Adaptation of the General Maturity Model of Knowledge Management (G-KMMM)

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Abstract: The aim of this paper is to propose an adaptation to maturity model knowledge management called "General Knowledge Management Maturity Model" (G-KMMM) of Wimberly [1], adding a key area (strategy). For this, the model in its original version is presented, then an adjustment to the instrument KM assessment tool (KMAT) is performed, and finally we show the results of the application to validate the adjusted model. It was established that the adjusted model provides a more robust measure of the maturity of knowledge management in an organization and this does not alter the benefits of the initial model.

Keyword: Knowledge management maturity models, maturity levels, education, institutions of higher education.

1. INTRODUCTION

Companies are currently facing the so-called knowledge society, where the management of intangible assets became a source of value creation and a fundamental element for the sustainability of organizations [2]. In this context, it is necessary to go beyond knowledge management (KM) and study the various stages in which an institution can create, capture, transform and use it for the benefit of organizational development while promoting creation or strengthening of competitive advantages. In other words, it is necessary to measure the maturity of knowledge management.

In the last three years, there are numerous works address the topic of maturity of Knowledge Management [3]. For example, [4] evaluated the level of maturity in KM in two companies that used the platform TALENTUM. [5] explored the systematic application of KM processes, identifying barriers that impeded the creation and effective dissemination of knowledge. As for [6], they elaborated a study that combined a survey to 143 contractors and a dynamic simulation of systems with structural equations. [7] identified the variety of factors that influence

the practice of measuring intellectual capital in an organization, therefore the KM. Likewise, [8] evaluated the ability of KM and determined the maturity status of KM in an institution of Higher Education in Mongolia, using the evaluation model of [9].

Moreover, [10] empirically evaluated the possible linkage between the maturity of KM and the performance of project-based organizations, specifically in Indonesian construction companies.

[11] research used the Brazilian Air Force as a case study assessing the effects that the establishment of a management of science and technology structuture, had in KM. [12] assessed the maturity of KM in large companies in Medellin. The study found that firms had difficulties to go beyond the implementation of basic KM practices and achieve a breakthrough in knowledge management maturity, articulating KM practices with the business processes, and achieving a greater use and appropriation by the members of the organization. Similarly, [13] explored the relationship between KM maturity and product and marketing innovations in leading R&D companies. [14] developed the Knowledge Management Maturity Model (KMMM) applying the assessment instrument to 3,000 employees from 14 different areas of a large food multinational company. Lastly, [1, 15] carried out a systematic review of the literature on KMMM between 2001 and 2016, in a number of bibliographic databases such as JSTOR, Emerald, Scopus, Science Direct, Taylor & Francis, Scielo, Google Scholar, EBSCO Business Source Premier and Engineering Village, finding 24 KMMM. However, the purpose of this article is to propose an adaptation to the Knowledge Management Maturity Model called General Knowledge Management Maturity Model (G-KMMM) [1], adding a key area called strategy, to the existing ones: people, processes and technology.

In order to achieve this goal, the article is structured in four parts. In the first one, the methodology is presented. In the second, the General Maturity Model of Knowledge Management (G-KMMM) is introduced. In the third part, the adaptation of the model is formulated and the results of the application validating the adjustment to the instrument are presented. The last part conclusions are shown.

2. METHODOLOGY

One of the most representative strengths of the G-KMMM model is that it can be applied to different objects of analysis, including the organization as a whole and individually for their respective units. In addition, the model provides a very detailed explanation of the assesment instrument to provide a systematic and structured approach that guarantees the transparency of the evaluation procedure. It is important to highlight that the G-KMMM model adopts an organized structure and clearly defines each level of maturity and its key process areas, as well as their specific characteristics ([16]). The model proposed by [1] has a dual function: descriptive and normative. The first one describes the essential attributes that characterize an organization at a particular stage of KM maturity. The second (normative), to the extent that the main practices denote the ideal types of behaviors expected in an organization.

Like most existing GC maturity models, the G-KMMM is based on the "Capability Maturity Model for Software (CMM)" since it has a structure defined in stages and covers three main components: Key process areas (Table 1), maturity levels, and common characteristics. The G-KMMM also adapts the five stages of maturity proposed by the CMM model: Initial, repeatable, defined, managed and optimizing. However, the authors renamed Level 2, which was renamed from repeatable to aware, given that such a level is mainly characterized by the fact that the organization is aware of the importance of managing knowledge[1].

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[1]   Its important to highlight that the G-KMMM was used for the construction of the work of [12], [14] y [16].

Table 1
Key process areas of G-KMMM

Key process areas	Description
People and organization	Builds trust (confidence in the intentions and behaviors of the organization), T-shapped skills (degree of understanding of one's own and others' tasks), incentive system (Economic or symbolic rewards to motivate employees to create and share knowledge) and the organizational structure (policies, procedures and standards).
Processes	It refers to how is created (development of new knowledge and procedures), collect (acquisition and registration of data, information and knowledge), share (exchange of best practices) and leverage knowledge (value creation for the organization).
Technology	It is conceived as the system that is used for the exchange of knowledge throughout the organization. This key process area is comprised of KM services (applications used by the company), technological infrastructure (ICT investment to support KM activities) and attitude towards ICTs (people's readiness versus the technologies that support the initiatives of KM).

Source: Own elaboration base on [1] y [14].

3. GENERAL KNOWLEDGE MANAGEMENT MATURITY MODEL (G-KMMM)

Each level of maturity is made of the three key process areas and each key area is described by a series of common characteristics. These characteristics specify the main practices that, when collectively addressed, contribute to achieving the objectives of a key area. The structure of the G-KMMM model is presented in Table 2.

