Journal of Management, Economic, and Financial

The Effect of Transformational Leadership Style and Change Management on the Performance of the Continuous Improvement Program

Afif Muliana[1*], Laura Lahindah[2]
Sekolah Tinggi Ilmu Ekonomi Harapan Bangsa, Indonesia
Emails: mm-23104@students.ithb.ac.id[1], laura@ithb.ac.id[2]

Abstract Continuous Improvement Programs (CIP) are pivotal in enhancing operational efficiency and fostering innovation across industries. At PT PSG South Sumatra, the hydrate cleanup program, a key CIP initiative, addresses refinery hydrate challenges and aims to increase LPG supply. This research investigates the influence of transformational leadership and change management on the performance of CIP at PT PSG. A quantitative approach was adopted, employing multiple regression analysis to evaluate the effects of these variables. Data were collected through questionnaires completed by 106 respondents and analyzed using SPSS software version 25. The results indicate that transformational leadership significantly impacts CIP performance, with a tcalculated value of 4.052 (ttable = 1.983) and a p-value of 0.001 ($\alpha < 0.05$). Similarly, change management also exerts a significant positive effect, with a tcalculated value of 6.231 and a p-value of 0.001. The combined effect of these variables shows a strong correlation ($r = 0.823$) and explains 67% of the variance in CIP performance ($R^2 = 0.677$). These findings emphasize the critical role of visionary leadership and adaptive change management in driving the success and sustainability of CIP initiatives. PT PSG is encouraged to strengthen these aspects to achieve greater operational performance and innovation. This research contributes to the understanding of how leadership and change management practices can optimize continuous improvement efforts in industrial settings.

Keywords: transformational leadership, change management, continuous improvement program, hydrate.

Introduction

Continuous Improvement Program, a philosophy that emphasizes the need for gradual and consistent progress in business processes, is integral to maintaining competitiveness in today's dynamic marketplace.(Singh & Singh, 2015) . PT PSG, since its inception, has recognized the importance of this approach, particularly in the context of Liquefied Petroleum Gas (LPG) production and distribution.

The company's commitment to supporting the national energy program and reducing dependence on fuel subsidies is commendable.(Sovacool, 2017) However, challenges in the LPG sector, such as refinery disruptions, require robust strategies backed by thorough analysis. Such strategic analysis not only helps in preventing potential supply issues but also ensures that the company's operations are aligned with broader economic objectives. Liquefied Petroleum Gas (LPG) has

become an important source of energy for households in Indonesia. The demand for LPG continues to increase in line with economic and population growth.

PT PSG, a joint-venture company between Pertagas and Samtan Co., Ltd. is actively engaged in continuous improvement programs (CIP) to improve operational efficiency and innovation. These programs are designed to foster creativity and problem solving among employees, encouraging them to explore and exploit every possibility to improve business processes and results. For example, in 2021, PT PSG (Pertagas), organized its 11th CIP event with the theme "Creativity in You, Explore & Exploit Every Possibilities". This event resulted in significant value creation, amounting to IDR 401 billion(Pertamina, 2021)

The program encourages employees to develop innovative solutions to everyday challenges, leading to increased productivity and profitability.(Davila et al., 2012) CIP initiatives typically cover various categories such as operational excellence, efficiency improvements, and health, safety, security, and environmental enhancements. These efforts not only contribute to the company's financial performance but also support its commitment to sustainable and responsible business practices.(Barauskaite & Streimikiene, 2021)

In summary, the continuous improvement program at PT PSG is a multifaceted endeavor. It requires a concerted effort from all levels of the organization, with leadership playing a critical role. By fostering a culture of excellence, investing in technology, and maintaining a forward-looking approach, the company can ensure the stability of domestic LPG stocks and contribute significantly to the national energy landscape.

As the business environment becomes increasingly complex, the principles of continuous improvement will remain a guideline for companies like PT PSG, enabling them to navigate the challenges and seize the opportunities that lie ahead. (Caldwell et al., 2004)To meet the growing demand for LPG, the government and the LPG industry need to work together to ensure the stability of LPG supply. One way to achieve LPG supply stability is to build LPG refineries capable of producing LPG domestically. Currently, Indonesia has several LPG refineries operated by private and state-owned companies. However, the production capacity of LPG refineries in Indonesia is still insufficient to meet domestic demand while the volume of LPG consumption in the Indonesian household sector is increasing.

