Capturing the Value of
PROJECT MANAGEMENT

Through Knowledge Transfer

2015

PMI
Project Management Institute

THE POWER OF KNOWLEDGE

The importance of knowledge—how it is acquired, used, and shared—is key to project and program success. Why then are so few organizations effective at transferring that knowledge, according to our findings in this latest *Pulse of the Profession®* in-depth report?

Knowledge has long been recognized as a driver of productivity and economic growth. In fact, the phrase "knowledge economy" was first used as far back as 1969 in Peter Drucker's seminal book, *The Age of Discontinuity: Guidelines to Our Changing Society*. Thirty-two years later, Drucker, who by then was one of the world's preeminent management consultants, said, "The next society will be a knowledge society. Knowledge will be its key resource, and knowledge workers will be the dominant group in its workforce."

Drucker predicted exactly what we see today. In our knowledge-based economy, it is talent—the knowledge worker—that differentiates an organization. Our most unique and dynamic employees with experience, initiative, creativity, and a commitment to excellence possess the type of knowledge that sets an organization apart from the competition. And, as you'll read throughout this report, when organizations create environments where those employees can effectively transfer their knowledge to others, strategic initiatives are completed more successfully. You will also read case studies written by organizations with effective knowledge transfer processes.

Project, program, and portfolio managers need to share the skills, capabilities, and behaviors that are going to result in the delivery of successful projects. This blend of technical project management skills, strategic and business-management insight, and leadership capabilities is exactly what we advocate through the PMI Talent Triangle, because it is what assures better success with strategic initiatives. So as organizations explore employee development, we encourage them to recognize knowledge transfer as a means to ensuring successful implementation of projects that are central to achieving their goals.

Knowledge is power. Transferring that knowledge is powerful.

Let's do great things together.

Mark A. Langley
President and CEO
Project Management Institute

INTRODUCTION: IMPROVING PERFORMANCE THROUGH KNOWLEDGE
By Larry Prusak

Although humans have been thinking and occasionally writing about knowledge for the past 4,000 years or so, we have only fairly recently been applying these insights in systematic ways to our work lives, cultures, and organizational forms.

Since World War II, theorists, and then later practitioners, have been examining, writing, and offering advice on how knowledge can be used to improve the performance of teams, organizations, and nations. Much of this original work was tied to the war effort and the value of learning-by-doing studies. These efforts have since been amplified by a number of trends worth mentioning here.

We first saw the growing acknowledgment of economists and other social scientists that knowledge—as contrasted to information, data, and other sources—is an extremely valuable "factor of production." The effective use of knowledge leads us to more productive and successful outcomes, as this report will clearly reveal.

The second trend is the unanticipated, global spread of information technologies that has allowed for much greater development of knowledge by dispersed practitioners and much quicker dissemination of knowledge throughout globally distributed organizations.

The increasing complexity of the economic environment and organizations that live in this environment is another trend. The democratization of knowledge—or the easy access to more advanced knowledge—that has occurred during the past 50 years has made the global economy much more competitive. Additionally, knowledge itself is now one of the leading products of the global economy, either as an end product itself or acting as a critical intermediate source for the development of products and services.

This leads us to the topic of this report. Rarely have we been gifted with such a useful set of empirical data focusing on how knowledge is being used—or not being used—as applied to a specific function: project management. This wonderful achievement will be of great help to all of us seeking ways to make the elusive, and sometimes tricky, substance of knowledge easier to make more operational and effective within organizations.

It is worthwhile to point out some of the highlights of this report that are not always mentioned or emphasized in the knowledge management literature.

The first highlight that stands out is the very substantial value the respondents place on the identification of "critical" knowledge. This is essential, yet often difficult to do. It's essential because without this activity one can drown in the huge amounts of "stuff" labeled knowledge in any organization, which leads to great waste. It also gives knowledge activities a bad reputation. At the same time, it is difficult to do, because the very word "knowledge" encompasses many forms of "knowing" that are more tacit and, not only uncodifed, but often not easily codified at all. We sometimes call this type of knowledge "know-how" or practice knowledge, and it is often difficult to identify in ways that make it more scalable and effective.

This leads us to the second theme worth pointing out: the value and concurrent difficulties of transferring knowledge within the organization. Once again, it has been shown that project managers are very aware of the value of having knowledge about knowledge and having access to the organization's collective memory and storehouse of stories and cases that are representative of this knowledge.

It has long been known that an organization has, within itself, much of the knowledge it needs to solve its own project obstacles. The major issue has been finding who has this knowledge and the ways to access it. This involves not only capturing and storage mechanisms, but also developing a knowledge-friendly culture that encourages knowledge sharing and discussion among workers. The very efficiency we all value in project management is not always the best perspective for knowledge sharing, which requires time and reflection to be ultimately successful.

In comparison with other bodies of management thought, knowledge management is still in its infancy. It has had some notable success as well as much failure, and still has a long way to go in developing standardized and proven models and methods. This report will undoubtedly prove to be a highly useful tool in this journey and is, therefore, a welcome addition to all researchers, practitioners, and organizations.

Mr. Prusak is the founder and former executive director of the IBM Institute for Knowledge Management, a global consortium of member organizations engaged in advancing the practice of knowledge management. He currently is a researcher, consultant, author, and world-leading knowledge management expert who is working with members of PMI's Global Executive Council to improve their organization's knowledge transfer capabilities.

BUSINESS CASE: IMPROVING PROJECT OUTCOMES

The most successful organizations—those able to turn ideas into action—recognize effective knowledge transfer as vital to their competitive advantage. That fact is supported by the findings in this report. The report also will show that being good at knowledge transfer improves project outcomes.

"Knowledge is central to mission success," said Ed Hoffman, Chief Knowledge Officer at NASA. "Projects are based on the successful interaction of multiple disciplines; the ultimate demand is to access the best solutions and answers from a global and diverse team. If there is no strategy for defining what knowledge is most critical, and what strategies can best be used to share and transfer knowledge, we leave to chance that the best decisions will be made."

Indeed, according to our *Pulse of the Profession* findings, organizations that are most effective at knowledge transfer improve project outcomes by nearly 35 percent. These organizations are also three times as likely to have a formal knowledge transfer process: 92 percent compared to 33 percent. Organizations that are good at knowledge transfer have the following steps in place.

Steps of the Knowledge Transfer Life Cycle:

1. **Identifying**: Determine what knowledge needs to be transferred

2. **Capturing:** Accumulate the essential knowledge that needs to be transferred

3. **Sharing:** Establish methods for transferring the knowledge

4. **Applying:** Use the knowledge that is transferred

5. **Assessing:** Evaluate the benefits of the knowledge that is transferred

What is the difference between organizations that are most effective versus least effective at knowledge transfer?

Organizations Most Effective at Knowledge Transfer

Defined as having the components of the knowledge transfer life cycle and being extremely or very effective at all components

Organizations Least Effective at Knowledge Transfer

Defined as not having the components of the knowledge transfer life cycle or being not too or not at all effective at all components

The knowledge transfer life cycle

Identifying
Capturing
Sharing
Applying
Assessing

Figure 1: Expect better project outcomes from organizations that are good at knowledge transfer

82% vs 62%
MOST EFFECTIVE   **LEAST EFFECTIVE**

Percent of projects meeting original goals/business intent

74% vs 42%
MOST EFFECTIVE   **LEAST EFFECTIVE**

Percent of projects completed on time

75% vs 48%
MOST EFFECTIVE   **LEAST EFFECTIVE**

Percent of projects completed within budget

One in three unsuccessful projects (34 percent) is adversely affected due to untimely or inaccurate knowledge transfer. Figure 1 provides more insight into what the *Pulse* reveals how effective knowledge transfer improves project performance.

