Virtual Learning Evaluation for the Development of Core Competences in Integrated Management of the Chemical Industry

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INTRODUCTION AND OBJECTIVE

The challenge of the companies to get economy of large scale production has taken the integration and development with the companies that follow the productive supply chain by means of management and technological innovation.

The integration of the productive supply chain is an important conquest for a competitive differential. This integration will be able to happen of diverse forms, since the upright of the activities, how to the acquisition of companies throughout the even though competing supply chain, or still, alliances and partnerships with customers and suppliers.

So that this possible integration either, the best experience and dissemination practical accumulated throughout the time are necessary, for the accomplishment of the critical processes, either by means of knowledge of its collaborators either by means of explicit organizational learning.

The advances of the technological innovation and the models of management have allowed successive profits in the productivity of the companies through reductions of costs and improvement of performance of the processes, products and services offered for its force of work.

This search of alternatives leaves to have an isolated focus and starts to have a vision extended of all the productive supply chain by means of resources renewed. The productive supply chain of the petrochemical sector exactly represents a significant parcel of the Brazilian internal production with 23,1% of the BIP (Brazilian Internal Production), producing raw material for other productive sectors, as for example, automobile, electro-electronic, packing and the textile sector, having that to face diverse factors that increase the production costs and hinder one better performance of the productive supply chain.

Amongst the factors that make it difficult the improvement of the productive supply chain could be: the sprayed productive structure, not existing supplements integrated, distant supply chain of the polar regions of production and the biggest consuming markets, the bad quality of the logistic infrastructure, high tax burden, high raw material costs, high capital costs and of the energy used in the sector, raising the production costs (NAKANO, 2006).

Although the essential importance of this productive supply chain, this one has a critical disadvantage that is the dependence of source non-sustainable. In this direction, it is each more frequently the resources of renewable fuels sources.

As alternative for this study, the sugar and alcohol productive supply chain was chosen, that inside represents an importance of the Brazilian potential, in special, for increasing attendance of the energy demand fuel. The challenge is in the generation of bigger combustible alcohol production to replace the gasoline, which is proceeding from the petrochemical sector (OLIVERIO, 2004).

Nevertheless, this productive chain can manufacture fuel from agricultural sources sustainable, as ethanol, which Brazil is world-wide the producing greater with the lowest cost of alcohol production from the sugar cane-of-sugar. To illustrate this competitive advantage, for example, in terms of costs, one liter of ethanol manufactured from the sugar cane costs $ 33 cents against $ 43 cents equivalent made of corn.

The alcohol production in Brazil was of approximately 16 billion liters in 2005, counting on 335 plants and the estimate is of 36.8 billion liters for 2015, being that more 89 plants are currently in project or construction, conducted for operation in 2012, representing an investment of 12 million dollar. Another important factor is that almost whole 335 plants in the country generate the proper energy from the burning of the residue of the proper consumed sugar cane, generating 1.642 megawatts (MW) of electricity from agricultural source sustainable, enough to supply an area with 3.2 million inhabitants, equivalent to the population of Uruguay, generating except for sales (VEJA MAGAZINE, 2006).

This work has the objective to understand the advances of the technological innovation and its impacts in the management of the inserted companies in the sugar and alcohol productive supply chain evaluating the essential abilities for improvement of its competitiveness in the market.

METHOD AND RESULTS EXPECTED

In this study it will be used a specific software for survey and management of the competences, the e-HCDM software, in a virtual learning, the TelEduc, as facilitator of the evaluation process and development of the essential competences. The chosen environment was the TelEduc, environment for distance education, developed for the Nucleus of Computer Science Applied to Education (NIED) of the State University of Campinas. This software is of public domain, being able to be redistributed and/or to be modified under the terms of General GNU Public License version 2 (Free Foundation Software).

For the survey of the data the models of management as ROSS (1997) that it contains four periods of training of management of the productive chain and the classification of the abilities (business, technician-professional and social).

The competences found will be classified as ZARIFIAN methodology (1999) *apud* FLEURY and FLEURY (2001) in abilities of the business, in which will have the strategic vision of the organization inserted in its strategic planning.

Employees must have to know about the external and internal environment for identification of the chances and threats. In this context, they have the knowledge of corporative values and objectives as well as its planning adjusted for the necessary changes.

The technique-professional abilities must have to the specific knowledge in the business core area for the performance in the activities inherent.

The social abilities involve abilities to communicate, negotiation and work in a team which its will allow that the organization can express and transmit ideas and direction with synergy for the employees get the corporative objectives.

For the accomplishment of the competences survey, the e-H-CDM software in the TelEduc will be carried through a diagnosis in the critical processes for evaluation front to the competences, relating the abilities necessary for the development. The competences will be compared with a model of competitive performance of the companies in the productive supply chains and would be to frontier for the learning development of core competences management.

Table 1. Diagnosis of the performance of productive supply chain

Diagnoses	Productive Supply Chain Sugar and Alcohol
Organizational Model	Not yet structuralized; few special companies in this market, functioning as buffer for companies that act in other chains
Requirements of competitiveness of the productive supply chain	Knowledge about the market, design, quality, price, gradual increase of importance of the innovation.
Critical factors of successes of the companies	Technological qualification, qualification for negotiation, prospecting of markets, development of products/systems, fast engineering of processes, answers to the market and search of information to make possible production

Table 2. Core competences for the productive supply chain

Core competences	**Objetive:** Increase of the capacity of sugar cane processing
business	management of the performance of the manufacture processes
Technician-professional	equipment development and engineering of processes
Social	multifunctional, work team and collaborative

An example of the application is shown in the Tables 1 and 2 where the diagnosis of the performance competitive and the essential abilities for the productive chain according to FLEURY and FLEURY (2001).

The analysis of this survey company it will be able to reach its corporative objectives, elaborating a plan for the development and acquisition of abilities improving performance and competitive advantages.

THE FINAL CONSIDERATIONS

The evaluation of the essential abilities of a company by means of a virtual environment of learning will allow, beyond a plan for the development of the abilities, to direct resources for to enrich of the company being considered its competitiveness. A time known to the deficiencies and the competitive advantages, the management front to the strong points of the company will have to be potential and of the neutralized weak points.

It can still, to be fortified and integrated other methods of management, in the search of competitive advantages. From this knowledge, a plan for the development of these abilities could be created, being visualized, of individual and systemic form, by means of reports and pointers in a repository of information for the management of the development of these abilities.

This repository of information will be available in the virtual environment of learning, which will facilitate the integrated management of the chosen productive chain, allowing the improvement of the demand forecast, reduction of costs of supplies and the productivity throughout the supply chain.

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