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The Issues and Challenges Involved in Identifying and Implementing the Appropriate Enterprise Knowledge Management for an Organization: A Literature Review

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Abstract
The implementation of Knowledge Management Systems (KMS) has gained significant attention in recent years due to its potential to improve organizational effectiveness and competitive advantage. However, despite the benefits that KMS can bring, many organizations face challenges when attempting to implement these systems successfully. This literature review aims to explore and analyze the main challenges that organizations encounter during identifying and implementing the appropriate Enterprise Knowledge Management (EKM)for an organization. By examining existing research and theoretical frameworks, this study seeks to provide an in-depth understanding of the technologies, tools and techniques that impact the successful deployment of EKM in organizations. Through synthesizing the literature, this research will contribute to the body of knowledge on KMS implementation challenges, offering valuable insights for practitioners and researchers seeking to enhance their understanding of this complex and critical organizational process. The research will study the literature available in the area of EKM system identification and implementation.

Keywords: Enterprise Knowledge Management, technology, knowledge creation, decision making, EKM model

Introduction

To strengthen the development of enterprises and optimize knowledge management strategies, the current situation of enterprise knowledge management (EKM) is investigated and the evaluation indicators of EKM strategies are analyzed.(Yuanjun)

An enterprise's primary responsibility is development, and management techniques play a critical role in advancing this goal (Chui et al., 2020; Nakayama et al., 2021). The optimization and implementation of management strategies are essential as a management center for experience and cutting-edge knowledge in enterprise development (Plageras et al., 2018; Ruel et al., 2019). Many research have offered technical help, despite the fact that enterprise knowledge management (EKM) strategy optimization is still not flawless.

Businesses are currently dealing with a more complicated competitive environment as a result of the economy's and technology's quick development as well as the acceleration of market globalization. Virtual

businesses have developed as needed because the old firm model is no longer able to adapt to this unstable competitive climate (Cai et al., 2022; Zheng et al., 2021a, 2021b).

At the current stage of socio-economic development, knowledge management is crucial in ensuring a country's competitiveness and sustainable economic growth (Barkhordari et al., 2019; Małkowska et al., 2021).

Understanding Knowledge Management Systems (KMS) is essential for organizations seeking to harness their intellectual capital effectively. KMS play a pivotal role in facilitating knowledge creation, sharing, and utilization within an organization, thereby enhancing its overall performance and competitiveness (Minu Saratchandra et al., p. 2668-2698). The design and implementation of KMS are complex processes that require careful consideration of organizational culture, technological infrastructure, and knowledge processes. Successful KMS implementation entails aligning the system with the organization's strategic goals, ensuring user-friendly interfaces, and fostering a knowledge-sharing culture among employees. Challenges in KMS implementation often arise from resistance to change, inadequate integration with existing systems, and a lack of clear knowledge ownership. By addressing these challenges and leveraging the potential of KMS, organizations can enhance their knowledge-sharing capabilities and drive innovation and growth.

An organization's capacity for knowledge creation and use directly affects both its financial performance and competitive advantage (Tanriverdi 2005). Organizations that possess knowledge are better equipped to handle challenging issues, make wiser decisions, and react to changing market conditions (Grangel et al., 2007). Organizations may successfully compete in the market and continuously innovate with the help of knowledge management. The management of knowledge resources is essential for corporate performance in a society where information is the only true organizational resource (Drucker, 2002).

Knowledge management is becoming more and more necessary as organizational decisions become more global, interrelated, and complex than they were in the past (Courtney, 2001). A trans-disciplinary approach to enhancing organizational results and learning via optimizing the use of knowledge is what knowledge management, or KM, is characterized as innovation and sharing of behaviors, controlling ambiguity and complexity through knowledge networks and connections, investigating intelligent procedures, and implementing people-centric technologies are all aspects of knowledge management. In response to this need, information technology have improved knowledge management both inside and across businesses (Chalmeta and Grangel, 2008).

