Decision Support System for Financial Resource Allocation at the University: Requirements and Outcomes

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A r t i c l e   I n f o

A B S T R A C T

The present research has been carried out in two parts with the aim of identifying the design requirements of the financial decision support system and the experimental implementation of an example of strategic financial decisions based on the design model of the financial decision support system in the university. The required information in the first part was collected through semi-structured interviews with scientific-executive experts in the fields of higher education economics, financial decision makers in the university and information technology specialists. They were selected by purposeful sampling and snowball method. The findings were analysed using content analysis and a three-step coding approach. The data in the second part included financial and statistical data and information from the budget and credit office and the university's planning vice-chancellor, which were used to analyse the cost in the system. Based on the analysis of experts' opinions, the design requirements of the financial decision support system in the university are: Content, human, managerial, educational, cultural, infrastructural, technical and operational, software, hardware, legal, economic, security, environmental and cross-sectoral requirements, and acceptance of changes. The results of the experimental implementation have also shown that the financial decision support system improves the efficiency, effectiveness and quality of financial decisions and optimizes the process by accurately estimating costs, reducing time and cost, removing mental limitations, effective use of limited resources, etc. Therefore, the use of ICT and its capabilities to remove biases and cognitive errors and mental limitations of decision makers, introducing the path to improve the intelligentization of financial resource allocation decisions in the university, helping to promote knowledge-based allocation of financial resources, etc. were among the most important results of the present research.

Keywords: *Requirements, Decision Making, Financial Decisions, Decision Making System, Financial Decision Support System, University*

Introduction

Decision making in the new era of higher education with a growing environmental and organizational complexities is almost impossible without using information and communication technology (ICT). Decision support system (DSS) is a new scientific and technical tool to improve the quality of financial resource allocation at the University. For that purpose, this research aims at identifying the requirements for developing financial decision support system and applying it in strategic financial decisions as a prototype case.

Methods

Data on identifying the requirements were collected through conducting semi-structured interviews with 20 specialists who have had scientific and operational experience and expertise in areas such as higher education economics, university financial decision making, and ICT using the purposeful and snowball sampling method. The qualitative data were classified and analyzed using Corbin and Strauss' (2008) codifying method through which we were able to identify the main concepts and the DSS components. Data on the prototype application of the DSS were gathered through the administrative sources and budget reports of a university. After developing the main components of the DSS, the quantitative data were used to evaluate its appropriateness in functioning and demonstrating with particular attention to allocating financial resource decisions using the university average cost function to make alternative scenarios.

Findings

After classifying and analyzing the qualitative data, we found that appropriate data and contextual resources, motivated and experienced human resources, managerial support, supportive culture for smart decision making, initiating training programs and workshops, organizational and technical infrastructures, computational capacities (including both hardware and software), financial resources, legislative bills and bay-laws, secure and reliable networks and storage capacities, environmental and macro level supports and companions, and coping with and supporting changes are as the requirements of developing the DSS. Then we developed a prototype version of financial decision support system to exploring its capabilities and found that the system can help provide appropriate and reliable technical and scientific information needed in financial decision making. Through the pilot application of the system we have also demonstrated that the quality of decisions can be improved and operational costs can be reduced substantially.

Conclusion

With regard to the objectives of this research and based on the empirical findings we conclude that DSS is a very useful scientific and technical tool for decision makers to cope with the organizational and environmental complexities dominated the financial decisions at a university. The quality as well as the cost-effectiveness of decisions are greatly improved. Hence, the system can be considered essential and imperative for universities of the future. In this research we restricted the pilot application of DSS to financial decisions. The prospect researchers can extend the DSS applications to other important decision related areas of a university such as student affairs, recruiting and developing faculty affairs, and the like.

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