The influence of organizational culture to supply chain performance by moderating effect of transformational leadership on manufacturing company in Riau Island Province

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Abstract

The purpose of this study is to know the relationship of organizational cultures to supply chain performance by moderating effect of supply chain transformational leadership style. The explanatory research was used by testing eight hypotheses for total samples from 171 manufacturing companies being represented by manager in supply chain management divisions of total 850 companies in Riau Island Province as one of region in Indonesia. SEM (Structural Equation Model) was used to analyze the data after getting primary data through questionare. The result of analyze found that: (1a) Development Culture is not significant to affect Supply Chain Performance; (1b) Transformational Leadership Style is significant to moderate relationship between Development Culture and Supply Chain Performance; (2a) Group Culture is significant to affect Supply Chain Performance and positively; (2b) Transformational Leadership Style is significant to moderate relationship between Group Culture and Supply Chain Performance; (3a) Rationale Culture is significant to affect Supply Chain Performance and positively; (3b) Transformational Leadership Style is significant to moderate relationship between Rationale Culture and Supply Chain Performance; (4a) Hierarchy Culture is significant to affect Supply Chain Performance; (4b) Transformational Leadership Style is significant to moderate relationship between Hierarchy Culture and Supply Chain Performance. The managerial implication of this research is as a guidance for decision maker in the company or manager in the supply chain management to implement suitable organizational culture and consider the effect of supply chain transformational leadership style to improve Supply Chain Performance.

Keywords: Organizational Culture, Supply Chain Transformational Leadership, Supply Chain Performance, Structural Equation Model

Introduction

Indonesia was one of the fifteen countries whose manufacturing industry contributed more than 10% to the Gross Domestic Product (GDP) in year 2016 based on data from the United Nations Statistics Division, where Indonesia ranked the fourth with a contribution of 21.3% after South Korea (29.3%), China (27.5%) and Germany (26.9%). The Riau Islands was one of province in Indonesia that had a contribution above the national average of 36% of the Gross Regional Domestic Product (GRDP) in year 2018. The above factors made it difficult for companies in Indonesia and also the Riau Islands province to compete with competitors in other countries if they could not choose the right strategy related to supply chain management, especially in the relationship of buyers and suppliers to operate efficiently by minimizing losses (Al-Tit, 2017). The decline in Indonesia's competitiveness in the manufacturing industry could be seen from the decline in the growth of the manufacturing industry in the computer, electronic and optical goods industry by 0.51% of Indonesia's GDP in year 2019 according to data from the Central Statistics Agency of Indonesia (2019), where these industries are the main industries in the Riau Islands on manufacturing industry at this moment. Riau Islands as the outermost province of Indonesia besides having advantages because of its location which is directly adjacent to a neighboring country must have an advantage to be able to compete with other countries as an investment destination also. From Batam city and Riau Islands Department of Manpower data, there were 170 companies that closed or moved from 2014-2017, some of which were the inability to compete with other companies abroad because they were not competitive in price, quality or fulfillment of customer demand flexibility, so that some companies moved their businesses to another place in another country.

Some studies specifically examine the influence of organizational culture in relation to company performance such as Al-Tit (2017), Gochhayat et al. (2017), Bag (2018) and Zhao et al. (2018). In general, previous studies used the Competing Value Framework (CVF) to explain the organizational culture popularized by Quinn & Rohrbaugh, 1981, 1983) which consisted of four cultural dimensions, namely development culture, group culture, hierarchical culture, and rational culture. In the influence of overall organizational culture, Bag (2018) as well as Prajogo & McDermott (2011) along with Al-Tit (2017) which states that there was a positive relationship in organizational culture relations and company supply chain operational performance. Different results stated by Zhao et al. (2018) whose the research focused on the influence of the application of organizational culture on company performance, where the results of the study concluded that the application of organizational culture had a negative effect on firm value or firm financial performance but had a positive effect on firm innovation output. The research of Zhao et al. (2018) contrasts with the research of Graham et al. (2017) which states that 91% of executives view that culture was very

important for their company and 71% consider culture as one of the three or five important factors in influencing company value.

