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A MULTIPLE REGRESSION ANALYSIS OF FACTORS THAT AFFECT THE RESELLING PRICE OF A CAR (WITH SPECIAL REFERENCE TO COLOMBO URBAN AREA)

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Abstract

This study has explored the hypothesis that predisposing and enabling factors of reselling price of used Toyota cars in Colombo District, Sri Lanka. The study was a cross-sectional survey among a representative sample of 55 used Toyota Cars from urban areas of Colombo District. The objective was helpful in providing a clear picture as to which Toyota car was a bigger/ lower issue in Colombo district in Sri Lanka and what were the reasons behind for the maximum/ minimum market share or demand of Toyota car resellers in Colombo district, Sri Lanka. A number of major influence factors that affected for the reselling price of used Toyota cars in Colombo district, Sri Lanka were examined through this study. The study highlighted less demand for matrix model with compare to the other Toyota car models in Colombo district, Sri Lanka. The principal factors affecting the reselling price of a car of these people in terms of magnitude were car model, car color, age of car and mileage.

Key Words: Reselling Price of a Car, Used Car, Toyota Car

I. INTRODUCTION

A second hand car or a used car means a car that has previously had one or more individual owners. In other words, when you buy a car from a private owner or a dealership called a second hand or used car. Some people are in the practice of changing their cars every time a higher version is launched by the particular car company and some people changing their car after it has met with an accident and has started giving mechanical problems. But the reselling price is different car to car. There are a number of different factors that affect the reselling price of used car. This study indicates that what the factors influences in reselling price of Toyota used cars on urban areas in Sri Lanka. The age of the car in years, number of miles in thousands

as indicated by the odometer at the time of sale, the model of the car (Avalon, Camry, Corolla, Matrix, Yaris) and the color of the car (Light and Dark color) are studies factors in this study.

II. OBJECTIVES OF THE STUDY

[1]. To study what is the impact of reselling price of Toyota used car on urban areas in Sri Lanka by means of age of a car, mileage, color of a car and model of a car.
[2]. To identify order of preference quantity for various models in Toyota cars.

III. MATERIALS AND METHODS

The study was a cross-sectional survey among a representative sample of 55 used Toyota Cars from urban areas of Colombo District. Disproportionate Stratified Random Sampling Technique was adapted for collecting the sample. Multiple Linear Regression (MLR) analysis was used to analyze the data.

IV. RESULTS AND FINDINGS

Primary data was collected by conducting simple experiment for targeting the reselling Toyota used cars in Colombo city. The 55 reselling used cars were studied in randomly. Sample survey data are presented as follows.

According to the Figure 1, as expected, a used car of low resale price is associated with high age of cars. Due to this reason we can say there is a very strong negative linear relationship between car resale price and age of car.

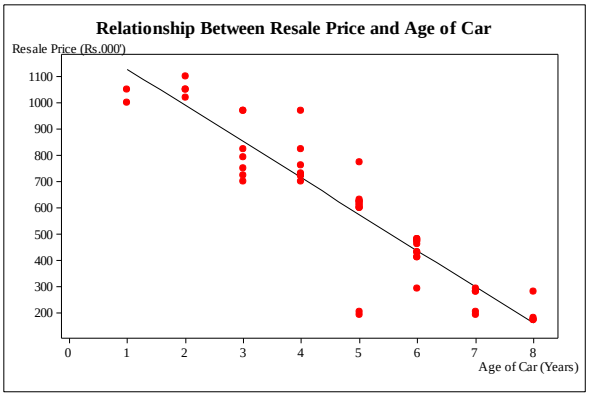

Figure 1: Effect of Age of Car for Car reselling Price

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According to the Figure 2, as expected, a used car of low resale price is associated with longer mileage of cars. Due to this reason we can say there is a very strong negative linear relationship between car resale price and mileage of car.

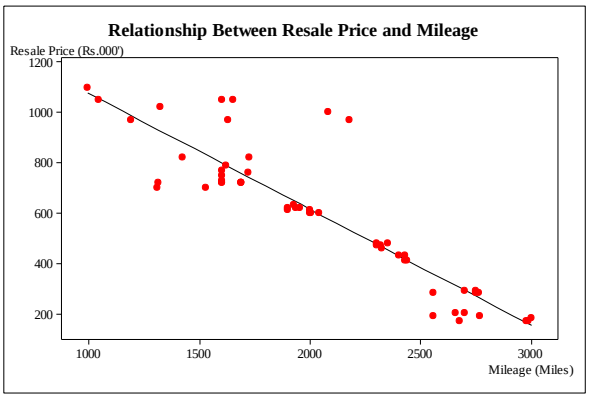

Figure 2: Effect of Mileage for Car reselling Price

Although less variability the median resale price appear to light color cars higher than the dark color cars. 50% light color car's resale price in between Rs.970000 to 1050000 and 50% dark color car's resale price in between Rs.287500 to 720000.

