Receivable Management Performance Measurement Tool and Factors Affecting Account Receivable Performance

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Abstract: *Days Sales Outstanding (DSO) is a calculation used by a company to estimate their average collection period. DSO is a tool to measure receivable management performance. Although DSO is commonly used to analyze the performance of account receivable, it has a weakness toward the fluctuation of the sales. DSO figure can be misleading since in its formula is included the sales value. Another tool to measure the effectiveness and the effort of collection done by collection department is Collection Effectiveness Index (CEI). A result of near 100% indicates that the collection department has been very effective in collecting the receivable from customers. The purpose of this study is to analyze the significant relationship of Sales and overdue Bills (also known as Average Days Delinquent) toward DSO using Pearson product moments, and to figure out how is the impact of sales and overdue on DSO by using Multiple Linear Regression. There are three main factors which affecting the overdue bills (ADD), that is lead times of returned delivery note, the lead times of bills submission and the customer payment behavior. These three factor will be analyzed using Panel data Regression with Pooled Least Square Model. The study reveals that DSO has a significant relationship with fluctuation of the sales and it cause bias. From the result, it also prove that the overdue bills has larger impact on DSO compare with sales. The Customer payment behavior is the main cause of increasing the overdue, and the second is the lead times of returned delivery note.*

Keywords: Account Receivable, Days Sales Outstanding, Average Days Delinquent, Collection Effectiveness Index.

1. Introduction

Sales on credit generate accounts receivable that describes the amount of invoices held by the company because of credit sales. "Debt owed to the firm by customers arising from sales of goods or services in ordinary course of business" (Joy 1078). In the company's balance sheet, accounts receivable is one of the most important assets. As an asset, accounts receivable is estimated to have 20% of total asset relief for large organizations and 30% for small/medium organizations (Jackling et al 2004). Accounts receivable include assets that can illustrate the company's liquidity and describe the company's ability to settle its liabilities. The level of receivables also plays an important role in the working capital cycle. The company pays all its short-term liabilities through its current assets i.e., the assets that can be quickly transferred to cash such as receivables (Gup, Benton E 1987). Another important thing in accounts receivable is managing bad debts. These uncollectible receivables cannot be categorized as assets again but are classified into bad debt allowances that will reduce the company's revenue and reduce the receivables as assets.

PT XRI is a company engaged in the garment industry. The company is a multinational company, where 90% of its customers are export oriented garment companies. Changes in Indonesian government policies that require all transactions within the territory of Indonesia to be conducted in Rupiah (Bank Indonesia Regulation Number 17/3 / PBI / 2015) make PT XRI must review its cash flow. In monitoring its cash turnover, PT XRI uses Days Sales Outstanding (DSO) to measure how many days its receivables are converted into cash. Days Sales Outstanding (DSO) is the length of days customers need to pay their debts (Ross, at al. 2008). The performance of PT XRI's receivables is only focused on accelerating the paying of bills by using one indicator, which is DSO, but without having the DSO industry reference as a standard. Low DSO is defined by the Management as improvement of the receivables performance and if the DSO rises, it is indicated that many bills have not been collected or become overdue. Looking at the high percentage of the number of delinquent bills per month in PT XRI did not show any improved performance of receivables even though DSO decreased. Conversely, there are times when the DSO increases, the percentage of overdue tends to decrease. This can provide a misrepresentation of the performance of the billing section when the amount of credit sales is not fixed (Lewellen, at al. 1975).

Table 1: DSO & Overdue ratio of PT XRI

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Avg
2013	Overdue Ratio (%)	34	28	24	28	26	29	30	33	20	23	25	29	28
	DSO days	70	68	69	68	68	69	69	72	73	63	65	68	69
2014	Overdue Ratio (%)	32	25	24	23	23	24	24	31	21	20	21	26	24

	DSO days	70	66	66	65	66	67	67	71	69	65	68	70	68
2015	Overdue Ratio (%)	26	26	23	21	27	27	31	25	16	18	20	25	24
	DSO days	73	71	72	68	72	71	73	72	66	62	64	66	69

Overdue represents the bills, which have not been collected as of the payment term given. From the Table.1 shows that in September 2013, DSO 73 with overdue ratio of 20%. Compare with the previous month in which DSO was lower (72) but the overdue ratio was 33%. Similarly seen in January 2015, DSO is 73 was higher than DSO 71 in February that is 71, but overdue ratio remained the same. The table above also shows that the up and down of DSOs are not in line with the percentage reduction of uncollectible bills, or in other words the decrease in DSO does not reflect the reduction of overdue. Therefore from the above data, indicated the problem as follows:

1) Is DSO that bias against sales appropriately used as a billing collection success measure?
2) How is the GAP between DSO and payment term given to customer?
3) What causing the high DSO and uncollected bills?
4) Is the DSO indicator sufficient to measure the performance of PT XRI' receivable?

