Design Models for Estimating Customer Volume Based on Competitors

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Abstract. The purpose of this study is to determine the approximate volume of X company subscribers based on their competitor conditions. The technique used is to estimate the volume of customers with the help of WINQSB Software in the forecasting of linear regression. Based on statistical calculations from five competitors, there are only two companies that significantly affect the customer volume. Based on hypotheses expressed, the influence of A and B company against X company performance of 95.13%, such influence at probability level 0.00<0.05. The influence of A company negatively impacts the accuracy of the significance value 0.019<0.025 and the influence of B company affects Positiv with the accuracy of the significance of 0.00<0.025 value, both conditions indicate a significant effect on the company’s performance. The design model to estimate the customer volume of X company is 397,691.71 - 53.26 (PT A) + 61.59 (PT B) + 0.22. Thus, the company can use the model to estimate the volume of customers for future conditions, and this model can be used as an illustration to determine strategic decisions in the face of competitors. Strategic direction of X company where the company should be able to seize the market share of A company. X company Let B company grow naturally or create aligned marketing strategy.

1. Introduction
In this study, we make a forecast to find out the estimated volume of X company’s customers based on their competitors. This study aims to map the estimated volume of X company’s customers based on the capacity of competitors. The method used is multiple linear regression forecasting with the help of WINQSB Software. The results of the study will provide an overview of which competitors influence positively and negatively and the selection of competitors which significantly influences it. After that, the company can determine what decisions and strategies will be taken in the future.

Multiple linear regression forecasting methods have been used to predict the peak load [1]. Patterned linear regression has also been carried out for short-term load forecasting [2]. Multiple linear regression has been carried out for modelling and forecasting electrical loads [3]. Regression forecasting has also been carried out to forecast electricity consumption [4]. Regression models have been used to estimate wheat yields in winter with MODIS data in Ukraine and Kansas [5]. Linear regression has also been used to forecast nitrate concentrations in groundwater with the help of artificial neural networks [6]. Multiple linear regression models have also been used to predict the potential of clay soil waves [7]. Multiple regressions have also been carried out for modelling spatial patterns of fires in Mediterranean Europe [8]. Multiple linear regression has also been used to make facial decomposition and evaluation of heart-based heart rate signals [9]. Multiple linear regression has also been applied to the monitoring system of wind turbine generator temperature conditions [10]. Multiple linear regression models have also been used to assess damaging effects on runoff by using case studies at the Manwan dam on the Lancang River [11]. Multiple linear regression has also been
used to predict daily suspended sediment discharge [12]. Multiple linear regression has also been used for Modelling factors as the cause of traffic accident losses [13]. Multiple regression models have also been used to determine and predict the viscosity of a crude oil mixture [14]. Multiple linear regression has also been used for the Transformer Error Prediction Method [15].

2. Method
This study was conducted to estimate how the influence of competitors on the volume of X company customers. The technique used in making customer volume estimation models is the regression forecasting technique group in WINQSB Software. The data needed to perform this forecast model is past customer data from X company and five competitors’ data over 48-period. The statistical test carried out is the deterministic test, hypothesis testing with probability calculation of F Test on simultaneous influence and hypothesis testing by calculating the probability value of the t test on the partial effect.

3. Results and Discussion
Here are two discussions about the initial and final regression model using WINQSB software. The following first model is an initial estimation model whereby 5 competitor companies are independent variables. \[ X_{\text{Company}} = 307.215,50 - 74.29 \times (\text{PT A}) + 54.91 \times (\text{PT B}) + 37.70 \times (\text{PT C}) - 30.31 \times (\text{PT D}) - 28.88 \times (\text{PT E}) + 0.18 \] (Figure 1).

Figure 1. The Initial Regression Coefficient Test

Figure 1 test coefficient of initial regression, this test demonstrates the influence of customer volume of five companies on X company’s volume conditions, this indicates that five companies are affecting X company performance by 97.79%, while 3.21% are influenced by performance of other companies. (Figures 2-3).