It should be mentioned that according to the G-KMMM an organization could be in different stages of maturity for each of the key process areas. Although this could be argued within the model, on the contrary, it shows its usefulness since it is conceived as a tool to diagnose the maturity of KM, that allows identifying the aspects that require improvements so that the organization can advance to the next level of KM maturity.

After describing the main points of the G-KMMM model, the following section presents the proposed adjustments and the application of it.

4. RESULTS AND DISCUSSION

Taking into account that the G-KMMM model is of the year 2006 and in the review of the literature, there was no update of the model, a new key area named strategy is proposed.

According to [14], stategy is relevant because it allows aligning the efforts of the KM with the strategic focuses of the organization, mainly with the innovation. These same authors indicate that this key area establishes three capacities of KM:

(a) KM strategy. It is related to the characterization of knowledge key process areas for the present and the future of the organization.

(b) Commitment of managers and resources. It refes to the sustainability of the KM strategy in the organization, which depends on the leaders' belief in the benefits of KM and the allocation of the resources required to ensure the deployment of KM over time.

(c) KM teams. It refers to the existence of a team that leads the KM strategy in its initial stage. Once the KM strategy is implemented, this team should play the role of facilitator and guide all collaborators so they can be empowered in the KM strategy.

The structure of the key area "strategy" is found in Table 3. This area is defined as the alignment of the KM with strategic efforts, mainly with innovation.

Table 2
Structure of the G-KMMM model

Level	Maturity Level	Characteristics	Key Process Areas		
			People/Organization	*Process*	*Technology*
1	Initial	Little or no intention to make use of organizational knowledge	Organization and its people are not aware of the need to manage its knowledge resources	No formal processes to create, capture, share and reuse organizational knowledge.	No technologies or infrastructure to support KM
2	Aware	Organization is aware of and has the intention to manage its organizational knowledge, but it might not know how to do so	The organization and its people are aware of the need of KM	Knowledge indispensable for performing routine task is documented	Pilot KM projects are initiated (not necessarily by management)
3	Defined	Organization has put in place a basic infrastructure to support KM	– Basic training is provided. – Incentive systems are created	– Processes to create, capture and share and reuse organizational knowledge – Processes for content and information management is formalized – Metrics are used to measure the increase in productivity	– Basic KM Infrastructure developed – Some KM projects are in place in some levels of the organization
4	Managed/ established	KM initiatives are well established in the organization	– KM strategy is standarized – Advanced KM training for members at the organization – KM is part of the organizational standards.	Quantitative measurement of KM processes are implemented (i.e. use of metrics)	– Enterprise-wide KM systems are fully in place – Usage of KM systems is at a reasonable medium/high evel. – Seamless integration of technology with content architecture
5	Optimized	KM is deeply integrated into the organization and is continually improved	Culture of create, capture and share and reuse organizational knowledge is institutionalized	– KM processes are constantly reviewed and improved – Existing KM processes can easily be adapted to meet new requirements – KM procedures are an integral part of the organization	Existing KM infrastructure is continually improved.

Source: Own elaboration base on [1], [12] y [16].

Table 3
Structure of the key area "strategy"

Maturity Levels				
1. Initial	*2. Aware*	*3. Defined*	*4. Managed/established*	*5. Optimized*
– No formal processes of KM. – Little or no intention of management to make use of KM. – No KM teams or leaders	– The organization moves towards the formulation and definition of KM. – The commitment of the leaders with the KM leads to explore the allocation of resources for its implementation. – One person partially accompanies the implementation of GC.	– There is a link between the strategy and the KM. Key areas of knowledge have been identified and practices have been developed to facilitate the creation, capture and use of KM. – Leaders of the organization provide the necessary resources for the implementation of GC practices. – A leader responsible for implementing the KM strategy is appointed.	– The impact of the KM is monitored through metrics. – KM initiatives are promoted. – The leaders of the organization accompany the evolution of the KM evidence-based metrics. – The team, systematizes and transfers the experience in internal and external spaces, consolidating and leading KM strategy.	– KM becomes a strategic process, transversal to all processes, leveraging innovation and strategy. – Leaders are fully convinced about KM and its impact on the future, which leads to ensuring the sustainability of the KM strategy. – Employees understand their role in KM and execute it with autonomy and commitment supported by the KM team.

Source: Own elaboration base on [14].

For the practical application of the G-KMMM model, this one proposes an assessment instrument known as KM Assessment Tool (KMAT). The KMAT assessment tool is a diagnostic survey (aimed at collaborators and managers) that helps an organization determine the effectiveness of its KM practices ([17], [18]).

Once the maturity model of G-KMMM [1] was adapted, the assessment instrument was validated by applying it to determine KM maturity at Escuela de Ciencias Básicas, Tecnología e Ingeniería de la Universidad Nacional Abierta y a Distancia (Colombia).

The instrument conducted among 307 people of the 570 that are part of the unit. Therefore, the margin of error was 3.8% at the 99%confidence level.

The KMAT evaluation instrument consists of 37 questions: 13 for key area People, 6 for key area Processes, 6 for key area Technology and 12 for key area Strategy.

5. CONCLUSION

It was possible to establish that the modification to the General Maturity Model of Knowledge Management (G-KMMM), does not affect the benefits of the model described above. On the contrary, allows a more robust measurement on the maturity of knowledge management.

The adjustment to the KMAT assessment instrument was validated in an higher education institution, suggesting that it can be implemented in service-based and knowledge-intensive organizations.

Research remains to be done in the application of the instrument for the diagnosis of the maturity of knowledge management in modern organizations, if possible in the education or services sector.

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