THE COMING KNOWLEDGE AND CAPABILITY SHORTAGE

Knowledge, skills and experience walk out industry’s door opened by the growing wave of retirees.

Lynda Aiman-Smith, Paul Bergey, April R. Cantwell, and Mark Doran

OVERVIEW: As the 76 million baby boomers, who represent 28 percent of the U.S. working population, begin retiring, organizations face a knowledge and capability crisis. The experience, knowledge, skills, and networks—the “deep smarts”—of these technical professionals and managers will walk out the door with them. Executives and managers can proactively develop and use decision-support processes to model the areas in their organizations where the knowledge and capability shortages will be severe, and take actions now to mitigate the potential tremendous loss of knowledge.

KEY CONCEPTS: critical talent, retirement, decision-support simulation, knowledge loss.

Industrial companies face a crisis, and many of them do not know it—yet. The crisis, which these companies have helped to create, is that as the baby boomers retire, they will take their tacit knowledge and their human-information networks with them and there simply will not be enough skilled, experienced, well-trained knowledge workers to replace them. Consequently, U.S. industry faces a “knowledge and capability” shortage (1).

This coming shortage arises from demographic and educational factors and is exacerbated by corporate policies that have led to a “trust gap” among their professional employees. The end result will be a drain of what Dorothy Leonard and Walter Swap term “deep smarts”—the experience-based store of tacit and explicit knowledge that allows people to understand issues, put together patterns, and come to correct conclusions with startling swiftness (2).

For the last 50 years, American corporations have thrived on the 76-million-strong baby-boomer generation, born from 1946 to 1964. But the boomers were followed by a much smaller Generation X, the 41 million people born from 1965 to 1983. And the Gen Xers will be followed by the Echo Boomers, those born from 1984 through 2002 (3, 4). Although the Echo Boomers will eventually provide a substantial labor force, this generation will not possess deep smarts for several more decades. Thus, in 2006, we are facing a “retirement bubble” as those baby-boomer professionals—especially technical professionals—begin to retire. Knowledge, skills, experience, and networks walk out the door with retirement.

At a 2005 Industrial Research Institute (IRI) meeting where some of this information was presented, a partici-

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pant reported that when the issue of aging technical professionals was brought up in his organization, a VP simply shrugged, "We'll just hire new people, we'll get them from somewhere." The truth—and part of the problem—is that the same aging demographics are everywhere (3,4). (See "Demographic Trends the Same Everywhere," this page.)

In the coming years there will be a shortage of technically-trained professionals, threatening the overall innovation potential of the U.S. (and of other countries as well). Immigration data are not encouraging, as it is increasingly difficult for people to emigrate to the United States. Even in countries with relatively high rates of immigration, these rates are offset by near-equal emigration. (See "Not Enough Scientists," next page).

Demographic Trends the Same Everywhere

Canada, all European nations, Japan, and China are all facing the same dilemma. Globally, there will be fewer people to do all the work that will need to be done (3). For example, by 2050, 40 percent of Europe's total population (60 percent of its working age population) will be over 60 years old. Germany, Italy, Spain, and Japan face the double blow of mounting pension obligations and shrinking workforces. The Middle East/North Africa, Oceania, Latin America/Caribbean and sub-Saharan Africa face similar trends (3,4).

To complicate matters, labor force participation has been declining since 1950 and is projected to continue to decline through 2050 in all major regions of the world (4). The projections signal to us that there will be even fewer workers available than population figures alone suggest.

Immigration data do not offer any hope. The international trends are toward decreasing or stabilizing immigration rates, especially for highly skilled workers. In most situations, immigration rates are being offset by emigration rates of highly skilled workers. The countries currently benefiting most from immigration of highly skilled workers are the U.S., Australia, Canada, France, and Germany (3,4). Achieving even more favorable ratios in these countries is unlikely.

