Knowledge Extraction—Amplifying the Value of Knowledge Management Post-print

Authors: Wu Qinghai

Date: 2023-10-08T00:00:00+00:00

Abstract

[Purpose/Significance] Knowledge extraction is an indispensable and crucial lever in the implementation process of knowledge management. Through knowledge extraction, both individuals and organizations can avoid detours and effectively amplify the value of knowledge management. [Method/Process] Based on a summary of knowledge extraction practices, this paper distills four typical implementation models for knowledge extraction and a "Three Forces" model for results promotion. Enterprise knowledge management promoters can design and select suitable implementation plans tailored to their organizational characteristics. [Result/Conclusion] Knowledge extraction is a fundamental skill essential for knowledge workers to advance to senior experts, and it also serves as a powerful support for organizations to elevate their knowledge management to the next level, warranting vigorous promotion.

Full Text

Preamble

ChinaXiv Collaborative Journal [Special Issue on Knowledge Management and Knowledge Services in the New Technology Environment]

Knowledge Extraction: Amplifying the Value of Knowledge Management

Pioneers Alliance Technology (Beijing) Co., Ltd., Beijing 100096

Abstract

[Purpose/Significance] Knowledge extraction is an indispensable and critical component in the implementation of knowledge management. Through knowledge extraction, both individuals and organizations can avoid detours and effectively amplify the value of knowledge management. **[Method/Process]** Based

on practical experience in knowledge extraction, this paper distills four typical implementation modes and a "Three Forces" model for outcome promotion. Knowledge management practitioners in enterprises can design tailored solutions according to their organization's characteristics. [**Result/Conclusion**] Knowledge extraction is a fundamental skill necessary for knowledge workers to advance to senior experts, and it serves as powerful support for organizations to elevate their knowledge management to the next level, making it worthy of vigorous promotion.

Keywords: knowledge extraction; experience extraction; knowledge management; extraction mode; outcome promotion; value amplification

1 Introduction

Typically, when a cohort of university graduates joins a company, their performance diverges significantly after a few years. Similarly, business backbone employees with identical qualifications may find themselves at vastly different points after a decade—some remain stagnant while others have grown into industry leaders, top experts, or influential IP personalities (originally an abbreviation for Intellectual Property, later evolving into a cross-boundary business model for content in the new media era, referring to professionals at the top of their fields who can capture major traffic and possess advantages in content monetization). How does this gap gradually emerge and widen? Numerous scholars and masters have discovered through extensive research some universal patterns: the ability to absorb new knowledge, conduct after-action reviews, extract experience, and put insights into practice constitutes the core reason for the enormous differences between individuals and organizations.

In today's world, "explosive" disruptive innovation is emerging across all domains. More Chinese enterprises are venturing into uncharted territory—pursued by competitors ahead but with no predecessors to follow. Since there is no mature experience to directly "borrow," they must "cross the river by feeling the stones." Without external references, we must learn from ourselves through reflection on our past experiences, gradually recognizing the significance and value of knowledge extraction. Continuously extracting lessons from successes and failures is undoubtedly one of the most effective ways to enhance core capabilities at both individual and organizational levels. As *The Great Learning* states: "This is called knowing the root, this is called perfect knowledge." The root of our learning ultimately lies within ourselves. Knowledge changes destiny; extraction amplifies value. Knowledge 未经萃取 is hardly true knowledge; a life 未经复盘 is also greatly diminished.

As one of China's earliest knowledge management practitioners and researchers, the author has witnessed the emergence, application, and maturation of numerous knowledge management techniques and methods. In recent years, demand for knowledge extraction from enterprises has noticeably increased. The author began practicing knowledge extraction in 2015 and developed the PREFS®

model methodology [1]; in 2017, the book *The Secret of Knowledge + Practice II* documented a case study on knowledge extraction in COFCO's benchmarking management project [2]; in 2019, the Knowledge Extraction Application Framework (KEAF) was proposed [3]. Subsequently, through continuous application in practice, understanding of knowledge extraction has deepened, providing consulting, coaching, and training services to industry leaders such as Midea, Baidu, BOE, Huali Chuangtong, AVIC, CSSC, and CRRC, while continuously summarizing and refining implementation methods and models for knowledge extraction.

