

































Summary						
Types of Explanatory Variables	Number of Dependent Variables	Technique				
Metric	One	Multiple Regression				
Categorical	One	ANOVA				
Both	One	ANCOVA				
Metric	m	Multivariate Multiple Regression				
Categorical	m	MANOVA				
Both	m	MANCOVA				

Review: The GLM Procedure							
Specification	Kind of Model						
Model y=x1; Model y=x1 x2; Model y=x1 x1*x1; Model y1 y2= x1 x2;	Simple regression Multiple regression Polynomial regression Multivariate regression						
Model y=a; Model y=a b c; Model y=a b a*b; Model y=a b(a) c (b a); Model y1 y2= a b;	One-way ANOVA Main effects model Factorial model (with interaction) Nested model (hierarchical) Multivariate analysis of variance (MANOVA)						
Model y=a x1; Model y=a x1(a); Model y=a x1 x1*a;	Analysis-of-covariance model (ANCOVA) Separate-slopes model Homogeneity-of-slopes model						



























































17-49

Table I Fit measure of brand extensions

Extension products	Average score	Extension products	Average score
Hon Hai (Foxconn)		Media Tek	
Notebook computer	4.16	DVD recorder	4.21
MP3 personal stereo	3.27	Liquid crystal television	3.71
Laser printer	2.43	MP3 personal stereo	3.31
Stereophonic	2.01	Digital set-top box	2.96
Digital camera	1.65	Compact disc	1.79
AUO		Quanta	
Liquid crystal television	4.68	Personal computer	4.45
Digital camera	3.11	PDA	3.52
Intelligent mobile	2.63	WEB CAM	3.06
Scanner	2.32	Base station for wireless network	2.54
GPS satellite positioning system	1.52	Computer screen filter	2.01

Bold: Selected extension products with high, medium and low scores.

E	EVALUATIO	$N = \beta_0 + \beta_1 Q + \beta_6 T + \beta_$	$+\beta_2 I + \beta_3 E + \beta_7 Q C_{[[residual]} + \beta_7 Q C_{[[residual]]} + \beta_7 Q C_{[[residual]} + \beta_7 Q C_{[[residual]]} + \beta_7 $	$\beta_4 D + \beta_5 C$ $_8 QT_{\text{[residual]}} +$
able 3 Regression results for individual industri	al brands			
Independent variable	Standardise	ed regression o	coefficient	
	AUO	Hon Hai	Media Tek	Quanta
Q (perceived quality of parent brand)	0.129**	0.207***	0.064	0.121**
I (perceived ability in product innovation)	0.056	0.121	0.091***	0.235****
E (commitment to environment protection)	0.025	0.017	-0.010	0.002
D (difficulty of making extension)	-0.I52****	-0.011****	-0.077	-0.176***
C (brand concept consistency between the parent brand and the extensions)	0.597***	0.423***	0.712***	0.473***
T (transfer of skills/assets from parent to extension product class)	n 0.155***	0.205***	0.096*	0.094*
QC (interaction term between quality perception with brand concept consistency)	-0.002	0.022	0.115*	0.123***
QT (interaction term between quality perception with transfer)	0.015	0.019	-0.042***	0.037
Sample size=378				
				0.50

p < 0.05; p < 0.01; p < 0.001Bold values represent highest influential factors.













4.1 研究架構

本研究探討單一品類不同型號規格產品的價格,對於其它產品 相對吸引力之影響。對於特定品牌產品相對吸引力的衡量,是以市 場的交易資料為基礎,利用台灣某通路商的資料庫系統中,實際 MP3 的交易買賣,共計 19 個月的銷售週期,錄有 8,038 筆下單觀 察值,總共售出 43,880 台產品,分析領導品牌於台灣市場所推出的 十種不同規格產品之間的價格競爭,以特定產品價格對於其它產品 銷售量的影響,來反映該品牌產品的相對吸引力。此外,透過產品 進化週期之觀點,從單一品牌的產品層級,分四個階段討論特定產 品如何影響其它產品的銷售量,並分析其市場競爭結構,研究概念 如圖1所示。



4.2 資料庫描述

領導品牌公司所銷售的 MP3 音樂播放器,在 19 個月的觀察期 間當中,總共推出10種不同的產品規格,整理於表1。

7

表 1 領導品牌 MP3 產品之記憶體容量、型號、和顏色





圖 2 領導品牌 MP3 產品銷售收入和數量 (橫軸:時間;縱軸:總銷售額)

表 2 10 種型號產品在市場上的存續時間											
型號	110	120	150	102	180	130	200	210	720	220	
推出市場 (年/月)	2004/03	2004/03	2004/03	2004/07	2004/07	2004/11	2004/11	2004/11	2005/02	2005/06	
退出市場 (年/月)	2004/10	2004/10	2005/03	2005/02	2005/04	2006/01	2006/02	2006/02	2005/08	2006/02	
存活時間 (月)	8	8	13	8	10	15	16	16	7	9	