One of the most important success factors for KM support has been recognized as information technology (IT) (Kim and Trimi, 2007; Edwards et al., 2005; Metaxiotis et al., 2005). IT is said to enhance knowledge management procedures faster and at a lower cost. Technologies like intranets, groupware, bigdata, AI, web conferencing, and document management systems, for instance, enhance the efficiency and quality of knowledge acquisition and sharing. Structured repositories are used by data management technologies, including data warehouses, to organize and store knowledge, resulting in the creation of an organizational memory. Knowledge-based systems and education/training software are effective means of disseminating knowledge.

The term "knowledge value management" describes how businesses use knowledge, including how they acquire, adapt, and use it (Bouarara, 2021; Orenga-Roglá & Chalmeta, 2019) During the acquisition process, the company must gather data from outside sources according to its requirements and transform it into knowledge that satisfies those requirements. Ultimately, a knowledge base is created and utilized to manage and apply the acquired knowledge (Yuanjun Zhao, 2022.)

EKM requires not only the overall self-management by the enterprise but also the self-management by individual employees. In the EKM evaluation standard, enterprise employees are evaluated based on the frequency with which they log into the EKM system and the size of knowledge base built and data storage . Enterprises are assessed based on the stability of the internal environment, adaptability to the external environment, competitiveness, and innovation ability of the enterprise.

Users will participate more actively in the implementation process if they can communicate and comprehend the system more easily. After installation, there will be a greater likelihood of system acceptability.

According to Shum et al. (2000), a knowledge model is a description of a domain or problem-solving behavior that is abstracted from implementation-specific features and focuses on the concepts, relations, and reasoning steps of the domain or behavior. It illustrates the links, properties, applications, and limitations of the knowledge components as well as their structure. A corporate organization can view and comprehend its knowledge structure more clearly by using a knowledge model.

A knowledge model offers a conceptual framework for organizing and managing corporate knowledge in a way that makes it explicit, accessible, and usable when required. Knowledge models are frequently constructed around important business procedures (Shankar and Gupta, 2005). Many actions are taken in a normal business process in an effort to meet predetermined goals. A business process crosses organizational boundaries and functions across functional boundaries. Different knowledge models may be developed in business organizations due to their diverse procedures. Every department might, for instance, have a unique knowledge model. It's possible that various organizational processes call for unique knowledge models.

The exchange of enterprise knowledge and communication amongst various individuals inside the company is one of the objectives of knowledge management (KM) (Kavakli and Loucopoulos, 2006). One challenge is articulating knowledge in a way that facilitates clear communication. You can use natural language. Natural language is simpler to comprehend and apply. Enterprise Knowledge Management (EMM) encompasses many modeling methodologies that explain the meanings, relationships, structures, and other attributes of enterprise knowledge. It also offers a standardized vocabulary to express enterprise knowledge that is easily comprehensible by all members of the organization (Whitman et al., 2001). The three parts of EKM are modeling language, process, and product. An output of EKM is a product, which is a collection of models for characterizing knowledge.

These models aim to depict the development process as a series of tasks with constraints dictating the tasks' sequence. Models that are focused on products present the outcome of these efforts. One paradigm used by the most recent generation of process models is decision-oriented. Because these models describe why transformations occur, they are known to be semantically more powerful than other models. Decision-oriented models can describe why a process occurs as well as how it does. Accordingly, it is thought that the modeling paradigm that is most suited for the EKD process is decision-oriented modeling (Rolland et al., 1999).

EKM has its own set of drawbacks despite its many advantages. There are several concerns regarding the creation of enterprise knowledge models. Consider the following: Is there a single, general model that houses all of the enterprise knowledge in a single view? Is it possible to specify the knowledge entities precisely? How can we decide which model is superior? How can a business knowledge model be developed and maintained? Fox (1993) EKM-related problems and challenges are covered in the sections that follow. There are five main concerns that need to be addressed: managing the evolving EKM,

developing a knowledge ontology, evaluating EKM, developing a consistent methodology, and integrating diverse knowledge models.