As researchers have noted, the capability shortage will loom especially large in areas requiring advanced science and technical training (1). Baby boomers, and hence their industrial employers, benefited from a time when U.S. science and engineering education reached its peak. One-quarter of the current science and engineering workforce is more than 50 years old, and many will retire by the end of this decade.

The Gen Xers and the upcoming Echo Boomers are not going to feed the innovation engine we need for U.S. industry to stay competitive. Not only are there simply not enough Gen Xers, but we haven't been educating them adequately in science and technology.—The Authors

As well, it will be a hard struggle to re-gain the loyalty of professionals who have been subjected to various corporate actions over the past few years. Managerial actions such as downsizing people on the one hand while demanding more and more from remaining employees on the other—all while corporations encourage early retirement—have generated distrust among many talented employees (3).

Losing Those "Deep Smarts"

If industrial organizations wish to remain innovative and competitive, management must confront the coming knowledge and capability shortage. As Leonard and Swap have noted, very few organizations do a good job managing the deep smarts embedded in their human talent, because it's difficult to pin down and measure (2). In this article, we describe steps two IRI companies have taken to address the coming capability crises in their organizations. We will also describe a simulation model that can help organizations begin to pin down and measure those deep smarts.

Recently, an IRI member company we shall call Company A asked, "What will our organization look like in 10 years if we don't something?" To answer its question, the company developed a population flow model of its employees. Its managers identified key input and output variables that could be adjusted for modeling purposes. They also used company trend data to determine the most likely staffing scenario they could encounter—what they called a strategic model.

Company A has several unique characteristics. For instance, it hires recent college graduates and promotes only from within. During the first few years of hiring, turnover is relatively high, but then it decreases dramatically. From this information, Company A learned that all technical leaders and managers advance along a relatively predictable timeline. For this reason,
modeling future scenarios in this company was straightforward.

Company A calculated the number of employees reaching the average retirement age in each of the company’s job bands. These data are presented in Table 1. In the top Technical Band (5 T), currently 19 percent of the members have reached the average retirement age (59.2 years), while in five years, 50 percent will have reached average retirement age. The implications of these data are frightening.

To answer Company A’s original question, what would happen if it did nothing, the company calculated the staffing shortages in each job band it would have in 10 years, using the company’s historical trend data for average retirement age, promotion rate and attrition rate, with no other interventions, and found that it would fall far short of its current numbers of employees in key positions. The shortages it would experience in 10 years are presented in Table 2. Without any intervention, Company A would have 30 percent fewer executives (officers) than it would need. A similar flow model revealed a severe lack of seasoned senior scientists and researchers.

Using the Excel-based population flow chart, Company A was able to determine that, to maintain the necessary management and research capabilities in 10 years, it would need to grow the organization 1 percent each year for six years, most likely through increased recruiting of college graduates. Because the company promotes from within, it also needs to increase promotion rates in three of the job bands by more than 1 percent for each job band. If Company A wants to grow its capabilities, even more drastic steps are needed.

Keep in mind, these data represent filling vacant positions only, and say nothing about the qualifications of the people in those positions. We do not know, for instance, how increasing the promotion rate will affect the organization. Calculating staffing shortages, such as the exercise done by Company A, will certainly get the attention of executives in the company, and is a good first step in trying to determine how the critical skills gap will affect your organization.

Although quantifying the loss of people can be a straightforward exercise, DeLong advises that, “... focusing on the threat of lost knowledge instead of staffing shortages provides a more accurate perspective on the real impact of turnover in the knowledge economy.” He identifies four types of knowledge which interact: human, social, cultural, and structured (1).