Figure 2. The Initial Model Reliability Test

Figure 3. Probability Curves in The F Test for The First Model
Here is the F test in Figure 2 and Figure 3. Preliminary model reliability test, this test uses hypotheses where the company's fifth influence statement is as follows:

**H₀**: There is no influence of A, B, C, D, and E company to the performance of X company.

**H₁**: There is the influence of A, B, C, D, and E company to the performance of X company.

The probability value F calculate (p-value) of 0.00 < 0.05, indicating the condition of the curve area is Ho rejected, where statistic there is a performance influence of the company's fifth competitor to the company's performance X. (Figure 4).

**Figure 4.** Probability Curves in The T Test for The First Model

Evaluation of initial Model with T Test in Figure 1 and Figure 4. Test the initial regression coefficient, this test uses a hypothesized test where the following five companies’ influences are as follows:

**H₀**: No significant influence any A, B, C, D, and E company against performance X company

**H₁**: There is a significant influence any A, B, C, D, and E company against the performance of X company

Two different conditions where the C, D, and E company showed the p-value > 0.025 and the destruction of A and B showed the p-value < 0.025. These signals show that the third partial hypothesis of the company is in the reception area of H₀, meaning there is no significant influence by each of the C, D, and E companies in the performance of the X company. Conversely the two companies are on the H₀ rejection area, meaning there is a significant influence of each A and B company to the performance of X company. Thus, other models should be created that only involve companies with a p-value less than 0.05, which are only A and B companies. (Figure 5).

**Figure 5.** The Final Regression Coefficient Test

The following figure is the second or final estimation model where two competing companies are independent variables, X company = 397,691.70 – 53.264(PT A) + 61.588(PT B) + 0.22. Here is figure 5. Final regression coefficient test, this test shows the influence of the volume of customers from two companies on the volume condition of X Company, this shows that A and B company affect the performance of X company by 95.13%, while 4.87% percent is influenced by other companies. (Figures 6-7).
Figure 6. The Final Model Reliability Test

Figure 7. Probability Curves in The F Test for The Final Model

Here is the F test in Figure 6 and figure 7. The final model's reliability test, this test uses the hypothesis test where the company's third statement of influence is as follows:

$H_0$: There is no influence of A and B company to performance of X company

$H_1$: There is the influence of A and B company to performance of X company

The probability value F calculate (p-sig) $0.00 < 0.05$, indicating the condition of the curve area is in the rejection area of $H_0$, where statistically, there is the performance influence of both companies’ competitor to the performance of X company. (Figure 8).

Figure 8. Probability Curves in The T Test for The Final Model

Evaluate the final Model with the T-Test in Figure 5 and Figure 8. Test the final regression coefficient, testing using the hypothesis test where the influence of each company is the following:

$H_0$: No significant influence every A and B company against performance of X company

$H_1$: There is a significant influence every A and B company against performance of X company

There are similarities to the destruction of A and B indicating the value of-p $< 0.025$. This gives signals that in the second partial hypothesis the administration is in the $H_0$ rejection area, meaning there is a significant influence of each A and B company to the performance of X company. This condition illustrates that both companies in the partial hypothesis exhibit significant effects, so that the X company model = 397.691,70-53.26 (PT A) + 61.59 (PT B) + 0.22 has a good level of reliability. (Figure 9).
Figure 9. Prediction Result for Estimating Costumer Volume Based on Competitor

The results of simulated company models can be done using WINQSB software on features as shown in Figure 9. The following prediction results. X company can predict the target sales volume by inserting an average sales volume of a competitor company or target sales volume of a competitor company from intelligence marketing. Another model can illustrate that the marketing strategy of a competitor company will have a positive linear impact on company performance. In line with research in Yemen, shows the strategic alignment of Triadic has a positive impact on the company's performance and there is a strategic alignment of triadic ideal for prospectors and defenders. This research contributes to the strategic alignment of literature and managers' understanding of how to align Business, IT and marketing strategies to improve company performance [16]. Thus, the X company should consider conducting a marketing strategy with A and B company, so that the goals of improving the company's performance can be achieved.

4. Conclusion
The conclusion gained from this study is that not all five competing companies serve as benchmarks to estimate the performance of X company, but rather only two company which is A and B company. Models that can be used to estimate the performance of X company namely the company's performance X = 397,691.70 – 53,264 (PT A) + 61,588 (PT B) + 0.22. This Model explains the strategic direction of X company where the company should be able to seize the market share of A company. X Company Let B company grow naturally or make aligned marketing strategy

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