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ORGANIZATIONAL CULTURE IMPACT ON INFORMATION SYSTEMS SUCCESS

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ABSTRACT

This research aims at exploring the effect of organizational culture, especially clan culture, toward the success of information system implementation. A conceptual model of information system success had been developed by integrating DeLone-McLean model, technology acceptance model (TAM), unified theory of acceptance and use of technology (UTAUT). Competing values model (CVM) is being used for organizational model, as such the assessment for organizational culture is using organizational culture assessment instrument (OCAI). To test the proposed conceptual model, empirical study was conducted at a IT-based company using questionnaire and gave the total of 319 usable data samples. The data analysis is using SmartPLS3 due to the abnormality of data distribution. The OCAI assessment shows that the company has a tendency toward clan culture which is quite unexpected for an IT-based company. However, further analysis shows that the company has successfully mixed clan culture with the less-dominant types of culture to create a conducive culture for the success of information system implementation. This study sheds light on IT implementation for business organizations especially the ones which have clan culture as a dominant culture embedded in their organizations.

KEYWORDS: *Information systems success, organizational culture*

INTRODUCTION

Information Systems (IS) has a critical role to organizations success, especially in this era, where globalization, digital economics, and digital organizations took place. So the weakness of IS considered as a dangerous phenomenon on organizational success in general

[1]. Furthermore, the question is not whether the organizations should have IS or not, but it should have an effective IS

[2]. Therefore IS success and its determinants considered to be critical in the field of Information Systems [3, 4, 5]. However, empirical results in this area are inconsistent [6], and an overall synthesis across the numerous empirical studies seems lacking [6, 7]. In addition to excluding many determinants that affects IS success [7, 6, 8], organizational culture is one of the important determinants of IS success that not deeply discusses by researchers [9, 10, 11]. In addition, there is no obvious results concerning the impact of

organizational culture on IS success. Thus a comprehensive understanding of Information Systems success remains fuzzy and elusive in this area.

OBJECTIVE

1. To study Organizational Culture Impact on Information Systems Success
2. To study organizational culture profile of the company based on employees' perspectives

The main objective of this study is to provide a further insight in to IS success and the organizational culture as a determinant of IS success, and examines the dimensions of IS success along with this determinant, and integrates the results with the prior researchs in this area. During this study a comprehensive model will be provided in order to enable the evaluation of information systems success along with the organizational culture, therefore this study adresses the following questions:

1. What are the dimensions of IS success?

2. What are the dimensions of organisational culture?

3. How do the dimensions of IS success depend on organizational culture and its dimensions?

To pursue these questions, a comprehensive model was developed in this study, including the dimensions of IS success as dependent varaibles, and the organizational culture dimensions as an independent variables, after that an empirical study to be held to examine the developed model.

METHODS

The empirical study for this research is using quantitative method. Questionnaires were distributed to the employees of an IT-based company in Indonesia. Questionnaire was distributed in two types: online and paperbased. The questionnaire is divided into two parts. The first part is for mapping the current organizational culture of the employees. The second part is data collection for information system success constructs with the human resource (HR) system as the research object (the questions in the questionnaire were asking about the employee's experience toward HR system which is mandatory for all employees). The data for information system success constructs will be processed and analyzed using statistical method, while data for organizational culture will be processed and analyzed according to OCAI [18]'s instruction. There were 398 questionnaires returned, but after data cleaning process, only 319 samples can be used for data analysis. SPSS is being used to test the normality of data distribution. Shapiro-Wilk test provides the best result for testing non-normal data distribution when the sample size is below 2000 . The result of Shapiro-Wilk test for the data of this study showed that the p-value < 0.000 for all variables. P-value < 0.000 means that the null hypotheses are rejected, hence the data is deemed to be not normally distributed. Based on that result therefore partial least square for structural equation modeling (PLS-SEM) is being used for data analysis since PLS does not need the data to be normally distributed . The tool for analysis is using SmartPLS3 .

RESULT

A. Organizational culture mapping using OCAI

It has been stated earlier that this study is using the theory of organizational culture based on competing values framework (CVF)which was established by [17] [18], therefore the assessment for organizational culture will use organizational culture assessment instrument (OCAI) which was developed by Cameron and Quinn [18].CVF divides organizational culture into four distinct culture types: clan, adhocracy, market, and hierarchy. Clan culture is characterized by close-knit relationship among member of the organization. The organization values teamwork and empowers their employees. Adhocracy culture gives regards to innovativeness and willingness of employees to take risks. They focus on long term growth and are leading in offering new products or services. Market culture focuses on competitiveness and goal oriented. They define success as representation of high proportion on the market share. Hierarchy culture is focusing on control, smoothness, and efficiency in day-to-day organizational operation, therefore they prefer activities that are predictable. As such, people in hierarchy culture tend to be resistant toward changes.

