



Corporate culture and organizational performance

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Abstract *While many culture researchers have devoted numerous articles to the nature and definitions of culture, relatively fewer articles have contributed towards culture and performance research. The purpose of this study is to investigate the possible relationships between corporate culture and organizational performance among Singaporean companies. The objectives of this study are twofold: first, it aims to investigate the validity of the culture construct. Can culture construct be operationalized along distinct, repeatable dimensions? Second, it attempts to assess how culture affects organizational performance. The organizational culture profile was used as the primary research instrument. Culture was found to impact a variety of organizational processes and performance. While more research remains to be done in this area, this study has demonstrated the power of culture in influencing organizational performance.*

Introduction

Culture has been characterized by many authors as “something to do with the people and unique quality and style of organization” (Kilman *et al.*, 1985), “the way we do things around here” (Deal and Kennedy, 1982), or the “expressive non-rational qualities of an organization”.

The beginnings of formal writing on the concept of organizational culture started with Pettigrew (1979). He introduced the anthropological concept of culture and showed how related concepts like “symbolism”, “myth” and “rituals” can be used in organizational analysis. Dandridge *et al.* (1980) showed how the study of these myths and symbols aid in revealing the “deep structure” of an organization. More recent researchers include Denison and Mishra (1995), Schein (1985a, b), Siehl and Martin (1988, 1990) and Wallach (1983), who have introduced various definitions of the culture concept.

This plethora of research definitions is due to the different research framework adopted by the various authors. Smircich (1983) identified four scientific lenses through which the body of culture research can be viewed. This includes the view of culture first as an external variable, led by proponents like Ouchi (1981) and Pascale and Anthony (1981). Culture can also be viewed as an internal variable of an organization, which is the most common definition used by researchers like Collins and Porras (1994) and Peters and Waterman (1982).

From the anthropological school, culture is conceptualized either as a system of shared cognitions (Rossi and O’Higgins, 1980) or as a system of shared symbols and meanings.

Until recently, culture has been examined with performance and effectiveness. According to Reichers and Schneider (1990), while culture researchers have devoted numerous articles to the nature and definitions of culture, relatively fewer articles have been contributed towards culture and performance research. One reason for this was the difficulty in operationalizing the culture construct.



Denison (1996) argued that many researchers were limited by the artificial paradigm separation between climate and culture research. For instance, he described that climate research was associated with surveys and statistical analysis while culture research was usually done through qualitative field studies. He argued persuasively that climate and culture research studies are frequent investigations of different manifestations of the same construct.

More recent research by Chatman and Jehn (1994), Denison and Mishra (1995) and Kotter and Heskett (1992), have, therefore, contributed to the field of culture-performance studies by explicitly acknowledging that culture is being treated as variable for a specific research purpose. For instance, Denison and Mishra (1995), utilizing a more rigorous methodology, discovered that cultural strength was significantly associated with short-term financial performance while Kotter and Heskett (1992) refined the culture-performance framework.

Kotter and Heskett (1992) found that firms with “adaptive values” are strongly associated with superior performance over a long period of time as compared to just short-term performance. This finding holds out the value of “adaptiveness” in determining organizational performance. This hypothesis was given support by both Collins and Porras (1994) and De Geus (1997) in their work in long lived, financially successful companies. Denison and Mishra (1995) contrasted between internal integration and external adaptation, and between change and stability. Saffold’s (1988) discussion on strong culture, having a strong sense of mission (long-term vision) and being adaptable (capacity for internal change), resembles Kotter and Heskett’s (1992) discussion on adaptable culture. These results suggest that culture can affect organizational performance if it is “strong” (wide consensus, deeply internalized and socialised) and appropriate to its environment (relevant to its industry and business conditions).

Thus, this study aims to investigate the possible relationships between organizational culture and performance among Singaporean companies. The objectives are twofold: first, it attempts to investigate whether the culture construct be operationalized along distinct, repeatable dimensions; second, it attempts to assess how culture affects organizational performance. In this study, culture is treated as an internal variable, and is defined as the shared values and norms of the organization’s members. This is appropriate, as the study is primarily concerned with the cause-effect relationship between culture and performance.

Literature review

Much of the early culture-performance research has focused on a trait approach – a search for some traits or values, which are supposed to result in superior performance for a company. This is what Siehl and Martin (1990) referred to as the research on “direct culture-performance link”.

An organization is postulated to have a “strong culture”, which is usually defined to be widely shared among employees. Well developed cultural artifacts like “rituals” and “organizational stories” are anecdotes given to illustrate particular cultural traits. The strength with which the cultural values are held among employees is then taken to be a predictor of future organizational performance, usually financial.

An early example of this sort of study is found in *In Search of Excellence* by Peters and Waterman (1982). There, the authors described the cultures of 62 financially

successful firms, making claims of a link between a particular type of “strong culture” and superior performance. Another example would be *Corporate Cultures* by Deal and Kennedy (1982). The authors, like Kilman *et al.* (1985), advanced the view that strong culture can have a major impact on the success of the business due to its pervasive influence throughout any organization.

A later study by Denison (1984) sought further evidence, using more sophisticated sampling procedures for both organizations and subjects within the organizations. Denison studied a convenient sample of 34 firms representing 25 different industries. He found that two indices, “organization of work” and “decision making”, were found to be significantly correlated with financial performance. In addition, he found that the strength of the culture was predictive of short-term performance, when performance was defined with broad indicators like return on assets, return on investment and return on sales, etc.

Gordon and DiTomaso (1992) in a follow-up study found the supporting evidence that a strong culture was predictive of short-term company performance. In an attempt to replicate Denison’s (1984) study, they also defined cultural strength using the inverse of standard deviations across the scales in their instrument. They then correlated their management surveys of 11 US insurance companies with their asset and premium growth rates for the following five years. “They found that a strong culture ‘regardless of content’, in which a substantive value was placed on the value of ‘adaptability’, was associated with stronger performance, at least in the preceding three years.” More importantly, they found that a cultural value of “adaptability” is also predictive of short-term performance. They therefore postulated that while both a strong culture, and an appropriate culture from the standpoint of content, will produce positive results, a combination of both is most powerful. This finding was important as it introduces the concept of fit into culture-performance studies.