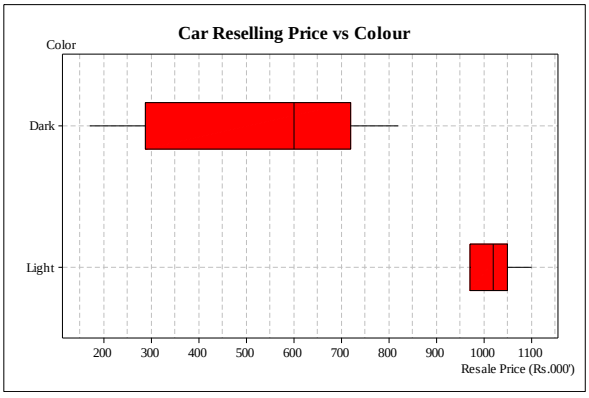

Figure 3: Effect of color of Car for Car reselling Price

The median resale price appears to Toyota Avalon cars higher than the other Toyota car models. According to figure 2.2.4 we can array reselling price of this Toyota car models, Avalon, Camry, Corolla, Matrix and Yaris in respectively descending order. Less variability in reselling price of Avalon car model and high variability in reselling price of Camry car model. Toyota car models reselling price are spread Rs.200000 to Rs.1050000 (Yaris to Avalon).

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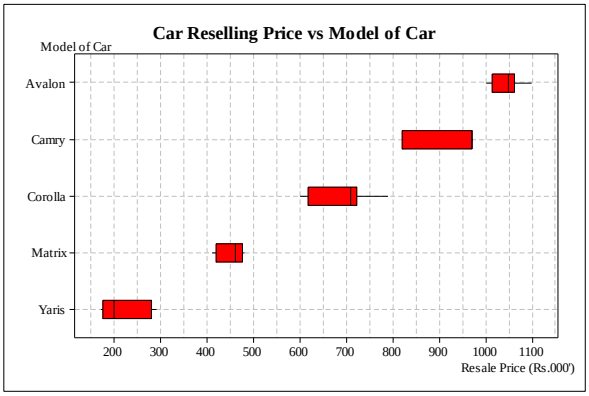

Figure 4: Effect of Car Model for Car reselling Price

Impacts of car model, car color, age of car and mileage for car reselling price are tested by using regression analysis.

Regression Equation:

Reselling Price = 543816 – 43622 Age of Car + 142730 Light Colors + 431158 Avalon + 428861 Camry + 325751 Corolla + 166805 Matrix + u_i

There is a high correlation (0.853) between two explanatory variables mileage and age of car. Due to this reason, if we add these two explanatory variables in to the regression model at the same time we have to face multicollinearity situation. So we drop one variable among these two explanatory variables from the regression model. Due to impact of mileage of car is very low than the age of a car, we drop mileage variable in this regression model.