Human knowledge is what individuals know or know how to do. We may typically think of human knowledge as skill or expertise. Social knowledge is found in the relationships in an organization. Individuals and groups develop networks of relationships that are critical to the organization. Cultural knowledge is the collective understanding of “how we do things” in a particular organiza-

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**Table 1.—Flow Model From Company A.**

<table>
<thead>
<tr>
<th>Average Retirement Age</th>
<th>Current Population Meets/Exceeds Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Today</td>
</tr>
<tr>
<td>Officers</td>
<td>56.9</td>
</tr>
<tr>
<td>Band 5 M</td>
<td>57.2</td>
</tr>
<tr>
<td>Band 4 M</td>
<td>55.9</td>
</tr>
<tr>
<td>Band 3 M</td>
<td>55.6</td>
</tr>
<tr>
<td>Band 5 T</td>
<td>59.2</td>
</tr>
<tr>
<td>Band 4 T</td>
<td>58.4</td>
</tr>
<tr>
<td>Band 3 T</td>
<td>55.5</td>
</tr>
</tbody>
</table>

These numbers include incentive-based early retirements; M stands for Manager, T stands for Technical Lead/Scientist.

**Table 2.—Example From Company A.**

<table>
<thead>
<tr>
<th>Positions Not Filled</th>
<th>U.S.</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officers</td>
<td>-30%</td>
<td></td>
</tr>
<tr>
<td>Band 5 M</td>
<td>-28%</td>
<td>Band 5 M</td>
</tr>
<tr>
<td>Band 4 M</td>
<td>-18%</td>
<td>Band 2 T</td>
</tr>
<tr>
<td>Band 3 T</td>
<td>-31%</td>
<td>Band 3 T</td>
</tr>
</tbody>
</table>

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**Not Enough Scientists**

New entrants into science and engineering are not being generated in sufficient numbers to replace the soon-to-be-retirees. Trends in technical education show the number of U.S. degrees granted in every field of science and engineering, other than the biological and social sciences, has remained flat or declined since 1985 (9). Historically, universities have had a large number of international students, the best and brightest from abroad, coming to the U.S. to study. Many of these international students stayed to contribute to our economy via their innovations.

About one-third of all scientists and engineers in the U.S. today were not born here. But now, applications from abroad and visas allowing in international students have dropped precipitously. Graduate programs predict that their enrollments will drop 20-30 percent because not enough U.S. students are enrolling in science programs, and the international students—who would—are not coming here (10). And as every R&D manager knows, even after the 6-9 years of graduate training it takes to produce a science or engineering professional, extensive socialization and experiential time is required before they really develop the knowledge to contribute strongly within an organization.—

The Authors
tion. An individual who wants to be accepted as a member of a group or the organization learns and adheres to cultural norms. Structured knowledge is found in an organization’s systems, processes, tools, and routines. It originates in the organization and is independent of the people who possess this sort of knowledge. Clearly, the loss of an individual with deep smarts along any of these four knowledge dimensions can be critical to an organization.

Another IRI member company (“Company B”) conducted an exercise to determine the implications of losing explicit knowledge in its organization with the goal of strategic staffing. The process it used involved six steps:

1. **Agree on Critical Skills.—** What are the critical skills in your organization?

2. **Assess Every Individual’s Ability for Each Critical Skill.—** Rate each employee on each identified critical skill using a critical-skill-by-employee matrix. Ratings should be simple, such as “Expert,” “Practitioner” and “Novice.”

3. **Summarize Data.—** This step provides some indication of how much of your explicit knowledge is at risk. How many experts do you have for each critical skill? Which experts do you anticipate losing in the near future? Can you identify potential experts for each critical skill?

4. **Assign “Strategic Importance” Values.—** For each critical skill identified, the business organization assigns a “Strategic Importance” value based on discussions with technology group.

5. **Assess Health of Organization (Assign “Capability Assessment” Values).—** Assign a “Capability Score” for each critical skill based on comparison between the number of current experts and perceptions of ideal numbers of experts. Identify situations where the capability score is high and the strategic importance is low, or the strategic importance is high and the capability score is low. These are your gaps.

6. **Develop Action Plans to Address Gaps.—** One way to build knowledge and skill in critical areas is to identify potential future experts from within your organization.

Company B’s process looks internally at explicit knowledge, critical skills, within the organization, and can be helpful in determining where losses of such knowledge can be anticipated.