Defining Knowledge Transfer

Knowledge transfer is the methodical replication of the expertise, wisdom, insight, and tacit knowledge of key professionals into the heads and hands of their coworkers. It's more than just on-the-job training. In organizational theory, knowledge transfer is the practical problem of transferring knowledge from one part of the organization to another. Knowledge transfer seeks to organize, create, capture, or distribute the "know-how" of the most expert in a field and ensure its availability for future stakeholders.[1]

That is an important goal in the world of projects and programs, which is knowledge intensive, and often has high levels of complexity and risk. Both could be minimized by transferring valuable knowledge from the most experienced, high-performing employees to others in an organization responsible for implementing strategic initiatives. When essential knowledge is captured and shared, organizations see improved results across the range of project metrics, including cost savings, time-on-task, error rates, and innovative solutions.[2]

"Knowledge is the business! And the best practice of knowledge transfer should accelerate the business value," said Jean-Claude F. Monney, Global KM Lead, Office of the CTO at Microsoft Enterprise Services. "What we really seek is knowledge collaboration that drives both productivity and innovation. For us, and any professional services organization, that knowledge collaboration is essential. We capture knowledge of every project through a process that makes highly valuable knowledge discoverable and known. You cannot search for something you don't know exists."

FOCUS OF EFFECTIVE ORGANIZATIONS

Knowledge transfer as a theory has meaning, value, and relevance for organizations, but its actual implementation and uptake in an organization can pose challenges, especially if no true results-oriented process is in place.

When organizations fall short of this more comprehensive knowledge transfer effort, the reasons are many but often relate to cultural issues. Many organizations point to the fact they have higher priorities (52 percent) and also believe there is insufficient recognition of the value (42 percent). So, how do organizations overcome these and other barriers and embrace knowledge transfer as an important business capability? Our research shows that effective organizations focus not only on culture, but also on leadership, and, most importantly, on people because knowledge lives in and is applied by them.

Culture Encourages Buy-in

When organizations have a culture that values knowledge transfer, they are far more successful at it. A full 96 percent of respondents agree that a supportive organizational culture—alone or coupled with state-of-the-art knowledge storage and retrieval policies and technology—contributes to effective knowledge transfer.

"Creating that culture is key," said Diane Millard, Manager, Benefit Administration at Anthem Blue Cross and Blue Shield. "It's important to encourage others to share—because it benefits both parties. And, it's even more critical when it comes to projects. With a project, when nothing is ever the same, there really are no benefits to hoarding information because it's not going to help you move on."

Despite these known benefits, many cultural factors continue to inhibit knowledge transfer. Knowledge management experts Thomas Davenport and Larry Prusak call them "frictions," because they slow or prevent transfer. They are also likely to erode knowledge as it tries to move through an organization.[3]

The following highlights some of the most common frictions and ways to overcome them.

Friction	Solutions
Lack of trust	**Build relationships and trust through face-to-face and virtual meetings that foster dialogue and collaboration**
Different cultures, vocabularies, frames of reference	**Establish common ground through the use of education; discussion; publications, such as the *PMBOK® Guide* and PMI's global standards; teaming; job rotation**
Intolerance for mistakes or need for help	**Accept and reward those who make use of lessons learned; support creative problem-solving and collaboration; recognize that no one knows everything**

Figure 2: Organizations that are effective at knowledge transfer have a culture that values it

96% vs 18%

MOST EFFECTIVE   **LEAST EFFECTIVE**

Extremely or very valued

"Our goal at NASA is to create an environment that has the right rewards, incentives, leadership, and commitment," said Dr. Hoffman, who feels culture drives everything, because it defines norms and behaviors. NASA encourages a culture of collaboration and mentorship. The complexity of NASA's programs and projects demands an open, vigorous culture where communication is continuous, empowering individuals and teams at all levels to ask questions, share information, and raise concerns.

Knowledge transfer is embedded in the culture of the effective organizations because they are significantly more likely to value the knowledge transfer processes that are in place (Figure 2).

A project management office (PMO) can be a successful advocate for knowledge transfer. The effective organizations are over five times more likely to have a PMO that supports knowledge transfer as a means to improving the management of projects and programs (90 percent vs. 16 percent in less effective organizations). They are also three times more likely to report that the PMO "owns" the organization's knowledge transfer (45 percent vs. 16 percent).

"A supportive culture allows the project team to be committed to the open sharing and engagement of what they see and hear. If issues are raised and dialogue and discussion happens, then you'll get to that truth," said Dr. Hoffman.

CASE STUDY
Boeing Creates Culture of Knowledge Sharing
By Tim Bridges, Director of Knowledge Management at The Boeing Company

We are harnessing the knowledge and skills of our 160,000 global employees through a renewed emphasis on developing a culture of knowledge sharing. Two primary initiatives that we have at Boeing are the Boeing Designated Experts (BDEs) and Communities.

Designated Experts
Launched in 2011, the BDE initiative provides readily discoverable functionally vetted experts that support business needs across the enterprise. BDEs complement "self-declared" subject matter experts by adding a layer of authoritative expertise endorsed by Boeing functions. Examples include engineering, manufacturing, supplier management, and finance, as well as specialties such as medical services and crane operations.

One recent success story involved a program chief engineer receiving knowledge through a BDE. The engineer faced a situation where a weld cracked in a special material valve bracket during a test in a high-temperature, high-vibration environment.

With many years at Boeing, this chief engineer had an extensive personal network, which was exhausted after pursuing the solution for a couple of months. Then he tapped into the broader Boeing for a BDE on the material and welding process. He typed a few keywords in our search and found a BDE immediately. After a 30-minute phone conversation, he had a line on a solution, including a supplier nearby the plant. The next morning he visited the supplier and solved it, retiring a large program risk.

Communities

We have a strong commitment to creating and encouraging communities. In 2011, clearer business relevance structure was added to what was thousands of formal and informal communities, leading to Communities of Practice (CoPs) and Communities of Excellence (CoEs). Today, with over 184 CoPs and 24 CoEs spanning eight functions, and 48,000 employees, this isn't an isolated practice. For example, a CoE has structure that better connects the commercial, defense, and research parts of Boeing with the employees in the community. And conversely, connects those employees to senior leadership in their field. This is done within engineering as well as HR and other functions, just like with BDEs.

The Lighting, Displays, and Optics CoE recently used these connections to bring One Boeing to bear in shaping an SAE standard for testing flat panel electronic displays. This helped ensure that the new standard, when released, would align with our needs, as well as the needs of our customers and suppliers. This CoE has over 80 examples of helping programs across Boeing with solutions to their problems. Additionally, they capture those solutions in their community space, making them available for future reference. Communities also serve to connect senior employees with newer employees, facilitating knowledge transfer naturally, during the course of figuring out solutions and advancing their field of endeavor.

Powerful Partnerships

Where personal networks existed five years ago, today a broad base of our experts is accessible in a simple and cost-effective intranet-based way. We encourage seeking this expert knowledge, adopting it, advancing it, and re-sharing it for others.

The key to making this work is having our knowledge management group partner with powerful functions in the company. Engineering was the main partner for BDEs and Communities. Additionally, IT is needed for search, collaboration and sharing tools, and to integrate this infrastructure. The library is needed for knowledge repositories, vocabulary, and supporting infrastructure. HR is needed for the cultural aspects; intellectual property management is needed for supporting policy, and communications for awareness campaigns. Finally, partnerships with program and project management are essential. Nobody has more power to set expectations around culture on a program or project than the program and project management.

Without a culture of reaching out, reusing, and collaborating, knowledge transfer just won't work.

Figure 3: 95% of effective organizations identify someone that has ultimate responsibility for knowledge transfer

95% Most Effective
54% Least Effective

Leadership Sets the Tone

With culture central to knowledge transfer, who sets the tone? More than half of organizations name managers and directors as ultimately responsible for knowledge transfer.

Many also agree that senior leadership sets the tone, including Dr. Hoffman. "It's imperative to have senior leadership actively engaged in sharing and directing the importance of knowledge," he said. "Everything starts with the leader." Hoffman further believes leaders set the culture. At NASA, leaders go through life-long development that emphasizes the skills of collective collaboration and communication. The organization is focused on getting leaders to learn and work together.

Regardless of the specific title, 95 percent of organizations that are effective at knowledge transfer have identified someone in the organization who is ultimately responsible for it, compared to only 54 percent of organizations that don't do knowledge transfer well (Figure 3).

People Make the Difference

Equally, if perhaps not more important to having a culture that supports knowledge transfer, is the buy-in and commitment of an organization's people. They are the vital link.

"At the end of the day, you're only going to be successful if the people working in the different areas are openly sharing what they see and know," said Dr. Hoffman. "Even when you fail at a project, you'll only learn if the knowledge is actually shared via the people."

