The Third International Conference on Government Education Management and Tourism (ICoGEMT) + HEALTH
Bandung, Indonesia, January 19-20th, 2024

THE EFFECT OF TOTAL QUALITY MANAGEMENT IMPLEMENTATION ON OPERATIONAL PERFORMANCE THROUGH 5S AND CORPORATE CULTURE AT FOOD AND BEVERAGE PRODUCER

[*1]**Adam Dwi Cahyo**,[2]**Hamdan Amaruddin**,

[1]*Management, Business and Economics, Pelita Bangsa University, Cikarang, Indonesia*
[21]*Management, Business and Economics, Pelita Bangsa University, Cikarang, Indonesia*

Author's email:
[1]Tigaoktober92@gmail.com
[2]hamdanamar@pelitabangsa.ac.id

Abstract. *This study aims to determine the effect of the implementation of Total Quality Management on Operational Performance through 5S variables and Corporate Culture variables in a food and beverage producer. The research method of this scientific work uses quantitative methods. The population in this study was employees of the bottle packing department at a food and beverage producer which amounted to 49 respondents. Hypothesis testing in this study uses multiple linear regression analysis and path analysis using SPSS (Static Product and Service Solution) software. The results of this study shows that total quality management has a direct positive effect on three variables, namely 5s variable, corporate culture variable and operational performance variable. As mediating variables, 5s has a significant effect on operational performance, but corporate culture does not have a significant effect on operational performance. The effect of the total quality management variable on the Operational performance increased significantly when mediated by the 5s variable and but did not increase significantly when mediated by the Company's culture variable.*

Keywords: *Total Quality Management, 5s, Corporate Culture and Operational Performance*

1. INTRODUCTION

In modern times, companies are required to adapt to a very fast changing environment, causing competition between companies to become tighter as well. Michael Porter (1985) in Awwad (2013) states that competitive advantage is the ability obtained through the characteristics and resources of the company to have optimal performance. Companies are required to produce goods and services with good quality, in terms of prices and services that are better than competitors. For this achievement, the company needs a good management system using Total Quality Management (TQM). However, before Total Quality Management (TQM) was known as a qualified method, long before there were several management tools that had been used by companies, such as 5S and corporate culture. So in this study the author wants to see how variables that already exist in the company can mediate total quality management variables in improving operational performance.

Based on observations made in a food and beverage producer company, it is known that data on production output results show that the level of products in the company has decreased. The author wants to research which factors have the most impact on operational performance so that they can be resolved to prevent continued decline in production.

2. LITERATURE REVIEW

When we talk about operational performance, there are many exogenous variables that influence it, one of which is total quality management. In addition, there are also other variables that have been applied by companies such as 5S management and Organizational Culture. Since total quality management was implemented later, does it

have effects on operational performance and two other variables. And if the 5S management and organizational culture variables are used as mediating variables, will they contribute on increasing the influence of total quality management on operational performance? From the arise questions, we try to identify the indicators of each variable as listed in the following table.

Table 1. Operational Variable Definition

Variables/ Concepts	Indicator	Scale
Operational Performance (OP) Operational performance is a company's measure of its processes and resources against standards or indicators of specified effectiveness, efficiency and environmental responsibility such as, cycle times, productivity, waste reduction and regulatory compliance. (Ghalayini & Noble, 1996).	1. Productivity Level 2. Product Defect Rate 3. Quality Corporate Culture 4. Service 5. Product Timeliness	Interval 1-5
Total Quality Management (TQM) Total Quality Management is "a management system oriented to customer satisfaction with activities that are pursued right first time, through continuous improvement and motivating employees. (Kit Sadgrove in Zulian Yamit (2013:181)	1. Customer Focus 2. Leadership 3. Employee Engagement 4. Continuous Improvement 5. Process Approach 6. Fact-Based Decisions 7. Relationship with Suppliers	Interval 1-5
5S Method The 5S method is a method that stands for the word Seiri if interpreted in English as Short, Seiton (Straighten), Seiso (Sweep and clean), Seiketsu (Systemize) and Shitsuke (Standardize). (Introduced by Takashi Osada 1980)	1. Seiri 2. Seiton 3. Seiso 4. Seiketsu 5. Shitsuke	Interval 1-5
Corporate Culture (CC) The norms and values that direct the behavior of organizational members (Fred Luthans 1998)	1. Observed behavioral regularities 2. Norms 3. Philosophy rule 4. Organizational climate	Interval 1-5

The relation between variables in the above table and their hypothesis can be described as seen in the following model.