Whereas structured knowledge is usually explicit, knowledge that is human, social or cultural can be explicit or tacit. Explicit knowledge is easier to quantify, formalize and communicate. Hence, explicit knowledge can be readily transmitted from one employee to another via written procedures, notes, videos, and other documentation. Tacit knowledge, on the other hand, stems from an individual’s experiences, actions, subjective judgments, hunches, intuitions, values, and ideals.

Tacit knowledge is more personal, usually cannot be formalized, and requires much more effort to be measured and communicated. Tacit knowledge cannot be relayed except through experience, observation and contact with the person who possesses that knowledge. Slowing the loss of both these types of knowledge, but especially the tacit, is the major challenge organizations face.

**What Organizations Are Doing**

Among the better practices identified in the management literature for slowing the loss of knowledge and capabilities are (1,5,6):

- Using phased retirement.
- Making effective use of retirees.
- Implementing mentoring programs.

Some organizations are already addressing the issue of the knowledge and capability loss that go with retirement (5). For example, many governmental and academic institutions have signaled that they are rethinking their policies on mandatory retirement. Phased retirement allows employees to move from full-time positions to part-time or temporary. This retains those employees’ knowledge and reduces their stress. Monsanto Co., for example, uses this technique, as does Deloitte & Touche. There are issues with this approach, however, including accounting problems with benefit plans and the frustration of younger workers working long hours while older workers are working short days.

Chevron and Prudential rehire retirees as consultants. Monsanto’s Resource Re-entry program and GE’s
Golden Opportunity are other examples. These companies tailor consulting jobs, and bring back retired employees (often via an outside contracting agency, such as YourEncore). For the retirees, this allows them to stay involved on their own terms and provides a job with less stress, (e.g., relinquished management role). Retirees can enjoy a more balanced lifestyle, while earning extra money for indulgences. For the company, hiring retirees from within retains all types of critical knowledge in-house and allows for immediate productivity. The company may also choose to hire retirees from other companies, which can bring a depth of knowledge from proven innovation leaders, fresh points of view and access to best practices from other companies.

Similar to consulting, some companies have begun placing retired executives on their boards of directors. They can then use the executive’s experience for guidance. Some organizations have worked out relationship with contract employment agencies whereby those agencies are actually the employers of the retired employees.

Mentoring programs are used at Deloitte and many other companies. A mentoring program should involve an experienced employee teaching a newer employee the company knowledge, values and culture. A mentor role could be one task of an employee’s job, or a full-time position. The mentor’s job performance could be judged on the performance of the young employee.

Data on this type of mentoring are encouraging; according to the Center for Creative Leadership, 77 percent of companies with successful mentoring programs reported that those programs were effective in increasing retention. Other studies show that 35 percent of employees who don’t receive mentoring in their organization look for another job within 12 months.

To have a successful mentoring program you need to identify people with critical knowledge, train mentors on how to mentor, establish opportunities for the younger employees to interact with their mentor, and allow for growth of both participants. Mentoring programs are not free—they require vision, commitment and effort; and having a program is no guarantee of success. Mentor programs have failed, usually due to over-structuring, crumbling under bureaucratic weight, and lack of accountability on the part of both mentees and mentors (6).

Other better practices identified for slowing the loss of knowledge in organizations include:

- Making use of global skills resource management.
- Employee rotational programs.
- Sharing case studies of lessons learned.
- Using communities of practice.
- Storytelling.
- Training and educating programs (such as shadowing).

One-third of employees who do not receive mentoring look for another job within 12 months.

- Strengthening recruiting relationships.
- Creating a knowledge manager position or an entire knowledge management department.

So far, we have described general practices for retaining and transferring the skills of the older worker, but how would these practices actually work in a particular organization? An astute R&D manager might be wondering how to know whether his organization has a potential crisis looming with knowledge and capability flow out of the organization. That manager might also wonder how to get a handle on understanding the potential effects of implementing programs to retain those deep smarts. A useful approach for such a manager would be using a simulation and modeling the workforce’s knowledge and capability, and using the information from that simulation to predict where to put efforts in talent management.