The volume of LPG consumption in the Indonesian household sector during the period 2012-2022 showed an increasing trend, in line with the kerosene to LPG conversion policy. In 2012, consumption began to increase, then continued to jump significantly in 2013-2015, driven by government policies that expanded the distribution of subsidized 3 kg LPG to new areas. The peak of the consumption surge occurred in 2016 as prices stabilized and subsidized LPG users increased. Although distribution control policies were implemented in 2017-2019, consumption continued to grow. During the COVID-19 pandemic in 2020, LPG consumption increased, driven by home cooking habits. The high consumption

trend continued in 2021 and peaked in 2022, influenced by economic recovery and increased household energy needs.

The continuous increase in demand causes Indonesia to import LPG from abroad. LPG imports can increase the risk of LPG shortages and LPG price fluctuations. Therefore, it is important to increase domestic LPG production capacity by building new LPG refineries and improving the operating efficiency of existing LPG refineries.

PT PSG was established on May 7, 2008 with the aim of producing LPG to support the government's program in providing energy for the community, while reducing the government's burden in fuel subsidies. PT PSG is a subsidiary of PT Pertamina Gas (Pertagas) and Samtan Co. Ltd. PT PSG has two LPG processing plants in South Sumatra, namely an extraction plant in Prabumulih which began construction in 2010 and a fractionation plant in Sungai Gerong which was built in 2011. The two plants started commercial operations in May 2013 and are able to contribute to the national LPG supply.

Hydrates, a problem encountered in gas refineries, are solid crystals formed from a mixture of water and gas at low temperatures and pressures.(Englezos, 2022) In LPG refineries, hydrates can form in cryogenic systems, which are systems used to cool and purify natural gas. The presence of hydrate in the cryogenic system can cause various hazards, one of which is pipe blockage. Pipeline blockages can impede gas flow and disrupt the LPG production process. A further impact of pipeline blockage due to hydrate is refinery shutdown. A refinery shutdown means that LPG production stops completely, thus disrupting the supply of LPG to the public. Therefore, it is imperative that continuous cleaning is carried out at regular intervals.

For PT PSG alone, a full day of refinery stoppage is estimated to result in a loss of around 600 MT of LPG. We can imagine the burden the country will bear to meet the needs of that much LPG stock. Based on industry selling prices alone, PT PSG is estimated to lose up to 14 billion rupiah in revenue over a period of several years. This requires the hydrate cleaning program to be as effective as possible so that the frequency of cleaning can be reduced.

The success of CIP implementation depends heavily on this factor. The role of leadership is one of the factors that influence the program. Effective leadership in determining every decision is very influential in determining the chosen business strategy, and ensuring that the CIP runs according to the goals set by PT PSG. (Prasetyo1 et al., 2023) In an increasingly complex and dynamic business era, leadership that understands business conditions, and has instincts in speculating future situations is increasingly important. Traditional leadership styles, such as authoritarian leadership, may no longer be effective in facing today's business challenges. More modern and adaptive leadership, such as transformational leadership, is more relevant in driving innovation and change. (Jung et al., 2003)

PT PSG has experienced significant regulatory changes, particularly in the production sector, coinciding with each leadership transition. Since 2015, the company has implemented several updates to its Continuous Improvement Program focusing on refinery hydrate removal. These changes reflect the company's adaptive strategy and the evolving vision of its leaders to improve operational efficiency and address emerging challenges in the production process (Yukl & Mahsud, 2010).These adjustments underscore the company's commitment to continuous improvement and a proactive approach to maintaining high refinery safety standards.

In the context of PT PSG, the role of leadership is not just limited to decision-making. It involves developing a culture that values continuous learning and adaptability. Leaders must inspire their teams to embrace change and seek opportunities for improvement. This is especially important in an industry that is prone to rapid changes in both market demands and technological advancements. The ability to anticipate future trends and prepare accordingly is a trait that will set companies apart in the long run.

