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MODELLING SUPERMARKET SALES USING LINEAR REGRESSION

Introduction

Tracking sales in a business premise is of great importance.this project therefore specializes in modeling sales in a supermarket taking the sales to be the dependent variable being affected by other several factors including:customer, gender,product line, unit price, VAT and quantity.

Problem statement

Decline in sales is the major problem that we are trying to solve through this modelling. This problem has affected major companies(supermarkets)e.g Uchumi supermarket and Nakumatt supermarket and has led to even their closure.

Research Objectives

1.What is the general trend in sales over the days/years?
2.What are the major factors contributing to the trend?
3.Will the company be in operation the coming days/years by using the model?

Methodology

Here, we find the Linear Regression model as an appropriate model to use. We will take Sales as the dependent variable and the other factors(age, gender, unit price, quantity, VAT) as the independent variables.

$$Y_i = \beta_0 + \beta_1 X_i + e_i \tag{1}$$

$$Y_i = dependentvariable \tag{2}$$

$$X_i = independent \tag{3}$$

$$\beta = unknownparameters \tag{4}$$

$$e_i = errorterms \tag{5}$$

References

1.The World Almanac and Book of Facts 1993 (1993), New York: Pharos Books. Dataset available through the JSE Dataset Archive.

2.Maulud, Dastan, and Adnan M. Abdulazeez. ”A Review on Linear Regression Comprehensive in Machine Learning.” Journal of Applied Science and Technology Trends 1.4 (2020): 140-147.