
Knowledge Strategy: Aligning Knowledge Programs to Business Strategy

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How does Business Strategy drive Knowledge Management?

Knowledge management (KM) has received extensive business press over the last two years, and offers substantial promise for long-term gains in competitiveness and organizational effectiveness. Due to both hype and interest, the field has expanded greatly, making it difficult to understand what's KM, what's worthwhile, and understanding how it might benefit organizations and their overall business. Soon after the initial articles and books emerged, technology vendors charged in with a bewildering array of solutions, playing into predispositions to purchase a technology "fix" to short-term problems. Gartner Group (Wilderman, 1999) shows that few clear directions and best practices have emerged in KM *consulting* as well, and many consultants "are simply retooling project management methodologies to include a KM path. This is not sufficient because KM binds technology and culture, and requires KM-specific competencies." Knowledge strategy requires you first understand the business need, as technology is expensive and bad choices hurt productivity and often eliminate second chances for deploying a better program.

We can distinguish *knowledge strategy* as aligning organizational knowledge to a defined business strategy. This approach therefore considers knowledge *management* as processes that optimize creation, sharing, and market leverage of knowledge assets and core capabilities. Many KM approaches focus on collaborative groupware tools for knowledge sharing and teamwork, and knowledge portals to organize vast amounts of information and filter the right content and access to corporate knowledge. However, technology-focused KM solutions have been exposed as offering little more than the ongoing implementation of groupware and document management. As revealed by research such as Orlikowski (1994) Star and Bowker (1994), and Nardi and O'Day (1999), technology programs that ignore the need for significant cultural change result in systems that merely reinforce the status quo. True knowledge sharing must start with the organization, with systems reflecting the new organizational requirements.

Though the phrases seem similar, there is an explicit and important differentiation that must be understood by all stakeholders, as indicated by the following "litmus test." "Does the program explicitly support business strategy at an organizational level?"

- If so, you're developing a *Knowledge Strategy process*. Knowledge strategy focuses on knowledge resource development to support business strategy.
- If not, you are developing a *Knowledge Management process*. This might include focusing on *current* knowledge gaps as opposed to future requirements, local process improvement and not organizational, or departmental resources and not the entire constituency of stakeholders.

The literature and practice both reveal two focuses for knowledge management that enable effective organizational leverage of knowledge resources. One focus is strategic, the other is community-based. Although these different directions both promise significant value for product innovation, revenue growth, and operational effectiveness, they do so following very different approaches. Very simply, knowledge strategy shows value through essentially a top-down approach, while knowledge communities require enabling bottom-up approaches. Paradoxically, very few knowledge management initiatives are championed from the very top or from the communities themselves. Instead, their value is often understood from the middle levels of the enterprise, identified by some KM theorists as a "Middle-Up-Down" approach.

However, knowledge *strategy* starts with the notion that an organization's *business* strategy should guide their planning for knowledge management. Northeastern University's Michael Zack answers the question of "how should an organization determine which efforts are appropriate, or which knowledge should be managed and developed?" The

development of the knowledge strategy approach draws from this, suggesting “the most important context for guiding knowledge management is the firm’s strategy,” and this link, “while often talked about, has been widely ignored in practice.” On the surface, such a link may seem obvious to business thinkers. However knowledge management remains complex, as it addresses strategic, organizational, cultural, and technology issues simultaneously. Understanding the links between business strategy and knowledge is by no means direct. Consider the complexity of strategy, with its issues of marketplace uncertainty, market share, profit growth, customer retention, alliancing, and competition. Then consider knowledge issues, such as individual and community knowledge resources, organizational learning, unique and embedded routines and practices, intellectual property and intangible capital, and incentives and benefits for knowledge sharing. How should decision makers link their investments in knowledge and organizational change with strategic goals made by executives in a completely dissociated context?

The Dynamics of Knowledge Strategy

Knowledge strategy designs an organization’s future based on using knowledge effectively. Many situations call for this approach, but certainly most when facing customer and marketplace uncertainty, increasing product complexity, shifts in competitors and technology, and radical product lifecycles. For firms *forced* to innovate, diversify product families, or improve time-to-market cycles, an integrated knowledge strategy coordinates decisions and rallies change. Many traditional firms understand themselves now as knowledge-intensive – knowledge is not just for the high-tech, but the lifeblood of competition and cooperation. With the easy entry and investment of new Internet competitors, established firms now face intense pressure to address their own knowledge strategy or face share erosion. Unique knowledge processes (including innovation, design, leveraging research) and brand value (trust, customer loyalty, and identification) are among the only non-replicable assets in a growing number of business sectors.