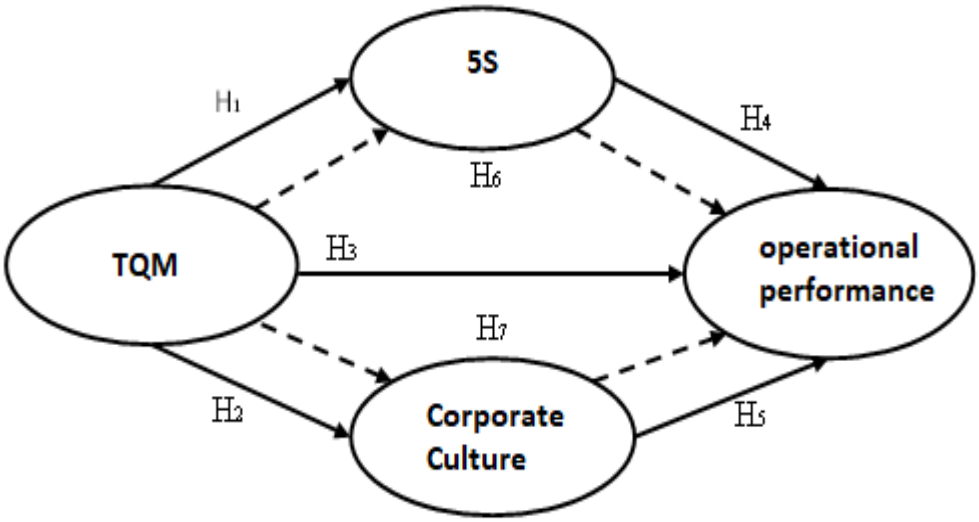

Figure 1. Research Model

3. RESEARCH METHODS

This study was conduct using quantitative methods with primary data obtained through surveys to respondents. The population used as respondents are the employee of food and beverage company located in MM 2000 industrial area. This research has been conducted since July 2023 for one semester with detailed schedules as listed in table 2 below.

Table 2 Research Schedules

No	Activities	Month					
		1	2	3	4	5	6
1	Proposal preparation						
2	Data collection						
3	Data Processing						
4	Report Preparation						
5	Publication / Proceeding						

Method of data collection is carried out through surveys using a developed questionnaires with Linkert scales.

The data that being collected were processed using SPSS software. The data processing stage starts from validity and reliability tests then continued with classical assumption tests to verify whether the data normal and free from autocorrelation or heteroscedasticity symptoms. These steps are followed by a path analysis test.

4. RESULTS AND DISCUSSION

4.1 RESULT

4.1.1 Instruments Test

The purpose of the validity test is to determine and test the level of reliability, validity of the questionnaire and to determine the extent of the accuracy and accuracy of a measuring instrument in performing its functions. It is known in this study from the comparison of r-count and r-table values with N = 100 at 5% significance. The r-table number obtained is 0.281. And from the SPSS test results in table 2, it is known that all r-count values in each variable are greater than the r-table values so that all questionnaire items are declared valid. The data in the table 3 also shows that all variables are considered reliable because they have a Cronbach's Alpha value greater than the critical value of 0.600.