Sharing begins not only with decisions about the kind of knowledge to capture—what is mission critical in the present—but also what would have value and contribute to longer-range, sustainable success with projects and programs. Organizations must then identify who has the knowledge, and provide the tools and resources to make the process of knowledge transfer as routine and easy as possible.

Among the different methods for identifying knowledge that needs to be captured, the majority of organizations in our research said that project managers specify the critical knowledge. This gives project managers an opportunity to promote, and even demonstrate, the value of transferring knowledge and how it contributes to an improved project delivery process. With that support and insight, employees are more likely to recognize their roles and participate.

The employee buy-in factor is significant. Just over half (57 percent) of organizations say employees are willing to share their knowledge. But within organizations that are the most effective at knowledge transfer, 90 percent of employees are willing to share. Furthermore, 82 percent of employees in effective organizations adhere to the organization's knowledge transfer processes, compared to only 49 percent within other organizations.

CASE STUDY

ExxonMobil IT Projects Fosters Knowledge Transfer Through People
By Margaret Dolbear, EPMO Manager at ExxonMobil IT Projects

Knowledge transfer within IT Projects at ExxonMobil relies on people, process, and tools. Our goal is to foster a learning-oriented organization and, while each dimension of knowledge transfer is key, people play a critical role.

In IT projects, an extensive network of geographic Project Communities of Practice (PCoPs) fosters knowledge transfer through common interest. The PCoPs range in size, depending on the location and number of projects and practitioners, from about 200 employees in the Houston area to a group of approximately 40 in the UK. The PCoP activities include lunchtime meetings with speakers on a variety of topics. To encourage transfer from all aspects of the organization, the meetings are open to all interested employees.

ExxonMobil's IT project apprentice program, Path2PM, is tied to bringing new people into the project management area. The program starts with a weeklong project fundamentals training course. From there, project managers have the option to do a five-week apprentice program, which combines mentoring with their project work activities. The apprentice program is also supported by a network of more experienced project managers who provide periodic subject matter expert lectures. Subsequent training is provided as project managers gain work experience.

Knowledge transfer processes like these help prepare ExxonMobil IT project managers to make contributions to our business, by positioning them to effectively lead IT projects. By focusing on our number one asset—our people—our knowledge transfer process is contributing to our project success.

STEPS AND ACTIVITIES

There are many ways for an organization to transfer knowledge. Some strategies will work better in one organization than another. Some may not be appropriate for specific types of content. The challenge is uniting the right steps, tools, and activities to transfer knowledge effectively.

With the numerous components, tools, and activities of knowledge transfer it's important to keep in mind that a little goes a long way. "Small wins are vital in transferring knowledge," said Dr. Hoffman. "That is, consider ways to transfer knowledge that doesn't cost dollars or require the organization to come up with new policies. Connect senior leadership or provide communities. Small wins really do lead to great things."

Steps

The steps of a knowledge transfer program—or the life cycle of knowledge transfer—have been defined as the following:

1. Identifying knowledge that is relevant and valuable

2. Capturing and retaining that knowledge

3. Sharing that knowledge with others

4. Applying transferred knowledge

5. Assessing the value or benefits of specific knowledge

Our study reveals that while approximately two-thirds of organizations follow the first three steps—identifying knowledge, capturing and retaining knowledge, and making knowledge available—few follow the last two steps: applying and assessing (Figure 4). And even when organizations follow one of these steps, our study finds only half do it effectively.

Figure 4: Steps of the knowledge transfer life cycle

Identifying knowledge that is relevant and valuable	64%
Capturing and retaining that knowledge	59%
Sharing that knowledge with others	69%
Applying transferred knowledge	39%
Assessing the value or benefits of specific knowledge	27%

■ % of organizations with step in place
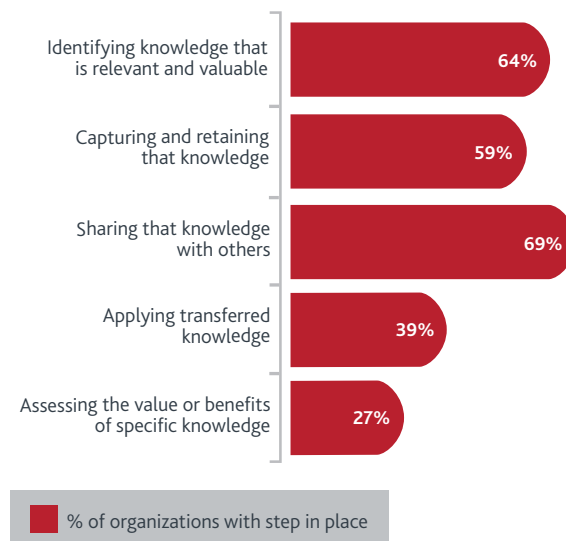
Further exploration into why organizations are not effective with each step reveals two main reasons:

• Resources: people or systems are not available

• Management: not interested in supporting knowledge transfer

The most-effective organizations, by their definition, execute all five steps well. What are they doing that other organizations can learn from? They report a wide range of methods and approaches for identifying, capturing, sharing, applying, assessing—and ultimately transferring—knowledge.

Identifying Relevant Knowledge

Identifying relevant knowledge is essentially mapping its true value. Organizations need to—and should— know what knowledge aligns with their strategy and what they "desire to be skillable," according to Mr. Monney. "The value of knowledge should be very clear," he said. "Not all knowledge is equal or important."

Our *Pulse* study explored how organizations are identifying relevant and valuable knowledge. Not surprisingly, effective organizations outpace their counterparts for identifying relevant and valuable knowledge, as shown in Figure 5. In the majority of these organizations, project managers identify the knowledge that is most important. Other techniques are used less often, but include industry practices/ benchmarks, identification of current gaps in documented content/knowledge, performance statistics, knowledge domains identified based on workforce planning, skill gap analysis, and interviews with experts and other key employees.

Figure 5: Methods organizations use to identify knowledge

Legend:
- Most effective at knowledge transfer
- Least effective at knowledge transfer

Data:
- Project managers specify critical knowledge: 72% / 41%
- Employees self-identify critical knowledge: 62% / 39%
- Industry practices/benchmarks: 61% / 25%
- Identification of current gaps in documented content/knowledge: 61% / 21%
- Performance statistics: 60% / 20%
- Knowledge domains identified based on workforce planning and skills gap analysis: 55% / 13%
- Interviews with experts and other key employees: 54% / 14%
- Senior management identifies knowledge that should be captured: 54% / 32%
- Regulatory compliance: 50% / 31%
- Communities of practice specify critical knowledge: 50% / 14%

Capturing and Retaining Knowledge

Once an organization identifies the knowledge that needs to be collected, it takes disparate approaches to capturing and retaining that knowledge. One widespread guiding principle is to document lessons learned for each project or program. What an organization does with that knowledge once it is captured is equally important and can determine the success or failure of knowledge transfer.

Some of the more common ways to capture knowledge include lessons learned/post-mortem/debriefings, subject matter experts, required documentation for project closure, the company intranet, knowledge transfer workshops, and mentoring (Figure 6). Organizations typically use multiple approaches, which suggest that doing just one or two things is not enough. Other activities that are not as widely used, but are more 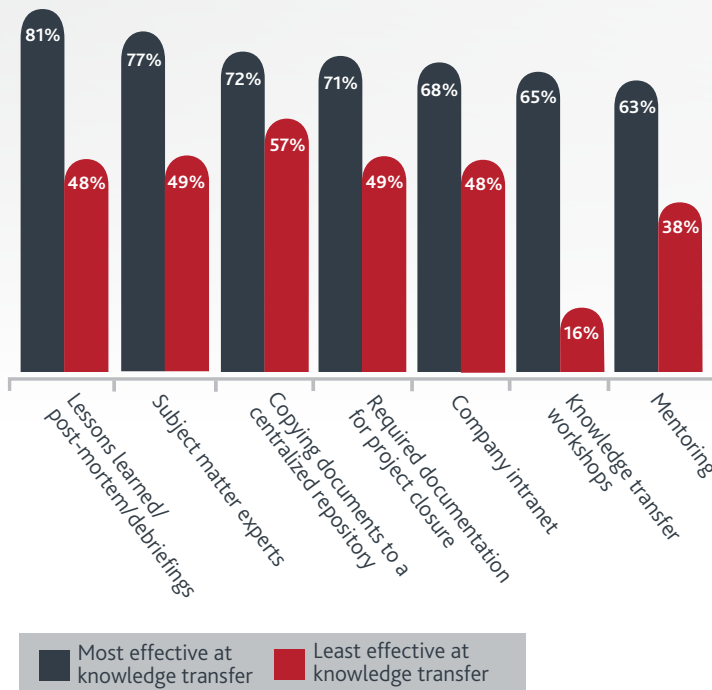unique and innovative include critical incident reviews, case studies, interactive web-based material, database construction, knowledge champions, communities of practice, and dedicated knowledge transfer teams.