To understand the causes of the unequal influence of organizational culture in supply chain management, then it is necessary to know the matters of relating to supply chain leaders in carrying out supply chain strategies (Akdogan & Demirtas, 2014; Defee et al., 2009; Defee et al., 2010; Gosling et al., 2016; Bag, 2018) because leadership is needed in the supply chain (Cooper et al., 1997; Gosling et al., 2016; Bag, 2018) as the key successful of strategy and competitive advantage (Bass, 1991; Waldman et al., 2001) and one successful factor in buyer and supplier relationship (Hsu et al., 2008; Liu et al., 2009; Bag, 2018). Some studies also mention that organizational culture and leadership are closely related to each other in their books such as Schein (1985, 1992, 2004), Bass (1985), Nadler (1998) and Pfeffer (1998). Leadership is always described as personal behaviors and traits that are unconsciously needed in influencing the process of a relationship (Grint, 2005; Gosling et al., 2016). This causes the manager's leadership style to be an important factor in supply chain leadership (Defee et al., 2009; Defee et al., 2010; Gosling et al., 2016; Bag, 2018) which does not only affect the company but also the entire supply chain including suppliers (Gosling et al., 2016; Bag, 2018). Supply chain leadership styles are generally distinguished by transactional leadership styles and transformational leadership styles (Hult et al., 2000; Defee et al., 2009; Defee et al., 2010; Gosling et al., 2016). Transactional leadership is traditional leadership that focusing on changes between leaders and followers, where these changes allow leaders to achieve their performance targets, complete the required tasks, maintain organizational conditions, motivate followers through contractual agreements, ensure direct behavior from followers towards achieving targets which is determined, emphasizes appreciation from outside, avoids unnecessary risks, and focuses on improving organizational efficiency based on Bass (1985, 2008) and Burns (1978) in their books, while transformational leadership more often shows four components namely influencing through ideas, inspiring and motivating, providing intellectual stimulation, and giving individual consideration (Hult et al., 2000; McCleskey, 2014). Transactional leadership styles also does not develop longterm relationships because performance is based on leader targets and the existence of rewards (Avolio et al., 1988) while transformational leadership styles focus on influencing through motivation and inspiration so as to produce innovations that can affect development culture and culture in groups (Büschgens et al., 2013). Supply chain transformational leadership styles will also play a role in improving the quality of integration with suppliers and maintaining long-term relationships with suppliers (Hult et al., 2000) as well as broad application of supply chain management strategies (Gosling et al., 2016) because transformational leadership styles direct followers with motivation through changes in mindset, so that the expected performance can take place in the long term (Jung & Avolio, 2000; Iqbal et al., 2015). Based on the gap from previous research on the influence of organizational culture in supply chain management, this study uses transformational supply chain leadership style as a moderating variable that can strengthen or weaken the relationship of various existing organizational cultures to supply chain performance and the research framework is shown in the figure below.

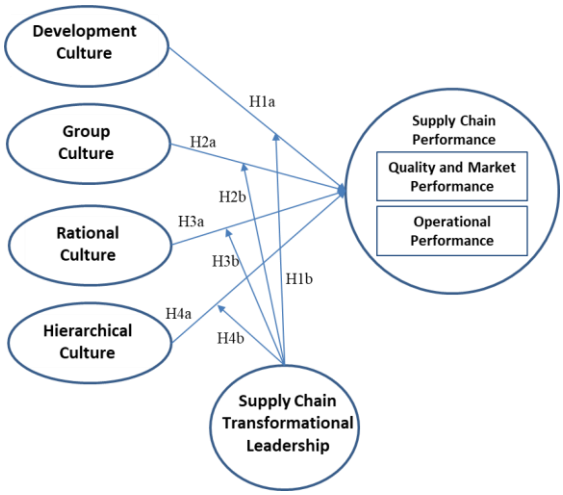

Fig. 1 Conceptual Framework

H1a : Development culture has a significant effect on supply chain performance
H1b : Supply chain leadership style significantly moderates the cultural relations of development and supply chain performance
H2a : Group culture has a significant effect on supply chain performance
H2b : Supply chain leadership style significantly moderates group culture relations and supply chain performance
H3a : Rational culture has a significant effect on supply chain performance

H3b : Supply chain leadership style significantly moderates rational cultural relations and supply chain performance

H4a : Hierarchical culture significantly influences supply chain performance

H4b : Supply chain leadership style significantly moderates the hierarchical cultural relations and supply chain performance

