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EFFECTIVE PRACTICES FOR IT SKILLS STAFFING

*How to identify, hire, and keep prized IT professionals with
the skills companies need most to compete in uncertain
technological and business times.*

“HUMAN, not financial, capital must be the starting point and ongoing foundation of a successful strategy” [4], which further argued that human capital constitutes a strategic business asset and challenge. Human capital is critical in the knowledge-intensive IT profession. Today’s CIOs must assemble, nurture, and reward appropriate IT skills for critical projects while simultaneously forecasting requirements over the next three to five years. Even in organizations that are downsizing, these executives must identify and retain the skills that will enable them to respond effectively to future technological challenges.

The IT staffing dilemma involves two main issues: whom to recruit and how to ensure the IT staff has critical skills. Previous research identified four strategies for determining whom to recruit: long-term, balanced, high-performance, and short-term [1]. They describe the appropriate organizational environment for choosing and retaining IT employees as determined by the expected length of employment for incoming IT employees, as well as their individual career paths and personal aspirations.

Here, we investigate the second: how companies ensure their IT staffs have the skills needed to respond to a rapidly changing and uncertain technological environment. But IT skill requirements represent a moving target due to market uncertainties and evolving business plans [1-3].

To understand how companies manage the IT staffing cycle, we surveyed 30 senior managers from 15 companies employing from 85 to more than 75,000 people (see Table 1). The companies represent a broad range of organizational environments across five industries: energy, high-tech, financial, transportation, and distribution. We sought to interview two key people from each organization: the CIO or a senior-level IT manager and a senior-level IT planner or senior-level human resources (HR) manager. However, not all companies employed IT planners or HR managers working directly with IT. In such cases, the CIO or other top-level IT managers identified appropriate IT planners and HR contacts who could best provide accurate information about IT skills forecasting and related activities in the staffing cycle.

Uncertainty

The various perspectives and practices we encountered in our interviews represent a set of staffing procedures for an essentially unpredictable environment. Four organizational responses proposed in [6] are used to deal with uncertainty and respond to technological change:

Slack resources. Management may use slack

	Industry	No. of Employees	Operations	Company View of IT	IT Turnover Rate	Position(s) Interviewed
1	Energy	555	Regional	Internal provider of IT services.	6-7%	• CIO • 2 IT planners
2	Energy	79,000	Global	Internal provider of IT services.	N/A	• Top manager • Corporate recruiter
3	Energy	15,000	Global	Information management to support business functions.	<5%	• CIO • IT planner • HR manager
4	Energy	4,500	Global	Uses IT to add value to core business.	10%	• CIO
5	High-Tech	325	Regional	Knowledge provider in IT; internal provider of IT services.	< industry average	• CIO
6	High-Tech	64,900	Global	Uses IT to support company's competitive strategy.	< 12%	• Top IT manager • IT planner
7	High-Tech	130,000	Global	Looks to bring the most value in IT services to its customers.	N/A	• Top IT manager • IT planner
8	Financial	1,000	National	Supports business plans.	> 12%	• CIO • HR manager
9	Financial	85	National	Develops the company's products.	< 9%	• 2 top IT managers
10	Financial	160	Regional	Provides IT services to customers.	0%	• CIO
11	Financial	95	Regional	Internal provider of IT services.	> 12%	• CIO • HR manager
12	Transportation	24,800	Global	Uses IT to support business functions; IT is a strategic weapon.	< 12%	• CIO • HR manager
13	Transportation	28,350	National	Uses IT to support operations and business competencies.	< 10%	• CIO • IT planner • HR manager
14	Distribution	38,900	National	Internal provider of IT services.	N/A	• CIO • IT planner • HR manager
15	Distribution	25,700	National	Uses IT to support corporate strategy by providing timely information during order process.	18-19%	• CIO • HR manager

Table 1. Characteristics of the 15 companies in the study.

resources to buffer uncertainty by acquiring additional resources or lowering standards and expectations; either response increases performance costs;

Self-contained units. Management may create self-contained units by forming organizational units with relatively complete sets of resources needed to accomplish their tasks, thus reducing the amount of communication and coordination required among organizational units;

Vertical information systems. Management may use vertical information systems to help reduce uncertainty and respond more quickly to change; these systems may be either computerized or organizational; and

Lateral relations and delegations. Management may distribute coordination and decision making to units with the necessary information; in addition, management may designate liaisons or other roles to help smooth communication and coordination difficulties.

When faced with organizational uncertainty or

technological change, managers first attempt to reduce uncertainty by creating slack resources or self-contained units. When these strategies provide inadequate responses to uncertainty or change, managers look to vertical information systems and lateral relations designed to delegate responsibility to lower levels [6].

