The integration of Information Systems Shared Services Center with E-Learning for Sharing Knowledge Capabilities

José L.R. Sousa\textsuperscript{a,}*\textsuperscript{,} Agostinho Sousa Pinto\textsuperscript{b}

\textsuperscript{a}IBMC-Instituto de Biologia Molecular e Celular Rua do Campo Alegre, 823, 4150-180 Porto, Portugal
\textsuperscript{b}ISCAP-Instituto Superior de Contabilidade e Administração, Rua Jaime Lopes Amorim, s/n 4465-004 S. Mamede de Infesta, Portugal

Abstract

Continuous learning became a fundamental element in any organization as a tool for managing development, sustainability and innovation from knowledge capabilities. In this paper, we start by describing the combination of two phenomena, Shared Service Center (SSC) and E-Learning that expand the knowledge capabilities. Then, we produce a conceptual model for developing a continuous learning organization. This model conceptualizes and integrates SSC as managing the organizational knowledge and memory repository and E-Learning as the enhancer for a pull and push communication process. Then, from the conceptual model, we mathematically deduct a \( \Delta \) (Delta) factor. This factor presents characteristics that allow its use for determining the viability of the continuous learning from sharing knowledge capabilities.

© 2013 The Authors Published by Elsevier Ltd.
Selection and/or peer-review under responsibility of SCIKA – Association for Promotion and Dissemination of Scientific Knowledge

Keywords: shared services; knowledge management; e-learning; conceptual model; continuous learning.

* Corresponding author. Tel.: +351226074998
E mail address: jsousa@ibmc.up.pt

Available online at www.sciencedirect.com

ScienceDirect

Procedia Technology

Procedia Technology 9 (2013) 480 – 488
1. Introduction

Beginning in the 80’s, the concept of a learning organization, start being articulated by scholars and practitioners. The learning organization aroused as a conceptualization defining a structure where, knowledge is fully utilized for capability enhancing, behavior change, and competition improvement. As knowledge management evolved and developed, the learning organization conceptualization became an interesting sustainability metaphor for contemporary organizations. It focused the importance and plausible relationship between sustainability and knowledge, and as a foundation for innovation and business performance. This process of building a learning organization founded to be fundamentally sustained under the availability of the organizational memory. With the development of the Information Communication Technology (ICT) were created conditions to increase the amount of organizational memory, its availability and its relational power. The fundamental conditions were the systems interoperability and knowledge communication tools.

Shared Services Center (SSC) and E-learning characterize this evolution respectively as promoting interoperability and knowledge communication, respectively. These two ICT developments are the focus for two reasons. The first reason is the adoption of the Shared Services Center by the organization to construct a common organizational memory (interoperable). Shared Services Center in its concepts is a repository of different organizational memories, integrating diversity. The second reason is the adoption of the E-learning as a knowledge communication tool. The E-learning is in its concept, a communication tools for knowledge. These two ICT developments respond to two of the enablers of knowledge management, the existence of diversity and ability to communicate. We expand that if organizations have access to other experiences they could develop unique knowledge. Additionally, if this knowledge is available to be communicated can allow an organization to chose to learn.

In this paper, we conceptually explore the organization knowledge management and consequently its ability for continuous learning. This results in the development of continuous learning as a dependent variable from Shared Services Center (SSC) and E-learning. We focus on the question “The use of a SSC and E-learning conceptual model positively influences knowledge management?” We follow the resource-based view (RBV) of the organization where there is an independent live organizational memory and combined memory, supported on resources stored into the information technology and communication systems. These resources develop capabilities to support the sharing of knowledge. We are in the edge of defining the Δ (Delta) factor for these sharing knowledge capabilities. This factor, instantiated to a SSC and E-Learning conceptual model for sharing knowledge can positively affect the knowledge management and support the sustainability of the learning organization.

A sustainable organization mostly results from its responsiveness and adaptability to the surrounding environment. This surrounding is a competitive environment and requires an organization to pursue the dimension of sustainability, mostly from learning and innovation. This paper points out that this dimension integrates the continuous learning, from a knowledge management perspective. As “the tool”, knowledge management is able to promote the aiming to develop and sustain a continuous learning organization. Two knowledge management elements are pointed out to promote the continuous learning: firstly, the management of the diversity and secondly, the communication of that diversity. These two elements are presented in any environment.