Figure 6: Activities and approaches for capturing knowledge

Bar chart data:
- Lessons learned/post-mortem/debriefings: 81% (Most effective), 48% (Least effective)
- Subject matter experts: 77% (Most effective), 49% (Least effective)
- Copying documents to a centralized repository: 72% (Most effective), 57% (Least effective)
- Required documentation for project closure: 71% (Most effective), 49% (Least effective)
- Company intranet: 68% (Most effective), 48% (Least effective)
- Knowledge transfer workshops: 65% (Most effective), 16% (Least effective)
- Mentoring: 63% (Most effective), 38% (Least effective)

Legend: ■ Most effective at knowledge transfer ■ Least effective at knowledge transfer

Data analyzed by Human Systems International (HSI) shows a significant increase in the number of organizations that have effective processes for transferring knowledge and learning from experience over the past 15 years (11 percent to 25 percent). Practices observed include, among others, lessons learned processes, post-implementation reviews, and knowledge-sharing events among communities of practice.[4]

Additionally, four in five organizations agree that identifying and capturing their internal and institutional knowledge is very/extremely important; this importance falls to half for external/social knowledge. HSI data suggest that many organizations do not systematically incorporate external knowledge or research in the area of organizational project management into their own practice.[5]

"As the world is becoming increasingly more connected, there is more knowledge externally available," said Mr. Monney. "Only for a short period of time when a product or service is created is that knowledge within the company. Very soon the knowledge, being outside in their own ecosystem, will be greater. For companies that do not have good processes in place or a holistic view, the problem will magnify. It's important for people to understand the knowledge life cycle process."

Indeed, effective organizations are significantly more likely to recognize the importance of identifying and capturing external/social knowledge (Figure 7).

CASE STUDY

Transferring Lessons at BG Group
By Allison Stewart, Manager, Capital Projects at BG Group

BG Group is an international energy business that is active in more than 20 countries and employs around 5,000 people. We have a multi-billion dollar project portfolio, with projects worldwide in multiple stages of development at any one time. To improve how we manage projects, we must leverage our global knowledge and experience.

In 2012, we initiated efforts to improve the knowledge transfer process for projects, developing a simple online tool that allowed projects to search through a 'library' of lessons gathered from around the company. This tool is the primary method of lessons "capture" at BG Group, which is part of the lessons management process that requires not only capturing, but sharing and implementing lessons on projects.

Implementing lessons can be far more difficult than capturing lessons, and our current focus is on enabling projects to not only think about how lessons from other projects could be applied, but to incorporate the actions from lessons into the planned activities of the project.

For example, lessons about contracts can be integrated into forward-looking contracting strategies; and technical lessons from operations can be integrated into engineering designs. Lessons at BG Group are only learned when a project does something different as a result of a lesson being implemented.

There were many challenges to work through at the beginning of implementing the lessons management process, including issues like how to address confidential lessons and how to balance different views on what should be learned from a lesson. While this created uncertainty in how best to implement the process, the company ultimately decided that the benefits of lessons sharing outweighed the potential risks. No knowledge transfer process will be perfect from the outset, and it will inevitably evolve over time; however, having a process in place is the first step to learning lessons. Our lessons library tool has expanded since its implementation to include other functions and regions, and anyone throughout the company can now contribute and search for lessons.

For other companies thinking about implementing a lessons process, our experience has been that tenacity and a focus on the common objective for lessons are critical to achieving a successful outcome. 〰
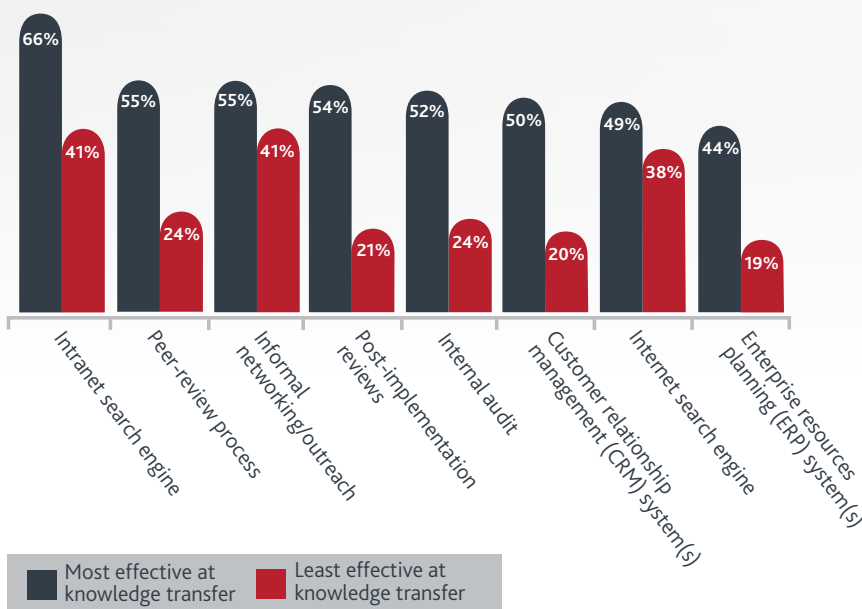
Figure 7: Identifying and capturing external/social knowledge

77% vs **38%**

MOST EFFECTIVE   LEAST EFFECTIVE

Extremely or very important

Sharing Knowledge with Others

Nearly seven in 10 organizations report that they make knowledge available to others. This step has the highest percentage of organizations performing it, but their approach is different, as is the definition of what it means to "make knowledge available." The most common ways knowledge is shared include intranet search engine, peer-review process, informational networking/outreach, and post-implementation reviews (Figure 8).

Figure 8: Methods or resources for sharing relevant knowledge

Method	Most effective at knowledge transfer	Least effective at knowledge transfer
Intranet search engine	66%	41%
Peer-review process	55%	24%
Informal networking/outreach	55%	41%
Post-implementation reviews	54%	21%
Internal audit	52%	24%
Customer relationship management (CRM) system(s)	50%	20%
Internet search engine	49%	38%
Enterprise resources planning (ERP) system(s)	44%	19%

How organizations are sharing and accessing relevant knowledge is a factor in their level of knowledge transfer effectiveness, which likely translates to project success rates. That's because not all methods or resources of sharing knowledge achieve the objectives of knowledge transfer—they don't necessarily engage people in a meaningful way. This is especially true if the only approach is the use of passive knowledge repositories. Organizations that are effective at knowledge transfer create a more interactive process that facilitates direct, person-to-person knowledge transfer.

"We leverage a post-project survey to obtain feedback from key project participants throughout the business," said Lynn Drezak, PMO Director at Prudential Financial. "We compile and analyze results to drive face-to-face follow up meetings that dive deeper on what was reported, discussing what went well, what did not, and how we can do it better. We then take it one step further by archiving key takeaways and making that information available to other project managers for future process development and to inform best practices. The next time someone picks up a similar project or a body of work, they have quick access to the past experience of team colleagues to help optimize process."

Applying Transferred Knowledge

After organizations make knowledge available to others, the application of transferred knowledge follows, which is often a challenging step. Technology is frequently used to facilitate applying knowledge that has been transferred (Figure 9). But it's important to remember that technology is most effective when it's used to aid the people, not to replace them. "It's about using technology to connect, engage, and further people," said Dr. Hoffman.

