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The Influence of Total Quality Management, Lean Manufacturing, and Entrepreneurial Orientation on Operating Performance in Semarangan Batik Entrepreneurs in Semarang City

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Abstract
Operations management is very important for the production process, the performance it produces is very important for the sustainability of the company. Further research is needed because of the many production problems faced by batik craftsmen in Semarang City. This study aims to study how the application of Total Quality Management, entrepreneurial orientation, and Lean Manufacturing impacts on operating performance. This study used questionnaires as a data collection method. Simple random sampling was used to select the sample, and 59 people were selected. Multiple linear regression analysis was used to evaluate the effect of the independent variable on the dependent variable of the study. The results showed that total quality management improved operating performance (H1 received). The second hypothesis says Lean Manufacturing improves operations performance is accepted, and the third hypothesis says entrepreneurial orientation improves operations performance is accepted. The results of the coefficient of determination test show that the three independent variables affect operating performance by 53%. It is recommended to Semarang batik craftsmen in Semarang City to provide training to their employees, improve their production methods, and reduce their dependence on intermediaries in sales.

Keyword: Operations Performance, Lean Manufacturing, Entrepreneurial Orientation, Total Quality Management.

Introduction

Local producers in Kampung Batik, located in Rejomulyo Village, Semarang, are taking advantage of the AEC's free trade effect. Kampung Batik is where many locals market their goods. The craftsmen can be found near the entrance. Kampung Batik has experienced both increases and decreases since the fire that broke out in 1942. It was not until 2006 that it was able to fully rise and survive to the present. Actually, the atmosphere of Semarang Batik Village is currently not as complete as the batik center in Solo or Pekalongan. However, we can still learn the history of batik and batik techniques.

As a result of interviews that have been conducted with several home industry owners in Kampung Batik, several problems were found. Mrs. Handayani shared some of the problems she faced as a batik craftsman, including the high cost of producing and shipping raw materials. In

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addition to distribution costs, quality control on all employees and business partners of Mrs. Handayani is a major problem. Mrs. Handayani usually hires several batik craftsmen for large orders, not only in Kampung Batik.

Raw materials are sent outside cities, such as Solo and Pekalongan, to maintain their quality. Production costs are high due to distribution and materials are usually more expensive. Pak Warno, one of the entrepreneurs and craftsmen of Semarang batik, also faced difficulties to set prices, because raw materials whose prices were sometimes uncertain and high amid fierce price competition in the place. The capital he has allows him to buy small amounts of raw materials even though he often receives large orders or large parties. Pak Warno asked other batik craftsmen to help him, and received compensation for the sale of batik. Therefore, the quality of ready-made orders varies, and many goods are returned.

Wholesales order manufacturers face the main problem of improving the efficiency of their production lines. Efficiency is measured by comparing the planned use of inputs with realized uses or other factors. Products have different qualities from one another because of too high order levels, complexity, time constraints, and production sites that are far apart from one another. Products must go through a fairly long process, starting from ordering initial raw materials, production processes carried out in different places, finished goods inspections, and distribution processes that take a lot of time.

The mismatch between the wishes of customers and what they receive may be due to very low quality control and reliance on trust in each other between batik craftsmen. Customers must return to the manufacturer as this extends the processing time. The frequent rate of returns, according to Pak Wisnu, a batik craftsman, is roughly four to five percent of the total order. Data on shipping and returning goods for any of the home industries are presented in table 1.

Table 1. Shipping and Return Data

Bulan	Barang Sampai	Return	Persentase Pengembalian
Januari – Februari	1.235	62	5%
Maret – April	1.432	66	4,6%
Mei – Juni	1.228	52	4,2%
Juli – Agustus	1.363	60	4,4%
September – Oktober	1.113	55	4,9%
November – Desember	1.323	62	4,6%

Method

Approximately 120 Semarangan batik craftsmen who received large orders in Semarang City and its surroundings were the subjects of this study. A simple sampling method was used in this study. The random number table used with the "RANDBETWEEN" function in Microsoft Excel is used to perform sampling. The minimum sample size required for this study was calculated using Yamane's approach. The results showed that the minimum sample for this study was 55 out of 120 craftsmen who entered and met the criteria, and 59 respondents were selected in order to anticipate questionnaires that could not be counted or were not valid. The study used

questionnaires to collect data. The answers to questions or statements in the questionnaire are calculated on an interval scale, and the Likert scale is used to measure the attitudes, opinions, and perceptions of each variable.