This paper starts with addressing the theoretical assumptions, section 2, next discusses the conceptualization of the structure that can support the learning organization, section 3, and in section 4 describes the development of the Δ (Delta) factor and the section 5 presents conclusions and future work.
2. Conceptual background

2.1. Knowledge management

Organizations recognize the need for collaborative innovation as improves how to create, accumulate and exploit knowledge that enhances the competitiveness and sustainability of the organizations. Additionally not only revolutionize working ways and creation, but also promote organizational learning. Moreover, engenders, manages knowledge and interactions with the environment. Knowledge management should be used to stimulate organizational knowledge within optimization of diversity and interoperable resources.

Through globalization, the success of organizations depends on its ability to interact with the environment and its ability to operate globally [1]. There is a need to identify and define technology models that can effectively support this interaction, pursuing an innovative and entrepreneurial approach. In this pursuit knowledge management has a central role.

The creation of knowledge occurs in different forms. According to [2], [3] there are five ways to generate knowledge; acquisition, dedicated resources, fusion, adaptation, and knowledge networks. Generated knowledge can then be analyzed and generates knowledge internalization if its analysis determines its usefulness for the organization. After verified its usefulness, it is then systematized and filed, through a codification and coordination of knowledge. This usefulness aims to make knowledge accessible to those who need it. To determine how it should be encoded, the knowledge is defined into a tacit or explicit way.

Tacit knowledge is the knowledge that individuals or groups have, but that is not consciously accessible since it is yet not part of the reality [4]-[6]. This knowledge acquiring, is an effort to understand, by processes that are not directly controlled by the learner. Explicit knowledge is the knowledge that is at the conscious level. Thus, not only the person or group recognize it, as they can convince others of this knowledge [7].

An important component of knowledge management is the existence of organizational memory. This memory enhances organizational knowledge gathering, organization, dissemination and reuse of the knowledge created inside the organization. Organization memory is then a system capable of storing resulting perceptions of experience or of keeping the abstract memory registers construction. This organization memory should be persistent in time and recoverable [8].

Organizational Knowledge Management is a field of multidisciplinary research that cuts across areas such as information systems, computer science, human resource management and organizational sciences. It focuses on the sharing and reuse of knowledge. It includes the individual and group skills, for improving quality, efficiency, increase customer and employee satisfaction and reduce risk. Additionally, improves the knowledge development, through imagination, experience and experimentation.

The process of knowledge management can be structured into four fundamental elicitation [7]:
- Knowledge creation;
- Retention and retrieval of knowledge;
- Sharing and knowledge transfer;
- Application of knowledge.

These four elicitation sustain the continuous learning, essential to keep up to date human resources in relation to technological innovations and work practices. Additionally, information communication technology makes learning easier.

2.2. Shared services

The promise of the SSC comes from a hybrid conception of traditional models aimed at capturing the benefits with centralized and decentralized arrangements. By unbundling and centralizing activities, the basic premise for a SSC seems to be that services provided by one local department can be replicated to others with
relatively few efforts. This is a conceptualization only possible through the support of information communication technologies.

Centralized governance structures are characterized by substantial economies of scale and scope because procurement of assets and services is done on the broadest scale possible within the organization. A centralized staff can eliminate redundant functions and improve the clearness about strategic alignment. Moreover, the organization evolves in a simpler communicating structure. However, centralized governance makes the response time slower, and often there is a higher distance to customers.

In the decentralized governance structure, the business units respond faster and with more flexibility to needed changes. Since they have the knowledge and choice over the usable resources to support business priorities and the costs allocated to business unit initiatives. However, the company as a whole, will have higher costs due to natural inefficiencies related to the duplication of services.

Shared Services Center should combine ideally the advantages of the structures of the two worlds, the centralized and the decentralized. For one side, this should result in economies of scale, scope, and standardization. For the other side, this should result into a flexible and effective alignment of IT with the needs of business. Additionally, synergy and mutual learning will increase while SSC will provide a clear management focus. [9], [10]

2.3. E-Learning

E-Learning is one way for enterprises to improve the process of information flow for knowledge improvement and achievement. Its web-based system nature removes the users or learners time restrictions or geographic limitations. Moreover, availability and flexibility are often presented advantages when comparing with traditional face-to-face. However, too many projects have high failure costs or users difficult adoption.

