

# Mediating Effect of Organisational Culture between Leadership Values on Innovation: A Partial Least Squares (PLS) Path-Modeling

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## Graphical abstract



## Abstract

This exploratory study examined how leadership values affect innovation through organizational culture in organisations. A model of these relationships was created based on earlier research on value-based leadership and culture and a sample of 390 managers and personnel of Government-link companies in Malaysia. The model was assessed using Partial Least Squares (PLS) based Structural Equation Modeling (SEM). Analyses with the PLS technique confirmed all the hypotheses concerned. The results generally support significant relationships between leadership values, organisational culture and innovation. The study also confirmed the mediating role of organizational culture for the relationship between leadership values and innovation in organisations. The role of organizational culture is important for understanding how leadership values and innovation are related. The results of the study also suggest several aspects that may help organisations create conducive working environment supportive of innovation.

**Keywords:** Leadership Values; organisational culture; innovation; mediating effect; values; partial least squares

## Abstrak

Kajian penerokaan ini memeriksa bagaimana nilai-nilai kepimpinan menjejaskan inovasi melalui budaya organisasi dalam sesebuah organisasi. Sebuah model bagi hubungan ini telah dicipta berdasarkan penyelidikan awal mengenai kepimpinan berasaskan nilai dan budaya dan sampel 390 pengurus-pengurus dan kakitangan syarikat-syarikat berkaitan kerajaan di Malaysia. Model ini telah dinilai menggunakan Kuasa Dua Terkecil Separa (PLS) berdasarkan Pemodelan Persamaan Berstruktur (SEM). Analisis dengan teknik PLS mengesahkan semua hipotesis berkenaan. Keputusan secara umumnya menyokong hubungan penting antara nilai-nilai kepimpinan, budaya organisasi dan inovasi. Kajian ini juga mengesahkan peranan pengantara budaya organisasi untuk hubungan antara nilai-nilai kepimpinan dan inovasi dalam organisasi. Peranan budaya organisasi adalah penting untuk memahami bagaimana hubungkait antara nilai-nilai kepimpinan dan inovasi. Hasil kajian ini juga mencadangkan beberapa aspek yang boleh membantu organisasi dalam mewujudkan persekitaran kerja yang kondusif menyokong inovasi.

**Kata kunci:** Nilai-nilai kepimpinan; budaya organisasi; inovasi; kesan pengantara; nilai-nilai; kuasa dua terkecil separa

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## 1.0 INTRODUCTION

In today's era of globalisation, many organisations are forced to focus on many issues that affect their survival. Organisations are trying to search for strategies and practices that will enable them to survive in an increasingly complex, competitive, and global marketplace. Innovation is widely regarded as vital to

organisational, indeed national economic health (Innovation and Business Skills Australia, 2004). As innovation becomes critical to the survival of these organizations, it is important that managers know how to shape and influence the work environment to make it conducive to creativity and innovation (Jaskyte, 2004). One of the major factors repeatedly suggested to affect innovation is leadership (King, 1990; Osborne, 1998; Schin & McClomb,

1998; Schein, 2004). Leaders can create and manage an organizational culture that promotes innovation, can be product champions or heroic innovators who support innovation throughout the process of its implementation, and can create organizational structure needed to support innovativeness (Peters & Waterman, 1982; Van de Ven & Andrew, 1986). Damanpour and Schneider (2006) asserted that strategic leadership research indicates that top managers influence organizational outcomes by establishing organizational culture, influencing organizational climate, and building the capacity for change and innovation.

In this regard, the purpose of exploratory study examined in this article was to investigate leadership values, organizational culture, and innovation in a sample of government-linked companies in Malaysia. More specifically, the study sought to answer the following research questions:

- (1) What is the relationship between leadership values and organizational innovativeness?
- (2) What is the relationship between leadership and organizational culture?
- (3) What is the relationship between organizational innovativeness and organizational culture?
- (4) Does organizational culture act as a significant mediating factor in the relationship between leadership and innovation?

