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Abstract

This study examines changes in organizational cultures of Japanese and US corporations between 1998 and 2008 through the lens of communication. Specifically, it analyzes organizational values that are manifest in the use of specific terms in the texts of corporate annual reports ($N = 255$). By doing so, this study empirically determines the patterns that describe over-time changes in organizational cultures of Japanese and US corporations. Theoretically, this study investigates whether the basic premise of the theory of convergence is applicable to the study of organizational culture change. To that end, three dimensions of organizational values—performance, continuity, and growth—have been derived. To test the hypotheses and the research question offered, this study examines the effects of time in years, national culture, and the interaction between the two on the three value dimensions. Using linear growth model analysis, this study found that time and national culture had significant effects on the use of the terms related to the performance and continuity dimensions. The effects were not significant for the growth dimension. In none of the cases, the interaction effects between time and national culture were significant. The results provided evidence to support the parallel change pattern for the performance and continuity dimensions and the unitary stability pattern for the growth dimension. The findings partially support the premise of the theory of convergence.

Keywords: intercultural communication, cross-cultural comparison, organizational culture, corporate annual reports, linear growth models

Culture Change in Organizations' Public Discourse 1998-2008:
Examining Annual Reports of Japanese and US Corporations

1. Introduction

Organizational culture, which operates outside the awareness of organizational members, is important because it often helps to explain some of the seemingly puzzling aspects of organizational life (Schein, 2010). Organizational culture research was started by such early scholars as Pacanowsky and O'Donnell-Trujillo (1982) and Pettigrew (1979). Since then, it has attracted the attention of many scholars, including those in the field of organizational communication, because of the importance of the subject it deals with. Organizational culture and communication are closely intertwined; organizational cultures are likely to be formed and transformed through communication among organizational members and through organizations' communication with the environments.

In the past decades, there have been organizational culture studies that follow the interpretive and ethnographic tradition. They focus on describing organizational stories (Meyerson, 1991), sagas (Clark, 1972), symbols (Rosen, 1991; Smircich, 1983), and codes (Van Maanen, 1991) as some of the manifestations of organizational cultures. There have also been organizational culture studies that follow the quantitative tradition. They mainly describe profiles of organizational cultures (Cameron & Quinn, 1999; Cooke & Rousseau, 1988; O'Reilly, Chatman, & Caldwell, 1991) and relate them to such organizational outcome variables as employee retention (Sheridan, 1992), effectiveness (Fey & Denison, 2003), and performance (Balthazard, Cooke, & Potter, 2006; Lee & Yu, 2004).

Among such multitude of topics in the past organizational culture research, one of the important issues is the influence of societal or national culture on organizational cultures. Past research (Hofstede, 1980; House, Hanges, Javidan, Dorfman, & Gupta, 2004; Ouchi &

Johnson, 1978) identified societal or national culture as an important source of variation in organizational cultures.

However, there is a paucity of cross-national longitudinal research on organizational cultures. Organizational cultures are not always stable; they may change over time (Schein, 2010; Trice & Beyer, 1993). One possible cause of the change is the business environments (Meyerson, 1991; Van Maanen, 1991) that have been under the influence of globalization in many societies (Stohl, 2001; Vernon-Wortzel & Wortzel, 1991). Therefore, even if particular cultural patterns were espoused by organizations in a society at a point in time, they may change in response to the pressures of the global as well as the local economy. If that is the case, organizational culture change in one national culture may not be independent of the organizational culture changes in other national cultures. However, we are short of empirical evidence to support particular paths along which organizational values of two or more national cultures change over time.

The purpose of the present study is to compare changes in organizational cultures between Japanese and US corporations over the period 1998 and 2008. This study determines specific change patterns of the two sets of organizational cultures. To do so, it draws on the theory of convergence (Inkeles, 1998). The theory of convergence provides a broad theoretical framework to explain various sociopolitical changes in institutional structures and popular attitudes and values in the modern world. In principle, the theory assumes that nations and individuals will respond in generally comparable ways when they face similar situations of action and similar pressure of daily life. The present study finds out whether this basic premise of the theory is applicable to the study of organizational cultures, testing a boundary condition of the theory and qualifying the theory if necessary.

To that end, this study examines organizational cultures that are manifest in the use of specific terms in the texts of annual reports of Japanese and US corporations. Through the use of language, particularly the choice of specific terms, in the annual reports, top management is likely to communicate the corporation's cultures to its stakeholders and to its members.

The choice of the two national cultures—Japan and the US—is ideal for a comparative purpose because a number of past studies have found distinct differences in organizational as well as general values between the two national cultures (e.g., Gudykunst & Nishida, 1984; Hall, 1976; Reischauer, 1977). As for the period between 1998 and 2008, it is characterized by relatively stable economic growth for both countries (Inoue & Isotani, 2008; Japanese Cabinet Office, 2012; Shindo & Sakurauchi, 2010). That makes it relatively easy for us to track over-time, supposedly linear, changes attributable to the economic growth. By looking at organizational culture through the lens of communication, this study will help researchers understand the influence of international environment on organizational cultures, which will extend their understanding of organizational cultures in a domestic environment. That will also help management practitioners to cope more successfully with the changing business environments through gaining a better understanding of organizational culture change.

In the following review of the literature, explanations of the issues relevant to the study of organizational cultures, including the definition of organizational culture and the relationship between language and culture change, are provided. Then, the theoretical framework of this study is discussed in the context of changing business environments during the period 1998-2008. Finally, hypotheses and a research question are offered.

2. Organizations' public discourse and organizational cultures

This study illuminates organizational cultures by examining organizations' values

through the analysis of specific terms in corporate annual reports. It is based on the belief that organizations' values closely approximate organizational cultures. This belief derives from the typology of organizational cultures developed by Schein (1984, 2010). Schein used this typology to compare various concepts of organizational cultures proposed by past researchers. By doing so, he provided one promising solution to the debate on the definition of organizational culture (Hofstede, Neuijen, Ohayv, & Sanders, 1990; O'Reilly, Chatman, & Caldwell, 1991; Sathe, 1985).

Schein's typology has three levels at which culture manifests itself. Artifacts, which include all the phenomena we would see, hear, and feel, are at Level 1. Espoused values and beliefs are at Level 2. Basic underlying assumptions, which are unconscious and taken-for-granted values and beliefs, are at Level 3. The present study examines espoused values (Level 2), which represent what are important to people. That is partly because they are observable and clearly interpretable and partly because they closely approximate underlying values, which Schein regarded as the "essence" (Schein, 2010, p. 32) of a culture.