Although Gartner Group shows knowledge management as typically focused on common areas of process improvement, productivity, and cost reduction, the areas of *innovation and market leverage* have much higher returns over the long run. According to Zack (1999), product and service *innovation* leads the list, followed by production and organizational improvements. Product innovation keeps the top-line alive, while internal process innovations erase costs against the bottom-line. These two broad strategic directions foster interactions between business goals and knowledge conductivity, dynamics not always coordinated or aligned effectively. If we look at a typical model of business strategy, three broad directions are commonly identified: Market growth or value, Operational effectiveness, and Customer intimacy. Market growth or overall value through services drives product innovation; Effectiveness drives internal knowledge sharing and management, to leverage use of knowledge to avoid costly reinvention and churn. And customer intimacy drives changes across the organization, requiring innovating *for* customers, leveraging customer knowledge, and driving revenues through customer retention.

Consider the interactions and possible decisions manifested by the directions of both business and knowledge strategy. If business strategy is to be used as guidance for knowledge initiatives, then which strategic goals are best supported by knowledge? What knowledge resources are best driven by business goals? An illustration of these relationships shows in Figure 1, where both strategies are mapped to these three strategic areas.

Knowledge Strategy	Product Innovation Knowledge Creation Intellectual Capital	Process Innovation Knowledge Sharing Developing Learning Culture	Product Innovation Customer Knowledge Integration Branding Knowledge
	Product Sales Time to Market Distribution Networks Pricing Strategy Patent & Product Leverage	Process streamlining Supply chain mgt Accounting and Financing	Customer retention Customer product needs Revenue growth Partnering / Alliancing
Business Strategy	Growth and Value	Operational Effectiveness	Customer Intimacy

Figure 1. Business and knowledge strategy drivers.

As indicated in Figure 1, the drivers for the two strategic directions differ. Some of the linkages between business and knowledge may not seem clear from this analysis. Furthermore, when substantial investment must be considered, and new programs require time and learning of the organization, how do decision makers know which “alignments” to make first? Are there dependencies between programs in knowledge strategy, where one activity generates or leverages another?

Also notice, especially in knowledge strategy, a nearly total avoidance of information technology. Knowledge strategy follows business strategy, and technology follows both strategies. Technology investments might be planned as part of strategy, but are processes that follow the cultural and practice changes proposed to the organizations.

Resource view of strategy and knowledge

Stepping back into theory briefly, let's look at the foundations of these proposed approaches to strategy. Before the rise of knowledge management, schools of strategic planning adapted Porter's (1980) Five Forces model of strategy, based on a model of strategic positioning within an entire industry. Firms were considered to engage strategy based on five positions within their markets, based substantially on a stable field of competition. Teece (1984) was among the early critics of this view, holding to a model of strategy based on the economic theory of value based on inherent resources of the firm, of which knowledge can be considered among the most significant. Teece as well as Spender (1994), Nelson and Winter (1982), Kogut and Zander (1996), Grant (1996), and Zack (1999) lead the business research literature in resource-based strategy, deriving variations of theories stemming from the work of Penrose (1959) and the notion of Penrose rents.

Essentially Edith Penrose's notion stated that a firm's only competitive advantage rests in its superior adaptation to business conditions by effectively coordinating its internal resources. Most of these resources were considered intangibles, such as competencies, employee knowledge, unique organizational routines, and ability to learn. Penrose rents (rents being the power to extract revenues from a market) were based on the notion that a firm's unique knowledge-based capabilities were economically unfeasible to replicate, so that growth was based on coordination of resources to develop and maintain advantages based on superior use of knowledge and competency.

Although it took nearly 30 years for Penrose's theory to establish itself, it stands as the basis for resource strategy theories that followed. Among economic theories of the firm, not only has Penrose stood the test of time, but has gained validity. The dominant firms in every sector of business show a market value far exceeding that of booked assets, which in simplest terms is considered a measure of added value from internal intangible resources.