TABLE 1

FREQUENCY OF CULTURE TYPES IN COMPANY

No	Organizational Culture	Frequency
1	Clan	169
2	Adhocracy	44
3	Market	84
4	Hierarchy	22
	Total	319

Organizational culture mapping is an activity to assess the perception of each respondent regarding the daily practice of their company which relate to certain culture type (clan, adhocracy, market, or hierarchy). Since this study only needs the current status of organizational culture, therefore only the “Now” part of OCAI was used without the “Preferred” part. Each respondent was given an OCAI questionnaire to be filled out. The result of organizational culture mapping is shown in Table I and the diagram is depicted in Fig. 4. Considering the company is an IT-based, the result is somewhat surprising since the shape of organizational culture profiles is having a tendency toward clan culture. It can be seen in Fig 4 that the aggregate score of clan culture is 40.3, adhocracy is 19.5, market is 26.0, and hierarchy is 14.1. With those results, it can be concluded that the dominant organizational culture in the company is clan culture, followed by market, adhocracy, and hierarchy.

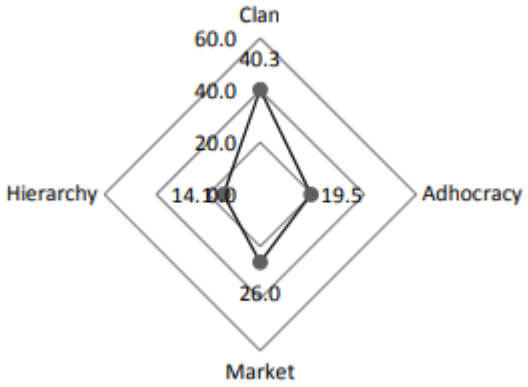

Fig. 4 Organizational culture profile of the company based on employees' perspectives

B. Data analysis for information system success

Data analysis using PLS-SEM involves two processes. First is assessing the measurements model to evaluate its reliability and validity, and second is assessing the structural model. To evaluate the measurement model, there are some parameters that need to be reported when data analysis is conducted using PLS-SEM. The first parameter is the score of internal consistency reliability which is supposed to be above 0.70. In SmartPLS3, the score of internal consistency reliability can be found in the composite reliability values. The result of composite reliability for this study is shown in Table 2. Since all variables have composite reliability above 0.70 therefore the requirement for internal consistency reliability is fulfilled.

TABLE 2

COMPOSITE RELIABILITY

Variable	Composite reliability
Perceive Ease of Use	0,906
Information Quality	0,916
Intention to Use	0,904
Use	0,900

	Perceive Usefulness	0,888
	Performance Expectancy	0,940
	Service Quality	0,952
	Social Influence	0,897
	System Quality	0,848
	Attitude	0,938
	Net Benefits	0,890
	User Satisfaction	0,922

TABLE 3

CONVERGENT RELIABILITY (AVE SCORES)

Variable	Average Variance Extracted
Perceive Ease of Use	0,763
Information Quality	0,578
Intention to Use	0,760
Use	0,693
Perceive Usefulness	0,726
Performance Expectancy	0,838

Service Quality	0,604
Social Influence	0,744
System Quality	0,584
Attitude	0,834
Net Benefits	0,730
User Satisfaction	0,747

The second parameter that has to be reported for PLS-SEM is indicator reliability or indicator loading which has to be above 0.70. Due to the limitation of the number of the page, the loadings for all indicators will not be shown in this paper. It can be reported that most indicators have loadings above 0.70. Even though some indicators have loadings below 0.70 but they are above 0.60 which is acceptable according to [40]. The third parameter has to be checked is the convergent validity which can be found in the average variance extracted (AVE) values. The AVE has to be higher than 0.50 to fulfill the requirement as a good model. It can be seen in Table 3 that the score of AVE for all variables are higher than 0.50. The fourth parameter that has to be reported is discriminant validity. J. Henseler [41] provides new guidelines for establishing discriminant validity which is using heterotrait-monotrait (HTMT) ratio instead of Fornell-Larcker criterion and cross-loadings. J. Henseler [41] stated that HTMT ratio with a threshold of 0.90 is acceptable for most cases. In SmartPLS3, HTMT scores can be found in the discriminant validity report section. The HTMT ratio is shown in Table 4 on the next page. Since all of the ratio values are below 0.90 therefore the discriminant validity is established. However, some of the HTMT have scores that are very close to 0.90 (for example the scores that higher than 0.86). This score can be used as a caution that variables with high HTMT score might measure similar substances or properties.

