

# KM IN EDUCATION

## KNOWLEDGE MANAGEMENT IN EDUCATION

*What is the current state of KM education?*

- Knowledge management challenges are a top priority for CEOs, increasing interest in KM as a professional practice. Education, including specialized courses, certifications, and formal degree programs, is preparing practitioners for these challenges, though it has raised questions regarding the necessary educational foundation for the profession.

### Knowledge Management Education Forum (KMEF)

There is currently no consensus on what comprises professional KM education. In 2011, Kent State University and George Washington University formed the KMEF to:

- Identify and grow consensus on the KM body of knowledge, competencies, roles, and curriculum.
- Bring together past and current thought leaders to open a dialogue for contribution.
- Connect various educational entities to the business community.

While there is general agreement that KM requires shared concepts, a basic lexicon, and a mutual understanding of frameworks, there is concern that excessive "standardization" might work against KM's success in the workplace. Success depends on how well KM elements align with an organization's unique objectives, management methodologies, and leadership structures. Future Requirements for KM Education. As education and the workforce become more mobile, a "teach-and-learn anywhere and anytime" philosophy is needed. This evolution must incorporate:

- Standards for course design and practical application for students.
- Technology that facilitates learning anywhere and anytime.
- Defined learning outcomes and assessments.
- An understanding of various KM roles and responsibilities.

### ROLES AND RESPONSIBILITIES OF KNOWLEDGE PROFESSIONALS

This list outlines the diverse roles, responsibilities, and core competencies required for Knowledge Management (KM) professionals within an organization. It emphasizes that while individual competency is vital, a successful KM program also requires a cultural shift toward knowledge sharing.

- **Chief Knowledge Officer (CKO):** Serves as the executive leader of the KM discipline.
- **KM Director:** Oversees KM efforts in specific organizational areas.
- **Operations KM Director:** Manages the strategy and processes for the operational KM program level
- **KM Program Manager:** Orchestrates the KM program's activities and approves new projects.
- **KM Project Manager:** Coordinates the execution of specific projects initiated by directors. **Knowledge Manager:** Works with program and project managers to implement initiatives. They balance technology and organizational
- **Knowledge Architect:** An interdisciplinary role that designs dynamic systems for knowledge creation and transfer.

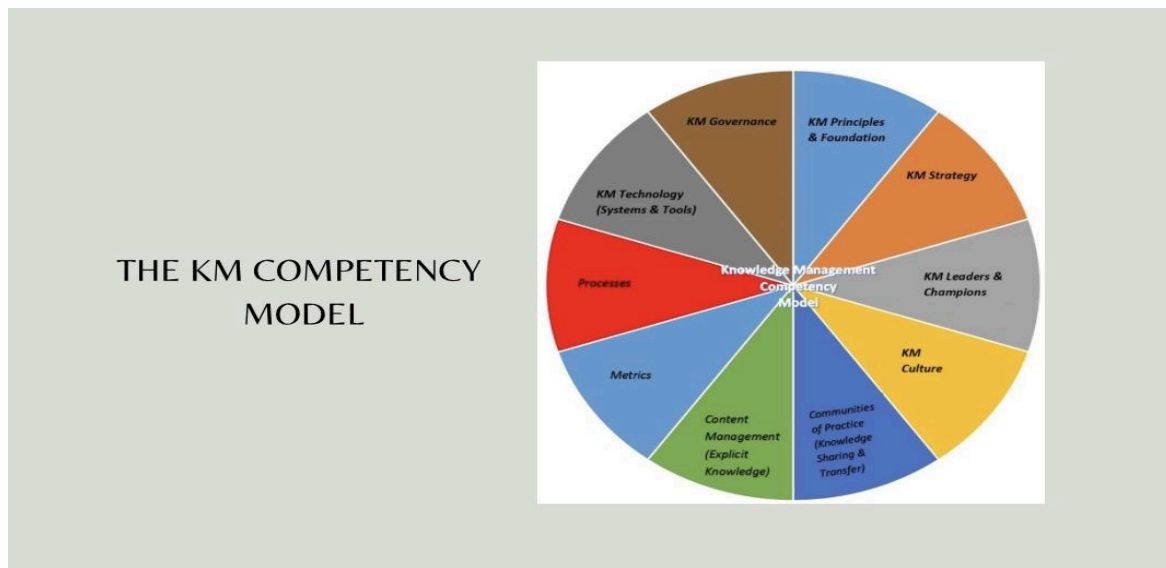
- **Knowledge Engineer:** Researches and designs computer programs, such as knowledge-based systems (KBSs), that use artificial intelligence for decision-making and data mining.
- **KM (Systems) Administrator:** Maintains the knowledge repository and coordinates the governance of knowledge within that system.
- **KM Specialist:** Engages in policy support, planning research, and metrics.
- **KM Analyst:** Evaluates the efficiency of the KM program and implements tools to document knowledge.
- **KM Liaison:** Acts as a resource for various teams across the organization, executing KM duties and acting as a champion for the program on behalf of the director.
- **KM Author/Writer:** Primarily responsible for creating content within the knowledge repository. They use "Plain Language and Information Design" (PLAID) to construct articles, FAQs, and other shared content.

### Core KM Competencies

Determining core KM competencies requires understanding what it takes to perform various KM roles and execute their responsibilities. These competencies include connecting education and strategic learning with skills in knowledge strategy development, operationalization, collaboration, leadership, management, and technical areas.

KM competencies are divided into soft and hard categories:

- **Soft Competencies:** Ensuring knowledge processing aligns with business goals and is integrated into everyday work. It also includes software development, business and systems architecture, and workflow management.
- **Hard Competencies:** Elicitation and representation of tacit and explicit knowledge, as well as structural knowledge in the form of business rules and processes.



### KM competency model

To determine the KM competency model, a rigorous process was initiated to provide consensus on core competency areas. This methodology applies to any modern organization, regardless of whether a CKO role is established. It is intended for any department or individual with the vision, leadership, and determination to infuse KM principles into the enterprise.

A KM competency model serves as the foundation for the following:

**Functions:** It serves as the basis for training, education, development, and performance management by specifying the essential knowledge, skills, and abilities required.