The fit hypotheses were given strong support by Kotter and Heskett (1992) in a study of 207 firms from 22 different industries. As above, the initial evidence for the strong culture approach was relatively weak. There was a relationship between the strength of the corporate culture and organizational performance at least in the short term, but it was not a strong one. There were companies with strong culture and poor performance as well as companies with weak culture and excellent performance. The researchers then selected a smaller subgroup of 22 companies from the initial sample for a more in-depth investigation. The companies chosen all had cultures of relatively equal strength, but 12 of the firms significantly outperformed a matched group (same industry) of ten firms. The results revealed that the 12 companies with a more “appropriate” culture for their business and environment performed better. This result was consistent with the results obtained by Chatman and Jehn (1994) and Gordon (1985), where they found that firms in different industries developed different cultural patterns to suit their business demands.

With the above findings in the literature, this study aims to examine the possible relationships between corporate culture and organizational performance among Singaporean companies, specifically in three different industries – high-tech manufacturing, hospitals and insurance. Different industries were selected to investigate whether different industries developed different cultural patterns. Specifically, three research questions were asked in the current study:

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- (1) Can culture construct be operationalized along distinct, repeatable dimensions? Corporate culture
(2) Does industry membership affect the profile of cultural values?
(3) Does cultural strength affect organizational performance?

Method

Measures

Organizational culture profile. The organizational culture profile (OCP) (Chatman and Jehn, 1994) was used as the primary research instrument. This instrument is based on the Q-sort profile comparison process. In a Q-sort, respondents are presented with a large number of items and asked to sort them into a specific number of categories based on some criterion. In this study, respondents were asked to sort the values according to the extent to which the items were characteristic of the organization. For example, from most characteristic of my firm's culture to least characteristic. There were nine categories, and the number of cards allowable in each category was 2, 4, 6, 9, 12, 9, 6, 4, 2.

The OCP contains 54 "value statements" that can generically capture organizational values. These statements were developed by O'Reilly *et al.* (1991) on the basis of extensive review of academic and practitioner-oriented writings on organizational values and culture. From an initial set of 110 items, statements that were redundant and irrelevant were omitted. After several iterations, a final set of 54 values was retained.

The method for developing the OCP turns out to be very important. As R and Q factor analysis is subsequently carried out on the Q-sorts of respondents to derive meaningful cultural profiles, the value statements need to capture the universe of possible descriptors of organizations. Otherwise, respondents are limited in the range of possible typologies that they can choose based on the 54 values. As the OCP is currently being used in an Asian context, it is possible that certain Asian characteristics or perceptions of organization culture may not be captured fully. In this study, respondents were assured that the items sorted were purely descriptive of their firm's culture, with no value judgements attached to the way Q-sorts were arranged.

There are two distinct advantages of using the OCP instrument with its semi-idiographic approach to assess the organizational culture as compared to other systems. First, since each item is implicitly compared to every other item, the outcome of a Q-sort is a realistic profile with items arranged in an order that reflects the relative importance of each item to each other with respect to an organization. This is realistic as some values are expected to be more important to the organization as compared to others. Although in Q-methodology, it is possible to sort items without a forced distribution (any number of items in a category), the present method is probably superior because it forces respondents to rank order important values in their organization. Without such imposed discipline, respondents would have found it easy to have a great mass of values at one end. Thus, it would not have allowed this study to investigate the values that were truly important and distinctive to the organization. Second, a semi-idiographic approach (ability to compare the relative strength of attributes within an individual) as compared to a nomothetic approach (all individuals rated in terms of an attribute) overcomes some of the problems involved in quantitative assessments of culture. Specifically, it avoids imposing researcher generated typologies on respondents.

In theory, there can be as many cultural typologies as there are respondents, since each respondent organizes the 54 items according to one's perception of organizational culture.

Performance indicators. This study adopted a number of procedures for assessing the organizational performance. First, as units of comparison in this research were organizations, performance indicators reflected the aggregate level of performance, and not at the subunit level. As culture was assumed to remain stable for a relatively long period of time, organizational data over the preceding five-year period were deemed to cover a suitable time frame. To retain relevance, this study assessed effectiveness between companies in the same industry only. The study used criteria that are most critical to that industry. For example, financial indicators like sales turnover, return on assets and net profitability were used for manufacturing firms. These data, covering a five-year period, were sourced from their annual reports and internal finance departments. Insurance companies were compared on rate of growth of business in force for life policies and annual premiums, net returns on investments and persistency rates. These data, covering a five-year period, were sourced both from their annual reports (where available) as well as the MAS Insurance Commissioner's Report. Hospitals presented a special challenge, as the hospitals in this study (with only one exception) were not commercial enterprises. Thus, comparing financial ratios would not make any sense. Instead, over a seven-year period, they were compared on internal improvement in bed occupancy rates, and reduction in the average length of stay of patients in class A, B1 and B2 wards. They were also compared on staff turnover rates.

Sample

A stratified random design was attempted through the selection of three industries: high-tech manufacturing, hospitals and insurance. This was done to control the industry membership, a variable that was said to affect the cultural profiles.

Letters requesting participation in the culture research project were sent to 72 companies in the manufacturing, hospitals and insurance industries.

Based on informal discussions with industry and academic experts, organizations within industries were selected based on market share in the case of hospitals (top three in terms of hospital beds) and insurance (top three in market share of life insurance), and was random in the case of manufacturing firms. A total of ten firms, three manufacturing, four hospitals, and three insurance firms participated in this study giving a response rate of 13.8 percent.