Supply chain management literature was born from the positive impact of its application on company performance where performance shows the efficiency and effectiveness of overall supply chain management as explained by Miguel & Brito (2011). Operational steps are included because they are directly related to the relationship between supply chain partners and include time steps for new product development (McIvor & Humphreys, 2004; Jajja et al., 2016), waiting times (Humphreys et al., 2004; Jajja et al., 2016), delivery performance (Tan et al., 2002; Jajja et al., 2016), product response and reliability (Shin et al., 2000; Jajja et al., 2016), customer satisfaction (Flamholtz & Kannan-Narasimhan, 2005; Jajja et al., 2016) and the manufacturing cycle time (Naylor et al., 1999; Jajja et al., 2016). In addition, Gawankar et al. (2017) divided supply chain management performance measurements based on traditional measurements (supply chain flexibility, supply chain integration, response to customers, efficiency, quality, product innovation, market performance) and relationship measurements (relationship of quality and supplier performance) or in general in the form of quality and market performance and operational performance based on Jajja et al. (2016). The structural equation model of the study is shown in the figure below.

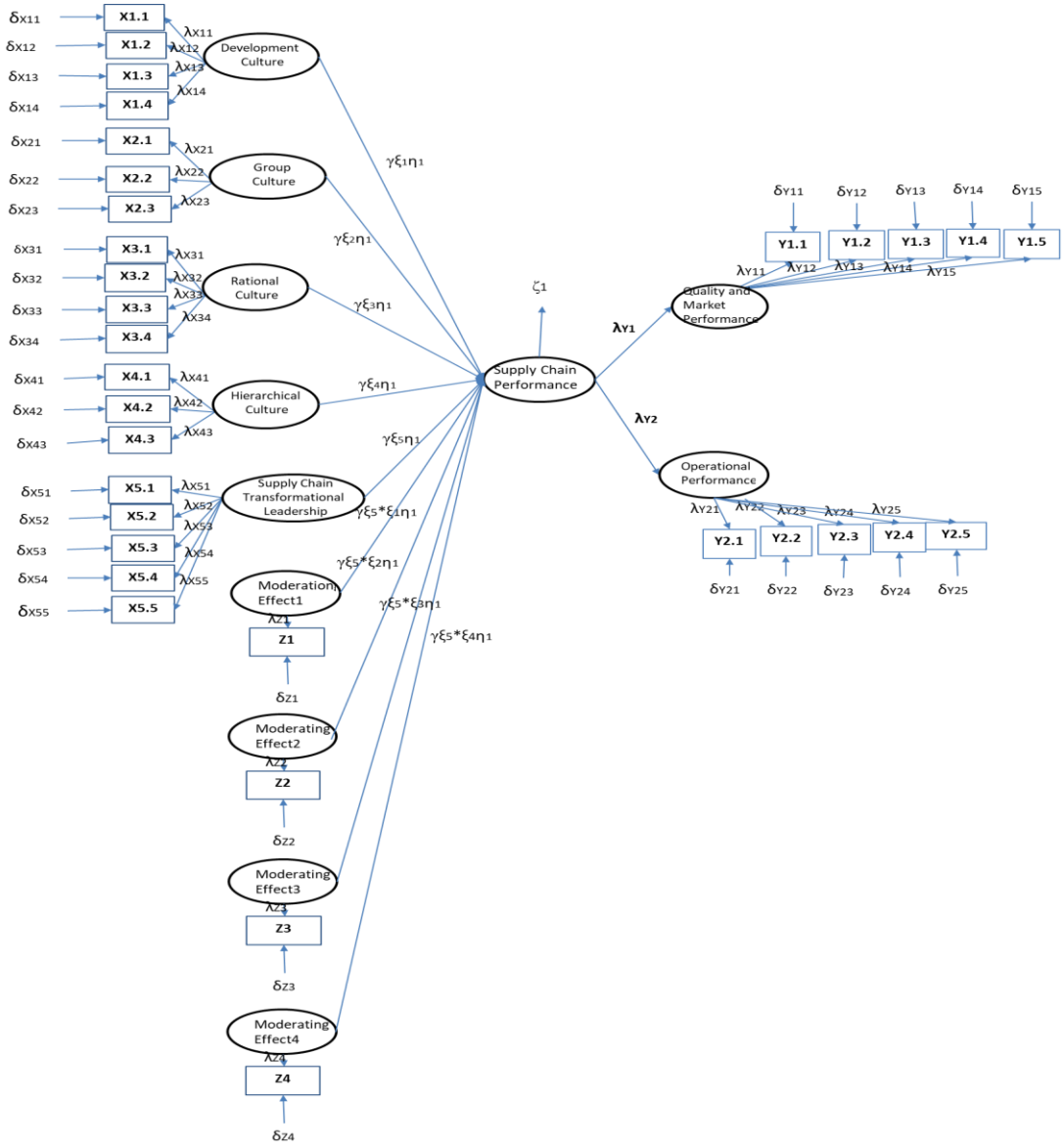

Fig. 2 Structural Equation Model

Result and Analysis

A total of 179 questionnaires were collected with a 21 percent response rate. After removing the two incomplete data, 171 respondents' responses could be used for further analysis. Profile of respondents shown in table 1 and table 2.

Table 1. Company Profile

	Frequency	%
Length of Established		
0 – 5 years	4	2.3
5 – 10 years	24	14
> 10 years	143	83.3
Industry Types		
Electronic	85	49.7
Plastic	48	28.1
Metal	27	15.8
Others	11	6.4
Number of Employee		
100 – 250	53	31
251 – 500	98	57.3
> 500	20	11.7
