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Role of Organizational Culture towards Organizational Innovation: Evidence from Kulim Hi-Tech Park, Malaysia

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Abstract: *Organizations are trying to be competitive through the level of adapting innovation so that they can provide goods and services that meet customers' expectations. One of the aspects that can affect organizational innovation is the dimensions of organization's culture. This study aims at exploring the dimensions of cultures influencing organizational innovation. A quantitative survey was conducted at Kulim Hi-Tech Park, Malaysia. The primary data were collected from 67 respondents who were the managers of companies registered under Kulim Hi-Tech Park. The collected data were analyzed using partial least square structural equation modeling (PLS SEM) with the support of smart PLS software version 2.0M3. The statistical findings reveal that all four cultures are positively and significantly correlated with organizational innovation. Among the four cultures, adhocracy culture was found to be the most significant followed by clan culture, hierarchy culture and market culture in influencing organizational innovation.*

Keywords: *Organizational Innovation, Organization Culture, Clan Culture, Adhocracy Culture, Market Culture, Hierarchy Culture*

1. Introduction

Today, the technology has changed rapidly and innovation has become one of the vital strategies in an organization. The economic growth also has changed due to the innovation. This organizational innovation refers to the introduction of any new product, process, or system within the organization (Sendjaya et al., 2008; Ostojić, 2015). At the beginning, the definition of organizational innovation focuses on identification of structural characteristics and its effect toward the product and technical innovation within the organization (Teece, 1998). Based on study done by Shepherd and Ahmed (2000), innovation is claimed as a new approach that attempts to discover or reframe problem for necessary solution. According to Gumusluoglu and Ilsev, (2009) innovation is the creative ideas that are successfully being implemented in the organization. In a nutshell, innovation is a process of transforming and creating idea into new products, processes and services. Innovation has further been defined as 'the willingness to place strong emphasis on research and development, new products, new services, improved product

lines, and general technological improvement in the industry' (Slevin & Covin, 1990). So types of innovation may include product development, implementing new technologies and management practices. Because of this new environment, most of the organizations are going through transformation period (Rahimi et al., 2011; Naqshbandiet al., 2015) which put them under pressure and each of the organizations need to find out different ways of thinking in order to be innovative and creative (Yesil & Kaya, 2012).

Innovation has become an essential catalyst in determining organizational success as a guiding performance and competitive advantage (Leskovar-Spacapan & Bastic, 2007). Companies also consider innovation as a pivotal thing for growing and surviving in the competitive market (Sylvie, 2013; Craig & Moores, 2006). Hence for the sustainability of business, continuous innovation is a must. It is also proved through previous studies that innovation is needed for the competitiveness, productivity and profit of the organizations (Leskovar-Spacapan & Bastic, 2007). According to Gumusluoglu and Ilsev, (2009) an organization needs to be more creative and innovative as a strategy to survive and grow in the business. According to Blackwell (2006), innovation is the competitive mechanism for enhancing organizations' performance and thus it is considered as an essential tool to adapt to a continuously changing business environment. On the other hand, it is found in previous studies that innovation can positively influence performance (Naranjo-Valencia et al., 2016; Uzkurt et al., 2013); and organizational culture is thought as an important determinant of organizational innovation (Büschgens et al., 2013; Lin et al., 2013). Meanwhile Rahimi et al., (2011) stated that organizations need to pay more attention to the organizational culture in order to achieve innovativeness. Consequently the relationship of organizational culture and innovation has been the subject of much needed research for the last few years in the context of developing nations. However, studies on the importance of organizational culture on innovation are mostly conducted in western countries (Aboramadan et al., 2019) and very little attention is given in developing nations' context. Moreover, the multitude of cultural variables under investigation has led to a fragmented concept of culture for innovation (Elsa, 2014). Previously researchers studied organizational cultures in terms of definitions, scopes, theoretical basis and conceptualizations, characteristics and types (Lavine, 2014; Schein, 1996) leaving a gap in explaining relationship between organizational culture and innovation. Therefore, it is essential to explore which cultures should be implemented in the organizations in order to introduce new products and flourish in the competitive market. From that ground the present study aims to identify the elements of organizational culture in companies implementing innovation for achieving superior performance. Thus the prime objective of this study is to examine the influence of deterrent types of organizational cultures on organizational innovation in Malaysian companies operating in the Kulim Hi-Tech Park, Malaysia.