Each company in the sample selected about seven participants ($N = 70$). No sampling frame for individual participants was used as the managerial depth, by function, in a few organizations was too low to ensure proper sampling. However, each company was requested to provide participants from a broad range of functions to ensure for proper representation of cultural types.

Participants in each organization were in the top two to three levels of management and had at least two years of working experience with that company. The average number of years of working experience with the sample companies is 7.5 years. The stratification according to the management levels and years of experience ensured that data would be comparable across organizations.

The average working experience with the company for hospital (9.8 years) and insurance (10.8 years) industries is higher than that of the manufacturing (3.4 years)

industry. The fewer years of working experience with that company in manufacturing industry may give less culture impact to the employees or managers. The average age of respondents for hospital and insurance industries is around 40, which is much older than that of manufacturing industry, which is less than 35. The average management level in company for the three industries is about two to three levels.

This stratification according to management levels and years of working experience with participating companies ensured that data would be comparable across organizations as participants form a distinct senior management subgroup.

Company performance data were obtained from annual reports where possible. For the insurance industry, the Insurance Commissioner's Report was used in addition to company data. As some organizations in this sample were not under statutory requirements to report company results, their data were obtained under the condition that no financial numbers would be reported in this research. Thus, organizational performance data were reduced to rank comparisons.

Findings

A number of tests by O'Reilly and colleagues were performed to assess the validity of OCP. First, test-retest reliability over a 12-month period was quite high (median $r = 0.74$, range = 0.65-0.87). Second, to avoid social desirability bias, the items in OCP were stated in neutral terms. Comparisons to an empirically derived profile of social desirability showed that respondents did not sort the items in ways that make their forms look good (Caldwell and O'Reilly, 1990). Third, the convergent validity of the instrument was established.

Factor analysis on OCP

The OCP responses were factored, analyzed using principal components analysis and an orthogonal varimax rotation. Five interpretable factors were finally chosen depending on the scree test, even though there were 18 allowable factors extracted with eigenvalues greater than one. These five factors, labelled as innovation, supportive, team, humanistic and task orientations, account for 41.5 percent of observed variance. Five factors were chosen even though the total number of allowable factors (with eigenvalues greater than one) was 18. This is because the slope changes after the fifth factor. In addition, the resultant factor loadings were deemed to be more interpretable. These five factors and their defining values are similar to those, although some were labelled differently, obtained by Chatman and Jehn (1994) and O'Reilly *et al.* (1991) (Table I).

On examining the factor structure, it was observed that all the factors contained bipolar items. These items had negative loadings. But, since these items were conceptually opposite (worded oppositely) in relation to the other items (e.g. being careful is the reverse of risk taking), this implied that the factor was in fact not bipolar. As the purpose is to have a parsimonious model, these items were not included during the later construction of culture profiles.

Before culture profiles were constructed, Cronbach's reliability test was performed on the items making up the scales (significant loads greater than 0.4). Reliabilities of these factors ranged from 0.55 to 0.7 and it implied that the items making up the scale were relatively consistent. It is important to note that these results were consistent with Chatman and Jehn's (1994) study.

Table I.
Factor analysis

	Innovation orientation Factor 1	Supportive orientation Factor 2	Team orientation Factor 3	Humanistic orientation Factor 4	Task orientation Factor 5
Being careful	0.730	-0.126	-9.726E-02	-3.556E-02	7.497E-02
Innovative	-0.629	-8.280E-02	-0.266	-0.150	5.101E-02
Risk taking	-0.568	-8.948E-02	-0.218	4.468E-02	9.777E-02
Being competitive	-0.558	-0.168	-0.123	-0.164	-0.253
Secure employment	0.556	0.420	-0.308	-0.232	-6.985E-03
Opportunities	-0.549	-0.363	-0.207	-0.343	-8.245E-02
Rule oriented	0.530	-0.267	-0.479	-0.169	0.222
Fitting in	0.519	-0.167	-3.651E-02	-5.540E-02	5.300E-02
Predictability	0.518	5.648E-02	-0.191	0.155	2.653E-02
Willing to experiment	-0.506	4.239E-02	-0.128	-4.089E-02	0.339
Stability	0.500	7.079E-02	-0.294	-8.363E-02	-0.382
Socially responsible	0.463	9.754E-02	6.985E-02	-0.367	7.828E-02
Decisiveness	-0.429	-5.918E-02	-4.431E-02	-2.691E-02	1.590E-02
Autonomy	-0.403	0.205	0.254	0.243	-2.458E-02
Taking initiative	-0.385	-0.352	0.159	5.804E-02	-0.148
Highly organized	0.368	-0.244	0.184	-0.244	-0.214
Respect for individual	6.555E-02	0.624	2.075E-02	9.780E-02	0.164
Attention to detail	0.374	-0.580	0.304	-2.501E-02	0.113
Action orientation	-0.165	-0.561	-2.190E-02	6.335E-03	-0.170
High pay for performance	-0.292	0.537	-0.266	-0.353	-7.081E-02
Being analytical	-1.356E-02	-0.516	-0.267	-0.214	0.161
Being people oriented	0.133	0.516	0.413	5.121E-02	0.259
Fairness	8.962E-02	0.491	3.130E-02	9.124E-02	0.125
Developing friends	0.109	0.451	-9.711E-03	0.268	-5.668E-02
Being supportive	-4.709E-03	0.435	0.307	8.482E-02	-4.257E-02
Praise for performance	-0.121	0.326	0.272	-0.203	0.112
Being different	-6.255E-02	0.299	-0.208	-8.077E-02	-0.109
Being demanding	2.754E-02	-0.245	-0.707	-7.833E-02	-0.256
Working in collaboration	0.220	-2.966E-02	0.660	3.960E-03	-0.103
Working long hours	0.244	2.243E-02	-0.608	0.191	3.539E-02

(continued)