Organizations' values are likely to manifest themselves in the use of language, particularly in the specific terms used in the texts of their public discourse, which include corporations' annual reports. That is because, in the annual reports, top management explains to its stockholders as well as to the members of the organization its operations, strategies, thoughts, and visions in the current context of the economic situation. Because annual reports are written texts, they are clearly observable and interpretable, standing as they were when first published, causing few observational problems. Thus, examining the texts of corporate annual reports allows us to track over-time changes of organizational cultures in a reliable manner. Given that, the present study examines changes in the use of the specific terms in the

texts of corporations' annual reports over the period 1998-2008.

3. Theoretical framework: The theory of convergence

To accomplish the goal of this study, we need to ask whether values of Japanese and US corporations actually changed during the period 1998-2008 in the globalizing business environments. We also need to ask whether national culture influenced the process. To answer the questions, we need to think of the paths that represent the changes in the values of the two populations. We also need to extract specific indicators of cultures from the analysis of the texts. Each cultural indicator can then be regressed on (a) time in years, (b) national culture, and (c) interaction between (a) and (b) to identify change patterns.

In exploring possible answers to the questions asked, we first need a theoretical guidance; the theory of convergence (Inkeles, 1998) is in order. We have witnessed increasing globalization of corporations during the past decades (Kwantes & Dickson, 2011; Vernon-Wortzel & Wortzel, 1991; Stohl, 2001). Globalization involves global interrelatedness in economy and among global and domestic organizations. The theory of convergence provides explanations for a broad range of sociopolitical changes, which include institutional structures and popular attitudes and beliefs in the modern world. The basic premise of the theory is that nations and individuals will respond in generally comparable ways when they face similar situations of action and similar pressures of daily life. The theory primarily focuses on the factors in the global economy that drive nations toward increasing utilization of similar institutional structures across nations, which in turn shape the structure of human relationships, and eventually influence people's attitudes and beliefs (Inkeles, 1998). Convergence means "moving from different positions toward some common point (Inkeles, 1998, p. 30)." According to the theory, patterns of organizational communication are likely to

change in response to “the demands of the global system that requires flexibility, responsiveness, speed, knowledge production, and knowledge dissemination (Stohl, 2001, p. 325).” As a logical conclusion, organizational cultures of different national groups will eventually become alike, that is, to converge.

The mechanisms of convergence may be explained by the new institutional theory (DiMaggio & Powell, 1983), which illustrates homogenization of organizational forms and practices. DiMaggio and Powell argue that institutional isomorphism takes place as a result of different mechanisms: coercive, mimetic, and normative. In the context of globalization, organizations facing environmental uncertainty tend to behave after the model of other organizations to survive in the environment.

The theory of convergence acknowledges different forms of convergence other than simple convergence. One of them is parallel change. Parallel change does not contradict the key premise of the theory because it also illustrates the process in which nations and individuals respond in broadly comparable ways under comparable pressures or situations. However, the change pattern is in fact non-convergent. This is the case in which different national or societal groups change in a parallel fashion, facing comparable conditions and pressures. The paths for these groups preserve their relative distance over time, while they are changing, with their rates of gain being identical. One salient example of the parallel change, according to Inkeles (1998), is the continuing gap in wealth separating the less developed and the more advanced countries after 1950.

The theory of convergence also acknowledges the possibility of divergence. Divergence focuses on the contradictory trends, the most important of which is the distinctive cultural traditions among different national cultures. Such cultural traditions can reduce the force of

the tendency toward convergence. Divergence means “movement away from a given point, common or not, to new points farther apart than is the original condition (Inkeles, 1998, p. 38).” Inkeles lists language, religion, and legal systems as some of the examples of social forms and expressions that resist the pressures toward convergence. On the other hand, Stohl (2001) argues that communication and sense-making activities in organizations continue to be culturally distinct or become increasingly divergent. That happens despite the increased convergence of organizational structures at the macro level even under similar global constraints and opportunities. As Inkeles (1998) acknowledges, whether two or more populations converge or diverge depends on the issue and on the strength of the populations’ motivation to preserve their cultural distinctiveness.

Let us now focus on possible changes in organizational values in Japan and the US. After the economic bubble burst in the early 1990s, Japan had gone through recession in the late 1990s, and its economy became sluggish. These economic pressures led many firms to downsize their workforce, depend less on the permanent employment system (Ahmadjian & Robinson, 2001), and introduce a performance-based wage system (Ohtake & Karato, 2003). From the early 2000s on, the Japanese economy started to recover, and the country’s GDP steadily increased during the period 1998-2008 (Japanese Cabinet Office, 2012). In the meantime, however, foreign investors mainly from the US and Europe increased their presence in the Japanese stock market, increasing their ownership of Japanese shares (Ahmadjian & Robinson, 2001). That is one of the likely causes to explain the introduction of the notion of shareholder activism, which made Japanese corporations to pay increasing attention to shareholder value and harsh concern for profit maximization. It is likely that many Japanese corporations have been exposed to even more pressure to adapt some of their

management styles to those of the US and European corporations. In such economic contexts, it is likely that organizational values of Japanese corporations changed, possibly converging to the values of many US corporations or changing in parallel to the value changes of US corporations.

In the meantime, the US economy had enjoyed a decade of lasting growth until 2001 when it slowed down a little after its economic bubble burst. It quickly started to grow again partly because of the housing construction boom. During the period 1998-2008, therefore, the country's GDP showed a steady increase (Inoue & Isotani, 2008; Japanese Cabinet Office, 2012; Shindo & Sakurachi, 2010). It is likely that the organizational values of US corporations, too, changed to cope with the pressure of doing successful local and global business in the expanding market during the period, possibly strengthening their dominant values as production and efficiency (Cheney & Frenette, 1993).

4. Research question and hypotheses

We first need to know whether organizational culture change took place over the period 1998-2008 before examining the issue of convergence (or divergence). Unless we could show that the organizational cultures of the two populations had changed, it would be impossible to talk about convergence (or divergence). The preceding review of the literature suggests that organizational cultures are likely to have changed during the period 1998-2008 for both Japanese and US corporations to cope with the pressures of globalizing business environments. Therefore, the following hypothesis was posited:

H1. Organizational values that are manifest in the use of specific terms in the annual reports of Japanese and US corporations significantly changed over the 1998-2008 period.

Figure 1 shows the possible change patterns, which expand on the three basic patterns of

convergence, parallel change, and divergence for the paths of organizational values for the Japanese and the US corporations. If we obtain evidence to support H1, it means that either Pattern1 (unitary change) or Pattern 2 (parallel change) holds. If we fail to do so, it means that either Pattern 3 (unitary stability) or Pattern 4 (parallel stability) holds.