These strategies can be applied to the uncertainties related to the IT staffing cycle of forecasting, acquiring, and training for IT-related skills (see the figure here). The IT staffing cycle begins by attempting to forecast IT-related skills and staffing needs. However, difficulties with forecasting arise not only from the uncertainties associated with the surges and ebbs of the national/global economy but from technological advances that call for new skills. The IT organization then must hire people with those skills. Additional uncertainty follows from variations in the employee marketplace and changes in government legislation and/or regulations (such as F1 and H1 visa limitations and residency requirements). After hiring people with

ing the right skills are available when needed. Though we did not find companies consciously hiring or retaining unneeded employees, 10 (or 67%) of the ones we studied employed contractors or consultants to fill skills gaps as needed. Contractors and consultants allowed companies to smooth employment fluctuations generated by major project initiatives, handle peak demand, and acquire new critical skills. Some companies hired consultants and contractors to provide up to 20% of their full-time-equivalent requirements when essential skills were not available internally.

Companies in the study employing contractors and consultants reduced technological uncertainty associated primarily with skills acquisition. Moreover, while the actual cost of external consultants and contractors was high, several respondents stressed the long-term value of learning skills from consultants hired by their organizations.

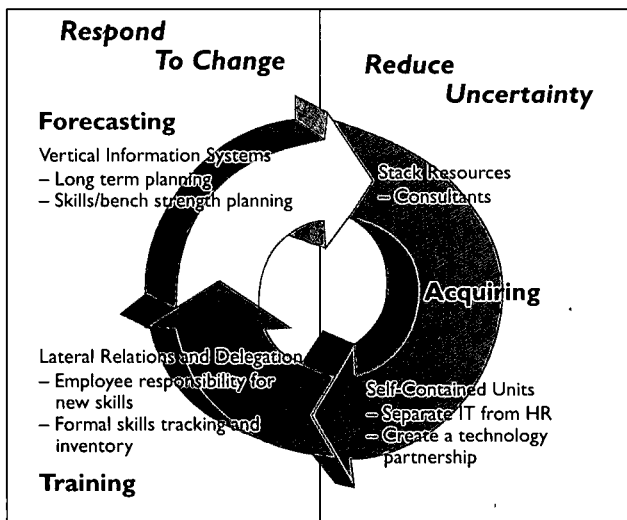
Self-contained units. Survey respondents reported they applied two approaches to reduce uncertainty by creating self-contained units:

- The IT department isolated itself either by maintaining a special relationship with HR or by ignoring HR altogether; and
- The IT department reduced uncertainty by limiting the range of technologies it employed throughout the company.

Managers in 10 (67%) of the surveyed companies considered their staffing and acquisition strategies relatively unique compared to other organizational departments. They felt that only experienced IT professionals could recognize IT talent and that the HR organization provided little to the management of IT professionals. These departments often handled HR functions themselves. While this reduced the need for communication with corporate HR departments and allowed IT to manage its own skills-hiring process, the IT departments were compelled to take on more unfamiliar organizational responsibilities.

Three (20%) of the 15 IT departments identified themselves as self-contained units, treating HR essentially as a “nuisance.” Within these companies IT managers viewed the HR functions in their departments as their personal responsibility, leaving employment administration and corporate benefits planning to the HR department. HR practices related to IT were thus handled in a seat-of-the-pants manner. Moreover, no formal skills or needs assessments were in place, and using HR departments for IT skills planning was limited.

Seven of the 15 IT departments in the study con-



Strategies for responding to uncertainty in the IT staffing life cycle.

the requisite skills, additional uncertainty arises as managers try to develop relevant training programs to anticipate future skill requirements.

Good Practices

Superimposing the model in [6] on the IT staffing cycle highlights the “good” practices we observed among the 15 companies in the study to reduce uncertainty or accelerate the response to change (see Table 2).

Slack resources. When IT organizations keep staff on hand, hire contractors during peak periods, or hire consultants to provide missing skills, they are using slack resources. Maintaining extra skills is one of the simplest, though relatively costly, strategies for assur-

sidered HR a "service bureau" for processing people (screening applications, hosting recruitment activities) and ensuring compliance with employment laws. The service-bureau approach represented a division of labor beyond advertising, interviewing, screening, and developing supply sources. The legal implications of hiring decisions were frequently sufficient to justify using HR's expertise. IT departments in these organizations generally had ultimate authority for hiring employees. Decisions involving the kind and number of employees were made by IT managers, particularly when hiring experienced personnel. HR was more involved in hiring recent college graduates.