Challenges in identifying and implementing EKM

The integration of several knowledge models is one of the main challenges in EKM. Multiple perspectives of the target system should be possible with any enterprise level modeling. The several perspectives, each concentrating on a distinct system feature, are complementary to one another. Accordingly, a deeper comprehension of whole systems is provided by the multiple perspective approach (Frank, 2002). On the other hand, incorporating all the information needed for every view into a single model greatly increases model complexity, which lowers comprehension and makes the model harder to explain. As a result, models are usually limited to illustrating a particular viewpoint or view of the objective system. Various knowledge models are developed to offer distinct perspectives to various stakeholders within the businesses (Kavakli and Loucopolous, 1999).

The many views might result in a fragmented and inconsistent understanding of the total enterprise knowledge, which contradicts the purpose of enterprise knowledge management (EMM), even though the single view approach reduces complexity and fosters understanding of individual models (Whitman et al., 2001). The reason for this fragmentation is that shared model concepts were not sufficiently accounted for in the independently produced models. This is known as the correspondence problem according to Fox and Gruninger (1998). The enterprise-wide model's consistency and integrity are brought into question by this correspondence problem (Maedche et al. 2003). For instance, the same idea could appear under several titles in several models. Furthermore, distinct ideas may appear under different names in several frameworks. As a result, knowledge concepts may not be effectively communicated across departments, procedures, or levels. These correspondence difficulties have the potential to raise update costs and cause integrity problems during the process. Integrating the knowledge models is one technique to preserve both model integrity and communication capabilities. To get a comprehensive depiction of the enterprise, it is imperative to integrate many points of view (Whitman et al., 2001).

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Several model integration has proven to be a difficult problem. Mapping and merging are two common methods of integration (Connolly and Begg, 2006; Kolaitis, 2005; Maedche et al., 2003).

The process of merging multiple knowledge models into a global EKM is known as merging. For instance, a new model is created when the first two local knowledge models are combined. The remaining local knowledge models are then gradually combined by modelers until every local model is included in the final EKM. Among the main issues is validating the final enterprise knowledge model. Validation is accomplished by having domain users examine the finished EKM to make sure the model accurately

captures organizational knowledge. A part of the source, such as the local knowledge model or view, is mapped to the target, such as the integrated view or EKM. Similarity extraction in the mapping approach finds commonality between various knowledge elements, and semantic mapping, when applicable, establishes correspondence between common elements. There may be syntactic, structural, or semantic variations amongst models. Semantic mapping in particular calls for the most time-consuming work and resources (Karagiannis, 2006). Two difficult problems are this extraction of similarity and establishing correspondence (Maedche et al. 2003). Bringing together models that have been realized using several meta-models is one of the hardest challenges. An implementation model is defined by a meta-model. Each model uses distinct notations, vocabulary, and concepts. It is difficult to map models directly with diverse meanings. For the models built on different meta-models, mapping should be realized on the meta-layer (e.g., ontology) that acts translator between meta-models (Karagiannis, 2006).

In conclusion, among the problems with research knowledge models integration are, but are not exclusive to:

Developing methods, tools, and strategies to validate merged/mapped models; Developing methods, tools, and techniques to extract multi-model element similarities; Developing both the theory and the practice for model merging and mapping

- Creating instruments, strategies, and processes to build correlation between common elements
- Creating instruments, processes, and strategies for integrating models based on various meta-models

The absence of a methodology focused on the creation of an EKM is another problem in the process of developing one. A technique is "a well-defined sequence of elementary operations that more or less guarantee the achievement of certain outcomes if executed correctly," whereas a methodology is "an organized collection of concepts methods (or techniques), beliefs, values, and normative principles supported by material resources" (Iivari et al., 2000, p. 186). The necessity of matching the methodology to the kind of problem being tackled has long been acknowledged (Vessey and Glass, 1998). Modelers can carry out the tasks in a repeatable, responsible, consistent, and coherent manner by using a methodology. At least four elements are needed for modeling methodologies: the product, the methods, the modeling language, and the context (Wand and Weber, 2002). The intended result of the modeling process is a product. In actuality, it is a collection of models meant to describe the system that will be built. The set of concepts and constraints, along with their attributes and connections, are defined as a result of the modeling process. A set of procedures is also a part of a methodology. These procedures provide out a method of operation (a set of guidelines) that facilitate the application of concepts.