E-Learning development followed two ways. One way as a distance learning tool and the other as assisted computer learning. Common to the two ways is the need of technological support with bottlenecks in the communication networks (availability) and in the experience of use (usability). These two ways subsume under E-Learning as the Internet becomes the integrating technology.

This adds pressure in the development of the learning materials. A task, that is most of the times unplanned, but that is fundamental to the learning experience reflecting into the usability. The Internet allowed the instant widespread of the learning content in a simultaneous anytime, anywhere.

E-Learning additional strength is it use as a tool for standardization of content, when compared with site formation of the different sectors of one organization. E-Learning can have control points that makes possible to have assessment to the user interactions and outcomes.

In these scenarios the E-Learning has properties of potential usefulness that goes much beyond the learning delivery. The E-Learning technology has characteristics for evolving into a structure for supporting organization knowledge management. It allows learning, by relating new knowledge with past experiences, trough the linking of learning to needs, and then by practically applying the learning. This can potentially develop a more user oriented and effective deployment of knowledge availability and the development experiences. E-Learning adoption for the knowledge management develops an environment of interactivity and promotes efficiency, motivation, cognitive effectiveness, and flexibility of the learning style. [11]-[13]

3. Research design

3.1. Aims and objectives

The primary aim of this study is the evaluation of what can be obtained by using a SSC with E-learning for developing sharing knowledge capabilities.
We develop this aim through a conceptual modeling of the SSC and E-Learning sustained in the evaluation of the initial motives and expectations for adopting a SSC and E-Learning for knowledge management. This conceptual model evaluation results in the development of a mathematical deduction. This mathematical deduction validates the knowledge increasing or not through the use of the conceptual model.

This study results into a conceptual model for sharing knowledge capabilities. Moreover is developed the identification of its knowledge sharing capabilities through the measuring of its $\Delta$ (Delta) factor. This conceptual model is sustained under the concepts of SSC and E-Learning.

This analysis can be used, by the organization, to support a decision-making process related to the introduction of such a sharing service center. This research should contribute to the limited body of research on SSCs available and the use of E-Learning as knowledge management tool.

This research focuses on the question “It is possible to add value, through sharing knowledge capabilities, by using a SSC and E-learning conceptual model for knowledge management?” We start by trying to define the $\Delta$ (Delta) factor for having a SSC for sharing knowledge. This $\Delta$ (Delta) factor will positively affect the management decisions regarding the use of Shared Services Center with E-Learning for developing sharing knowledge capabilities.

3.2. Research methodology

This study adopts an exploratory research with conceptual mathematical modeling in a design science approach [14].

The choice of exploratory research results from the scarcity of empirical work related to conceptual modeling shared knowledge through the SSC and E-learning, and the need to investigate the nature of the knowledge sharing [15]. The mathematical conceptual modeling is used as enabler for the understanding due to its objective nature. The design science is the umbrella for the methodological approach to the study.

4. Conceptual Model

In a conceptual model for SSC use for knowledge management it’s necessary to go beyond the process systematization, standardization and cost reduction that are fundamental philosophical assumptions for SSC management. In this case SSC should developed unique and new combined knowledge emerging from the combination of sharable organizations. By one side, by adopting a SSC, an organization has shareable knowledge available with potential to be integrated into other organization. When this process occurs we have a process of sharing knowledge. By other side, the SSC can combine different organizational memories and potentially develops new patterns. These two sides are conceptualized into the model of Fig. 1. This conceptual model describes how the SSC is a live combined organizational memory and develops unique sharable combinations of knowledge through E-Learning communication flow.
In this conceptual model A, B and C represent organizations that use and integrate the shared services center and where the shared services center holds the larger part of the individual organizational knowledge. The resulting Organizational Knowledge of the Shared Service (OK SS) comes from the addition of the Organization Knowledge (OK) that is sharable of each organization. The organizational knowledge of, shared services, exists by itself and also in which one of independent organizational memory (OK). The total amount of available knowledge will always be different from the existent individually [OK(A+B+C) <> OK SS]. The E-Learning is the artifact of technological nature that allows the communication of the organizational knowledge and also part of the organizational memory. The property of internalization, of Nonaka,[16] [17] and fundamental for learning is becomes a dependent variable from the independent variables of SSC and E-Learning. The organizational learning is then dependable from this variables and results from its combinatory development and communication of learning.