	Innovation orientation		Supportive orientation		Team orientation		Humanistic orientation		Task orientation	
	Factor 1	Factor 2	Factor 2	Factor 2	Factor 3	Factor 3	Factor 4	Factor 4	Factor 5	Factor 5
Emphasis on quality	0.125	-9.187E-02			0.586		-0.435		-1.022E-02	
Being aggressive	-0.432	-0.222			-0.576		4.708E-02		-0.172	
Sharing information freely	5.921E-02	-3.433E-02			0.549		0.323		-2.513E-02	
Team oriented	-3.895E-02	-6.308E-02			0.509		-3.582E-03		-7.610E-02	
Being precise	0.207	-0.383			-0.397		-2.280E-02		0.288	
Not constrained by rules	-0.257	7.129E-02			0.101		0.694		9.865E-02	
Clear guiding philosophy	-9.273E-02	-6.657E-02			0.210		-0.603		-5.399E-02	
Low level of conflict	0.299	3.629E-02			0.108		0.549		4.975E-02	
Easy going	0.177	0.346			-0.104		0.492		0.164	
Professional growth	9.392E-03	0.425			9.223E-02		-0.487		8.554E-02	
Informality	8.977E-02	0.253			0.137		0.478		0.270	
Emphasize single culture	5.087E-02	-0.402			0.145		-0.439		0.117	
Flexibility	-0.258	0.389			0.237		0.429		5.689E-02	
Job enthusiasm	-0.151	-4.442E-02			9.810E-02		0.425		5.927E-02	
Being calm	0.254	-3.130E-02			-0.162		0.423		0.283	
Individual responsibility	-0.320	-0.325			0.258		0.340		1.803E-02	
Adaptability	-0.253	3.285E-02			6.450E-02		0.263		6.971E-02	
Achievement orientation	-0.141	-0.237			0.104		-6.734E-02		-0.756	
Results oriented	-8.767E-02	-0.174			4.682E-02		-0.226		-0.733	
Tolerance	-6.461E-03	0.291			8.876E-02		0.203		0.544	
Good reputation	9.834E-02	0.286			0.149		-0.337		-0.464	
Expect high performance	4.128E-02	-0.374			-6.571E-02		0.123		-0.443	
Being reflective	6.305E-03	-8.841E-02			0.120		-8.049E-02		0.422	
Confront conflict directly	-0.104	-0.133			-0.123		0.117		0.359	

Notes: Extraction method: principal component analysis. Rotation method: varimax with Kaiser normalization. ^aRotation converged in nine iterations; ^bitalic statistics indicate loadings greater than 0.4

Table I.

ANOVA by industry

Table II shows the cultural value descriptives by industry.

In cultural values ANOVA (Table III), four culture dimensions, innovation, team orientation, humanistic orientation and task orientation were found to be significantly different across industries. It is interesting to note that the support dimension is not affected by industry membership. The support dimension is defined by values like respect for the individual, being supportive and people oriented.

Significant differences in values can be taken to represent the distinguishing cultural values of that industry. For example, insurance and manufacturing firms were found to score significantly higher on innovation dimensions as compared to hospitals. However, hospitals score significantly higher on teamwork dimension as compared to insurance and manufacturing. Manufacturing was found to score significantly higher on humanistic dimension as compared to insurance and hospitals. Insurance firms scored higher on task orientation as compared to hospitals and manufacturing firms (Figure 1).

Comparing across industries, there were a total of 15 possible statistically significant differences (three industries × five culture dimensions) across the five cultural dimensions. From ANOVA results by industry on cultural values, eight significant differences between the three industries were obtained. Industry membership therefore, accounted for 53.3 percent (8/15) of the variance.

Controlling for industry at the firm level, there were a total of 15 possible statistically significant differences across culture dimensions for manufacturing firms

Culture dimension		<i>n</i>	Mean	SD	Standard error	95 percent confidence interval for mean		
						Lower bound	Upper bound	
Innovation	Industry	1.00	20	5.1473	0.8992	0.2011	4.7264	5.5681
		2.00	29	4.3773	0.9499	0.1764	4.0160	4.7386
		3.00	21	5.3553	1.3568	0.2961	4.7377	5.9729
		Total	70	4.8907	1.1480	0.1372	4.6169	5.1644
Support	Industry	1.00	20	4.7640	1.1552	0.2583	4.2233	5.3046
		2.00	29	5.0308	0.9068	0.1684	4.6859	5.3758
		3.00	21	4.6971	0.6092	0.1329	4.4198	4.9745
		Total	70	4.8545	0.9120	0.1090	4.6370	5.0719
Team	Industry	1.00	20	5.3424	0.9893	0.2212	4.8794	5.8054
		2.00	29	6.2740	1.2832	0.2383	5.7859	6.7621
		3.00	21	5.1587	0.9109	0.1988	4.7441	5.5734
		Total	70	5.6732	1.2009	0.1435	5.3869	5.9596
Humanistic	Industry	1.00	20	5.1760	1.1163	0.2496	4.6536	5.6985
		2.00	29	4.4569	1.1489	0.2133	4.0199	4.8939
		3.00	21	3.9056	0.5898	0.1287	3.6371	4.1741
		Total	70	4.4970	1.1047	0.1320	4.2336	4.7604
Task	Industry	1.00	20	6.0932	1.2703	0.2841	5.4987	6.6877
		2.00	29	6.1901	1.1679	0.2169	5.7459	6.6343
		3.00	21	7.5257	0.7237	0.1579	7.1962	7.8551
		Total	70	6.5631	1.2466	0.1490	6.2658	6.8603

Table II.
Cultural value
descriptives by industry

Note: Industry 1 = manufacturing, Industry 2 = hospitals, and Industry 3 = insurance