Average Days Delinquent (ADD) presents an overview to evaluate a company's overall billing performance. ADD informs the number of past due bills. According to Olsen (1999), ADD is also very useful to evaluate the performance of each customer, customer performance per segmentation or performance of each collector at a time. ADD is the difference between DSO and BPDSO (the credit terms given to customers) that illustrate the existence of irregularities in customer payments. Collection Effectiveness Index (CEI) can also be used as a tool to measure the performance of accounts receivable. Dr. Venkat Srinivasan (1986) developed this method. CEI is the percentage that describes the effectiveness of the collection effort. The closer to the 100%, the more effective the billing performance. CEI compares how many accounts receivable the company with how much actual bills have been collected

2. Literature Review

The main purpose of Receivables Management is to determine the effectiveness of the implementation of the Credit Rules and Policies that can improve the efficiency of the collection department and ultimately contribute to the improvement of corporate value. The aim of receivable management is specifically: (1) to evaluate the "creditworthiness" of the customer prior to the sale of the credit, (2) to minimize the investment cost on the receivable, (3) to minimize the existence of bad debts, (4) to formulate

the period of time to be given to the customer by considering minimum investment on account receivable but in the same time also increase sales, (5) to minimize the cost of billing operations.

When a customer is offered credit sales term, it becomes very necessary to have an established mechanism for managing the receivable created. The function of accounts receivable is self-explanatory from its name and has to do with all

elements that come together to ensure receivables are well handled to benefit the firm while it transacts on credit terms and thereby maximizing the value of the firm. The first issue has to do with the decision whether to grant credit at all. (Arnold, 2005). However, credit is a global practice though not all businesses but the global market largely thrives on credit. The factors that affect accounts receivable are three and they usually form the focal points in the management of receivables. They are credit extension policy, credit collection policy and receivables investment monitor (Ramesh 1987)

Melita Stephanou, Maria Elfani & Petros Lois (2010), in this study they conducted an empirical investigation of effects rather than the Working Capital Management of firms on financial performance in developing countries. Their hypothesis is that effective working capital management will increase corporate profits. Using multivariate regression analysis, their results support the hypothesis. Especially in the results indicating that the cash cycle in which the component is inventory turnover, DSO and payment obligations affect the company's profits.

David B and Steven I Hochberg (1998) conducted a study on Garage Doors Inc. on how an analysis of receivables can reveal deeper problems to companies and help to improve their financial health. In this study mentioned at the time of financial crisis occurs, analysis of receivables as a whole can often prove two things at once. The first is, Accounts Receivable are assets that can be easily and quickly converted into cash. Secondly, the existence of accounts receivable from customers that are very slowly paid can indicate a deeper problem phenomenon that may be the core problem faced by the company.

3. Data & Research Methodology

3.1 Data Collection

In this section it will be analyzed the relationship between sales with DSO and overdue with DSO, before we continue to find the impact of each variable on DSO. Below are the DSO, sales and overdue data taken from PT XRI during 36 months, from January 2014 up to December 2016.

Table 2: DSO Figure

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Avg
2014	73	72	72	68	72	71	73	72	66	62	64	66	69
2015	64	63	65	63	68	65	70	70	67	71	68	69	67
2016	71	69	68	68	68	69	76	77	63	63	60	59	68

Table.2 shows the DSO of PT XRI. The data explain that the average days consume to collect the receivable is average 69 days in 2014, 67 in 2015 and 68 days in 68.

Table 3: Sales Data (000)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Avg
2014	4268	4604	5300	5263	4594	3763	2972	4105	5378	5098	4391	4408	4512
2015	4697	4925	5563	5410	4593	4186	3119	4606	5396	5150	4652	4246	4712
2016	4680	4823	5250	5264	4496	4080	3126	4965	5499	5220	4731	4719	4738

Table 4: Overdue Data (000)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Avg
2014	2821	2727	2739	2513	3146	2758	2648	2090	1598	1903	1968	2357	2439
2015	2095	2099	2486	2149	2776	2212	2495	1653	1789	2345	2397	2268	2230
2016	2283	2074	2060	1989	1928	1804	2258	1394	1475	1553	1520	1055	1783

From Table. 3 and Table.4 above, it is clearly shown that there was a decreasing in term of overdue value compare with the last year sales in average. Even when the sales is same, but the average DSO is increase. Using above data, we will figure out which variable has the most impact on DSO.