After testing for H1, we need to ask whether the Japanese and US corporations differed significantly in the magnitudes by which they endorsed the organizational values related to the relevant dimensions over the period 1998-2008. We need to test this hypothesis before examining the occurrence of convergence. Unless we could show that the organizational cultures of the two populations had been different, it would be impossible to talk about the occurrence of convergence. Past studies report differences in organizational values between the two national cultures, which include a qualitative observational inquiry (Ouchi & Johnson, 1978) and questionnaire survey research (Hofstede, 1980; Suzuki, 1997). They allow us to infer that cross-national differences in organizational values should be present in corporations' annual reports. Specifically, this study intends to focus on the dominant values of US corporations in the 1990s such as production or efficiency (Cheney & Frenette, 1993). It is likely that US corporations place more emphasis than Japanese corporations on these values. Thus, the second hypothesis of this study was:

H2. The organizational values that are manifest in the use of specific terms in the annual reports of Japanese corporations are significantly different from those of US corporations.

In Figure 1, Pattern 2 (parallel change) is the case where we obtain evidence to support H1 and H2. If we obtain evidence to support H1 but not H2, Pattern 1 (unitary change) holds. If we obtain evidence to support H2 but not H1, Pattern 4 (parallel stability) holds. If we fail

to obtain evidence to support not only H1 but also H2, Pattern 3 (unitary stability) holds (see Figure 1).

Provided that the annual reports of the corporations from the two national cultures reveal differences in values, the two sets of values may possibly change at different rates. If that happens, they could become increasingly similar (converge) or dissimilar (diverge) to each other over time.

Possibly, the values of Japanese corporations could change at higher rates than those of US corporations, which is the case of true convergence. The prediction is possible if many Japanese organizations have adopted some of the typical Western management practices during the past decades. Because Japan, not possessed of natural resources, could not continue without external trade, the country's interconnectedness in the globalized economy means dependency (Inkeles, 1998). In contrast, many US corporations lost their interest in learning from Japan as well as from other parts of the world in the early 1990s (Peterson, 2011). The US interconnectedness in the globalized economy reveals itself in an autonomous system with a high potential for achieving a condition of economic independence (Inkeles, 1998). That is one possible explanation for the case where the Japanese values could change at higher rates than the US values, eventually becoming more similar to the US values than before.

On the other hand, the US values could show a trend of positive change possibly because of the changes in the US business environments, while the Japanese values show smaller rates of change. In this case, the two sets of values are likely to diverge over time. This could happen when the Japanese corporations have rather strong motivation to resist culture change or under strong influences of their own social and local environments. Both of these predictions are plausible. In addition, too little is known to make us pose specific

hypothesis regarding this issue. Therefore, the following research question was asked:

RQ1. Do organizational values of Japanese corporations and those of US corporations either converge or diverge over time?

If the rates of value change for Japanese corporation are greater than those for the US corporations, the convergent pattern (Pattern 5) holds. If the rates of value change for the US corporations are greater than those for the Japanese corporations, the divergence pattern (Pattern 6) holds (see Figure 1).

5. Method

5.1. Data

The annual reports of 40 corporations, which include 20 Japanese and 20 US corporations, published between 1998 and 2008 were used as the data set for the present study. Table 1 lists the 40 corporations. The basic progression of selecting the data for this study followed the procedure similar to Jang and Barnett's (1994). Using LexisNexis Academic Database, the researcher first identified 20 Japanese corporations that had submitted their annual reports to the US Securities and Exchange Commission (SEC) sometime during the period 1998-2008¹, which means that these corporations had stock offerings in the US. Second, the researcher found out more about each corporation, including such information as the corporation's industry classification (together with SIC and NAICS codes), the number of employees, net annual sales, and key competitors. All the data about the corporations were current as of August, 2011, the time of data retrieval. Among the list of each corporation's key competitors, one US corporation was chosen to be matched with one Japanese corporation. In making each matching decision, the researcher examined each Japanese-US pair of corporations to see if they had at least the same two digits (major business division) of the

primary or the secondary SIC codes listed in the database. The first two digits of SIC codes represent the major business division, the third digit the line of business within the division, while the fourth the specific product type. In case where no match was found between the two corporations' SIC codes, then the first four digits of the NAICS codes were referred to find a match. The first two digits of NAICS codes represent the economic sector, the third digit the subsector, the fourth digit the industry group, the fifth NAICS industry, and the sixth the national industry.

In deciding on each pair of corporations, the researcher also paid attention to the equivalence of the two corporations in terms of the corporate size. Specifically the researcher made sure that the size of one corporation was less than three times that of the other corporation in terms of either the number of employees or net annual sales.

The 20 Japanese corporations were paired with their 20 US counterparts in this manner. After that, the necessary SEC files—20-F forms, the annual reports of non-US-based corporations—for the Japanese corporations and 10-K forms—annual reports of US-based corporations—for the US corporations were downloaded. In total, the researcher downloaded 255 text files, which included 101 files from the Japanese corporations and 154 files from the US corporations. On average, 6.38 annual reports per corporation were available. The average length of the reports for the Japanese corporations was 60566.75 words ($SD = 26208.81$) and that for the US corporations was 35519.86 words ($SD = 25460.64$).

5.2. Analysis

The analysis progressed as follows. First, value-related words were selected. Second, relative frequencies with which those words appear in all the texts combined in each sample were calculated using WORDSTAT 6 (Provalis Research, 2010). The purpose was to select a

smaller number of value-related words common across the two samples. Third, the word frequency data were factor analyzed using exploratory factor analysis to extract major value dimensions that are common across the two samples. Fourth, the hypotheses and the research question were tested with the linear mixed effects model procedure in SPSS 18.0 with each of the value dimensions serving as the dependent variable.

5.2.1. Making a list of value-related terms.

It was necessary to identify value-related terms common across the Japanese and the US samples. To do that, the researcher first referred to the study by Cheney and Frenette (1993). They examined annual reports of 50 US corporations and obtained frequency data for value-relevant words and phrases. For the purpose of study, the value-related words and phrases used frequently in the annual reports in their study were selected to make a list. The list was supplemented by relevant terms from the study by Jang and Barnett (1994) who examined the words and phrases used by Japanese and US corporations in their annual reports. It was appropriate to refer to these studies to find value-related terms for the 1990s and on. Thus a list of 48 value-related words and phrases was made (see Table 2).

5.2.2. Calculating relative frequencies of the value-related words.

At this point, it was necessary to choose a smaller number of the most important value-related words that were used in the data. Using WORDSTAT 6, the relative frequencies of the 48 words and phrases (i.e., the cumulative raw frequencies of words divided by the total number of words included in all the texts in each sample, excluding numbers and numerical information) were calculated for the Japanese and the US samples, respectively. Inflected forms of each word were included in the analysis. For example, the word “improve” included: improve, improves, improved, improving, improvement, and improvements. To select a

smaller number of the most important value-related words, the researcher decided to choose those words whose relative frequencies were higher than .002 (or .2% in percentage), which was the cutoff value, for the Japanese and the US samples, respectively. As a result, 27 words for the Japanese sample and 29 words for the US sample were chosen, but no phrases were included in the lists. Among the words listed, 27 words were found to be common across the two samples (see Table 2).