	表3 產	品進化	调期各	階段產	品價格	和銷售	量(售	曹單位	;元)			17-58
產品進化週期	型號	110	120	150	102	180	130	200	210	720	220	
第一階段	平均售價	3327	4546	5348								
<u></u> 2004 年 3 月- 2004 年 6 月	總銷售量	2674	3822	1384								
第二階段	平均售價	3155	4061	5180	2950	4715						
2004 年 7 月- 2004 年 10 月	2004 年 7 月- 2004 年 10 月 總銷售量	2345	3594	694	650	1365						
第三階段	平均售價			4407	2693	3700	3668	4835	3309	7578		
2004 年 11 月- 2005 年 5 月	總銷售量			321	360	415	2319	4366	10583	68		
第四階段	平均售價						4043	4074	2856	7500	4853	
2005年6月- 2005年9月	總銷售量						484	198	5469	8	971	
	假說二	產品 型號 :產品 : 建號	進化週 產品的 進 足 品 進 品	期第二 平均 到 期 第 均 4	-階段, 售價相 三階程 銷售價	各型 各有颜 ,各型	就產品 著關聯 型號產, 與著關]	的銷售 。 品的銷 聯。	量與1 售量與	t它 ;其 它		
2	產品進	化週期	第四	皆段,」	即高記	這體的 120 m	世代,	產品規	格為	130 ·		
20	0、刑腑	220 .	11720	* 推翻	坐 <u>死</u> 的亚世	白銷售	明告重	兴型 第 , 依此	新祥士	空號		
15	係式具有	面著	關係,	提出整	體的研	究假調	史田 史四·	n/m	天民了庄子	CTT 1940		
	假說四	1:產品	品進化	週期第	四階段	1,各	2號產,	品的銷	售量真	其它		
		型理	虎產品	的平均	銷售售	格有到	領著關」	聯。				





Modeling

We begin by using a linear regression model to test the influence of promotions on sales and the interactive impacts of retail outlets, package sizes and product categories. Most sales response models tend to follow the autoregressive process:

$$Y_{t_{iik}} = \beta_0 + \beta_1 Y_{t-1_{iik}} + \beta_2 X_{1_i} + \varepsilon_{i_1} \varepsilon_{i_1} \sim iid$$

where $Y_{t_{ijk}}$ represents the sales revenue in period t; $Y_{t-1_{ijk}}$ refers to the sales revenue in period t-1; and X_{1_i} is the total amount of promotional expenditure (see Appendix, Table AI).

Brand	Category	Package	Outlet	Sales promotion
One brand	Bouillon	Jar	PX Mart	Coupon
			KA Mart	Training expenditure
			GT (distributors)	Display expenditure
		Cube	PX Mart	Coupon
			KA Mart	Training expenditure
			GT (distributors)	Display expenditure
	Seasoning	Bottle	PX Mart	Coupon
	0		KA Mart	Training expenditure
			GT (distributors)	Display expenditure

Following Cosslett and Lee (1985), Hamilton (1996) has developed a general non-liner transfer function. Starting from the unconditional probability of state 1 at time t = 1, given by the well-known formula:

$$\theta = \theta (P_{11}, P_{22}) = \frac{(1 - P_{11})}{(2 - P_{11} - P_{22})}$$

The ergodic Markov switching regime model has two features. First, it allows the promotion activities to switch across regimes following a first order Markov chain. The unconditional probability for state 1, θ can be referred to as the frequency of promotional activities a firm apply. Second, the autoregressive parameters are also allowed to change as the expected demand shift, and hence the promoted demands are regime-varying. We set the expected revenue, *R*, for the manufacturer as the product of

	Bou	illons	Seasonings			
Sales promotion	Jar	Cube	Bottle	Sum of θ		
Coupon	0.09	0.00^{a}	0.14	0.23		
Training expenditure	0.05	0.00^{a}	0.20	0.25		
Display expenditure	0.00^{a}	0.33	0.00^{a}	0.33		

Note: ^aWhere the value of θ was found to be less than 0, it was counted as 0 promotion strategy in maximizing revenue:

$$\theta^* = \frac{\overline{P}}{2k\mu_2} \left(\mu_2 - \mu_1\right) \tag{3}$$

Chapter 85 The REG Procedure

Overview: REG Procedure

The REG procedure is one of many regression procedures in the SAS System. It is a general-purpose procedure for regression, while other SAS regression procedures provide more specialized applications.

Other SAS/STAT procedures that perform at least one type of regression analysis are the CATMOD, GEN-MOD, GLM, LOGISTIC, MIXED, NLIN, ORTHOREG, PROBIT, RSREG, and TRANSREG procedures. SAS/ETS procedures are specialized for applications in time series or simultaneous systems. These other SAS/STAT regression procedures are summarized in Chapter 4, "Introduction to Regression Procedures," which also contains an overview of regression techniques and defines many of the statistics computed by PROC REG and other regression procedures.

PROC REG provides the following capabilities:

- · multiple MODEL statements
- · nine model-selection methods
- · interactive changes both in the model and the data used to fit the model
- · linear equality restrictions on parameters
- · tests of linear hypotheses and multivariate hypotheses
- · collinearity diagnostics
- · predicted values, residuals, studentized residuals, confidence limits, and influence statistics
- · correlation or crossproduct input
- · requested statistics available for output through output data sets
- · ODS Graphics. For more information, see the section "ODS Graphics" on page 7106.