

104 學年度大四工工專題摘要

第 4 組	A Study of Traditional Market in Taiwan 台灣傳統市場之研究
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摘 要	
Traditional markets in Taiwan are facing a hard situation because consumers are fond of supermarkets or other retailers more than the traditional markets these years. To find out the solution to the fading popularity of the traditional markets, we investigate the reasons causing the weakness of the traditional markets and we learn that several unpleasant features including poor environment and layout... etc. are the main factors resulting the current situation. Because traditional markets represent the real life and culture of Taiwanese people, which could not be replaced by other modern retailers. Thus, we would like to analyze the traditional markets in Taiwan from three aspects. First, in order to lower the polluted interactions between different items in the market, we adopt clustering methods for establishing model of item classification which would improve the environment problem. Then, we apply the revised Analytic Hierarchy Process method to evaluate the optimal layout for the traditional market based on the preferring criteria of the market manager. At the end, standing on the side of the consumers and using the resulting layout derived from the Analytic Hierarchy Process, we want to provide customer a lowest cost route according to their shopping list by referring Travelling Salesman Problem to establish a route planning model and solve it by Branch and Bound algorithm. The model will be transferred into an application on smartphone in the future. Later, we applied the three models in a real case- Hsinchu, Hsua-Yuan Traditional Market. In conclusion, we help either the authorities of the markets to decide the markets' layout and items' classification and the consumers to the markets to quickly access the optimal route. Moreover, we also find out that our models could be applied on different fields as well- classification model on supermarkets, Analytic Hierarchy Process for multi-criteria three leveled problem and the Rout Recommender System for indoors. Keywords: <i>Traditional Market, Clustering Analysis, Crisp c-means, Layout selection, AHP method, Route Suggestion, Traveling salesman problem, Branch and Bound</i>	

這些年來，台灣的傳統市場面臨越來越多消費者轉向超級市場或其他零售業者購買的艱難處境。為了找到傳統市場漸漸式微的原因，我們深入研究傳統市場並發現像是髒亂的環境與不佳的佈局等常見的問題，是造成目前處境的主因。

傳統市場代表了台灣人無法被現代零售業取代的真實生活與文化，因此，我們從三方面分析台灣傳統市場。首先，為了降低不同商品品項互相影響所造成的汙染，我們採用集群分析(Clustering Analysis)來建構分類模型以解決環境問題。接著，我們調整了層次分析法(Analytic Hierarchy Process)後，並根據市場經理所提出的評估準則來決定最適市場佈局。

在得到最佳佈局後，站在客群的角度，我們參考業務員銷售問題(Travelling Salesman Problem)建立一個適用於市場內部的路線規劃模型，並使用分支界定法(Branch and Bound 演算法)求解，以提供消費者一個根據他的消費清單且最低成本的路線。在未來，這個市場採購路線規劃模型也將發展成手機 APP。

以上三方面也被使用於新竹水源市場的案例上。簡而言之，我們幫助市場主管能決定最佳佈局並建構商品分類，同時協助消費者經所建議之快速取得最佳消費路線快速購得所需商品。更重要的是，我們的模式可以應用在其他領域，譬如分類模型應用在超級市場；調整後層次分析法在多準則三階問題；還有路線建議系統應用在其他的室內空間等。

關鍵詞:

傳統市場、集群分析、Crisp C 均值演算法、佈局選擇、層次分析法、路線建議、業務員銷售問題、分支界定法