3.2 Analysis the correlation between Sales, Overdue and DSO

Correlation is an analytical technique that is included in one of the relationship measurement techniques using numerical values to determine the level of strength of the relationship between variables. Two variables are said to be related if the behavior of one variable affects the other. If no effect occurs, then both variables are independent. There are three interpretations of the results of this correlation analysis, the strength of the relationship between two variables, the significance of the relationship and the direction of the relationship. In this research will examine the correlation between sales and DSO by using Pearson's Correlation Coefficient. The correlation coefficient (r) obtained shows the strength of the relationship between sales and DSO, overdue and DSO where r lies between -1 and +1.

In this section it will be analyzed the relationship between sales with DSO and overdue with DSO, before we continue to find the impact of each variable on DSO. Below is the data taken from PT XRI.

From Table. 3 and Table.4 above, it is clearly shown that there was a decreasing in term of overdue value compare with the last year sales in average even when the sales is same, but the average DSO is increase. Using above the data we will figure out which variable has the most impact on DSO.

$$r = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{[N \sum x^2 - (\sum x)^2][N \sum Y^2 - (\sum Y)^2]}}$$

where:
N = number of pairs of scores
$\sum xy$ = number of pairs of scores
$\sum x$ = sum of sales scores
$\sum y$ = number of dso scores
$\sum x^2$ = sum of squared sales scores
$\sum y^2$ = sum of squared dso scores

After we analyze the relationship between sales and DSO, the next step is to find the influence of sales and overdue on DSO through multiple linear regression model, where "x1" is the overall sales data of PT XRI, "x2" is PT XRI overdue data and "y" is DSO of PT XRI taken for 36 months.

Through the multiple regression model, it will be analyzed which factor has the most dominant effect on the DSO, whether sales or overdue.

$$Y = \alpha + \beta_1 x + \beta_2 x$$

Y = Days Sales Outstanding (DSO)
α = intersep (constant)
β = Slope
x1 = total sales per month
x2 = total overdue per month

3.3 Calculate the Best Possible DSO and Average Days Delinquent (ADD)

In order to analysis, how much is the overdue (ADD) of PT XRI, first, we have to know the ideal situation, assuming that all receivable paid on time. All the invoices within payment term will be taken from the aging schedule and calculate the BPDSO using below formula:

$$\text{Best Possible DSO} = \frac{(\text{Current Receivables x Number of Days in Period Analyzed})}{\text{Credit Sales for Period Analyzed.}}$$

After we know the DSO and BPDSO, we will calculate the Average Days Delinquent as a representation of the overdue by finding the difference between DSO and BPDSO.

3.4 Analysis factors causing high level of ADD (Overdue)

From many factors that affect the performance of accounts receivable, it will be taken three main causes: The lead times of returned delivery note, the lead times of bills submission and the customer payment behavior. These three factors will be analyzed using panel data regression.

The panel data regression is a combination of cross section data and time series data. Cross section data is data collected in a certain period consisting of several objects or commonly called samples. In this study, the cross section data is 35 customers of PT XRI. This cross section unit is observed repeatedly for some time. While time series data is data collected from time to time (can be daily, monthly, quarterly or yearly) against one individual or sample. The time series data in this study is 36 months, from January 2014 to December 2017. If each cross section unit has the same number of time series observations then it is called balanced panel data, otherwise if each cross section unit has a number of observations time series is different, then the panel data is not balanced (unbalanced panel data). There are three common approaches to panel data regression models, Pooled

Ordinary Lest Square (PLS), Fixed Effects Model (FEM) and Random Effect Model (REM).