The regression equation is

```
Selling Price = 543816 - 43622 Age of Car + 142730 Light Colour + 431158 Avalon
                + 428861 Camry + 325751 Corolla + 166805 Matrix
Predictor       Coef  SE Coef      T      P
Constant      543816    61816   8.80  0.000
Age of Car    -43622     8637  -5.05  0.000
Light Colour  142730    42386   3.37  0.002
Avalon        431158    65655   6.57  0.000
Camry         428861    46435   9.24  0.000
Corolla       325751    28608  11.39  0.000
Matrix        166805    21898   7.62  0.000


S = 46404.3   R-Sq = 97.4%   R-Sq(adj) = 97.0%
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Analysis of Variance

Source	DF	SS	MS	F	P
Regression	6	3.80754E+12	6.34589E+11	294.70	0.000
Residual Error	48	1.03361E+11	2153359776		
Total	54	3.91090E+12			

Source	DF	Seq SS
Age of Car	1	3.41530E+12
Light Colour	1	64791290087
Avalon	1	34853971674
Camry	1	10680994300
Corolla	1	1.56965E+11
Matrix	1	1.24951E+11

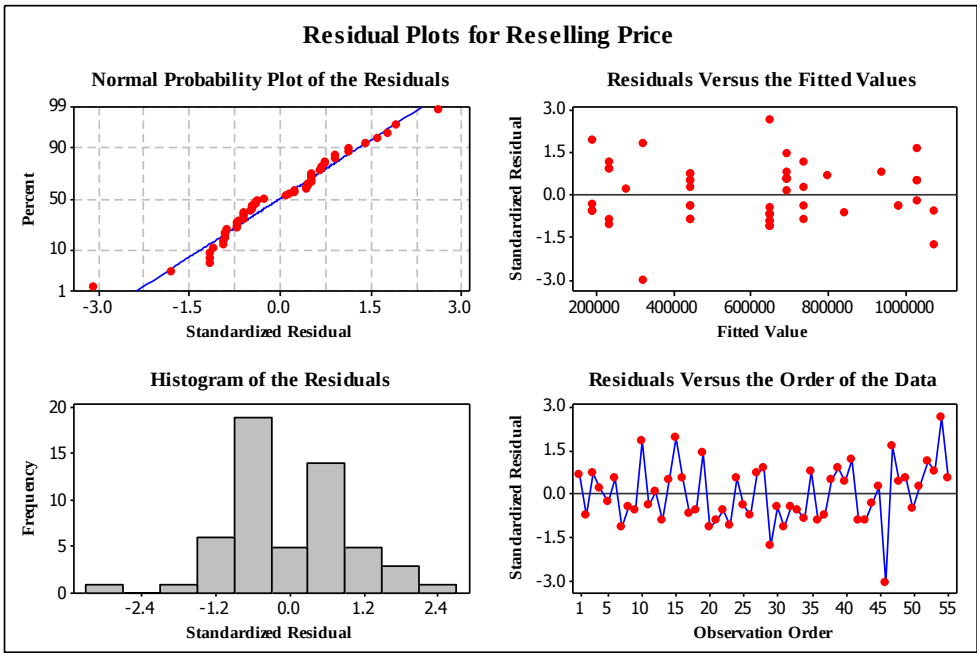

Figure 5: Residual Plots for Reselling Price

- **Test for Significance of Regression Model**

Hypothesis:
H_0: Model is Not Significant
H_1: Model is Significant

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Table 1: Parameter Values of the One Way ANOVA Test

P Value	0.000
R^2	97.0%

Due to P Value is less than the significance level and R^2 is over 80% we can we have enough evidence to reject H_0 at 5% level of significance. That means this regression model is statistically significant.

- **Test for Significance of Regression Parameters**

Hypothesis:
H_0; $ß_1 = ß_2 = \ldots\ldots = ß_6 = 0$
H_1; $ß_j \neq 0$; for at least one j. Where; j=1 to 6

Table 2: Parameter Values of the Regression Analysis

Predictor	P value	Decision
$ß_0$	0.000	Parameter is statistically significant
$ß_1$	0.000	Parameter is statistically significant
$ß_2$	0.002	Parameter is statistically significant
$ß_3$	0.000	Parameter is statistically significant
$ß_4$	0.000	Parameter is statistically significant
$ß_5$	0.000	Parameter is statistically significant
$ß_6$	0.000	Parameter is statistically significant

Rejection of this null hypothesis implies that at least one of the regresses X_1, X_2, ……., X_6 contributes significantly to the model. Due to P value is less than 0.05 in all predictors, we can say all factors are contributes significantly to the regression model.

There is a high strength between car reselling price and car model, car color, age of car and mileage. When one mile of mileage is increased, car reselling price is increased by Rs.123 under ceteris paribus condition. When light color car, car reselling price is increased by Rs.161322 under ceteris paribus condition. When Toyota Avalon car, car reselling price is increased by Rs.500260 under ceteris paribus condition. When Toyota Camry car, car reselling price is increased by Rs.451965 under ceteris paribus condition. When Toyota Corolla car, car reselling price is increased by Rs.335290 under ceteris paribus condition. When Toyota Matrix car, car reselling price is increased by Rs.178348 under ceteris paribus condition.

V. SUMMARY

In this research, examined a number of predisposing, enabling and needed factors that influenced the reselling price of a used Toyota Car.

- ✓ The mileage your car delivers is probably one of the most vital aspects that would determine the resale value of your car. Lesser the miles recorded in your car, the better the price you will get. But now mileage of car can be reversal by manually. So when one mile of mileage is increased, car reselling price is decreased by approximately Rs.125 under ceteris paribus condition. Due to reversal car distance meter before selling a car, the mileage of car is not very highly affected to the used car reselling price.

- ✓ When light color car, car reselling price is increased by approximately Rs.160000 under ceteris paribus condition. Due to Colombo is a torrid city, social attitudes of Sri Lankan people and smart looking (for wedding house, tourist travel) the color of car is very highly affected to the used car reselling price.

- ✓ When Toyota Avalon car, car reselling price is increased by Rs.500260 under ceteris paribus condition. When Toyota Camry car, car reselling price is increased by Rs.451965 under ceteris paribus condition. When Toyota Corolla car, car reselling price is increased by Rs.335290 under ceteris paribus condition. When Toyota Matrix car, car reselling price is increased by Rs.178348 under ceteris paribus condition.

- ✓ According to new trend of Toyota car preference, people are more like to choice Toyota Avalon car, Toyota Camry car, Toyota Corolla car, Toyota Matrix car and Toyota Yaris car in respectively.

- ✓ The age of your car delivers is probably one of the most vital aspects that would determine the resale value of your car. Low age of your car, the better the price you will get. So when one year of age is increased, car reselling price is decreased by approximately Rs.43600 under ceteris paribus condition.

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