**Modeling Workforce Knowledge and Capability**

Simulation is a useful methodology for providing managerial insights into highly complex problems. Simply, a simulation model is a mathematical representation of a problem of interest. The primary advantage of using computer simulation is that it allows for experimentation with random variables in the simulation model to assess potential outcomes before they actually occur. Simulations are most useful when they model systems that are so complex that is hard to anticipate in advance how the model will actually play out over time (7).

In this section, we describe a simulation model that can be used to study the long-term impact of management policies on organizational knowledge and workforce capability in the context of an aging workforce. The proposed simulation has these major objectives:

1. **Identify potential outcomes.**— These are outcomes that are most likely to occur under various organizational policies. In our experience, simulations often uncover those usually unforeseen “unintended consequences”— surprising relationships, unanticipated equilibriums,
unforeseen catastrophes, or unusual end states—that are so troubling to managers. When outcomes can be predicted, they become more controllable.

2. Let managers see tradeoffs. — Simulations can be built so they provide quantifiable tradeoffs in terms of what expected organizational knowledge levels result from various practices.

3. Assess risks. — Simulations can give information on differences in expected organizational knowledge levels associated with different managerial policies and practices. A simulation may help managers better identify the sources of uncertainty in their model, and may help to qualify and quantify knowledge loss and knowledge transfer.

4. Clearly identify where managers can make decisions and where they cannot. — Using such a model can clearly identify decision points for managers—those things that can be controlled. The proposed work may illuminate the types of decisions that “should” be made at each of these decision points.

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**Simulation of Knowledge Loss and Retention**

Our simulation model can be posed in the form of the influence diagram, next page, showing how simulation variables (exogenous and endogenous) affect organizational decisions and outcomes. Here we provide an intuitive and logical explanation of the elements depicted in the diagram.

**Individual Potential.** We model individual potential as a randomly assigned value (standardized Z score) drawn from a normally distributed population. In practice, Individual Potential is a latent variable that is unknowable to persons attempting to measure it. In simulation, it is knowable with perfect certainty.

**Validity.** Industrial/organizational researchers refer to Validity as the correlation between an applicant’s test score and expected job performance. In other words, it is management’s imperfect attempt to measure an individual’s potential to perform on the job. Equation (1) synthesizes Individual Potential and Validity to provide an applicant’s test score. The error term is also assumed to be normally distributed ~ N(0, 1).

\[
\text{ApplicantTestScore}(i) = \text{Validity} \times \text{TruePotential}(i) + \sqrt{1 - \text{Validity}^2} \times \text{Error}
\]

(1)

**Selection Ratio.** Most selection research is based upon the premise that organizational outcomes are derived from the organization’s ability to assemble a willing and able workforce. A key factor that determines the quality of the consideration set of applicants is the selection ratio. It is the reciprocal of the number of candidates to consider/interview for each available position. In our simulation, we use the Selection Ratio to determine the size of the applicant pool.

**Reliability.** Performance appraisal systems are management’s imperfect attempt to measure an individual’s productivity/contribution to the organization. Classical measurement theory defines true performance as the average rating an individual would receive if his/her performance were rated by a very large number of knowledgeable raters. Our use of Reliability here reflect inter-, rather then intra-, rater reliability. Equation (2) is used to generate an observed performance value in each time period based upon an individual’s True Potential. The error term is also assumed to be normally distributed ~ N(0, 1).

\[
\text{Rating}(i, t) = \sqrt{\text{Reliability}_{XX}} \times \text{TruePotential}(i) + \sqrt{1 - \text{Reliability}_{XX}} \times \text{Error}
\]

(2)

**Tenure.** An individual’s tenure is simply the number of periods that individual has been with the organization. An individual enters with zero tenure and is incremented by one in each subsequent period. Tenure impacts the extent to which an individual has had the opportunity to share his/her knowledge and learn from others. In our simulation, tenure affects the number of sequential periods over which an individual’s knowledge network evolves.