Pooled Ordinary Least Squares (Pooled OLS) Regression combines cross section data and time series (data pool). The assumption of interception and slope is considered constant both between individuals and between times. Assuming that the intercept (α) and slope (β) will be constant for each time series and cross section data, then α and β can estimate the model with the least squares approximation. (Nachrowi and Usman 2006).

$$Y_{it} = \alpha + \beta_i X_{1t} + \varepsilon_{it}$$

Y_{it} = Dependent variable
X_{it} = Independent variable
α = intersep
β = *slope*
i = individu of-i; and
t = periode of -t
ε_{it} = error

Fixed Effect Model (FEM) is a regression method that estimates panel data by adding dummy variables. This model assumes that different effects exist between individuals or individuals having different intercepts where dummy variables are used to capture these differences. According to Firdaus (2012), dummy parameters can be added to the model to allow changes to this intercept, and then the model is predicted using OLS,

$$Y_{it} = \sum \alpha_i D_i + \beta X_{it} + \varepsilon_{it}$$

Y_{it} = Dependent variable
X_{it} = Independent variable
α = intersep
β = *slope*
D = Dummy variable
i = individu of-i; and t = periode of -t
ε_{it} = error

While in FEM, the difference between individual and or time is reflected through intercept, then on Random Effect Model (REM) the difference is accommodated through error. This technique also takes into account that errors may be correlated along the cross section data as well as time series data. Random Effect Model (REM) is a regression method that estimates panel data by calculating errors from the regression model. The assumptions used in this model are individual errors are not corrected as well as the combination errors. The Random Effects Model can be explained by the following equation:

$$Y_{it} = \alpha + \beta_i X_{1t} + \varepsilon_{it}$$
$$\varepsilon_{it} = \mu_{it} + v_{it} + w_{it}$$

$u_i \sim N(0, \sigma_u)^2$, cross section error component
$v_i \sim N(0, \sigma_v)^2$, times series error component
$w_i \sim N(0, \sigma_w)^2$, times series and cross section error component.

3.4.1 Selection of Regression Data Panel Model
There are several ways to determine which model is best used in estimating parameters in panel data. According to Widarjono (2007), there are three tests to choose the model,

F-Test (Chow Test)
This test is to compare which method is better between Pooled Ordinary Least Squares (OLS) and Fixed Effect (FE). The null hypothesis (H0): the intercept and the slope is same. The statistical value F will follow the statistical distribution F with the degree of freedom is n-1. If the value of F arithmetic is greater than F critical then the null hypothesis is rejected which means the correct model for panel data regression is the fixed effect model. In addition, vice versa, if the value of F arithmetic smaller than F critical then null hypothesis accepted which means the right model used for panel data regression is PLS.

Haustman Test
Compare which model is the best between Fixed Effect (FE) and Random Effect (RE). In this test, the assumption of whether or not correlation between regressor and individual effects is performed. The Hausman Test statistic follows the statistical distribution of Chi-Squares with degrees of freedom (df) of the number of independent variables. The null hypothesis is the right model for panel data regression is Random Effects and the alternative hypothesis is the right model for panel data regression is Fixed Effect. If the Hausman statistic value is greater than the critical value of Chi-Squares then the null hypothesis is rejected which means the correct model for panel data regression is Fixed Effects. And conversely, if the Hasuman statistic value is smaller than the critical value of Chi-Squares, then the null hypothesis is accepted which means the Random Effect model is better.

Langrange Multiplier (LM test).
To select which model is best between Pooled Least Squares (PLS) and Random Effect (RE) is used Langrange Multiplier Test developed by Bruesch-Pagan. This test is based on the residual value of the PLS model. LM test is based on Chi-Squares distribution with degrees of freedom (df) of the number of independent variables. The null hypothesis is the right model for panel data regression is PLS, and the alternative hypothesis model is Random Effects. If the calculated LM value is greater than the critical value of Chi-Squares then the null hypothesis is rejected which means the correct model for panel data regression is Random Effects. However, if the LM value is smaller than the critical value of Chi-Squares then the null hypothesis is accepted which means that the right model for panel data regression for this study is Pooled Ordinary Least Squares (OLS)

3.5 Analysis of CEI, ADD as an alternative Tools of performance of Accounts Receivable

In this study, it will be analyzed another receivable measurement tools which not included sales in the calculation. (Srinivasan 1986). The Calculation of Collection Effectiveness Index (CEI) will be done to find out how far the effectiveness of credit department performance at PT XRI by using formula:

$$CEI = \frac{(Beg\ Receivable + Mon.Cred.Sales - End.Tot.Receivable)}{Beg.Receivable + Mon.Cred.Sales - End.Curr.Receivable} \times 100$$

After obtained the results from the calculation of CEI, it will be analyzed the correlation between ADD & DSO, DSO & CEI, ADD & CEI by using Pearson Product Moment.

4. Discussion and Result

4.1 The Correlation between Days Sales Outstanding (DSO) with Sales

The classic assumption test to the data has been done as a pre-condition of the Pearson Correlation Product moments.

1) The exploration of data from the variables are a nominal data that can be measured at a continuous level.
2) Linearity.

