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Organizational culture influence on implementation of knowledge management and quality management system for improving Indonesian construction companies' performances

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Abstract. This study aimed to assess the organizational culture profiles of Indonesian state-owned construction companies and to examine the relationship between companies' organizational culture profiles, and the implementation of knowledge management and quality management systems. The methodology employed a survey questionnaire of construction industry practitioner in five state-owned construction companies. The Organizational Culture Assessment Instrument and Knowledge Management Assessment Instrument were selected due to their suitability in assessing organizations' underlying culture and knowledge management implementation. Quality management systems questionnaire is based on ISO 9001:2015 quality management principles and companies' performance questionnaire is based on the balanced scorecard. Within the examination among research variables, it was found that clan culture and market culture have a significant effect on the implementation of knowledge management and quality management system. The results of this study can be used as a reference for the improvement of construction companies' knowledge management and quality management systems implementation using organizational culture approach.

1. Introduction

Civil construction projects in Indonesia have been frequently criticized by stakeholders due to low-quality works. Substandard construction works are serious problems for the government of Indonesia and the construction industry in general [1]. Based on previous studies, there are relationships between organizational culture, knowledge management, and quality management systems [2], [3], [4], [5], [6]. Moreover, the implementation of knowledge management and quality management systems can improve organization performance [6], [7], [8], [9], [10], [11]. The aims of this paper are to develop the relationships between organizational culture, knowledge management, quality management systems, and companies' performances. The focus of this research is to evaluate cultural types, knowledge management elements, and quality management system elements that drive companies' performances. This paper used questionnaires to collect data from respondents and Pearson's correlation analysis was conducted to study the relationships between research variables.



2. Research Method

2.1. Research Instruments

Research variables in this study are organizational culture, knowledge management, quality management systems, and companies' performances. To measure the research variables, four questionnaires using the five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree, were used, which included:

- Organizational culture assessment instrument, adapted from Cameron and Quinn (2006), was used to assess organizational culture based on competing values framework. According to competing values framework, there are four major culture types: hierarchy culture, market culture, clan culture, and adhocracy culture [12].
- Knowledge management assessment instrument, adapted from Lawson (2003), was used to assess knowledge management implementation. This instrument consists of six knowledge management cycles, which included: creating knowledge, capturing knowledge, organizing knowledge, storing knowledge, disseminating knowledge, and applying knowledge [13].
- Questionnaire based on quality management principles ISO 9001:2015 was used to assess quality management system implementation. Seven quality management principles ISO 9001:2015 are included: customer focus, leadership, engagement of people, process approach, improvement, evidence-based decision making, and relationship management [14].
- Questionnaire based on balanced scorecard, adapted from Kaplan and Norton (1996), was used to assess companies' performances. Four perspectives in balanced scorecard are included: financial, customer, internal business process, and learning and growth [15].

2.2. Sample and Data Collection

The random sampling method was used in this study, with state-owned construction companies' employees as respondents. In total, 34 respondents from four companies returned the questionnaires.

2.3. Statistical Methods

To test the reliability of the questionnaire Cronbach's α test was used, and α that was obtained for the questionnaire was 0.936, which means the questionnaire is very reliable. Discriminant validity test for the questionnaire was using average variance extracted (AVE) values from each construct, and the AVE values obtained for all construct were above the 0.50 threshold, thus confirmed the discriminant validity of the questionnaire. Finally, Pearson's correlation was used to test the relationships between research variables.

3. Results and Discussion

3.1. Relationships Between Organizational Culture, Knowledge Management, Quality Management Systems, and Companies' Performances

The Pearson's correlation analysis to study the relationships between organizational culture, knowledge management, quality management systems, and companies' performances were conducted in SPSS 20. The results of the Pearson's correlation analysis as follows:

