New Information Systems Leaders: A Changing Role in a Changing World[1]

By: **Lynda M. Applegate**
Harvard Business School
Soldiers Field Road
Boston, Massachusetts 02163
U.S.A.

Joyce J. Elam
Decision Sciences and Information Systems
College of Business Administration
Florida International University
Miami, Florida 33199   U.S.A.

Abstract

It is widely argued that the information systems (IS) leadership function has undergone fundamental changes over the past decade. To better understand the changes, this study compares the backgrounds, responsibilities, reporting relationships, and power of newly appointed IS executives (who had been in their position for two years or less) with established IS executives (who had been in their position for five years or more). The study found that approximately half of the new IS executives were external hires, whereas almost all of the established IS executives were promoted from within the company. More than two-thirds of the new IS executives had more than five years' experience managing a non-IS function within the past 15 years. Established IS executives had spent the majority of their career within the IS function. The activities receiving the most attention from new IS executives were information technology (IT) strategic planning and control, IT architecture management and stan-

dards development, and human resource management. For established IS executives, the activities receiving the most attention were IT architecture management and standards development, human resource management, and operations. An increasing number of new IS executives reported directly to the CEO, and almost half were members of the senior management/ strategic policy committee. These findings have several important implications. First, the senior IS executive must be able to bring a broad business perspective to the position. Current senior IS executives who have not broadened their own knowledge, skills, and experiences in business strategy, management, and operations should immediately develop a personal career development program to gain these valuable perspectives. Second, senior IS executives should implement career development strategies within their own organizations that ensure that IS professionals have the opportunity to acquire the business management experience necessary to advance to higher IS management levels. Third, graduate and executive programs designed to prepare future IS managers and leaders must provide both a business and IT perspective throughout the curriculum.

Introduction

Most senior executives are now well aware of the critical role information technology (IT) plays in enhancing organizational competitiveness in the 1990s. Stories of the use of IT as a major competitive tool are legendary (Ives and Learmonth, 1984; McFarlan, 1984). Some argue that the role and qualifications of the leader of the information systems (IS) function should be radically changed to ensure that opportunities to use IT in this manner are identified and exploited (Cash, et al., 1992; Synott, 1987). In the "data processing era" of the 1960s, when IT served a strictly support function, it was acceptable for the IS leader to be a technical expert and competent manager. In the "information era" of the 1990s, a new and expanded set of responsibilities

[1] Portions of this study were previously reported in: Applegate, L.M. and Elam, J.J. "CIO and SuperCIO," *CIO*, April 1991.

demands that the executive responsible for IT throughout the corporation also possess strong leadership skills, power, and business expertise.

Given such circumstances, one would expect significant turnover among IS executives, and, indeed, a recent study reported in *Computerworld* (Wilder, 1992) found that 33 percent of the senior IS executives surveyed had recently replaced IS executives who had been dismissed or demoted. This percentage was up from 32 percent in 1990 and 29 percent in 1989. These results are consistent with reports from the popular IS and business press on changes in senior IS positions within *Fortune 500* firms over the past decade.

Finding the right individual for the senior IS position has never been easy. "No one from our internal IS unit," remarked one CEO, "had the business perspective that we needed, and no one from the business units had the required technology perspective." He continued:

> We expanded our search to the outside and could find only one candidate who possessed the combination of both the technology *and* business backgrounds that we were looking for. But this individual was not familiar with our company and its culture and, we believed, would not be effective in leading the company through the major organization transformation upon which we were embarking. We hired someone from within who had the broad business and organizational background and the strong leadership skills that would be required and then helped her get up to speed as quickly as possible on the technology.

The ideal candidate for the senior IS position in a company is apparently an individual who has a combination of business, technology, and leadership skills. However, the ideal candidate may be hard to find. Most likely, someone from the IS organization will not have the business perspective needed, while someone from a business unit will not have the technology background needed. Someone from outside the organization often lacks the organizational knowledge and relationships to do the job.

We conducted a study of newly appointed IS executives to identify the types of job experiences they brought to their positions. We also wanted to explore how these experiences related to their agenda for action—the set of key activities to which they devote attention. For this study a newly appointed senior IS executive was defined as one who had assumed his or her position during the period January 1986 to January 1989 and had been in the position for less than two years. In-depth interviews with nine new IS executives were followed by a survey of 64 new IS executives. Additionally, we surveyed established IS executives to identify differences between the "new" and the "old." For purposes of this study, an established IS executive was defined as one who had assumed the IS leadership position before 1984 and had been in that position for five years or more. The data collection phase of the study took place between March 1988 and October 1989.

This article presents a picture of contemporary IS leadership. When compared with previous studies, differences between new and established IS leaders highlight important trends for IS leaders in the 1990s.

Research Questions

The study addressed the following questions:

1. What are the job experiences of new IS executives? Do they differ from those of established IS executives?

2. Why did the previous senior IS executive leave? Is there a relationship between his or her reasons for leaving and the kind of individual hired as a replacement?

3. What is the new IS executive's agenda for action? Does it depend on the job experiences that the executive brings to the position? Does it differ for established IS executives?

4. To what extent has the new IS executive developed professional networks with key individuals in the organization? Do previous job experiences influence the ability to use these networks? Do established IS executives have the same types of networks?

5. Does the new IS executive have the power to implement his or her agenda? Does the previous background of the new IS executive influence the power granted to the position? Do established IS executives exhibit the same level of power?

Previous research pertaining to these questions is discussed in the rest of this section.

Job experiences

In 1974, a review of more than 3,000 studies attempted to define and characterize leadership (Stodgill, 1974). This review found that many definitions of leadership existed. Though there has been much debate about the definition of leadership and the characteristics of leaders, most agree that leadership is a process of social influence (McCall, 1983). Bennis and Nanus (1985) state that the one quality without which a leader cannot lead is power, which they define as the "basic energy to initiate and sustain action which translates intention into reality." Power, according to Bennis and Nanus, can be realized only through (1) the development and communication of a vision that has high perceived value for others in the organization and (2) the empowerment of others to initiate the actions needed to achieve that vision (Evans, 1970; House, 1971). Kotter (1988) summarizes this concept by identifying two major tasks of a leader—agenda setting and network building—and defining six major characteristics of effective leadership in accomplishing these tasks:

- Broad business and organizational knowledge

- Broad set of relationships in the firm and in the industry

- Excellent reputation and a strong track record in a broad set of activities

- Keen mind and strong interpersonal skills

- High integrity and personal values

- High level of motivation (energy and drive to lead)

The first three characteristics derive primarily from education and job experience. The last three, though influenced by education and job experience, are dependent upon inborn characteristics and personal/social values. Though many studies have attempted to identify specific personal characteristics and values that could be related to effective leadership, most researchers now believe that the influence of these personal characteristics and values is context-specific and therefore difficult to quantify or classify (McCall, 1983). For this reason, we did not obtain any data

on the last three characteristics of effective leadership. Instead, our study specifically identifies the level of business, technical, and organizational knowledge possessed by newly appointed IS executives, as reflected in their past educational and job experiences.

Why predecessors left

New leaders are often sought when an organization faces new opportunities or problems that cannot be realized or solved by established structures and processes (Bennis and Nanus, 1985). Effective leadership requires "some level of congruence" between the objectives of the leader and of those being led (Pfeffer, 1977). As a result, organizations undergoing a change in goals, values, and priorities often also undergo periods of instability in leadership. Requirements for leadership positions tend to remain stable in organizations as long as the organizations themselves remain stable (Pfeffer, 1977). Organizations in the process of transformation and change often find that the requirements for leadership have changed. Consequently, individuals selected to lead the IS organization might be expected to have special characteristics that make them uniquely qualified for the position. In this study, we sought insight into the underlying stability of IS leadership in an organization by obtaining information on when and why the predecessor of the new senior executive left. We also examined the nature of the relationship between the reasons for the predecessor's departure and the job experiences of the person selected as his or her replacement.