Table 3. Summary of Instrument Test Results

Variable; Indicator	Pearson Correlation	Cronbach's Alpha	Critical Value	Remarks
Operational Performance		0.845	0,600	Reliable
Y.1.1 Productivity Level	0.605		0,281	Valid
Y.1.2 Product Defect Rate	0.618		0,281	Valid
Y.1.3 Quality Corporate Culture	0.674		0,281	Valid
Y.1.4 Service	0.650		0,281	Valid
Y.1.5 Product Timelines	0.659		0,281	Valid
Total quality Management		0.859	0,600	Reliable
X.1.1 Customer Focus	0.602		0,281	Valid
X.1.2 Leadership	0.453		0,281	Valid
X.1.3 Employee Engagement	0.691		0,281	Valid
X.1.4 Continuous Improvement	0.609		0,281	Valid
X 1.5 Process Approach	0.723		0,281	Valid
X 1.6 Fact-Based Decisions	0.754		0,281	Valid
X.1.7 Relationship with Suppliers	0.694		0,281	Valid
5S Methods		0.873	0,600	Reliable
Z.1.1 Seiri	0.537		0,281	Valid
Z.1.2 Seiton	0.662		0,281	Valid
Z.1.3 Seiso	0.702		0,281	Valid
Z.1.4 Seiketsu	0.728		0,281	Valid
Z.1.5 Shitsuke	0.797		0,281	Valid
Corporate Culture		0.886	0,600	Reliable
Z.2.1 Observed behavioral regularities	0.737		0,281	Valid
Z.2.2 Norms	0.789		0,281	Valid
Z.2.3 Philosophy rule	0.707		0,281	Valid
Z.2.4 Organizational climate	0.712		0,281	Valid

Source: Data copied from SPSS output results, 2023

4.1.2 Classical Assumption Test

a) Normality Test

The normality test is performed to test whether data used have normal or abnormal distributions. Normality test can be done using the Kolmogorov-Smirnov Sample test, if the significance value is above 5% or 0.05, the data has a normal distribution. From table below, we can see the result value of asymp. Sig. (2-tailed) is 0.200 > from 0.05. So it can be concluded that the data have a normal distribution and can be proceed to the next stage of analysis.

Tabel 4. Normality Test Result.

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		49
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	1.72241707
Most Extreme Differences	Absolute	.097
	Positive	.088
	Negative	-.097
Test Statistic		.097

Asymp. Sig. (2-tailed)	.200[c,d]

b) Multicollinearity Test

The multicollinearity test aims to determine whether the regression model found a correlation among independent variables.

Tabel 5. Result of multicollinearity test.

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3.253	4.096		.794	.431		
	TQM	.523	.102	.536	5.116	.000	.593	1.687
	5S	.232	.131	.239	1.770	.084	.356	2.810
	BP	.207	.133	.187	1.556	.127	.451	2.218
a. Dependent Variable: KO								

Source: Data processed, 2023

From table 5 above we can see that tolerance value > 0.10 and VIF value < 10.00, that means there is no multicollinearity between variables.

c) Heteroscedasticity Test with Scatterplot

The heteroscedasticity test aims to find out whether in a regression model variance discomfort from residuals exist in one observation to another.

Tabel 6. Result of Heteroscedasticity Test

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.830	2.746		.666	.509
	TQM	.012	.069	.033	.172	.864
	5S	.027	.088	.076	.308	.760
	CC	-.064	.089	-.158	-.717	.477
a. Dependent Variable: Abs_RES3						

Source: Data processed, 2023

From the table 6, all independent variables used in this study have significance values greater than 0.05. It means that all these variables are free from symptoms of heteroscedasticity and can be proceed to a further testing.

4.1.3 Hypothesis Test

a) T-Test

This test has some purpose such as to determine the significance level by comparing the t-count with the t-table and also to find out the r-square which is represent the value of coefficient determination. From the results of the regression test between the TQM variable and 5S as shown in table 7 bellow, it is known that the TQM variable has a significant effect on 5S, this is proved by a significance value of 0.00 which is smaller than 0.05

Table 7 Total Quality Management on 5S Methods

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.460	5.257		3.322	.002
	TQM	.640	.116	.628	5.536	.000
	R square	0,395				

Dependent variable is 5S. Source: Result of the SPSS test

From the same table, a simple regression line equation can be obtained as follows: Z1 = 17,460 + 0.640X. The equation shows that the value of the TQM coefficient is 0.640 which means that increment of TQM by 1 point will lead to increment of the 5S (Z1) by 0.640 points and value of R square (R2) is 39.5%.