Dimension	Sum of squares	Df	Mean square	<i>F</i>	Sig.
<i>Innovation</i>					
Between groups	13.492	2	6.746	5.836	0.005
Within groups	77.445	67	1.156		
Total	90.937	69			
<i>Support</i>					
Between groups	1.585	2	0.793	0.952	0.391
Within groups	55.802	67	0.833		
Total	57.387	69			
<i>Team</i>					
Between groups	18.215	2	9.108	7.506	0.001
Within groups	81.297	67	1.213		
Total	99.512	69			
<i>Humanistic</i>					
Between groups	16.614	2	8.307	8.234	0.001
Within groups	67.591	67	1.009		
Total	84.204	69			
<i>Task</i>					
Between groups	27.908	2	13.954	11.786	0.000
Within groups	79.326	67	1.184		
Total	107.234	69			

Table III.
Cultural values ANOVA
by industry

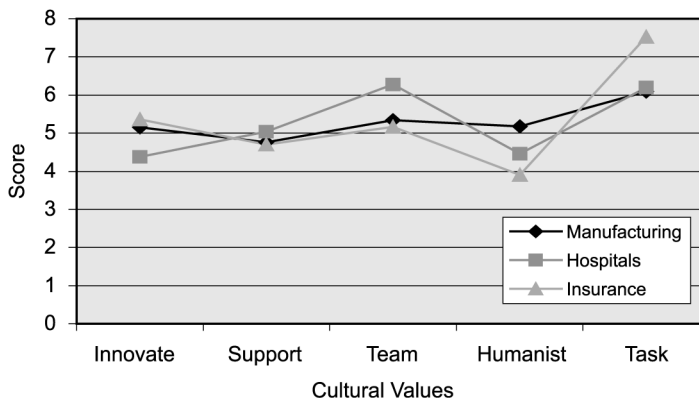


Figure 1.
Cultural value – profile by
industry

(three firms × five culture dimensions), 20 for hospitals (four firms × five dimensions) and 15 for insurance (three firms × five dimensions).

From the results of ANOVA analysis, manufacturing firms had only two significant differences across their culture dimensions, which account for 13.3 percent of differences. Insurance firms had only one significant difference across their culture dimensions, which amounted to 6.6 percent of differences. Hospitals had six differences, which amounted to 30 percent.

These results gave support to the hypothesis that even though organizations do possess distinct cultural profiles, cultural variation is greater across industries than within them.

Q-factor analysis

Cultural strength indices were created for cultural values. Q-methodology was used to derive model cultural profiles. Organizational culture strength was then assessed based on the grouping of company respondents among the four profiles.

Q-factor analysis was performed on the respondents in the data set using a principal components analysis and a orthogonal varimax rotation (Table IV). From the scree test, four interpretable factors with eigenvalues greater than one and defined by at least three respondents emerged. These four factors account for 44.5 percent of observed variance in the data.

A Cronbach reliability test was performed on the respondents making up the four factors. Reliabilities of these factors range from 0.80 to 0.91. While the richness of the data would have allowed this study to explore further the relationships between the respondents making up each model array, for this study it was only used to assess the cultural strength of each organization.

The factor loadings of each respondent that loaded significantly (> 0.4) on the four factor structures were transformed into weights using the formula $w = f / (1 - f^e)$ (McKeown and Thomas, 1988). These weights showed the relative contribution of each respondent towards the cultural model. Each cultural model was then calculated by merging all the respondent's scores together, after adjusting for their relative weights.

The resultant four cultural models are shown in Table V. The cultural strength of each organization was then assessed by computing how many respondents from that particular organization belong to the same cultural model. Thus, as shown in Table VI, insurance 2 is considered to possess the highest cultural strength among companies in this sample, as eight of the participants described their perceptions of company values similarly (by belonging to the cultural model 1). In contrast, manufacturing 3 has the lowest cultural strength as only two of their participants described their perceptions similarly (by belonging to the cultural model 3).

Correlation analysis

The constructed cultural strength indices were correlated with selected organizational performance indicators as shown in Table VII.

Owing to the small sample size in each industry, Spearman's rank correlation coefficient was used. Thus, firms' rankings on cultural, work practice strength as well as their relative performance on selected indicators were used in the analysis.

Owing to the small sample sizes involved, *p*-value results indicating extremely high positive or negative correlation should be reinterpreted as offering tentative evidence for some form of association instead.

The results show that in insurance industry, both cultural strength and innovation were significantly correlated with growth in business in force, annual policies and sum insured. However, they were found to have negative correlation with company's net return on investment. Work practice strength was not correlated with any of the selected performance indicators. In the manufacturing industry, both management practice strength and supportiveness were found to be significantly correlated with growth in net profits. Value strength was significantly correlated with return on assets. In hospitals, practice strength, team orientation and task orientation were significantly correlated with staff turnover rates. However, supportiveness was negatively correlated with staff turnover rates. Cultural variables were not a good explanatory