Results and Discussions

Total Quality Management Index Analysis (X1)

Table 2. Total Quality Management Index Analysis (X1) Value

Indikator	Skor					Jumlah*	Indeks**	Kategori
	1	2	3	4	5			
X1.1	0	1	0	45	12	242	83,44	Tinggi
X1.2	0	0	2	52	4	234	80,68	Sedang
X1.3	0	14	19	20	5	190	65,75	Sedang
X1.4	0	2	14	25	17	231	79,65	Sedang
X1.5	0	5	8	38	7	221	76.20	Sedang
X1.6	0	1	13	36	8	225	77,58	Sedang
X1.7	0	5	21	28	4	205	70,68	Sedang
Jumlah							533,98	-
Rata-rata							76,28	Sedang

With a value of 76.28, the Total Quality Management variable index number is in the medium category. This shows that most batik craftsmen apply the principle of Total Quality Management (TQM) during the production process. The first point question (X1.1) that focuses on consumers has the highest index at 83.44 points. Thus, it is possible that customer satisfaction is highly regarded by most Semarang batik craftsmen in Semarang City. However, in the third point question (X1.3), the obsession with quality, there is an index with a value as low as 65.75. This shows that Semarang batik craftsmen in Semarang City have not paid enough attention to improving quality through their human resources or employees.

Lean Production Index Analysis (X2)

Table 3. Lean Production Index Analysis (X2) Value

Indikator	Skor					Jumlah*	Indeks**	Kategori
	1	2	3	4	5			
X2.1	0	7	26	24	1	193	66,55	Sedang
X2.2	0	1	7	47	3	226	77,93	Sedang
X2.3	0	3	15	32	8	219	75,51	Sedang
X2.4	0	5	23	30	0	199	68,62	Tinggi

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X2.5	0	2	12	42	2	218	75,17	Sedang
Jumlah							363,78	-
Rata-rata							72,75	Sedang

This table shows that quite a lot of Semarang batik craftsmen in Semarang City still do not pay attention to lean production or Lean Production in their business. The second point question (X2.2) showing the Plan, Do, Check, and Action (PDCA) indicator received the highest score, with a relatively moderate value of 77.93. This means that in Semarang City, many Semarang batik craftsmen often conduct special training to improve their efficiency. The first point question (X2.1), which describes the Manufacturing Layout indicator, has the lowest value for the Lean Production variable. A value of 66.55 indicates that the variable belongs to the medium category. It is possible that most Semarang batik craftsmen in Semarang City do not consider the layout or layout for their operational efficiency.

Entrepreneurship Orientation Index Analysis (X3)

Table 4. Entrepreneurship Orientation Index Analysis (X3) Value

Indikator	Skor					Jumlah *	Indeks **	Kategori
	1	2	3	4	5			
X3.1	0	3	17	36	2	211	72,75	Sedang
X3.2	0	2	17	35	4	215	74,13	Sedang
X3.3	0	1	31	24	2	201	69,31	Sedang
X4.4	0	14	30	12	2	176	60,68	Sedang
Jumlah							276,87	-
Rata -rata							69,21	Sedang

The majority of Semarang batik craftsmen in Semarang City still do not dare to take risks in running their business. With a value of 69.21, the variable index of entrepreneurial orientation is mostly in the medium category. The second point question (X3.2) shows the level of innovation of craftsmen, which is classified as a medium category, with a value of 74.13. Thus, it can be concluded that most of the Semarang batik craftsmen are quite proficient in developing new products. However, the fourth point question (X3.4), which shows the risk-taking indicator, shows the lowest index value. This shows that most Semarang batik craftsmen in Semarang City have not dared to take significant risks.