The shared organizational knowledge results from the composition of two types of knowledge. Firstly, from of individual organizational knowledge, available at the SSC and that can be used and integrated by other organizations. Secondly, from the set of organizational knowledge that emerges from the combination of the individual organizational knowledge, only made possible by the coexistence into the SSC.
The conceptual model reflects also the concepts [18] that the organizational knowledge can be arranged into three large classes:

- Behavioral knowledge, characterized as know how;
- Perceptual knowledge, characterized by the knowing;
- Conceptual knowledge, characterized by the use.

5. Results

It is fundamentally on the component of joining SSC and E-Learning that the developed conceptual model intends to add value, through demonstrating that exist a possible \( \Delta \) (Delta) factor. This \( \Delta \) (Delta) factor results from the difference between every organizational memory that the SCC has and the resulting combined knowledge. The \( \Delta \) (Delta) factor is described according to Equation 1. In the Equation 1, \( K_{ssc} \) represents the organizational shareable knowledge resulting from the sum of all the different organizational memories.

\[
\Delta = K_{ssc} - \sum_{i=1}^{n} K_i
\]  

The Equation 2 describes the composition of the \( K_{ssc} \). In the Equation 2, \( K \) represents the amount of sharable knowledge; \( P \) represent the amount of perceptual knowledge; \( C \) represents the amount of conceptual knowledge; \( Ce \) represents the amount of explicit behavioral knowledge and \( K' \) represents the combination of knowledge. This combination results from the existing in the individual organizational memories of the SSC according to Equation 3.

\[
K_{ssc} = \sum_{i=1}^{n} K_i(P + C + Ce) + K'
\]  

\[
K' = C(K, p)
\]  

In the Equation 3 is characterized the \( K' \). \( K' \) represents the patterns of knowledge that results from the combination, \( C \), of the different knowledge, \( K \), of different organizations, \( p \). Replacing in Equation 1 the \( K_{ssc} \) and \( K_p \) by the equivalents equations 2 and 4 respectively results into the Equation 4.

\[
\Delta = K'
\]

5.1. Discussion

This conceptual model inference positively characterizes that the integration between SSC and E-Learning in order to develop organizational knowledge management should demonstrate the implications of Equations 5 and 6.

\[
C > \implies \Delta > \quad (5)
\]

\[
K > \implies \Delta > \quad (6)
\]

From the implication of Equations 5 and 6 two conclusions can be drawn regarding the sustainability of organizational knowledge management sustained on the define solution. Firstly, that SSC have to develop active policies to improve the amount of organizational memory diversity in order to support the increment of \( C \) and \( K \). Secondly, the E-Learning is the instrument for the knowledge communication so its usability is a factor for the diffusion and use of \( K \). These implications focus the \( \Delta \) (Delta) factor and its increase as the
validation of the SSC and E-Learning sustainability for knowledge management. Moreover, characterizes the fundamental possibility to define a value proposition of SSC and E-Learning integrated use.

This measure, $\Delta$ (Delta) factor, allows the SSC manager to develop strategies to justify and improve SSC. Moreover, develops an approach to study SSC adoption with contributions to extend research in the diffusion and use of SSC. This conceptual model can contribute to develop a management approach of SSC for knowledge management. The $\Delta$ (Delta) factor determines that this is possible through the adding, of the amount of diversity that exist at the SSC, and the efficiency of E-Learning as communication for learning tool.

6. Conclusion

This conceptual model should be seen and evaluated as a model focused in the management of the organizational knowledge. When we talk about shared services we focus in the economy of scale, standardization, processes reengineering and control. When we think about E-Learning, after overcome the convenient temptation to associate to traditional education, we think in technological solutions for continuous learning.

With the present model and its adoption in a context of integration between SSC and E-Learning, we are able to integrate the process of organizational knowledge management. At the same time, this incorporates the process of knowledge discovery that happens in the first place through the sharing of the diversity and in second place as a result of explicit activities of standardization and reengineering.

It can also support the discovery of new knowledge, developing potential of infinite grow, through the use of analytical tools, used to discover patterns. This discovery often happens, and is sustained in the model, by the elicitation of knowledge, in particular the behavioral knowledge, that by other way would not be no more than tacit knowledge.

Thereby the amount of knowledge that potentially exists into the knowledge bases, organizational memory of the SSC and that evolves continuously by the discussed reason, becomes sharable knowledge. This knowledge can then be used and reused by all the intervening, sustaining innovation and promoting the organization development.

References


