

Application of Grey Theory in the Forecast of Facility Maintenance Hours for Office Building Tenants and Public Areas

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Abstract : This study took case office building as subject and explored the responsive work order repair request of facilities and equipment in offices and public areas by gray theory, with the purpose of providing for future related office building owners, executive managers, property management companies, mechanical and electrical companies as reference for deciding and assessing forecast model. Important conclusions of this study are summarized as follows according to the study findings: 1. Grey Relational Analysis discusses the importance of facilities repair number of six categories, namely, power systems, building systems, water systems, air conditioning systems, fire systems and manpower dispatch in order. In terms of facilities maintenance importance are power systems, building systems, water systems, air conditioning systems, manpower dispatch and fire systems in order. 2. GM (1,N) and regression method took maintenance hours as dependent variables and repair number, leased area and tenants number as independent variables and conducted single month forecast based on 12 data from January to December 2011. The mean absolute error and average accuracy of GM (1,N) from verification results were 6.41% and 93.59%; the mean absolute error and average accuracy of regression model were 4.66% and 95.34%, indicating that they have highly accurate forecast capability.

Keywords : rey theory, forecast model, Taipei 101, office buildings, property management, facilities, equipment

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