Examining the Association and Strength of Association between the Different Attributes and the Performance of Retail Outlets with Reference to Sales in Suburban by Taking the Customer Purchase Patterns into Consideration

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Abstract:- **The purpose of the study was to analyze the factors influencing the sales of the retail outlets in the suburban area. It was designed mainly to find the relation between the retail sales and few of the factors like retail location etc, which were not, studied earlier mostly. Consumer purchase patterns were taken into consideration and the study was carried for about a month by taking different samples of various family units randomly. It was found that the factors like retail location, air-condition facility in the retail outlet, behavior of the sales staff in retail outlet, arrangement of the products in the shelf etc were influencing the sales of the retail outlets. There is a good fit between all theses factors as a whole and the product sales of retail outlets.**

Keywords: **Retail sales, Regression analysis, Correlation, influence, residuals**

I. INTRODUCTION

Most of the retailers create a comfortable and convenient environment in the shopping areas, so that the customers can purchase the products which can satisfy their needs and wants. Retailers try to build certain factors which will mostly influence the consumer purchase patterns and add up to the retail sales. Distinguishing the factors like retail location, staff behavior, comfort shopping environment etc makes the retail outlets to position themselves in the minds of the customers. Moreover the mere presence of the products in the retail outlets will not get the sales but they need few complementary factors which will influence the product sales. The samples were selected randomly from the suburban area, Nandyal. In this study the data was analyzed using the correlation of coefficient and regression analysis techniques.

II. REVIEW OF LITERATURE

A Study was done on the factors affecting the sales of retails outlets but it was focused only on the branded products, Dr .S. Frankilin , Mr. J.Anand Christopher (2012)[1].A study was done on the factors influencing the store patronage but it was restricted to Supermarkets, Hypermarkets in Thailand, Wornchanok Chaiyasoonthorn and Watanyoo Suksa-ngiam (2011)[2]. A research was done to study the Factors influencing the consumer purchase decisions at Organized retail stores ,New Delhi , but the factors include availability & variety, ambience, service, price, promotions and quality (2014)[3]. But this study mainly looks at the factors influencing the sales of retail outlets in suburban area where the shopping is not widely modernised. Relationship between income level and branded milk was studied by Dudlicek,james (2009) pushing the line, dairy foods,vol110,issue4,p70-71,2p,1 color photograph.[7] The association between price and location was studied by P. T. L. Popkowski Leszczyc, A. Sinha, and A. Sahgal, "The effect of multi-purpose shopping on pricing and location strategy for grocery stores," Journal of Retailing, vol. 80, no. 2, pp. 85-99, 2004.[5] The factors influencing the destination choice of a grocery store was studied by Recker, W. W., & Kostyniuk, L. P. (1978). Factors influencing destination choice for the urban grocery shopping trip. Transportation, 7(1), 19-33[6]. Hence the Null hypothesis considers that the factors like air condition facility, product arrangement in shelf, space, retail location, Staff dress code, sign boards etc will not influence the sales of the retail outlets, the consumers too will not take anything into consideration at the time of purchase and there is no relation between the above stated factors and sales. The alternative hypothesis states that there is significant effect of the above stated factors on the retail sales and there is a significant relationship between the factors and retail sales and at most of the times the consumers considers the factors in making the purchase at the retail outlets.

III. RESEARCH METHODOLOGY

Objective of the study

To analyze the factors influencing the retails sales and to study the relationship between the retail outlet sales and the factors as a whole.

Hypothesis

H_0 : Null Hypothesis

There is no relation between the factors and the retail outlet sales i.e., there is no influence of the factors on the retail outlet sales.

H_1 : Alternate Hypothesis

There is a relationship between the factors and the retail outlet sales .i.e., there is influence of the factors on the retail outlet sales.

Respondent Sample

The respondents, i.e., families were selected randomly from the suburban area. The questionnaire was given to nearly 28 families and the persons of age greater than 18 years were selected in each family unit.

Data collection

The sales value of each family unit was collected in a particular time by administering the questionnaire. Questionnaire consisted of different questions referring to different factors where the respondents would consider at the time of purchase of any products at different retail outlets.

Research design

Initially Exploratory study was taken into consideration & Explanatory research design was used to collect and to analyze the data. Questionnaire was used as data collection instrument.

Data analysis and Results

Pearson correlation coefficient and regression analysis was used in data analysis. The retail sales influencing factors were grouped into at different numbers and them the data was analyzed using the regression and person correlation coefficient. Here both of the variables were analyzed quantitatively.

The accuracy of the Pearson correlation coefficient was tested using regression analysis.

Table 3.1 Collected data

No. of Family units/Sample No.	No. of factors varied at each level	Sales Value(Rs.)
1	1	1245
2	5	2642
3	3	1785
4	2	1356
5	7	2660
6	6	2145

7	4	1856
8	3	2547
9	2	1986
10	1	895
11	6	1963
12	5	2314
13	4	3254
14	7	3845
15	2	1265
16	5	3621
17	4	1254
18	6	2411
19	5	2145
20	7	3215
21	6	2845
22	4	1896
23	6	2458
24	3	1254
25	1	1452
26	2	1245
27	4	1879
28	7	2875
29	7	2635
30	6	2589

By analyzing the collected data, following is the scatter plot and regression line for correlation coefficient and regression equation.