**Adoption:** It acts as the foundation for enterprise-wide KM adoption and use.

**Culture:** It creates a culture of collaboration and knowledge sharing where personalized and contextual information and knowledge are “pushed and pulled” across the enterprise to meet mission objectives.

**Values:** Within this model, good ideas are valued regardless of their source.

**Recognition:** Knowledge sharing is recognized and rewarded.

**Accessibility:** The knowledge base is accessible without technological or structural barriers.

### **KM Competency Model Details**

#### *KM Principles and Foundation*

**Goal:** Understand KM principles, methods, and their applications.

**Action:** Formal training is either developed or accessed by an accredited (creditable) institution.

**Learning Method:** Standardized KM courses are taught via instructor-led and/or online.

#### *KM Strategy*

**Goal:** Develop and socialize the vision and mission of KM by developing and operationalizing a detailed KM strategy.

**Action:** Develop an effective KM strategy to support the KM program through the establishment of a short-term (1-3 years) and a long-term (3-5 years) roadmap.

**Learning Method:** Focus on building a holistic, enterprise-wide KM program, potentially piloting methods, practices, or tools in targeted areas as part of a larger plan.

#### *KM Leaders, Champions, and Culture*

**Goal:** Understand what KM professionals do, their roles and responsibilities, and how they influence the use of KM practices; identify and understand cultural issues impacting adoption.

**Action:** Seek out KM champions throughout the organization; develop specific KM expertise; establish a "lifelong learning culture" to ensure the capture and use of lessons learned.

**Learning Method:** KM champions act as liaisons; explore creating leadership positions like CKO and knowledge architect; develop KM executive councils; and reward knowledge sharing.

#### *Communities of Practice (CoPs)*

**Goal:** Understand the KM approaches to knowledge sharing, transfer, and collaboration.

**Action:** Encourage the establishment of CoP around professional activities and communities of interest (CoI) around nonprofessional activities; establish policies to use SME resources.

**Learning Method:** Provide resources for CoP and CoI activities to grow; build trust and relationships across departmental boundaries; use facilitation, mentoring, coaching, and expertise transfer.

### **Content Management (Explicit Knowledge)**

**Goal:** Understand content-life-cycle management, library structures, labeling and tagging, and search as it pertains to KM practices (IA).

**Action:** Review current content management procedures; ensure all content is credible, authoritative, and contextually consistent; develop a consistent organizational approach to metadata.

**Learning Method:** Assess how documents are created, stored, accessed, and archived; develop an IA plan/strategy for addressing discrepancies; use manual and automated methods for metadata creation.

### **Metrics**

**Goal:** Understand the reasons for monitoring and evaluating performance, considerations of what to measure, and using metrics to refine KM strategies.

**Action:** Use metrics to assess accomplishment of strategic goals; measure efficiency (output-activity based) and effectiveness (outcome-results based); standardize measures across the organization.

**Learning Method:** Use a combination of hard (factual) and soft (perceptual) measures; manage no more than five to seven measurements for outcomes; results should drive decisions to refine strategy.

### **Processes**

**Goal:** Understand the use of KM techniques in order to find opportunities for simplifying current processes or making them more efficient or effective.

**Action:** Use KM techniques to simplify or increase efficiency/effectiveness of current business processes; create process maps and conduct knowledge audits to identify critical information and knowledge inputs and outputs.

**Learning Method:** Assess current processes that may be streamlined or eliminated; use process maps with knowledge maps to define appropriate roles and responsibilities integrated into the operational workflow.

### **KM Technology (Systems/Tools) and KM Governance**

**Goal:** Understand how technology impacts KM and tools available for sharing and collaboration; balance the need to know with the need to share and how KM coexists with information management policy.

**Action:** Ensure IA fits needs of primary user groups; assess current technology use for tasks; stay abreast of emerging technologies; develop a comprehensive content governance plan.

**Learning Method:** Map technologies (e-mail, phone books, blogs, wikis, podcasts) within the IA; incorporate security strategies, access controls, and encryption; include security controls in the KM life cycle.

### **KM Curriculum Development and Delivery**

KM curriculum development and delivery must support the twenty-first century model of being able to learn anywhere, anytime, and on a varied number of platforms, applications, and mobile devices.

*To embark on the challenge of providing KM curriculum for the twenty-first century, the four pillars of KM were leveraged as a foundation by the KMEF:*

**Leadership:** This deals with the environmental, strategic, and enterprise-level decision-making processes.

Organization: This deals with the operational aspects of knowledge assets.

**Learning:** This deals with behavioral aspects and social engineering of the organization.

Technology: This deals with the various information technologies that support and/or enable KM strategies and operations.

The curriculum must not only focus on concepts and theories but also on practical aspects (based on real-world implementation of KM) and how it is implemented and used. The curriculum must also include the various methods, tools, applications, and systems that are developed and utilized to enable KM to be an actionable event. Another essential ingredient of KM curriculum development and delivery for the twenty-first century would be to incorporate the use of case studies, storytelling, affinity diagrams, knowledge cafés, and similar experience-sharing mechanisms.

This is the type of education that will lead to KM career enhancement, enrichment, and planning. Other curriculum “basics” pointed out by the KMEF to be included in KM are courses in measures and metrics, collaboration techniques, networking, and organizational development and effectiveness.

### Teaching Philosophy/Methodology

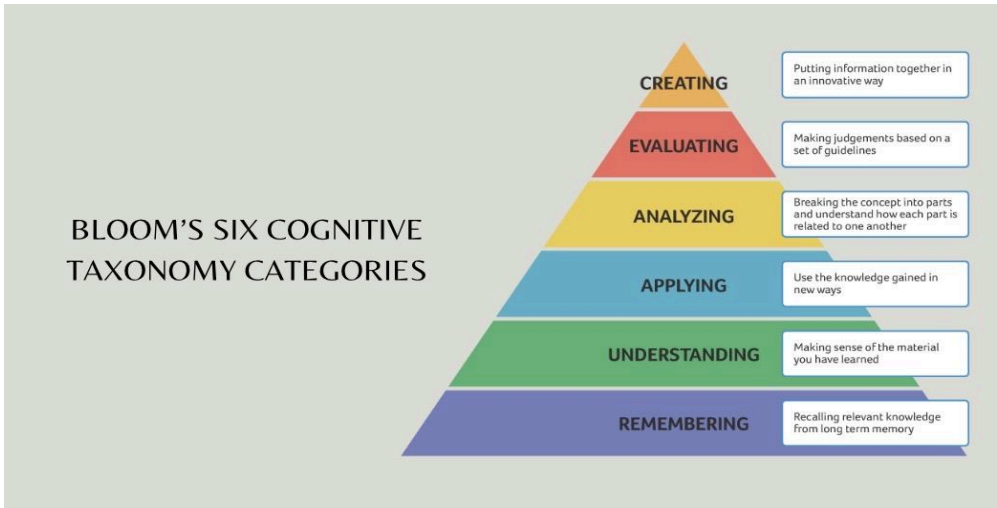
- The KM professional must be able to learn knowledge concepts and apply them in a variety of ways.
- KM education comes in a variety of forms