Spender and Nelson and Winter (1982) proposed that the firm's strategic knowledge capabilities are further developed in collective practice, “embedded in the form of routines and operating procedures, allowed for the possibility that the collective had knowledge which is unknown to any of its members.” Spender identifies how both explicit and implicit knowledge show up socially and individually, focusing on the competitive value of social collective knowledge. Collective knowledge in organizational routines can be viewed as emerging from coordination among resources, a highly context-specific property of the firm's practices. The more knowledge is contextually embedded in practice, the less it can be appropriated by competitors or even individuals that leave the firm.

For example, Microsoft has developed unique practices in its forms of software engineering that have been described and copied by competitors. However, the coordination of resources between product lines, staff roles, and deep knowledge of product code, the operating system code, and their internal processes cannot be replicated by other firms. To the extent that their product lines remain dominant in the marketplace, Microsoft's knowledge-based collective operations establish a powerful beachhead against competition. Both efficient and innovative, their processes keep their product lines advanced and ahead of competitors to a great extent.

However, embedded knowledge in collective practice shows a downside in the form of ultra-stability. Firms with less than dominant positions are not served by establishing processes that cannot be effectively changed. For one, new knowledge-based practices may enable a competitive advantage, and until this edge is found, the firm should continue to innovate its practices. It doesn't help to embed outdated or ineffective processes, regardless of their basis in unique knowledge.

Zack (1999) identified core, advanced, and innovative knowledge as the three levels of knowledge development related to building knowledge strategy. Core knowledge is commonly shared by all members of an industry, and offers no competitive value. It is the “price to play,” such as web-based companies' understanding of Internet technology. Advanced knowledge can be differentiated, and therefore provides some competitive advantage. With the same

advanced knowledge as competitors, a firm can position and coordinate that knowledge in different ways, creating value for its customers. Advanced and usable user interfaces in web products offer an advantage based on advanced knowledge, but still remains knowledge open to the overall market. Innovative knowledge allows a firm to lead its industry by significantly differentiating from its competitors. Firms such as Cisco Systems and Qualcomm developed early core technologies in their product areas, established de facto standards as patented, licensed intellectual property, and created internal processes for building on these standards. Until a significant disruption occurs in TCP/IP networking and CDMA wireless technologies, these firms will remain dominant in their areas.

However, even advanced knowledge ages, and becomes less viable in its given context. In technology industries, innovative knowledge must be refreshed on an almost constant basis. Embedding knowledge in organizational routines is made more challenging when the critical knowledge changes rapidly. Both knowledge content and processes must change in relation to each other, a coordination of resources requiring support from a knowledge-sharing culture and collaborative technology. These capabilities remain in a dynamic state almost constantly, a complex challenge for organizations, individuals, and work practices. Teece, Pisano, and Schuen (1997) extended the notion of knowledge resources into *dynamic capabilities*, the proposition that dynamic and adaptive knowledge remains the most competitive knowledge. According to Teece (1998), "this is the ability to sense and then to seize new opportunities, and to reconfigure and protect knowledge assets, competencies, and complementary assets and technologies to achieve sustainable competitive advantage." Dynamic capabilities map to dynamic strategy, an approach to business strategy that allows responsive adaptation to market change. Without developing dynamic capabilities as part of an organizational strategy, a dynamic strategy approach would be likely to fail in most firms. The ability to shift the organization when market dynamics change appears highly dependent on the firm's ability to dynamically adapt its knowledge to emerging situations, and to learn collectively.

Competitive advantage of dynamic organizational learning

If dynamic capabilities give the firm its ability to compete in changing markets, how do we develop dynamic capabilities? Some factors show as rapid learning, making mistakes sooner than your competition, adapting to the marketplace direction, and revising plans based on market feedback. Therefore, *dynamic learning* may fundamentally be the most critical factor to knowledge strategy.

How well do we learn as organizations, and how does our learning facilitate competitiveness and contribute to business strategy? These are key questions of our knowledge strategy, addressing our ability to transform as required to meet novel or emerging business opportunities and challenges. According to Zack (1999), "the ability of an organization to learn, accumulate knowledge from its experiences, and reapply that knowledge is itself a skill or competence that - beyond the core competencies directly related to delivering its product or service - may provide strategic advantage."

An organization's learning cycle can be assessed against two dimensions of strategy and competition. With respect to *strategy*, we evaluate the speed and depth at which people in the organization develop capabilities required by business strategy. To meet or exceed desired goals, organizations must bring new or improved capabilities to market as strategy dictates, or as customers require. With respect to *competitive learning rate*, firms must consider whether they can develop depth from learning required capabilities and technologies faster than their competition.

