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The relationship between out of stocks and total settlement in Coca Cola Official Distributor at Betro-Surabaya

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ABSTRACT: *Coca Cola is a company that produces one of the biggest Non Alcoholic Ready to Drink (NARTD) in its market, but The DIFOTAI (Delivery In Full On Time and Accurate Invoice) in Coca Cola Official Distributor (CCOD) at Betro is under the standard which is 95%. As the out of stocks is the first internal problem that happens in CCOD Betro and total settlement is the final result of company supply chain flow. Therefore, the motivation of this research is to define the relationship between out of stocks and the total settlement. This study aims to define and investigate the causal relationship between out of stocks and total settlement and create the new DIFOTAI or standards for CCOD Betro. Simple linear regression is used in order to define the relationship between out of stocks and total settlement. As the result of this study, there is a significant relationship between of out stocks and total settlement. There are 2 new DIFOTAIs for CCOD Betro, first is the moderate DIFOTAI which is 91% - 94% and second is extreme DIFOTAI which is 100%. To minimise the out of stocks level, Coca Cola needs to have more communication in all sectors, especially towards the CCOD Betro with the hope of it will increase the productivity between CCOD Betro and Coca Cola.*

Keywords: inventory level, out of stocks, service level, third party logistic

1 INTRODUCTION

Coca Cola is a company that produces one of the biggest Non Alcoholic Ready to Drink (NARTD) in its market; therefore it is used as the object of this research. Coca Cola has always wanted to provide the best service to all customers and consumers. Coca Cola receives order or demand from sales representative (Sales Rep). The way it works is sales reps go to the outlets that are registered in the Coca Cola's system and ask the outlets whether they want to make an order or not. If yes, the sales reps will note all the orders that outlets want and input it in their device which connected with the online system. After the sales reps finished going around and gathering all the orders from the outlets, the order that being inputted in the online system called total order (TO).

Coca Cola Official Distributor (CCOD) is a third party logistic (3PL) that is assessed by Coca Cola to store and deliver the products to certain areas. From CCOD, Coca Cola products will be delivered by delivery men which owned by CCOD and delivered to the outlets. All the products that being delivered are based on the request order. The order will be prepared and ready to be delivered from CCOD to the outlets with the lead time of 1 times 24 hours. Total Settlement (TS) on Table 1 explained about the total products that are delivered in an on time to the outlet and received by the outlet.

Table 1 Out of Stocks and Total Settlement Monthly Data from October 2016 – June 2017

Month	Monthly Data	
	Out of Stocks (Case)	Total Settlement (Case)
October	61	44,573
November	140	45,826
December	17	49,715
January	176	37,249
February	107	31,829
March	6	39,686
April	80	84,312
May	78	154,729
June	2,296	126,094

Source: Coca Cola Amatil Indonesia.
Where as 1 Case = 12 bottles.

Performance measurement is simply a mechanism that improves the likelihood the organisation will implement its strategy successfully (Anthony & Govindarajan 2004). Coca Cola also has their own terms, named Delivery In Full On Time and Accurate Invoice (DIFOTAI). DIFOTAI is the key performance indicator (KPI) that used to measure the service level in CCOD. For DIFOTAI, there are strategies and work programs that needed in order to achieve the expected performance. DIFOTAI will show the score of the product fulfilment that requested by the outlet towards the CCOD. Coca Cola has 3 CCODs, first is located at Betro, second is located at Suko-Manunggal, and the third is located at Tandes.

There are some impacts due to the CCOD is not able to fulfil the order, first, CCOD performance is going down and it is explained by the decreasing in DIFOTAI, with the reason of company cannot fulfil the requested order from outlets. Logically, if the company cannot fulfil the order from customer can reduce customer service (Woensel et al. 2007). Therefore, the company should increase or maintain the customer relationship and in this case is the outlets. In order to keep the outlets buy products from the Coca Cola, Coca Cola should maintain the customer relationship towards all the registered outlets. Secondly, outlets will not satisfy towards Coca Cola performance because Coca Cola cannot deliver 100% of total order. Thirdly, customers also probably cannot find a drink that they want because the outlets do not have the specific drink due to the order fulfilment is not 100%. So, Delivery In Full On Time and Accurate Invoice is really crucial for CCOD, it measures a lot of performances in supply chain distribution and the service level result will give a lot of impact to the 3 majors like the company, outlets, and customers.