Figure 9: Technologies used to facilitate applying knowledge

| Most effective at knowledge transfer | Least effective at knowledge transfer |
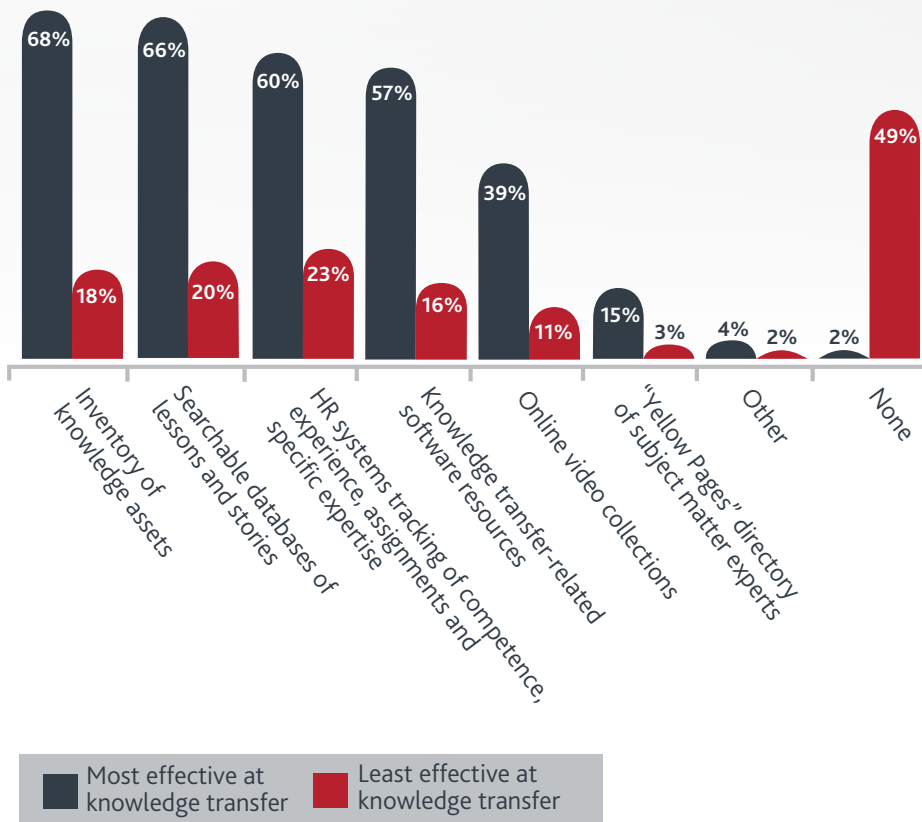
Assessing the Benefits of Knowledge Transfer

The final step of assessing the value or benefits of specific knowledge, in the knowledge transfer life cycle—identify knowledge, capturing and retaining knowledge, sharing knowledge, and applying transferred knowledge—is often the hardest but the one with the biggest payoff.

Assessing the benefits of knowledge is where organizations struggle. In fact, only 27 percent even make the effort to determine the value knowledge transfer delivers. Many find the value difficult to measure, because it's not always tangible or precise. For example, 76 percent of organizations that are effective at knowledge transfer measure project success rates to determine the value of their knowledge programs, whereas other organizations question whether the correlation is direct enough to assess.

Everyone needs a starting point, and our research finds that effective organizations are not only making the effort to assess knowledge transfer success, but they are also surpassing their counterparts in a significant way (Figure 10).

Figure 10: Methods for assessing the value or benefits of knowledge transfer

Legend:
- Most effective at knowledge transfer
- Least effective at knowledge transfer

Method	Most effective	Least effective
Project success rates	76%	16%
Quality of deliverables	76%	13%
Project efficiency (person-hours)	63%	11%
Functional diversity of teams	39%	3%
Interdepartmental communications	38%	4%
Other	2%	1%
Benefits are not measured	3%	46%
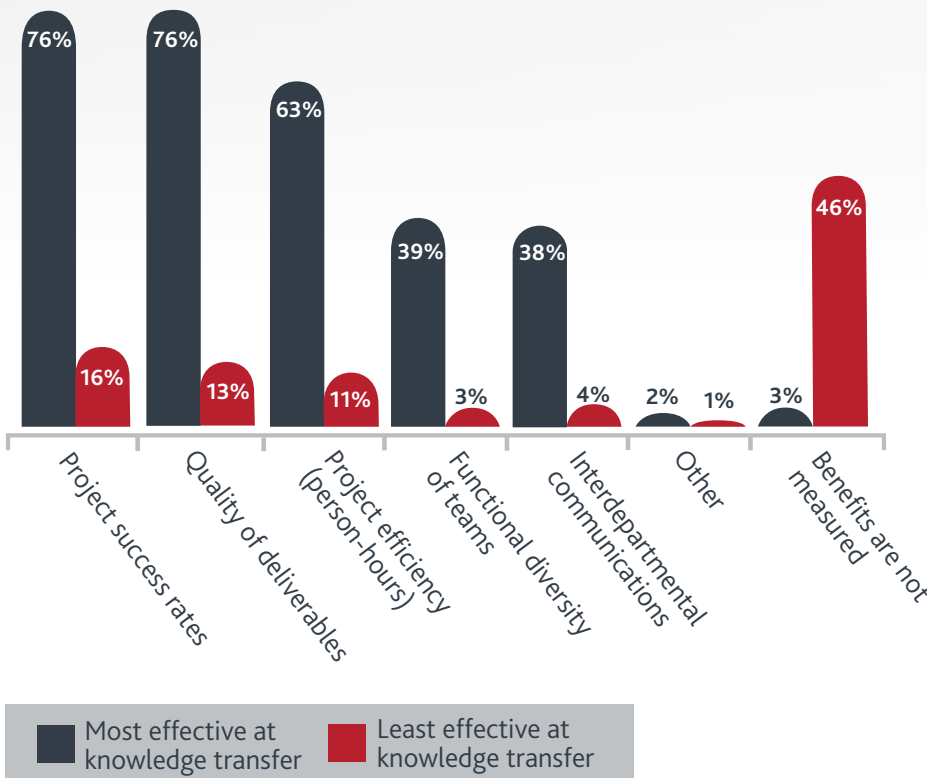
TOPIC TO WATCH

Managing Multiple Generations Of Knowledge

As the population ages and millions begin to retire, companies stand to lose a wealth of accumulated knowledge. Will the younger workers be able to use some of that transferred knowledge, and what do they have to offer in terms of knowledge?

Retiring Workforce

By 2050, the number of people aged 60 years or older will reach 21 percent in the United States, 27 percent in France, 31 percent in Germany, and 36 percent in Japan.[1] When they retire, organizations will lose their knowledge, skills, relationships, and networks—unless they have a formal process to capture and distribute those assets.

According to our *Pulse* findings, the primary reasons organizations have a formal program or process is to transfer knowledge from a mature workforce to new hires; and prevent knowledge loss, erosion or degradation.

Only 16 percent of organizations track employee retirement dates, job roles, tenure, and expert status. Twice as many organizations that are effective at knowledge transfer track this compared to those least effective.

A 2011 study by the Economist Intelligence Unit, found that 26 percent of global business executives felt their organizations were not effective at transferring knowledge from retiring staff to younger staff.[2]

Younger Workers

Understanding differences between the generations and acknowledging that younger workers have knowledge to offer is important in building a successful multigenerational workplace.

The idea of "reverse mentoring" has been talked about since the late 1990s by GE CEO Jack Welch, when he asked GE executives to pair with people below them to learn how to use the Internet. The younger generation brings knowledge and comfort with technology, having been exposed to various digital aspects since birth. This generation is entering the workplace with a better grasp of a key business tool than more senior workers.

"I think that wherever you have two people doing something similar, they will end up teaching each other something—whether it is from young to old, old to young, or from a novice on a topic to a person who has been doing something for a long time," said Martin Stevenson, Chief of IT Procurement at California Department of Water Resources.

That reverse-mentoring model can build morale and strengthen collaboration among all generations. 〰️

References:
1. Center for Strategic and International Studies. *The Global Retirement Crisis: The Threat to World Stability and What to Do About It*. Citigroup and Center for Strategic and International Studies. April 2002.
2. Economist Intelligence Unit (EIU). *A Silver Opportunity? Rising Longevity and Its Implications for Business*. Economist Intelligence Unit and AXA. March 2011.

CONCLUSION

The process of transferring knowledge is an ongoing progression of learning, adjusting, and improving. Success is possible across any organization that follows the approach identified in this report to align culture, leadership, and people.

Our most unique and dynamic employees—those with experience, initiative, creativity, and a commitment to excellence—possess the type of knowledge that sets an organization apart from the competition. When those employees transfer their knowledge to others, project outcomes improve and strategic objectives are met.