TABLE 4

HETEROTRAIT-MONOTRAIT (HTMT) RATIO

		Perceive										
		Ease of	Information	Intention		Perceive	Performance	Service	Social	System		Net

		Use	Quality	to Use	Use	Usefulness	Expectancy	Quality	Influence	Quality	Attitude	Benefits
	Perceive Ease of Use											
	Information Quality	0,741										
	Intention to Use	0,776	0,681									
	Use	0,577	0,727	0,769								
	Perceive Usefulness	0,658	0,751	0,730	0,830							
	Performance Expectancy	0,486	0,603	0,618	0,779	0,899						
	Service Quality	0,658	0,779	0,599	0,634	0,749	0,619					
	Social Influence	0,452	0,527	0,695	0,788	0,728	0,705	0,543				
	System Quality	0,698	0,861	0,680	0,802	0,853	0,728	0,852	0,581			
	Attitude	0,610	0,754	0,771	0,825	0,713	0,670	0,636	0,672	0,798		
	Net Benefits	0,562	0,704	0,732	0,873	0,816	0,851	0,636	0,823	0,774	0,858	

	User Satisfaction	0,749	0,815	0,814	0,842	0,770	0,668	0,717	0,677	0,834	0,859	0,859

To assess the structural model in PLS-SEM [42] define four parameters that have to be examined: coefficient of determination (R2), path coefficient, cross-validated redundancy (Q2), and effect size. The value of R2 =0.75 is considered "substantial", 0.5 is considered "moderate", and 0.25 is weak. Table 5 shows the R2 and adjusted R2 for the model. J. F. J. Hair [43] suggests to use adjusted R2 rather than R2 . The adjusted R2 for variable Use, which is 0.429, is the least among all endogenous variables. That means there are other factors besides Intention to Use that urge the employees for using the system since Intention to Use only explains 42.9% of Use. The adjusted R2 for user satisfaction (User Satisfaction) and user benefits (Net Benefits) are nearly substantial, 0.687 and 0.667 respectively. It is quite satisfying that User Benefits (benefits perceived by the users after using the information system) holds a quite high adjusted R2 since User Benefits is the very goal of information system success.

TABLE 5

THE R^2 FOR ENDOGENOUS VARIABLES

	Endogenous variables	R Square	R Square Adjusted
	Intention to Use	0,550	0,542
	Use	0,431	0,429
	Attitude	0,434	0,430
	Net Benefits	0,689	0,687
	User Satisfaction	0,671	0,667

The path coefficients for the model can be seen in Table 6. If alpha=0.05 then the threshold for T statistics is 1.96 for P values to be significant [39]. If alpha=0.10 then the threshold for T statistic =1.62 for P values to be significant. Table 6 shows the result of all path coefficients for alpha=0.05. There are four relationships which have T statistics < 1.96 (in Table 6 written in bold).That means those four relationships are considered not significant: Intention to◊ Intention to Use, System Quality ◊ Intention to Use, Service Quality ◊Performance Expectancy User Satisfaction. The result of path coefficients is depicted in Fig 5. The arrows with◊Use, and System Quality solid line are showing the relationships that are significant, and the dashed arrows are showing the relationships that are not significant.

TABLE 6

THE SIGNIFICANCE OF THE RELATIONSHIPS IN THE MODEL

	Relationships	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values*
	Perceive Ease of Use ->Attitude	0,286	0,288	0,058	4,907	0,000
	Information Quality ->Intention to Use	0,175	0,174	0,072	2,434	0,015
	Information Quality ->User Satisfaction	0,299	0,294	0,076	3,924	0,000
	Intention to Use ->Use	0,657	0,658	0,039	17,054	0,000
	Use ->Net Benefits	0,463	0,461	0,061	7,576	0,000
	Use ->User Satisfaction	0,405	0,400	0,068	5,936	0,000
	Perceive Usefulness ->Attitude	0,455	0,455	0,056	8,058	0,000
	Performance Expectancy -> Intention to Use	0,052	0,053	0,058	0,893	0,372
	Service Quality -> Intention to Use	0,065	0,068	0,072	0,905	0,366
	Service Quality ->User Satisfaction	0,167	0,177	0,068	2,474	0,013