To enable the KM professional to speed up on a particular concept and apply it to meet a specific need:

1. Knowledge transfer,
2. communities of practice (CoPs),
3. capturing tacit and explicit knowledge, and
4. KM governance

The goal of instruction delivery is based on the following premises:

- To improve student comprehension, application, and performance.
- Learning should not occur in a haphazard way but should be developed in accordance with orderly processes.
- Be specifically tailored to the target audience.
- Have measurable outcomes.
- Incorporation of Bloom’s Taxonomy of Learning.



**Objectives of Bloom's Taxonomy of Learning**

- Remembering:** Recall data or Information
- Applying:** State a Problem in one's own words
- Analyzing:** Distinguish between facts and inferences
- Evaluating:** Make judgements about the value of ideas or materials
- Creating:** Build a structure or pattern from diverse elements

**Knowledge Dimension**

**Metacognitive:**

- Knowledge about when and how to use particular strategies for learning or for problem solving.

**Procedural:**

- Knowledge exercised in the performance of some task.

**Conceptual:**

- Knowledge is rich in relationships and understanding; it is a connected web of knowledge, a network in which the linking relationships are as prominent as the discrete bits of information.

**Factual:**

- The basic elements students must know to be acquainted with a discipline or solve problems in it.

**BLOOM'S SIX COGNITIVE TAXONOMY CATEGORIES**

Bloom's Taxonomy is a framework that classifies levels of learning. The passage shows examples of teaching methods and how students demonstrate knowledge at each level.

This passage is a practical guide to Bloom's Taxonomy, showing how each level of learning is taught and how students demonstrate mastery — from recalling facts all the way to creating new solutions.

## **KM Education Programs**

KM education, which included university courses (master's programs), certification programs, and certificate programs.

For any education to be effective, it must be supported by practical application

- The basics of and differences between data, information, and knowledge.
- Establishing "your" definition of KM.
- Developing/executing KM strategy (including knowledge audits, knowledge mapping, and KM process).
- Identifying and addressing knowledge gaps (resulting from knowledge audit).
- Collaboration and knowledge sharing (CoPs).
- Knowledge transfer planning (mentor–protégé relationship and knowledge codification).
- Collecting/applying KM metrics.
- Identifying, planning, and executing KM projects/initiatives.
- KM tools (wikis, blogs, search, and KM systems).
- The approach must include planning, strategies, and processes applied for KM as well as the software that will enable and support the execution of the KM program initiatives. The US army's KM competency model serves as a foundation to how the army will approach KM and represents a holistic approach to institutionalizing KM

## **KM at Institutions of Higher Education**

KM continues to be a growing discipline in which organizations are seeking qualified individuals. A master of science (MS) concentration in KM offers students an opportunity to enter the knowledge economy and become an important asset to organizations working to get the right knowledge to the right people at the right time.

a university program that presents a holistic approach to the principles, practices, policies, and technologies being deployed today.

An MS concentration in KM will provide the successful student with the ability to:

- Assist organizations in making better decisions.
- Understand where knowledge exists.
- Uncover knowledge gaps that will lead to better performance and communication between workers.

Certain institutions offer educational experiences that support gaining the necessary knowledge to fill various KM roles, responsibilities, and core competencies.

## **Knowledge Systems Institute**

KM at Knowledge Systems Institute (KSI)'s Master of Science Graduate School

- is an area of concentration most suitable for people who already have a career in a field other than information technology but now find the need to acquire new IT skills in order to remain technologically competent. KSI offers coursework and research in the field of KM. The program is designed as concentration for individuals who need to acquire actionable insights into KM methodologies and strategies to enhance
- knowledge transfer and collaboration as a driving principle of organizational success.

### **George Mason University**

At George Mason University, KM is taught within the School of Policy, Government, and International Affairs. The curriculum combines organizational development and KM. In the Organization Development & Knowledge Management Development (ODKM) cohort master's program, you will explore organizational leadership theory and practice, the shift from hierarchical structures to group-based learning, and best practices to promote the creation of adaptive, collaborative work environments. While focusing on the human and social aspects of organizing, the program also emphasizes the use of collaborative groupware technologies to support interactive learning, knowledge sharing, and knowledge creation.

### **George Washington University**

The Department of Engineering Management and Systems Engineering (EMSE), The George Washington University, offers research areas in knowledge and information management. A large research component is the joint research between faculty members and their doctoral students. The specific research topics include knowledge-based economy, knowledge-intensive enterprises, knowledge security/assurance, and strategic asset management.

### **Kent State University**

Kent State University offers an MS in KM within the School of Library and Information Science (SLIS). The MS concentration in KM prepares you to take a leadership role in this engaging profession. In addition, Kent State University offers a master's degree in information architecture and knowledge management (IAKM) with concentrations in health informatics, KM, and user experience design; these programs are dynamic and continually respond to changes in the marketplace, helping information and knowledge professionals and their evolving skill sets.

### **Notre Dame of Maryland University**

Notre Dame of Maryland (NDM) offers an MS in analytics in knowledge management (AKM). NDM states that this program will "transform big data into powerful knowledge for your company or clients." NDM indicates that AKM is the systematic process of developing, organizing, retaining, and using knowledge resources that contribute to an organization's sustained success.