These two learning motivators enable a third factor, the capability for *breakthrough innovation*. Faster learning plus increased depth and breadth of knowledge sharing significantly increases the types and opportunities for innovation of services and technologies. For technology and professional services organizations, these tools are essential to creating high value and innovative competencies and services.

Teece, Pisano, and Schuen (1997) also discussed learning in organizations as the dynamic capability offering the most significant competitive advantage of all organizational processes.

"Learning is a process by which repetition and experimentation enable tasks to be performed better and quicker. It also enables new production opportunities to be identified. ... Learning involves organizational as well as individual skills. While individual skills are of relevance, their value depends upon their employment in particular organizational settings. Learning processes are intrinsically social and collective, and occur not only through the imitation and emulation of individuals, ... but also because of joint contributions to the understanding of complex problems."

A rapid learning rate brings increasing returns, as faster learning explores the ground of new technologies earlier, makes and recovers from mistakes earlier, and therefore gains expertise earlier in the market cycle. Rapid learning organizations will secure first-in customers, and retain the ability to hold customers over a longer period. Competitive advantage derives from the rapid integration of core and advanced knowledge with internal processes, and from accruing insights faster than competitors.

Much of what we learn in developing competency is also available to competitors. Many sources for competitive learning - research, training, technologies, best practices, and personal knowledge – can be bought, shared, and assimilated throughout an industry. The key for competitiveness is integrating learning faster, and thereby understanding its value and learning from making mistakes sooner.

Developing a Knowledge Strategy

Given the competitive advantage of developing a firm's knowledge resources, how should strategy be developed? What have research and practice shown as best practices for creating a knowledge strategy?

Zack (1999) identified an approach for developing knowledge strategy based on research and practice. His "14 steps" offer a comprehensive approach to analyzing strategic gaps in the organization and aligning knowledge management to business strategy. Zack's model reveals a flow of basic activities, and does not define techniques for strategic analysis and development. The steps each ask a fundamental question, such as "How do you want to play the game?" and "What's your external knowledge gap?"

Following this model allows application of well-known methods of strategy development, such as SWOT (strengths-weaknesses-opportunities-threats) analysis and scenario planning. We discuss Origin's experience with this process, and describe some of our learning while adapting the SWOT and scenario approaches to knowledge strategy.

The first activity in knowledge strategy is understanding the current business strategy, then affirming or progressing that strategy as the basis for organizational analyses. By using identical processes for current strategy as in knowledge strategy, we were able to distinguish the differences between business goals and knowledge-based strategy. To understand the organization's gaps with internal strategy and with external competitors, an assessment and gap analysis process was undertaken. When moving from organizational resource assessment to knowledge strategy, the gaps identified specific areas requiring attention and improvement in the organization. Since these gaps were already based on strategy, they could all be considered critical – nonetheless, prioritization of the gaps enabled focus on the most important knowledge gaps.

The knowledge strategy process used aligned business strategy to four dimensions of knowledge resources, organizational practices, culture, and collaborative technology. Collaborative technology (an Intranet knowledge portal) was planned and deployed, but only after determining the overall value of knowledge assets to the business, so that each investment makes a defined contribution. Otherwise, knowledge management tools applied to tactical issues or the wrong problem could suboptimize an entire business process, or waste effort solving misvalued problems.

Knowledge Strategy Methods

The traditional SWOT framework has been recognized by Zack and others as a place to start in developing knowledge strategy. In our internal research, a knowledge-based SWOT analysis was conducted in an early phase of knowledge strategy work. Our research also conducted scenario workshops based on a Team Design approach (Jones, 1998) to develop an alternative framework for strategy, and provide the depth of detail offered by scenario analysis. Using these two methods for both business strategy and knowledge strategy development enabled comparison of findings and relevancy between the two approaches.

The knowledge-based SWOT analysis built upon the two dimensions of Business and Knowledge, adding the value of identifying different strategic strengths and weaknesses based on knowledge development as well as business needs. The analysis also considered the effects of external contingency (conditions of the business and competitive environment) as well as internal factors (organizational, management, overall business strategy). This approach enabled a rapid analysis of the relationships between business goals and knowledge management. The knowledge related SWOT issues provided a significant indication of *current* knowledge management issues within the organization (KM issues are not necessarily related to the business strategy of the enterprise, but often with the current situation). Resulting from these analyses, KM issues were surfaced, allowing the team to address some of

them immediately. The specific SWOT analyses are not shown in this paper, as they continue to hold strategic value to the organization.