	Social Influence ->Intention to Use	0,263	0,263	0,061	4,302	0,000
	System Quality -> Intention to Use	-0,008	-0,005	0,076	0,107	0,915
	System Quality -> User Satisfaction	0,065	0,066	0,072	0,904	0,366
	Attitude ->Intention to Use	0,337	0,331	0,075	4,488	0,000
	User Satisfaction ->Net Benefits	0,428	0,430	0,059	7,207	0,000

*alpha=0.05

Another parameter that has to be reported in construct evaluation is cross-validated redundancy (Q2). Q^2basically is assessing the "model's predictive accuracy" [42]. A value of Q^2 above zero for an endogenous variable means that the particular endogenous variable can be predicted quite good in the model. In SmartPLS3, the cross-validated redundancy is the result from blindfolding process with certain omission distant value. SmartPLS3 suggests the omission distance=7 while [44] suggest to use the omission distance value between 5-10. According to crossvalidated redundancy principle, the number of sample divides by omission distance has to give result a non integer value, therefore this study follows SmartPLS advice to set omission distance as 7. Table 7 shows the result for Q2 . It can be seen that the cross-validated redundancy values for all endogenous variables are above zero. This result means that, in the proposed model, all of endogenous variables can be predicted quite good.

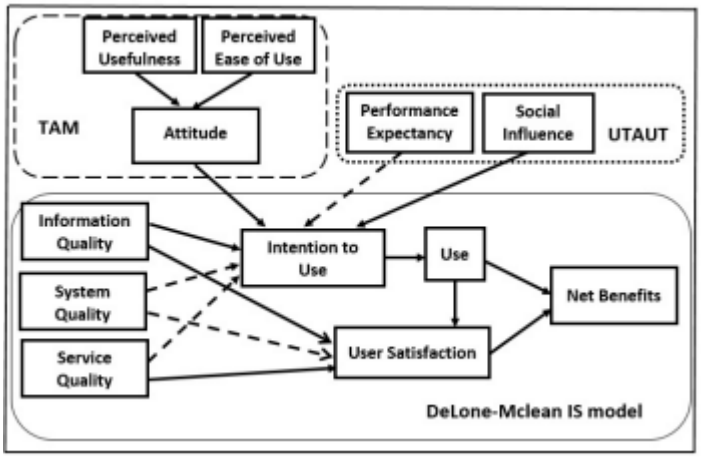

Fig. 5 The result of path coefficients analysis without culture as control variable

The last parameter that needs to be reported for model evaluation is effect size (f2). Effect size is "the increase in R2 relative to the proportion of variance of the endogenous latent variable that remains unexplained". In other words, basically, effect size shows the strength of a predictor variable toward an endogenous variable. The effect size (f2) of 0.02 is considered weak, while f2 =0.15 is medium, and f2

=0.35 is strong. The effect size of the model is showed in Table 8. It can be seen that Performance Expectancy, Service Quality, and System Quality have a very weak effect size toward Intention to Use, which are below 0.02. The score of Information Quality toward Intention to Use is exactly at 0.02, stronger than the previous three variables. That result is consistent with the result of path Intention to◊Intention to Use, Service Quality◊coefficients of the three relationships: Performance Expectancy Intention to Use are not significant with alpha = 0.05 (see Table 6). System Quality is◊Use, and System Quality having a very weak effect size toward both Intention to Use and User Satisfaction. This result is consistent with the result of path coefficient analysis shown in Table 6. A very low f2 score is corresponding with a non-significant path Use. That means that◊coefficient. It can be seen in Table 8 that the highest effect size holds by Intention to Use this relationship is the strongest among all of the relationship in the model.