### **Columbia University**

Columbia University's MS in information and knowledge strategy (IKNS) program prepares individuals who are invested in the strategic potential of business-knowledge strategy alignment, collaboration, and business analytics to expand or branch out from their current roles or become entrepreneurs of ventures in the knowledge domain.

### **Drexel University**

Drexel University's online accredited master of science in library and information science (MSLIS) program is an industry leader in digital information management. The College of Computing and Informatics offers a concentration in competitive intelligence and knowledge management. In this program, students will learn to identify and evaluate an organization's knowledge-based assets, design knowledge-sharing opportunities, and utilize competitive intelligence activities to support strategic decision-making.

### **The Hong Kong Polytechnic University**

The Hong Kong Polytechnic University promotes a flexible program that allows students to develop their own learning plan with a combination of on-site and online classes. The curriculum is codeveloped by an international team of leading experts and scholars in KM. Delivery of the program is via a balanced mix of in-person seminars and workshops, online tutorials, and web-based study.

### **KM Certification Programs**

KM certification programs are often designed for working professionals. These programs are leveraged to provide the tools and methods for understanding and implementing KM relatively quickly. A good KM certification should be based on standards disseminated by the industry and professional KM organizations. Once the participant completes an in-class project and examination, it signifies that the individual is certified to meet certain standards or competencies related to successful implementation of KM

### **Knowledge Management Institute**

KMI supports the paradigm of “learn anywhere and anytime.” KMI programs provide what expert KM practitioners need to know to carry out successful enterprise KM.

- Offerings: Certified knowledge manager (CKM), certified knowledge specialist (CKS), certified knowledge practitioner (CKP™), and master classes in special topics like taxonomy, information architecture (IA), innovation, knowledge capture, social KM, and community management.
- Proven methodology, curriculum licensed by institutions of higher learning, preferred training vendor for many US Department of Defense agencies and all US Combatant Commands, and trusted training solutions for Fortune 500 companies.

# KM IN HUMAN RESOURCES AND TALENT MANAGEMENT

## **KNOWLEDGE MANAGEMENT IN HUMAN RESOURCES AND TALENT MANAGEMENT**

### **Knowledge Loss in Organizations**

- Organizations lose valuable knowledge when employees retire, resign, or transfer
- Loss of experts creates knowledge gaps
- Critical skills and experience leave with employees
- Hiring short-term experts only provides temporary solutions

### **Knowledge Management as the solution**

- Knowledge Management (KM) captures and preserves employee knowledge
- Prevents loss of critical expertise
- KM transforms human capital into organizational knowledge
- Encourages knowledge sharing and reuse

### **Knowledge Audit & Knowledge Gaps**

- A knowledge audit identifies what knowledge an organization has and what is missing
- Helps locate who holds critical knowledge and where it is stored
- Identifies knowledge gaps caused by employee turnover
- Distinguishes between tacit and explicit knowledge

### **Role-Based Knowledge**

- Role-based knowledge focuses on knowledge required for a specific job role
- Defines tasks, responsibilities, and work products
- Ensures consistency in job performance
- Supports faster onboarding and better employee effectiveness

### **KNOWLEDGE MAP TO IDENTIFY EXPERTS**

- Knowledge mapping helps in building a knowledge repository or “library.”
- It must be implemented gradually, starting with specific departments or functions and expanding to cover the entire organization.
- It is also an essential part of doing a KM audit and overall KM strategy.
- Knowledge and content managers/architects are important in capturing, organizing, maintaining, and sustaining organizational knowledge through repositories and KM initiatives.

### **HUMAN CAPITAL MANAGEMENT**

- Human capital pertains to employees’ competencies, knowledge, skills, and personal attributes that enable them to create economic value.
- Human Capital Management (HCM) treats employees as measurable assets whose value can be increased through investment.
- It focuses on making sure that the organization has the right competencies to meet its goals.

#### **1. TALENT ACQUISITION AND PLANNING:**

- Talent acquisition and planning are essential in a knowledge-driven economy.
- Linking talent acquisition and workforce planning to improve visibility for current and future talent needs.

- Multiple recruitment strategies
- A process for designing effective advertising campaigns.

## 2. WORKFORCE MANAGEMENT:

- Workforce Management (WFM) ensures the right employees with the right skills are in the right roles at the right time.
- HR planning, pay and benefits, training, time and attendance, recruitment, performance management, and scheduling.
- Its focus areas are career and succession planning, talent tracking, learning management, and performance management.

## 3. WORKFORCE OPTIMIZATION:

- Helps organizations manage all aspects of staffing while improving performance over time.
- It enables employees to understand their impact on business performance and operational efficiency.
- It represents the next step beyond WFM, focusing on maximizing staff performance, operational efficiency, and customer impact

**Talent Management:** Talent management is a strategic process used by organizations to ensure they have the right people with the right skills in the right positions. It focuses on attracting, developing, and retaining talented employees so the organization can achieve its goals and remain competitive in the market.

**Purpose of Talent Management:** The main goals of talent management are to:

- Attract highly qualified employees
- Defines tasks, responsibilities, and work products
- Retain valuable workers
- Prepare future leaders
- Improve organizational performance

### Key Components of Talent Management

**Recruiting:** Recruiting is the process of finding and hiring the best candidates. It involves posting job openings, screening applications, interviewing, and selecting applicants who have the right skills and fit the company culture. Its main goal is to bring in people who can contribute positively to the organization.

**Onboarding:** Onboarding is the process of welcoming and training new employees. It helps them understand their job responsibilities, company policies, and workplace culture. Effective onboarding makes new hires comfortable and confident, increasing productivity and reducing early turnover.

**Performance Management:** Performance management monitors and improves employee performance. It includes setting goals, giving feedback, evaluating work, and providing coaching. This process helps employees understand their strengths and areas for improvement, leading to higher motivation and better overall performance.

**Career and Succession Planning:** Career planning guides employees' growth by identifying future roles and development opportunities. Succession planning ensures trained employees are ready to fill key positions when leaders leave or retire. This prevents leadership gaps and ensures business continuity.