Respondents	Cultural model 1	Cultural model 2	Cultural model 3	Cultural model 4
VAR058	0.802	-0.100	0.128	-1.074E-02
VAR064	0.782	3.329E-02	0.142	-0.152
VAR061	0.778	0.256	1.453E-02	-0.139
VAR062	0.723	-9.258E-02	0.191	-0.326
VAR065	0.688	-0.307	0.248	0.189
VAR053	0.639	0.328	0.329	0.179
VAR059	0.628	-0.198	0.245	0.366
VAR056	0.620	0.126	-6.990E-02	4.113E-02
VAR060	0.607	0.230	0.165	0.307
VAR048	-0.570	0.412	0.392	-5.044E-02
VAR057	0.564	5.551E-02	0.270	0.310
VAR046	-0.547	6.653E-02	0.480	5.936E-02
VAR010	0.544	0.228	-5.540E-03	-9.369E-02
VAR013	0.528	-1.696E-02	-0.406	7.241E-03
VAR021	0.521	0.243	8.741E-02	0.497
VAR022	0.520	0.234	0.328	0.307
VAR041	0.484	0.170	0.212	0.378
VAR011	0.441	0.155	-0.191	0.272
VAR004	0.433	0.113	0.298	0.150
VAR018	0.344	0.273	9.027E-02	0.129
VAR014	0.322	-5.723E-02	-0.113	-9.067E-02
VAR039	-0.154	0.743	-0.194	3.669E-02
VAR037	-0.121	0.738	1.414E-02	-3.550E-02
VAR055	0.112	0.720	0.223	0.258
VAR054	0.179	0.695	0.233	-6.096E-02
VAR042	0.117	0.689	4.405E-02	8.895E-02
VAR051	1.007E-02	0.686	0.110	0.181
VAR038	-0.112	0.604	-2.286E-02	-0.141
VAR035	-6.749E-02	0.582	-0.137	0.233
VAR069	0.262	0.579	9.319E-02	0.129
VAR040	0.264	0.557	0.165	0.128
VAR070	0.322	0.527	0.209	0.177
VAR050	0.377	0.515	6.097E-02	-0.282
VAR068	0.423	0.487	-0.258	0.188
VAR067	8.126E-02	0.483	1.920E-02	0.179
VAR063	0.308	0.451	-0.199	0.244
VAR036	3.209E-02	0.424	4.025E-02	-6.606E-02
VAR009	-8.038E-02	0.403	3.567E-02	-0.295
VAR019	0.217	-0.306	5.053E-02	-0.191
VAR029	8.908E-02	8.310E-03	0.711	0.133
VAR002	2.032E-02	-0.117	0.699	-8.068E-02
VAR049	-0.230	-6.468E-02	0.696	0.190
VAR003	0.184	-2.645E-02	0.606	-0.246
VAR034	-6.629E-02	-0.122	0.603	5.233E-02
VAR007	0.252	-2.509E-02	0.596	0.103
VAR044	-0.140	0.328	0.588	0.119
VAR001	0.229	1.011E-02	0.570	7.653E-02
VAR027	-7.733E-02	9.058E-02	0.530	0.282
VAR052	0.231	0.481	0.511	-0.155

*(continued)*Table IV.
Q-factor analysis

Respondents	Cultural model 1	Cultural model 2	Cultural model 3	Cultural model 4
VAR017	0.235	0.225	<i>0.505</i>	0.274
VAR028	-0.139	8.659E-02	<i>0.464</i>	0.208
VAR015	0.117	-0.261	<i>0.456</i>	-0.185
VAR008	0.380	7.859E-02	<i>0.450</i>	2.795E-03
VAR005	0.241	2.424E-03	<i>0.437</i>	0.379
VAR032	1.529E-02	0.153	<i>0.422</i>	0.353
VAR033	0.234	0.189	<i>0.411</i>	3.379E-02
VAR031	0.254	0.258	<i>0.411</i>	0.288
VAR066	0.129	0.322	0.384	0.280
VAR006	-0.349	4.956E-02	0.375	-0.183
VAR043	-0.145	0.231	0.362	-3.664E-02
VAR016	0.285	0.113	0.348	-0.330
VAR030	0.221	0.156	0.115	<i>0.731</i>
VAR025	0.138	0.168	0.222	<i>0.680</i>
VAR023	0.188	-5.407E-02	0.370	<i>0.587</i>
VAR024	4.353E-02	0.436	0.223	<i>0.536</i>
VAR026	0.217	-5.820E-02	0.302	<i>0.535</i>
VAR012	0.165	0.426	2.024E-02	-0.478
VAR020	-1.234E-02	-0.375	0.292	-0.464
VAR045	0.249	-2.483E-02	-8.690E-02	-0.449
VAR047	0.108	-9.613E-02	0.267	-0.435

Notes: Extraction method: principal component analysis; Rotation method: varimax with Kaiser normalization. ^aRotation converged in 13 iterations; ^bItalic statistics indicate loadings greater than 0.4

Table IV.

variable for improvements in bed occupancy rates and reductions in the average length of stay.

Discussions

Operationalization of culture construct

The results of the factor analysis and reliability tests gave strong support that a distinct set of cultural dimensions that was applicable across a heterogeneous sample of organizations existed. Thus, the culture construct can be operationalized along distinct, repeatable dimensions. This finding contributes to the theory building in operationalization of culture construct and validates OCP as a culture measure instrument.

From the observed factor structures, it appeared that the degree of innovation, team orientation, task orientation, degree of supportiveness and degree of humanism were dominant themes in organizational cultures.

However, as only five factors were chosen despite the presence of other factors with eigenvalues greater than one, it was possible that other culture typologies peculiar to an Asian context (for instance, “high power distance” and “masculine” values) were left out. For example, Hofstede *et al.* (1990) discovered that while organizations explained a significant share of variance in participant answers, the ANOVAs across countries explained a larger share of the variance. There is, however, no way to either confirm or disconfirm this hypothesis as all respondents in this study were Singaporeans.

	Top six distinguishing values	Bottom six distinguishing values
Culture profile 1	Achievement orientation Results oriented Being competitive High performance expectations Innovative Quick to take advantage of opportunities	Predictability Easy going Being careful Being calm Highly organized Rule oriented
Culture profile 2	Results oriented Socially responsible Good reputation Secure employment High performance expectations Rule oriented	Risk taking Not constrained by rules Confront conflict directly Flexibility Autonomy High pay for performance
Culture profile 3	Flexibility Being people oriented Emphasis on quality Being results oriented Being team oriented Achievement oriented	Being rule oriented Risk taking Being highly organized Being results oriented Quick to take advantage of opportunities Paying attention to detail
Culture profile 4	Emphasis on quality Emphasize a single culture throughout Being team oriented Have clear guiding philosophy Working in collaboration with others Paying attention to detail	Risk taking Not constrained by rules Confront conflict directly Flexibility Autonomy High pay for performance

