

A CASE STUDY OF A CUBAN GOVERNMENT INSTITUTION

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Abstract. The aim of this contribution is to present a case study on the partial implementation of a knowledge management system in an institution. In this case the knowledge management has been directed toward the best performance of the organization. The tool used in case study can be implemented at any institution, including institutions of nuclear or radiological profiles.

1. Introduction.

The aim of this contribution is to present a case study on the partial implementation of a knowledge management system in an institution. In this case the knowledge management has been directed toward the best performance of the organization. This organization is a non profit one and its functions are the promotion, support and supervision of issues related to science, technology and environment for the economic development of a region.

For a better understanding of this paper is necessary to define the concept of knowledge given by its author. There is not author's intention to be in contradiction with the already existing concepts about this term of knowledge. The author considers that it is not so necessary to develop theoretical definitions on this topic. In this case is more important to show how to use it in practice, and the abilities or skills associated to this concept, that is do specialized competencies in this regard. For this reason, in the context of the present paper, the author suggests that these two terms, knowledge and competence can be used indistinctively. However, the author knows that these terms, theoretically speaking, are not the same.

The tool used in this case study can be implemented at any institution, including institutions of nuclear or radiological profiles. Many nuclear and radiological facilities have as a purpose the promotion, support and supervision of the nuclear applications for the biggest economic development. And this should be oriented to the implementation of the best practices.

2. Description of the study

The main author has designed this applied methodology, which is much wider than the information on it shown in this paper

The attention was focused on the objectives and competencies to be achieved and identified for an efficient organization.

This study was developed with an expert group. The Directive personnel, the whole institution advisory group and some selected workers formed it. Twelve members integrated the overall group. They identified the functions that were necessary to fulfill the mission of the organization and the relative importance of these ones. Then, the necessary competencies for these functions were determined. Competencies were pondered in relation to each function. The approach of the beneficiaries to this issue was also taken into consideration. This allowed elaborating the matrix of necessary competencies to satisfy the identified functions. The main author "convergence matrix" named this matrix, because it is that way we should make our efforts converge with the main goal of obtaining the best outcome. The use of mathematical expressions allowed identifying the "index of utility for necessary competence" (see fig.1). In this case, it was valued that all those competence that had an index

of utility over 0.70 were considered "core competencies". That value was determined taking into consideration the strategic projection of the organization. In this study, the core competencies of the organization were No. 1, 2, 35, 37, 38, 39, 40, 41, 42, 43, 44, 45, 48, 50, 52, 53, 54, 55, 56 and 58. It was also identified that the first 8 functions need that the competencies were archived at determined higher level.

Secondly, a study about the competencies acquired d by all the workers of the organization was carried out. The results of this study are listed below:

- Establishing the inventory of existent knowledge in the organization,
- Identifying the magnitude in which the functions were satisfied,
- Making the divergence matrix and,
- Finding gaps of the existences competencies (see figure 2 and 3).

This was possible after comparing the index of utility of the convergence matrix with the one obtained in the divergence matrix and the satisfaction ratio between them was calculated. This ratio identifies how the necessary competencies were satisfied by the acquired competencies. The author developed the concept of divergence matrix because it shows the way any institution personnel background can differ from the general picture we could have about them.

Among all core competencies, only competence No.35 was not satisfied at all, and No. 37, 40, 44, 45 and 53 were partially satisfied. This allows observing that only 5% of the core competencies are not satisfied and that 25% of them were acceptably satisfied. From the total of competencies only 8,6% is not satisfied and 20.6% acceptably satisfied, the rest of the competencies is completely satisfied.

In general, there are not difficulties for a correct functioning of the organization. This situation gives us an idea of an institution that can work in an acceptable way and that it possesses some human resources with wide potentialities to generate new or more capital.

A way to show graphically the results of this study are by means of knowledge maps (competencies maps). These give a really immediate image of the general situation of the institution. In the map of the all-necessary competencies you can see the level at which these competencies are necessary and how uniformly they are distributed. Checking all this with the map of the existing competencies you can determine the real situation you have at your area with the competencies, which of them are failing and how they are distributed within the personnel (see fig 4).

In the map of acquired knowledge (competencies map) weak areas were detected, but a higher level is not necessary. On the other hand, they are areas where detected competencies were very strongly developed by the personnel of the institution. This gives the possibility to create internal instructors' groups that allow to training the personnel.

3. Conclusion.

A special training was decided to be carried out, as a result at this study. The personnel of the organization itself arranged this course, in order to use the tacit knowledge of the organization and, this way preserves its own culture.

The first version of the course was already put into practice and good results were achieved. Nowadays, the first version of the course is being improved taking into consideration suggestions and advices given by the Higher Institute of Technologies and Applied Sciences (InSTEC).