## **Importance of TM**

TM is important because:

- Increases employee satisfaction
- Reduces staff turnover
- Builds strong leadership
- Improves company performance
- Creates a competitive advantage

## **KM's Influence in Talent Management**

Knowledge Management (KM) plays a crucial role in Talent Management in organizations. KM refers to the process of collecting, organizing, sharing, and using information and expertise within a company. When knowledge is properly managed, employees can easily access the information they need to perform their jobs effectively. In talent management, KM helps ensure that the organization places the right people in the right positions and supports them with the right knowledge.

## **Better Hiring Decisions**

KM helps organizations make better hiring decisions by providing access to important data such as job requirements, skill profiles, and past employee performance. With this information, human resource managers can identify what type of candidate is most likely to succeed. This reduces hiring mistakes and helps the organization choose applicants who fit both the job and the company culture.

## **Faster Onboarding**

KM supports faster onboarding by giving new employees access to training materials, manuals, and company guidelines through knowledge systems. Instead of relying only on supervisors, new hires can quickly learn how things are done by using these resources. This helps them adjust more easily and become productive in a shorter amount of time.

## **Improved Performance**

Employees perform better when they have access to accurate and useful information. KM allows workers to learn from best practices, expert knowledge, and past experiences within the organization. This helps them solve problems quickly, avoid repeating mistakes, and improve the quality of their work.

## **Leadership and Succession Planning**

KM plays an important role in leadership and succession planning by storing information about employees' skills, experiences, and achievements. Managers can use this data to identify employees with leadership potential and prepare them for higher positions. This ensures that when leaders leave or retire, there are trained people ready to take their place.

## **Right Knowledge, Right Time, Right Role**

One of the key benefits of KM in talent management is ensuring that the right knowledge is given to the right person at the right time. When employees receive the information they need exactly when they need it, they can make better decisions, work more efficiently, and contribute more effectively to the organization.

## High-Impact Talent Management Framework by Bersin

- Talent management is how an organization attracts, develops, evaluates, and keeps employees so the business can achieve its goals.
- The framework integrates all talent processes into a single, connected system
- Begins with talent strategy aligned to business needs

### Workforce planning identifies:

- Talent segments
- Critical roles
- Organizational skills gaps

### Workforce insights drive:

- Succession planning
- Recruitment strategies
- Learning and development agendas

## Core Components of the framework

### Capability & Competency Management

- Defines required skills, competencies, experiences
- Answers: Who to hire? What to develop? What to assess against?

### Job Profiles

- Developed for all critical roles
- Include skills, competencies, and experience requirements

## Employment cycle central framework

- Recruiting
- Assessing
- Developing
- Rewarding

## Core Talent Management Processes

**Leadership Development:** builds high-performing leaders

**Career Management:** Aligns employee career aspirations with opportunities (bottom-up)

**Total Rewards:** Ensures employees are rewarded appropriately throughout the lifecycle

**Succession Management:** Ensures bench strength for critical roles (top-down)

**Performance Management:** Assesses talent, strengths, and weaknesses

## Learning & Capability Development

- Enables all talent management strategies
- Essential to prevent skill stagnation as business evolves
- Driven by gaps identified from:
  - New hires or role changes (learning curve)
  - Performance reviews
  - Career aspirations
  - Succession readiness needs

## Framework Enablers (Pillars/Bookends)

**Organization & Governance:** Alignment, accountability, oversight

**Business Metrics & Analytics:** measures effectiveness of talent programs

**Talent Infrastructure:** Aligns data, systems, and processes and enables integration and accessibility across HR systems

## Key Learnings

- Talent management must be business-driven, not just HR-driven
- All HR systems should be connected and integrated.
- Knowledge management (KM) should support learning and skill development.
- Roles should be clearly defined, because job titles don't always match actual roles.
- Clear roles help with career development, succession planning, and system access.

## Tips and Techniques

**Training (The Present):** A structured, instructor-led intervention designed to improve the specific skills and attitudes employees need to perform their current job roles effectively.

**Learning (The Future):** A systematic process where employees use organizational tools to acquire new knowledge. Its primary focus is preparing individuals for future responsibilities and long-term organizational goals.

**Knowledge Management (The Immediate):** A system that provides instant access to expertise and data for real-time decision-making. It bridges the gap between theory and practice by offering explicit resources (like manuals) and tacit connections (like expert networks) to support employees on the job.

## KM Needs Analysis

To improve business results, organizations can assess their knowledge gaps through these steps:

**Data Collection:** Gather performance metrics on the specific behaviors that need improvement

**Root Cause Identification:** Determine why these knowledge gaps exist in the first place.

**Gap Analysis:** Review the data to pinpoint exactly where knowledge is lacking.

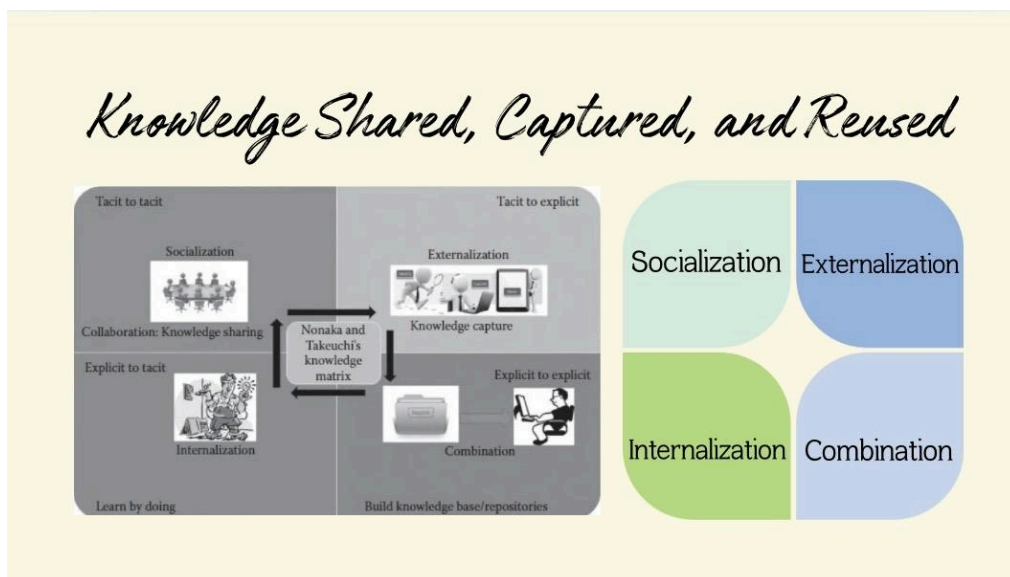
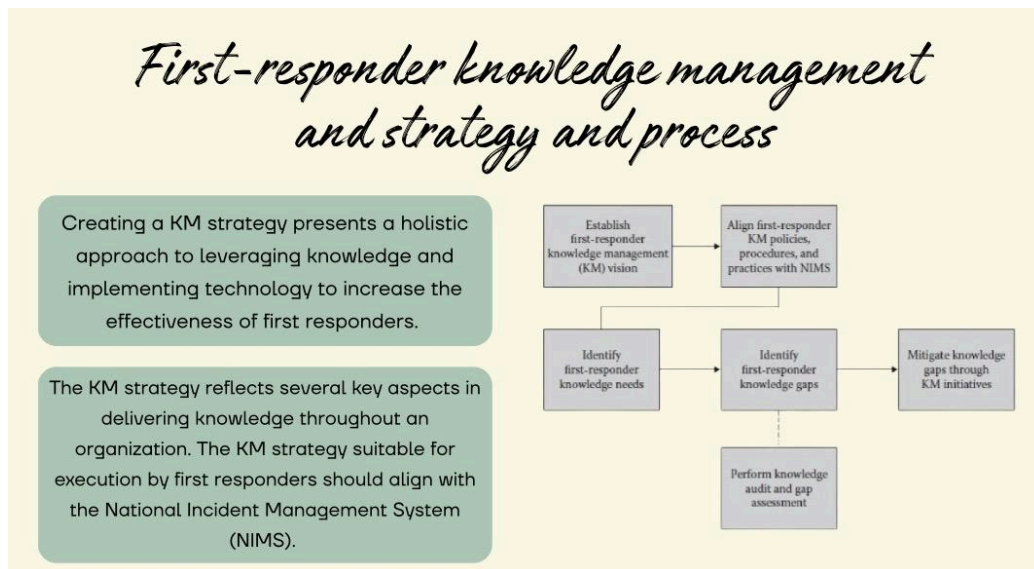
**Solution Implementation:** Recommend and apply specific knowledge-based fixes to bridge those gaps.

# KM IN EMERGENCY AND DISASTER PREPAREDNESS

## KNOWLEDGE MANAGEMENT IN IN EMERGENCY AND DISASTER PREPAREDNESS

### Contributing Factors and its Effects

- Current alert systems do not align with a cohesive preparedness, response, and recovery strategy
- Many alert systems do not integrate with national, state, and local systems
- Current alert systems do not leverage weather, geospatial, and intelligence services
- Many alerting systems do not enable two-way communication among emergency officials and first responders
- Current alerting systems do not enable two-way communication between officials and the public
- Current alerting systems require dedicated hardware, software, and telecom interfaces
- Ineffective information feeds to broadcast alerting systems (TV and radio)
- Current alerting systems lack targeted, ad hoc geographic alerting capabilities



## **Knowledge Shared, Captured, and Reused**

First responders must have a KM strategy that supports the following:

- Quick and decisive decision making, collaborative communication, and situational analysis
- Acquiring EMS-specific knowledge
- Knowledge recognition, needs assessment and allocation, and feedback and evaluation
- Expertise coordination practices
- Command and control structure
- Learning and knowledge transfer

## **Quick and Decisive Decision Making**

To support quick and decisive decision making, collaborative communication, and situational analysis, an incident command structure must disseminate integrated information using real-time communications. Firefighters operate under pressure and in confusion, needing to absorb and judge information rapidly. The KM strategy will facilitate decision making through this command structure and be supported by NIMS protocols for communication and management.

## **Acquiring EMS Knowledge**

EMSs has emerged as an important part of what services Fire Departments and first responders provide to the public. A plan for cross-training within the Fire Department to efficiently and effectively deliver its services should be included within the KM strategy. Knowledge Recognition, Needs Assessment and Allocation, Feedback, and Evaluation During an emergency event, the firefighter first responder has to know details about the event as it is happening, what is needed to address the event, who needs specific information and knowledge, and what action(s) have to be taken. The NIMS protocols, procedures, and policies support the knowledge recognition, needs assessment and allocation feedback, and evaluation mechanisms needed in a KM strategy for first responders.

## **Expertise Coordination Practices**

Expertise Coordination Practices (ECP) support the rapid exchange and coordination of knowledge during emergency events by managing skill and knowledge interdependencies among first responders. As part of the Fire Department's Knowledge Management strategy, ECP enables effective knowledge sharing and expertise validation during emergencies (Faraj & Xiao, 2006).

The key ECP protocols include:

- Protocols to streamline work and reduce process uncertainty
- Plug-and-play teaming arrangements for flexible personnel deployment
- Communities of Practice (CoP) for operational responsibility and training
- Knowledge externalization to enhance knowledge sharing

These practices provides policies and procedures to coordinate resources and knowledge among individuals, teams, and agencies throughout all phases of an emergency event (NIMS, 2008).

## **Command and Control Structure**

Command and control address the management of information and knowledge at the tactical level (Balogun et al., 2006). At the tactical level, the KM strategy will address functional (tacit) knowledge at the operation level, which includes task planning, event monitoring, understanding the time and place of emergency events, reasoning about the cause and effect of the incident, and lessons learned (Balogun et al., 2006). Command and control has been identified as an integral part of any KM system (Balogun et al., 2006).

## **Learning and Knowledge Transfer**

Because information and knowledge of the crisis event is being passed along from individual to individual, team to team, and agency to agency, there is a need to incorporate policies, procedures, and protocols to facilitate an atmosphere of learning and knowledge transfer. Learning and knowledge transfer will be a key ingredient in the KM strategy for Fire Departments and for the first responders they deploy on emergency events.

### **1. Codification (Technological) KM Strategy**

A Codification or Technological KM strategy focuses on collecting tacit and explicit knowledge, storing it in a knowledge repository, knowledge base, and/or electronic library, and providing it in an explicit codified form (Haggie and Kingston, 2003; Nicolas, 2004; Smith, 2004). This strategy is designed to transition individual knowledge to organizational knowledge. Furthermore, this strategy is associated with the externalization and combination aspects of Nonaka and Takeuchi's SECI model to transition knowledge from tacit to explicit and into an electronic format.