Operational Performance Index Analysis (Y)

Table 5. Operational Performance Index Analysis (Y) Value

Indikator	Skor					Jumlah *	Indeks **	Kategori
	1	2	3	4	5			

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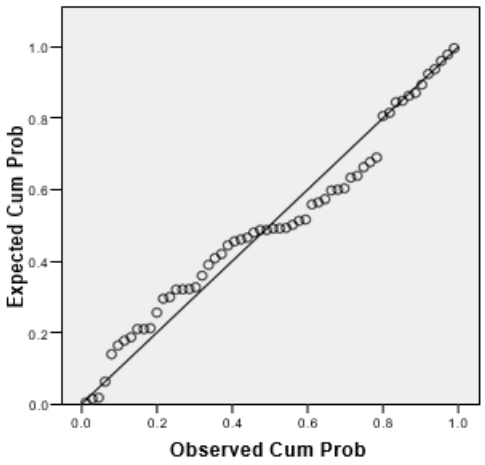
Y.1	0	3	16	34	5	215	74,13	Sedang
Y.2	0	6	12	38	2	210	72,41	Sedang
Y.3	0	5	22	27	4	204	70,34	Sedang
Y.4	3	19	22	12	2	165	56,89	Sedang
Y.5	0	9	26	23	0	188	64,82	Sedang
Y.6	0	6	28	24	0	193	66,20	Sedang
Y.7	0	1	8	36	13	235	81,03	Tinggi
Jumlah							485,82	-
Rata -rata							69,40	Sedang

With a value of 69.4, the operating performance variable index entered the medium category. The results show that Semarang batik craftsmen have operational performance that is arguably far from good, but also not too bad. Most craftsmen still face problems such as high production costs, ineffective warehouse management systems, and waiting times that are considered too long. The seventh point question (Y.7) that discusses product quality has the highest index value. Various products made by Semarang batik craftsmen have good quality. Meanwhile, the fourth point question (Y.4), which leads to the raw material indicator, has the lowest value on this variable. From these points it can be concluded that most of the Semarang batik craftsmen still do not have the ability to arrange stock or.

Graph analysis uses normal probability plots to compare normal and cumulative distributions. If the results show that the data is scattered around or following a slash or diagonal, then the regression model satisfies the normality assumption. Below are the results of the normality test performed with chart analysis:

Figure 1. Normality Test Value



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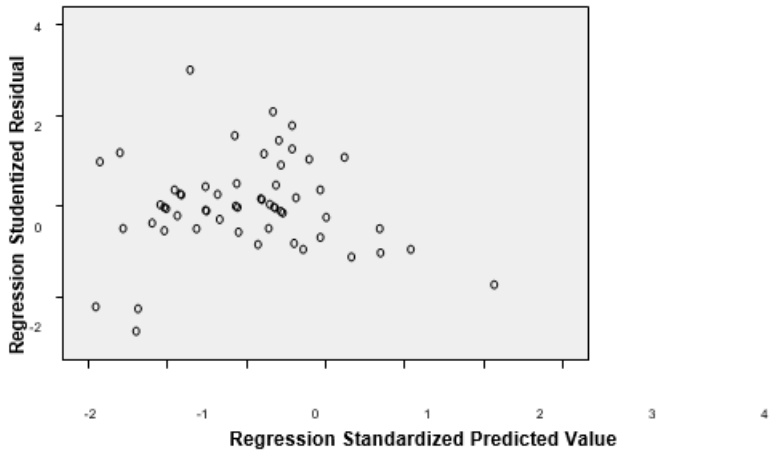
Based on the normal probability results of the plot, it can be concluded that the data spreads around the slash or diagonal line and follows the direction of the line. This means that the regression model satisfies the assumption of normality.

Heteroscedacity Test

The heteroscedacity test is a step aimed at finding out whether the regression model has inequalities in residual differences from one observation to another. If this happens, the regression model is considered good if its variation from residuals is fixed or ordinary. This study used scatterplot graphs. If there is no clear pattern and all points are spread above or below the number 0 on the Y-axis on the scatterplot chart, then there is no heteroscedacity. The results of the heteroscedacity test can be seen in the following figure:

Figure 2. Heteroscedacity Test Value



Based on the scatterplot graph above, it can be seen that the points spread randomly and are scattered both above and below the number 0 on the Y axis. It can be concluded that there is no heteroscedasity, so the regression model can be used to predict Operations Performance based on the input of independent variables TQM, LM, and Entrepreneurial Orientation.