The variables of sales with DSO and Overdue with DSO are also form a linear relationship as shown in scatterplot graph in Figure.1 and Figure.2
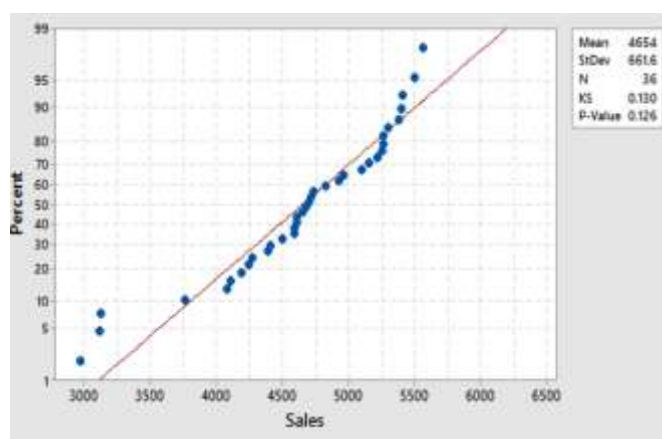
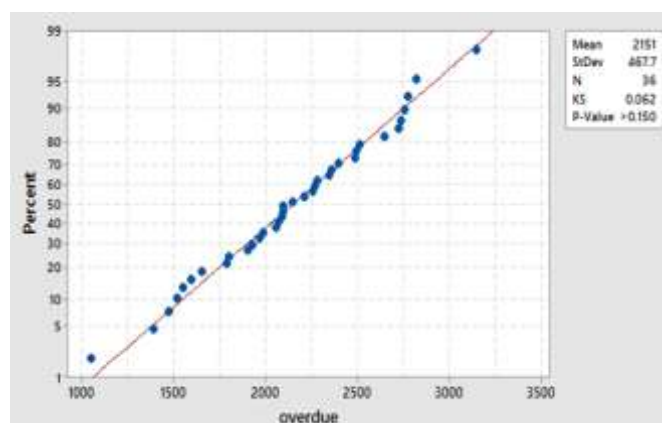

Figure 1: The scatterplot graph of DSO and sales

Figure 2: The scatterplot graph of DSO and Overdue

3) Normality.
From Kolmogorov Smirnov test results showed that sales, overdue and DSO variables are normally distributed. Probability or p-value of sales is 0.126 greater than the α = 0.05, and the p-value (probability) overdue > 0.150 at α = 0.05.

From Table. 4 shows matrix correlation between sales and DSO with (r) = -0.436. This value reflects the amount of variation of the DSO variable can be explained by the sales variables (Nachrowi 2006) with the value of statistical significance or p-value 0.008 > 0.05, which means sales, has significant effect on DSO. With negative direction when sales up then the DSO is tend to down.

The correlation between overdue bills and DSO is shown by (r) = 0.491 and the relation is positive. When overdue is down then the DSO will increase.

Table 4: Pearson Correlation Result

		DSO	Sales	overdue
DSO	Pearson Correlation	1	-.436**	.491**
	Sig. (2-tailed)		0.008	0.002
	Sum of Squares and Cross-products	636.750	-43099.333	34301.763
	Covariance	18.193	-1231.410	980.050
	N	36	36	36
Sales	Pearson Correlation	-.436**	1	-0.320
	Sig. (2-tailed)	0.008		0.057
	Sum of Squares and Cross-products	-43099.333	15323157.556	-3463328.636
	Covariance	-1231.410	437804.502	-98962.247
	N	36	36	36
overdue	Pearson Correlation	.491**	-0.320	1
	Sig. (2-tailed)	0.002	0.057	
	Sum of Squares and Cross-products	34301.763	-3463328.636	7657099.469
	Covariance	980.050	-98962.247	218774.271
	N	36	36	36

**. Correlation is significant at the 0.01 level (2-tailed).

The results of this study prove that the movement of DSO associated with the rise and fall of sales. Empirically this research is supported by previous research conducted by Credit Research Foundation (1993) and Sensiba San Filippo (2012) which concluded that DSO is sensitive to sales and can be misleading because it has a major disadvantage that DSO fluctuates with sales.