Sales/Year		
USD 200K– 4 M	78	45.6
> USD 4 M	93	54.4
% Key Supplier at Oversea		
< 50%	45	26.3
50% - 75%	78	45.6
> 75%	48	28.1

Source: Data processed using SPSS 24.0

Table 2. Supply Chain Mgr Profile

	Frequency	%
Gender		
Male	96	56.1
Female	75	43.9
Educatio		
< Degree	34	19.9
Degree	132	77.2
Master	5	2.9
Working		
< 5 years	12	7
5 – 10	111	64.9
> 10	48	28.1
Total		
< 5 years	0	0
5 – 10	17	9.9
> 10	154	90.1

Source: Data processed using SPSS 24.0

Respondents' perceptions of development culture, group culture, rational culture, hierarchical culture, transformational supply chain leadership style, and supply chain performance are shown in tables 3, 4, 5, 6, 7 and 8

Table 3. Development Culture

Indicator	SD	Mean
DC1	0.808	4.082
DC2	0.807	4.041
DC3	0.781	4.047
DC4	0.762	4.158

Source: Data processed using SPSS 24.0

Table 4. Group Culture

Indicator	SD	Mean
GC1	0.777	4.158
GC2	0.739	4.175
GC3	0.711	4.152

Source: Data processed using SPSS 24.0

Table 5. Rational Culture

Indicator	SD	Mean
RC1	0.801	4.129
RC2	0.771	4.129
RC3	0.801	4.129
RC4	0.765	4.164

Source: Data processed using SPSS 24.0

Table 6. Hierarchical Culture

Indicator	SD	Mean
HC1	0.761	4.094
HC2	0.769	4.140
HC3	0.781	4.035

Source: Data processed using SPSS 24.0

Table 7. Supply Chain Transformational Leadership

Indikator	SD	Mean
TL1	0.787	3.801
TL2	0.819	3.813
TL3	0.824	3.819
TL4	0.833	3.795
TL5	0.779	3.801

Source: Data processed using SPSS 24.0

Table 8. Supply Chain Performance

Dimension	Indicator	SD	Mean
MP	MP1	0.626	4.234
	MP2	0.675	4.181
	MP3	0.642	4.228
	MP4	0.662	4.310
	MP5	0.648	4.322
OP	OP1	0.633	4.304
	OP2	0.720	4.228
	OP3	0.621	4.222
	OP4	0.658	4.328
	OP5	0.635	4.234

Source: Data processed using SPSS 24.0

Confirmatory Factor Analysis (CFA) to determine the validity and reliability of indicators for each research construct and the feasibility of the model (Goodness of Fit) are shown in tables 9, 10, 11, 12, 13, 14 and 15.

