

## Applying Leontief's Model to Higher Education in Colombia

Topic: Labor and Education Issues

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The complexity of the social problems in higher education (HE) is derived from the dynamic nature of the same education system and how the universities evolve; they have been focused on the poor levels of quality, competitiveness and productivity, with a high incidence in quality and elevated costs in the HE in Colombia for government and families. A solution space is presented with the creative development of several Architectures inspired in Leontief's model, multi-layers, and linear programming. The architecture approach with an engineering model-orientation, facilitates 360° vision that allows us to analyze the interaction among various architectures components and especially the governability problem within a University. Universities are themselves systems that ensure compliance with government policies, rules and standards in a highly complex institution with intellectual assets and knowledge processes. Several intelligent architectures (applications and tools) we have developed looking for the analysis and solutions related to the following issues: Academic Governability, Sustainability, Productivity (students, college authorities, and teachers), High Quality of HE including Strategic Planning and Prospective tools, HE Sector Competitiveness, including internationalization, Propaedeutic Cycles and their implications and Linking HE with media education (ME) These initiatives have been submitted in several international meetings of IEEE, ACM, ISTE and also published as book chapters and books. The model of the student is another important achievement to have full implementation of each student's individualized model of the FUNDACION DE EDUCACION SUPERIOR SAN JOSE, FESSANJOSE and both student self-control and his/her regulatory board. The architecture enables an iterative and dynamically cognitive developing which is rich in personal information analysis for decision making of both student and teacher.

The Linear Programming with Leontief Input Output model focuses on organizational governance with its impact on university financial sustainability, knowledge generation and organizational learning to quality, productivity and competitiveness. As mentioned before student modeling involves 3 levels:

- 1- Good Performance student (Permanence and related are the main Colombia purpose of the National Education Ministry.
- 2- Recoverable student and the
- 3- Dropout;

The Optimization problems involve more than one objective respectively..

Our study allowed us to conclude that the re-situated Leontief Model, from the old inter-industry economy to the new inter-industry knowledge economy, is a way to analyze knowledge jointly with large volume of information coherently. At the same time the model allowed us to analyze problems as of Governability, Productivity, Competitiveness and Sustainability of HE.

Our Previous Work References

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