**Turnover Rate.** We partition Turnover into two primary categories, voluntary and involuntary. Involuntary turnovers represent termination decisions by the organization. We further partition voluntary turnover into subcategories of avoidable and unavoidable. Unavoidable turnovers represent events such as loss of employee due to spousal relocation, accidental death or unexpected illness, etc. We operationalize unavoidable turnover in our simulation by randomly selecting employees for departure without regard to any factors in the simulation. Thus, each individual has an equal probability of leaving unexpectedly. The notion of avoidable turnover is at the very heart of this study. We examine the impacts of professional development programs and retention programs aimed at mitigating avoidable turnover and subsequently lost knowledge.
5. Drive home an understanding that workforce capability and organizational knowledge are more than the sum of individual potentials.—This can be helpful for future hiring and transfer decisions.

By modeling knowledge transfer in organizations using fundamental assumptions about human behavior (based upon what industrial/organizational psychologists and organizational behavior researchers know), simulation can be used to capture the essential elements of the expected knowledge transfer that will take place under various conditions. Consider, for example, the plight of an R&D manager faced with an impending retirement bubble. She knows that the average tenure of the science professionals in the organization is 12 years, and that there is a large variance. What’s more, the tenure distribution is bimodal with a large cohort reaching retirement age over the next 3–5 years, followed by a second large cohort reaching retirement age in about 20–25 years. She is concerned that much of the current workforce capability (and corporate history) is about to walk out the door.

This manager is considering several action plans that may help to close the knowledge gap between the two cohorts of knowledge workers. She wonders whether the organization should implement professional development programs that can hasten the development of its less experienced cohorts. She is also considering retention programs (or phased retirement) of the more experienced cohort to extend the useful life of their knowledge. Finally, she is considering implementing a mentorship program to aid in transferring knowledge from the more experienced to the less experienced cohort members. At this point, she is relegated to the use of gut feel for estimating what to expect from any one program or any bundle of programs that may be implemented.

Individual Knowledge. An individual’s knowledge is an esoteric value derived from his/her inherent individual ability and the ability to utilize/transfer knowledge from co-workers. Thus, the notion of knowledge can be represented as a system of objects ($S$), a network, having a set of nodes ($N$) and edges ($E$) that evolve over time. The nodes represent individuals in the organization, each having some unique True Potential, which serves as a proxy for their true Individual Knowledge. The edges represent communication activities between individuals, while the weights on the edges serve as a proxy for the amount (percent) of knowledge transferred to the respective individual. It is significant that the edges are two-directional and the knowledge transfer weights typically will not sum to 1 (i.e., perfect transfer of all knowledge) for any particular individual. Equation 3 provides the formal expression of individual knowledge used in our simulation.

$$\text{Knowledge}(i) = \beta_1 \times \text{TruePotential}(i) + \beta_2 \sum_{j=1}^{n} E_{ij} \times N_j + \text{Error}$$

Influence diagram of our simulation model shows the dependent relationships among the variables of interest. For example, the exogenous variables Validity and Selection Ratio influence the decision variable New Hires. Additionally, the endogenous variable Turnover Rate influences the source of uncertainty, Lost Knowledge.

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Traditional social science research methods offer little in the way of predictive guidance on these critical issues.

While intuitively we know that professional development programs will raise the knowledge and capability levels of our employees, it is unclear how much this will compensate for the loss of knowledge. Furthermore, we can intuit that retention programs will maintain the existence of critical knowledge for a short time, but how does this knowledge get transferred to others in the organization for sustainable productivity and in what critical areas?