Agendas for action

There has been much speculation in both the academic and practitioner literature on the need to redirect and change the role of IS in the organization. Similarly, others have tried to define the responsibilities the successful senior IS executive must assume in this transformed role. These responsibilities include (1) ensuring that IS initiatives support business strategies, (2) identifying and ensuring development of strategic IT applications, (3) promoting and coordinating the use of technology throughout the firm, (4) developing the technology infrastructure, standards, and architecture, and (5) attending to the

career development of IS professionals throughout the firm (Elam, et al., 1988).

A change in the senior IS position provides the opportunity for an organization to reassess, redefine, and rearrange the priorities of IS and set a new IS agenda. The essence of the agenda will undoubtedly be influenced by the factors that motivated the change in the first place. In this study, we were interested in identifying the responsibilities undertaken by new senior IS executives and the extent to which these responsibilities were influenced by the job experiences they brought to the position.

Networking

To be effective in the future, IS leaders must establish a very aggressive agenda for change while securing and maintaining a large network of resources necessary to carry out their agenda. Success in this endeavor depends on the three leadership characteristics described above. An effective IS leader must have (1) an impressive track record and solid reputation; (2) well-established cooperative working relationships with key individuals in the industry and company; and (3) the interpersonal skills and integrity needed to quickly develop credible relationships with a varied group of people (Kotter, 1988).

In this study, we explored the degree to which these cooperative working relationships exist and how their presence related to the job experiences that the new senior IS executive brought to the position. We compared the cooperative working relationship of new IS executives with those of established IS executives to determine if significant change was occurring in this area.

Power

The growing importance of IT in organizations has created the expectation that the IS leader will become a powerful figure, occupying a high-level position within the company and exerting growing influence on the company's strategic direction through membership on the senior executive policy and strategy committee (Cash, et al., 1992). Organizational power is an elusive quality, blending (1) bargaining advantages (derived from formal authority and obligations, institutional backing, and status); (2) expertise, skill, and

motivation; and (3) others' perceptions of the previous two (Allison, 1988; French and Raven, 1959). Measuring the absolute power of an organizational leader is a difficult task and is outside the realm of this study. Research has shown, however, that specific characteristics of an organizational position, such as reporting level, can influence perceived authority and power to affect and influence organizational actions (Hambrick, 1981; Rousseau, 1978).

By identifying the reporting relationships of the new senior IS executives participating in our study, we sought to gain a sense of the formal organizational power inherent in the IS leadership position. In addition, we were interested in the relationship between job experience and reporting level. We assumed that selecting a new senior IS executive from either the "business" side of the house or from outside the organization was indicative of a major change in IS direction in the organization. In those cases, we expected to see a change in reporting relationships. To further clarify this change, we also examined the reporting relationships of established IS leaders.

Another indirect measure of power is participation on key senior management committees. We assumed that senior IS executives would use this position to influence how IT was used throughout the organization and the level of investment made in IT. We were interested in identifying the degree to which they participated on senior management policy committees and whether their backgrounds influenced their participation. New IS executives with business backgrounds were expected to be more likely than those with a strict IT background to be included in top management committees. These individuals may have previously been part of such a committee, and, if they were "insiders," the relationships with key players was likely to already be established.

Study Methodology

Senior IS executives who assumed their positions during the period January 1986 to January 1989 were targeted to participate in this study. These individuals were identified in a number of ways. First, we searched the general business (e.g., *Wall Street Journal, New York Times*) and IS (e.g., *InformationWeek, Computerworld, Datamation, CIO)* press for announcements of new IS

appointments. Second, we examined the *CIO 100* list (Alter, 1988) and the *InformationWeek 100* list (Layne, 1988) to identify individuals who fit the study's criteria. Finally, word of mouth and interviews with IS consultants and management search firms helped provide additional leads on companies in which a transition in the top IS position or the establishment of a new IS leadership position had recently occurred. We identified 87 IS leaders who met the study criteria and sent them a detailed questionnaire. We also used the *CIO 100* and *InformationWeek 100* lists to identify IS executives in 50 organizations who had been in their positions for five years or more; we sent them a second questionnaire. Nine other IS executives who assumed their positions during the 1987-88 period were selected for personal interviews.

We believe the methods used to identify subjects for the study have skewed the sample toward larger companies and those in which IS has assumed a higher level of importance. We expect that smaller companies and those in which IS has low perceived value would be less likely both to publicize new IS appointments in the press and to use management search firms to fill IS positions.

Interview data

Senior IS executives from nine large corporations headquartered in the United States were interviewed. All had assumed their positions during the 1987-88 period, and all had varied backgrounds. Six were promoted from within the company. Of them, four had strictly business backgrounds; two had IS backgrounds. Of those brought in from outside the organization, two had strictly business backgrounds, and one had an IS background. Eight of the nine were responsible for corporate IS, and one was in charge of IS for the firm's international subsidiaries. Three of the nine were women. The industries represented in the interviews included financial services, aerospace, manufacturing, and petroleum. We used a semi-structured interview format to gather data that were then used to help formulate the research questions for the study.

Survey data

The research questions and interviews served as the basis for the development of the survey that was sent to newly appointed senior IS executives. Unpublished survey instruments developed by Arthur Andersen Company and Touche Ross & Company also provided helpful information in the development of the survey instrument for this study. The survey addressed the following areas: (1) predecessor information; (2) job experiences (length of time with company, previous position, previous work experiences, educational background); (3) reporting relationship; (4) professional responsibilities and activities; (5) salary range; and (6) IS budget and employee information.

Of the 87 surveys sent to new senior IS executives, 64 usable questionnaires were returned (74 percent). Table 1a presents a summary of the characteristics of the companies represented by these individuals, and Table 1b presents information on IS budgets and salary levels. Sixty-two of the respondents were in charge of corporate IS organizations; two were in charge of divisional IS organizations. Two of the respondents were women. There were a few cases in which the senior IS executive served in a staff role with responsibility for a very small percentage (less than 1 percent) of both the overall IS budget and IS employees. However, for the most part, new senior IS executives were directly responsible for the majority of IS professionals employed in the organization (average of 66 percent).

Of the 50 surveys sent to established IS leaders, 35 were returned, but only 17 (34 percent) were able to be used in the study. The remaining 18 surveys were filled out by individuals new to the position, and not by the executives to whom they were originally sent. Tables 2a and 2b summarize the company characteristics for the established IS executives. The set of responses covered all of the industries represented by new IS executives, with the exception of retailing and health services/pharmaceuticals. All of the respondents were in charge of corporate IS organizations. There were no women in the group.