While there is a field of knowledge research, not much has been prepared on how it affects project performance. This research begins to fill that gap in understanding the importance of knowledge transfer in supporting project success. Organizations that value knowledge transfer and have developed good practices to support it, report substantially better project outcomes than those that don't value the discipline.

Although specific practices vary among organizations, the most effective organizations report adhering to a five-step method for identifying, capturing, sharing, applying, and assessing knowledge. They know knowledge is power and transferring that knowledge is a powerful aid to successful projects.

REFERENCES

1. Howlett, Robert James. *Innovation Through Knowledge Transfer*. Springer Science & Business Media. July 19, 2010.

2. Davenport, T.H. and Prusak, L. *Working Knowledge: How Organizations Manage What They Know*. Harvard Business School Press. 1998.

3. Ibid.

4. Human Systems International (HSI). HSI Corporate Practice Assessment: part of HSI's 4Q Suite of assessment products. 1999–2014.

5. Human Systems International (HSI). HSI Talent Management Assessment: part of HSI's 4Q Suite of assessment products. 2009–2014. (*HSI is a PMI company that provides organizational assessment and benchmarking services.*)

ABOUT THIS REPORT

PMI's *Pulse of the Profession®* in-depth research on knowledge transfer was conducted in January 2015 among 2,466 project management practitioners around the world who provide project, program, or portfolio management services on a full-time basis within organizations, as contractors or as consultants. Additional in-depth telephone interviews were conducted for the purpose of obtaining deeper insights into opinions and examples of situations.

APPENDIX

Q: Which of these processes or activities, if any, is documentary/archival-type knowledge routinely accumulated in your organization? (Select all that apply)

Category	Percentage
Copying documents to a centralized repository	62%
Required documents for project closure	58%
Knowledge-transfer workshops	35%
Critical incident reviews	33%
Database construction	29%
Interactive web-based material	29%
Case studies	28%
Retrospective summaries/descriptions	22%
Indexed archives	20%
Keyword coding of documents	15%
In-depth interviews with experts	15%
Master classes	10%
Other	1%
None	3%

Q: Which of these other approaches to knowledge accumulation, if any, does your organization use? (Select all that apply)

Category	Percentage
Lessons learned/post-mortem/debriefings	61%
Subject matter experts	57%
Company intranet	55%
Mentoring	48%
Job shadowing	28%
Help desk	28%
Community of practice	26%
Exit interviews with key staff	25%
Knowledge champions	19%
Dedicated knowledge transfer team	13%
Story-telling	12%
YouTube-type videos	9%
Other	1%
None of these	3%

APPENDIX

Q: What are the methods with which your organization identifies knowledge that should be captured? (Select all that apply)

Project managers specify critical knowledge	57%
Employees self-identify critical knowledge	46%
Senior management identifies knowledge that should be captured	43%
Industry practices/benchmarks	42%
Identification of current gaps in documented content/knowledge	36%
Regulatory compliance	36%
Performance statistics	33%
Interviews with experts and other key employees	27%
Knowledge domains identified based on workforce planning and skills gap analysis	26%
Communities of practice specify critical knowledge	24%
Tracking of employee retirement dates, job roles, tenure, expert status, etc.	16%
Outside consultants identify knowledge that should be captured	15%
Social network analyses	8%
Other	1%

Q: Which of these knowledge transfer-related software resources are used in your organization? (Select all that apply)

Q: What technologies (other than software) are in place in your organization to facilitate knowledge transfer? (Select all that apply)

Knowledge transfer-related software	43%
Searchable databases of lessons and stories	43%
Inventory of knowledge assets	39%
HR systems tracking of competence, experience, assignments and specific expertise	38%
Online video collections	19%
"Yellow Pages" directory of subject matter experts	8%
Other	2%
None	22%
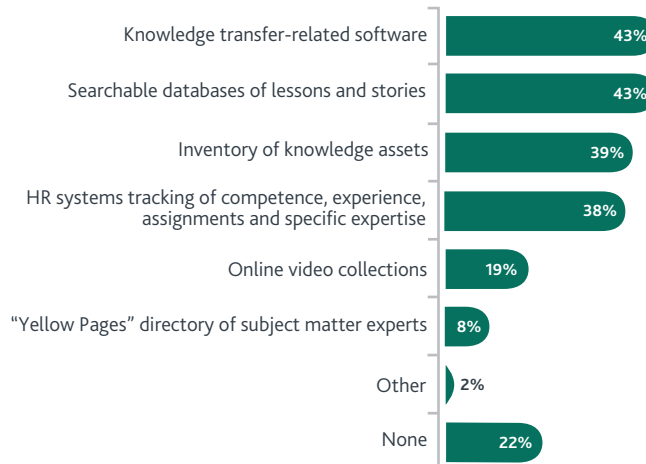
APPENDIX

Q: In your organization, how important is identifying and capturing each of the following types of knowledge? (Select one for each type)

| External/social knowledge | 3% | 10% | 34% | 37% | 15% |
| Internal/institutional knowledge | 1% | 3% | 17% | 48% | 31% |

Not at all important   Not too   Somewhat   Very   Extremely important
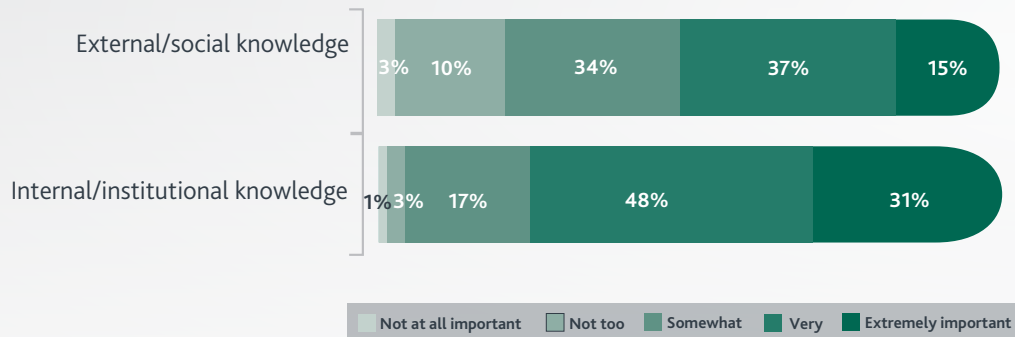
Note: Percentages may not sum to 100% due to rounding.

Q: What are the methods or resources with which people in your organization access relevant knowledge? (Select all that apply)

Intranet search engine	55%
Informal networking/outreach	43%
Internet search engine	43%
Peer-review process	36%
Post-implementation reviews	34%
Internal audit	34%
Customer relationship management (CRM) system(s)	30%
Enterprise resource planning (ERP) system(s)	29%
User help desk/reference librarian	23%
Official inquiries	20%
Topic indexes/directories	18%
Dedicated research staff	12%
Listserv queries	3%
None of these	2%

APPENDIX

Q: How does the PMO support knowledge transfer for the effective management of projects and programs with the organization? (Select one) (Based on organizations that have a PMO)

3%	13%	38%	36%	11%

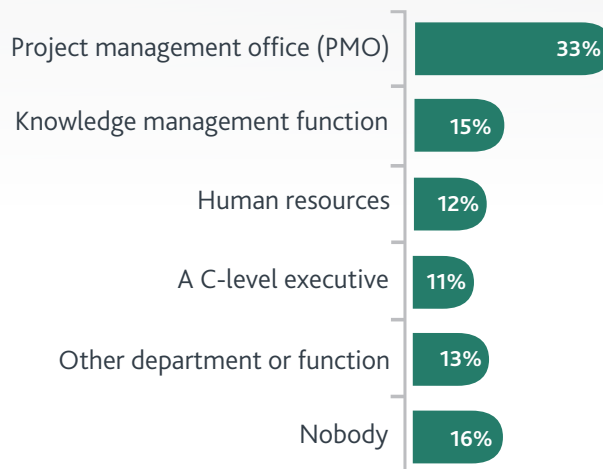Not At All Well   Not Too   Somewhat   Very   Extremely Well
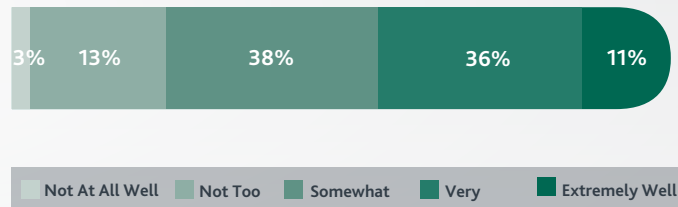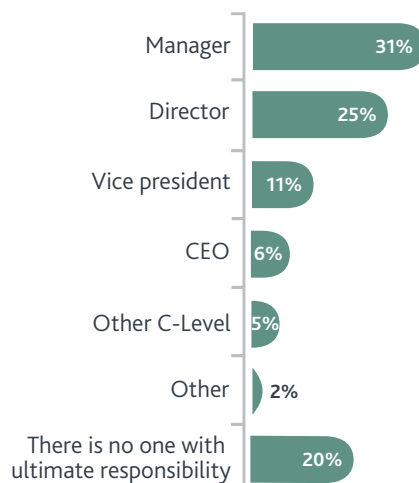
Note: Percentages may not sum to 100% due to rounding.