Table V.
Cultural profile models 1,
2, 3, and 4

	Cultural models				Highest score	Total respondent	Ratio
	1	2	3	4			
Manufacturing 1	1	–	6	–	6	8	0.75
Manufacturing 2	3	–	2	–	3	6	0.50
Manufacturing 3	–	–	2	–	2	6	0.33
Hospital 1	2	–	1	4	4	7	0.57
Hospital 2	–	–	6	1	6	7	0.86
Hospital 3	1	7	–	–	7	8	0.88
Hospital 4	–	1	3	–	3	7	0.43
Insurance 1	2	4	1	–	4	7	0.57
Insurance 2	8	1	–	–	8	9	0.89
Insurance 3	–	4	–	–	4	5	0.80
Total	17	17	21	5			

Note: Highest score is equal to the number of respondents in highest culture profile type. Sum of the respondents across profile types may not be equal to total respondents due to insignificant loadings. Ratio is the proportion of total respondents that score on the highest profile

Table VI.
Cultural strength of
values

Nevertheless, the result has important implications for future culture research. This is because this study has demonstrated that a set of replicable cultural dimensions exists across organizations. For example, while firms may differ in innovativeness, innovation remains a relevant dimension along which organizations can be described.

		Value strength	Innovation			
<i>Insurance</i> ^a						
Spearman's rho	Growth in business in force (Annual premium)	1.000	1.000			
	Growth in business in force (Sum insured)	1.000	1.000			
	2-year persistency	-0.500	-0.500			
	Net return on investment	0.000	0.000			
<i>Manufacturing</i> ^b						
Spearman's rho	Growth in net profit	0.500	1.000	<i>Support</i>		
	Return on assets	1.000	0.500			
	Growth in sales turnover	-0.500	0.500			
<i>Hospitals</i> ^c						
Spearman's rho	Improvements in average bed occupancy rates	-0.500	0.500	-0.500	0.500	0.500
	Staff turnover	0.500	1.000	-1.000	1.000	-0.500
	Reduction in average length of stay	-0.500	0.500	-0.500	0.500	0.500

Table VII.
Correlation between
culture and performance

Note: **Correlation is significant at the 0.01 level (two-tailed)
Sources: ^aMAS Insurance Commissioner's Report 1989-1996; ^bCompany Annual Reports 1992-1996, Finance departments; and ^cHospital Annual Reports 1989-97, HR departments

This could be an important prerequisite for future culture studies involving comparisons across organizations or industries. As Siehl and Martin (1988) have argued, there are many important theoretical questions that cannot be answered until "culture can be measured with repeatable, easily administered instruments that permit systematic comparisons".

In addition, this study has added support to the robustness of the OCP given that similar culture dimensions (and defining values) were obtained, given the differences in national cultures and types of organizations chosen between Chatman and Jehn's (1994) and the present studies.

As noted earlier, the range of possible cultural typologies derivable from the OCP is limited by the 54 values within it. Further tests should be done to improve the range of values in the OCP in order to improve the type of dimensions generated.

Effects of industry membership on cultural profile

The distinguishing cultural values of the three industries in this study appeared to be related to industry dynamics. For example, the insurance and manufacturing industry were found to be significantly more innovative than hospitals. This could be due to the more dynamic and competitive environment that they are in. In addition, the insurance industry was significantly more task oriented than either manufacturing or hospitals. This could be because life insurance is a much more sales and results oriented industry. Owing to the nature of the job (nurses and doctors make up the largest proportion of hospital staff), hospitals had significantly more team oriented values. These observations can be considered to be descriptive of current industry

characteristics. It represented one potential key success factor among others of that particular industry, and could theoretically represent a barrier to entry for new entrants. It is also interesting to note that there were cultural dimensions that were not affected by industry membership. For instance, scores on the cultural value of supportiveness were independent of industry membership.

The results gave support to the hypothesis that even though organizations do possess distinct cultural profiles, cultural variation is greater across industries than within them. These findings are congruent with the results obtained by Chatman and Jehn (1994), Gorden (1985) and Hofstede *et al.* (1990). It implies that industry membership might be a greater constraint on truly unique cultural types than earlier thought. For instance, manufacturing firms only differed significantly on supportiveness dimension, while insurance firms differed only on innovativeness. Hospitals were an exception as they differed significantly on a wider range of cultural and work dimensions, but the difference was still less than the industry variation. One possible reason for this was three out of four hospitals in this sample had undergone restructuring programs. They changed from being government run hospitals to privatized hospitals. The attendant change in cultural modes may not have settled into a steady state yet.

These results supported the idea that cultural modes do evolve to fit industry dynamics and demands. However, it cannot answer the question – to what extent does this fit account for variation in organizational performance? From earlier studies by Chatman and Jehn (1994), Gorden (1985) and Kotter and Heskett (1992), there was strong evidence that fit accounts for some proportion of organizational performance.

However, paradigm shifts in industry competitive dynamics are usually caused by new entrants to the industry, and not by the industry incumbents themselves. Beinhocker (1997) argued that it was not the dominant established retailers like Sears who created category killer stores or booming mail order businesses. It was aggressive new entrants like The Home Depot, Circuit City and Land's End. Similarly, it was not IBM that pioneered the desktop computer or the widespread use of the Internet. It was new entrants Sun, Apple, Microsoft and Netscape. This list could go on and on.

Viewed in this perspective, it seems that evolving cultural norms to fit industry dynamics only enabled it to become a strong competitor in its *current regime* (with its attendant assumptions of pricing, positioning and value adding strategies). It is not a guarantee or predictor of future success. In fact, it seems that organizations should constantly strive to redefine themselves and thereby recreate the critical success factors in the industry (Hamel and Prahalad, 1996).

If industry dynamics inevitably “coerces” everyone to adopt the same set of traits and values, common culture items cannot be a source of sustained, superior performance. However, the converse may not be true. For instance, not adopting certain industry norms may very well lead to organization dysfunction.