New and established IS executives differed in another significant way: 73 percent of the established IS executives controlled less than 10 percent of the total IS budget, less than 10 percent of total IS employees, or both. Analysis of the significance of this surprising finding is beyond the scope of this study. Clearly, our sample of established IS executives is biased toward

Table 1a. New IS Leaders Surveyed: Revenue and Employees

Industry	Number of Companies	Revenue (in millions)		Employees	
		Average	Range	Average	Range
Financial Services	15	$8,658	$114 - $22,934	28,556	87 - 84,200
Retailing	3	$22,721	$2,617 - $50,251	260,000	35,000 - 485,000
Consumer Products	9	$5,954	$2,000 - $13,007	60,789	9,600 - 225,000
High-Technology Manufacturing	6	$15,036	$1,781 - $59,681	103,917	19,300 - 389,000
Utilities	3	$5,336	$1,900 - $10,880	32,170	4,610 - 80,900
Petroleum, Chemicals, and Plastics	9	$17,249	$100 - $79,557	32,110	886 - 102,000
Manufacturing	3	$6,788	$5,365 - $9,509	37,033	34,100 - 39,000
Transportation/Aerospace	7	$5,671	$450 - $18,283	52,357	6,440 - 190,000
Media/Entertainment/Recreation	4	$2,760	$1,818 - $3,438	19,675	15,800 - 30,000
Health Services/Pharmaceuticals	5	$4,200	$758 - $7,046	37,135	7,600 - 89,000

Table 1b. New IS Leaders Surveyed: IS Budget and Salary

Industry	Number of Companies	IS Budget (in millions)				Salary (in thousands)		
		<$50	$50-$99	$100-$199	>$200	<$100	$100-$150	>$150
Financial Services	15	2	2	1	9	-	2	12
Retailing	3	-	-	1	1	-	-	3
Consumer Products	9	1	4	-	2	-	-	9
High-Technology Manufacturing	6	-	1	2	3	-	1	5
Utilities	3	1	1	-	1	-	1	2
Petroleum, Chemicals, and Plastics	9	4	1	1	3	-	7	2
Manufacturing	3	-	2	1	-	-	-	3
Transportation/Aerospace	7	2	1	2	2	-	3	4
Media/Entertainment/Recreation	4	1	2	-	1	1	-	3
Health Services/Pharmaceuticals	5	2	1	1	-	-	-	5
Total	**64**	**13**	**15**	**9**	**22**	**1**	**14**	**48**

Note: Some categories may be incomplete because of missing data.

organizations in which the senior IS leader had significantly less control of the firm's IS resources than the sample of new IS executives. (As mentioned earlier, of the 50 companies sampled, 18 surveys were returned but were not usable because they were filled out by a new IS leader who had recently replaced the established IS leader to whom the survey had been addressed. In addition, of the 15 surveys that were not returned, we know that several of these senior IS executives had recently left their firm.) Are some companies choosing to transfer power and authority for IT resources to the business units in an attempt to make up for a lack of business expertise on the part of the established IT ex-

ecutives? Until this question can be answered, and until a broader and more representative sample of established IS leaders is obtained, we are limited in our ability to generalize study findings that compare new and established IT leaders.

Results

Job experiences

Various patterns emerged based on hiring status (internal or external hire) and job experience (business, technology, or hybrid). New senior IS

Table 2a. Established IS Leaders Surveyed: Revenue and Employees

Industry	Number of Companies	Revenue (in millions)		Employees	
		Average	Range	Average	Range
Financial Services	2	-	N/A	31,250	15,100 - 47,400
Consumer Products	1	$4,840	$4,840	51,800	51,800
High-Technology Manufacturing	4	$6,900	$3,360 - $15,400	14,250	38,800 - 161,000
Utilities	1	$8,000	$8,000	67,100	67,100
Petroleum, Chemicals, and Plastics	1	$82,000	$82,000	102,000	102,000
Manufacturing	2	$48,400	$26,200 - $71,600	245,500	122,000 - 307,000
Transportation/Aerospace	5	$8,599	$5,023 - $12,100	80,460	48,200 - 116,000
Media/Entertainment/Recreation	1	$6,200	$6,200	194,000	194,000

Table 2b. Established IS Leaders Surveyed: IS Budget and Salary

Industry	Number of Companies	IS Budget (in millions)			Salary (in thousands)	
		$50-$99	$100-$199	>$200	$100-$150	>$150
Financial Services	2	-	-	2	-	2
Consumer Products	1	1	-	-	1	-
High-Technology Manufacturing	4	1	-	1	1	1
Utilities	1	-	-	1	-	1
Petroleum, Chemicals, and Plastics	1	-	-	1	-	1
Manufacturing	2	-	-	2	-	2
Transportation/Aerospace	5	-	-	3	2	3
Media/Entertainment/Recreation	1	1	-	-	-	1
Total	17	3	0	10	4	11

Note: Some categories may be incomplete because of missing data.

executives were classified as internal hires if they had been with the company for more than five years at the time they had assumed the IS leadership position. Individuals were classified as external hires if they had been with the company for five years or less. Five years was chosen as the cutoff because individuals are typically considered to be part of the corporate establishment (e.g., 100 percent vested in retirement plans and stock options) after five years of employment.

Job experience was analyzed from detailed descriptions of job titles and work responsibilities provided by the respondents. (Though educational experience was also examined through detailed descriptions of educational degrees, most of the degrees were obtained more than 15 years ago and were therefore concluded to be less relevant than more recent work experiences.) At least five years of work experience within the past 15 years in either IS or business was required to qualify for having "broad background" in either of these areas. A "hybrid" was defined as an individual who had five or more years of experience in *both* IS and business within the past 15 years.

A summary of the background of new IS executives is presented in Table 3. Despite much speculation in the popular press that most firms were looking outside the organization for new IS leaders, we found a slight majority of new IS executives (53 percent) to be internal hires. This pattern held across all 10 industries represented in the study except financial services (in which 10 of 15 new IS executives were external hires),

Table 3. Background of New IS Executives

Industry	Internal Hire			External Hire			Totals
	IS	Business	Hybrid	IS	Business	Hybrid	
Financial Services	3	1	1	2	4	4	15
Retailing	-	1	2	-	-	-	3
Consumer Products	1	4	1	1	1	1	9
High -Technology Manufacturing	1	2	1	2	-	-	6
Utilities	-	3	-	-	-	-	3
Petroleum, Chemicals, and Plastics	1	2	3	1	-	2	9
Manufacturing	-	-	2	1	-	-	3
Transportation/Aerospace	-	1	-	3	1	2	7
Media/Entertainment/Recreation	1	-	-	-	-	3	4
Health Services/Pharmaceuticals	1	1	1	1	-	1	5
Total	**8**	**15**	**11**	**11**	**6**	**13**	**64**

Note: Hybrid = more than five years' experience in both IS and business between 1977 and 1992.

transportation/aerospace (six of seven were external hires), and media/entertainment/recreation (three of four were external hires). For all but those three industries, knowledge of the organization appeared to be an important factor driving the selection of a new senior IS executive. Choosing an internal candidate afforded a knowledge of the organization not found in an external candidate. During our interviews, the importance of this organizational knowledge was stressed in those companies undergoing corporate-wide change initiatives, such as structural reorganizations, development of new products and markets, and major cost-cutting programs.

In line with the observations of the CEO quoted in the introduction to this paper, we expected that most CEOs would be searching for a new IS leader with a combined business and technical background. A 1988 Coopers & Lybrand survey of CEOs' satisfaction with their MIS departments found that 78 percent would prefer an MIS leader with both a business and technology background (Alter, 1990). But we also expected individuals with these qualifications to be hard to find. We were surprised to find that 24 of the 64 new senior IS executives in the survey (37 percent) were classified as hybrids; that is, they possessed a broad background in both business and technology. Twenty-one (33 percent) had a broad business background but no technology experience, and only 19 (30 percent) had risen to

the top IS leadership position through the traditional IS function.

How did these new senior IS executives compare with established senior IS executives who had been in their positions for more than five years? Table 4 summarizes these data. All but one of 17 established IS executives (94 percent) were internal hires. Only two of 17 (12 percent) were classified as hybrids. Ten (60 percent) had risen to their positions through the IS organization and possessed strong technical experience but no general business experience.