Finally, mentorship programs will logically increase the transfer of knowledge between individuals. However, who should be paired with whom? Are pairs best? How intense must the interaction be to produce the desired result? Is there an optimal way to go about mentoring junior employees to maximize knowledge transfer? While simulation cannot provide perfect information on these issues, it can provide insights from a formal model that would go otherwise unnoticed.

Using formal modeling, organizations gain managerial insights to the important workforce management questions they face. Such a model should build upon good research and provide an analytical foundation for estimating an organization's aggregate workforce capability (8). It should construct and integrate the notion of knowledge transfer in organizations using a mathematically codified knowledge network representation. The model can be used to simulate the flow of individual talent/capability through an organization and monitor the impact of various knowledge management programs designed to retain top performers. Using such a simulation model is a key step toward mitigating the coming knowledge and capability crisis—the retirement bubble.

See “Simulation of Knowledge Loss and Retention” for technical details of simulation and a proposed model. Although we discuss one type of simulation model, organizational issues could also be approached with other decision support systems, such as neural networks and artificial intelligence.

Neural networks are mathematical models that mimic human brain function with the aim of capturing and replicating complex non-linear decision processes in the form of artificial intelligence. We believe a novel application of a neural network would be an extension to the “organizational brain.” For example, based upon historical data, a neural network might be used to provide insights into organizational areas most vulnerable to knowledge erosion.

Although knowledge is a difficult phenomenon to study in real organizations, computer simulation is a reasonable approach to understanding how managerial practices affect knowledge and capability. Such a simulation will help managers to identify potential outcomes, view tradeoffs, assess risks, identify decision points, and give a more holistic view of workforce capability and organizational knowledge issues. It is important to recognize that no simulation model is perfect, but a model need not be perfect to be useful. We recognize the strengths and limitations of this approach and have attempted to present a balanced assessment of the method.

The final reality is: organizations must prepare for this anticipated decline in the number of technically competent replacement workers and the growing proportion of workers over age 40. Organizations need to understand and act on the upcoming knowledge and capability shortage. If these issues are not addressed, the implications for U.S. productivity, commerce and economic growth will be significant.

Where Will You Be in 10 Years If You Do Nothing?

Several issues were raised in this paper stemming from the impending loss of “deep smarts” due to the retirement bubble. Our first and most important piece of advice is to take action now to mitigate these losses. First, analyze your organization for an understanding of basic staffing issues. Where will you be in 10 years if you do nothing? A process similar to that used by Company A can provide basic information for understanding your company’s situation and can spur top executives to take action.

Second, assess your company’s critical skills and identify individuals with deep smarts. To understand your company’s situation more holistically, consider using a modeling technique like the one described in this paper. Next, understand the existing “better practices” for mitigating knowledge loss. Learn about the better practices described here and identify which of these your company currently uses. Finally, attempt to match the better practices to specific situations in your organization. Again, a simulation may be useful in this effort, particularly in identifying options and tradeoffs your leaders will need to consider.

Proactive management and planning are key to addressing the coming knowledge and capability shortage. The challenge for company managers is to determine the best actions and put them in place to transfer and embed the deep smarts within their organizations before the
boomers retire. Where will you be in 10 years if you do not begin to address this issue now? 6

Acknowledgements

A subcommittee of the IRI's Research-on-Research committee has been working on this issue for the past year. Mark Doran acknowledges and thanks Dan Carpenter and Ron Webb, his co-chairs of that committee. We thank all the attendees at ROR sessions for stimulating our thinking and encouraging us to get this article written. We especially thank Robin Bergstrom, Mike Krotszewska, Scott Steinmetz, Ron Webb, and Stewart Witzeman, for their vital information and research.

We also acknowledge the NC State MBA students who provided background research for this article: Chris Adams, Cheshire Cole, Joe Dimanlig, Jeramy Freeman, Julie Jensen, Junqing Lily Jia, Sandra Hernandez, Lawrence Mcwright, Jonathan Phillips, Matt Remke, Paul Scheidt, Naveen Vangipurapu and Brett Williams.

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