2. Organizational Culture and Innovation

Organizational culture that supports innovation is also characterized by the level of education and general management, economic and social knowledge, efficient systems of communication in the organization, ambition and the atmosphere of competition, incentive schemes, free exchange of novel thoughts proposals, a lack of arrogance and egoistic attitudes, announcing authors of success and those who assisted in this process (Al Ali et al., 2017). Excellence in leading innovation has everything to do with how that leader creates a culture where innovation and creativity thrives in every corner (Al Ali et al., 2017). Nguyen et al., (2019) found in their study that organizational culture is positively and significantly related to innovation. Ahmad (2012) also supports that organizational culture as shared value and belief influences the behavior which is adopted in problem solving within organization. Shahzad et al., (2012) stated that the basic of organizational cultures is the cognitive system. This system will assist the organization to explain how their employee thinks and makes decision within organization. Organizational culture has tremendous effect on the speed and frequency of innovation (Maher, 2014). For ensuring company development, managers should be enterprising and continuously interested in innovation activity of a diverse nature, from the ground breaking and pioneering innovations to minor modernization that brings considerable effects (Flaszewska, 2013). Organizations wishing to be innovative must develop a culture that encourages employees to come up with new ideas for products development. Loewe and Dominiquini (2006) believe that organizational culture and values are one of the four – in addition to leadership behaviors, management processes, people and skills – key areas for effective implementation of innovation. There are four controlling types of culture which are hierarchy, market, clan and adhocracy. These four types of culture emerge from the Competing Values Framework. This framework is useful for organization in order to organize and interpret an extensive variation of the phenomena within the organization (Cameron & Quinn, 2006). The next section discusses these four types of culture and their relationship with innovation.

2.1 Clan Culture

Clan culture is where the employees feel comfortable with the work environment and can easily share with other employees without hesitation (Gull & Azam, 2012). Zaheer et al., (2006) stated that clan culture is the concentration of an organization towards internal maintenance with flexibility, concern for people, and sensitivity for those it serves. The commitment of employees is achieved from the involvement of the employees itself while they believe that personal satisfaction is more important than financial goals. It is also a culture that values cohesiveness, participation and teamwork where employees are looked after and valued. It is to encourage the involvement and commitment of the employees for the organization. So clan culture is a teamwork and collaboration of employees within organization. Besides, clan culture can be related to the mentoring,

employer commitment and employee engagement that can promote empowerment and loyalty and will lead success and productivity in an organization (Tharp, 2009). In the study done by Dasanayaka et al., (2009) on gift and decorative sector showed that innovations could be attributed more on internally focused compared to externally focus. So clan culture can positively influence organizational innovation. Subsequently the studies done by Ashraf et al., (2013) and Selvaraja and Pihie, (2015) found that there is positive and significant relationship between clan culture and organizational innovation. Thus, it can be hypothesized in this study that;

H1: There is positive relationship between clan culture and organizational innovation.

2.2 Adhocracy Culture

According to Khurosani (2013), the purpose of adhocracy culture is to push creativity, flexibility and adaptability. This is a culture supported by an open system that encourages action. Khurosani (2013), also stated this culture as entrepreneurial culture and development that is combined with a focus on high level of flexibility in the competitive position. According to Gull and Azam (2012), adhocracy culture is defined as self-deployed, energetic and provides a place for the workers and at the same time the management comes forward with intelligent work and develops offerings based on the needs of the custumers. In general, the feature of adhocracy culture contrasts with bureaucracy which is characterized by inflexibility. Other than individual level, adhocracy culture is also characterized by corporate level however they are less strictly defined. Adhocracy culture emphasizes new product and service development, growth, change and it is featured by dynamic, entrepreneurial, innovative and creative workplace (Tseng, 2010). It also emphasizes innovation and risk taking and at the same time commitment to innovation which may lead the organization to the readiness for a change and meeting new challenges (Lavine, 2014). The previous studies evidenced that there is positive relationship between adhocracy culture and organizational innovation (Dasanayaka et al., 2009; Yeşil & Kaya, 2012; Ashraf et al., 2013; and Selvaraja & Pihie, 2012). Therefore, the hypothesis is proposed as below:

H2: There is positive relationship between adhocracy culture and organizational innovation.