4.2 Analysis of The effect of Sales and Overdue on DSO

Overdue also affects DSO in addition to sales. The next research is to examine the effect of sales along with the overdue of receivables over DSO using multiple linear regression. Table 5.below is showing the result of the regression model and the effect of each independent variable. Looking at the standardized beta in Table. 4, it can be determined multiple linear regression equation resulting from this study are as follows

$$DSO = 67.865 + 4.052 \; Ovrd - 1.912 \; Sales$$

The coefficient regression of variable sales is equal to = -1.912 which mean if sales increase 1 thousand while overdue is assumed to remain , the DSO will decrease by 1,91 days. The coefficient regression of overdue variable is = 4,052, means if the overdue increase 1 thousand while sales is assume constant, then DSO will increase 4.052 days.

Table 5. Multiple Linear Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constanta)	67,865	0,899		75,501	0,000		
	Ovrd	4,052	0,283	0,672	14,336	0,000	0,995	1,005
	Sales	-1,912	0,140	-0,642	-13,684	0,000	0,995	1,005
a. Dependent Variable: DSO								

F test results also obtained p-value <0.05. With the hypothesis H0: All variables have the same effect on DSO and the alternative hypothesis H1: there is one variable that has significant influence on DSO, and then reject H0. The conclusion of the model is there is one variable that has significant influence on DSO that is overdue.

Table.6 Uji F ANOVA[a,b]

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	436,641	2	218,320	212,030	000
Residual	33,979	33	1,030		
Total	470,620	35			

a. Dependent Variable: DSO
b. Predictors: (Constant), Sales, Ovrd

4.3 Gap Analysis between DSO and Credit Period (Average Day Delinquent)

ADD, as an overview of the overdue on receivables will be examined in relation to the movement of DSO. BPDSO fluctuations are a reflection of sales variations based on the given credit period. When BPDSO up/down then DSO was also move to the same direction. Therefore, the movement of the difference between BPDSO and DSO (ADD) is the reflected performance of the billing department.
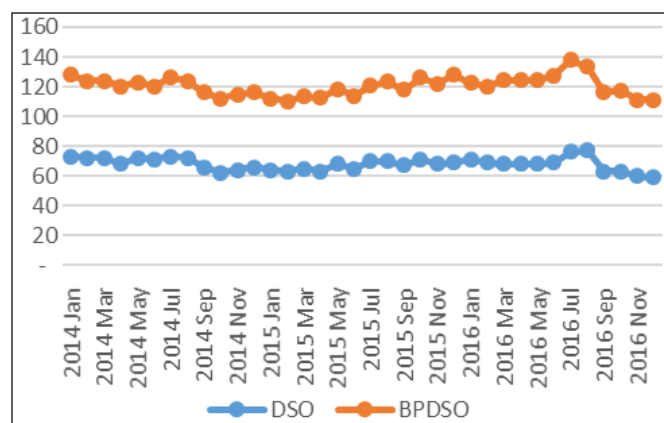

Figure 3: The graph of DSO and BDSO movement

In Figure.3 it is seen that when DSO rises followed by increase of BPDSO. BPDSO fluctuations that reflect variations in sales based on credit terms also affect DSO fluctuations. The management of PT XRI because of late paying customers assumes the increase in DSO. This is explained in the case of PT XRI, DSO is not good enough to be used as a performance indicator of the collection section because if only look at the fluctuations of DSO itself, it can cause bias. Data generated from the ADD calculation shows there is always a gap between the DSO and BPDSO, which indicates that the performance of PT XRI receivables has not

been optimum. Here is an example of ADD data calculating the difference between BPDSO and DSO.

Table 7: Constant DSO

	DSO	BPDSO	ADD
2016 Oct	63	55	8
2016 Sep	63	53	10
2015 Apr	63	50	13
2015 Feb	63	47	16

Table 6 shows constant DSO but ADD rises and varies from 8 days to 16 days. This is because BPDSO itself varies. In conclusion even though DSO remains but ADD down which means improvements in the performance of accounts receivable due to the gap between the time of the bill and the actualization of payments from customers shrink.

Table 8: Constant ADD

	DSO	BPDSO	ADD
2015 Sep	67	51	16
2015 Feb	63	47	16
2015 Oct	71	55	16
2015 Jan	64	48	16
2015 Jun	65	49	16

Table. 7 shows that BPDSO and DSO fluctuating with ADD still show no change in the performance of receivables even though DSO shows a varied number. Since ADD is a reflection of the actual deviation of customer payments, the DSO must be viewed along with its ADD.