Research on the influence of leadership on Lean Management (LM) maturity and team performance has been widely discussed in several studies. Hilvirda et al. (2023) from the University of Groningen and Erasmus MC highlighted the role of 58 leadership activities in nine themes that influence Continuous Improvement Program (CIP) maturity, and encouraged the adoption of a hybrid leadership style with transformational elements to improve LM maturity. In line with these findings, (Abudaqa et al., 2020)found that transformational and participative leadership have a positive relationship with team performance, while organizational culture strengthens the influence of leadership on performance. (White, 2022) emphasize the importance of maintaining a culture of continuous improvement even though the leader has left the company, by involving employees in decision making and aligning leadership activities with organizational strategy.(Bass & Avolio, 1994) Based on this background, a research entitled "The Effect of Transformational Leadership Style and Management Change on the Performance of the Continuous Improvement Program (Case Research on the Hydrate Cleaning Program at PT PSG South Sumatra)" was prepared. This research aims to analyze the effect of transformational leadership style, management change, and the simultaneous influence of both on the performance of hydrate cleaning CIP at PT PSG South Sumatra.

Method

This research aims to analyze the continuous improvement program for hydrate removal at PT PSG from a financial perspective, with a focus on the effect of refinery shutdown on product loss experienced by the company. The research only covers aspects of the hydrate removal program in the production department, without addressing other aspects of refinery operations. PT PSG, established on

May 7, 2008, aims to produce LPG to support government programs in energy supply and fuel subsidy reduction. In the LPG production process, hydrates formed from the combination of hydrocarbon gas and water pose a serious threat, as they can clog pipes, damage equipment, and disrupt gas flow. Contributing factors include high pressure, low temperature and high water content. Preventive measures include gas drying, hydrate inhibitor injection and strict process control. This research quantifies the financial impact of hydrate removal methods, particularly in terms of product loss. (Cao et al., 2022) Using a descriptive quantitative method based on Kotter's project management approach, the research utilized historical refinery operation data as well as data related to the continuous improvement program. The research population included 217 employees working at PT PSG's refinery before and after the program was implemented, with sampling aimed at obtaining a more focused and representative picture. The results of this research are expected to provide recommendations regarding the most effective and financially efficient hydrate removal method.

Results and Discussion

Profile of Respondents Based on Employee Age

The age of respondents is divided into 4 groups, namely ≤ 26 years, 26-35 years, 36-45 years, 46-55 years, and ≥ 55 years. Based on the research that has been done, an overview of 106 respondents based on age can be seen in Figure 4.3. The following is respondent data based on age.

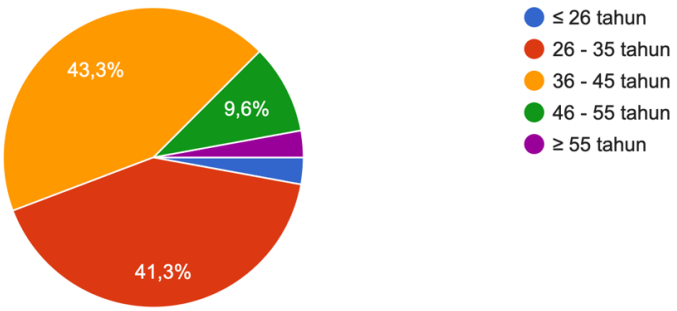

Figure 1. Diagram of Respondents by Age

Based on Figure 1, it can be seen that the most or majority of respondents are respondents aged between 36 - 45 years with a percentage of 43.3%. Respondents with an age range of 26 - 35 years only differ slightly in percentage, namely 41.3%, followed by respondents aged 46 - 55 years with a percentage of 9.6%. Meanwhile, respondents with ages that are in the minority are ages ranging from ≤ 26 years and ≥ 55 years.

Profile of Respondents Based on Education Level

This research examines the continuos improvement program in the company which is of course related to several levels of education. The criteria for employee education levels will provide an overview of the educational background of the

employees in this research. The education level of the respondents is divided into 4 groups of 106 respondents, namely SMA, Diploma, S1, S2 and others. Based on the research that has been conducted, it is found that the description of respondents based on the level of education in this research can be seen in Figure 2:

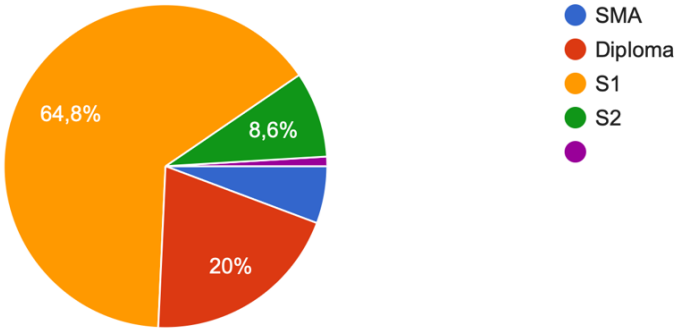

Figure 2. Diagram of Respondents by Education Level

Based on Figure 2, it can be seen that the most respondents or the majority are respondents in the S1 education level category with a percentage of 64.8%, while the minority are respondents with high school and other education level categories. The second highest percentage is at the Diploma education level which shows a percentage of 20%. In addition, the S2 education level shows a percentage of 8.6%.