We found that a large number of weaknesses were easily identified by the team. The business SWOT analysis was quite balanced, with the team identifying about 20 Strengths and Weaknesses, and 16 each of Opportunities and Threats. However, the Knowledge SWOT was very lopsided. Knowledge Strengths numbered only 7, with Weaknesses counting 20. The Opportunities were more balanced with Threats, with each at about 12. The strategy team easily counted a large number of knowledge weaknesses, demonstrating an awareness of critical knowledge requirements. We concluded our organizational vocabulary for identifying knowledge strengths may not have been well developed at that time, so the strengths may have been underspecified. The ease in identifying knowledge weaknesses, however, led to consideration the SWOT approach was useful in assessing organizational needs in developing knowledge strategy.

SWOT evaluation of the knowledge issues and weaknesses showed some typical knowledge-related business problems. We noted how our current culture did not effectively reward knowledge sharing, and few realistic incentives were made to encourage sharing, creation, and reuse of key knowledge resources. Also, we found managers had difficulty determining the skill sets and the desired learning programs for staff. An independent effort was initiated to resolve these issues as a knowledge management solutions.

The SWOT analysis established a foundation from which to draw priorities and develop further strategy. The Origin research continued with scenario planning and other methods, extending the strategy process using a series of half-day workshops with cross-functional participation from across the consulting organization. The crucial outcome, regardless of method, was in developing a consensus model for organizational alignment and validation, as well as creating a vision for future action.

Aligning Resources to Strategy

A strategy analysis based on SWOT or scenario methods is only a first step. As with any broad-based organizational initiative, complexity grows when identifying priorities for intervention and carrying out actual projects. To manage complexity and resources on the research and analysis efforts, we adopted a four-phased approach for developing the knowledge strategy and moving projects forward.

Envisioning Business Strategy identified and developed a business strategy, and linked initial knowledge needs to the strategy. This phase used strategy workshops, SWOT analyses, and scenario planning sessions to develop the initial strategy.

Knowledge Valuation analyzed the current state of the organization, diagnosing strategic gaps, evaluating the learning rate, and assessed cultural issues. This phase delivered an organizational assessment and gap analysis.

Creating Knowledge Strategy analyzed impacts and developed strategies for addressing gaps and redesigning processes. Strategic gaps were prioritized, and action plan developed, and knowledge resources and practices were aligned to the strategy.

Knowledge Pathbuilding established plans and designs for building a knowledge architecture to support full organizational participation. This phase coordinated plans, people, and information resources to integrate the knowledge strategy into organizations, systems, product lines, and business processes.

Findings from these other phases show the initial knowledge SWOT and scenario analyses remained an effective guide for alignment throughout the research process and for organizational action.

The purpose of Phase 2, *Knowledge Valuation*, was to understand the current state-of-knowledge access and awareness in the organization. This phase focused on organizational knowledge resources, infrastructure, practices, and culture. We analyzed the current status of staff capability, shared organizational knowledge, cultural issues, and the ability to leverage knowledge. To map out the state of knowledge, 12 in-depth management interviews were conducted, followed by a web-based survey of all regional members of the focus organization.

A gap analysis was conducted on the results of this set of data, comparing the resulting qualitative data to the business strategy, and making assessments against competition. The baseline model from Phase 1, developed from

SWOT and embodied in scenarios, revealed several key areas of strategy in professional services addressed by the analysis, as follows.

Services and Technologies shift – need flexible mix of consulting approaches.

e-Business trends continue – must build the brand in this area.

Knowledge management – must prepare for both organizational services and technology.

Enterprise integration – beyond warehousing, to information portals across the enterprise.

More national overall – wider range of consulting opportunities.

Geographical shifts: integrating more international practices.

This strategy overview summarizes some of the areas Phase 2 evaluated to derive gaps and priorities. As external and internal conditions change, the strategic framework must be adaptable to support planning and decisions. Data analysis and gap analysis were organized into the four knowledge management dimensions recognized in the knowledge strategy approach:

Infrastructure and Collaborative Technology

This affects the ability to share knowledge and communicate, and supports the participation of managers and consultants in the organization. The findings showed a mix of available access within a common infrastructure, pointing to a possible need to deploy knowledge portal technology to enable universal knowledge access.