Meanwhile, the knowledge management and corporate training communities have begun forming some achievements. For instance, Sun Bo proposed the SPASTM best practice extraction model [4]; Yue Yang, Li Dianbo, and Yu Xuemei summarized patterns in corporate experience extraction and case development [5]; Wang Xingquan successively documented techniques for organizational and individual experience extraction [6-7]; Qiu Zhaoliang also proposed "knowledge alchemy" and the PDA trilogy for knowledge extraction and operation [8]. These recent research achievements on knowledge extraction have sprung up like bamboo shoots after rain, indicating that knowledge extraction may become a new hotspot in knowledge management practice.

2 The Relationship Between Knowledge Extraction and Knowledge Management

Everything requires systematic methods, and enterprise knowledge management implementation is no exception. Unfortunate organizations each have their own misfortunes, but happy organizations are similar. Based on past practice and research, and through discussion and co-creation with numerous domestic knowledge management practitioners, we have summarized 14 essential steps for enterprise knowledge management implementation (see Figure 1 [Figure 1: see original paper]), which we have named the "Fourteen Steps of Knowledge Management." As the name suggests, these 14 important steps in the knowledge management implementation process are interconnected, mutually reinforcing, and form a complete and efficient systematic approach.

Viewed from the entire lifecycle of knowledge management implementation, it can be divided into four major phases: preparation, import, operation, and optimization. Each phase contains different steps, and a single step may span multiple phases. As shown in Figure 1, knowledge extraction is an important step that cuts across three phases: it brews during the import phase, gains momentum in the operation phase, and demonstrates results in the optimization phase. Many enterprises, after importing knowledge management, gradually recognize the value of knowledge extraction in the subsequent operation and optimization phases. Therefore, after importing knowledge management, knowledge extraction can undoubtedly serve as a critical lever. We knowledge management internal promoters (KMer) may well consider knowledge extraction as an important means and method to promote the overall value enhancement

of enterprise knowledge management.

Knowledge extraction is an effective component in the entire enterprise knowledge management journey. When synergized with other knowledge management work—such as prior knowledge architecture planning and subsequent knowledge operation promotion and activation, followed by knowledge application value realization—it can undoubtedly amplify the value of knowledge management. So what is knowledge extraction? The author has provided definitions in many articles. The activity of processing, mining, extracting, and refining high-value knowledge from large amounts of internal and external organizational data, texts, and experiences is called knowledge extraction [1]. The conceptual scope of knowledge extraction has gradually expanded in practice to include the mining, reproduction, and refinement of tacit knowledge, as well as the integration, processing, and standardization of explicit knowledge [3]. Extracting experience is the process of making tacit knowledge explicit, while extracting documents is the process of standardizing explicit knowledge.

In fact, we can find an excellent metaphor for knowledge extraction in nature—the process of bees making honey. Bees must locate nectar sources and collect nectar. Forager bees suck nectar into their honey sacs and return to the hive to regurgitate it to house bees. House bees ingest the nectar into their stomachs, mixing it with invertase through more than 100 cycles of regurgitation, causing chemical reactions. Other bees also fan their wings continuously to expel moisture and water from the hive. This ultimately produces honey, where the original sucrose in nectar is decomposed and converted into glucose and fructose, and water content is reduced from the original 60%-80% to 20%, leaving only the "essence" and "dry goods."

Similar to bees making honey, knowledge extraction is the process of brewing knowledge essence. Our inputs are data, information, experience, feelings, and other raw materials—like the "nectar" 原料; our outputs may be cases, courseware, models, methods, and other outcomes—like the "honey" 产出; in this process, we need to draw on collective wisdom, using analysis, comparison, summarization, refinement, and sublimation techniques to conduct knowledge extraction, achieving the removal of dross and retention of essence—very similar to the "brewing" process.

Many Chinese enterprises, after years of struggle, have passed the primitive stage of knowledge accumulation and begun to recognize the importance of knowledge application. They have discovered the need to shift from emphasizing knowledge "quantity" to emphasizing knowledge "quality," and from emphasizing knowledge acquisition "speed" to emphasizing knowledge cognition "depth." Knowledge extraction methods and techniques can positively enhance both the quality of knowledge products and the depth of knowledge cognition. This knowledge brewing technique is a fundamental skill necessary for workplace professionals to advance to senior experts and powerful support for organizations to take knowledge management to the next level.