Profile of Respondents Based on Tenure

The categories of employee tenure who are respondents are divided into 4 groups, namely ≤ 2 years, 2-5 years, 6-10 years, 11-15 years and ≥ 15 years. Based on the research that has been done, a description of 106 respondents based on their length of service in this research can be seen in the following figure of respondent data based on employee tenure.

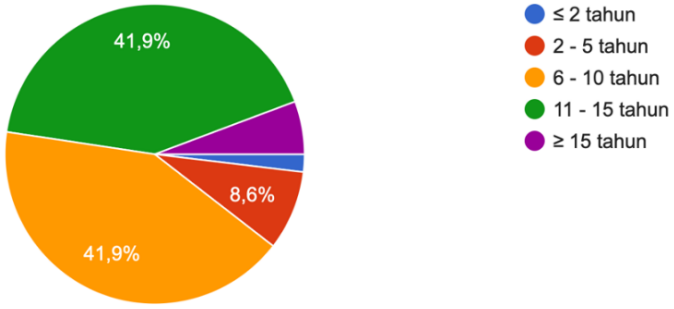

Figure 3. Diagram of Respondents by Length of Service

Based on Figure 3, it can be seen that the most or majority of respondents' tenure is 6 - 10 years and 11 - 15 years which shows the same percentage value of 41.9%, while the minority of employees' tenure is ≤ 2 years and ≥ 15 years. Employees who have worked for 2 to 5 years have a percentage of 8.6%.

Respondents' Responses Based on Research Variables

Based on the calculation results of the SPSS program, with the independent variables of transformational leadership (X_1) and change management (X_2) and the dependent variable, namely the continuous improvement program (Y), the frequency of customer responses to the indicator items of these variables will be explained as follows:

Respondents' Responses Based on Transformational Leadership Variables (X_1)

Respondents' responses regarding the transformational leadership variable will provide an overview of the extent to which the concept of continuos improvement program at PT PSG. The transformational leadership variable is represented by eight question items. The respondents' opinions on the items of the transformational leadership variable can be explained in Table 1 below:

Table 1. Respondents' Responses Regarding the Transformational Leadership Variable (X1)

Variables	Statement	SS (5)	S (4)	N (3)	TS (2)	STS (1)	Total
X_1.1	My boss fosters my confidence in doing my job.	50	4	12	0	0	106
X_1.2	My boss gives me confidence that the company's goals will be achieved.	46	0	10	0	0	106
X_1.3	My boss is my role model in the company.	31	0	19	18	1	106
X_1.4	My boss instills a sense of pride in me during my time with him.	31	0	19	18	1	106
X_1.5	My boss encourages me to use my creativity to get the job done.	38	4	13	1	0	106
X_1.6	Superiors listen well to subordinates' ideas and thoughts.	40	1	12	1	1	106
X_1.7	My boss is working to improve my	43	9	12	1	1	106

Variables	Statement	SS (5)	S (4)	N (3)	TS (2)	STS (1)	Total
	personal development.						
X_1.8	My boss treats me as a private individual, not just as a member of a work group.	31	4	17	2	1	106
			Total Respondents				106

Respondents' Responses Based on Organizational Change Variables (X_2)

The organizational change variable in this research, which is also an independent variable, will certainly provide an overview of the extent to which the concept of continuous improvement program at PT PSG. Similar to the previous variable, the organizational change variable is also represented by eight question items. The respondents' opinions on the items of this variable are described in Table 2 below:

Table 2. Respondents' Responses Regarding the Organizational Change Variable (X2)