5.2.3. *Extracting dimensions of values.*

The 27 words (based on their frequency values) were submitted to an exploratory factor analysis using unweighted least squares extraction with quartimax rotation. The purpose of this factor analysis was to extract major value dimensions. Although the factor analysis extracted six factors whose eigenvalues were greater than 1.0, the scree plot indicated a substantial drop in eigenvalues between factors 4 and 5. Based on the result of the scree plot, four factors (eigenvalues > 2.0) were tentatively chosen, which accounted for 32.4% of the total variance. After that, those items whose primary loading was .40 (rounded to the first decimal place) or greater², with the secondary loading being .20 or less than the primary loading, were selected. As a result, a total of 19 items loaded on three factors were chosen. The three factors accounted for 30.3% of the total variance. The seven words loaded on the first factor were: customer, develop, expand, grow, lead, market, and strategy. The six words loaded on the second factor were: competitive, control, efficient, environment, perform, and relation. The six words loaded on the third factor were: continue, future, good, improve, operation, and result. The three factors were interpreted to represent: (a) growth, (b) performance, and (c) continuity, respectively. The standardized item alpha, or Cronbach's alpha based on standardized scores, for each factor was .70 for the growth factor, .71 for the

performance factor, and .64 for the continuity factor³. The mean interitem correlation was .26 for the growth factor, .28 for the performance factor, and .23 for the continuity factor⁴.

Because the word list was thus finalized, word frequency data were obtained for each annual report. In creating the data file, relative frequencies of the words (i.e., the raw frequency of each word divided by the total number of words in each text, excluding numbers and numerical information, with 0.001 being the cutoff value, which is 0.1 in percentage) were calculated for individual reports or texts. To facilitate interpretation of the results, the researcher multiplied each value (that is, the value of each relative frequency) by 10000, so that the value represents the word's frequency in a 10000-word text.

5.2.4. Testing the hypotheses and the research question.

Prior to testing the hypotheses and the research question, the intraclass correlation was calculated to see if there is nonindependent clustering of scores within groups (i.e., corporations). If the group effect is present, the linear growth model analysis is to be conducted to control for nonindependence within groups. The linear growth model analysis is conducted through the use of the linear mixed effects model procedure in SPSS 18.0. The nature of the data set is longitudinal; for each of the 40 corporations, this study has repeated measurements. The data exhibit a hierarchical structure, which means that corporations are nested within national cultures. The linear growth models can handle this type of hierarchical structure. The longitudinal aspect of the analysis is dealt with by including time in years as a variable in the model, which allows the researcher to model over-time changes.

In the growth model analysis, the corporations (Level-2 variable) were subjects for which observations (scores for each dimension) at different time points were available. Year (i.e., time in years) was a Level-1 continuous covariate. To facilitate interpretation of the

effects, the values for the variable year were recoded as 0 (year 1998) through 10 (year 2008). Testing for the fixed effects of this variable provides evidence whether or not to support H1. The corporations are categorized into two groups: Japan (coded as 1) and the US (coded as 0). National culture, therefore, was a Level-2 fixed factor. Testing for the fixed effects of this variable provides evidence whether or not to support H2. In addition, the researcher added a cross-level interaction term between year and national culture. If the fixed effects associated with this interaction turn out to be significant, it means that the slope for year differs between the two countries (RQ1). To deal with incomplete data because of the intermittent publication of the annual reports during the period, this study used full information maximum likelihood estimation, which performs estimation of parameters under the assumption that data are missing at random or conditional on observed variables (McArdle, Hamagami, Jones, Jolesz, Kikinis, Spiro, & Albert, 2004).

Linear growth models were tested in stages. The fixed effects included: intercept (mean of the dependent variable when the covariate, i.e., year, equals zero), year (fixed slope for year, i.e., expected change in the dependent variable for 1-unit increase in year), national culture (contrasts for the two countries, i.e., mean differences in the dependent variable between the Japanese and the US samples), and interaction between year and national culture (effects of national culture on the slope for year). The random effects included: intercept (corporation-specific random deviation from the fixed intercept) and year (corporation-specific random deviation from the fixed slope for year).

6. Results

The significance level for testing the hypotheses and the research question for this study was set at .05. Table 3 provides means and standard deviations of the dependent variables for

the overall, the Japanese, and the US samples for each year. Table 4, 5, and 6 report the estimates obtained from the linear growth model analysis for the value dimensions⁵.

The intraclass correlation for the growth, performance, and continuity dimensions was .51, .71, and .66, respectively. Based on the variance component outputs obtained from the analysis of the null model, the intraclass correlation reveals the proportion of variance in the dependent variables that lies between level 2 units (i.e., corporations). The results of the intraclass correlations suggest that the development of a linear growth model is warranted to control for the nonindependent clustering within units.

6.1. H1: Over-time changes in organizational values

The first hypothesis predicts that the relative frequencies of the specific terms related to the value dimensions changed over the 1998-2008 period. As a result of testing for Model 1 for each dependent variable, the fixed effects for year were significant for the performance and continuity dimensions (see Tables 5 and 6 for the estimates and significance levels of the parameter year for the model). A comparison between the null model (the model with no predictors) and Model 1 revealed that the addition of year, the within-group predictor, in Model 1 led to a reduction in residual within-group variability. The addition of the predictor accounted for 31.8% ($= (135.91 - 92.64) / 135.91$) and 37.0% ($= (328.59 - 207.01) / 328.59$) of the variance for the performance and continuity dimensions, respectively. In either case, the mean growth rate per year was positive. It means that the relative frequencies of the terms representing these two value dimensions significantly increased with time during the period. For the growth dimension of values, however, the effects were not significant, accounting for 20.0% ($= (494.68 - 395.88) / 494.68$) of the within-group variability in the dependent variable (see Table 4). The results, therefore, provided partial evidence to support H1.