1.4 Analysis of Factors Affecting the Average Days Delinquent (Overdue)

The result of Chow Test test on Pooled Least Squared and Fixed Effect model obtained F or p-value test result: 0.2437> 0.05, so do not reject H0 which means the selected model is Fixed Effect. The Hausman test is used to compare the Fixed Effect Model with Random Effect. In the appendix of Hausman's test, it can be seen that the probability value in the cross section random effect test shows the number of 0.9107 which means significant with 95% significance level (α = 5%) and using the distribution Chi-Square (Gujarrati, 2003). So the decision taken on this test is accept H0 or the selected model is Random Effect Model because p-value value is 0.9107> from 0.05. Based on Langrange Multiplier (LM) test obtained p-value 0.4684> 0.05, so do not reject H0 means the model selected is PLS model. Based on the three test results shows the best model is the PLS model.

The set data for Pooled OLS is 36 months data series (from January 2014 – December 2016) and the cross section data is 35 customers of PT XRI. The OLS regression model can be stated as follows:

$$Y_{it} = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \varepsilon_{it}$$

Where
Y_{it} = Average Days Delinquent
α = Constant
X_1 = Leadtime Returned Delivery Note
X_2 = Leadtime Invoice submission
X_3 = Length of time of Customers payment
i = Customer of - i
t = periode of - t
e = random error with expectation 0

Based on the normality test result, the probability value is 0.812> 0.05. In the normality test, calculation can be seen residual scattered with normal where the maximum value 1.079693, the minimum value of -1.0940083 and the median value -0. This means that the residual has spread normally.

Heteroscedasticity test conducted in this study using Breusch-Pagan-Godfrey test. The result of this test is the value of F and Obs * R-squared, with the following hypothesis, H0: the residual variety is not homogeneous H1: homogeneous residual variety. Based on the result of heteroscedasticity test, obs * R-squared is 0.4282 with 5% confidence level obtained 0.4282> 0.05, so accept H0. In other words, the residual variety has been homogeneous.

Furthermore, multicorrelation can be known from correlation value between independent variables. From the results if the data is known all the correlation values between free variables <0.8, then it is considered there are no symptoms of multicollinearity. The data is said to be identified as multicollinearity if the correlation between independent variables is more than 1 or equal to 0.8 (Gujarat, 2003). Based on the output obtained Durbin Watson value of 2.018610 is at intervals 1.55 - 2.46 so that based on the critical table Durbin Watson test there is no correlation between observations of one another or in other words in this PLS model there is no autocorrelation.

In the result of Pooled OLS model analysis through F test, obtained the prob (F-statsitics) value of 0.000 <0.01, meaning the model is feasible at a real level of 1%. While the partial test results (t test) obtained:

Table 9: t-Test

Variable	Coefficient	Std Error	t-stat	Prob
Returned Delivery Note (X1)	1.004944	0.004192	239.7213	0.0000
Leadtime Invoice Delivery (X2)	0.998192	0.002214	450.8317	0.0000
length of time the customer pays (x3)	1.000320	0.000976	1024.547	0.0000
DSO	-0.00109	0.023946	-0.045499	0.9637

Variable	Coefficient	Std Error	t-stat	Prob
Returned Delivery Note (X1)	1.004944	0.004192	239.7213	0
Leadtime Invoice Delivery (X2)	0.998192	0.002214	450.8317	0
length of time the customer pays (x3)	1.00032	0.000976	1024.547	0
DSO	-0.00109	0.023946	-0.045499	0.9637

Based on the results obtained, all the variables have a significant effect on DSO. The variable returned delivery note (X1) has significant effect on the 1% level with the estimated coefficient value of 1.004, which means 1-day increase on the returned Delivery note will increase the ADD by 1,004 days. Variable of lead-time of invoice delivery (X2) also have significant effect on 1% with the estimated coefficient value of 0.998, which means that if the delivery period increases one day, then ADD will increase 0.998 days. The variable length of time the customer pays (X3) has a significant effect on the 1% level with the estimated coefficient of 1, which means a 1 day increase in the customer payment period, will also increase the ADD by 1 day.

4.5 Comparison Analysis of Collection Effectiveness Index, Days Sales Outstanding and Average Days Delinquent

Based on data receivable balance receivable PT XRI known calculation results Collection Effectiveness Index (CEI). The average CEI of PT XRI during the period from January 2014 to December 2016 was 68%. This illustrates the performance of the PT XRI billing section, which is not yet optimum. Table.9 shows the test results of the relationship between CEI, ADD and DSO using Pearson product moment.

