Abstract

This research aims to investigate the factors affecting the adoption of prefabrication system of construction related to personnel. This study used Everette M. Roger's (2003) 'The Diffusion of Innovation Theory' as a framework for investigating the adoption of innovation. The researcher studied the development of the prefabrication system and the factors affecting its adoption. This can be classified into four factors: 1) characteristics of innovation, 2) communication channels, 3) management support; and 4) environmental factors

To study the factors affecting the adoption of prefabrication system the researcher collected data by mailing 160 questionnaires to construction related personnels in different construction firms, government organizations and state enterprises. Most questionnaire respondents resided in Bangkok and its surrounding provinces, and Chiang Mai province. They were building designers, foremen, building owners, or contractors. After the questionnaires were completed, the responses were analysed using SPSS software. The research results were then presented.

According to the data analysis, the architects and engineers, aged between 25-45 years old, who worked as a building designer for 6-10 years played a key role in construction direction setting, prefabrication system adoption as major or minor parts of the buildings, and building design program setting. At present, the level of prefabrication system adoption was Mean = 3.58, S.D. = 0.47. In the adoption of prefabrication system, the lowest mean was Trial (Mean = 3.26, S.D. = 0.86) and the highest mean was Evaluation (Mean = 3.84, S.D. = 0.62). This show that Pollution reduction, Construction schedule and Construction Cost were different with the reinforced concrete system, Experience with the adoption of precast concrete products (beam, column and floor) was also not popular. However, it was considered high in terms of understanding and adoption level. Thus, to accelerate the development of the prefabrication system industry, entrepreneurs must provide knowledge to, and co-operate with the architect and engineering designers.

The factors affecting the adoption of prefabrication system can be ranked from the factors with the most affect to the factors with least. There are four main factors including characteristics of innovation, communication channels, management support, and environmental factors. It was revealed that skills and trainings on prefabrication systems were very important for their adoption because they would help reducing the problem of skilled labor shortages.

This research suggests that the prefabrication system must be designed to be easily and rapidly installed with no leftover materials, in order to avoid impacts on the environment. The construction projects, with a number of duplicate buildings, were opportunities for the use of the prefabrication system. However, every part of the prefabrication system must be certified to Industrial Standards or ISO in order to increase the confidence level of consumers or designers.