6.2. H2: Differences in organizational values between Japanese and US corporations

The second hypothesis predicts that the relative frequencies of the specific terms related to the value dimensions are significantly different between the Japanese and the US samples. As a result of testing for Model 2, the fixed effects for national culture were significant for the performance and continuity dimensions (see Tables 5 and 6). A comparison between Model 1 and Model 2 revealed that the addition of national culture (the between-group predictor) led to a reduction in the intercept variance estimate. The addition of the predictor accounted for 46.5% ($= (351.51 - 188.02) / 351.51$) and 20.7% ($= (1130.10 - 896.08) / 1130.19$) of the between-group variability in the dependent variable for the performance and continuity dimensions, respectively. For the performance and continuity dimensions, the mean values for the US sample were significantly greater than those for the Japanese sample. Specifically, for the performance dimension, the difference in the estimated marginal means was significant ($F(1, 34) = 16.57, p < .001$): the Japanese sample ($M = 14.60, SD = 3.59$); the US sample ($M = 34.48, SD = 3.45$). For the continuity dimension, the difference in the estimated marginal means was significant ($F(1, 39) = 9.12, p = .004$): the Japanese sample ($M = 70.37, SD = 5.45$); the US sample ($M = 93.37, SD = 5.33$).

The effects, however, were not significant for the growth dimension (see Table 4). The addition of the predictor, national culture, led to a reduction in the between-group intercept variance estimates, accounting for only 1.1% ($= (1003.61 - 992.46) / 1003.61$) of the between-group variability in the dependent variable. For the growth dimension, the difference in the estimated marginal means was non-significant ($F(1, 41) = 0.81, p = .37$): the Japanese sample ($M = 67.54, SD = 5.33$); the US sample ($M = 74.16, SD = 5.18$). The results provided partial evidence to support H2.

6.3. RQ1: *Convergence or divergence of organizational values between Japanese and US corporations*

The research question (RQ1) asks whether the values of the Japanese sample and those of the US sample either converged or diverged over time. As a result of testing for Model 3, the interaction effects between year and national culture were found to be non-significant for any of the value dimensions (see Tables 4, 5, and 6). The research question was answered in the negative. The results provided no evidence to support either convergence or divergence of the two paths of values.

To back up the parameter estimates reported in the above, the models were compared in pairs in order by taking the differences in the -2 Log likelihood values. That reveals which of the two models better fits the data. The deviance difference has approximately a chi-square distribution with the number of *df* equal to the difference in the number of parameters in the models. The results of these model comparisons were consistent with those of the parameter estimates.

For the performance dimension, Model 1 was a better-fitting model than the null model, with the difference in the chi-square value being 49.95 ($p < .001$), and Model 2 was better than Model 1, with the difference in the chi-square value being 12.81 ($p < .005$). However, the fit for Model 3 was no better than that for Model 2, with the difference in the chi-square value being 2.14 ($p > .05$). Therefore, Model 2 turned out to be the best-fitting model for the continuity dimension (see Table 5).

Similarly, for the continuity dimension, Model 1 was a better-fitting model than the null model, with the difference in the chi-square value being 58.12 ($p < .001$). Also, Model 2 was better than Model 1, with the difference in the chi-square value being 7.99 ($p < .05$). However,

the fit for Model 3 was no better than that for Model 2, with the difference in the chi-square value being 2.01 ($p > .05$). Therefore, Model 2 turned out to be the best-fitting model for the continuity dimension (see Table 6).

In contrast, for the growth dimension, Model 1 was a better-fitting model than the null model, with the difference in the chi-square value being 22.44 ($p < .001$). However, Model 2 was no better than Model 1, with the difference in the chi-square value being 0.8 ($p > .05$). Also, Model 3 was no better than Model 2, with the difference in the chi-square value being 0.02 ($p > .05$). Therefore, Model 1 turned out to be the best-fitting model for the growth dimension (see Table 4).

7. Discussion

Based on the analysis of the word frequency data from the annual reports of Japanese and US corporations published between 1998 and 2008, this study derived dimensions of values—performance, continuity, and growth—and examined effects of time in years, national culture, and the interaction between the two on the dimensions of values. The results suggest that the basic premise of the theory of convergence is generally applicable to the study of organizational culture change, although not without exceptions. That is, corporations in Japan and the US responded generally in comparable ways when they faced similar changes in their business environments. The results also identified specific change patterns—the parallel change pattern for the performance and continuity dimensions, and the unitary stability pattern for the growth dimension (see Figure 1).

7.1. Overtime changes in organizational values

Consistent with the prediction posited in H1, the relative frequencies of the terms related to the performance and continuity dimensions demonstrated a significant rising trend

over the period 1998-2008. A stable economic environment for both countries likely affords the management a climate to think positively about the corporation's current business situation and its prospects. It is plausible that the management may have held up such values of performance and continuity (of good performance) increasingly more strongly.

However, the management's response to environmental changes appears to depend on the dimension of organizational values; the use of the terms related to the growth dimension failed to indicate a significant increase. Although growth may be an important value dimension for managers in both countries, it appears to be a value dimension that is unsusceptible to change even under the pressure of changing economic environments. Wallace (1970), in his discussion of cultural lag theory, argues that societal cultures do change over time and that some aspects of values in the areas of cultural focus change more rapidly than other aspects. The argument is likely to hold true for organizational cultures as well. Some aspects of organizational cultures change more rapidly than others, while some other aspects hardly change or change very slowly.

7.2. Differences in organizational values between Japanese and US corporations

Regarding the differences in organizational values between Japan and the US (H2), the corporations in the US sample were consistently found to be greater in the use of the terms related to the performance and continuity dimensions than their Japanese counterparts. Placing an emphasis on maximizing profit, which is related to performance values, is generally considered to be among the major characteristics of the US management style (Useem, 1996). Many Japanese corporations have appreciated profit maximization to a lesser degree (Ahmadjian & Robinson, 2001). The US sample's mean value for the continuity dimension was also greater than that for the Japanese sample. It is likely to be related to the

US corporations' greater concern for steady and continuous performance. The US corporations thus demonstrated greater concern for performance and continuity than their Japanese counterparts. The distinctive cultural traditions, therefore, seem to influence the characteristics of corporations' public discourse, despite the force of the tendency toward standardized managerial practices in the time of globalization.

In contrast, the results revealed no significant difference in the mean values for the growth dimension between the Japanese and the US samples. Cheney and Frenette (1993) claim that growth is also one of the dominant values in the US corporations. However, the results suggest that Japanese corporations have no less concern for strategic growth and development than their US counterparts.

7.3. Convergence or divergence of organizational values between Japanese and US corporations

Regarding the question of true convergence or divergence (RQ1), neither was supported. The results suggest that the two paths of values for the Japanese and US samples preserved their distance from each other over the period for the performance and continuity dimensions. At the same time, though, the values related to the two dimensions were increasingly espoused over the years, which is stated in the above. For the growth dimension, no apparent difference between the two samples was discerned during the period. Many Japanese corporations started to deinstitutionalize some of the Japanese management practices over the period to introduce some of the management practices typical of the US and European corporations. However, the values of the Japanese corporations did not truly converge to the values of the US corporations. Inkeles (1998) acknowledges that a considerable part of the change we observe is likely to be of this parallel kind rather than true convergence or

divergence. He argues that the parallel change takes place given the distinctiveness of the social forms the countries may have developed earlier and given the different points from which they started out. Considering that the growth dimension of values followed the pattern of unitary stability (Pattern 3 in Figure 1), however, there is apparently some variability in the change patterns among the dimensions of values.