Table 8 Regression Testing of TQM to Corporate Culture

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.453	5.014		3.082	.003
	TQM (X)	.479	.110	.535	4.337	.000
	R square	0,286				

Dependent variable is corporate culture. Source: Result of the SPSS test

Tabel 8 shows that the results of the regression test between the TQM and Corporate Culture, we can see that the TQM variable has a significant effect on Corporate Culture, this is proved by a significance value of 0.00 which is smaller than 0.05. From the same test results, we can obtain a simple regression equation as follows: Z2 = 15.453 + 0.479X. The equation shows that the value of the TQM coefficient is 0.479 which means that Corporate Culture will increase by 0.479 points if the TQM increases by 1 point. Coefficient determination represent by the value of R square (R2) 28.6%.

Table 9 Regression Testing of X, Z1, and Z2 on Y

Model		Coef. Reg.	Beta	t-count	Sig.	Zero-order	The contribution of each variable to R Square
1	(Constant)	4.041		0.944	.350		
	TQM (X)	.484	.489	4.471	.000	.757	0.489 X 0.757 = 0,370
	5S (Z1)	.297	.306	2.227	.031	.719	0.306 X 0.719 = 0,220
	CC (Z2)	.157	.142	1.121	.268	.630	0.142 X 0.630 = 0,089
R square							0,679

Source: result of the SPSS test

After discovering the effect of TQM to both of mediating variables, we need to discover the effect of three variables to operational performance. This case can be done by conducting a simultaneous regression test to determine the effect of TQM variables,

5S variables and Corporate Culture Variables on Operational Performance. The test result in the table 9 shows that the sequential significance value of TQMs is 0.000, 5S is 0.031 and Corporate Culture is 0.268. From these three variables it can be seen TQM and 5S techniques are significant because they have significance values less than 0.05 but Corporate Culture is not significant since it has a significant value greater than 0.05.

b) Path Analysis Test

Path analysis test is useful to examine a direct influence exerted by the independent variable on the dependent variable and to check the indirect influence exerted by the independent variable through the mediation variable on the dependent variable.

