



Statistical Analysis: How Sale Models Change Consumer Buying Behavior

Quddus Syed*, Jyoti Choudhury and McHardy Dale

Assistant Professor, University of The Bahamas, Bahamas

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*Corresponding author: Quddus Syed, Assistant Professor, University of The Bahamas, UB | Oakes Field P.O. Box N-4912 | Nassau, Bahamas

Abstract

A statistical analysis is processed to systematically explain and evaluate how significantly consumer buying behavior is changed by applying different sale-promotion models. The data was collected by using a convenient sample technique through a questionnaire, floated on an online Google form survey to collect primary source of information based on Likert scale. The SPSS based statistical analysis methods, 'Cronbach's Alpha' and 'backward regression' are 'respectively used to check the reliability of data and to iteratively examine the statistical significance of the criterion and predictors relationship. By knowing the effect and significance of sales promotion tools it will be very beneficial and easy for promoters, marketers and consumers to choose and stimulate their selling and buying strategies respectively.

Researchers have shown limited preference to sales promotion methods. It is believed that the perception of consumers from specific premises and culture and respondents of a particular background is various on different sales promotions methods and consumers may change with possibilities of comparison and education [1]. However, no study was found studying the impact of sales promotions on the consumer behavior with reference to the Bahamas supermarkets. The study contributes to the literature by providing the perceptions of consumers from specific premises and respondents of a particular background in the Bahamas context.

In past some studies have done in different areas by collecting random data from markets but in the present study, 65 respondents are from students and employees of the Business faculty at the University of Bahamas who participated. A regression model equation was developed for forecasting the consumer buying behavior based on sales promotion predictors 'price discount', 'free-sample', 'online sale' and 'buy one get one free offer'.

Keywords: Buy One Get One Free; Consumer-Behavior; Free Sample; Price Discounts; Online Sale; Regression; Econometric

Introduction

A statistical analysis is carried out to analytically explain and evaluate how significantly consumer buying behavior is altered by applying various sale-promotion models. Sales Promotion in precise, is a technique used by marketers to inspire and stimulate consumers to purchase the promoted product [2]. It is clearly from the definition that it is used to stimulate the consumers to accelerate their buying either in terms of time or amount. To motivate the customers, numerous types of monetary or non monetary benefits are offered to them. Salvi [3] tested various sales promotion techniques (discount, price-off, buy one get one) with respect to different consumer behavior variables (store visit, purchase and earlier purchase). Chaharsoughi, Yasory [4] studied "effect of Sales Promotion on Consumer Behavior based on culture". Gilbert, Jackaria [5] examined the efficiency of sales promotion with reference to supermarkets of UK. The study compared the performance of coupon, price discount, sample and buy-one get-one free. Shamsi, Khan [6] assessed the efficiency of Sales Promotion with respect to affecting various consumer behavior factors.

Weerathunga, Pathmini [7] affirms that sales promotion methods have a meaningful correlation with customer buying behavior. Offer, premium and contest significantly influence consumer buying decision [8]. Chakraborty et al. [1] advises that sales promotion is more effective than advertisement. Researchers have shown limited preference to sales promotion methods and statistical analysis techniques. However, no study was found studying the impact of sales promotions with reference to the Bahamas concentrating on consumer buying behavior.

Research Questions

- i. The following four research questions were developed for this study.
- ii. What is the effect of buy one get one free offer of sales promotion on consumer buying behavior?
- iii. What is the effect of a free sample of sales promotion on consumer buying behavior?

- iv. What is the effect of the online sale of sales promotion on consumer buying behavior?
- v. What is the effect of price discount offer of sales promotion on consumer buying behavior?

Research Methodology

To collect data for this research, the questionnaire was floated to the respondents to know their buying behavior towards sales promotion activities. We used a Likert scale to quantify the level of consent and disagreement of each respondent on a certain parameter. The statistical analysis methods, 'Cronbach's Alpha' and 'backward regression' are 'respectively used to check the reliabil-

ity of data and to iteratively examine the statistical significance of the criterion and predictors relationship. Most of studies showed that Cronbach Alpha technique is used to check the reliability of data.

Data Analysis and Discussion

We start our data analysis with demographic analysis of respondents. The sample data characteristics are shown in Table 1, 31 % of respondents were male, while 69 % were female. 15% of respondents were employees of Business faculty, while 85% were students. In terms of age, 58% were between 18-24 years, 26% were between 25-29 years old, 6% were between 30-34 years, 5% between 35-39%, and 5% student was above 40 years.

Table 1: Demographic data.