7.4. Implications for the theory of convergence

In terms of theory, the results suggest that the theory of convergence, in general, provides a suitable framework for describing organizational culture change. They suggest that Japanese and US corporations responded in generally similar ways when they faced more or less comparable business environments. The specific change patterns found in this study, however, were not true convergence. For the performance and continuity dimensions, they followed the parallel change patterns. The findings suggest that the distinctive cultural traditions of different societies appear to have persistent influence on organizational culture changes that are manifest in organizations' public discourse. Stohl (2001) may be right to point out that communication in organizations continues to be culturally distinct despite the increased convergence of organizational structures at the macro-level under similar contexts of globalization. The results, however, also suggest that the premise of the theory of convergence holds true with regard to certain specific value dimensions. In this study, the case of the growth dimension was found to be an exception. These findings makes us realize the complexity of studying organizational cultures in changing business environments, where there may be influences (or lack of such influences in some cases) of persistent traditions in each national or societal culture.

7.5. Implications for organizational and intercultural communication research

This study has an implication for organizational and intercultural communication researchers. It demonstrated that organizations' public discourse could be remarkably adaptable to the changes in the environmental arrangements. Given that, it is one of the ideal means of knowing a good deal about organizational cultures, both domestic and in cross-cultural contexts. Also, the researchers should be aware of the competing forces that may be operating to affect organizational cultures: the unifying force that drives different sets of organizational cultures toward homogenization, the diversifying force that drives them toward differentiation, and the stabilizing force that keeps as they are.

7.6. Practical implications

This study also has implications for management practitioners. The findings of this study will help managers validate their belief that organizational public discourse is an important means of communicating their values to outsiders, particularly to stakeholders, as well as to the members of the organization. Also, they will also help managers of multinational corporations to accurately estimate their out-of-awareness values they currently have and become more cognizant of the possible gaps in values among the diverse groups of workforces within each organization.

7.7. Limitations and future directions

This study has following limitations. First, it examined only two national groups for a specific period of time. Japan and the US (for the period 1998-2008) were the two countries for which comparable longitudinal data of an acceptable size in the form of annual reports were available when the data were retrieved. It is true, however, that the choice of the two cultures and the time period limits the generalizability of this study's findings. Future research needs to examine similar data from other national cultures or for other periods of time to see

whether these findings are applicable to other contexts. Second, this study examined corporations' annual reports all written in English. That helped the researcher avoid the difficulty of ensuring equivalency in translating terms. However, the 20 Japanese corporations that submitted their English annual reports to the US Securities and Exchange Commission could possibly be non-typical Japanese corporations. As they had stock offerings in the US, they may have been keener on globalizing their management practices than other Japanese corporations. Therefore, it may be necessary to interpret the results with caution. Also, there might be a gap between the Japanese and English versions of Japanese corporations' annual reports, which could be an issue to be examined by future research. Third, organizational cultures revealed in annual reports may not be comprehensive; they are mainly targeted at relatively limited range of audience. Future research may examine changes in other cultural dimensions by exploring other representations of organizational cultures.

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Footnote

¹Although global financial crisis occurred in fall, 2008, the year 2008 was included in the analysis as the last year of satisfactory economic growth. Because the annual reports are published sometime between spring and the end of each year, it is not very likely that influences of the crisis manifest themselves immediately in the contents of the 2008 reports.

²Hair, Black, Babin, Anderson, and Tatham (2006) suggest that factor loadings of .30 to .40 are minimally acceptable.

³According to Hair et al. (2006), the alpha coefficient may decrease to .60 in exploratory research although .70 or above is the generally acceptable.

⁴According to Briggs and Cheek (1986), “the optimum level of homogeneity occurs when the mean interitem correlation is in the .2 to .4 range (p. 114).”

⁵Power analysis was conducted using PASS 2008 (Hintze, 2008), a power analysis and sample size software. Based on the preliminary analysis of this study, the size of each group was set to 12 (the mean number of subjects per sample per year), the baseline mean 45.27 (the mean intercept value), the subject variance 239.82 (the mean residual variance), and the significance level .05. The minimum detectable differences were 16.50 (the mean fixed effects for national culture) for the between-group factor, 1.22 (the mean fixed effects for year) for the within-subject factor with multiple levels, and 1.15 (the mean fixed effects for interaction between year and national culture) for the interaction term. The power analysis with 100 simulations indicated that the power for the parameter national culture was .72 (with the 95%

confidence interval, .62 and .81), the power for the parameter year was 1.00 (with the 95% confidence interval, .96 and 1.00), and the power for the interaction term between year and national culture was 1.00 (with the 95% confidence interval, .96 and 1.00).

Table 1

List of 40 Corporations

Japanese	US
1-1. Bank of Tokyo-Mitsubishi Ltd (6029 6159 522110)	1-2. Goldman Sachs Group Inc (6211 6029 523110)
2-1. Canon Inc (3579 3861 332710)	2-2. Xerox Corp (3577 6159 333293)
3-1. Hitachi Ltd (3571 3357 3334111)	3-2. Hewlett-Packard Co (3571 3572 333293)
4-1. Honda Motor Co Ltd (3711 3751 333112)	4-2. General Motors Co (3711 3647 336111)
5-1. Komatsu Ltd (3531 3599 321992)	5-2. Caterpillar Inc (3531 6331 333120)
6-1. Kubota Corp (3523 3531 321992)	6-2. Deere & Co (3523 6321 333111)
7-1. Kyocera Corp (3699 3827 327112)	7-2. Corning Inc (3357 3678 32721)
8-1. Makita Corp (3546 3559 332212)	8-2. Black & Decker Inc (3546 3699 327910)
9-1. Mitsui & Co Ltd (5172 7349 212299)	9-2. Alcoa Inc (3334 3335 212299)
10-1. NEC Corp (7373 3669 333293)	10-2. IBM Corp (7373 6159 333293)
11-1. NIDEC Corp (3621 3714 335312)	11-2. Emerson Electric (3621 3714 326199)
12-1. Nomura Holdings Inc (6211 523110)	12-2. Bank of America Corp (6021 6211 522110)
13-1. NTT Corp (4812 6719 517110)	13-2. AT & T Inc (4813 4812 517110)
14-1. Orix Corp (7359 6141 522298)	14-2. Agco Corp (3523 6141 333111)
15-1. Panasonic Corp (3651 3639 333293)	15-2. Motorola Inc (3663 3672 334119)
16-1. Ricoh Co Ltd (3861 3579 333293)	16-2. Eastman Kodak Co (3861 3081 325992)
17-1. Sony Corp (3651 7812 33411)	17-2. Microsoft Corp (7372 3577 334119)
18-1. TDK Corp (3679 3695 333295)	18-2. Senmina-Sci Corp (3672 3674 333295)
19-1. Toyota Motor Corp (3711 3348 332311)	19-2. Ford Motor Co (3711 7515 336111)
20-1. Wacoal Corp (2342 2339 315192)	20-2. Guess Inc (5621 2339 31521)