Table 1.a. Results of the Pearson correlation analysis

Variables	Clan	Adhoc	Market	Hierarchy
Clan				
Adhoc	0.831**			
Market	0.363*	0.580**		
Hierarchy	0.472**	0.663**	0.571**	
CreatingK	0.244	0.245	0.439**	0.232
CaptuK	0.444**	0.321	0.426*	0.225
OrgK	0.482**	0.410*	0.303	0.122
StoringK	0.497**	0.336	0.341*	0.106
DissK	0.563**	0.453**	0.381*	0.128
ApplyK	0.320	0.321	0.404*	0.214
CostumerF	0.347*	0.307	0.446**	0.230
Leadership	0.187	0.137	0.364*	0.121
PEngag	0.428*	0.315	0.142	0.120
ProcessA	0.185	0.267	0.380*	0.259
Improv	-0.009	0.078	0.171	0.147
EvidBase	0.009	0.096	0.337	0.205
Relation	0.066	0.178	0.518**	0.258
FinancialP	0.174	0.079	0.207	0.249
CustomerP	0.039	-0.116	-0.092	0.049
IntPro	0.030	-0.046	0.051	0.103
LearnGro	-0.004	-0.084	-0.035	0.103

Table 1.b. Results of the Pearson correlation analysis (continued)

Variables	CreatingK	CaptuK	OrgK	StoringK	DissK	ApplyK
CreatingK						
CaptuK	0.838**					
OrgK	0.800**	0.791**				
StoringK	0.735**	0.666**	0.642**			
DissK	0.724**	0.872**	0.803**	0.663**		
ApplyK	0.834**	0.731**	0.774**	0.646**	0.740**	
CostumerF	0.717**	0.702**	0.564**	0.528**	0.732**	0.718**
Leadership	0.707**	0.661**	0.560**	0.582**	0.638**	0.748**
PEngag	0.660**	0.655**	0.767**	0.590**	0.696**	0.776**
ProcessA	0.680**	0.572**	0.590**	0.493**	0.538**	0.892**
Improv	0.665**	0.429*	0.546**	0.509**	0.342*	0.735**
EvidBase	0.575**	0.459**	0.404*	0.387*	0.381*	0.582**
Relation	0.712**	0.457**	0.562**	0.525**	0.391*	0.746**
FinancialP	0.248	0.400*	0.016	0.181	0.260	0.164
CustomerP	0.228	0.224	0.128	0.283	0.072	0.214
IntPro	0.484**	0.362*	0.338	0.351*	0.254	0.608**
LearnGro	0.385*	0.354*	0.265	0.284	0.151	0.414*

Table 1.c. Results of the Pearson correlation analysis (continued)

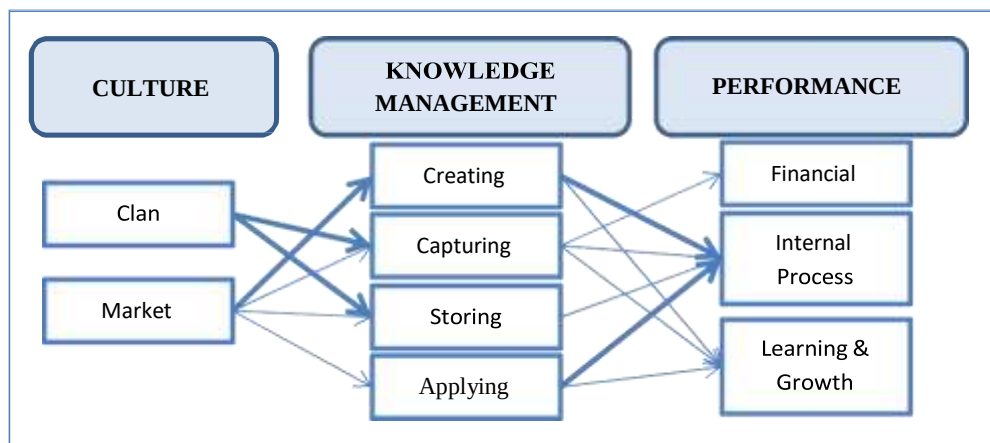
Variables	CostumerF	Leadership	PEngag	ProcessA	Improv	EvidBase	Relation
CostumerF							
Leadership	0.818**						
PEngag	0.609**	0.641**					
ProcessA	0.641**	0.655**	0.621**				
Improv	0.510**	0.708**	0.603**	0.769**			
EvidBase	0.490**	0.682**	0.514**	0.506**	0.645**		
Relation	0.533**	0.591**	0.431*	0.714**	0.654**	0.696**	
FinancialP	0.323	0.267	0.176	0.091	-0.013	0.179	0.131
CustomerP	0.056	0.256	0.206	0.167	0.237	0.246	0.277
IntPro	0.357*	0.478**	0.443**	0.589**	0.533**	0.388*	0.520**
LearnGro	0.196	0.381*	0.400*	0.378*	0.462**	0.407*	0.354*