Coca Cola Official Distributor Betro is having issues with the DIFOTAI. The service level or in Coca Cola terms named DIFOTAI level is under the target which is 100%. Coca Cola also have the standard for DIFOTAI which is 95% and it will be considered as good if the DIFOTAI is ≥ 95%. However, if it is below or < 95% then CCOD will receive some consequences, for instance, bear the loss. Therefore, out of stocks surely gives an impact to total settlement (Xu et al. 2016). If the first step of the system is already bad, then the result will be bad too. The main problem is, if the product that is needed to be delivered is not available (out of stock) then it will directly give an impact to total settlement because it means the total settlement will not be equal with total active order (TAO).

This study aims to investigate and define the causal relationship between out of stocks and total settlement by doing the statistical test. The new standard for DIFOTAI is then needed because current total settlement is not equal to total active order that make the recent DIFOTAI cannot reach out the current standard which is 95%.

2 RESEARCH METHODS

A quantitative approach is used in this research. Regarding the case study of CCOD Betro, the type of this research is applied research. In this research, causal relationship method is used to find the relationship between out of stocks and total settlement at CCOD in Betro. The way to analyse the data is by using the model as following:

$$Y = a + \beta x + \in.$$

Whereas, Y stands for the dependent variable which considered as the total settlement. According to Wang et al. (2016) the meaning of total settlement in Coca Cola terms is the products that have been delivered to the outlets and reported back to the office with the complete invoice. α stands for is the intercept and it will be considered as the minimum standard of DIFOTAI during the value of *y* when *x* = 0. The slope of the line is β which can be $0<\beta<0$ and the x is explanatory variable which is out of stocks and the out of stocks will be considered as minus (-) because the natural behaviour of out of stocks is negative, out of stocks is decreasing the total delivered products and also total order dispatch as stated by Pibernik (2006).

The data on the Table 1 is taken from Coca Cola Amatil Indonesia, Head Office Surabaya. To get the data the researcher has to go to the Coca Cola head office which located in Surabaya and asks the data from them with the thesis purpose. Therefore, the data that researcher get is valid from October 2016 – June 2017 with 39 weekly or 9 months as the time series data.

3 RESULTS AND DISCUSSIONS

There are a lot of activities that performed in CCOD Betro and there are 3 main classifications data, which are: 1) order, 2) inventory and warehousing, 3) distributor constraint which likely comes from the external factor that is difficult to be managed internally. There is a reason why the research is talk about out of stocks and total settlement and it is because the out of stocks is the first thing that the CCOD need to be checked before the CCOD do the delivery, which is why it makes the out of stocks is a

vital issue for the delivery or distribution. In this case, the issue is called as out of stocks (Elsayed 2015). However, the tangible products called as inventory or stock. For the total settlement, is the subtraction of total on-time delivered products with total order dispatch. The total settlement also used to count the performance measurement in CCOD Betro by calculates the ratio between total settlement and total active order.

The main idea of this research is to find the causal relationship between out of stocks and total settlement. To add with argument from Pibernik (2006) that stock-out costs are modelled as cost of lost sales or backorder cost on a per unit (and time) or per stock-out occasion basis (Pibernik 2006). Therefore, this research is talking about causal relationship between out of stocks and total settlement. This research use 3 kinds of data which is daily, weekly and monthly because the daily data is mostly used by the operational level and also CCOD to do the forecasting. The result of statistical test is described in Table 2 below.

