

Knowledge Management Contribution Measurement Model

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ABSTRACT

Presently it is easy to verify the high value of knowledge as one of the most important factors that generate wealth for organizations. There are some difficulties in measuring the contribution that knowledge management can provide to the companies' results. Therefore it is possible to verify how complicated it is to structure a measurement model related to the benefits provided by the actions involved with the creation, registering, dissemination and sharing of knowledge. The objective of this article is to show a case study about the development of a knowledge management contribution measurement model in a Brazilian engineering and construction company.

Keywords

Knowledge, Measurement, Intellectual Capital, Intangible Assets

1.0 INTRODUCTION

The structuring of processes related to the measurement of activities developed by a company has as its main objective guarantee that its goals are being followed according to the planning.

According to Skyrme (2003), the measurement of the benefits provided by knowledge management has become one of the greatest challenges of the economy, which can justify the development of complex studies related to the structuring of a specific measurement model for it or at least to the adaptation of any other model.

One of the factors that make it hard is related with the similarity between the knowledge management and intangible assets concepts

Consequently, the real challenge is related to the structuring of a measurement model that considers the use of some traditional metrics, with technological and financial aspects, and non-traditional ones, to measure, objectively, the benefits provided by knowledge management to reach the company's goals.

2.0 THE KNOWLEDGE IMPORTANCE IN THE ENTERPRISE SCENARIO

The great change for which companies have been submitted in the last years to maintain their competitiveness is related to the high speed that has to be implemented to develop their activities and projects, as the only way to take care of their partners and customers more efficiently.

Some people believe that this great speed can provide the company more success during the project management and consequently to reach its organizational goals.

According to Wernke (2002) the great differential of a company is not related to the quantity of equipment available but with the sum of the many requirements related to the collective knowledge generated and acquired, the abilities, creativity, values, actions and motivation of its collaborators and, finally, the satisfaction level of its customers. Considering this opinion correct, it is possible to believe that the intangible assets of an organization assume a very relevant importance, principally by the fact the frequent development of new ways to create, use and reproduce adequate knowledge and abilities which is extremely difficult to be measured.

To Davenport & Prusak (1998), knowledge is composed by a mix of experiences, values, information, insights which allow the existence of a framework that makes it possible not only to maintain new experiences and information, but also the measurement of its relevance. According to these authors, the source of knowledge is in the brain of each person, and its presence in organizations isn't restricted to documents, magazines and books, but principally in the routines, procedures and innovative practices.

It is very important for an organization that the knowledge learned and acquired are available to any collaborator in any stage of the project.

Ahead of this enterprise scenario where knowledge has a great importance to the organization, it is possible to rescue the concept presented by Santiago (2002), for who

knowledge management is a procedure to get, manage and share the experience and specialization of collaborators with the objective to have access to the best information at the right time and manner.

3.0 KNOWLEDGE MANAGEMENT CONTRIBUTIONS

According to Lev & Gu (2001), the intangible assets related to knowledge support the value increase in the majority of the economic sectors. However the use of some procedures to measure the importance of these assets is still a hard question to be discussed in great part of the companies.

To Saint-Onge & Wallace (2003), although there are many doubts about the real possibility to measure knowledge management contributions, today it is already possible to verify some companies that attribute the reason for their success to the use of their knowledge.

Some concepts described by Nonaka & Takeuchi (1995), about creation and development of knowledge, evidence how it is really difficult to measure its importance.

According to their studies there are two kinds of knowledge, the first one is called explicit, because it is easy to be registered in many types of media, the second one known as tacit is still in the head of each person.

In case it is considered very difficult to measure the contribution of explicit knowledge to a company, it is reasonable to think that this process become harder when tacit knowledge are studied.

The simple use of some metrics to measure this contribution can restrict the analysis to some activities that already were developed which result in static and historic references to support some decisions procedures. The great challenge has to be associated in the adoption of some metrics or indicators that make it possible to foresee some future scenarios that can be influenced by the intellectual capital already existing in the organization.