The main goal is to convert personal knowledge into organizational knowledge that can be accessed and used by others. In terms of the SECI model, this relates to the externalization and combination processes, where knowledge moves from tacit to explicit and is organized in a usable format.

### **2. Personalization KM Strategy**

A Personalization KM strategy uses technology to assist in the process of people communicating sharing their knowledge (Nicolas, 2004; Smith, 2004). This type of KM strategy manages knowledge that is tied to or associated with a person and is commonly shared directly via person-to-person contact (Smith, 2004). This strategy is associated with the socialization aspects of Nonaka and Takeuchi's SECI model, which details tacit-to-tacit knowledge exchange.

Unlike the codification strategy, this one focuses on knowledge that is tied to people. Technology helps facilitate communication, but the knowledge is usually shared directly from person to person. This strategy aligns with the socialization process in the SECI model, emphasizing tacit-to-tacit knowledge sharing.

### **3. Socialization KM Strategy**

A Socialization KM strategy combines both the Codification or Technological KM strategy and the Personalization KM strategy (Nicolas, 2004). This strategy is designed to exchange

and pool knowledge (Nicolas, 2004). In combining both the Codification and the Personalization KM strategies, the Socialization KM strategy combines the externalization, combination, and socialization aspects of Nonaka and Takeuchi's SECI model. This strategy combines both codification and personalization approaches. It encourages storing knowledge in systems while also promoting person-to-person sharing. Essentially, it allows organizations to both capture and exchange knowledge, involving the externalization, combination, and socialization aspects of the SECI model.

### **Why Knowledge Management (KM) Matters in Emergencies**

During disasters, the problem is usually not lack of effort but lack of correct information. First responders want to help, but when information is late or inaccurate, it causes confusion, slow response, and poor decisions. In the worst cases, this can lead to loss of life.

- During disasters, critical information often does not reach the right people on time
- First responders fail not because of lack of effort, but because of lack of accurate, timely knowledge
- Poor information flow leads to:
  - Confusion
  - Slow response
  - Poor decisions
  - Possible loss of life

### **Problems with Current Emergency Alert Systems**

Many emergency alert systems today are ineffective. They fail to deliver accurate and meaningful information, and they do not reach first responders, leaders, and the public on time. Because of this, proper preparedness, response, and recovery are affected.

Current systems are ineffective because they:

- Do not deliver accurate and meaningful information
- Fail to reach first responders, leaders, and the public
- Do not support proper preparedness, response, and recovery

### **Major Contributing Factors**

There are several reasons why alert systems fail. Many systems are not integrated across national, state, and local levels. There is also no two-way communication between officials, responders, and the public. Important data like weather and location information is not used, and alerts are often slow, delayed, and not targeted.

- Alert systems are not integrated (national, state, local)
- Lack of two-way communication
  - Between officials and first responders
  - Between officials and the public
- No use of weather, geospatial, and intelligence data
- Alerts are slow, delayed, and not targeted
- Requires special hardware or software, limiting speed and reach

## Effects of These Problems

Because of these problems, first responders cannot make informed decisions. The public does not receive warnings on time. As a result, emergency response becomes slower, more expensive, and less effective.

- First responders cannot make informed decisions
- Public does not receive timely warnings
- Emergency response becomes:
  - Slower
  - More costly
  - Less effective

## Purpose of the Chapter

The purpose of this chapter is to propose a Knowledge Management strategy for first responders. The goal is simple: to deliver the right knowledge, to the right people, at the right time during emergencies.

- Proposes a First-Responder Knowledge Management (KM) Strategy
- Goal:
  - Deliver the right knowledge
  - To the right people
  - At the right time

## First-Responder KM Strategy

This KM strategy uses a holistic approach. It combines knowledge, technology, and communication. It must also align with the National Incident Management System or NIMS to ensure proper coordination during emergencies.

- Uses a holistic approach
- Combines:
  - Knowledge
  - Technology
  - Communication
- Must align with NIMS (National Incident Management System)

## Focus Areas of the KM Strategy

The KM strategy supports all stages of emergencies from disaster preparedness, to emergency response, and up to post disaster recovery. It also helps different agencies like fire, police, EMS, and the National Guard work together more effectively.

The KM strategy supports:

- Disaster preparedness
- Emergency response
- Post-disaster recovery
- Faster and more effective coordination among:
  - Fire
  - Police
  - EMS

- National Guard
- Coast Guard

### Knowledge That Must Be Managed

The chapter explains that there are two types of knowledge. Tacit knowledge comes from experience, skills, and judgment, while explicit knowledge includes written procedures, manuals, and data. Both types are important during emergencies.

Based on Nonaka & Takeuchi:

- Tacit Knowledge – experience, skills, judgment
- Explicit Knowledge – written procedures, manuals, data

### SECI Model (Very Important)

The SECI model explains how knowledge is shared. Experience is shared through interaction, documented into procedures, organized into systems, and learned through practice. This model is very important because it is the foundation of knowledge sharing during emergency situations.

The SECI model explains how knowledge is shared:

- **Socialization** – sharing experiences (tacit to tacit)
- **Externalization** – turning experience into documents (tacit to explicit)
- **Combination** – organizing documents and data (explicit to explicit)
- **Internalization** – learning by doing (explicit to tacit)

This model is the foundation of knowledge sharing during emergencies

- In conclusion, many emergency failures are actually knowledge failures. A strong Knowledge Management strategy improves decision-making, saves time, and ultimately saves lives. Effective emergency response depends on people, knowledge, and technology working together.
- Emergency failures are often knowledge failures
- A strong KM strategy:
  - Improves decision-making
  - Saves time
  - Saves lives
- Effective emergency response depends on:  
People + Knowledge + Technology

### Knowledge Recognition, Needs Assessment, Allocation, Feedback, and Evaluation

During an emergency, first responders must understand what is happening in real time, identify available and needed resources, determine who requires specific information, and decide on appropriate actions.

This process is continuous and requires accurate information flow. NIMS policies and procedures support knowledge recognition, needs assessment, resource allocation, feedback, and evaluation, allowing responders to adjust actions as the situation evolves.

