APPLICATION OF AHP IN DECISION-MAKING ON URBAN LAND USE: A CASE STUDY OF CHAO-HU CITY DEVELOPMENT IN CHINA

C. C. FENG1 and Edwin H. W. CHAN2

1 Centre of Real Estate Studies and Appraisals, Department of Urban and Regional Planning, Peking University, Beijing 100871, P. R. China.
E-mail: fcc@urban.pku.edu.cn
2 Department of Building and Real Estate, The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR.
E-mail: bsedchan@polyu.edu.hk

Abstract
There are four directions for developing the proposed areas of Chaohu City in China and it is considered significant to prioritise the development choice among the four proposed directions or plans. This paper is an application of the Analytic Hierarchy Process (AHP) in deciding the urban land use development of Chaohu City. We first analyse a variety of factors related to decision of land use, then set up a strategic decision model of hierarchy multi-level and multi-object, and further obtain quantitative results through an analog operation by means of a computer. Finally, based upon the total ordering of levels, decide on the best one from the four projects.

INTRODUCTION

There are many factors to be considered in making a decision on urban land use. Existing methods are mostly qualitative and all factors are considered descriptive which cannot be quantified (Tongji University Editing Group, 1980; Song et al 1985). Therefore, it is difficult to analyse the integrated impact of all these factors. Analytic Hierarchy Process (AHP) is considered an effective approach to quantify the qualitative factors, thus the integrated impacts of these factors can be obtained in quantitative terms. The AHP technique has been used in design proposals selection (Paek et al., 1992), tenders selection and procurement selection (Alhazmi and McCaffer 2000, Cheung et al., 2001; Fong and Choi, 2000), and in dispute resolution methods selection (Chan, Suen & Chan 2004). It provides decision makers with a systematic, transparent and logical approach in prioritising the relative importance of the selection factors, and therefore improving objectivity and reducing human biases in making decisions.

This paper presents the procedures of using AHP and a model (a system of factors) for urban land use development. The developed model has been adopted in Chaohu City in Anhui Province, and it has been proved that this application is effective. Before the adoption of this model, there were many different views in using the traditional approach in the development of this city, as there was no quantitative result to prove which direction was better. The application of AHP has thus resolved these disputes. It is also considered that the application of AHP is more reasonable and adequate, as it incorporates the inputs of many experts and the consideration over many factors in collaboration. The traditional method considers these factors as separate entities and cannot generate an overall profile, which combines the individuals’ impacts. The case study proves that this model is applicable and workable.