2.3 Market Culture

Market culture focuses on transaction with external constituencies (Khan et al., 2009) and it is necessary for stability and control (Dasayanaka, 2009). Market culture is featured by the competitive advantage and market superiority where the leader of the organization leads towards productivity, results and profits and at the same time winning and achieving the target goals and objectives together (Prajogo & McDermott,

2005). Market culture is highly influenced by the technical innovation which indicates competitiveness, market superiority and goal achievement which are the most important in innovation implementation (Mohammed & Bardai, 2012). Market culture is a key cultural dimension which is necessary to enhance innovativeness (Dasanayaka et al., 2009). Previous studies found positive relationship between market culture and organizational innovation (Dasanayaka, 2009; Mohammed & Bardai, 2012; Ashraf et al., 2013; and Selvaraja & Pihie, 2012). Hence, it is hypothesized that;

H3: There is positive relationship between market culture and organizational innovation.

2.4 Hierarchy Culture

Hierarchy is where an organization focuses on internal maintenance with a need for stability and control (Dasayanaka et al., 2009). Formal and structured organizations practice this culture as it emphasizes smooth running, stability, predictability and efficiency. These organizations concentrate on prescribed rules and policies. Since the environment is comparatively stable, functions are generally integrated and synchronized; and uniformity in products and services is maintained. Hierarchical organizations tend to rely on clear lines of decision-making authority, standardized rules and procedures. Control and accountability mechanisms are valued as the keys to success while the management of employees is concerned with secure employment and predictability (Lavine, 2014). Hierarchy culture is characterized by regulations and formal structures and holds the organization together, procedures govern what people do, meanwhile an effective leader is good coordinator and organizer who will smoothly run organizations (Koutroumanis & Alexakis, 2009). Previous studies found a positive relationship between hierarchy culture and organizational innovation (Mohammed & Bardai, 2012 and Dasanayaka, 2009). Thus, it is hypothesized that;

H4: There is positive relationship between hierarchy culture and organizational innovation.

3. Materials and Methods

The present study is designed to examine the influence of different types of cultures on organizational innovation. This study is quantitative in nature and a set of structured questionnaire has been used as the instruments for collecting the data. There are approximately eighty six companies at Kulim Hi-Tech Park, Malaysia. The unit of analysis of this study is the manager of each company. The managers have been chosen as target sample because their perceptions on the impact of organizational culture on organizational innovation are better compared to other level of management. Therefore, the total number of respondents of this study is 86 which is the population size of this study. For organizational culture measurement, the items were adapted from organizational

culture assessment instrument (OCAI) developed by Cameron and Quinn (2006). There were 24 items in the questionnaire survey and the responses were gathered on five-point Likert scale from level 1 (strongly disagree) to 5 (strongly agree). The items were adapted from previous study since they were proved reliable and valid in those studies. However, out of 86 distributed questionnaire, 67 were collected back in usable form. Data gathered from 67 respondents were analyzed by Partial Least Squares Path Modeling (PLS SEM) using Smart-PLS software 2.0M3. The Measurement Model of PLS SEM provides output for Reliability, Convergent Validity and Discriminant Validity. Besides that, the hypotheses were tested based on the findings generated from structural model.