A study commissioned by the Society of Information Management (SIM) in the early 1980s (Rockart, et al., 1982) predicted that future IS executives would be required to have an in-depth understanding of the business to complement their technical knowledge. Most likely, this knowledge would be acquired through actual experience in the overall management of the business. Our study indicates that this prediction is being realized. The majority of individuals hired into senior IS positions in the later part of the 1980s had direct managerial experience outside of the IS function. The group of IS executives who had remained in their positions throughout the 1980s did not. Perhaps these individuals succeeded because they found ways other than through managerial experiences to gain required business expertise. Our study suggests, however, that individuals selected for senior IS executive positions will increasingly be required

Table 4. Background of Established IS Executives

Industry	Internal Hire			External Hire			Totals
	IS	Business	Hybrid	IS	Business	Hybrid	
Financial Services	2	-	-	-	-	-	2
Consumer Products	1	-	-	-	-	-	1
High-Technology Manufacturing	2	1	1	-	-	-	4
Utilities	1	-	-	-	-	-	1
Petroleum, Chemicals, and Plastics	-	1	-	-	-	-	1
Manufacturing	-	1	-	1	-	-	2
Transportation/Aerospace	3	1	1	-	-	-	5
Media/Entertainment/Recreation	-	1	-	-	-	-	1
Total	**9**	**5**	**2**	**1**	**0**	**0**	**17**

Note: Hybrid = more than five years' experience in both IS and business between 1977 and 1992.

to have actual management experience outside the IS function.

Why predecessors left

Information on the predecessors of the newly appointed senior IS executives is shown in Tables 5a and 5b. Interestingly, 21 of the 64 respondents (33 percent) assumed a new position; therefore, there was no incumbent. In most instances the new senior IS position was created at a higher level in the organization than any previous IS position. In some instances, it was a corporate staff position with dotted-line responsibility for the existing IS function. In others, the existing IS executive reported to the new IS leader but continued to manage more operational aspects of the IS function.

Of the 43 incumbents who were replaced, 32 (74 percent) left the company. Of those who left, 13 (41 percent) were dismissed. Ten (31 percent) left voluntarily, and nine (28 percent) retired. Seven of the 10 individuals who left voluntarily had been in their position five years or less.

Of the 11 incumbents who remained with the company, only three (27 percent) were promoted. These three individuals had all been in the IS leadership position less than five years. Six incumbents moved laterally and two were demoted. This pattern was relatively consistent across industry groups represented in the study.

These data indicate a high turnover among senior IS executives. Other studies also have documented high turnover (Wilder, 1992). Uncertain job expectations have been cited as major frustrations contributing to the decision of IS executives to leave their companies (Carlyle, 1988).

How did the exit status of predecessors relate to the background of the individuals hired to replace them? Though the small number of individuals in each category makes definitive comparisons difficult, two interesting patterns are revealed (see Table 6). First, of the 13 incumbents who were dismissed, nine (69 percent) were replaced by an external candidate and six (46 percent) by an individual classified as a hybrid. Second, of the nine incumbents who retired, only two (22 percent) were replaced by an external candidate; six (67 percent) were replaced by a hybrid.

Our interview data were consistent with these findings. Of the nine IS executives interviewed, three were external hires and two of their predecessors were dismissed. Conversely, all predecessors who retired were replaced by internal candidates. These data suggest that, in the case of dismissals, companies often look outside the firm for a candidate with a strong business and technology background. In the case of retirements, companies, though still requiring a candidate with a strong business and technology background, may have time to develop these capabilities internally.

Agendas for action

Gaining an understanding of the activities to which IS executives devote (or should devote)

Table 5a. New IS Executives' Predecessor Information: Length in Position Before Leaving

Predecessor Exit Status	Length in Position Before Leaving			Totals
	<5 yrs	>5 yrs and <10 yrs	>10 yrs	
Remained with Company:				
Promoted	3	-	-	3
Moved laterally	4	1	1	6
Demoted	2	-	-	2
Subtotal	9	1	1	11
Left Company:				
Left voluntarily	7	2	1	10
Dismissed	7	3	3	13
Retired	2	3	4	9
Subtotal	16	8	8	32
Total	25	9	9	43

Table 5b. New IS Executives' Predecessor Information: Status by Industry

Industry	New Position	Left Company			Remained With Company			Totals
		Retired	Left Voluntarily	Dismissed	Moved Laterally	Promoted	Demoted	
Financial Services	6	-	3	4	2	-	-	15
Retailing	2	-	1	-	-	-	-	3
Consumer Products	2	-	4	3	-	-	-	9
High-Technology Manufacturing	1	-	-	-	2	2	1	6
Utilities	1	-	-	1	1	-	-	3
Petroleum, Chemicals, and Plastics	1	6	-	1	-	1	-	9
Manufacturing	1	1	-	1	-	-	-	3
Transportation/Aerospace	5	-	-	1	1	-	1	7
Media/Entertainment/Recreation	-	-	1	2	1	-	-	4
Health Services/Pharmaceuticals	2	2	1	-	-	-	-	5
Total	21	9	10	13	6	3	2	64

Table 6. Background of New IS Executives Based on Exit Status of Predecessors

Predecessor Exit Status	Internal New IS Executive			External New IS Executive			Totals
	IS	Business	Hybrid	IS	Business	Hybrid	
Remained with Company							
Promoted	1	2	-	-	-	-	3
Moved laterally	1	3	-	1	-	1	6
Left Company:							
Demoted	-	-	-	1	1	-	2
Left voluntarily	2	2	2	-	2	2	10
Dismissed	1	2	1	2	2	5	13
Retired	-	2	5	1	-	1	9
Total	5	11	8	5	5	9	43

their time and energy has been an ongoing topic of research in the MIS field. The 1982 SIM-sponsored study mentioned earlier in this article predicted that the direct-line responsibilities of IS executives would diminish as they were required to spend more time on the development of information systems strategies, long-range plans, and standards (Rockart, et al., 1982). The responsibility to create and maintain the company's information architecture, however, would remain an important responsibility. A subsequent study of senior IS executives in 25 large companies found that this prediction was being realized (Benjamin, et al., 1985). Of the critical responsibilities of IS executives in the 1985 study, 20 percent involved IT strategic planning and control, and 31 percent were related to IT architecture planning, management, and standards. Twenty-three percent of the critical responsibilities involved direct-line activities such as operations and development. The remainder (26 percent) were split among such areas as human resource management (6 percent), consulting (11 percent), and education (9 percent). Increased responsibilities in the future were seen for IT strategic planning, IT architecture planning and management, and consulting.

In general, our study found that the agenda of the new IS executive also reflected the changes in IS responsibilities predicted by the 1982 SIM-sponsored study and verified by the subsequent 1985 study. There was one notable exception. Human resource management was consistently cited as a critical responsibility by the new IS executives in our study.

All of the nine individuals interviewed emphasized the critical importance of developing either an "information" or "information technology" infrastructure for the company. This seemingly minor difference in terminology reflected a major difference in approach. Those individuals who had risen to their position through the IS organization often used the term "information technology" infrastructure, stressing the technical standards and policies that would be needed to support business process integration throughout the organization. In contrast, those individuals with strong business backgrounds often used the term "information" infrastructure, stressing the need for shared information to support both business process integration and shared management decision making throughout the organization. Five of the nine interviewees

linked their "information" agendas to major, corporate-wide organization change initiatives. In one company, which had recently consolidated its three strategic business units into one global organization, information technology was seen both as a critical enabler of successful integration and management of the reorganized firm and, paradoxically, as a major impediment to successful reorganization because each of the previously independent business units had developed widely diverse business and management systems. Three of the interviewees mentioned the critical role the IS organization would play in corporate-wide business process integration, redesign, downsizing, and delayering.