Variables	Statement	SS (5)	S (4)	N (3)	TS (2)	STS (1)	Total
X2.1	I am able to adapt to changes that occur in the organizational system.	54	45	7		0	106
X2.2	I support any changes that occur in the organizational system.	40	54	10		0	106
X2.3	I have the skills to reliably operate a new set of machinery at the refinery.	36	56	14		0	106
X2.4	I am able to integrate knowledge and skills about new machines in my daily	45	51	10		0	106

Variables	Statement	SS (5)	S (4)	N (3)	TS (2)	STS (1)	Total
	work activities.						
X2.5	Employees can accept when a new management system is implemented.	38	55	12		0	106
X2.6	Employees follow every change process in management from year to year.	42	55	8		0	106
X2.7	The organization where I work has a work culture that provides opportunities for employees to gain knowledge to improve work skills.	43	52	9		1	106
X2.8	The organization I work for has a work culture that requires employees to disseminate the knowledge they acquire.	39	52	15		0	106
			Total Respondents				106

Respondents' Responses Based on the Continuous Improvement Program Variable (Y)

The continuous improvement program variable is the dependent variable in research at PT Perta-Samtan Gas. Respondents' responses were recorded the same as the independent variables. Similar to the independent variable, the organizational

change variable is also represented by eight question items. The respondents' opinions on the items of this variable are described in Table 3 below:

Table 3. Respondents' Responses Regarding the Continuous Improvement Program Variable (Y)

Variables	Statement	SS (5)	S (4)	N (3)	TS (2)	STS (1)	Total
Y.1	Good quality standard setting is implemented in my department or team.	53	45			1	106
Y.2	I believe that any planning done in my department or team will support the company's vision and mission.	40	57			0	106
Y.3	I go through step by step the implementation of the program implemented in my department or team.	40	56	0	0	0	106
Y.4	I was able to follow the program implementation well and without any major obstacles.	49	50		0	0	106
Y.5	Employees are involved in the review of every program conducted at the refinery.	32	51	9	3	1	106
Y.6	Employees follow every inspection process related to the continuous improvement program.	32	61	3	0	0	106
Y.7	I can implement every work program given.	40	58			1	106
Y.8	I was involved in every evaluation related to the work	40	43	8	4	1	106

Variables	Statement	SS (5)	S (4)	N (3)	TS (2)	STS (1)	Total
	program at the refinery.						
	Total Respondents						106

Research Instrument Test

Validity Test

The validity test is intended to determine how much accuracy and accuracy of a measuring instrument in performing its measuring function. The validity test as a measuring tool in this research, namely using Pearson's product moment correlation, namely by correlating each question with the total score, then the correlation results are compared with the critical number at a significant level of 5% (Narimawati & Sarwono, 2024) In this research, validity testing was carried out on three variables, namely transformational leadership (X2) and organizational change (X2) which are independent variables (X), as well as the continuous improvement program variable (Y).

The validity of the instrument is sought by comparing the Pearson Product Moment correlation value found in the data processing results with the help of the SPSS program seen in the CITS (Corrected Item-Total Correlation) column with the r value in the PMM (Person Product Moment) table. The critical value of the correlation table (r-table) with n as many as 105 respondents at a significance level of (α) 5% is 0.1927 in the Pearson Product Moment r table. The decision-making criteria:

a. If the value of$r_{hitung} > r_{tabel}$ (0.1927), it is declared valid,
b. If the value of$r_{hitung} < r_{tabel}$ (0.1927), then it is declared invalid

After further data processing, the results obtained can be seen in the Validity Test Table (attached in the appendix). Based on this table, it is known that each indicator (item) on each transformational leadership variable and change management as an independent variable and the Continuous Improvement Program as the dependent variable has a Pearson's Product Moment value result with a significance value of 0.000 <0.05, so that the indicators (items) used in this research variable can be declared appropriate or relevant and can be used as items in data collection.

Reliability Test

This test is carried out to show the extent to which a measurement result is relatively consistent. A good question or statement is a statement or question that is clear, easy to understand, and has the same interpretation even though it is submitted to different respondents and at different times. The reliability test uses Cronbach's Alpha. An instrument is said to be reliable if Cronbach's Alpha is greater than 0.60 (Narimawati & Sarwono, 2024). Reliability testing of research instruments is carried out on five variables of transformational leadership (X1) and

organizational change (X2) which are independent variables, while Continuous Improvement Program (Y) is the dependent variable. The decision-making criteria:

If the Realibility Coefficient (Cronbach's Alpha) value is> 0.60, the measured variable can be said to be reliable.