Note. One Japanese corporation is matched with one US corporation in the same row based on the similarities in the business type and the corporation size. The two SIC codes and one NAICS code (shown in the parenthesis in order) were chosen, whenever available, from the list of codes in the database; the information was current as of August, 2011, the time of data retrieval. If two corporations have the same two digits of either SIC code, signifying the major business type, they are paired with each other. In case where no match was found in a set of SIC codes, then the first four digits of the NAICS code, signifying the economic sector (the first two digits), subsector (the third digit), and the industry type (the fourth digit), were referred to find a match.

Table 2

*Lists of Words and Phrases*The original list of 48 terms^a

achieve	acquisition	advance	aggressive	competitive	continue
control	cooperate	cost-effective	creative	customer	develop
economy	efficient	ethic	expand	environment	expertise
first	flexibility	future	good	grow	improve
innovate	integrity	knowledge	lead	market	modernize
operation	performance	plan	productivity	profit	progress
public relation	quality	relation	reputation	reliable	responsibility
result	sale	strategy	success	team	upgrade

The list of 27 terms^b

achieve	advance	competitive	continue	control	customer
develop	economy	efficient	environment	expand	future
good	grow	improve	market	lead	operation
performance	plan	profit	quality	sale	relation
result	strategy	success			

The final list of 19 terms^c

The first factor (Growth)

customer	develop	expand	grow	lead	market
strategy					

The second factor (Performance)

competitive	control	efficient	environment	perform	relation
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The third factor (Continuity)

continue	future	good	improve	operation	result
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a. Inflected forms of each term were all included in the analysis.

b. The terms with their relative frequencies above .2% were selected from the original list of 48 terms for each sample. Of those terms, 27 were found to be common across the two samples and factor analyzed.

c. These terms were included in either of the three factors that were extracted from the factor analysis of the 27 terms.

Table 3

Means and Standard Deviations

Year [cases]	Growth Dimension			Performance Dimension			Continuity Dimension		
	Overall	Japanese	US	Overall	Japanese	US	Overall	Japanese	US
1998	81.43	60.00	87.27	23.57	6.67	28.18	81.14	46.67	91.82
[14, 3, 11]	(47.37)	(10.00)	(52.17)	(12.77)	(5.77)	(9.82)	(36.62)	(15.28)	(34.88)
1999	77.62	75.00	78.67	22.38	6.67	28.67	76.67	51.67	86.67
[21, 6, 15]	(37.93)	(15.17)	(44.38)	(14.11)	(8.16)	(10.61)	(39.92)	(14.72)	(42.71)
2000	85.00	72.00	90.00	20.00	6.00	25.38	76.11	58.00	83.08
[18, 5, 13]	(39.15)	(14.83)	(44.72)	(13.72)	(5.48)	(11.98)	(29.93)	(10.95)	(32.25)
2001	74.55	78.33	73.13	14.56	6.67	17.50	83.64	68.33	89.38
[22, 6, 16]	(32.91)	(13.29)	(38.07)	(12.24)	(5.16)	(12.91)	(33.46)	(13.29)	(37.14)
2002	70.36	70.00	70.53	30.36	12.22	38.95	85.00	70.00	92.11
[28, 9, 9]	(42.21)	(12.25)	(51.04)	(25.16)	(9.72)	(25.78)	(34.59)	(14.14)	(39.24)
2003	64.67	69.44	57.50	23.67	19.44	30.00	84.00	73.33	100.00
[30, 18, 12]	(23.45)	(23.88)	(21.79)	(21.57)	(13.49)	(29.54)	(31.56)	(14.95)	(42.21)
2004	71.88	66.88	76.88	26.56	16.88	36.25	89.69	73.13	106.25
[32, 16, 16]	(26.22)	(19.57)	(31.56)	(24.97)	(11.38)	(30.96)	(30.85)	(23.01)	(28.18)
2005	73.45	67.14	79.33	28.97	17.14	40.00	85.52	69.29	100.67
[29, 14, 15]	(27.29)	(21.28)	(31.50)	(22.42)	(9.14)	(25.63)	(28.11)	(20.56)	(26.04)
2006	70.80	62.86	80.91	32.80	20.71	48.18	82.80	75.00	92.73
[25, 14, 11]	(27.98)	(18.99)	(34.77)	(26.85)	(12.69)	(32.50)	(22.83)	(15.57)	(27.24)
2007	61.00	64.44	58.18	33.50	23.33	41.82	86.00	85.56	86.36
[20, 9, 11]	(23.60)	(15.90)	(28.92)	(24.77)	(7.07)	(30.93)	(29.63)	(21.86)	(35.85)
2008	84.38	70.00	85.33	39.38	10.00	41.33	98.75	80.00	100.00
[16, 1, 15]	(40.16)	-	(41.38)	(22.23)	-	(25.88)	(34.62)	-	(35.46)

Note. The value in each parenthesis represents the standard deviation for the mean value above. The three numbers in each bracket, below the year of publication, is the number of cases or observations for the respective year for (a) the overall sample, (b) the Japanese sample, and (c) the US sample, starting from the left to the right.

Table 4

Linear Growth Models for the Growth Dimension

Model	Null Model				Model 1				Model 2				Model 3			
Parameter	Estimate	SE	t value	Wald Z	Estimate	SE	t value	Wald Z	Estimate	SE	t value	Wald Z	Estimate	SE	t value	Wald Z
Estimates of fixed effects ^a																
Intercept ^b	71.37	3.88	18.38***		72.13	6.16	11.71***		68.62	7.26	9.45***		67.67	10.03	6.74***	
Year ^c					-.23	0.79	-0.29		-0.21	-0.79	-0.26		-0.06	1.35	-0.04	
National culture ^d									6.62	7.34	0.90		8.06	12.75	0.63	
Year x National culture													-0.23	1.67	-0.14	
Estimates of covariance parameters																
Residual	494.68	47.44		10.43***	395.88	40.74		9.92***	396.29	40.80		9.71***	396.22	40.79		9.71***
Intercept + Year ^e																
Intercept variance	514.07	130.86		3.93***	1003.61	291.36		3.45***	992.46	288.29		3.44***	992.02	288.27		3.44***
Slope variance					-80.60	33.53		-2.40*	-80.64	33.45		-2.41*	-80.49	33.46		-2.41*
Covariance between intercepts and slopes					11.99	4.82		2.49*	11.95	4.81		2.49*	11.93	4.81		2.48*
-2 Log Likelihood				2384.65				2362.21				2361.41				2361.39

a. The estimates of the fixed effects are unstandardized regression coefficients.