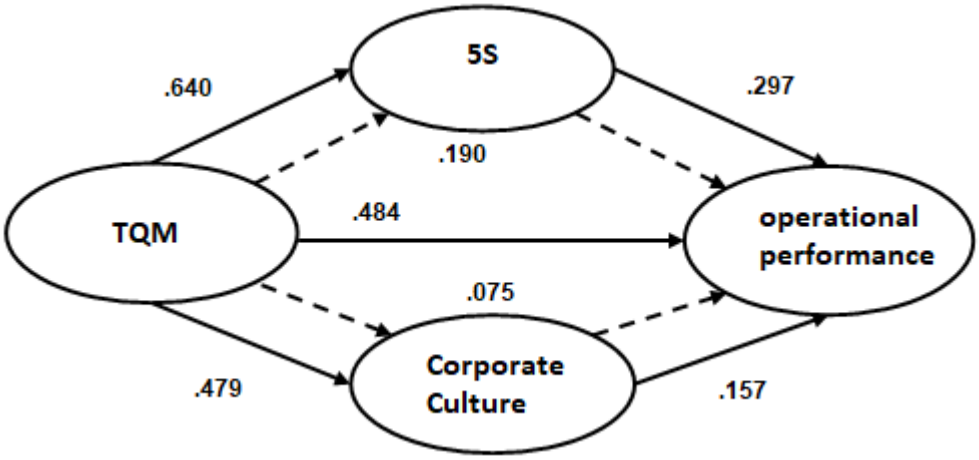

Figure 2. Test Path Analysis

Source: Data is a summary result of the SPSS test

From the data in figure 2 it can be seen that: a) TQMs have a significant direct effect on 5S by a path coefficient of 0.640 and a partial determination coefficient of 0.395; b) TQMs have a significant direct effect on Corporate Culture with a path coefficient of 0.479 and a determination coefficient of 0.286; c) TQM significantly effect to Operational Performances with a path coefficient of 0.484 and a partial determination coefficient of 0.370; d) 5S has a significant direct effect on Operational Performances with a path coefficient of 0.297 and a partial determination coefficient of 0.220; e) Corporate Culture has a significant direct effect on Operational Performances with a path coefficient of 0.157 and a partial determination coefficient of 0.089. f) the indirect influence of TQMs through 5S on Operational Performances with a path coefficient of 0.190 obtained from the multiplication between the coefficient of the TQM path to 5S and the path coefficient from 5S to Operational Performances, the multiplication result obtained is less than the path coefficient from TQMs to Operational Performances of 0.484. This means that the indirect influence of TQMs to Operational Performances through 5S is significant but less significant than direct influence; g) indirect influence of TQMs through Corporate Culture on Operational Performances has a path coefficient of 0.057 obtained from the multiplication between the path coefficient of the TQM to 5S and the path coefficient from 5S to Operational Performances, the multiplication result obtained is less than the path coefficient from TQMs to Operational Performances which is 0.484, This means that the indirect influence of TQMs to Operational Performances through Corporate Cultures is less significant compare to direct influence.

4.2 DISCUSSION

TQMs have a significant influence on Operational Performances. This result is supported by Shafiq et al (2017) in a paper entitled “The impact of Total Quality Management on organizational performance” which stated that TQM has a highly positive effect on organizational performance.

5S has a significant influence on Operational Performances. This research is supported by Arash Ghodrati et al (2013) in a paper entitled “The Impact of 5S

Implementation on Industrial Organizations' Performance" which states that 5S is an effective tool for improvement of organizational performance, regardless of organization type, size, its production or its service. Consequently, 5S techniques would strongly support the objectives of organization to achieve continuous improvement and higher performance.

In this research shows that Corporate Cultures has insignificant effect on Operational Performances. This result contradicted to the most of similar researches in previous time which conclude that Corporate Cultures have a positive significant effect on operational performance. However, there are some researches that support this finding such as research by Muliati at al (2020) and Setyowati Subroto that stated organizational cultures have not affect firm performance. Since the corporate culture does not gives a significant effect on organizational culture subsequently the indirect effect of total quality management on organizational performance become insignificant.

CONCLUSION

Base on the result and discussion we conclude that;

1. TQM has a direct significant impact on 5S and also have an indirect significant impact on operational performance through mediation of 5S techniques.
2. The indirect impact of TQMs through organization culture on Operational Performances has no a significant value since the corporate culture has no impact on operational performance.
3. TQMs has a significant direct impact through Operational Performances and this impact is stronger than its indirect impact through 5S technique and corporate culture.

REFERENCES

Arash Ghodrati1, Norzima Zulkifli2, The Impact of 5S Implementation on Industrial Organizations' Performance International Journal of Business and Management Invention ISSN (Online): 2319 – 8028, ISSN (Print): 2319 – 801X www.ijbmi.org Volume 2 Issue 3 ǁ March. 2013ǁ PP.43-49.

A. S. Awwad, A. A. Al-Khattab, and J. R. Anchor, "Competitive Priorities and Competitive Advantage in Jordanian Manufacturing," Journal of Service Science and Management, vol. 6, pp. 69-79, Jan. 2013.

E. Herjanto, Manajemen Operasi Edisi Ketiga. Jakarta: Grasindo. 2015 Ghalayini, J.S. & Noble. (1996). "The Changing Basis of Performance Measurement". Intenational Journal of Operations & Production Management.