In contrast, four of the 15 IT organizations in the study accepted HR as a valued partner in skills management, often assigning HR people to the IT "recruiting team." In one transportation company, several HR specialists were assigned to the IT department to help plan, hire, and train IT staff. Another company assigned full-time HR employees to IT, requiring they devote up to a third of their time to IT issues.

HR input was particularly helpful in four areas of IT employee management:

Legal risk. HR departments educated IT managers and recruiters to avoid statements constituting unfair or discriminatory hiring practices, including those involving race, gender, marital status, and age;

Skills assessment. HR assisted IT supervisors and managers conducting skills assessments;

Skills tracking. The HR organizations in several larger companies developed formal IT skills-tracking systems for employee promotions and reassignments; and

Awareness of current trends. One HR manager highlighted a common HR concern: large numbers of Baby Boomers nearing retirement age.

Another effective strategy reported by the respondents for creating a self-contained IT environment was to limit the variety of technologies in the shop, thus reducing uncertainty and simplifying skills forecasting. One approach was to avoid leading-edge technologies. Operating and maintaining tried-and-true technologies reduced the need to acquire expensive leading-edge IT skills from the external marketplace. One organization even refused to con-

sider projects that were not mainframe-based.

Two companies took a more proactive approach to creating a self-contained IT environment by partnering with Microsoft to develop all their new systems using Microsoft's software development tools. In exchange, Microsoft provided beta versions of new products and shared its development plans. This liaison increased the predictability of IT operations by limiting the range of required skills and restricting the scope of the environ-

Company	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Relationship between HR and IT	N	S	P	S	S	S	S	N	N		S	P	P	S	P
Uses consultants or contractors	✓	✓	✓	✓		✓	✓					✓	✓	✓	✓
IT representation in long-term planning				✓	✓	✓	✓		✓	✓		✓	✓		✓
Formal technology-scanning group		✓	✓			✓			✓	✓		✓	✓		✓
Uses technology-scanning consultants			✓	✓	✓		✓					✓			
Long-term skills forecasts		✓								✓		✓			
Formal skills-inventory system		✓	✓		✓	✓	✓					✓			
N = Nuisance; S = Service Bureau; P = Partner; Company 10 had no HR department, therefore no relationship between HR and IT.															

Table 2. Key study findings.

ment that had to be anticipated. Although such a strategy involves inherent risk, particularly if the partner turns out to be unsuccessful, it offers substantial opportunities and reduced uncertainty.

Vertical Information Systems

Companies invest in information systems to respond to environmental change and to forecast IT staffing needs more accurately. The 15 IT departments in the study incorporated IS into two main forecasting approaches:

- The IT department maintains some sort of formal technology scanning system; and
- The IT department's systems support the planning process in which IT skills forecasting is a component.

We expected that all 15 companies would have formal, long-term external forecasting systems for IT skills to complement their long-term business planning processes. We found only three (20%) claiming to do this. The ultimate decision regarding which skills are required depends on the organization's planned projects. We expected IT needs to be represented in the strategic planning process and found nine (60%) companies formally considering IT skills needs in their long-term business planning. For the others, information generally flowed downward from the overall corporate strategic plan, with the IT plan generated in response. The continued use of traditional top-down information dissemination was sur-

prising in light of extensive media coverage of the importance of IT in today's business world.

Eight (53%) of the companies utilized formal scanning teams, generally consisting of three to 10 members, to evaluate new and evolving technologies. The other seven used a variety of informal approaches to scan technological developments: contacting vendors, customers, and consultants; attending conferences; reading trade and technical publications; and browsing Internet sites. However, the results did not appear to be formally linked to IT staffing plans. Indeed, most managers in the study felt it was nearly impossi-

bles and did not need a formal skills-tracking system.

"While additional technical training can improve anyone's employability, it also has a shelf life" [3]. As companies change their focus from external recruitment to internal training, IT managers must contend with shrinking training budgets. Previous research indicated that only 19% of organizations view IT training as a worthwhile investment [5].

Employees with valuable IT skills can readily change employment. Since they value the recognition of their skills and accomplishments, an effective skills-tracking system combined with positive feedback can

THREE (20%) OF THE 15 SURVEYED IT DEPARTMENTS IDENTIFIED THEMSELVES AS SELF-CONTAINED, TREATING HR ESSENTIALLY AS A NUISANCE.

ble to accurately forecast long-term technology skills.

Seven (47%) of the 15 companies applied less formal approaches to determine their long-term skills needs. Two employed formal long-term skills planning with rolling 18-month planning horizons. Five relied on external consultants, including Gartner Group and META Group, for long-term estimates of critical skills. The others focused exclusively on short-term staffing needs. For them, immediate customer and business requirements—current projects or projects due to be initiated within the next six months—usually determined required IT skills needs.