A few well-known and standardized methodologies exist in other conceptual modeling domains, such as process or data modeling. Examples of these include the entity relationship (ER) model in data modeling, the data flow diagram (DFD) in process modeling, and the unified modeling language (UML) in object-oriented (OO) modeling. Established techniques frequently incorporate best practices and offer a user-friendly, expressive tool. These approaches speed up the development process and offer a formal foundation for creating and developing models.

At the moment, proprietary, general-purpose, or specially tailored techniques are used in EKM processes. Businesses and consulting organizations rely on their own proprietary processes or employ conceptual modeling techniques intended for different uses, such as the UML (Unified Modeling Language) class model and the ER (Entity Relationship) model. A broad number of subjects can be modeled using general-purpose modeling languages like UML (Frank, 2002). As an illustration, UML is quickly emerging as the most well-known and practical OO modeling standard in the business. It is frequently used as a modeling

language for EKM, nevertheless, and is being utilized more and more in business modeling outside of the OO domain. Like other languages, UML defines semantics (the underlying meanings of the text and symbols) and syntax (both graphical and textual, in this case).

An example of a knowledge model using UML is the knowledge model for vessel scheduling process built by Kim et al. (2006). A partial solution to the issue of inadequate EKM methodology is the use of proprietary approaches. Many times, small businesses cannot afford to purchase their own proprietary techniques. They lack personnel and knowledge. Small businesses will be encouraged to establish EKM if a consistent technique is accessible (Rolland et al., 1999). According to Chalmeta and Grangel (2008), the application of these non-task specific techniques leads to problems in the knowledge models that are produced.

Semantic issues arise since these non-task specific approaches don't offer precise concepts and graphical representation suitable for describing knowledge. In addition to fostering the creation of commercial tools, a standard approach specifically focused on knowledge modeling will improve the process of creating precise knowledge models in the syntactical, structural, and semantic senses. A common approach will foster industry agreement on the advantages of EKM and offer a cohesive perspective on it (Frank, 2002). Proper and expressive modeling language availability is a prerequisite for standard methodology development. The task development, documentation, and visualization necessary for standard methodology tasks depend on an efficient modeling language. "It is important to appropriately formalize language descriptions. In other words, the language description should fulfill formal requirements such as completeness, simplicity, and correctness."(Frank p.3, 2002).

To sum up this , the following research questions are among the many that exist in this field:

- Creating a modeling language with semantics and syntax tailored to knowledge modeling. Creating the knowledge modeling-specific methodology procedures; defining the knowledge modeling context, which outlines the limitations of the knowledge modeling methodology;
- Creating sample knowledge modeling products to highlight the usefulness and worth of the methodology
- Creating a meta-model that articulates the common process with an expressive focus on corporate knowledge modeling. The methodology's structure, elements, and interrelationships will be established by the meta-model.

The researchers have discovered that the KM maturity model can only be broadly applied with the CMM framework. Since Software Engineering is a very structured process, each of its process areas (PA) has a known consequence and is unique from the others. Furthermore, software engineering as a subject is widely acknowledged and accepted for its function, goal, and contribution. Process area activities are primarily limited to a group of individuals that "do" software engineering. Compared to evaluating an organization's KM maturity, evaluating its SE capabilities is easier because of the aforementioned traits. This is because KM is still somewhat vague in comparison to SE. Within KM, practices are not standardized. The results of KM are difficult to quantify. Numerous "knowledge workers" are dispersed throughout the organization to participate in KM-related activities. Knowledge workers "as perceived" the benefits of knowledge management

Therefore, in addition to gathering data about the availability of knowledge management (KM) systems and associated procedures, the efficiency of KM (and consequently its maturity level) must be assessed based on the opinions of those who stand to gain from it. Consequently, in order to benchmark the KM maturity level, at least two different kinds of assessments must be carried out. Making a list of all the KM

tools, techniques, and associated procedures is one. These taken together might be referred to as the "KM infrastructure." The other is appraising the worth of the KM to the knowledge workers. This includes the knowledge worker's perception about: the availability of the KM infrastructure and the effectiveness of the KM infrastructure in making a positive difference. This also includes the knowledge worker's opinion about the leadership, vision, and strategy with respect to KM, the existence of a knowledge-sharing culture, etc.