EW Adhi, H Amaruddin "Faktor-Faktor Yang Mempengaruhi Kinerja Operasional Perusahaan Di Kawasan Industri Mm2100" Prosiding Seminar Sosial Politik, Bisnis, Akuntansi dan Teknik 4, 96-107

G. Tortorella, R. Giglio, F. S. Fogliatto, and R. Sawhney, "Mediating role of learning organization on the relationship between total quality management and operational performance in Brazilian manufacturers", Journal of Manufacturing Technology Management, Vol. 31 No. 3, pp. 524-541. 2020. https://doi.org/10.1108/JMTM-05-2019-0200

Hamdan Amaruddin et al "Sistem Manajemen Mutu ISO 9001:2015 Terhadap Kinerja Operasional melalui Budaya Kualitas dan Perilaku Produktif Karyawan" JOURNAL ARTICLE published 18 February 2022 in MASTER: Jurnal Manajemen Strategik Kewirausahaan

H Amaruddin "Analyses of Total Quality Management Implementation through ISO 9001: 2015 Standard Approach" INCEESS 2020: Proceedings of the 1st International Conference on Economics.

Muliati Muliati1, Mohammad Iqbal1 & Arung Gihna Mayapada1, The Effect of Organizational Culture on Firm Performance With Social Responsibility as Mediating Variable http://rwe.sciedupress.com Research in World Economy Vol. 11, No. 5; Special Issue, 2020. Doi:10.5430/rwe.v11n5p279

Norah Dhafer Al-Qahtani, Sabah Sa'ad Alshehri and Dr. Azrilah Abd.Aziz. The impact of Total Quality Management on organizational performance European Journal of Business and Management, www.iiste.org ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol.7, No.36, 2015

R. R. Deri, I. S. Nugroho, D. Nahwan, R. Ratik S, and T. Malik J, "Analysis of Quality Management System in the Textile Industry with the 5R/ 5S Method and Fish Bone Diagram," The International Conference on Innovations in Social Sciences and Education (ICoISSE) Bandung, Indonesia, July 25th,2020, vol. 1, no. 1, pp. 859-871, July 2020.

Shafiq, Muhammad Lasrado, Flevy Hafeez, Khalid 2017. The effect of TQM on organisational performance: empirical evidence from the textile sector of a developing country using SEM. https://dx.doi.org/10.1080/ 14783363.2017.1283211

S. Alhudri, and M. Heriyanto, "Pengaruh Penerapan Total Quality Management (TQM) Terhadap Kinerja Karyawan Pada PT. PLN (Persero) Ranting Bangkinang," Jom FISIP, vol. 2, no. 2, pp. 1-14, Oct. 2015, https://jom.unri.ac.id/index.php/JOMFSIP/article/download/7451/7126.

S. P. Islamy, and N. Purnama, "Analisis Pengaruh Penerapan Total Quality Management Terhadap Kinerja Operasional Pada Pt. So Good Food," *Jurnal UNII*, pp. 1-14, 2017.

V. S. S. Sitio, "Pengaruh Penerapan Total Quality Management (Tqm) Terhadap Kinerja Perusahaan Melalui Kinerja Karyawan Sebagai Variabel Intervening Pada Head Office Angkasa Pura (AP) I Persero," Jurnal Ilmiah M-Progress, vol. 12, no. 1, pp. 38-51, Jan. 2020.

Y. H. Hibau, I. N. Latif, and A. S. Nurqamarani, "Analisis Pengaruh Penerapan Total Quality Management (TQM) Terhadap Kinerja Operasional Pada Media Online “kaltim Kece” Tahun 2019," Academia, vol. 10, no. 1, pp. 1-8, 2021, http://ejurnal.untag-smd.ac.id/index.php/EKM/article/view/5660. Y. H. Hibau, I. N. Latif, and A. S. Nurqamarani, "Analisis Pengaruh Penerapan Total Quality Management (Tqm) Terhadap Kinerja Operasional Pada Media Online “kaltim Kece” Tahun 2019," Academia, vol. 10, no. 1, pp. 1-8, 2021, http://ejurnal.untag-smd.ac.id/index.php/EKM/article/view/5660.