Scatter Plot 3.1
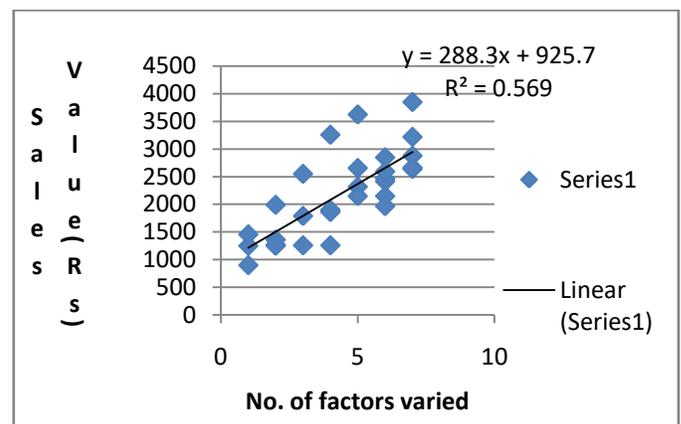
From the above scatter plot, we can infer that initially the actual values are near to the predicted line but as the no. of of factors increases the Y- Actual values are moving away from the Y-Predicted values indicating that the it would be better if the sample size is more bigger.

There is a good fit between the two variables and coming to the coefficients , the consant i.e., 925.7 is the Y-intercept when X=0 and for every unit of change in the X- value the Y changes by an amount of 288.3.From R^2 i.e., coefficient of determination , it can be inferred that 56 % of variation of Y is explained by X , which is a good fit and there is a significant relation between the variables.

The standard error i.e., the distance between the actual Y-values and predicted Y values increases as the no. of factors increases.To minimize this we need to go for a bigger sample size.

The data points are dispresed widely as the factors increases but the R^2 i.e., coefficient of determination shows that 56.9% of variation of Y value is explained by the X value , which is statistically significant.

And even the regression line is of good fit by which one can predict the future Y values for a particular X value.

Table 3.2 Summary Output

Regression Statistics	
Multiple R	0.75
R Square	0.57
Adjusted R Square	0.55
Standard Error	508.24
Observations	30

From the above regression summary output , it can be inferred that Multiple R i.e., Pearson coefficient of correlation is 0.75 ,which shows that the association between the variables is significant.

The R square that is coefficient of determination shows the strenght of association between the variables and that is 0.57 by which we can infer that 57 % of variation in Y value is explained by X value , which is significant too.

Adjusted R Square is 0.55 which will always be less than R square which considers the other associated factors too.

The standard error is the unexplained error or noise or residual error i.e.,508.24 the distance between the actual Y values and predicted Y values , which show that the data pints get dispersed as the no. of varied factors increases.This can be reduced by a bigger smaple size.The no. of observations are 30.

Table 3.3 ANOVA

	df	SS	MS	F	Significance F
Regression	1	9556273.38	9556273.38	37.00	1.46676E-06
Residual	28	7232736.48	258312.02		
Total	29	16789009.87			

From the above ANOVA table , the F Test is significant , Significanc F value is less than 0.05 where 5% chance of occuring randomly.Hence the regression equation is good.

Table 3.4

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	925.78	226.83	4.08	0.00034	461.14	1390.43
No. of factors varied at each level	288.31	47.40	6.08	0.0000015	191.21	385.41

The Y intercept is 925.78 and for every one unit X value the Y value changes by an amount of 288.31.Here the 288.31 is the beta coefficient of independent variable X which is high and which is good indicator of explanation power of independent variable X i.e., the higher the coefficient the higher is the explanatory power.

The standard error show the distance of the actual Y values and predicted Y values, which is a dispersion of the data.

In either case the P-values are lesser than 0.05 , which infers that the test statistic is significant and hence the null hypothesis can be rejected and can accept the alternate hypothesis.

The lower and upper values shows the occurrence of the values.

III. CONCLUSIONS

The research shows that there is a significant relationship between the no. of factors varied and the retail outlet sales as shown by correlation. And through the regression equation one can predict the Y values for a particular X value and the regression analysis explains the strength of relationship between the dependent and independent variables.

IV. LIMITATIONS

The sample size is small but here the market was restricted to suburban area and the no. of retail outlets were less.

The regression analysis is basically concerned with nature and degree of association but it never imply or assume any casuality.

The residual error cannot be explained even by the researcher at initial stages and off course that could be an error in this research.

V. IMPLICATIONS

The retailers once they come to know that there is an association between the sales and the other factors like retail location and so on ,which will be known by Correlation coefficient and then the regression analysis would make them to predict the future sales.

The change in sales value i.e., Y value will infer the retailer , the most significant change is due to which factor and it would be better fro the retailers to focus on those factors alone. If there is a best fit line then the retailers can make better predictions for a certain X-Value.The retail outlet managers can build certain factors as tested in this research to influence the customers and to increase the purchase value.

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