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Fig. 1. - Necessary competencies for functional goals

	1	2	3	4	5	6	7	8	9	10	11	12	IUN
PO	5	5	5	4	5	5	5	5	5	5	4	4	
1	5	4	5	4	4	5	5	4	3	2	1	2	0.73
2	5	4	5	5	4	5	4	3	3	2	1	2	0.72
3	5	4	5	4	4	4	4	3	3	2	1	2	0.68
4	4	4	4	4	3	3	3	2	2	2	1	2	0.57
5	4	3	4	3	3	4	3	1	1	1	1	2	0.48
6	4	3	3	2	2	3	2	1	1	1	1	2	0.42
7	4	4	3	1	2	3	3	1	2	2	1	1	0.46
8	4	3	2	4	2	2	3	2	1	2	0	0	0.38
9	4	4	4	2	4	4	4	4	3	3	1	1	0.62
10	4	5	5	4	3	4	4	2	2	1	1	2	0.62
11	5	5	5	4	3	4	4	2	1	1	1	1	0.59
12	3	5	3	2	2	2	3	2	2	1	1	1	0.43
13	4	5	3	2	2	3	2	2	2	1	1	1	0.45
14	4	5	4	2	2	3	2	2	1	1	1	1	0.46
15	4	5	4	3	3	4	4	2	2	2	2	1	0.59
16	4	5	4	2	3	3	3	3	1	1	1	1	0.49
17	4	5	4	2	4	4	4	3	2	1	1	1	0.57
18	4	4	4	3	2	3	4	2	1	2	0	1	0.50
19	2	4	3	2	2	3	4	2	1	1	0	1	0.39
20	2	4	2	2	2	2	3	1	1	1	0	1	0.36
21	3	3	2	2	1	2	3	2	1	1	0	1	0.33
22	3	3	2	2	2	2	4	2	1	1	1	1	0.35
23	5	4	4	3	4	4	4	3	2	1	1	2	0.62
24	4	3	4	2	4	4	4	3	3	2	0	2	0.59
25	5	4	5	2	4	4	4	4	3	2	1	2	0.62
26	4	4	4	2	4	4	4	4	3	1	1	2	0.60
27	3	3	4	2	3	4	3	3	2	2	1	3	0.56
28	5	4	4	5	4	4	4	3	3	4	1	1	0.69
29	5	4	4	4	4	4	4	2	2	3	1	1	0.64
30	4	4	3	4	3	4	4	1	1	2	1	0	0.51
31	4	5	3	4	3	3	3	1	1	2	0	0	0.48
32	3	5	2	4	3	3	2	1	1	2	1	1	0.44
33	4	3	2	5	2	2	2	1	2	4	1	1	0.47
34	4	4	3	4	2	3	3	1	1	2	0	1	0.43
35	4	5	5	4	4	5	4	4	3	4	2	5	0.76
36	4	5	5	4	3	3	3	3	2	4	2	5	0.69
37	4	5	4	4	4	4	4	3	4	4	2	4	0.75
38	5	4	4	3	4	5	4	5	5	3	3	3	0.76
39	4	4	4	3	4	5	4	5	4	3	2	3	0.75
40	5	4	4	3	5	5	4	5	4	3	2	3	0.78
41	5	4	4	3	5	5	5	5	5	3	3	3	0.79
42	5	4	4	3	5	5	5	5	5	3	3	3	0.80
43	5	4	4	3	5	5	5	5	5	2	3	3	0.80
44	4	4	4	3	5	5	4	5	4	2	2	3	0.75
45	4	4	4	2	4	5	4	5	4	2	1	3	0.74
46	3	4	3	2	3	3	3	4	2	2	2	2	0.55
47	3	3	3	2	3	3	3	3	3	2	3	3	0.55
48	4	4	5	4	4	4	5	4	5	4	5	4	0.85
49	3	3	3	3	3	3	3	3	3	3	4	3	0.60
50	4	4	4	3	4	4	4	4	4	4	3	3	0.70
51	4	2	3	2	4	3	3	3	3	2	3	2	0.56
52	4	4	5	4	5	5	5	3	5	5	4	4	0.85
53	4	4	4	4	4	4	4	5	5	4	4	4	0.83
54	4	4	4	4	4	4	4	4	4	3	2	3	0.75
55	4	4	4	3	4	4	4	4	5	4	4	4	0.78
56	4	4	4	4	4	4	4	4	4	4	4	4	0.82
57	3	3	3	2	4	3	4	3	4	3	3	3	0.64
58	5	5	5	4	5	5	5	5	5	5	4	5	0.95
	4	4	3.8	3.1	3.3	3.7	3.7	3	2.7	2.3	1.6	2.2	