Table 1.d. Results of the Pearson correlation analysis (continued)

Variables	FinancialP	CustomerP	IntPro	LearnGro
FinancialP				
CustomerP	0.610**			
IntPro	0.467**	0.750**		
LearnGro	0.545**	0.838**	0.886**	

3.2. Trace Back Analysis

Trace back analysis is conducted for knowledge management and quality management system elements that have significant effects on companies' performance. Then, trace back analysis is conducted for organizational culture elements that have significant effects on knowledge management and quality management system, the results of trace back analysis as follow:

**Figure 1.** Trace back analysis result for knowledge management elements

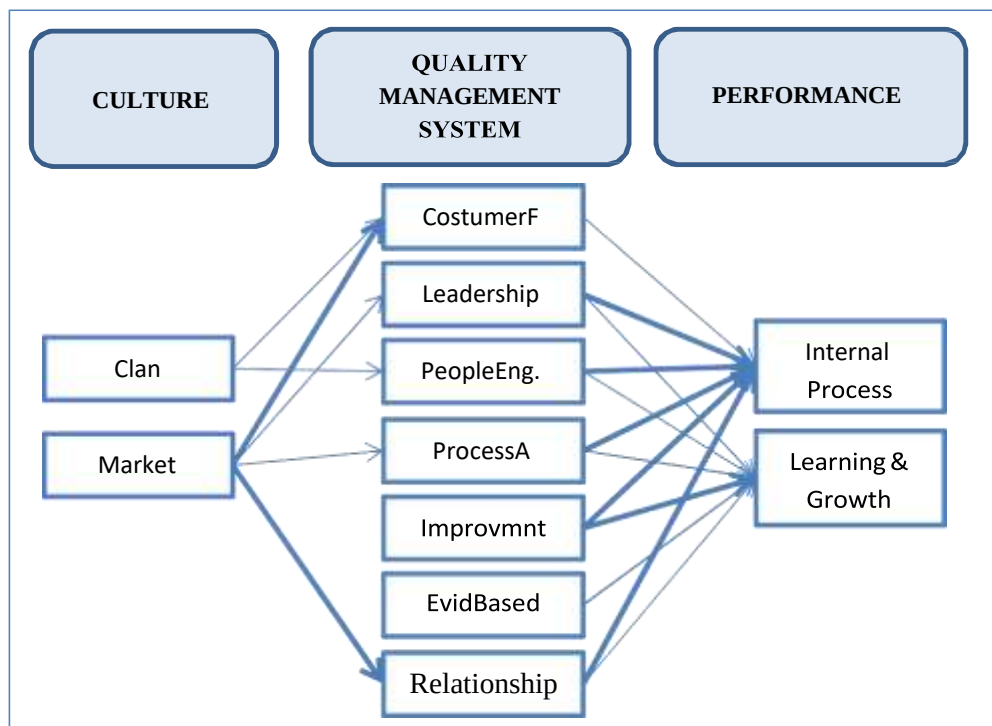


Figure 2. Trace back analysis result for quality management system elements

Thick arrows in (Figure 1) and (Figure 2) represent significant correlation at 0.01 level, meanwhile thin arrows represent significant correlation at 0.05 level. Based on this trace back analysis, it was found that clan and market culture are affecting knowledge management elements: creating knowledge, capturing knowledge, storing knowledge, and applying knowledge. Moreover, clan and market culture are affecting quality management principles: customer focus, leadership, engagement of people, process approach, and relationship management.

4. Conclusion

To the best of our knowledge, this study is the first study to empirically test the relationship between organizational culture, knowledge management, quality management systems, and companies' performances in Indonesian construction companies. Clan culture and market culture have significant effects on the implementation of knowledge management and quality management system, which are affecting companies' performances. The improvement of construction companies' knowledge management and quality management systems implementation using organizational culture approach has the opportunity to improve companies' performances.

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