Q: Which department or function "owns" your organization's knowledge transfer process? (Select one)

Project management office (PMO)	33%
Knowledge management function	15%
Human resources	12%
A C-level executive	11%
Other department or function	13%
Nobody	16%

Note: Percentages may not sum to 100% due to rounding.

Q: What is the title of the person who is ultimately responsible for effective knowledge transfer in your organization? (Select one)

Manager	31%
Director	25%
Vice president	11%
CEO	6%
Other C-Level	5%
Other	2%
There is no one with ultimate responsibility	20%

Note: Percentages may not sum to 100% due to rounding.

APPENDIX

Q: To what extent are employees in your organization willing to share the knowledge they possess? (Select one)

1%	6%	36%	43%	14%

Not at all willing   Not Too   Somewhat   Very   Extremely willing
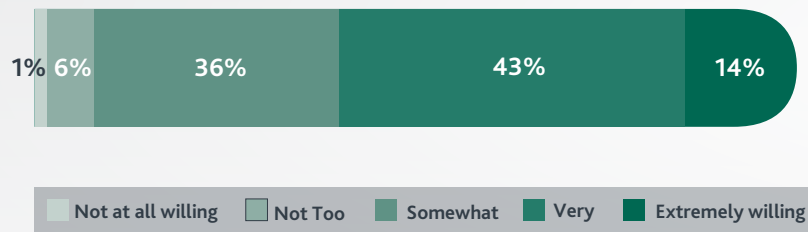
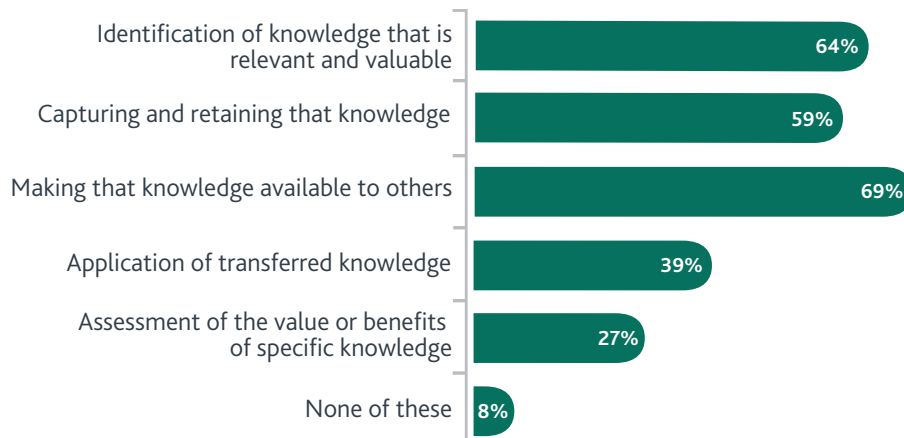Note: Percentages may not sum to 100% due to rounding.

Q: Are employees mandated to adhere to the organization's knowledge transfer policies?

% Yes — 56%

Q: What percentage of employees adhere to the organization's knowledge transfer policies? (Enter percentage)

Mean — 65%

Q: Which of these components of a knowledge transfer program can be found in your organization? (Select all that apply)

Component	%
Identification of knowledge that is relevant and valuable	64%
Capturing and retaining that knowledge	59%
Making that knowledge available to others	69%
Application of transferred knowledge	39%
Assessment of the value or benefits of specific knowledge	27%
None of these	8%

APPENDIX

Q: How effective are your organization's methods for [component]?
(Select one for each)

	Not effective at all	Not too	Somewhat	Very	Extremely effective
Identification of knowledge that is relevant and valuable	0%	8%	39%	43%	10%
Capturing and retaining that knowledge	1%	8%	39%	42%	11%
Making that knowledge available to others	1%	10%	39%	38%	12%
Application of transferred knowledge	1%	7%	39%	42%	11%
Assessment of the value or benefits of specific knowledge	2%	6%	35%	42%	15%

Legend: Not effective at all · Not too · Somewhat · Very · Extremely effective
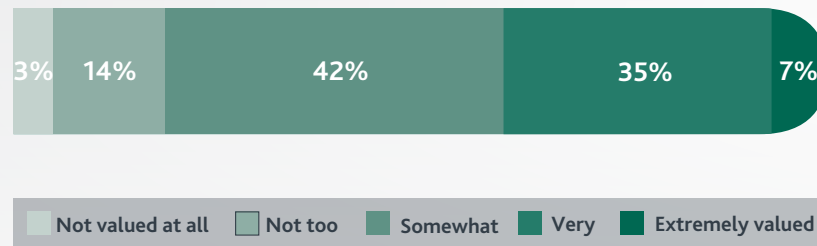
Note: Percentages may not sum to 100% due to rounding.

Q: In your experience, which of these two types of resources or conditions contributes more to effective knowledge transfer? (Select one)

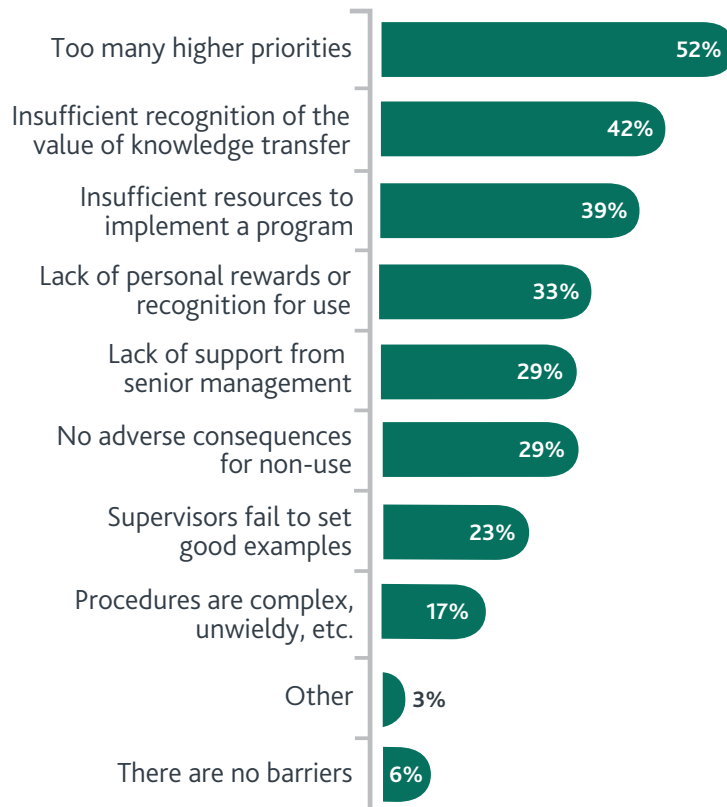|	
An organizational culture that supports communications and accessibility across individuals, teams, and departments	56%
State-of-the-art knowledge storage and retrieval policies and technology	5%
Both about the same	40%
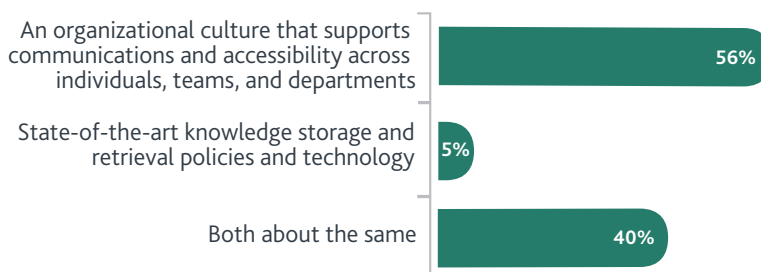
Note: Percentages may not sum to 100% due to rounding.

