

The Optimal Allocation of Shelf Space in Distribution Industry

秦椿茂、林燦煌, 駱景堯

E-mail: 8603908@mail.dyu.edu.tw

ABSTRACT

To promote the sales of a retail store in the distribution industry, we used to focus on all kinds of promotion methods but ignore the value brought by display techniques. According to past experiences, the way the products displayed on the shelves affects sales volume. An appropriate display technique may create a selling place that the customers can watch, select, and purchase products easily, and may prevent product shortage in the stores. There are varieties of products along with large volumes in a shop. However, the shelf space is limited. If the methods adopted to classify and display products is inappropriate, the customers can hardly buy what they want. Even with hundreds and thousands of products, it is absolutely useless for sales increase. Therefore, to fully utilize the sales space, it is very important to find an efficient method to allocate products onto shelf space. In this research, we first investigated factors such as consumer behaviors, facility equipment, and cost structure that affect shelf space allocation behavior. From the results, we constructed a mathematical model by defining the decision variables, the objective function, main factors and their corresponding constraints. Through proper solution procedures, we then determined the best shelf space allocation plan. In order to verify the correctness and the applicability of the model, we apply a set of real data as the test basis. Through the sensitivity analysis, we conducted further analysis about factors of the shelf space allocation model and tried to find their effects. The results derived from the research can truly offer the distribution industry a reference tool to allocate the shelf space for different products.

Keywords : Distribution Industry ; Shelf Space ; Allocation

Table of Contents

封面內頁 簽名頁 授權書.....	iii	中文摘要.....	
.....iv 英文摘要.....		.....v 致謝.....	
.....vi 目錄.....		.....vii 圖目錄.....	
.....viii 表目錄.....		.....ix 第一章 緒論.....	
.....1 第一節 研究背景與動機.....		.....1 第二節 研究目的	
.....3 第二章 文獻探討.....		.....4 第一節 貨架空位	
分配方法.....		.....4 第二節 銷售時點情報管理系統.....	
.....14 第四節 貨架空位分配模式研究的差異.....		.....10 第三節 商品陳列	
.....18 第四章 研究方法與進行步驟.....		.....15 第三章 問題定義	
.....24 方法.....		.....18 第四章 研究方法與進行步驟.....	
.....24 第二節 進行步驟.....		.....24 第一節 研究	
.....25 第五章 最佳化模式建構.....		.....25 第三節 研究	
.....27 第一節 貨		.....27 第一節 貨	
架空位與銷售額間影響之因素.....		.....27 第二節 目標函數之建構.....	
.....27 第二節 目標函數之建構.....		.....30 第三節 限	
.....33 第四節 求解模式之程式設計.....		.....33 第四節 求解模式之程式設計.....	
.....41 第一節 實例建立、輸入與求解.....		.....39 第六章 案	
.....42 第三節 敏感度分析.....		.....41 第一節 實例建立、輸入與求解.....	
.....57 結論與未來研究方向.....		.....41 第二節	
.....57 第一節 結論.....		.....41 第二節	
.....58 參考文獻.....		.....50 第七章	
		.....57 第二	
		.....57 第二	
		.....58 參考文獻.....	
		.....59	

REFERENCES

1. 陳名揚譯 零售店55項庫存管理原則 建宏出版社 民國八十四年
2. 丁逸豪編譯 零售學-美國零售商業研究 華泰書局 民國七十八年
3. 楊鴻儒編譯 賣場設計 書泉出版社 民國八十四年
4. 陳明杰譯 零售學 前程企業管理公司 民國八十四年
5. 黃政旺 零售商手冊 崇德工業研究發展基金會 民國七十二年
6. 李孟? 商店經營現代化 聯經出版社 民國八十四年
7. 陳信財 零售業的戰略情報系統 松崗電腦圖書資料公司 民國八十四年
8. 吳靄書 現代零售管理 大中國圖書公司 民國七十四年
9. 賀立祥 貨架空位陳列效應-雅客超級市場之實證研究 國立台灣工業技術學院工程技術研究所工業管理組碩士論文 民國七十九年六月
10. Anderson, E.E. and Amato, H.N., A Mathematical Model for Simultaneously Determining The Optimal Brand-Collection and Display-Area Allocation, Operation Research, Vol.22, No.1, pp.13-21, 1974
11. Borin N. & Farris P.W. & Freeland J.R., A Model for Determining Retail Product Category Assortment and Shelf Space Allocation, Decision

Sciences, Vol.25, No.3, pp.359-384, 1994 12. Borin N. & Farris P.W., A Sensitivity of Retail Shelf Management Models, Journal of Retailing, Vol.71, No.2, pp.153-171, 1995 13. Brown M.G. & Lee J.Y., Allocation of Shelf Space: A Case Study of Refrigerated Juice Products in Grocery Stores, Agribusiness, Vol.12, No.2, pp.113-121, 1996 14. Corstjens, M. and Doyle, P., A Model for Optimizing Retail Space Allocations, Management Science, Vol.27, No.7, pp.822-833, 1981 15. Corstjens, M. and Doyle, P., A Model for Optimizing Retail Space Allocations, Management Science, Vol.27, No.7, pp.943-951, 1983 16. Curman R.C., Shelf Allocation and Profit Maximization in Mass Retailing, Journal of Marketing, Vol.37, pp.54-60, 1973 17. Hamasen P. & Heisbroek H., Product Selection and Space Allocation in Supermarkets, European J. Opl.Res., Vol.3, No.6, pp.58-63, 1979 18. Zufryden F.S., A Dynamic Programming Approach for Product Selection and Supermarket Shelf-Space Allocation, J. Opl.Res.Soc., Vol.37, No.4, pp.413-422, 1986 19. Zufryden F.S., A Dynamic Programming Approach for Product Selection and Supermarket Shelf-Space Allocation, J. Opl.Res.Soc., Vol.37, No.4, pp.201-203, 1987