Institutional Change Affecting Engineering Education in Japan ~ A Model and Empirical Analysis of Competence Building

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ABSTRACT: In this paper, a conceptual model of the factors affecting competence building in an Engineering university is developed. The extent to which each faculty member can exert his/her potential to the fullest has a profound impact on the overall competences in an Engineering university. Identifying the bottlenecks in the system, which are the inhibiting factors, would lead to concrete solutions to strengthen competences. Having put forward a conceptual model, a detailed case study of competence building analysis in an Engineering School in Japan, Tokyo Institute of Technology (Tokyo Tech) is presented. The study was carried out as a 2 step process. At first, ranking surveys by the media were reviewed to assess how Tokyo Tech was assessed by external agents. Secondly, a comprehensive survey based on a questionnaire was carried out within the Engineering School in the main areas affecting competences, namely admissions process, teaching, research, internationalization, contribution to society and organizational, administrative processes. In this paper, I have focused on the analyses of teaching and research competences. The data obtained was used as a basis to provide concrete policy recommendations to top administrators of the university to strengthen competences. Among the national universities in Japan, this study marks the first time that such a path breaking in-depth survey has been carried out in an Engineering School. This approach may be readily adapted to be used as a strategic management analysis tool in other types of research institutions such as national research laboratories or corporate basic research laboratories.

INTRODUCTION

Higher Education in Japan has been going through major changes in recent years. National Universities have become independent administrative institutions in April 2004. The COE (Centre of Excellence) programme was launched in 2001 by the Ministry of Education, Culture, Sports, Science and Technology in order to introduce competition among universities and to selectively fund the leading universities in the respective fields. At the same time, the demography has been changing rapidly with a declining percentage of the 18 year olds compared to a growing percentage of the elderly people. In other words, competition among universities to admit the best students is becoming fierce. Under such circumstances, Higher Education in Japan has been in a state of a flux and the leading national universities have been under pressure to undergo structural reforms in order to become more competitive. Preparation is underway for accreditation of universities by an institution called NIAD (National Institute for Academic Degrees). At the departmental level, accreditation of engineering departments by JABEE1 has been gaining momentum.

1Japanese Accreditation Board of Engineering Education.