**2.0 MATERIALS AND METHODS**

**2.1 Methodology**

The focus of this study is on the value-based leadership and culture in government-link companies (GLCs) in Malaysia. A total of six GLCs were identified for the study. This study utilised both qualitative and quantitative methods. The use of both methods can enhance understanding of social phenomena (Creswell, 1998). Qualitative methods were used in the first stage to provide an understanding of the contextual background for core values internalisation in those GLCs. Quantitative methods were used in the second stage primarily for confirmatory analysis, including hypothesis testing. In the first stage of data collection, a briefing was given to six GLCs heads or the corporate section managers on the purpose of this research. In the second stage of data collection, questionnaires were distributed to managers and executives in the six GLCs through the appointed coordinators. The respondents were asked to rate the extent to which the ‘visibility’ of core values being internalized in their respective organisations on a 5-point Likert scale. A total of 450 questionnaires were returned. However, due to the use of listwise treatment of missing values, a final 390 questionnaires were utilized for data analyses. The pilot test revealed that all measurement scales used in the study had Cronbach’s alpha above 0.70 as generally accepted lower limit (Hair et al., 2010) and exceeds 0.60 as suggested by Nunnally and Bernstein (1994).

**2.2 Air Pollution Index (API)**

In this study, path diagrams showing relationships among three constructs: 1) Leadership, 2) Organisational Culture, and 3) Innovation are examined and depicted in Figure 1. A model of these relationships was created based on earlier research by Hamid et al. (2010 & 2011). These variables denote the theoretical constructs of the relationships which are to be tested empirically. Observed or measured variables for these constructs are then developed as discussed. Six observed variables or indicators for Leadership values: 1) Truthfulness, 2)

Trustworthiness, 3) Sincerity, 4) Sense of Direction, 5) Commitment, and 6) Competency are selected. Six indicators for organisational culture are identified. They are perception of 1) Comradeship, 2) Consultation, 3) Caring, 4) Teamwork, 5) Respect, and 6) Quality. 1) Beneficial, 2) Genuineness, 3) Conformance, 4) Value Add, 5) Enterprising, and 6) Competitiveness are six indicators of Innovation. The respective values-based indicators and the descriptions/items for this study are summarised in Tables 1a-c.

**Table 1 (a)** Value-based indicators for leadership values

Constructs	Values	Items
Leadership	Truthfulness	L1: Our leaders take risks for every decision taken without fear or favour in order to assure business/organisational success.
	Trustworthiness	L2: Our leaders will ensure that whatever tasks assigned will be accomplished as planned / scheduled / budgeted by the organisation.
	Sincerity	L3: Actions taken by our leaders are always in the best interest of the whole organisation.
	Sense of Direction	L4: Actions taken by our leaders are in line with organisational goals.
	Commitment	L5: Our leaders consistently provide the guidance, means and encouragement for the people to achieve success.
	Competency	L6: Our leaders are capable of planning, organising, leading and controlling the organisation.

**Table 1 (b)** Value-based indicators for culture values

Constructs	Values	Items
Organisational Culture	Comradeship	C1: Relationships among the employees at all levels in this organisation are based on the spirit of brotherhood.
	Consultation	C2: Views of others are consulted in decision making process.
	Caring	C3: Caring culture exists in this organisation.
	Teamwork	C4: Teamwork is being practiced in this organisation.
	Respect	C5: People’s ideas are respected no matter what position they hold or at which level they sit.
	Quality	C6: Services provided receive positive evaluations by customers or stakeholders