Fig. 2. - Acquired competencies for functional goals

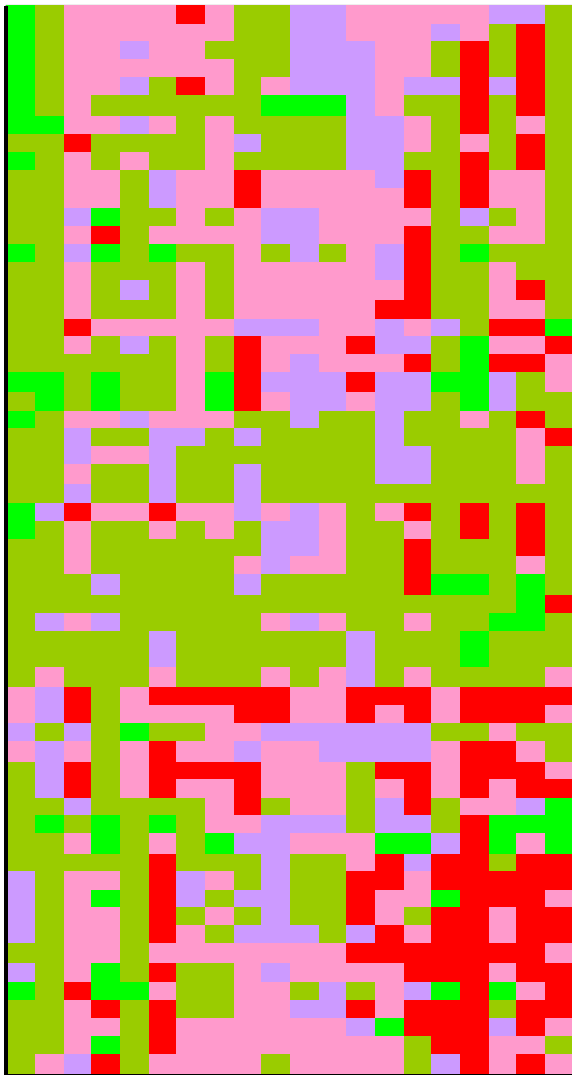
	1	2	3	4	5	6	7	8	9	10	11	12	
PO	5	5	5	4	5	5	5	5	5	5	4	4	IUE
1	4	4	4	4	4	4	4	4	3	2	1	2	0.69
2	4	4	4	4	4	4	4	3	3	2	1	2	0.66
3	3	3	3	3	3	3	3	3	3	2	1	2	0.52
4	3	3	3	3	3	3	3	2	2	2	1	2	0.52
5	3	3	3	3	3	3	3	1	1	1	1	2	0.44
6	2	2	2	2	2	2	2	1	1	1	1	2	0.31
7	3	3	3	1	2	3	3	1	2	2	1	1	0.43
8	3	3	2	3	2	2	3	2	1	2	0	0	0.36
9	3	3	3	2	3	3	3	3	3	3	1	1	0.52
10	4	4	4	4	3	4	4	2	2	1	1	2	0.59
11	4	4	4	4	3	4	4	2	1	1	1	1	0.55
12	3	3	3	2	2	2	3	2	2	1	1	1	0.40
13	4	4	3	2	2	3	2	2	2	1	1	1	0.43
14	3	3	3	2	2	3	2	2	1	1	1	1	0.40
15	3	3	3	3	3	3	3	2	2	2	2	1	0.48
16	4	4	4	2	3	3	3	3	1	1	1	1	0.48
17	4	4	4	2	4	4	4	3	2	1	1	1	0.56
18	4	4	4	3	2	3	4	2	1	2	0	1	0.50
19	2	3	3	2	2	3	3	2	1	1	0	1	0.36
20	2	3	2	2	2	2	3	1	1	1	0	1	0.34
21	3	3	2	2	1	2	3	2	1	1	0	1	0.33
22	3	3	2	2	2	2	3	2	1	1	1	1	0.34
23	3	3	3	3	3	3	3	3	2	1	1	2	0.48
24	2	2	2	2	2	2	2	3	3	2	0	2	0.39
25	3	3	3	2	3	3	3	3	3	2	1	2	0.49
26	2	2	2	2	2	2	2	2	2	1	1	2	0.35
27	2	2	2	2	2	2	2	2	2	2	1	3	0.38
28	4	4	4	4	4	4	4	3	3	4	1	1	0.65
29	3	3	3	3	3	3	3	2	2	3	1	1	0.51
30	3	3	3	3	3	3	3	1	1	2	1	0	0.44
31	3	3	3	3	3	3	3	1	1	2	0	0	0.41
32	2	2	2	2	2	2	2	1	1	2	1	1	0.32
33	2	2	2	2	2	2	2	1	2	2	1	1	0.35
34	3	3	3	3	2	3	3	1	1	2	0	1	0.39
35	2	2	2	2	2	2	2	2	2	2	2	2	0.37
36	2	2	2	2	2	2	2	2	2	2	2	2	0.38
37	3	3	3	3	3	3	3	3	3	3	2	3	0.56
38	3	3	3	3	3	3	3	3	3	3	3	3	0.58
39	4	4	4	3	4	5	4	5	4	3	2	3	0.73
40	3	3	3	3	3	3	3	3	3	3	2	3	0.58
41	4	4	4	3	4	4	4	4	4	3	3	3	0.71
42	4	4	4	3	4	4	4	4	4	3	3	3	0.74
43	5	4	4	3	5	5	5	5	5	2	3	3	0.79
44	3	3	3	3	3	3	3	3	3	2	2	3	0.56
45	3	3	3	2	3	3	3	3	3	2	1	3	0.52
46	3	3	3	2	3	3	3	3	2	2	2	2	0.51
47	3	3	3	2	3	3	3	3	3	2	3	3	0.55
48	3	3	3	3	3	3	3	3	3	3	3	3	0.57
49	3	3	3	3	3	3	3	3	3	3	3	3	0.57
50	3	3	3	3	3	3	3	3	3	3	3	3	0.59
51	3	2	3	2	3	3	3	3	3	2	3	2	0.53
52	4	4	4	4	4	4	4	3	4	4	4	4	0.79
53	3	3	3	3	3	3	3	3	3	3	3	3	0.58
54	3	3	3	3	3	3	3	3	3	3	2	3	0.56
55	4	4	4	3	4	4	4	4	4	4	4	4	0.75
56	4	4	4	4	4	4	4	4	4	4	4	4	0.82
57	3	3	3	2	4	3	4	3	4	3	3	3	0.64
58	4	4	4	4	4	4	4	4	4	4	4	5	0.80
	3.2	3.2	3.1	2.7	2.9	3.1	3.1	2.6	2.4	2.1	1.6	2	