3 Typical Patterns of Organizational Knowledge Extraction

As knowledge extraction continues to be explored and deepened in enterprise practice, some inherent paradigms have gradually been summarized. Currently, based on the two axes of "person-thing" and "individual-organization," organizational knowledge extraction practice can be divided into four typical patterns, as shown in Figure 2 [Figure 2: see original paper].

3.1 Expert-Based Knowledge Extraction

Some enterprises, after decades of development and innovation, have cultivated numerous master-level and national treasure-level experts. However, many active technical and management experts face retirement. Some older retired experts gradually become verbally challenged, mentally confused, or even pass away. Some chief designers lament: "When I retire, all my personal materials and documents stored in the company's internal network will be cleaned up and deleted after two months—what a pity." Some leaders also express the sentiment that "we need to rescue experts' knowledge like rescuing cultural relics." These experts' valuable experiences and knowledge are not organized, mined, or extracted in many enterprises, let alone well inherited. This necessitates expert-based knowledge extraction to solve such problems.

Therefore, we can conduct knowledge extraction oriented toward experts (life experiences, encounters, stories), with relevant tools and templates including but not limited to life journey maps, personal lessons learned, major personal achievements, personal knowledge systems, and personal knowledge packages.

3.2 Theme-Based Knowledge Extraction

Some enterprises suffer from severe communication problems between different professions, fields, and departments. The same problems occur repeatedly, and mistakes are frequently repeated, causing enormous waste. Some former star products are in jeopardy, with market share gradually shrinking; core technical personnel and related knowledge are 流失 ing in large numbers; major quality issues occur frequently, but there is no time to summarize the painful lessons; research on competitors is insufficient, patent layouts are unclear, technical directions are ambiguous, and product planning is done annually but constantly changing, leaving themselves without confidence.

In such cases, theme-based knowledge extraction can be implemented. Business backbones from different professions, fields, and departments can be 抽调 to form a special knowledge extraction focus group. Starting with cognitive training, they can fully recognize the value of knowledge extraction to the company; then, from different professions (e.g., finance, R&D, quality) and different themes, they can develop, refine, and extract real thematic cases; through collective co-creation, they can promote unity of purpose and concerted effort.

Therefore, we can conduct knowledge extraction oriented toward themes (e.g.,

professions, fields, projects), with relevant tools and templates including but not limited to professional knowledge systems, field FAQs, quality problem 归零 cases, patent analysis, business cases, and industry cases.

3.3 Position-Based Knowledge Extraction

Some enterprises, based on business expansion needs, recruit large numbers of new employees within short periods, facing problems of short training cycles, large numbers of trainees, and high requirements. However, using traditional mentoring methods, new employees in various positions generally need 2-3 years to work independently. There are also problems of heavy tasks and shortages of mentors.

In this situation, position-based knowledge extraction can be implemented. For example, establishing knowledge systems for different position groups and multiple position sequences. Through position basic knowledge maps (guides for beginners, must-reads for positions, essential basic knowledge), vertical and horizontal position knowledge (experience knowledge for the same position in different units, position capability enhancement), and related position 关联 knowledge (technical knowledge of upstream and downstream processes for efficient collaboration), position knowledge can be promoted. Ultimately, this effectively solves the challenges of autonomous learning and multi-batch 交叉 training within short periods; relying on knowledge communities to solve trainee communication, discussion, and stage summary issues; and relying on knowledge management platforms to avoid 重复 investment and effectively reduce training costs. This promotes self-improvement of new employees and achieves continuous updating and improvement of position knowledge.

Therefore, we can conduct knowledge extraction oriented toward positions (responsibilities, tasks, capabilities), with relevant tools and templates including but not limited to position responsibilities, position operation guides, position knowledge maps, position competency models, and position learning maps.

3.4 Business-Based Knowledge Extraction

Knowledge extraction must also be closely integrated with enterprise business activities, especially with specific business processes such as corporate strategy, technological innovation, and product R&D, to achieve true "process pipelines, knowledge running water." While conducting business work, knowledge is 沉淀 ed and extracted, laying the foundation for knowledge application to "feed back" into business, thereby effectively improving work efficiency and capability.