4. Data Analysis Findings

4.1 Measurement Model (Outer Model)

Table: 4.1: Measurement model output

Variable	Items	Loading	Cronbach's Alpha	Composite Reliability	AVE
Adhocracy Culture	AC1	0.786	0.768	0.844	0.525
	AC2	0.781			
	AC3	0.798			
	AC4	0.703			
	AC6	0.517			
Clan Culture	CC3	0.745	0.799	0.815	0.526
	CC4	0.783			
	CC5	0.742			
	CC6	0.619			
Hierarchy Culture	HC2	0.771	0.736	0.829	0.550
	HC3	0.712			
	HC4	0.659			
	HC5	0.816			
Market Culture	MC1	0.689	0.821	0.752	0.504
	MC4	0.650			
	MC6	0.784			
Organizational Innovation	TI1	0.755	0.754	0.833	0.502
	TI2	0.715			
	TI6	0.626			
	TI7	0.778			
	TI9	0.655			

For the reliability of data, the Cronbach's alpha value need to be higher than or equal to 0.80 for a good scale, 0.7 for an acceptable scale and 0.60 for a scale for exploratory purposes (Hair et al., 2012). The present study's all variables have Cronbach's alpha values under acceptable score such as Adhocracy Culture (AC) with 0.768 Clan Culture (CC) (0.799), Hierarchy Culture (HC) (0.736), market culture (0.821) and lastly Organization Innovation (OI) (0.754). All constructs showed acceptable score

suggested by Hair et al., (2012). However, the internal consistency can be confirmed by using the value of composite reliability. Composite reliability is interpreted like a Cronbach's alpha for internal consistency reliability estimate. According to Hair et al., (2012), the acceptable value of composite reliability for PLS-SEM analysis is 0.7 and above and the present study's variables meet that criteria. Meanwhile Fornell and Larcker (1981) suggested that the threshold value for composite reliability is greater than 0.7. The present study's variables have a composite reliability value of more than 0.70, thus the model posed good internal consistency. As shown in Table 4.1, the composite reliability value for all variables are greater than 0.7 where AC (0.844), CC (0.815), HC (0.829), MC (0.752), and OI (0.833). According to Hair et al., (2012), the item loadings which are equal to or more than 0.5 are considered acceptable. Table 4.1 shows that all items' loadings are greater than 0.5. The average variance extracted (AVE) reflects the variance captured by the indicators relative to measurement error. For this study, the average variances extracted (AVE) values ranged between 0.5 and 0.7 indicating a good level of construct validity of the measures used (Barclay et al., 1995). So the 0.5 item loadings and AVE values confirm the convergent validity of data.

Table 4.2: Discriminant Validity Result

	AC	CC	HC	MC	OI
AC	**0.725**				
CC	0.288	**0.725**			
HC	0.497	0.442	**0.742**		
MC	0.436	0.337	0.410	**0.710**	
OI	0.302	0.582	0.489	0.409	**0.708**

The square root of the AVE of each construct was compared with the correlation between that construct and the other constructs for measuring discriminant validity. Table 4.2 demonstrates that the square root of the AVEs exceeds the highest correlation between that construct and the other constructs, providing the support for discriminant validity (Fornell & Larcker, 1981) of the constructs in this study.

Meanwhile, the value of R^2 was 0.493 in this study. This indicated that the dependent variable is influenced by the independent variables by 49.30%. So the four dimensions of organizational culture can explain variations in organization innovation by 49.30%. The other 50.67% remains uninfluenced.

4.2 Results of Hypothesis Testing

After confirming reliability and validity of data in measurement model, the structural model of PLS SEM analysis provides output for testing the hypotheses. Following bootstrapping procedure, this step was done. The significance level for two-tailed t-test is 5% and the path coefficient will be significant if the T-Statistics is larger than 1.96.