FIG. 3.- RELATION BETWEEN THE INDEXES OF UTILITY FOR NECESSARY AND ACQUIRED COMPETENCIES

com	IUN	IUE	IUE/IUN
1	0.73	0.69	0.94
2	0.72	0.66	0.91
3	0.68	0.52	0.77
4	0.57	0.52	0.90
5	0.48	0.44	0.92
6	0.42	0.31	0.76
7	0.46	0.43	0.93
8	0.38	0.36	0.94
9	0.62	0.52	0.83
10	0.62	0.59	0.94
11	0.59	0.55	0.93
12	0.43	0.40	0.94
13	0.45	0.43	0.96
14	0.46	0.40	0.88
15	0.59	0.48	0.82
16	0.49	0.48	0.98
17	0.57	0.56	0.98
18	0.50	0.50	1.00
19	0.39	0.36	0.92
20	0.36	0.34	0.96
21	0.33	0.33	1.00
22	0.35	0.34	0.97
23	0.62	0.48	0.79
24	0.59	0.39	0.66
25	0.62	0.49	0.79
26	0.60	0.35	0.58
27	0.56	0.38	0.67
28	0.69	0.65	0.95
29	0.64	0.51	0.79
30	0.51	0.44	0.85
31	0.48	0.41	0.86
32	0.44	0.32	0.74
33	0.47	0.35	0.74
34	0.43	0.39	0.91
35	0.76	0.37	0.49
36	0.69	0.38	0.56
37	0.75	0.58	0.77
38	0.76	0.73	0.95
39	0.75	0.73	0.97
40	0.78	0.57	0.74
41	0.79	0.71	0.90
42	0.80	0.74	0.92
43	0.80	0.79	0.99
44	0.75	0.56	0.75
45	0.74	0.52	0.71
46	0.55	0.51	0.93
47	0.55	0.55	0.99
48	0.85	0.57	0.68
49	0.60	0.57	0.95
50	0.70	0.59	0.84
51	0.56	0.53	0.96
52	0.85	0.79	0.93
53	0.83	0.58	0.71
54	0.75	0.56	0.75
55	0.78	0.75	0.97
56	0.82	0.82	1.00
57	0.64	0.64	1.00
58	0.95	0.80	0.84

FIG 4.- COMPETENCES MAPS GUIDED TOWARD TO FUNCTIONAL GOALS

**Acquired
competencies
map**



**Necessary
competencies
map**