Human resource management and IT planning and control tied for second place as major agenda initiatives for the interviewees. Both were mentioned by six of the nine. Cross-training of business and technology professionals to develop future hybrids was the most common focus of the human resource management agenda. Four were developing programs for rotating IT professionals through business positions, and two of the four were also developing programs for rotating business professionals through IT positions. One of the latter had developed a training program called "Let's Communicate," in which small groups of 10 to 12 business and technology professionals met to discuss common issues and problems.

The linkage of business and IT planning processes was the most common theme of the IT planning and control initiative, mentioned by six of the nine interviewees. Cited as a critical initiative by three of the six was the need to take a proactive stance in looking for ways that IT could promote as well as support strategy. Also cited by three of the six was the operationalization of the IT plan through the development of strategic IT systems. One individual mentioned the importance of developing IT control measures based on business effectiveness criteria (e.g., inventory reduction, business process productivity increases, cost reduction, and specific strategic measures). It is not surprising that this individual possessed a strong business background. Two of the nine interviewees mentioned cost reduction or cost efficiency as major initiatives.

To supplement our interview data and develop a broader understanding of how the stated agen-

das of the nine interviewees translated into action, we asked our survey respondents to estimate the percentage of time they spent on various categories of activities. Table 7 and Figure 1 present a summary of those data for new IS executives, and Figure 2 does so for established IS executives.

The survey data for new IS executives confirm the top three agenda items mentioned by the nine individuals interviewed for the study. Survey respondents reported spending approximately 27 percent of their time on activities related to IT strategic planning and control, 19 percent on activities related to IT architecture management and standards development, and 17 percent on human resource management activities. The patterns for these three categories of activity were fairly consistent for individuals with past job experiences in IS-related, business-related, or hybrid categories, as well as for internal and external hires. A minor difference was noted in the greater percentage of time spent on IT architecture and standards development activities by external hires than by internal hires. It is also interesting to note that internal hires with a broad business background spent approximately 17 percent of their time on non-IS related activities, which frequently consisted of other business responsibilities that could often be traced to their previous internal business positions.

The survey data for established IS executives reflected an agenda associated with the traditional IS executive of the early 1980s (Rockart, et al., 1982). Although established IS executives were similar to new IS executives in the time spent on human resource management (20 percent vs. 17 percent) and IT architecture manage-

ment and standards development (20 percent vs. 19 percent), they differed markedly on the time devoted to strategic planning (16 percent vs. 27 percent), and devoted more time instead to the traditional IS responsibilities of operations and systems development (31 percent vs. 22 percent). This finding is surprising given that these individuals, unlike the new IS executives, had little direct control over the majority of the total corporate IS budget and total number of IS employees. It may indicate the difficulty or reluctance in changing emphasis from traditional direct-line management to staff-oriented consultation.

Networking

As mentioned earlier, the essence of leadership involves the development of networks—both internal and external—for accomplishing the agenda. The IS executive has traditionally been very weak in establishing such networks. A 1981 study of the day-to-day activities of IS managers found that 61 percent of their time was spent interacting with subordinates within the IS organization and only 8 percent with business users (Ives and Olson, 1981). Such a situation may be acceptable as long as the role of IT is primarily one of support. However, as IT becomes more critical to achieving corporate strategic objectives, IS executives are called upon to reach out to corporate and user management (Cash, et al., 1992). Research has found that IS executives who have regular communication with corporate/business management have a better understanding of their organization's goals, objectives, and direction and consequently are in a better position to ensure that new opportunities made possible by IT are seized and that capital expenditures for information

Table 7.   New IS Executives' Percentage of Time Spent on Various Activities: Internal vs. External Hires

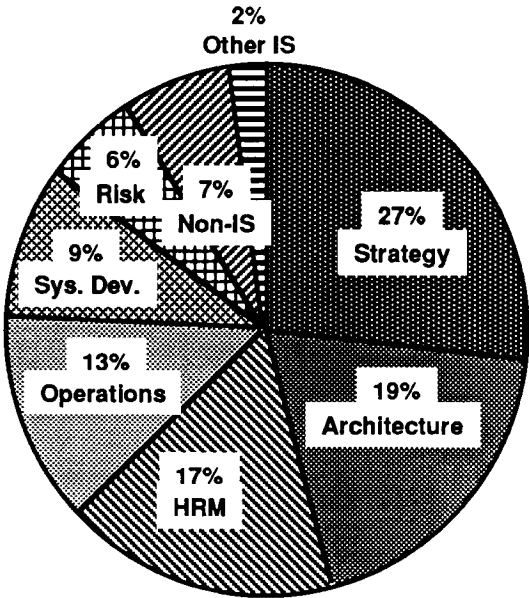| Activity	Internal New IS Executive			External New IS Executive		
	IS	Business	Hybrid	IS	Business	Hybrid
IT Strategic Planning and Control	38	26	29	30	31	25
IT Architecture Mgmt. and Stds. Dev.	13	15	14	23	24	23
Human Resource Management	18	20	17	14	16	17
Operations	8	14	15	18	13	13
Systems Development and Maintenance	13	9	7	8	9	8
Risk Management	9	2	5	4	8	6
Other: Non-IS	0	18	16	3	0	5
Other: IS	0	1	4	0	0	4

Figure 1. New IS Executives' Percentage of Time Spent on Various Activities (Internal and External Hires Combined)
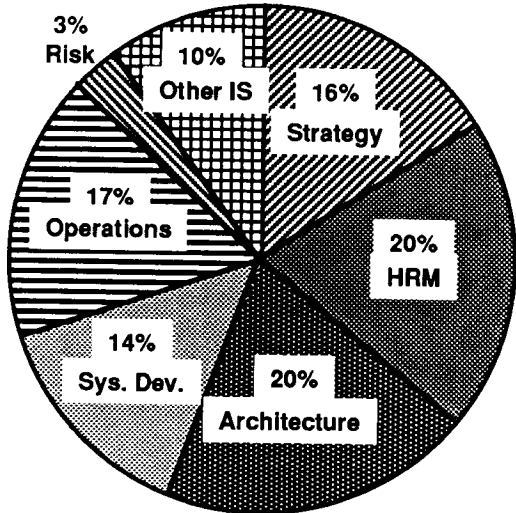

Figure 2. Established IS Executives' Percentage of Time Spent on Various Activities

resources are ranked according to business needs (Lederer and Mendelow, 1989; Watson, 1990).

When asked to describe how they planned to accomplish their agendas, all nine of our interviewees stressed the importance of networking. Frequently mentioned internal network categories included corporate senior management, especially the CEO, president, and other influential members of the executive committee; business unit executives and influential managers; and IS managers under their direct control. Frequently mentioned external network categories included vendors, senior IS executives in other companies, academics, and consultants. Most of the interviewees spent the majority of their time developing internal networks, with external network development accounting for only about 30 percent of their time. (One individual, who had been in her position approximately three months when initially interviewed, estimated that she split her time evenly between internal and external networking activities. Subsequent interviews revealed that two years into her position, she spent approximately 30 percent of her time on external networking activities.)

Survey respondents were asked to estimate the percentage of time spent working with corporate executives, business unit managers, and internal IS managers and staff. The results for new IS executives are presented in Figure 3. A comparison of new and established IS executives is presented in Figure 4.

For new IS executives, external hires in all three categories (IS, business, hybrid) and internal hires who rose to their position through the IS function spent almost half their time dealing with managers and staff in their own IS unit. Internal hires with strong business backgrounds tended to split their time evenly among corporate, business unit, and IS unit activities. This balanced perspective may reflect the internal executive's broader network of relationships throughout the organization due to his or her previous experience in business positions before becoming head of IS. In addition, our data indicate that companies were more likely to hire an external candidate when the established IS executive was either demoted or dismissed. In such circumstances, it can be expected that the new IS leader would need to spend increased time developing relationships with subordinates, developing internal IS capabilities, and monitoring internal IS activities. It is assumed that, over

time, the pattern for external hires would change to match that of internal hires.