Rylatt (2003) believes there are five questions that have to be analyzed for the benefits evaluation related to knowledge management:

- The measurement of any kind of activity must be avoided. It is really necessary to restrict efforts in those actions directly related to the objectives and aims defined by the organization;
- Be aware of assuming certain references, benchmarking and successful cases occurred in some organizations that have different profile and characteristics;

- It is necessary to define clearly what the company really wants. Therefore, first of all, it is important to adopt some general premises;
- Before start structuring some actions related to the measurement, the questions and concepts about it have to be disseminated and clearly understood by all the collaborators in the different areas where they work;
- It is really important to register the difficulties, mistakes and the good experiences occurred during the measurement process. They can be very useful to be applied or avoided in the future during the next projects and activities.

4.0 CRITICAL POINTS ADOPTING KNOWLEDGE MANAGEMENT MEASUREMENT MODEL

According to Santiago (2002), in the beginning of the 90's, although there was a high technological evolution that generated a fever for new solutions, it was significant the quantity of technologies that did not reach their real objectives due to the lack of integration with the organizational model adopted by the companies. It wasn't understood by some collaborators how these technologies could be included in the development of their routines, it was known as "the technology for the technology".

The same question potentially happens with knowledge management, in case it isn't aligned to the activities that already are developed by the company. It is really a big mistake when these actions are not related to three important questions: cost reduction, time reduction and quality improvement.

In case it is clear there are some difficulties related to knowledge management, it is obvious there are many other hard questions to be managed when a company intends to develop a measurement model to evaluate its contribution to the organizational results.

To Early & Associates (2006), there are four critical points for adopting a knowledge management measurement model:

- The reason for the development of activities related to knowledge management has to be clearly understood by every collaborator;
- The use of metrics or indicators already known by the organization;
- The indicators defined to the model have to permit a good interpretation about the reasons for the success or the failure of the activities that were evaluated;
- The metrics have to be included as part of the routine of each collaborator.

According to Iev (2001) the adoption of indicators in organizations has to satisfy at least six criterions to have its use recognized by the collaborators:

- The indicators must be quantitative;
- The indicators have to consider qualitative aspects;
- It is necessary to keep a pattern;
- Use indicator that can be analyzed in benchmarking studies;
- The indicators have to be easily calculated;
- The results must be clearly checked by the collaborators.

5.0 MEASUREMENT MODEL DEVELOPMENT

The measurement of the benefits provided by knowledge management has to consider the evaluation of two very important questions. The first one is related to the measurement of the ways or activities that are used or developed to make the knowledge management possible. The last one is involved the real contribution provided by these actions in the organizational objectives of the company.

According to this understanding, it is assumed the necessity to define two different kinds of indicators, which were called, Way Indicators and End Indicators:

- Way Indicators (WI): are related to the way, actions and activities that make the knowledge management possible in a company. They intend to show how the knowledge management was well developed;
- End Indicators (EI): present the benefits provided by knowledge management activities in the organizational results of the company;

The definition of these two indicators is justified by the importance of having different analysis, one regarding the efficiency of the procedures and activities related to the knowledge management in the company, and the other one about its impacts or relevance in the organizational objectives, which is aligned with the main question discussed in this article, measurement of knowledge management contribution to the company.

About the WI there were two groups adopted, they are:

- Information Technology Indicator: Information Technology is recognized as one of the most important disciplines that contribute to the development of activities related to registering and sharing knowledge therefore it is really necessary to manage and evaluate its use and efficiency;

- People Indicator: Any kind of activity related to knowledge management has to consider the participation of individuals, its integration and engagement in companies activities;

However, it is possible to define many different questions to be measured using these two indicators, the first question to be clarified is related to what kind of analysis the company can do with the results of this evaluation. Only after having this understanding is it possible to define how each indicator will be measured.

The use of the EI intends to evaluate the contribution of knowledge management in four different perspectives of the company, they are:

- Strategic Perspective: identify how the actions related to knowledge management can contribute to a company to attain its strategic goals;
- Operational Efficiency Perspective: the concepts associated to the improvement of quality services and products developed by the company;
- Human Resources Perspective: related to the benefits provided to collaborators due to knowledge management;
- Economic and Financial Perspective: analyze economical and financial benefits provided by activities related to knowledge management.

After the identification of four perspectives, it is necessary to define one indicator for each perspective, therefore integrating the Way Indicator (WI) and End Indicator (EI), according to the six indicators, four are WI and two are EI, the Measurement Model is structured this way:

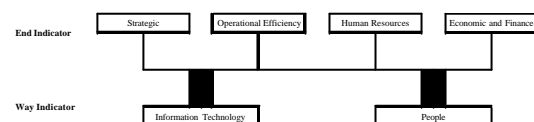


Figure 1: Measurement Model

The next step is related to the definition of each indicator that will be measured according to some premises adopted by the company.