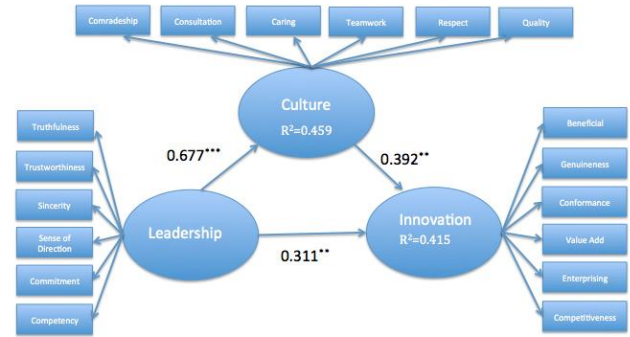
**Table 1** (c) Value-based indicators for innovation values

Constructs	Values	Items
Innovation	Beneficial	I1: Only new ideas that will benefit end-users are considered by the management.
	Genuineness	I2: The new products and services developed by the organisation are always unique and based on original ideas.
	Conformance	I3: New products are required to undergo tests for conformance with specified standards or regulations.
	Value Add	I4: Only innovative ideas that have value-added are taken into account by the management for further development.
	Enterprising	I5: In this organisation people are encouraged to introduce products and services that have potential market.
	Competitiveness	I6: The new product and services introduced by the organisation are always well known in the market.

**3.0 RESULTS AND DISCUSSION**

**3.1 The Measurement Model**

The research model of Figure 1 was analyzed using SmartPLS 2.0, a PLS structural equation modeling tool (Ringle *et al.*, 2005). The measurement model in PLS is assessed in terms of item loadings and reliability coefficients (composite reliability), as well as the convergent and discriminant validity. Individual item loadings greater than 0.7 are considered adequate (Fornell and Larcker, 1981). Interpreted like a Cronbach’s alpha for internal consistency reliability estimate, a composite reliability of 0.7 or greater is considered acceptable (Fornell and Larcker, 1981). The average variance extracted (AVE) measures the variance captured by the indicators relative to measurement error, and it should be greater than .50 to justify using a construct (Barclay *et al.*, 1995). The discriminant validity of the measures (the degree to which items differentiate among constructs or measure distinct concepts) was assessed by examining the correlations between the measures of potentially overlapping constructs. Items should load more strongly on their own constructs in the model, and the average variance shared between each construct and its measures should be greater than the variance shared between the construct and other constructs (Compeau *et al.*, 1999). The structural model in PLS is assessed by examining the path coefficients (standardized betas). *t* statistics are also calculated to assess the significance of these path coefficients. In addition,  $R^2$  is used as an indicator of the overall predictive strength of the model. The PLS path model and the measurement results are summarised in Figure 2.



**Figure 2** Results of PLS path model estimation

**Table 4** PLS output - item loadings

Indicators	Leadership	Organisational Culture	Innovation
L1	<b>0.70</b>	0.47	0.37
L2	<b>0.80</b>	0.51	0.47
L3	<b>0.84</b>	0.59	0.51
L4	<b>0.84</b>	0.51	0.50
L5	<b>0.82</b>	0.59	0.48
L6	<b>0.82</b>	0.58	0.45
C1	0.47	<b>0.77</b>	0.37
C2	0.57	<b>0.80</b>	0.51
C3	0.52	<b>0.83</b>	0.43
C4	0.57	<b>0.81</b>	0.42
C5	0.59	<b>0.81</b>	0.53
C6	0.46	<b>0.69</b>	0.54
I1	0.44	0.40	<b>0.69</b>
I2	0.47	0.45	<b>0.76</b>
I3	0.32	0.37	<b>0.71</b>
I4	0.45	0.46	<b>0.79</b>
I5	0.41	0.42	<b>0.74</b>
I6	0.42	0.52	<b>0.71</b>

**Table 5** Reliability, convergent and discriminant validity coefficients

	CR	AVE	1	2	3
1. Leadership	.916	.647	<b>.804</b>		
2. Org. Culture	.907	.619	.677	<b>.787</b>	
3. Innovation	.875	.540	.576	.601	<b>.735</b>

CR: Composite Reliability; AVE: Average Variance Extracted.