Established IS executives spent 40 percent of their time within their own IS units, 40 percent with business units, and 20 percent with corporate management. This finding is consistent with that of a recent study by Stephens, et al. (1992) in which the activities of five CIOs were observed over a one-week period. They found that 42 percent of the senior IS executives' time was spent interacting with subordinates. Using the classification framework employed in our study, four of their five CIOs would be classified as "internal" hires; three of the five had IS backgrounds and two of the five appeared to be hybrids; and three of the five would be classified as "new" IS executives. (The study is published in this issue of MIS Quarterly.)

Established IS executives spent the majority of their time on activities relating to their own IS organization and to the business units they served. An examination of the agenda typically associated with established IS executives provided one possible explanation for this finding. They reported spending a significant amount of time managing system development, maintenance, and operations, which would imply the need for interacting with their staff and the users of their services. Because less effort was devoted to strategic planning, less time needed to be spent with corporate executives. In addition, only five of the established IS executives were members of the senior management/strategic policy committee.

Power

As mentioned earlier, examining reporting relationships and membership on the senior management strategic policy committee can provide a general sense of the formal organizational power inherent in the IS leadership position. Salary levels also can be used to determine this level of power.

Figure 5 summarizes the reporting relationship of new senior IS executives in this study. Traditionally, the IS function reported through the finance function, and the leadership position was located several levels down in the organizational hierarchy. The nature of the reporting relationship has changed as the IS function has grown in importance in organizations. A survey in the
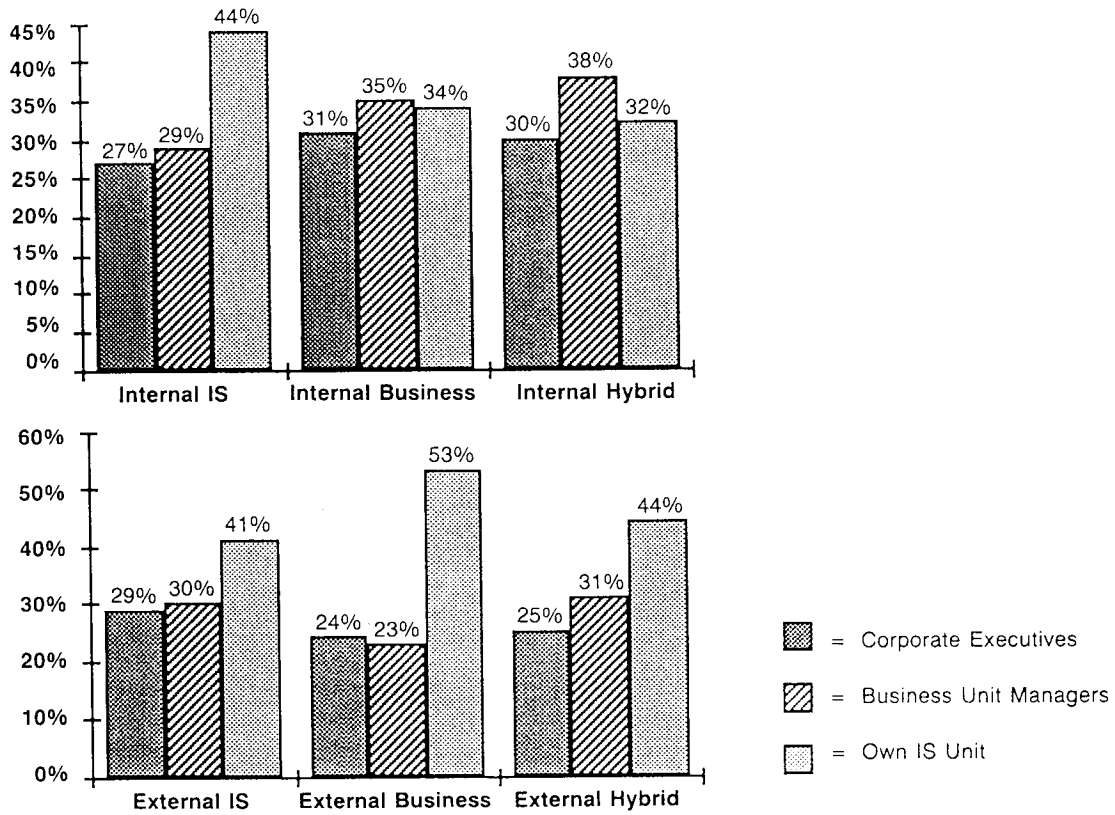
Figure 3. New IS Executives' Percentage of Time Spent With Different Groups

early 1980s (Benjamin, et al., 1985) found 80 percent of the senior IS executives positioned three or more levels down in the organization with 20 percent reporting directly to the CEO. Eighty percent reported to an area outside of finance. A more recent study (Raghunathan and Raghunathan, 1989) found that 22 percent of IS executives reported directly to the CEO, 56 percent reported one level down, and 12 percent reported two levels down.

In our study, the new senior IS executives were asked to indicate the corporate officer to whom they currently reported and the corporate officer to whom the IS function reported two years earlier. Forty-four percent of the new senior IS executives currently reported to finance. This figure is only slightly down from the 48 percent who previously reported through finance two years earlier. More significantly, whereas the IS function reported to the CEO only 13 percent of the time two years previously, 27 percent of the new senior IS executives reported directly to the

CEO. Only 17 percent of the established IS executives reported to the CEO; 42 percent reported through the finance function.

Three insights can be drawn from these data. First, the trend toward IS executives reporting directly to the CEO, identified first in the early 1980s, is continuing. Second, the reporting relationship is often redefined when a change in IS leadership takes place. Third, even though changes are occurring in reporting relationships, the traditional reporting relationship through finance remains in many companies.