6.0 INDICATORS DEFINITION

Amongst the six indicators, two identified as Way Indicator and four recognized by End Indicator, it is possible to note there are different forms to measure each one, which makes it very important to analyze the real use of these.

First, it is necessary to assume dynamic behavior during the measurement process, which means to adopt dynamic

indicators that can be changed after some period of time. The references or benchmarking also must be frequently renewed to keep them as a real challenge to be reached. The criteria have to be defined clearly and presented for every collaborator independently of which indicator will be measured.

An example that can be adopted in definition of these indicators is presented below:

6.1 Way Indicators

It was defined two kinds of indicators.

6.1.1 Information Technology Indicator

Number of Knowledge Records Consulted

Objective: identify how many knowledge records are kept in Information Technology System and are being consulted by the collaborators

Table 1: Information Technology Indicator

Indicator	Grade	Reference
Number of Knowledge Records Consulted	Blue	At least 10% above the RV
	Green	Between 5% and 10% above the RV
	Yellow	Maximum 5% above the RV
	Red	Below the RV

Where: RV is Reference Value

6.1.2 People Indicator

Number of People Sharing Knowledge

Objective: quantify how many collaborators frequently share their knowledge

Table 2: People Indicator

Indicator	Grade	Reference
Number of People Sharing Knowledge	Blue	At least 10% above the RV
	Green	Between 5% and 10% above the RV
	Yellow	Maximum 5% above the RV
	Red	Below the RV

6.2 End Indicators

It was defined four kinds of indicators.

6.2.1 Strategic Perspective Indicator

Alignment between Knowledge and Organizational Strategy

Objective: identify the existence of knowledge records related to the activities that make part of the Strategic Planning of the company

Table 3: Strategic Perspective Indicator

Indicator	Grade	Reference
Alignment between Knowledge and Organizational Strategy	Blue	100% of the RV
	Green	Between 80% and 100% of the RV
	Yellow	Between 60% and 80% of the RV
	Red	Below 60% of the RV

6.2.2 Operational Efficiency Indicator

Operational Quality Improvement

Objective: identify the development of procedures and new ideas implementation that improve services and products quality.

Table 4: Operational Efficiency Indicator

Indicator	Grade	Reference
Operational Quality Improvement	Blue	At least 10% above the RV
	Green	Between 5% and 10% above the RV
	Yellow	Maximum 5% above the RV
	Red	Below the RV

6.2.3 Human Resources Indicator

Collaborator Skills Increase

Objective: promote the career improvement of collaborators not restricting to the organizations activities.

Table 5: Human Resources Indicator

Indicator	Grade	Reference
Collaborator Skills Increase	Blue	At least 10% above the RV
	Green	Between 5% and 10% above the RV
	Yellow	Maximum 5% above the RV
	Red	Below the RV

6.2.4 Economic – Finance Indicator

Cost Reduction due to Innovation

Objective: measure costs reduction due to new technologies implementation in comparison with the costs obtained with the use of the previous ones.

Table 6: Economic-Financial Indicator

Indicator	Grade	Reference
Cost Reduction due to Innovation		TC/BC <= 0,90
		0,90 < TC/BC <= 0,95
		0,95 < TC/BC <= 1,00
		TC/BC > 1,00

Where: TC means Cost using New Technologies

BC means Budget Cost using Known Technologies

The indicators definition is thought as a great challenge to be reached during any measurement process, therefore it is reasonable to pay attention during its development and keep clear the company's objectives.

7.0 CONCLUSION

According to the article it is possible to affirm the effective possibility to measure the benefits provided by knowledge management to the organizational results of a company. The knowledge has a high importance to the company, because it helps the correct development of every activity developed by the collaborators and its alignment with the organizations' objectives.

The structuring of this measurement model helped to clarify every one in the company how important the knowledge management is, not only to each personal need but principally to the results of the company.

The measurement of knowledge contribution in organizational results guarantee the correct execution of every activity, its frequent evaluation, the monitoring of any variations occurred throughout its development and finally the accomplishment of eventual corrective actions that intends the correction of routes and agility in attainment of its goals.

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