Analysis of relation between quantity and sales

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ABSTRACT

We investigate whether there is a direct correlation between the quantity sold and the amount received from it. There are two variables – quantity sold and sales, our analysis will be focused on both of them. The analysis involves correlation and regression of both the variables and predicting the future value. The research paper also involves graphs which depict the sales at different quantities. There are 502 entries in the research paper which will help us determine our objectives.

Keywords— *Correlation, Regression*

1. OBJECTIVES

- To determine the correlation between both the variables.
- To find the regression analysis.
- To interpret the results received.
- To interpret the data with the help of a graph.
- To depict the future value.

2. INTRODUCTION

This is a primary data which is collected from B.D Textiles and includes the buyer, the city, the quantity purchased and the sales. The B.D. Group was incorporated in 1975 and within a span of a few years, transformed from being a textile trader to a fully integrated manufacturing conglomerate. Today, the B.D. group is vertically and horizontally integrated to provide customers total textile solutions. Few companies globally have such a diverse product range of nearly 50 varieties of PREMIUM BLOUSE MATERIALS to cater to customers across age groups, occasions and styles. The group is the leader in textiles in India and enjoys a pronounced position in the market. B. D. believes in Excellence, Quality and Leadership. The following sales data is from the current year, 2020.

3. Data

Row Labels	Average of Amount
0-99	22101.85714
300-399	22605.25
400-499	25654.5641
500-599	30302.5
600-699	33295.40376
700-799	36453.58621
800-899	36047.77778
900-1000	41901.27273
Grand Total	**33373.47012**

Correlation:

	Column 1	Column 2
Column 1	1	
Column 2	0.45239	1

Interpretation: A weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5 and a strong positive correlation from 0.5 to 1. This data has a moderate positive correlation of 0.45239. This means that change in quantity has an impact on change is sales amount.

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.452389751
R Square	0.204656487
Adjusted R Square	0.2030658
Standard Error	7451.74105
Observations	502

ANOVA

|	df	SS	MS	F	Significance F			
Regression	1	7144244094	7144244094	128.6591788	1.07674E-26			
Residual	500	27764222337	55528444.67					
Total	501	34908466431						
	Coefficients	**Standard Error**	**t Stat**	**P-value**	**Lower 95%**	**Upper 95%**	**Lower 95.0%**	**Upper 95.0%**
Intercept	18498.85278	1352.888413	13.67359836	2.19293E-36	15840.80608	21156.89948	15840.80608	21156.89948
X Variable 1	22.34776256	1.97021518	11.34280295	1.07674E-26	18.47684171	26.21868341	18.47684171	26.21868341

Regression:

$$Y = a + bX$$
$$Y = 18498.85278 + 22.34776256X$$

Interpretation: This means that when there is an increase of 22.34 units sold the sales will increase by Rs.1.

Depicting the future value: Assume X=500

Substituting in the equation, Y will be Rs. 29672.73406
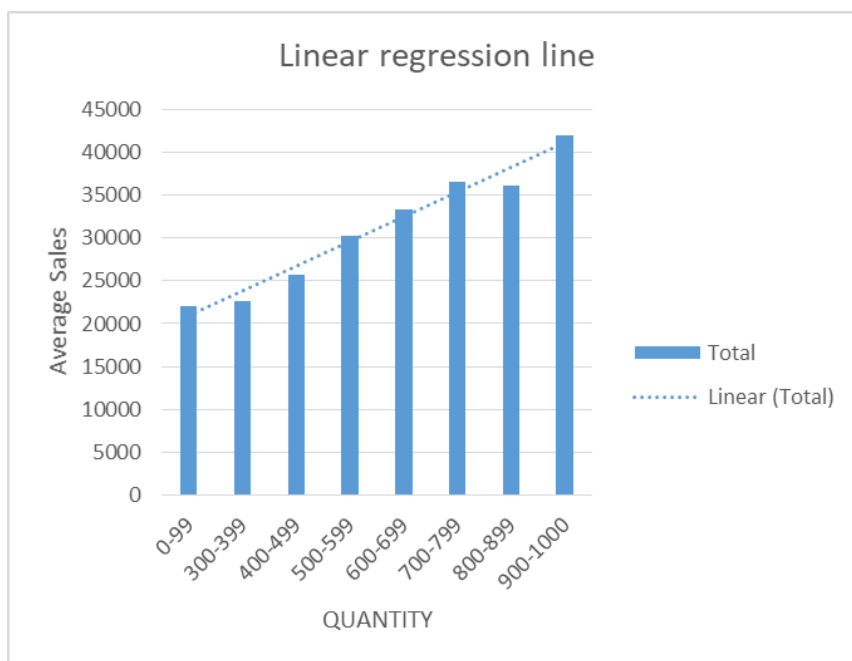
Graph depicting the linear regression line where the quantity is on the x-axis and the average sales is on the y-axis.

4. CONCLUSION

The data shows that there is a positive moderate correlation between the quantity and sales. Quantity is an independent variable where as sales is a dependent variable. It depends upon the quantity. Through the regression analysis we can determine the future value by putting any amount of quantity with respect to the current data. There is a linear graph line in the paper which is determined through the regression analysis where the quantity is on the x-axis and the average sales is on the y-axis.

5. REFERENCES

[1] B. D. Textiles pvt. Ltd.
[2] NCERT Solutions
[3] Math Workbook