TABLE 7

PREDICTIVE RELEVANCE (CROSS-VALIDATED REDUNDANCY)

Latent Variables	SSO		SSE	Q^2 (=1-SSE/SSO)		
Intention to Use		957,000	594,887		0,378	
Use		1.276,000	925,115		0,275	
Attitude		957,000	638,199		0,333	
Net Benefits		957,000	512,433		0,465	
User Satisfaction		1.276,000	690,258		0,459	

TABLE 8

EFFECT SIZE (F2) OF PREDICTOR VARIABLES

	Intention to Use	Use	Attitude	Net Benefits	User Satisfaction
Perceive Ease of Use			0,100		
Information Quality	0,020				0,083
Intention to Use		0,758			
Use				0,317	0,266
Perceive Usefulness	0,003		0,252		
Performance Expectancy					
Service Quality	0,004				0,036
Social Influence	0,081				
System Quality	0,000				0,004
Attitude	0,103				
User Satisfaction				0,270	

C. The effect of organizational culture type toward information system success model

The effect of organizational culture type on the relationships in the model of information system success is analyzed using multi-group analysis (MGA). As reported in the section A that, in this study, employees were being mapped based on their perception on the culture of the company. As consequence there are four groups of employees which have clan, adhocracy, market, or hierarchy dominant type of culture. The focus of analysis is to examine the effect of employees' culture type on the relationships between latent variables in the model of information system success. The result of multi-group analysis using SmartPLS3 is shown in Table 10. The P-value < 0.05 (or T statistics > 1.96) is considered significant. It can be seen that some relationships have different significance based on the culture type. Clan culture has the least number of

significant relationships (4 out of 12 relationships are not significant), while hierarchy culture is the type of culture which has the most number of nonsignificant relationship (9 out of 12 relationships are not significant). There are two relationships that are significant Attitude. There are three relationships that are not◊ Net Benefits and Perceive Usefulness ◊across culture: Use Intention to Use, and◊ Intention to Use, System Quality◊significant across culture: Performance Expectancy User Satisfaction. The rest of the relationships have different status of significance depending on◊System Quality the type of organizational culture.

CONCLUSION

There are some highlighted findings that can be drawn from this research. First, clan culture can be a dominant culture in IT-based Company even though generally IT-based Company have tendency toward adhocracy or market culture. Second, in the research of information system success and the like (technology acceptance/technology diffusion), the choice of information system to be studied affects the result of the study. If the information system is not crucial for the users on doing their tasks then some relationships might give a non-significant result, as the relationship between Performance Expectancy and Intention to Use. Third, the circumstance of the system usage (mandatory vs. voluntary) also affects the result of the research. Fourth, clan culture, combined with other subculture and with clan organizational control, can drive the company to survive during turbulence, hence enabling company to sustain in almost every situation. Further research needs to be conducted to get a greater clarity on the impact of organizational culture on the success of information system implemented in organization. Since information technology is a relatively high investment therefore a suitable organizational culture is needed to ensure its success. Different type of information system might have a different impact toward employees therefore the employees will respond accordingly. For example, in mandatory setting where the use of information system is a must, employees will act based on the rules of the organization and set aside their own perspectives. In such circumstances, a specific treatment has to be conducted to get the real picture of user behavior. Further research also needs to involve qualitative study to get a deeper understanding on the impact of culture toward employees' perception on information system.

REFERENCES

1. Adnan Pandu Praja, 2014. Potential Mining Tax Rp 20 trillion vanished. Newspaper Tempo, Thursday, April 24, 2014.

2. Masykur Ali Musa, 2014. BPK findings on the financial abuse of this country is evidence of misuse of information systems of state finances. http://pelitaonline.co.

3. Anwar Suprijadi, 2014. Application of NSW at the Port of Batam already started since December 2006 had been uncovered, particularly regarding the information systems that have unintegrated. www finance detik.com 8 April 2014.

4. Atkinson., Et al, 2012. Management Accounting. New Jersey: Prentice-Hall.

5. Azhar Susanto, 2013. Accounting Information Systems, Structure-Control-is risk Development. Bandung: Lingga Jaya.

6. Belkaoui, 2002. Behavioral Management Accounting. London: Quorum Books.

7. Bentley & Whitten, 2007. Systems Analysis and Design for The Global Enterprise. 7th edition. New York: McGraw Hill.

8. Bodnar and Hopwood, 2010. Accounting Information System. Prentice Hall, Inc. New Jersey.

9. Flynn & Chatman, 2001. Strong Cultures and innovation: Oxymoron or opportunity? In C.L. Cooper, S. Cartwright, & P.C. Early (eds), International handbook of organizational culture and climate (pp. 263-287). New York: John Wiley & Sons.

10. Heidmann., Et al, 2008. The Role of Management Accounting Systems in Strategic sensemaking, 1 st Edition. Germany: Deutscher Verlag Universitats-.

11. Hirsch, 1994. Advanced Management Accounting, 2 nd. South Western Publishing Co.

12. Hoque, 2003. Strategic Management Accounting: Concepts, Process and Issues, Second Edition. Great Britain: Biddles, UK