### Expertise Coordination Practices (ECP)

Emergency response requires rapid coordination of different skills and expertise. Expertise Coordination Practices (ECP) help manage knowledge and skill interdependencies among responders during crisis events.

ECP ensures that the right expertise is applied at the right time and supports effective knowledge sharing and validation.

Key ECP components include:

- Streamlining work processes to reduce uncertainty
- Flexible “plug-and-play” team arrangements
- Communities of Practice (CoP) for training and operational learning
- Externalizing knowledge to improve sharing across teams

These practices are supported by NIMS resource management protocols and enable coordination across individuals, teams, and agencies.

# KM IN HEALTHCARE

## KNOWLEDGE MANAGEMENT IN HEALTHCARE

- Healthcare is a knowledge-intensive industry, where effective use of knowledge is essential for delivering quality patient care while controlling and streamlining operational costs.
- Knowledge Management (KM) in healthcare focuses on sharing know-how through collaboration and integrating systems to ensure timely access to relevant knowledge.
- Collaborative work environments improve communication among healthcare professionals and increase responsiveness to patient needs.
- Healthcare is moving from a single physician–patient to customer–company relationship which is delivered by a team of healthcare professionals that specialize in a single aspect

### Challenges

The healthcare industry faces challenges:

- Rising costs
- High rates of medical errors
- Increasing quality expectations

### Healthcare delivery process

#### 01 Patient Intake Process

- first opportunity to capture knowledge about the patient and their condition
  - ex: medical history, payment method, current vital condition

#### 02 Data Collection

- data collected is sent to the healthcare facilities' database
- diverse set of public and private data collection systems that could fragment data flow
- to increase flow, data, information, and knowledge could be integrated with data from other sources

#### 03 Decision Support System

- Clinical Decision Support Systems (CDSS)
- enable standardization and sharing of clinical best practices and protocols
- if CDSS is a standalone system, it will lack the interoperability needed to provide the necessary knowledge for healthcare professionals

#### 04 Diagnosis and Treatment

- happens largely at an unconscious level
- enumerate diagnostic possibilities and estimate their relative likelihood
- incorporate new data, information, and/or knowledge to choose the most likely **diagnosis, and patient records are updated**

#### 05 Patient Closeout / Patient Discharge

- receives medication, set follow-up appointments, finalizes payment arrangements, patients records are updated
- prior to discharging a patient; examination and sign-off by appropriate providers and patient education

## KM Models for Healthcare Tringali and Lusigan (2005)

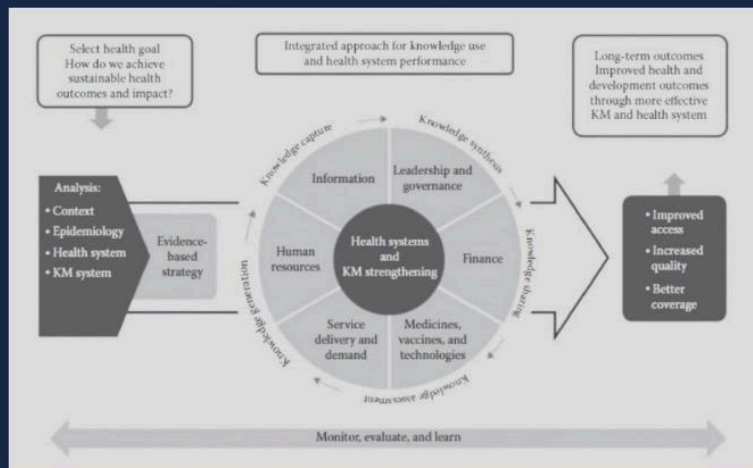


Figure 9.2 Model for KM in healthcare

### SECI Model in Healthcare Operations

Socialization: Interaction with customers and on-the-job training

### Combination

recombining existing knowledge through categorizing and sorting, database utilization

### Externalization

metaphors, analogies, concepts, and hypothesis in collective reflection and evaluation, “unlearning”

### Combination

recombining existing knowledge through categorizing and sorting, database utilization

### Internalization

individual experiences in manuals or oral stories

### Patient-Centered Approach to Knowledge Management

- Patients play an increasingly active role in healthcare by contributing tacit knowledge about their values, preferences, and lived experiences.
- Evidence-based medical practice requires the integration of scientific research, clinical expertise, and patients' values to achieve optimal outcomes.
- Ignoring patient knowledge can hinder acceptance of medical recommendations and reduce the effectiveness of care deliver
- Healthcare knowledge construction now centers on patients rather than solely on physicians.
- Social interactions among consumers, providers, regulatory agencies, and sponsors influence how healthcare knowledge is created, shared, and applied.

## Knowledge Management and Healthcare Informatics

### Healthcare Informatics

- Combines the fields of IT and health to develop the systems required to administer the expansion of information
- The goal is to gain expertise in the understanding of clinical knowledge with a computational approach enabling the creation of processes in aggregating clinical data from various data storage systems

### KM Tools in Healthcare

#### 01 Expert Systems

- Often in the form CDSS, which analyzes data to help healthcare providers make clinical decisions
- Used when accuracy of diagnosis and efficiency for various services are needed

#### 02 Data Mining

- Used during the knowledge discovery process and aims to analyze a set of data or information by finding data patterns and trends through a number of complex algorithms

#### 03 Text Mining

- Extract useful knowledge from textual data or documents by scanning and converting the selected data with the tool's data base

#### 04 Business Intelligence and Analytics

- To improve healthcare delivery and make improvements on cost reductions

#### 05 Communities of Practice

- To facilitate the sharing of knowledge throughout the healthcare delivery process  
Three key dimensions:
  1. **Domain of knowledge** – focus on specific populations, performance of specific procedures
  2. **Community** – share a voluntary commitment to relationship building
  3. **Shared practice** – develop and share knowledge and build expertise

### Conclusion

- Effective CDSS that's integrated to the clinical workflow and interoperable within healthcare organizations
- Public knowledge resources serve as vital educational tools that shouldn't replace professional medical advice
- A holistic approach for KM that extracts germane knowledge and allows an integrated view across the entire healthcare organization