In order to investigate the culture-performance relationship, it may, therefore, make more sense to correlate the organizational performance of firms against the culture dimensions, which do show significant differences between firms.

Cultural strength and organizational performance

The results obtained from this part of the study are mixed. The strength of cultural values was found to be correlated with the organizational performance of firms in a few

cases. For example, it was correlated with return on assets in manufacturing firms, growth in annual premiums and sum assured in insurance firms. There were no significant correlations with hospitals.

Thus, the evidence, while supporting the existence of some form of relationship between culture strength and organizational performance, is not strong enough to provide a discerned pattern applicable to a wider sample of companies.

It may be more interesting to look at the effects of companies' ranking on various culture dimensions (where significant differences were reported) and their performance. For example, cultural strength was significantly associated with performance in three out of ten performance indicators (30 percent), practice strength was significantly associated with performance in two out of ten performance indicators (20 percent).

In the manufacturing industry, the degree of supportiveness of firms was significantly associated with one out of three indicators (33 percent). In insurance industry, the degree of innovation was associated with three out of four indicators (75 percent). In hospitals, the set of distinguishing values was associated with three out of 12 indicators (25 percent). These results gave some tentative support to the notion that the distinguishing elements of an organization's culture were at least as important as the cultural strength of the firm in determining performance.

The results should be viewed within the framework developed by Barney (1986) to assess whether culture contributes to sustained economic performance. Barney (1986) argued that culture can only be a source of competitive advantage if it is valuable (adds value in some way), rare (cultural attributes not similar to other firms) and imperfectly imitable. Culture is defined in this study as a set of values and beliefs held by employees. Strong cultures, therefore, imply homogeneity and pervasiveness of these values. Strong cultures impact upon a wide range of organizational processes.

Thus, it can be valuable as it improves commitment, loyalty and reduces bureaucratic costs through social control, among other impacts. Arguably, these factors allow a company to achieve competitive advantage through its people (Pfeffer, 1994).

However, strong culture brings with it an attendant set of problems.

First, Nemeth (1997) contended that strong culture companies may inadvertently stifle the creativity and innovativeness of their employees through blind commitment to a set of ideas. It makes employees more susceptible to groupthink and less ready to accept different ideas or new modes of thinking. This, therefore, decreases the intellectual diversity in the company. While strong culture may help the implementation of creative ideas, it may not help to generate them.

Beinhocker (1997) also argued that the modern economy resembles a complex adaptive system rather than a close equilibrium system. Thus, such markets exhibit periods of punctuated equilibrium (times of relative calm and stability which are interrupted by stormy periods or punctuation points).

Such disequilibriums make it difficult for participants to survive for long periods as their strategies, skills or culture tend to get finely optimized for stable periods, and then suddenly become obsolete when the restructuring occurs. Companies have a hard time surviving upheavals, market shakeouts and technology shifts.

Therefore, strong cultures are only valuable if they exhibit the adaptive and learning qualities. Otherwise, they become a liability during the periods of accelerated change. This perspective offers one possible explanation why the strong culture-performance results are mixed.

In addition, culture is rare only if it has attributes and characteristics that are not common to the cultures of a large number of other firms. It is of no use to have a cultural profile that everyone else has, because it will not prove to be a source of sustained competitive advantage. Thus, research on culture-performance has to control for the distinguishing industry values in order to assess what is truly unique about each organization.

This view, therefore, offers an explanation for the discovery in this study that the distinguishing cultural elements of each company are also important in determining performance.

Finally, culture has to be imperfectly imitable in order to sustain superior performance. If it is not so, rival firms can easily modify key elements of their cultures to duplicate that success. This property of organizational culture is not testable in this study.

Authors like Deal and Kennedy (1982) and Peters and Waterman (1982) had taken a prescriptive approach towards culture management. They argued that adopting certain common cultural traits would result in superior performance.

However, successful cultures may in fact be very difficult to imitate due to their many interlocking elements. In addition, resource-based theory suggested two other reasons why culture may be extremely difficult to imitate. First, cultural norms and values are subject to path dependency. From Schein's (1985a, b) life cycle theory of cultural evolution, it can be seen that cultural development and strength depends on the historical development of the company itself. Thus, the assumptions, values and interlocking elements were built up over a period of time. Competitors cannot duplicate all these elements in a piecemeal fashion. They must, therefore, be built up in ways that are difficult to imitate. Second, organizational capabilities like culture are casually ambiguous. It is extremely difficult for an outside competitor to pinpoint what the valuable resource really is. This is because the cultural impact on performance could be due to a wide range of social interactions among organizational members.

Summary and conclusion

The results of this research encompassed a wide variety of organizational issues. They are as follows:

- (1) First, it was discovered that certain cultural dimensions are recurrent elements of organizations. The robustness of the OCP was confirmed. These two factors will aid the issue of comparability between organizations in future culture research.
- (2) The power of industry membership in limiting unique cultural types was also discovered. Industry dynamics led to the development of distinguishing values that characterized the industry. For instance, hospitals were significantly more team oriented, insurance firms were significantly more task oriented and manufacturing firms were significantly more humanistic.
- (3) The cultural strength of organizations was related to organizational performance in some cases. In addition, the cultural elements which distinguish companies from each other were also found to be related to performance.

This study has enhanced the understanding of the culture construct in the Singaporean context. Of special interest was the robustness of the OCP. This is an instrument that future culture researchers should be willing to use readily.

Culture was found to impact a variety of organizational processes. Practitioners will be interested to know that culture can be a source of sustained competitive advantage under certain conditions.

While more research remains to be done in this area, this study has at least demonstrated the power of culture in influencing organizational performance.

Several limitations exist in the study. First, the sample only included senior management. It may not represent the employees of the organizations. Second, the selection of three distinct industries was deliberate to create diversity in sample groups, however, it also reduced the comparability of performance indicators across industries.

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