Knowledge Resources

Knowledge resources involves competencies, capabilities, and structured, and unstructured information. Extending the definition, it also covers personal knowledge, unique skills, customer relationships, intellectual property, and other forms of intellectual capital. The findings showed Origin with a stable base of core competencies understood in common by customers and consultants.

Organizational Practices

Organizational practices include work routines, standard service delivery processes, and other organizational functions necessary to manage professional services. If knowledge resources can be thought of as content, organizational practices can be seen as processes that manage and use that content. Communications and other core practices were found well-developed, with opportunities for stronger cross-functional integration across service lines and other broad-based practices.

Culture and Learning

Culture and learning evaluated the organizational *environment* as opposed to specific processes. This analysis revealed excellent support for training and skill development, and support for a significant diversity of competencies. The organizational climate was positive in both survey and interview responses, supporting an unusually low turnover rate as a professional services organization.

Phase Three, *Creating Knowledge Strategy*, built upon these findings and developed a complete knowledge strategy for use in action and project planning. The knowledge strategy was based on the initial work described in Phase 1- since a common presentation model had been adopted and socialized in Phase 1, this model was revised with the new findings and priorities, and this model was used as the roadmap for knowledge strategy.

Finally, Phase Four, *Knowledge Pathbuilding*, remains in progress, and will continue to evolve as programs and projects roll out based on the planning in this phase. New practices for knowledge sharing are being integrated within the design for a knowledge portal system that will connect up to 2000 consultants and managers in the first year. A revising of focus on technical and consulting competencies remains ongoing, throughout the global organization. The strategic focus of the larger global practices will also affect the regional practices, but allowing for regional strengths in serving specific large clients to remain focused. Organizational practices supporting these changes have been planned, and as always noted in research and practice, become a long term effort requiring organizational innovations to be guided by core values and the local cultures within the company.

Conclusions

Basing your KM approach on organizational strategy affords the opportunity to target high priority and highest value payoff areas. It starts by focusing on processes on which future development and knowledge assets most depend, and evolves to scale these priorities. This focus ensures when KM systems are “finally” deployed, *the business strategy is reinforced just through daily usage*, a benefit never realized with most IT. But the key is to start in the first place – no “silver bullet” technologies on the horizon can solve the human and process issues faced and creatively solved by organizational knowledge development.

The action research project discussed in this paper streamlined many practices recommended in the research literature, and some planned practices were never developed within the scope of the project. For example, the Knowledge Valuation phase did not cover *all* of Zack’s analyses recommended for current competitive knowledge evaluation. The research found specific difficulty, in both time and processes, effectively analyzing:

- Competitor knowledge advantages
- Learning cycles and rate of dynamic learning
- Competitor learning cycles

In investigating these areas, we learned the state-of-the-art remains unpublished. Where do we turn to understand methods for evaluating the dynamic learning capabilities of competitors in professional services? We also were unable to find current accepted or effective processes for evaluating *our* learning rate, let alone those of competitors. We developed a theoretical model for evaluating learning cycles, but this was not fully researched and populated with data. Also, given our time limitations, we did not explore competitors as thoroughly as we have for client-based knowledge strategy projects.

Overall, the area of knowledge strategy remains largely driven by practice. Each knowledge strategy project focuses on unique, differing organizations within unique business environments. Every organizational culture is unique, and management styles differ within large firms with strategies that span multiple divisions. The level of strategic intervention – enterprise, divisional, or departmental – drives the knowledge strategy development. Each organizational level demands somewhat different methods, differing rates of deployment, and differing levels of priority and impact. For example, a departmental knowledge strategy will be greatly dependent on overall business strategy, and has almost no leeway in driving strategic recommendations across the organization. An enterprise level initiative, on the other hand, may require much longer timeframes for evaluation and deployment, requiring multiple revisions of business strategy during the based-based evaluations.

Finally, knowledge strategies differ by industry. While our reported approach focused on professional services, other engagements have focused on Internet startup firms, large chemical firms, consumer products, and petrochemical firms. A flexible knowledge strategy model must be backed with considerable industry knowledge to develop appropriate methods and conduct the evaluations and strategic design sessions necessary to prepare the strategy and action plans.

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