When analyzed as a group, 45 percent of the new senior IS executives were members of the senior management/strategic policy committee. If hiring status and job experience are taken into account, some interesting patterns emerge. As shown in Table 8, job experience appeared to have little influence on whether an individual was appointed to the senior management policy committee. Forty-seven percent of those with a traditional IS
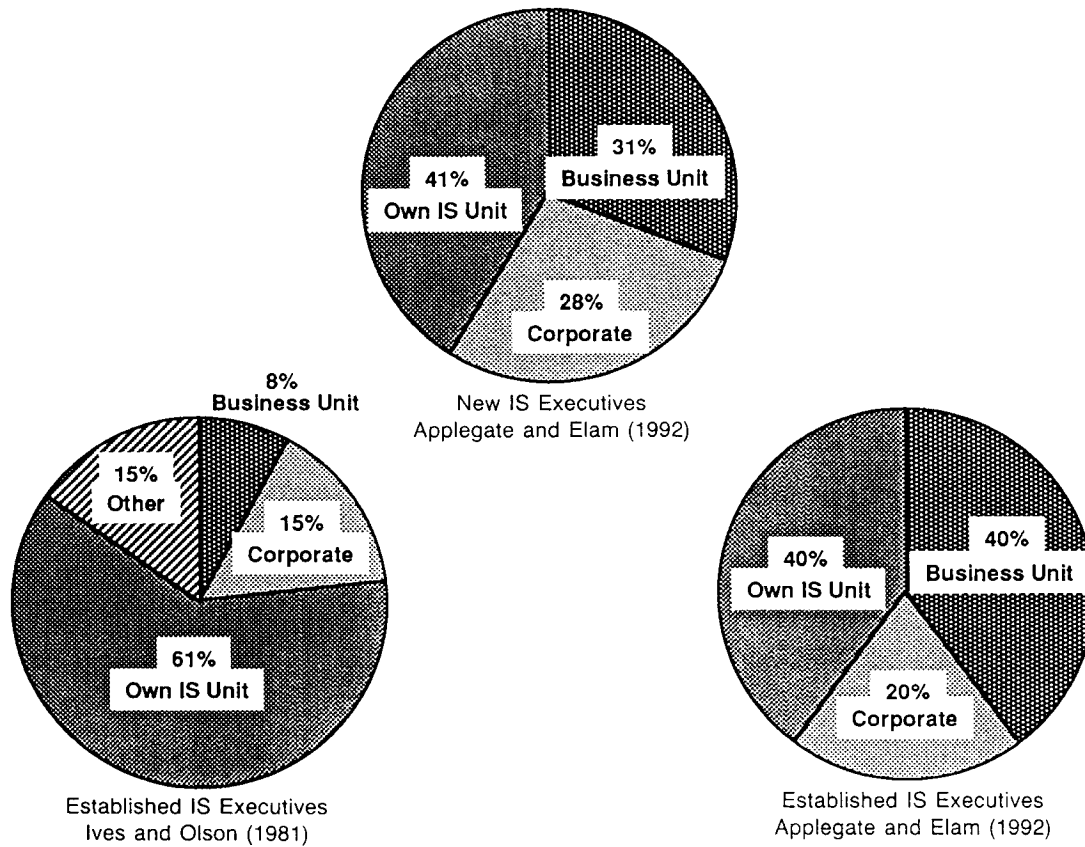
**Figure 4. Percentage of Time Spent With Different Groups:
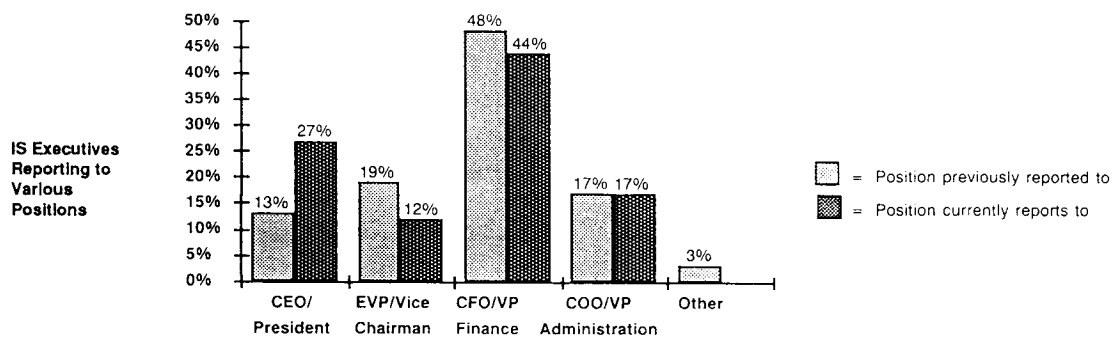Comparison of New and Established IS Executives (1981 and 1992 Studies)**

Figure 5. New IS Executives' Reporting Relationships

Table 8. New IS Executives' Membership on Senior Management/Strategic Policy Committees

Demographic Variable	Yes	No	% Yes
Internal Hire			
IS	2	6	25
Business	5	10	33
Hybrid	3	8	27
Subtotal	**10**	**24**	**29%**
External Hire			
IS	7	4	63
Business	5	1	83
Hybrid	7	6	53
Subtotal	**19**	**11**	**63%**
Industry			
Financial Services	10	5	67
Retailing	2	1	67
Consumer Products	3	6	33
High-Technology Manufacturing	1	5	17
Utilities	1	2	33
Petroleum, Chemicals, and Plastics	3	6	33
Manufacturing	1	2	33
Transportation/Aerospace	6	1	86
Media/Entertainment/Recreation		4	0
Health Services/Pharmaceuticals	2	3	40
Total	**29**	**35**	**45%**

background, 48 percent with a business background, and 42 percent with both business and technology backgrounds were members of the senior management/strategic policy committee. Hiring status (external versus internal), however, appeared to be more strongly related; 63 percent of external hires were members of the committee, whereas only 29 percent of internal hires were members. Across industries, 86 percent of the new senior IS executives of transportation/aerospace companies and 67 percent of financial services and retailing companies were members. During the time frame in which our data were collected—1987 to 1989—these were industries in which IT played a strategic role. For all other industries, membership on strategic policy committees ranged from 40 percent down to 0 percent. Thirty percent of established IS executives were members of such committees. With a change in leadership, there appears to be

a greater opportunity for IS executives to become part of top management, especially if the replacement is hired from the outside.

Finally, it was expected that the salary of new IS leaders would reflect their growing importance within their firms. (Tables 1b and 2b provide summary data on the salaries of the new senior IS executives by industry.) Of the 64 new IS executives surveyed, 48 (75 percent) received more than $150,000 per year in base salary; an additional 14 (22 percent) received between $100,000 and $150,000. Only one individual received less than $100,000.

The distribution of salary was consistent across industries except for marked differences in two of them. First, in the petroleum, chemicals, and plastics industry, seven of nine new senior IS executives (78 percent) received between $100,000 and $150,000, and only two of the nine received

more than $150,000. These data are consistent with data from Figure 5 and Table 8, which indicate that seven of the nine new senior IS executives in this industry reported to the finance function; six of nine were not members of the senior management/strategic policy committee. Second, the transportation/aerospace industry exhibits some inconsistency among salary, reporting level, and policy committee membership data. Although three of the seven (43 percent) new senior IS executives received less than $150,000 in salary, two of those three reported directly to the CEO/president and were members of the senior management policy committee. In total, six of the seven (86 percent) new senior IS executives in the transportation/aerospace industry were members of the senior management/strategic policy committee.

Implications and Recommendations

Through a comparison of new IS executives with established IS executives, this study suggests the changing nature of the IS leadership role in organizations. The ability to generalize our findings is limited by the method of identifying our sample population (which biased the sample toward large companies in which IT had attained a high level of importance), the small size of the established IS executive sample, and the small percentage of IS resources controlled by the latter group. Despite these limitations, some interesting patterns have emerged.

Individuals who are currently being selected to provide IS leadership appear to have very different job experiences from those of the traditional IS executive. Whereas established senior IS executives tend to have little experience outside both their own organizations and the IS function, new IS executives are just as likely to come from outside as inside the organization and to have business experiences outside the IS function. New senior IS executives are becoming more powerful. Their agendas focus on the link between business and IT strategy. They quickly develop a broad network of relationships at all levels of the organization, especially if they are drawn from inside the firm. Increasingly, new IS executives report directly to the CEO and are able to directly affect the strategic direction of their organizations through increased participation on the senior management/strategic policy committee.

An important question is: How successful will these new senior IS executives be? Although there have been a few well-publicized successes of some of these individuals, (Layne and Pelton, 1989; LiCalzi, 1989) the high level of change and instability associated with the IS leadership role will undoubtedly affect their success.

Although many large companies are going to great lengths to find, reposition, and compensate new senior IS executives to ensure that the strategic importance of IT in their particular businesses is addressed, a recent survey of CEO satisfaction with the IS function found that many continue to evaluate the IS executive on the basis of traditional cost-effectiveness measures (Alter, 1990).

A lack of clarity on the evolving role of the IS function in the business and, more critically, on the appropriate measures for evaluating IS performance and its leadership may be contributing to the lack of stability in the IS leadership role. In this context, our study confirms the high turnover rate among top management IS roles during the 1980s. Business and IS leaders are attempting to clarify the role and are instituting programs designed to better understand the crucial intersection between technology and business at all levels of the organization. They are also actively working on career development programs that will help develop this understanding throughout the organization. But much more needs to be done.

