



Performance evaluation of extension education centers in universities based on the balanced scorecard

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ABSTRACT

This study aims at developing a set of appropriate performance evaluation indices mainly based on balanced scorecard (BSC) for extension education centers in universities by utilizing multiple criteria decision making (MCDM). Through literature reviews and experts who have real practical experiences in extension education, adequate performance evaluation indices have been selected and then utilizing the decision making trial and evaluation laboratory (DEMATEL) and analytic network process (ANP), respectively, further establishes the causality between the four BSC perspectives as well as the relative weights between evaluation indices. According to this previous result, an empirical analysis of the performance evaluation of extension education centers of three universities at Taoyuan County in Taiwan is illustrated by applying VlseKriterijumska Optimizacija I Kompromisno Resenje (VIKOR). From the analysis results, it indicates that “Learning and growth” is the significant influential factor and it would affect the other three perspectives. In addition, it is discovered that “Internal process” perspective as well as “Financial” perspective play important roles in the performance evaluation of extension education centers. The top three key performance indices are “After-sales service”, “Turnover volume”, and “Net income”. The proposed evaluation model could be considered as a reference for extension education centers in universities to prioritize their improvements on the key performance indices after performing VIKOR analyses.

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1. Introduction

In the light of knowledge-based economy era commencement, gaining knowledge is no longer restrained to traditional high education structures; in contrast, people need to have a lifelong learning spirit to encounter the expanding steps of globalization. Therefore, a lifelong learning concept has become a phenomenal educational trend in this century. Furthermore, new society shows post-modern, cyberization, aging population and globalization thus learning society becomes the inevitable and necessary international trend. Hence, establishing an educational concept of “learning society” should be demanded with immediate attentions to reach satisfactions of the public pursuing new knowledge continually as well as raising competitions and creativities of the entire nation. In recent years, with the developing trend of international high education becoming generalized and the educational reform plus promoting multiple

channels of entering schools, high education in Taiwan performs a highly prosperous developing pattern. Under Taiwanese government's domestic policy, many technology colleges are reorganized into universities or universities of technology and new schools being established so that the number of domestic universities grows dramatically (about 175%) in recent 10 years (Department of Statistics, 2008).

However, the birth rate in Taiwan has been declining gradually year by year thus the social pattern of fewer children is formed. Because of this, the number of young students is reducing by degrees too. Based on this point, starting from the angle of schools, in order to carry on running schools and surviving continually, adults would become the main student sources for universities. Apart from this, the trend of lifelong learning and recurrent education would continue to expand and spread. Therefore, adult education in universities would be the key point for developing policies for universities to consider how to run their schools. Due to the fact that living patterns, learning motivations, knowledge and skills requirements are various depending on individuals, extension education centers form operating development in regional patterns. The key point for most people to choose which school to go to is depending on the locations of schools nearby their houses

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or work. As a result, how to satisfy the demands of each person is a significant issue of operating and promoting universities and colleges.

Under the background of an expanding number of universities and lacking sources of education, universities have to add economic purpose into their targets of running schools to gain profits through offering social services. As a result, the extension education centers of Taiwanese universities grow and expand dramatically. In consequence, facing the high competitive situation of recruiting students, all universities have to dispense with conventional management practice and replace it by applying concepts of business operations to achieve the ends of sustainable development and survival. Especially this practice exists more obviously in extension education centers. They divide their programs into courses with or without credits by utilizing the existing integral equipments and device sources. Obtaining the credits is the inducement of courses with credits to students; however, courses without credits focus on offering professional knowledge and techniques to students. Nevertheless, the organized frameworks of extension education centers vary from other administrations or teaching units in universities. Thus, extension education centers need to have great flexibility and penetrative senses to the market so that they could adjust their programs and organizations to follow the trend of society. Since extension education centers have been considered one of the capital forces to extend financial resources by universities, their operations all apply or mimic the operating management pattern of industries. They not only pay attention to effectivities and operating performances but also request the professional abilities of their staffs who offer the services to students. Besides, adequate performance evaluation and reward plan are supplied to their staffs in order to make them focus on hard work as well as pursue self-improvement and returns. As a result, the performance evaluation and evaluation plan are very significant to extension education departments.