APPENDIX

Q: How much are the knowledge transfer processes that are in place valued across your organization? (Select one)

3%	14%	42%	35%	7%

Not valued at all   Not too   Somewhat   Very   Extremely valued
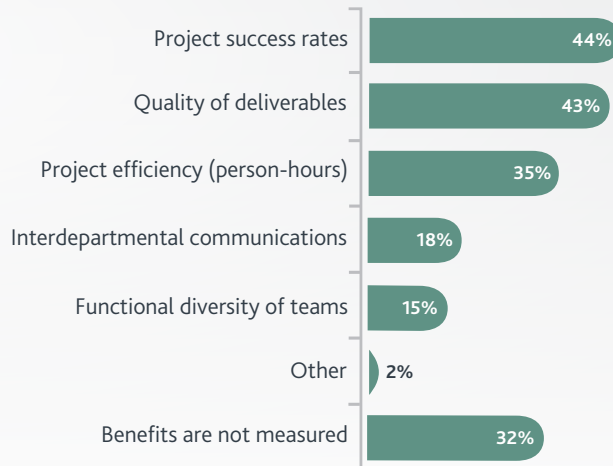
Note: Percentages may not sum to 100% due to rounding.

Q: What are the primary barriers to effective knowledge transfer in your organization? (Select all that apply)

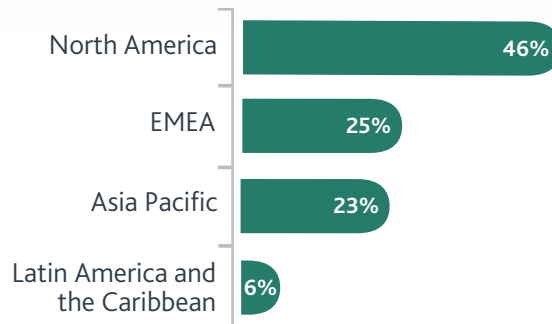| Barrier	Percentage
Too many higher priorities	52%
Insufficient recognition of the value of knowledge transfer	42%
Insufficient resources to implement a program	39%
Lack of personal rewards or recognition for use	33%
Lack of support from senior management	29%
No adverse consequences for non-use	29%
Supervisors fail to set good examples	23%
Procedures are complex, unwieldy, etc.	17%
Other	3%
There are no barriers	6%

APPENDIX

Q: What are the methods with which your organization measures the benefits of its knowledge transfer program or processes? (Select all that apply)
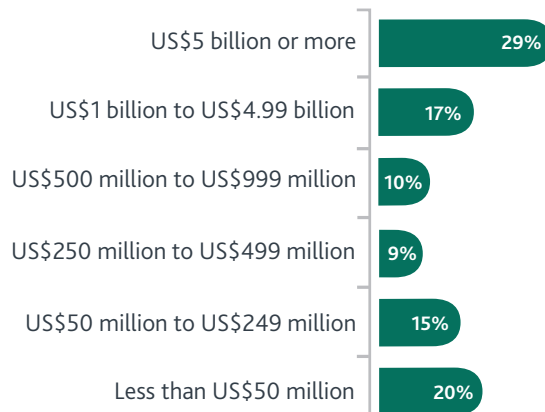
Method	Percentage
Project success rates	44%
Quality of deliverables	43%
Project efficiency (person-hours)	35%
Interdepartmental communications	18%
Functional diversity of teams	15%
Other	2%
Benefits are not measured	32%

Region

Region	Percentage
North America	46%
EMEA	25%
Asia Pacific	23%
Latin America and the Caribbean	6%

Note: Percentages may not sum to 100% due to rounding.

Q: Which of these includes the total annual revenue of your organization (in US$)? (Select one)

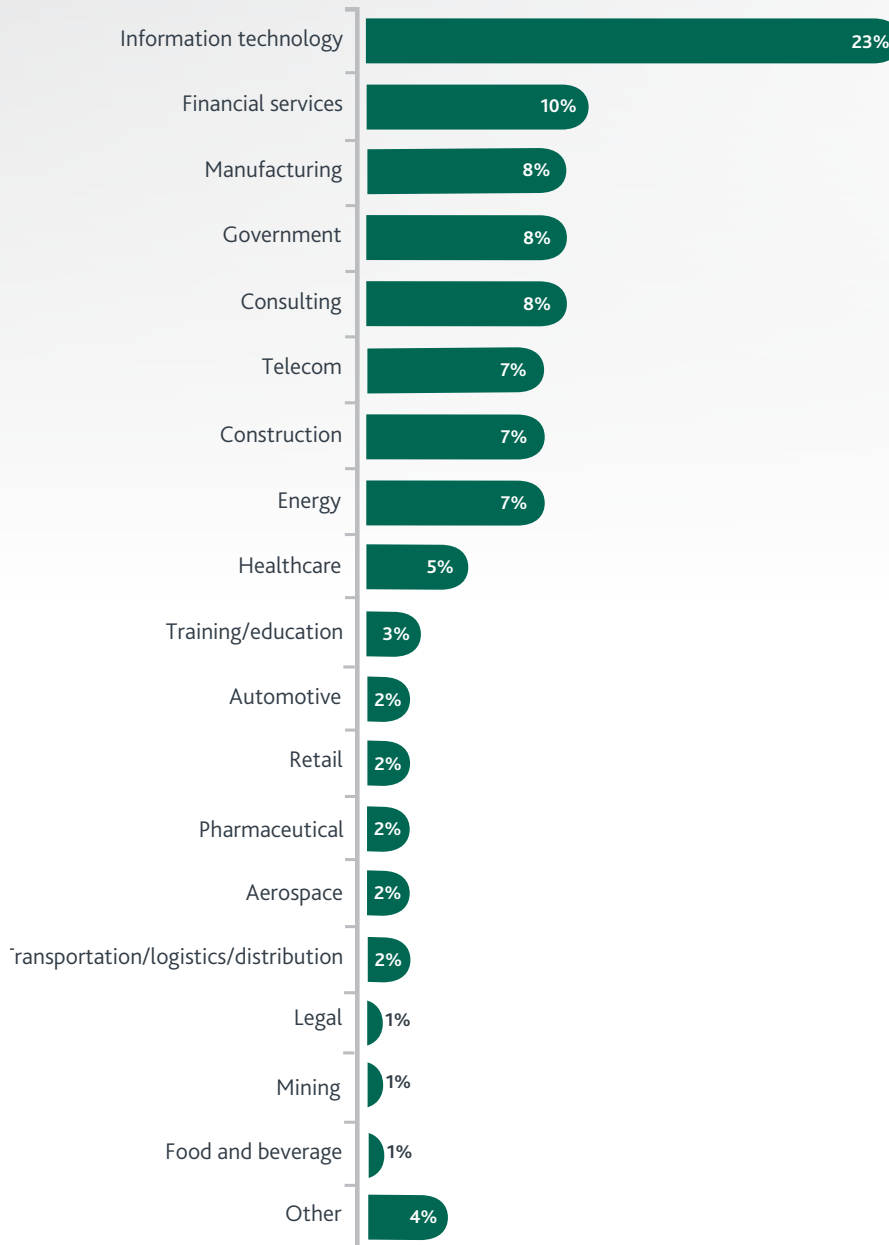| Revenue	Percentage
US$5 billion or more	29%
US$1 billion to US$4.99 billion	17%
US$500 million to US$999 million	10%
US$250 million to US$499 million	9%
US$50 million to US$249 million	15%
Less than US$50 million	20%

Note: Percentages may not sum to 100% due to rounding.

APPENDIX

Q: Please select the term that best describes the primary focus of your organization. (Select one)

Category	Percentage
Information technology	23%
Financial services	10%
Manufacturing	8%
Government	8%
Consulting	8%
Telecom	7%
Construction	7%
Energy	7%
Healthcare	5%
Training/education	3%
Automotive	2%
Retail	2%
Pharmaceutical	2%
Aerospace	2%
Transportation/logistics/distribution	2%
Legal	1%
Mining	1%
Food and beverage	1%
Other	4%

Note: Percentages may not sum to 100% due to rounding.

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