important job in the face of outsourcing and the growing IT job market.

APPENDIX: THE PLAN OF THE STUDY

The 2005 survey was similar to the 2004 study in methodology and process.

Determine the participants and survey process.

Like 2004, for the 2005 study, the SIM Executive 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 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.

Figure 18. Inhibitors – Ranking of Importance		
2005 Survey	**2003 Survey**	**1993-1997**
1. Business communication with IT	Senior executive support for IT	IT/business lack close relationships
2. Clarity and predictability of corporate goals/direction	Influence of headquarters' leadership	IT does not prioritize well
2. Influence of headquarters' leadership	Business communication with IT	IT fails to meet its commitments
4. Business commitments of budgets to IT investments	Business commitments of budgets to IT investments	IT does not understand business
5. Business commitments of staff to support IT investments	Linkage of individual business unit plans to strategy	Senior executives do not support IT
6. Business units' prioritization of IT needs	Clarity and predictability of corporate goals/direction	IT management lacks leadership
7. IT and business governance	Linkage of individual business unit plans to strategy	
8. Linkage of individual business unit plans to strategy	IT and business governance	
9. Lack of senior executive support for IT	Business commitments of staff to support IT investments	
10. Lack of clear ownership of IT-business alignment	Business units' prioritization of IT needs	
11. Resistance from senior executives	Business units' lack of support for corporate-wide IT initiatives	
12. Business units' lack of support for corporate-wide IT initiatives		
12. Antiquated business processes in business units		
14. Business units' lack of understanding of the firm's IT environment		
15. Business units competing for IT resources rather than sharing		

Participants were asked to rate 25 managerial (Figure 1) and 35 application/technical issues (Figure 6).

The 2005 survey used many of the same questions and choices as in 2004. It updated some based on (1) similar lists from trade publications, (2) input from SIM Board members, and (3) the lead 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 authors believed it would be valuable to uncover additional insights pertaining to alignment. The 2005 survey decided to explore the issue of IT-business alignment enablers and inhibitors again. This use allows the lead author to compare the findings with his other research findings.

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 2005. By September, 105 responses had been received and a preliminary presentation of the results was made at the SIM annual conference (the "SIMposium") in Boston in September. That brief presentation generated considerable interest and was cited in a number of trade publications.

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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.

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