Lateral Relations and Delegation

Companies often seek to delegate decision making to the source of information. For IT skills, this usually means a system allowing individuals to choose the skills they want to acquire and bid for higher-paying positions matching these skills. We did not find that salary differences due to bonuses or temporary premiums for skills generated internal equity problems for the nine companies acknowledging that they pay a skills premium.

Six (40%) companies in the study employed a formal system for "inventorying" IT skills. The most elaborate skills inventory we saw provided a framework for a broad range of skills-management activities, including career mapping, skills-gap analysis, training curricula, developmental assignments, sourcing strategies, and staffing decisions (see the sidebar "Example Formal Skills Inventory Model"). Formal IT inventory systems in these companies were often integrated with organizational promotion and review processes to allow employees to record their newly acquired skills. Smaller companies found it difficult to justify the cost of a formal IT skills-tracking system; their senior managers said they were fully aware of their skills invento-

be an important tool for both training and retaining IT employees. Employees of companies using only informal tracking systems may perceive that their organizations are not truly concerned about their welfare.

Helpful Model for IT Staffing

The strategies in [6] represent a model for managing the uncertainty of the IT skills life cycle. Superimposing this model on the IT staffing cycle helped us identify the four main IT employment approaches:

Slack resources. The slack-resources approach of using external contractors and consultants to smooth fluctuations in employment needs is used by many companies to deal with uncertainty.

Self-contained units. The self-contained approach of separating the IT department from HR specialists involves risk. But IT departments undoubtedly benefit from better relationships with HR; HR specialists offer expertise in legal risk, skills tracking, skills assessment, and other trends that can reduce IT staffing uncertainty.

Vertical information systems. IT organizations need to invest in information systems to provide better forecasting and a closer connection with their organizations' overall business planning process. These systems position the departments and their companies to respond more quickly to change.

Delegation. IT departments develop lateral relationships by creating formal IT skills inventories to help delegate skill development decisions to departments or individuals.

In today's volatile economic and technological marketplace, effective practices for IT staffing must manage uncertainty, not be managed by it. Our study found that companies limiting themselves to reacting

Example Formal Skills Inventory Model

A large global energy company (company 3 in Tables 1 and 2) demonstrated a best practice for formally tracking IT skills. Its skills inventory system is based on a detailed model for assessing the skills of its employees. This approach includes two ability groups—process and technology—each with four abilities:

Process

- Strategy and direction;
- Business integration;
- Change management; and
- Data management.

Technology

- Infrastructure support and integration;
- Application delivery and support;
- Alliance management; and
- Data services.

Each job in the IT department is tied to a primary ability. Each ability may cover one or more job types or roles. The link between a job and its primary ability is a reference for job postings and staffing/sourcing decisions for these positions.

Four to six skills are associated with each ability. A skill is the know-how to provide products or services; for example, data services require four main skills: business acumen, industry acumen, performance tuning, and technology design. Collectively, they are critical for distinguishing one ability from another.

Employees are evaluated on these skills and abilities to plan their individual career-development tra-

jectories. The organization refers to this approach to staffing decisions as the "bench strength process." Each leadership position involves certain skills. Each business unit assesses its employees' abilities to determine whether they are ready to apply a particular ability immediately, one to three years out, or three to five years out. Staffing and recruiting decisions are based on gaps in skills and abilities. Thus, the company has a bottom-up skills-identification process based on where individual employees map into a matrix. For example, if a large percentage of employees (90%) fall into a cell, no further development of skills or functional exposure is needed for that cell; more training is planned for cells with a limited number of employees. Staffing and recruiting coordinators in the business units evaluate skills. HR uses validated aptitude tests to evaluate individual employees during on-site visits. The skills model is used to fill gaps in skill sets with training, new hires, and contractors.

Supervisors know the needs of their individual units and prepare targets for developing their employees, depending on the company's business needs. They look at the functional skills of their people to identify where they lack the needed skill sets to support business needs. During annual reviews employees might indicate where in the organization they might want their careers to go. If a business need matches the desired individual need, supervisors try to assign individuals so they can acquire the desired skills. The organization also uses a management team for succession planning. ■

to market changes and skills requirements inevitably generate costly responses. Using external consultants and new employees hired at competitive salaries create salary inequities, job turnover, and often loss of company loyalty. While the turbulent nature of the IT industry may complicate long-term IT skill forecasting, the implications and potential reward for such efforts are considerable. ■

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