All of those data are being tested by using SPSS software and come up with the result of the daily and weekly data which detected outliers are significant with the confidence interval ($\alpha = 95\%$). There are 2 weekly data tabs since the first one is not significant and the other one is delete the detected out layer data by using residual option and it became significant. The use of detecting outliers by using residual option is to delete the abnormal data behavior which is sometimes so far away from the upper and lower boundaries. The data which located beyond either on upper or lower boundaries will be broke the data calculation because those data sometimes is not valid or there is a special occasion during that specific time. Unfortunately, monthly data is not significant because of the data on June 2017 explains there is a massive out of stocks and it is happened due to the festive season which is Eid Mubarak. The analysis α and β is basically come from the based or original data which is can be checked, those table are the original data and have the daily, weekly, weekly with detected outliers and monthly. Then the data have been converted into the certain units like daily, weekly and monthly and by that, there will be 2 new standards for CCOD Betro, first is the moderate standard which not really hard to be reached and second is the extreme standard which is pretty hard to be reached due to the maximum is the highest standard.

Coca Cola may use the new DIFOTAI for CCOD which 91% - 94% and by using the new DIFOTAI it means Coca Cola have to use the new DIFOTAI with the range from 91% to 94% which is from moderate DIFOTAI result. But for the extreme DIFOTAI result, the result is 118% - 122% whereas it should be considered as 100% because the maximum service level is 100%. In the other explanation, moderate DIFOTAI is beyond the target which is 100%. It means that the capability of CCOD to give the service to the outlets or customer is beyond the target and it can be happened if the situation in the CCOD is maximum which there is no any restraint in the CCOD.

Table 2. Hypotheses Test Results using Simple Linear Regression Model

Data	Model: TS = $\alpha + \beta.OOS + \epsilon$
Daily (raw data)	TS = 2,404.796*** – 21.383*** *OOS* + ϵ (10.56) (5.26) R=-0,322, R^2=0,104, ANOVA 27,67***
Weekly (raw data)	TS = 10,989.801*** – 21.759 *OOS* + ϵ (11.88) (1.33) R=-0,213, R^2=0,045, ANOVA 1,761
Weekly (eliminiated Outliers in raw data)	TS = 2,404.796*** – 17.745*** *OOS* + ϵ (10.56) (3.16) R=-0,471, R^2=0,222, ANOVA 9,983***
Monthly (raw data)	TS = 5,871.343*** – 28.906 *OOS* + ϵ (10.56) (1.46) R=-0,484, R^2=0,234, ANOVA 2,144

Source: Processed Result by using SPSS Software
Where as: (***) = Significant Level (0.01)
(**) = Significant Level (0.05)
(*) = Significant Level (0.1)

4 CONCLUSION

There are two practical implications in this research. First, the result explained that Cola Official Distributor Betro may know the actual problem that gives impact to the total settlement which also influenced the service level and it is the out of stocks (Woensel et al. 2007). Second, the α and β results especially for daily, weekly and monthly, these results can be used for the future forecast. Therefore, by creating an accurate service level forecast, the CCOD Betro will be able to face the sudden of increasing of the demand/order and it will make the CCOD able to fulfil the order from the outlet so the DIFOTAI could increase or remain high (Novich 1990).

There are few recommendations for Coca Cola, first for the Coca Cola Official Distributor Betro, to reach the standard which is DIFOTAI, managing stocks in the correct ways is needed to make sure that everything is under controlled for instance; the product availability is always positive and not negative or called as out of stocks and maintaining the other factors. Second, to minimise the out of stocks which exist and affecting the total settlement or

DIFOTAI, it can be done by first, make a particular forecasting with certain available linear regression models which should be very detail in order facing the supply-demand. Third, during the festive season, Mega DC can rent more trucks in order to reduce the delivery lead-time, even though that there will be a cost due to renting the trucks but the trade-off is still good. Fourth, Coca Cola head office should make the communication more transparent to the CCOD. Fifth, the current DIFOTAI for CCOD Betro is either not suitable or the CCOD Betro is hardly to reach the stated standard for DIFOTAI which is 95%. Based on the result the new DIFOTAI has been made which can be more suitable to be applied in any CCOD especially CCOD Betro, Surabaya. The new moderate standard is with the range of 91% - 94% which lower than before which is 95% and the extreme standard is 100%. Lastly, by having the 3 types of data, which are daily, weekly, and monthly data. So, every data which is used for this research is having its own special purpose, like where or when to use this data and which data is more suitable for certain occasion.

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