Table 4. Results of *Instrument* Reliability Test Research Variables

Variables	Cronbach's Alpha	Cutt Off	N of Items	Description
Transformational Leadership (X1)	0,876	> 0,60	10	**Reliable**
Organizational Change (X2)	0,861	> 0,60	10	**Reliable**
Continuous Improvement Program (Y)	0,866	> 0,60	10	**Reliable**

Source: Processed from Questionnaire, 2024

Based on the results of the reliability test of the research variable instruments in Table 4 above, the results of the reliability test of the independent variables of transformational leadership ($X_{(1)}$) and change management (X_2) show that the data obtained are reliable because the Cronbach's Alpha value is 0.876 and 0.861 while the results of the reliability test of the dependent variable continuous improvement program (Y) show that the data obtained are reliable because the Cronbach's Alpha value is 0.866.

Classical Assumption Test

After obtaining the model, the next step is to test whether the model developed is BLUE (Best Linear Unbiased Estimator) (Narimawati & Sarwono, 2024). BLUE assumptions that must be met include: normally distributed data, no multicollinearity, and no heteroscedasticity. Classical assumption testing is carried out on multiple linea regression models which are explained as follows.

Normality Test

The data normality test is carried out to determine whether the data obtained is normally distributed or not. The normality test carried out on the sample was carried out using the Kolmogrov-smirnov Test by setting the degree of confidence (α) at 5% (Sarwono, 2006). The test results can be presented as follows:

Table 5. Normality Test Results

Test of Normality	Kolmogrov-Smirnov			
	Sig.		Cutt Off	Description
Transformational Leadership (X2)	0,200	>	0,05	**Normal**
Organizational Change (X2)	0,132	>	0,05	**Normal**
Continuous Improvement Program (Y)	0,145	>	0,05	**Normal**

Source: Processed from Questionnaire, 2024

Based on Table 5, it can be seen that the probability or significance value for each variable is greater than 0.05, so it can be stated that the data in this research

are normally distributed. The normality test also aims to test whether in a regression model, the independent variables or both have a normal distribution or absolute good regression is normal or near normal data distribution. Detect normality by looking at the spread of data points on the diagonal axis of the graph (Narimawati & Sarwono, 2024). The basis for decision making includes:

a. If the data spreads around the diagonal line and follows the direction of the diagonal line, the regression model fulfills the assumption of normality;
b. If the data spreads far from the diagonal line and or does not follow the direction of the diagonal line, the regression model does not fulfill the assumption of normality.

Based on Figure 4, it shows that the data is normally distributed, because the data spreads around the diagonal line and follows the direction of the diagonal line, so it can be stated that the regression model fulfills the assumption of normality.

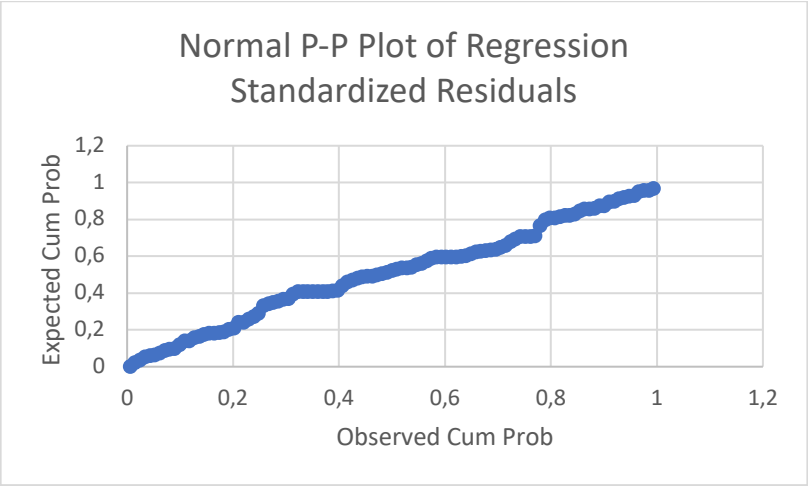

Figure 4. Normality Test Results

Multicollinearity Test

Multicollinearity test aims to test whether the regression model found a correlation between independent variables. A good regression model should not have a correlation between the independent variables. A common way to detect multicollinearity in this model is to look atR^2 , or based on the tolerance and VIF values. Multicollinearity test can be done for the regression results for both models to be estimated. The trick is to find the tolerance number, where tolerance is the value of$1 - R^2R^2$. After the tolerance number is obtained, then look for the VIF number. VIF (Variance Inflation Factor) number which is the reciprocal of tolerance.