Since most scattered knowledge cannot directly meet the comprehensive and holistic organizational knowledge needs in enterprise business activities and strategic development, some enterprises combine business realities (e.g., strategy, processes, projects) to form strategic-oriented (overall solutions), process-oriented (end-to-end process solutions), and project-oriented (project solutions)

knowledge productization management models. Different types of knowledge products solve different specific problems and meet different knowledge needs.

Therefore, we can conduct knowledge extraction oriented toward more complex business scenarios (strategy, processes, projects), with relevant tools and templates including but not limited to strategy maps, technology roadmaps, business process diagrams, business process manuals, and project knowledge maps.

In addition to organizational-level knowledge extraction, knowledge extraction has much broader scenario applications at the individual level. In the real world, an individual's growth also 离不开 the three major links of learning, reflection, and practice. Only through reading, traveling, meeting people, seeking mentors, and gaining insights can continuous transcendence be achieved. Applying knowledge extraction means integrating it into different scenarios for continuous tempering and polishing. Along with this, our efficiency in learning, working, and communication will also be enhanced and amplified.

4 The "Three Forces" Model for Promoting Knowledge Extraction Outcomes

When Huawei conducts project knowledge harvesting, the final step is "transferring knowledge to potential user groups"—that is, identifying the potential target scope and audience for extracted knowledge outcomes. Then knowledge management personnel act as "knowledge relay players," actively organizing knowledge transfer activities and determining transfer methods, such as experience lightning dissemination, online project space displays, interview video production, and generation of lessons learned and examples, to ensure that this new knowledge can be delivered to appropriate groups.

Of course, every company has different methods for promoting knowledge extraction outcomes. Are there universal patterns? How can we better make knowledge extraction and outcome application a habit for everyone? How can we enhance the leadership of each KMer? Let us see through phenomena to the essence and study the patterns that drive employee transformation. An important model for reference is what the author calls the "Three Forces" model for promoting knowledge extraction outcomes.

4.1 The "Three Forces" Model

The so-called "Three Forces" model refers to the forces that drive knowledge extraction mainly coming from the following three aspects (as shown in Figure 3 [Figure 3: see original paper]):

Environmental Push: This push has three important sources: 1) Reward power, referring to bonuses, salary increases, and promotions, which generates driving force; 2) Coercive power, referring to leaders giving orders and fear of punishment, which also generates driving force; 3) Legitimate power, which is

authority granted by organizations or society, such as positions that generate driving force. These three types of power can also be called "hard" power, and they all have "hard" influence.

Environmental Pull: This pull also has three important sources: 1) Expert power—for example, doctors, teachers, and lawyers each have authoritative power that comes from professional expertise; 2) Referent power—for example, film and television singers, internet celebrities, and stars have enormous influence over fans, and the power of role models is infinite; 3) Information power, which is persuasiveness—the ability to make others listen to you can also generate pull, which is an additional benefit. These three types of power can also be called "soft" power, and they all have "soft" influence. In fact, these three types of "soft" power are more effective than the three types of "hard" power in the push category.

Internal Drive: This is the drive that originates from within each individual, involving three important aspects: 1) Biological drive, which is our instinct, such as the instinct to seek advantages and avoid disadvantages; 2) Extrinsic motivation, typically carrots and sticks, incentives and assessments, which correspond to reward power and coercive power in environmental push, working together internally and externally; 3) Intrinsic motivation, which is a person's most fundamental driving force with infinite power.

The famous Austrian psychologist Frankl, author of *Man's Search for Meaning* and *The Will to Meaning*, observed in concentration camps that those who could survive were mostly people who had found significant meaning in living and had great 寄托 for the future. Since intrinsic motivation is so important, we can further subdivide it: 1) Autonomy—the ability to freely decide what to do, where to do it, and who to cooperate with; 2) Mastery—the desire to do things well, to strive for perfection, and to embody craftsmanship; 3) Purpose—personal mission, inner longing, aspirations, and dreams.

4.2 Application of the "Three Forces" Model

So how is this model applied? Let us examine how to design some "clever moves" to effectively promote knowledge transfer, sharing, and application, thereby realizing the value-added of knowledge extraction outcomes.

First, utilize environmental push. For example, we can establish awards such as "Best Case Award" and "Knowledge Master Award," which belong to reward power. We can have leaders at various levels send direct emails or give orders, or conduct performance assessments for those who are not active, which belongs to coercive power. We can issue relevant rules and regulations that explicitly stipulate required behaviors and integrate them into daily work processes, which belongs to legitimate power.