A questionnaire given to the knowledge workers in the organization to be evaluated may be used to conduct the perceptual evaluation. On the other hand, only employees who are aware of the existence of KM infrastructure—typically, IT / IS personnel—should perform the KM infrastructure assessment. For instance, the presence of an intelligent search engine for finding knowledge documents might only be known by those who work in systems. However, a knowledge worker who is not aware of the search mechanism's sophistication could still see the value in employing it to get an accurate result. When combined, these two evaluation kinds provide a comprehensive view of an organization's level of knowledge management maturity.(Robert St. Louis, Uday Kulkarni, 2003).

Validation is a crucial process that is accomplished by having domain users examine the finished EKM to make sure the model accurately captures organizational knowledge. An enterprise model needs to be valid, relevant, accurate, and full (Fox and Gruninger, 1998). The two most important components of a good EKM are the evaluation and the feedback derived from the evaluation (Gómez-Pérez, 2001). Dieng et al. (1999) state that in order to conduct an evaluation, it is necessary to specify the evaluation criteria, the person(s) who will assess the model, the time and method of the evaluation process, and the manner in which the evaluation results will be acted upon. An accurately and comprehensively validated model will depict the domain. Model flaws can spread to later system development activities without thorough validation, leading to delays and sometimes expensive rework (Shanks et al., 2003). According to Brank et al. (2005), the majority of businesses use one of three methods to evaluate the model: applying the model to the target domain using domain data, comparing the model to an established benchmark, or reviewing the model with human experts. Evaluating a model's adherence to a meta-model is an additional approach to verify its validity. A "model of a model" that offers a set of guidelines and modeling structures is called a meta-model (Atkinson and Kuhn, 2003).

It is a definition and specification of a model; it is independent of the domain. According to Henderson-Seller (2003), one of the popular meta-models at the conceptual level is the OPF (Open Process Framework) Meta Model. The meta-model specifies five elements of a conceptual model: work product, producers, work unit, language, and stages. Each approach to EKM validation has strengths and weaknesses, so combining more than one approach may yield better outcomes. To evaluate a model, a set of criteria needs to be determined, and it might be challenging to develop a set of criteria that meets every need. Two pertinent criteria are provided by Tolvanen (1998): problem domain correspondence and richness. Richness evaluates the model's semantic richness. A model ought to offer enough semantic concepts to cover every pertinent facet of the issue area. The problem correspondence is assessed using the second criterion. It will determine whether the model's constructions match the elements of the issue domain. Six criteria should be considered when assessing an enterprise model, according to Fox and Gruninger (1998): minimality, perspicuity, generality, efficiency, functional completeness, and precise granularity.

A functionally complete model is one that precisely and well captures the target domain. The degree of generality will assess its applicability in many contexts. A model's compatibility and shareability across

domains increase with its generality. Efficiency will verify whether the model is created and kept up for the least amount of money. The model's perspicuity assesses how simply and accurately users can understand and interpret it. The precision granularity checks if the model definitions are independent of one another and divisible. For a model to be considered minimal, it must include the fewest possible concepts—yet sufficient ones. Consistency, completeness, conciseness, expandability, and sensitivity were the five evaluation criteria proposed by Gómez-Pérez (2001). As Whitman and Huff (2009) pointed out, a model should also support step-wise refinement. A good model supports hierarchical decomposition of the problem. As mentioned, there is no single best approach to model evaluation. The choice will depend on the purpose, the application in which the model is to be used, and on what aspect of the model evaluators are trying to evaluate. (Brank et al., 2005).