Thus, the higher the tolerance value, the lower the degree of collinearity that occurs. As for VIF, the lower the VIF, the lower the degree of collinearity that occurs. The maximum VIF value limit commonly used to justify the presence of collinearity is 10. The assumption of multicollinearity is a situation where there is a perfect or near perfect linear relationship between the independent variables in the model.

Table 5. Multicollinearity Test Results

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.555	.308		1.800	.075		
	X1.1	.141	.071	.192	1.989	.050	.384	2.605
	X1.2	.022	.068	.028	.317	.752	.475	2.106
	X1.3	-.046	.045	-.079	-1.027	.307	.603	1.658
	X1.4	.172	.063	.234	2.738	.007	.491	2.036
	X1.5	.012	.055	.018	.218	.828	.530	1.888
	X1.6	.157	.065	.235	2.404	.018	.377	2.650
	X1.7	-.092	.070	-.139	-1.318	.191	.323	3.096
	X1.8	.025	.051	.040	.499	.619	.569	1.758
	X2.1	.126	.064	.155	1.982	.051	.590	1.694
	X2.2	.175	.055	.243	3.213	.002	.629	1.591
	X2.3	.022	.068	.029	.322	.748	.455	2.198
	X2.4	.083	.070	.105	1.176	.243	.449	2.228
	X2.5	-.049	.064	-.066	-.764	.447	.482	2.074
	X2.6	-.053	.067	-.068	-.788	.433	.478	2.091
	X2.7	.095	.070	.138	1.349	.181	.341	2.929
	X2.8	.073	.063	.103	1.159	.250	.453	2.206
a. Dependent Variable: Y_COMPOSITE								

Source: Processed from Questionnaire, 2024

Based on the results from Table 5, it shows that there is no multicollinearity between independent variables because it shows the VIF value is less than 10.

Heteroscedasticity Test

The heteroscedasticity test aims to test whether in a regression model there is an inequality of variance of residuals from one observation to another. How to predict the presence or absence of heteroscedasticity in a model can be seen from the pattern of the model's Scatterplot image. The basis for decision making includes:

a. If there is a certain pattern, such as existing points forming a certain regular pattern (wavy, widening, then narrowing) then heteroscedasticity has occurred.
b. If there is no clear pattern and the dots spread above and below the number 0 on the Y axis, then there is no heteroscedasticity. The test results are presented in Figure 7 as follows:

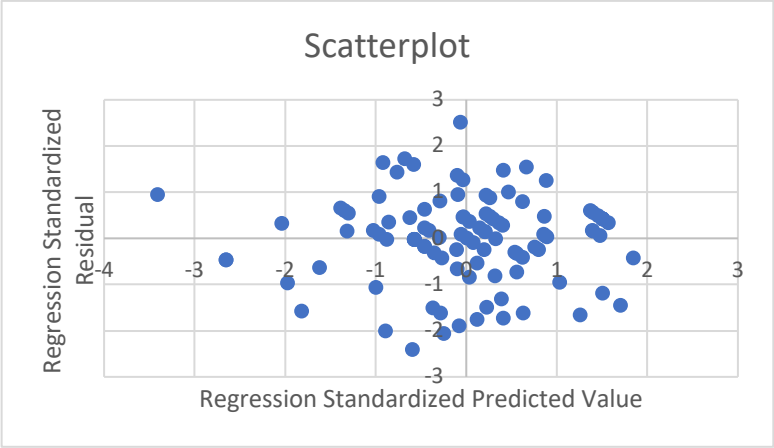

Figure 6. Heteroscedasticity Test Results

Based on Figure 6 above, it shows that there is no heteroscedasticity, because the spread of data forms a certain line or there is no clear pattern, and the points spread above and below zero on the Y axis.