Table 10: Correlation Matrix of DSO, ADD and CEI

		DSO	ADD	CEI
DSO	Pearson Correlation	1	0,687**	-0,412*
	Sig. (2-tailed)		0,000	0,013
	N	36	36	36
ADD	Pearson Correlation	,687**	1	-0,498**
	Sig. (2-tailed)	,000		0,002
	N	36	36	36
CEI	Pearson Correlation	-,412*	-,498**	1
	Sig. (2-tailed)	,013	,002	
	N	36	36	36

**Correlation is significant at the 0.01 level (2 tailed)
* Correlation is significant at the 0.05 level (2 tailed)

From the results is known strength of the relationship between DSO and ADD is quite significant by looking at the value of p-value of 0.000 <0.01 at a real level of 1%. Based on Pearson correlation, the relationship between ADD and DSO is 0.687 where this number is close to 1, which means having a strong relationship between DSO and ADD movement. The relationship between DSO and CEI was also significant with p-value = 0.013 at 5% real level. Supported by Chung's theory (2014) which says the relationship between DSO and CEI is opposite, the correlation between DSO and CEI is -0.412. This figure indicates when the DSO increase will be followed by a decrease in CEI. The relationship between CEI and ADD also showed a significant relationship with p-value of 0.002 <0.01 at a real level of 1%. The correlation between ADD and CEI is also quite strong, indicated by a correlation coefficient of -0.498. The direction

of the relationship between ADD and CEI is also significant in opposite direction if an increase in ADD will be followed by a decrease in CEI or it can be inferred when overdue decreases, an increase in the effectiveness of the billing section works.

5. Managerial Implications

Based on the results of variables analysis that affect the Average Days Delinquent (overdue) and the analysis of the influence of sales and overdue on DSO movement, it found some formulation in managerial implications. This managerial implication can be an input for the company to make improvements to the performance of receivables and using an alternative measurement of receivables. From the results also shown that Sales has a significant effect on DSO. Sales fluctuations negatively affect the movement of DSO. When sales increase then the trend of DSO is decreasing vice versa. DSO does not reflect the efficiency of receivable performance because DSO biased towards sales.

DSO does not meet the criteria of a good measuring instrument because:
(1) cannot reflect the exact conditions of billing efficiency or performance of receivables as the objectives of the company, (2) DSO cannot be targeted and the purpose of achieving the billing section due to the sales performance of the department (3) The DSO measurement results are not independent or should be used in conjunction with ADD which reflects the actual condition of the billing process.

Management should look at the phenomenon of this DSO bias and look for alternatives to other measuring tools in order to get the right picture and can improve the company's cash flow. If company can improve the overdue up to 4 days it will be impact to speed up to cash to 1 million USD per month.

The company does not yet have a measuring instrument that specifically measures the efficiency and effectiveness of billing performance. DSO cannot be used as a reference for this. Collection Effectiveness Index that does not include the element of sales in the calculation can be used as a measuring tool for billing performance.

The late of delivery note return contributes to the length of customer payment. The procedure applied by the customer regarding the completeness of the billing document is to include the original signed delivery note. This has led to delays in the delivery of billing documents, especially to customers outside the Jakarta area. Delays in the delivery of these billing documents result in long processing of payments and result in high ADD (overdue). Another significant factor causing ADD is the inappropriate customer timing in making payments. Recording of accounts receivable at the company begins when the goods are shipped. From the customer side, the recording of debt starts from the receipt of the invoice. This difference results in different bill dates or time.

To reduce or minimize ADD, management must be able to take corrective actions in the management of these accounts receivable, especially the collection of due and overdue receivables such as improving the administration of goods delivery and shipping bills in order not to take a long time. Companies must ensure that the collection portion to reconcile the balance of receivables on a regular basis to ensure that all documents are received and paid on time. The existence of firmness in reminding the bill will be due or past due by the collection. Implementation of goods delivery blocking system if a bill is overdue. Management should also review the credit facility provided to each customer. Review the terms of payment given to each customer to ensure and the timing of the start of the maturity calculation, whether starting from the date of receipt of the item or from the date of receipt of the invoice. This needs to be done to anticipate the occurrence of gaps on the actualization of payments.

6. Conclusion

Based on the research that has been done, it can be concluded that DSO cannot be used as a single measuring tool in assessing the performance of PT XRI due to DSO influenced by sales fluctuations. Overdue also affects the high low DSO but cannot identify the amount or how big the influence on DSO. ADD simultaneously with CEI, or DSO along with ADD can be an effective alternative measurement alternative rather than using only one measuring instrument. In the case study of PT XRI, the factors that led to high overdue were delays of returning the delivery note and customer compliance in paying on time according to the due date.

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