The identification of the model's evaluator, the details of the evaluation process, including when and how it will be carried out, and the manner in which the evaluation results will be considered, are additional matters that need to be addressed (Dieng et al., 1999). Either a more formal or casual evaluation process might be used. A standard approach might be used to conduct an evaluation that is more formal. Users and the development team may undertake the informal evaluation. One of the best ways to validate ontologies is through an expert focus group or a walkthrough conducted by users, developers, and the quality assurance team. The topic of knowledge-based system evaluation is relatively new, despite the large number of works in this area. A set of criteria that fulfills every condition is hard to define (Grüninger et al., 2000). In addition to validation and verification, determining the frequency of evaluation and establishment of a mechanism of linking the feedback to the model are also critical issues in the ontology assessment. The interval for evaluation will depend on the nature of knowledge and business for which the model is being built.

To sum up, the following research questions are among the many that exist in this field:

- Creating instruments, strategies, and processes to set assessment standards
- Creating instruments, strategies, and procedures for selecting and determining the evaluation process's elements, such as participants, phases, dependencies, completion requirements, and feedback loops. An enterprise model must not only be accurate, current and complete, but also relevant (Whitman and Huff, 1998). As the business environment changes, the required quality and quantity of knowledge will change, which will drive changes in the model. The process of evaluation will highlight the addition of new knowledge and update/deletion of outdated knowledge. Regular audit and evaluation is necessary to maintain an effective knowledge model(Whitman et al., 2001).

A model's development is predicated on the common scenarios of corporate operations and processes. The typical business flow is the main concern of developers. However, there are peculiar situations. These are unique occurrences or business process flows. These are the ones that do occur but are not regarded as typical. Unexpected events and business scenarios may be formed after the model has been constructed, as most developers and users are unable to foresee every scenario at first. The enterprise model needs to be flexible enough to accommodate new occurrences with speed and ease in order to be effective (Whitman et al., 2001). Extensible, dynamic, and maintainable knowledge models are useful (Whitman and Huff, 1997). These features allow the model to adapt to modifications. Unpredictability exists in the way the environment in which the knowledge model was developed changes. The assumptions that were established when the model was developed may also vary as the environment does. The validity of the model will quickly be lost if it is hard to maintain (Maedche et al., 2003). If the model is not in sync with reality, it is useless (Whitman and Huff, 1997). When a system undergoes change, a model must also.

Important details regarding the pace of change and the cause of the change must also be included (Whitman et al., 2001).

A temporary, expedient action that is easy to formulate and implement may lead to problems in long term. Managerial efforts should be directed to developing a way of systematically managing the evolution of EKM. Systematically managing the evolution of knowledge models will avoid long-term problems (Whitman and Huff, 1997).

In summary, the research issues in this area include (but are not limited to):

- Developing a set of metrics to measure relevance and currency
- Developing methods, tools, and techniques to manage EKM evolution

Recently, ontology-based enterprise modeling approach has emerged. This ontological approach to modeling is gaining popularity with its representational capability and its power of expression (Kim et al., 2011; Wand and Weber, 2004; Pinto et al., 2009). Ontology is the study of entities that exist in the world: a formal, explicit specification of a shared conceptualization (Gruber, 1992). In the context of knowledge management, ontology means a specification of knowledge that can be designed for knowledge sharing and reuse (Pinto et al., 2009; Vernadat, 2002).

The ontological description provides formal conceptualizations of such entities. The knowledge notion is the understanding of an entity, which might be a person, thing, concept, event, or organization (Gómez-Pérez, 2001). The descriptions of an entity's attributes, relationships, restrictions, and actions are commonly included in ontological specifications. The qualities of an entity are described by its attributes. The relationships (e.g., participant, usage, assembly and components, container and contents, generalization and specialization, etc.) explain the association among the entities. The behaviors outline the possible courses of action for the entities, while the constraints provide the regulations regulating them. Ontological analysis assigns categories to objects in the domain world.