Second, utilize environmental pull. For example, we can verify experts and open expert blogs, which belongs to expert power. We can encourage learning

from the spirit of masters and seniors who are willing to share and serve as human ladders, which belongs to referent power. We can design special interview columns for in-depth communication with outstanding performers to influence them, which belongs to information power.

Finally, and most importantly and most difficult, is how to utilize internal drive. Igniting and stimulating internal drive requires three types of fuel:

The first fuel is called competence. For example, strengthen relevant training to introduce the most effective methods of knowledge extraction. Enable everyone to do knowledge extraction, master knowledge extraction, and continuously practice knowledge extraction. Habit becomes nature; with practice, it gradually becomes daily work behavior.

The second fuel is called pride. For example, use the method naming approach—naming methods, principles, and rules after their originators. When we eat hotpot at Haidilao, servers give each person a plastic phone bag. Internally, Haidilao calls it the "Baodan Phone Bag" because the person who proposed this idea was named Baodan.

The third fuel is called belonging. Birds of a feather flock together. If you are a member of the "Taishan Club," you naturally have a special 光环加持. We call ourselves KMer, also in search of like-minded people who "love knowledge, love learning, and love wisdom."

For every knowledge management internal promoter (KMer), mastering the above "Three Forces" model enables them to use principles to guide techniques and generate countless methods. For each KMer, they can naturally design the best "moves" according to their organization's characteristics to effectively amplify the value of knowledge extraction.

5 Conclusions

In the process of researching, practicing, and serving knowledge extraction, the author deeply realizes that mastering the thinking methods, mature routines, and ready-made tools related to knowledge extraction will undoubtedly add wings to the tiger and help achieve twice the result with half the effort. At the same time, the following insights and reflections have been formed.

Experience requires knowledge extraction to be sublimated and applied. It is particularly important to note that experience often exists as tacit knowledge in people's minds. If experience is made explicit through knowledge extraction and formed into documented cases, it becomes easier to inherit, reference, and create more value. Therefore, at this level, experience can be imitated and replicated. Of course, experience still needs to be deepened into methods and elevated to theory. After years of knowledge accumulation and extraction, a company will 相信 gradually form a large number of guidebooks and methodology systems internally, which, when fed back to employees, can ensure the overall capability of the company remains high.

It is necessary to establish an appropriate field to empower knowledge extraction. The key to successfully conducting high-quality knowledge extraction lies in whether a creative field can be constructed where mutual trust, safety, and sharing are possible. The care, love, trust, and commitment demonstrated in this field, along with face-to-face empathy between individuals, are crucial for the transfer and transformation of tacit knowledge. Therefore, in-depth knowledge extraction at critical moments is best guided by experienced knowledge extraction teachers in a team co-creation manner, sharing experiences, feelings, insights, and realizations from all aspects of projects, using each other as mirrors to 洞察 and mine the deep connotations at the tacit level.

Knowledge extraction is an inevitable stage in the development of knowledge management. The author realizes that knowledge management can thereby gradually penetrate into business levels, 提炼 valuable knowledge "dry goods," making direct contributions and creating value for business. New eras require new approaches, and using micro-videos to display knowledge extraction outcomes will be an inevitable choice for more and more organizations. At the same time, the professional value of personnel's knowledge extraction capabilities will become prominent. How to cultivate professional talents and service capabilities in knowledge extraction will become a future hotspot. Good content requires strengthened operation—even good wine fears deep alleys, and promoting high-quality knowledge applications requires even greater effort.

When IBM consulted for Huawei, it once proposed a sweat-inducing perspective: (In enterprises) there is no time and energy to do things right the first time, yet there is time and energy to repeat the same things over and over again. Chai Jing wrote in *Seeing* that pain is not wealth; reflection on pain is wealth. What makes you progress is not how awesome things you have done, but the depth of your summary and reflection. What makes organizations progress is not how awesome things the organization has done, but the thickness of systematic accumulation and 沉淀 of knowledge. Let individuals and organizations avoid detours and effectively amplify the value of knowledge management—let us begin extracting knowledge together.

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Note: Figure translations are in progress. See original paper for figures.