Table 4.3: Results of Hypothesis Testing

Hypotheses		Path Coefficient	Standard Error	T-Value	P-Value	Level of Significant	Decision
H1	CC -> OI	0.350	0.133	2.631	0.01	***	Accepted
H2	AC -> OI	0.406	0.164	3.275	0.00	***	Accepted
H3	MC -> OI	0.286	0.140	2.011	0.05	**	Accepted
H4	HC -> OI	0.347	0.145	2.262	0.03	**	Accepted

*p<0.10 **p<0.05 ***p<0.01

Table 4.3 shows that clan culture is positively and significantly correlated with organizational innovation. Here the path coefficient (0.350) is positive and the value is significant at 5% level. Hence hypothesis 1 is supported. Again, it is seen in table 4.3 that adhocracy culture is positively and significantly correlated (beta, 0.406; p, 0.000) with organizational innovation. So hypothesis 2 is supported. Market culture is also found to be positively and significantly correlated with organizational innovation (beta, 0.286; p, 0.05). Therefore, hypothesis 3 is supported. Finally, the statistical findings show that hierarchy culture positively and significantly influences organizational innovation (beta, 0.347; p, 0.03) which supports hypothesis 4.

5. Discussion

The present study investigated the relationships between different types of organizational cultures and organizational innovation. The statistical findings reveal that all four cultures are positively and significantly correlated with organizational innovation. Among the four cultures, adhocracy culture was found to be the most significant followed by clan culture, hierarchy culture and market culture in influencing organizational innovation. The first hypothesis test findings reveal that clan culture is a significant factor for any organization to be innovative. This finding is consistent with that of Mohammed and Baradi, (2012); Ashraf et al., (2013) and Selvaraja and Pihie, (2012) who found that there was strong positive and significant relationship between clan cultures and organizational innovation. Therefore, organizations should develop clan culture so that employees can engage themselves wholeheartedly in the organizational activities. It is to encourage the involvement and commitment of the employees to the organization. Previously researchers found that there was positive relationship between adhocracy culture and organizational innovation (Dasanayaka et al., 2009; Yeşil & Kaya, 2012; Mohammed & Bardai, 2012; Ashraf et al., 2013; and Selvaraja & Pihie, 2012). This study also supports the previous findings as it is found in this study that adhocracy culture positively and significantly influences organizational innovation. This adhocracy culture enables employees to be creative and risk taking individuals. These personality traits might lead the organization to the readiness for a change and meeting new challenges. Hence organizations should push creativity, flexibility and adaptability so that employees come forward with innovative ideas which might help

organizations to provide new offerings to the customers. This study also found that market culture positively and significantly influences organizational innovation. This finding is similar to previous studies' findings (Dasanayaka, 2009; Mohammed & Bardai, 2012; Ashraf et al., 2013; and Selvaraja & Pihie, 2012) that also found market culture an essential element to increase organizational innovation. Market culture is featured by the competitive advantage and market superiority where the leader of the organization leads towards productivity, results and profits and at the same time winning and achieving the target goals and objectives together (Prajogo & McDermott, 2005). Therefore, organizations must emphasize market culture for providing innovative products in the market on a regular basis. Finally, in this study, hierarchy culture was also found to be an important factor for organizational innovation. Previous studies (Mohammed & Bardai, 2012; and Dasanayaka, 2009) also provided the same evidences that hierarchy culture is an important issue for organizational innovation. It might be because of the fact that hierarchy culture focuses on regulations and formal structures that hold the organization together. Hierarchy culture also means well organized by rules and regulations, procedures, methods and working criteria (Gull & Azam, 2012). Hence, hierarchy culture is an important criteria for making organizations innovative.

6. Conclusion

This study examines which cultures are important for organizational innovation in the context of Malaysian High Tech Industry. Though researches on organizational culture are being conducted in Malaysia, there seems to be a paucity of research works investigating influence of cultures on organizational innovation in the context of the high-tech industries in Malaysia. This study identifies that the four cultures namely clan, adhocracy, market and hierarchy might make organizations innovative. Hence this is a new finding which might benefit high-tech industries all over the world by focusing on specific organizational cultures for organizational innovativeness. The study's findings provide new and significant insights into the research literature on cultures and organizational innovation which may enable the high tech industries to face challenges in the near future. At the same time the findings of this study reveal the importance of developing good cultures for organizational innovation. Though the study generates some important findings, it focused on different sectors of industries under Kulim High Tech Park. Hence, future researches can be conducted on specific sector and industry. Besides that this research took samples from the firms that come from only one city with relatively small number. Therefore, it is recommended that further studies may be done taking big sample size or organization spanning across the country.

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