This study has dependent variables of Total Quality Management (X1), Lean Manufacturing (X2), and Entrepreneurial Orientation (X3). Operating Performance (Y) is the independent variable, and the influence of the independent variable on the dependent variable is assessed using multiple linear regression analysis. The following table shows the results of multiple linear regression analysis:

Table 6. Results Of Multiple Linear Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-				

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	11,16	4,382		-	0,014
	8			2,548	
Total Quality Management	0,411	0,094	0,418	4,390	0,000
Lean Manufacturing Orientasi	0,741	0,134	0,512	5,545	0,000
Orientasi Kewirausahaan	0,396	0,150	0,505	5300	0,000

From the above results, it can be concluded that the Total Quality Management Variable (X1) has a significant and positive effect on operating performance with a beta coefficient of 0.418. This shows that the more Total Quality Management is used in entrepreneurial industries such as batik, the better the operation performance is achieved. The Lean Manufacturing variable (X2) has a positive and significant effect on operating performance with a beta coefficient of 0.512. This shows that operating performance will improve if the company applies more Lean Manufacturing principles, the Entrepreneurial Orientation Variable (X3) has a positive and significant impact on operating performance with a beta coefficient of 0.505. This indicates that operating performance will improve in companies with a good entrepreneurial orientation.

Test F

Table 7. Test F Value

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	264,268	3	88,094	22,467	0,000
	Residual	211,740	54	3,921		
	Total	476,027	57			

The calculated F value, which has a significance of 0.000, is greater than the table F value, which is 2.776. It is possible that the independent variables of the study, namely total quality management, light manufacturing, and entrepreneurial orientation, influence the dependent variable, i.e. operating performance.

T Test

Table 7. Test F Value

Model		t hitung	t tabel	Sig.
1	Total Quality Management	4,390	2,005	0,000
	Lean Manufacturing	5,544	2,005	0,000
	Orientasi Kewirausahaan	5,300	2,005	0,000

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Based on the table, it can be seen that the calculated t value of 4.390 for the Total Quality Management (X1) variable shows that the calculated t value is higher than the table t value, which is 2.005, with a significance probability of 0.000 which is lower than 0.05. It is possible that total quality management factors have a direct impact on operating performance. In the second variable, Lean Manufacturing (X2), a calculated t value of 5.544 indicates that the calculated t value is higher than the table t value of 2.005, and

The probability of significance of 0.00 is lower than 0.05. It is possible that Lean Manufacturing factors have a partial impact on operating performance. For the third variable Entrepreneurial Orientation (X3), the calculated t value is 5.300 and the calculated t value is higher than the table t value, which is 2.005, with a significance probability of 0.000 lower than 0.05. It can be concluded that the variable of entrepreneurial orientation affects the performance of operations individually.

Conclusion

The purpose of this study is to examine how Total Quality Management (TQM), Lean Manufacturing (LM), and entrepreneurial orientation correlate with operational performance in the Semarang batik industry in Semarang City and its surroundings. We can reach several conclusions based on the problem statement, the results of data analysis, and previous discussions, The first hypothesis (H1) states that Total Quality Management has a positive impact on the performance of operations received. The variable with the least influence on operating performance is the Total Quality Management variable, which has a beta coefficient of 0.418. This shows that the implementation of Total Quality Management in the batik industry of Semarang City will improve operating performance. According to the second hypothesis (H2), Lean Manufacturing has a positive impact on accepted operating performance. With the highest beta coefficient of 0.512, Lean Manufacturing is the variable that influences operational performance the most. It is possible that better operating performance will occur if batik craftsmen continue to implement Lean Manufacturing in their industry. According to the third hypothesis (H3), entrepreneurial orientation has a positive impact on accepted operating performance. The Lean Manufacturing variable has a second rank, and the entrepreneurial orientation has a beta coefficient value of 0.505. It was decided that the craftsmen of the batik industry have a higher entrepreneurial orientation, which means that their operating performance is better. This study found several recommendations that can help Semarang batik industry players in Semarang City to improve their operating performance, including: Research shows that manufacturing layout or production area layout has the lowest value on the Lean Manufacturing variable. A good layout will greatly help craftsmen during the batik production process. The batik craftsmen have to take risks and not rely on resellers. This is due to the fact that many batik craftsmen have not dared to run a business independently or only sell through others, thus reducing the potential profit. To improve the quality of production, the employee development element is very important. This allows employees to thrive, become more resilient, and be more creative.

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