In recent years, Taiwan's ministry of education actualizes an evaluation mechanism to all universities and colleges. According to the content and results of evaluation, the ministry of education will offer fund supplements and reduce or increase the number of classes. Because of this, every school is trying its best to raise the performance of running their schools as well as to enhance developing the teaching characters. Furthermore, the performance audition of extension education centers is included as one of the key items of university evaluation. It could be seen how much attention the ministry of education pay to extension education centers. Consequently, how to evaluate the operating performance of existing extension education centers and how to improve the performance of them are worthwhile to be studied and focused. Generally speaking, there are quite a few methods to do performance evaluation such as analytic hierarchy process (AHP), analytic network process (ANP), decision making trial and evaluation laboratory (DEMATEL), ratio analysis, balanced scorecard (BSC), regression analysis, data envelopment analysis (DEA), etc. However, no matter which method is used, characters of extension education centers need to be focused for proper evaluations and analyses in order to make the process and result reach due severeness, justice, objectivity and reasonableness.

As a result, the purpose of this research is to select critical indices for building up a performance evaluation model to suit extension education centers properly and then providing them the information as a reference to increase their running effectiveness. By reviewing the relative domestic and overseas documents, the concept of BSC is applied to the performance indices of extension education centers as a basis of setting up the performance evaluation model. Besides, multiple criteria decision making (MCDM) such as AHP, ANP, DEMATEL, etc. has been extensively

utilized in the performance evaluation and other fields for many years such as high-tech selection problem (Erdogmus, Kapanoglu, & Koc, 2005), airline safety measurement using a hybrid model (Liou, Tzeng, & Chang, 2007), evaluating intertwined effects in e-learning programs (Tzeng, Chiang, & Li, 2007), marketing strategy based on customer behavior for the LCD-TV (Chiu, Chen, Shyu, & Tzeng, 2006), corporate social responsibility programs choice and costs assessment in the airline industry (Tsai & Hsu, 2008), a value-created system of science (technology) park (Lin & Tzeng, 2009), etc. More recently, a hybrid MCDM model is constructed for evaluation of environment watershed plans (Chen, Lien, & Tzeng, 2010) and for sourcing strategy mix decision in IT projects (Tsai, Leu, Liu, Lin, & Shaw, 2010). Chen and Chen (2010a, 2010b) apply a conjunctive MCDM approach in the education sector establishing an innovation support system for higher education and a pro-performance appraisal system for the university. Tsai and Chou (2009) propose a novel hybrid MCDM model based on the BSC perspectives for selecting optimal management systems. This research also adopts the MCDM approach. It starts from the angle of the performance evaluation of extension education centers in universities and colleges setting up the performance indices by studying the relative literature review as well as by applying four perspectives of BSC. When doing the performance evaluation, the causality and correlation between perspectives could be obtained by using DEMATEL. Followed by this, ANP is utilized to get the relative weight of each performance index to establish performance indices and evaluation model that can help the performance audition of extension education centers reach the expectation of universities and colleges. In addition, according to the relative weights of performance indices made by ANP in the evaluation framework, extension education centers of three universities in Taoyuan are selected to be carried out doing empirical analysis with VIKOR for ranking and comparison. Through mutual performance assessment estimates, the advantages and disadvantages of each university can be defined as well as placing these universities in order, to provide some useful information to decision makers or managers for their referential purposes.

The remainder of this paper is organized as follows: Section 2 addresses some related theoretical foundation of performance evaluation and illustrates the initiative indices of performance evaluation of extension education centers. The proposed model as well as the analytical tools used in this study is introduced in Section 3. Section 4 details the analysis results of application of the evaluation model through an empirical analysis. Discussion and lessons learned are provided in Section 5. Finally, some important managerial implications and suggestions for further research are summarized in Section 6.

2. Extension education and its performance evaluation indices

This section mainly discusses some related theoretical foundation, connotation of extension education, performance evaluation, and BSC. Besides, the initiative indices of performance evaluation adequately used as a foundation of performance evaluation of extension education centers are introduced.

2.1. Introduction of extension education

The term of "extension education" was first created by Cambridge University in 1850. As time goes by and the environment changes, this concept has being existed in global education systems and social environments as well as more similar forms of this concept. For example, lifelong education, education for sustainability, continuing education, liberal arts education, adult education, recurrent education, lifelong learning, learning society, etc. However, "extension education" is still a representa-

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