Diagonal Elements are the square root of the variance shared between the constructs and their measurement (AVE). Off diagonal elements are the correlations among constructs. Diagonal elements should be larger than off-diagonal elements in order to obtain the discriminant validity.

The results show that, except for C6 and I1, all other item loadings were above the suggested 0.70 (Table 4). However, items C6 and I1 were not dropped because the internal reliabilities assessed by composite reliability were greater than 0.70 (see Table 5). Table 5 also demonstrates satisfactory convergent and discriminant validity of the measures. Average variance extracted (AVE) for all constructs exceeded 0.50. As for the discriminant validity, Table 5 shows that all constructs were more strongly correlated with their own measures than with any of the other constructs. Thus, the discriminant validity of the constructs is achieved.

### 3.2 The Structural Model

The estimated path coefficients from the PLS analysis are shown in Figure 2. Hypotheses H1, H2 and H3 were all supported. With a weight of 0.576, the Leadership values expresses the largest explanatory share, while the weight of the Organisational culture is slightly lower (0.316). To determine the significance of all the relationships in the model, resampling techniques such as bootstrapping procedure was applied (Henseler *et al.*, 2009). The bootstrapping procedure allows for *t*-tests to be carried out on each of the relationships. Based on the *t*-test statistics Leadership values demonstrated a direct, statistically significant, and positive effect on Organisational Culture (H1  $p < .001$ ). Similarly, as hypothesized, Leadership values have a direct, statistically significant, and positive impact on Innovation (H2  $p < .001$ ). Its impacts was fully mediated by Organisational Culture, which had a significant direct effect on Innovation (H3  $p < .01$ ).

Table 6 Structural path coefficients

Latent Exogenous Variable	Original Value	Mean (Bootstraps)	Standard Error	<i>t</i> -value
Leadership -> Org. Culture	0.495	0.494	0.038	12.899***
Leadership -> Innovation	0.576	0.582	0.035	16.367***
Organisational Culture -> Innovation	0.316	0.319	0.042	7.593**

\*\*\* $p < .001$

The goodness-of-fit  $R^2$  of the latent endogenous variables can be used to evaluate the utility of the proposed model. In the proposed Model, 33.2% of variance in Innovation was explained by the leadership and culture values. In addition, 52.5% of variance in Organisational Culture was explained by Leadership values itself. For a more detailed analysis, a computation of the effect size  $f^2$  approximates the two constructs' predictive power regarding the innovation. If the analysed exogenous latent variable in the structural model is either excluded or included, relative changes in the goodness-of-fit  $R^2$  define the effect size. According to Chin (1998),  $f^2$  values of 0.02, 0.15 and 0.35 specify whether latent exogenous variables have a small, medium or large effect. Based on the preceding results, the Leadership values (0.085) have a small effect at the structural level, while the effect of the Organisational culture (0.151) is medium.

### 4.0 CONCLUSION

In this article, a theoretical model of the relationship between leadership values, organisational culture and innovation in Malaysian GLCs was developed and analysed. The focus of this paper was to examine the mediating effect of the organizational culture in the leadership-innovation relationship. The results of this study seem to suggest that in order for the organizations to become more innovative, leaders would have to internalize leadership values that will help shape the culture of their organizations. The results also emphasise the need for managers and subordinates to understand and internalise the culture of their organization and seek to develop values, skills and practices that are supportive of innovation. By developing cultures that foster innovation, managers can help their organizations become more responsive to the changes in the external environment and become more competitive.

Numerous scholars (Howell and Higgins, 1990; Schin and McCloskey, 1998) asserted that several aspects of leadership practices that would promote innovation in their organisations include: reward for creative ideas, risk taking, forward looking, searching for innovation and potential influence, experimenting with new concepts and procedures, studying emerging social and economic trends, committing to vision-supporting innovation, and pursuing unconventional action plans. As Drucker (1994) pointed out that organizations characterised by deeply embedded leadership practices and organisational values risk success because they can stop questioning the need to change and respond to the external environment.

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