The product of such analysis is a catalog of the entities that are assumed to exist in a domain of interest (Sowa, 2003). Ontology can be used as a means with which developers capture knowledge about a domain of interest by specifying relevant concepts of knowledge items and relationships between them. An Ontology Based Enterprise Knowledge Modeling (OBEKM) provides many benefits. The ontological description of knowledge can be a formal enterprise knowledge model. This identifies and defines the enterprise entities, their attributes and relationships between them. (Kavakli and Loucopolous, 1999). Since ontology represents entities that exist conceptually or physically in reality, any model built on ontology remains constant and doesn't change frequently. An ontology-based knowledge modeling provides stability and reliability in representing and maintaining enterprise knowledge. Ontology based models are highest level description of target reality. They have a higher power of expression, are more user oriented, goal oriented, and are more extendable (Spyns et al., 2002).

By eliminating semantic heterogeneity, ontology-based modeling promotes a common and shared knowledge of a topic and enhances communication amongst the stakeholders. Ontology is not implementation- or task-specific. By their very nature, ontologies are universal and task-neutral. Reusing and sharing the generic, implementation-independent ontology is simple. The issue is how to offer a method for creating ontologies. It is necessary to provide developers with guidelines, regulations, and frameworks so they can accurately and consistently design ontologies.

For an ontology based modeling methodology to develop into a more mature and reliable methodology, there are many issues remaining to be addressed. One such task is the development of the theoretical foundations of ontology that support the development of EKM methodology (Grüninger et al., 2000). A

well founded and coherent theory of ontological design can provide a rigorous basis for specifying, designing, constructing, and maintaining domain ontology. This will result in a more scientific methodology with which developers can build more generic models sharable and reusable across many domains.

Finally, the ontology model should be consistent with key enterprise metrics. Businesses should direct their efforts to developing a set of metrics which can be used to measure the effectiveness and efficiency of the ontologies.

In summary, the research issues in this area include (but are not limited to):

- Development of a theory for ontology use in EKM
- Developing methods, tools, and techniques to create and maintain an OBEKM
- Developing methods, tools, and techniques to measure and evaluate OBEKM

The availability and abundance of information and data in recent decades has made it difficult for people, teams, and organizations to manage their assets efficiently. Concurrently and subsequently, the field of knowledge management (KM) emerged to assist in the organization and utilization of the copious amounts of information required by businesses to carry out their operations and capitalize on the valuable asset of acquired knowledge. A "fluid mix of framed experience, values, contextual information, expert insight, and intuition that provides an environment and framework for evaluating and incorporating new experiences and information" is how Tiwana (2002) defines knowledge.

The early definitions of knowledge management involved a process of implementing a system to capture, structure, manage, and distribute this knowledge (not just data and information) throughout an organization to increase performance, utilize best practices that have been used before, and reduce expensive relearning for new projects(Dalkir, 2011; Nonaka & Takeuchi, 1995; Pasternack & Viscio, 1998; Pfeffer & Sutton, 2000; Ruggles & Holthouse, 1999). In recent years these knowledge management systems have come to be known as first-generation KM that is primarily focused on knowledge operations, deployment and usage. More modern concepts and practices are now seeking to employee a second generation of KM implementation for organizational knowledge production and learning (McElroy, 2003).

The tenets of this second generation of knowledge management begin with the notion that knowledge is something that can be produced and that innovation occurs socially, not within an organizational structure. For a more balanced approach to effective knowledge production, codification, and dissemination inside an organization, the human factors must therefore be taken into account. However, a lot of businesses and managers are still having trouble understanding the basic ideas behind KM implementation, so it's important to evaluate useful solutions.