Table 9. Validity and Reliability Test of Development Culture

Ind	λ	AVE	VT	CR	RT
DC1	0.94	0.64	Valid	0.87	Good
DC2	0.93		Valid		
DC3	0.63		Valid		
DC4	0.65		Valid		

Source: Data processed using LISREL 8.7

Table 10. Validity and Reliability Test of Group Culture

Ind	λ	AVE	VT	CR	RT
GC1	0.85	0.63	Valid	0.84	Good
GC2	0.70		Valid		
GC3	0.83		Valid		

Source: Data processed using LISREL 8.7

Table 11. Validity and Reliability Test of Rational Culture

Ind	λ	AVE	VT	CR	RT
RC1	0.87	0.61	Valid	0.86	Good
RC2	0.83		Valid		
RC3	0.67		Valid		
RC4	0.75		Valid		

Source: Data processed using LISREL 8.7

Table 12. Validity and Reliability Test of Hierarchical Culture

Ind	λ	AVE	VT	CR	RT
HC1	0.91	0.66	Valid	0.85	Good
HC2	0.89		Valid		
HC3	0.61		Valid		

Source: Data processed using LISREL 8.7

Table 13. Validity and Reliability Test of Supply Chain Transformational Leadership Style

Ind	λ	AVE	VT	CR	RT
TL1	0.94	0.54	Valid	0.87	Good
TL2	0.52		Valid		
TL3	0.56		Valid		
TL4	0.83		Valid		
TL5	0.73		Valid		

Source: Data processed using LISREL 8.7

Table 14. Validity and Reliability Test of SCP First Construct

Dms	λ	AVE	CR	VT	RT
MP	0,94	0,86	0,91	Valid	Good
OP	0.91			Valid	

Source: Data processed using LISREL 8.7

Table 15. Goodness of Fit

Item	Target Value	Est. Result	Conc.
Absolute Fit			
RMSEA	0.05 – 0.08	0,08	Good Fit
CI of RMSEA	0.00 – 0.10	0.029 – 0.01	Good Fit
GFI	>0.80, >0.90	0.98	Good Fit
Incremental Fit			
NNFI	> 0,90	0,97	Good Fit
CFI	> 0,90	1,00	Good Fit
IFI	> 0,90	1,00	Good Fit
NFI	>0.80, >0.90	0.98	Good Fit
Parsimony Fit			
CAIC	Default model < model *saturated*	373.8 < 405.35	*Good Fit*
ECVI		0.78 < 15.43	*Good Fit*
AGFI	>0.80,	0.85	*Good Fit*

Source: Data processed using LISREL 8.7

The results of the table show that each construct indicator has a loading factor value ≥ 0.50, AVE value ≥ 0.50 and CR value ≥ 0.60. So it can be concluded that all indicators are valid and reliable and can measure constructs accurately (Hair et al., 2018). Hair et al. (2018) also states that from the several absolute fit measure and incremental fit measure test results that exist, if the results of one fit test, it can be concluded that the model used is fit. Based on the results of the above table, the goodness of fit test results can be stated that the research model is declared good fit because it is seen from the values of RMSEA, GFI, NFI, CFI, IFI, NFI, PGFI, ECFI and CAIC so that the model is declared to pass the goodness of fit test and can the next testing phase is carried out. From the results of the hypothesis test with Lisrel 8.7, the results obtained are as in table 16 below.

Tabel 16. Result of Hypothesis Test

Hip.	**Coeff. (γ)**	***t-value***	**Result**
H1a	-0.16	-1.15	H1a is not supported
H1b	-0.24	-3.07	H1b is supported
H2a	0.29	3.19	H2a is supported
H2b	-0.36	-4.33	H2b is supported
H3a	0.40	3.43	H3a is supported
H3b	-0.46	-5.71	H3b is supported
H4a	-0.04	-0.29	H4a is not supported
H4b	-0.28	-3.58	H4b is supported

Source: Data processed using LISREL 8.7

The results showed that t-value > 1.96 or t-value < -1.96 for a significance level of α = 5% for H1b, H2a, H2b, H3a, H3b and H4b means these hypothesis are significant but it's different with another hypothesis, i.e H1a and H4a. The coefficient of relationship of each constructs are showed on **γ** value**.**

Conclusion

Based on the hypothesis test conducted, it can be concluded that supply chain transformational leadership style will have a moderating effect in the relationship of all organizational cultures to the supply chain performance of manufacturing companies in Riau Islands Province that support research from Gosling et al. (2016) and Bag (2018). By doing interview with several respondents, it's caused of employee in manufacturing company are mostly operator level who have senior high school of education background and most of them have age below 25 years old. The study also concluded that group culture and rational culture had a significant and positive effect on supply chain performance while the development culture and hierarchical culture had a negative but not significant effect to manufacturing companies performance in Riau Islands.

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