Recommendations to business and IS leaders

An important finding of our study is the growing number of senior IS executives who combine both business and IS management experience. During the 1980s, many large companies found that IT was a critical tool for gaining and sustaining competitive advantage. But the ability to exploit this new-found power was seriously limited by the lack of understanding of the business on the part of IS executives and the lack of understanding of IT on the part of business leaders. The solution sought by many companies was to hire business executives to lead the IS function. These business leaders were often ill-

equipped to deal with the dizzying pace of technology evolution and the management decisions and challenges required. Dissatisfaction, lack of role clarification, and inconsistent performance measurement criteria on the part of both senior business executives and the new IS leaders often resulted in voluntary leaves, demotions, and dismissals. Our study indicates that the latest trend has been to hire individuals with both business and IS management experience. Thus, the challenge for business and IS leaders of the 1990s is to develop future leaders who are able to manage organizations in which IT is not only critical to strategy but is also a critical component of the organizational and industry infrastructure.

Many large companies that participated in our study are creating human resource management units within the IS function that are specifically responsible for developing and implementing career development strategies that will ensure "cross-fertilization" of skills, knowledge, and experience between business and IS at all levels of the company. Many of these programs have concentrated on providing business training and experience to IS professionals, but we recommend that they place equal emphasis on providing IS training and experience to business professionals.

A number of companies have redefined "management fast-track" programs to require future general management executives to assume direct responsibility for various aspects of the IS function. Early in their careers, this responsibility may involve system development project management experience. Later, career development opportunities may involve assuming responsibility for data center or network operations or technology research and development. Participation on interfunctional IT management and planning committees is also critical but cannot substitute for direct management responsibilities. It has been suggested that this experience should begin within the first three years of employment and continue throughout an employee's career (Elam, et al., 1988).

Current senior IS executives who have not broadened their own knowledge, skills, and experiences in business operations, strategy, and management should immediately develop a personal career development program to gain these valuable perspectives. Failure to do so will seriously undermine both personal effectiveness

and career potential, as well as the effectiveness and career potential of the people who report to them.

This study also has implications for those making the decision to fill the senior IS position in the organization. Our study shows that individuals with strong business, technical, and organizational experience are increasingly being chosen to fill the top IS leadership position. External hires spent most of their time with the IS unit regardless of their business and technology background. Internal hires with strong business backgrounds, however, tended to balance their time among business, information systems, and corporate contacts. We believe this reflects these individuals' already existing, broader organizational networks. Senior business executives charged with hiring a new IS executive should carefully weigh the organization's needs with the candidate's qualifications and experiences. If broad knowledge of the organization and access to a broad network of organizational contacts are critical requirements, the company may wish to search for an internal candidate. If a suitable internal candidate does not exist, or if top management wishes to "shake up" an entrenched IS organization, the orientation program should provide the appropriate balance of required knowledge, skills, and experience along with a focus on developing appropriate organizational networks. Formal "leadership partnerships" can be used to offset lack of either business or technical experience in internal or external candidates.

It is important to note that simply elevating the IS leadership position to report to the CEO, appointing the senior IS executive to the senior management committee, and raising the salary to be commensurate with other top management positions will not ensure that the individual hired for the senior IS leadership position will be capable of assuming the role expected of a top officer within the firm. Roles must be clarified and understood among the senior management team, and performance measurement and evaluation criteria must be consistent with these new roles.

Attracting and keeping qualified individuals in the senior IS executive position also will be a challenge, given the poor record of promotions from this position. (Our study shows that only 7 percent of the predecessors of new senior IS executives were promoted.) This record will be

unacceptable for the new breed of senior IS executive being sought by CEOs of today's large, technology-dependent firms. New organizational arrangements may be necessary to meet this challenge.

Recommendations for research and education

This study has just begun to reveal the important challenges facing senior IS executives in the 1990s. The IS leadership role remains in a state of transition. Attempting to study it without controlling for the important differences in background, power, roles, and responsibilities can perpetuate the confusion that has surrounded research in the past. Our study can be expanded in several ways. First, we recommend that it be repeated on a larger, more representative sample of both new and established senior IS executives. Additional studies are also needed to show how job experience, roles and responsibilities, and power contribute to the ultimate success of IS executives in their organizations. The surprising finding of the small percentage of IS resources managed by the established IS executives should also be explored further. Finally, additional studies on role perceptions and performance expectations by CEOs and IS leaders should also be undertaken.

Our study has implications for the design of undergraduate, graduate, and executive education programs for both business and technology professionals. Education programs must reflect the broad business and IT backgrounds that will be required by organizations in the future. Educators must recognize that organizations will still need highly trained technology specialists, and undergraduate MIS programs must continue to emphasize technical training. In the junior and senior years, however, there should be increasing emphasis on developing a business perspective. Graduate and executive programs designed to prepare future IS managers and leaders must provide a broad business and IT perspective throughout the curriculum.

Recently, there has been much speculation that, as business managers and professionals assume increasing responsibility for IT, the IS leadership role may decline in importance (Hayley and Bolek, 1989; Hopper, 1990; Rothfeder, 1990). But during the past few years, we have seen dozens of IS executives rise to new positions of prominence and influence over their company's strategic directions (LiCalzi, 1989). We believe that the continued rapid pace of information technology evolution during the next decade will demand strong technology leadership if companies hope to sustain technological advantage —or even stay in the game. As we move into the 1990s, the head of the IS function will be called on to assume even greater responsibility as a business integrator and catalyst for change, all the while ensuring cost-effective deployment of information and technology resources. Globalization of markets, industries, and organizations will demand even more sophisticated technology-based communications, coordination, and control systems. The challenge to IS professionals and educators is to ensure that we are leading the way in meeting these demands.

Acknowledgements

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About the Authors

Lynda M. Applegate is associate professor at the Harvard Business School. She received a Ph.D. in business administration from the University of Arizona with a major in management information systems and a minor in quantitative methods. Prior to joining the faculty at the Harvard Business School, she held a number of management positions, as well as faculty ap-

pointments at the University of Michigan, the University of Washington, and the University of Arizona. Dr. Applegate is an active consultant and teaches regularly in corporate executive programs. Her research and recent publications forus on the role of information technology in organization transformation. Recent articles have been published in *Harvard Business Review, Journal of Organizational Computing,* and *Journal of Operations Research.* She recently co-authored a book, *Corporate Information Systems Management: Text and Cases,* with Professors James Cash, Warren McFarlan, and James McKenney. She is an associate editor for *MIS Quarterly, Journal of Organizational Computing,* and *Group Decision Making and Negotiation* and is on the editorial board of *Organization Science.* She won "best paper" award at the Hawaii International Conference on System Sciences in 1986 and 1987 for papers on the design of information systems to support group decision making.

Joyce J. Elam is the James L. Knight Eminent Scholar in Management Information Systems in the Department of Decision Sciences and Information Systems, College of Business Administration, Florida International University, Miami. She has held previous positions as assistant professor at the University of Pennsylvania's Wharton School, associate professor in the College of Business Administration at the University of Texas at Austin, and a Marvin Bower Fellow at the Harvard Business School. Dr. Elam earned both her Ph.D. in operations research (1977) and her B.A. in mathematics (1970) from the University of Texas. Her research deals with the competitive use of information technology, the management of the information services function, and the use of information technology to support both individual and group decision making. She is the author of numerous articles appearing in such journals as *Information Systems Research, Decision Sciences, Operations Research,* and *Decision Support Systems.* She is a co-author of the book *Transforming the IS Organization,* published by ICIT Press. She has served as associate editor for *MIS Quarterly* and is currently on the editorial board for *Information Systems Research.*