Variables	Sample(N)	%
Gender		
(Male)	20	31
(Female)	45	69
Marital status		
(Unmarried)	53	82
(Married)	12	18
Education		
Undergraduate	45	69
Bachelor	15	23
PhD	3	5
Other	2	3
Income(BD/month)		
3,00-1,000	10	15
15,00-2,000	22	34
25,00-3000	10	15
3500-4000	10	15
4500-5500	5	8
6000-8500	5	8
90000≥	3	5
Age		
18-24	38	58
25-29	17	26
30-34	4	6
35-39	3	5
40≥	3	5

We performed Cronbach's alpha test for measuring reliability of the scales for the five variables used in the study; 'price discount', 'free-sample', and 'buy one get one free offer', and 'consumer buying behaviour'. The results are shown in Table 2. Since the cut off for Cronbach's alpha is 0.7 , reliability statistics from the data collected for our study results in value for each variable in the range of 0.778 – 0.892 [9]. This means the questionnaire is reliable.

To know the value of the coefficients for independent variables that how much these values have an impact on the dependent variable, regression analysis has been applied to the collected data. The backward regression method has been used here to get the significant independent variables to determine the best-fit equation for our model.

The above table 3 illustrates the model summary of the data.

The value of R is 0.685 i.e. 68.5% which represents that there is correlation between variables. The coefficient of determination R square describes the goodness of fit of the model which is 0.469 in our case. This estimates that changes in sales promotion tools (i.e. Price Discount, Free Sample, Buy one Get one and Online Sale) describes 46.9% variations in Consumer Buying Behavior. Addi-

tionally, R square value is 2% different from Adjusted R-square; this shows that we have taken an adequate size sample.

The below Coefficient, the table 4 shows the significance of each independent variable in predicting the dependent variable. The positive value shows that there is a positive effect of independent variables on the dependent variable.

Table 2: Reliability Statistics.

Scales	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Price discount	0.79	0.802	5
Free sample	0.875	0.876	5
Buy one get one free	0.912	0.912	5
Online sale	0.908	0.909	5
Buying behaviour	0.811	0.809	5
Overall	0.941	0.942	25

Table 3: Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.685b	0.469	0.459	0.63755

Table 4: Coefficients.

Model	Unstandardized Coefficients	Standardized Coefficients		t	Sig. value.
	B	Std. Error	Beta		
(Constant)	1.023	0.208		4.911	0
Free.sample	0.142	0.054	0.203	2.643	0.01
Price.disc	0.295	0.06	0.418	4.94	0
B1G1	0.109	0.056	0.156	1.93	0.057
Online.sale	0.157	0.056	0.216	2.796	0.006

This table also facilitates in formulating the econometric model which is:

$$\text{Consumer buying behaviour} = \beta_0 + \beta_1\text{FreeSample} + \beta_2\text{Price-Discount} + \beta_3\text{Buy oneget one free} + \beta_4\text{OnlineSale} + u$$

Where,

Y= consumer behavior X1= free sample

X2= price discount

X3= buy one get one free X= online sale

u= error term

By substituting the values in the above equation from table 4 our for our study becomes:

$$Y = 1.023 + 0.142X1 + 0.295X2 + 0.109X3 + 0.157X4$$

For this study, the following hypothesis summary is calculated. If p-value is less than $\alpha=0.05$ that shows that the variable is significant (Table 5).

Table 5: Hypothesis Summary.

Hypotheses	Statement	P. value	Decision
H1	Free sample has no effect on consumer buying behavior.	0.01	Reject
H2	Price discount has no effect on consumer buying behavior.	0	Reject
H3	Buy one get one free has no effect on consumer buying behavior.	0.057	Not. Reject
H4	Online sale has no effect on consumer buying behavior.	0.006	Reject

The independent variable of H3 (There is no significant impact of buy one get one free on consumer buying behavior) was found insignificant. The results indicate that price discounts, free sample and online sale has significant and positive impact on consumer buying choices. Coefficient and significance values showed positive and strong impact of these sales methods on consumer buying choice [10,11].

'Buy one get one free' offer didn't show significance for consumer buying behavior. It has been seen during collecting data that respondents were not so anxious and enthusiastic about 'buy one get one free' offer. Their experiences discovered that this method is mostly used in food items like pizza and burger in the Bahamas so it did not have much impact on their buying decisions.

Conclusion and policy recommendation

The consumer-behavior regression equation explains that sales-promotion- techniques, 'price discount', 'free-sample', and 'online sale have a strong significant relationship with consumer buying behavior but the 'buy one get one free offer' has no significant relationship with consumer buying behavior. Our sample size consisted of 65 respondents were limited and comprised of specific premises and respondents of a particular background. It is suggested to research further on the people with all age groups, income and education and from different areas.

Briefly, it can be concluded that different promotional techniques create a noticeable impact on consumers' choices and behavior. It has been observed that sales promotional techniques are very helpful in boosting the sale of retailers and wholesalers. These methods served as complementary for their business plans and future decisions. It is very important for producers to select the specific strategy which is useful for sales enhancement in a particular area.

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