Since KM programs and processes are still relatively new business practices, the research paper looks at both established and developing programs and processes. It is crucial to take into account relevant research findings and the field's guiding principles. This includes sophisticated management tools designed to boost output, cut costs, and benefit businesses by improving employee satisfaction and return on investment (ROI). Companies need to take into account a variety of knowledge management concepts in order to establish and preserve a sustainable competitive advantage (Awad & Ghaziri, 2004). Including the idea that the company's critically valuable explicit and tacit knowledge base needs to be preserved and shared, as well as the necessity for more attention to be placed on acquiring it. Important ideas are covered in this knowledge base for both internal use within the company and external use in its partnerships with other businesses. Furthermore, companies nowadays must never stop focusing on innovation and the processes

they currently have or can create to transform it into new goods and services. Planning and implementing strategic and operational KM processes are crucial in this situation.

A previous research study of knowledge growth stages in 50 companies examined their rank on the Bohn scale(Bohn, 2004), and found that most companies are active between stage three (the measure stage) where knowledge is typically written and stage four (control of the mean) where knowledge is written and embodied in hardware (Alstete, 2010). While it was also found that managers are self-perceived as usually slightly ahead of their competitors, the overall belief is that they are not nearly at the ideal level that they would prefer their organization to be. There is other research that examines the creation of knowledge management systems and intellectual capital that can be leveraged for competitive advantage.

Karl Wiig's book explores how a people-focused knowledge management approach to decision making at businesses contributes to organizational success (Wiig, 199). The idea goes in part as follows: knowledge management practitioners, researchers, and scholars are creating—or have already created—the need to refocus on a different strategy, akin to the McElroy Second Generation, in which technology and prescriptive processes are integrated into a deeper understanding of how people's actions are influenced by their own knowledge, both explicit and tacit, intellectual capital assets, and other resources.

This is a tall order for organizations today in light of the many challenges that all companies face with a volatile economy, changing demographics, globalization, rapidly developing technology, increased government regulations, evolving consumer expectations, and related macro-environmental issues. Therefore managers today are in strong need of clear initial guidance and direction to properly develop and implement a KM system within their organizations.

Discussion

EKM is crucial to the growth and development of enterprises because EKM can provide data support for enterprises, summarize experience, and guide the direction for the development of enterprises. Modern enterprises are paying increasing attention to knowledge management, and the study of EKM is also becoming increasingly significant. However, related technology is lacking. Therefore, EKM is researched and analyzed using NNs technology through big data. In the process of enterprise development, NNs technology analyzes and obtains data for enterprises in a timely manner and provides relatively complete knowledge through forward and reverse error calculations. This helps enterprises build an independent knowledge base, evaluate it in real time during the application of the knowledge base, and improve stored knowledge. In other words, using NNs technology can not only create new knowledge for enterprises, but also provide technical support for the development and improvement of EKM. In addition, if enterprises want to strengthen the optimization of knowledge management strategies, they should obtain relevant information from external sources, convert useful information into their own knowledge through exploration, combine knowledge to build a knowledge base to improve the depth of EKM, and extract useful information through development. They should also transform information into their own useful timely knowledge to fill gaps in the knowledge base and improve EKM strategies. In terms of evaluation, enterprises need to strengthen their adaptability to the external environment, improve the vitality of the environment, increase competitiveness and creativity, and comprehensively improve their management ability.

Conclusion

With the support of big data, NNs technology is used to study and analyze EKM strategies and provide

data through step-by-step analysis to enable formulation of relative strategies for EKM. Optimizing EKM should start with improving the adaptability to the external environment of the enterprise, vitality of the internal environment, competitiveness and creativity, and real-time analysis of the current situation of the enterprise. Meanwhile, the management model of the enterprise should be adjusted in a timely manner according to the collection and analysis. Using NNs technology to analyze EKM strategies can not only analyze different enterprises but also calculate the knowledge management indicators of different strategies. The final calculation results reflect the knowledge management indicators and provide calculation errors for the enterprise. Enterprises can adjust their own knowledge management strategies according to the calculated indicators and can also analyze the practicality of the calculation based on the errors provided in the calculation process and adjust the calculation items. The calculation of NNs technology provides technical support for EKM strategies and guarantees optimization. Although the EKM method is relatively comprehensive, it is not ideal for practical application. In the future, this part will be strengthened to improve the application of technology in the optimization of EKM strategies.

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