Conclusion

The conclusion in this research shows that Transformational Leadership and Change Management have a significant effect on the Continuous Improvement Program (CIP) on the hydrate removal program at the PT PSG South Sumatra refinery. The results of multiple linear regression analysis show that Transformational Leadership has a positive and significant effect on CIP, as indicated by the calculated t value of 4.052 (greater than the t table value of 1.983) and a significance level of 0.001 ($\alpha < 0.05$). Similarly, Change Management also has a positive and significant effect on CIP, with a t-value of 6.231 (greater than the t-table value of 1.983) and a significance level of 0.001 ($\alpha < 0.05$). Furthermore, the correlation coefficient ($r = 0.823$) indicates a very strong relationship between the independent variables (Transformational Leadership and Change Management) and the dependent variable (CIP), while the coefficient of determination ($R^2 = 0.677$) indicates that 67% of the variation in CIP is explained by these two factors. These findings confirm the synergistic impact of Transformational Leadership and Change Management in driving the success of the Continuous Improvement Program.

For future research, these findings contribute to the understanding of leadership and management strategies in organizational improvement initiatives. Future research can explore other factors that influence CIP, such as organizational culture, employee engagement, or technological innovation, to provide a more comprehensive model. In addition, expanding the scope to include different industries or geographic locations could further validate and generalize the results of this research, providing valuable insights into how leadership and change management practices can be adapted to diverse operational environments.

References

Abudaqa, A., Faiz, M., Dahalan, N., & Almujaini, H. (2020). The role of leadership styles in encouraging and improving team performance in one of the biggest oil & gas group of companies in Abu Dhabi, UAE. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, *4*(02).

Barauskaite, G., & Streimikiene, D. (2021). Corporate social responsibility and financial performance of companies: The puzzle of concepts, definitions and assessment methods. *Corporate Social Responsibility and Environmental Management*, *28*(1), 278–287.

Bass, B. M., & Avolio, B. J. (1994). Transformational leadership and organizational culture. *The International Journal of Public Administration*, *17*(3–4), 541–554.

Caldwell, S. D., Herold, D. M., & Fedor, D. B. (2004). Toward an understanding of the relationships among organizational change, individual differences, and changes in person-environment fit: a cross-level study. *Journal of Applied Psychology*, *89*(5), 868.

Cao, X., Wang, H., Yang, K., Wu, S., Chen, Q., & Bian, J. (2022). Hydrate-based CO2 sequestration technology: Feasibilities, mechanisms, influencing factors, and applications. *Journal of Petroleum Science and Engineering*, *219*, 111121.

Davila, T., Epstein, M., & Shelton, R. (2012). *Making innovation work: How to manage it, measure it, and profit from it*. FT press.

Englezos, P. (2022). Applications of clathrate (gas) hydrates. *Clathrate Hydrates: Molecular Science and Characterization*, *2*, 749–781.

Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly*, *14*(4–5), 525–544.

Narimawati, U., & Sarwono, J. (2024). Theoretical Approaches Review on Covariance Based Sem Using Lisrel, Partial Least Based Sem Using Smart PLS and Component Based Sem Using Gesca. *American Journal of Applied Mathematics*, *12*(4), 133–140.

Pertamina. (2021). *Ajang CIP 2021 Pertagas hasilkan Rp 401 miliar value creation*. https://www.pertamina.com/id/news-room/energia-news/ajang-cip-2021-pertagas-hasilkan-rp-401-milyar-value-creation

Prasetyo[1], A., Trisnani, T., Wahyudianto, H., Hartopo[1], A., Sondakh, J. O. M., Kilmanun, J. C., & Kenda, N. (2023). Check For Updates Comparative And Collaborative Data Management As A Driver For Regional Competitiveness Efficiency In The Economic Development Region. *Proceedings of the 4th Borobudur International Symposium on Humanities and Social Science 2022 (BIS-HSS 2022)*, *778*, 196.

Singh, J., & Singh, H. (2015). Continuous improvement philosophy–literature review and directions. *Benchmarking: An International Journal*, *22*(1), 75–119.

Sovacool, B. K. (2017). Reviewing, reforming, and rethinking global energy subsidies: towards a political economy research agenda. *Ecological Economics*, *135*, 150–163.

White, M. E. (2022). *Electric Cooperative Managers' Strategies to Enhance Organizational Commitment to Increase Employee Productivity*. Dissertation. com.

Yukl, G., & Mahsud, R. (2010). Why flexible and adaptive leadership is essential. *Consulting Psychology Journal: Practice and Research*, *62*(2), 81.