Critical success factors for implementing of nuclear knowledge management

C. H. S. Grecco[1], J. T. V. Souza[2], P. V R. Carvalho[1], C. A. N. Cosenza[3]
E-mail: grecco@ien.gov.br

[1]*Division of Nuclear Engineering – IEN*
[2]*PPGIEN – IEN*
[3]*COPPE/UFRJ*

Keywords: knowledge management, critical success factors, safety

The use of nuclear technology relies on the creation, storage, and dissemination of knowledge. Nuclear knowledge management in a research and development context therefore has an important place in nurturing innovation and facilitating future development of nuclear technologies for nuclear power, its associated fuel cycles and nuclear applications in medicine, industry, and agriculture. For a successful implementation of knowledge management (KM), it is important to identify the barriers or critical factors that affect the success of the KM process [1]. The set of critical success factors (CSFs) can act as a list of items for organizations to address when adopting knowledge management. This helps to ensure that the essential issues and factors are covered during design and implementation phase. For academics, it provides a common language for them to discuss and study the factors crucial for the success of knowledge management program in an organization. Interest associated with barriers and critical success factors rose strongly after 2003. This was also because the basic models of KM already existed, which, despite not providing a solution to the failures of KM projects, created a strong basis to build basic concepts and identification and description of the process steps of knowledge management. Many empirical studies are focused of them, for example, much has been stated about culture, information technology and leadership as important considerations for its accomplishment [2]. However, no systematic work exists on characterizing a collective set of CSFs for implementing KM in nuclear organizations. CSFs are critical areas of managerial planning and action that must be practiced achieving effectiveness. In terms of KM, CSFs can be viewed as those activities and practices that should be addressed to ensure its successful implementation. These practices would either need to be nurtured if they already existed or be developed if they were still not in place [1]. This work presents a CSFs framework to identify barriers or critical factors that affect the success of the nuclear knowledge management [3]. The list of CSFs was developed based on seven themes [3]: top-level commitment, organizational culture, organizational structures, human resources management practices and policies, measuring and results, information technology and learning culture. Table 1 presents the themes and exemplify some CSFs and the metrics used to evaluation them.

Themes	CSFs	Metric used
1 Top-level commitment	1.1 Mission and values 1.2 … 1.3 …	1.1….clear definition of the mission and values of the institution. …
2 Organizational culture	2.1 Organizational climate 2.2 … 2.3 …	2.1 …positive environment, encouraging the knowledge sharing. …
3 Organizational Structures	3.1 Multidisciplinary groups 3.2 … 3.3 …	3.1 ...groups are multidisciplinary and have autonomy in decisions. …
4 Human resources management practices	4.1 Training 4.2 … 4.3 …	4.1 …training is often offered and encouraged by managers. …
5 Measurement of results	5.1 Investment monitoring 5.2 … 5.3 …	5.1...adequate monitoring of results of investments in training. …
6 Information Technology	6.1Technological structure 6.2 … 6.3 …	6.1 …technological structure for the storage of knowledge... …
7 Learning culture	7.1 Context changes 7.2 … 7.3 …	7.1 …adequate learning to accept new practices… …

Table 1 - Themes, CSFs, and metrics.

The CSFs framework was applied to the knowledge management assessment of the Human-Systems Interfaces Laboratory of IEN.

References

[1] International Atomic Energy Agency. IAEA-TECDOC-1675. Knowledge Management for Nuclear Research and Development Organizations. 2012.

[2] WONG, K. Y. Critical success factors for implementing knowledge management in small and medium enterprises. Industrial Management & Data Systems, 2005, n.3, v.105, p. 261-279.

[3] VIANA, J.; GRECCO, C. H. S.; CARVALHO, P.V.R.; COSENZA, C. A. N. Gestão do conhecimento nuclear: uma proposta de fatores críticos de sucesso. SODEBRÁS, 2020, v.15, p. 41-45.