b. The mean of the dependent variable when the covariate, year, equals 0.

c. Year was recoded as 0 (1998) through 10 (2008) by subtracting 1998 from the respective value. The estimate is the expected change, or the mean growth rate, in the dependent variable for 1-unit increase in year.

d. Japan was coded as 1, while the US was coded as 0. The estimate is the mean difference in the dependent variable between the two samples.

e. (Subject = Corporation)

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

Linear Growth Models for the Performance Dimension

Model	Null Model				Model 1				Model 2				Model 3			
Parameter	Estimate	SE	t value	Wald Z	Estimate	SE	t value	Wald Z	Estimate	SE	t value	Wald Z	Estimate	SE	t value	Wald Z
Estimates of fixed effects ^a																
Intercept ^b	25.42	2.99	8.48***		18.92	3.45	5.48***		7.67	3.94	1.94		4.42	4.48	0.99	
Year ^c					1.16	0.42	2.77**		1.33	0.40	3.31**		2.11	0.65	3.23**	
National culture ^d									19.88	4.88	4.07***		24.23	5.67	4.28***	
Year x National culture													1.21	0.82	-1.48	
Estimates of covariance parameters																
Residual	135.91	13.08		10.39***	92.64	9.72		9.53***	94.58	10.11		9.35***	94.23	10.02		9.40***
Intercept + Year ^e																
Intercept variance	334.56	79.53		4.21**	351.51	112.62		3.12**	188.02	79.33		2.37*	184.88	76.49		2.42*
Slope variance					-12.43	9.92		-1.25	-4.12	7.59		-0.54	-3.04	7.06		-0.43
Covariance between intercepts and slopes					3.74	1.38		2.71**	3.39	1.25		2.71*	3.13	1.17		2.68**
-2 Log Likelihood				2086.12				2036.17				2023.36				2021.22

a. The estimates of the fixed effects are unstandardized regression coefficients.

b. The mean of the dependent variable when the covariate, year, equals 0.

c. Year was recoded as 0 (1998) through 10 (2008) by subtracting 1998 from the respective value. The estimate is the expected change, or the mean growth rate, in the dependent variable for 1-unit increase in year.

d. Japan was coded as 1, while the US was coded as 0. The estimate is the mean difference in the dependent variable between the two samples.

e. (Subject = Corporation)

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6

Linear Growth Models for the Continuity Dimension

Model	Null Model				Model 1				Model 2				Model 3			
Parameter	Estimate	SE	t value	Wald Z	Estimate	SE	t value	Wald Z	Estimate	SE	t value	Wald Z	Estimate	SE	t value	Wald Z
Estimates of fixed effects ^a																
Intercept ^b	82.68	4.20	19.69***		72.28	6.02	11.83***		59.51	6.83	8.72***		51.76	8.57	6.04***	
Year ^c					2.07	0.70	2.96**		2.10	0.69	3.03**		3.38	1.11	3.06**	
National culture ^d									23.00	7.61	3.02**		34.79	11.10	3.14**	
Year x National culture													-2.02	1.39	-1.45	
Estimates of covariance parameters																
Residual	328.59	31.63		10.39***	207.01	40.74		9.72**	207.44	21.81		9.51***	207.83	21.87		9.50***
Intercept + Year ^e																
Intercept variance	645.10	156.05		4.13***	1130.10	291.36		3.45***	896.08	249.39		3.59***	860.31	237.62		3.62***
Slope variance					-73.741	33.53		-2.40*	-63.73	26.92		-2.37*	-57.07	25.16		-2.27*
Covariance between intercepts and slopes					11.40	4.82		2.49*	11.12	3.87		2.87**	9.96	3.62		2.75**
-2 Log Likelihood				2302.87				2244.85				2236.86				2234.85

a. The estimates of the fixed effects are unstandardized regression coefficients.

b. The mean of the dependent variable when the covariate, year, equals 0.

c. Year was recoded as 0 (1998) through 10 (2008) by subtracting 1998 from the respective value. The estimate is the expected change, or the mean growth rate, in the dependent variable for 1-unit increase in year.

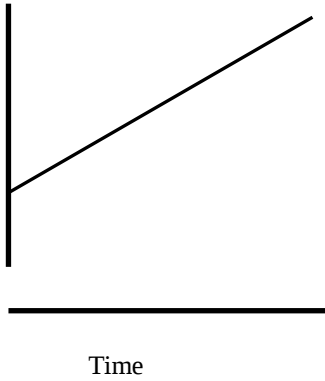
d. Japan was coded as 1, while the US was coded as 0. The estimate is the mean difference in the dependent variable between the two samples.

e. (Subject = Corporation)

* $p < .05$. ** $p < .01$. *** $p < .001$

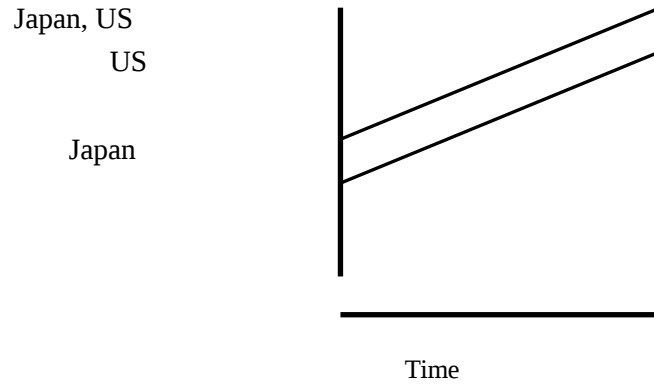
Pattern 1. Unitary Change

- (a) significant
- (b) non-significant
- (c) non-significant



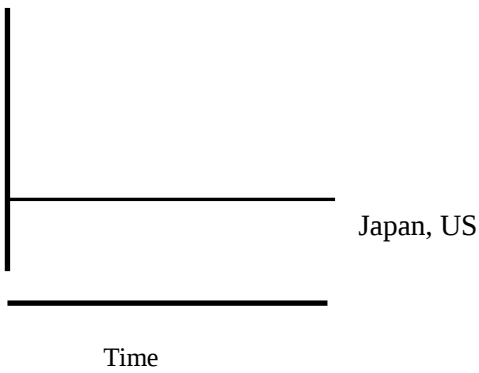
Pattern 2. Parallel Change

- (a) significant
- (b) significant
- (c) non-significant



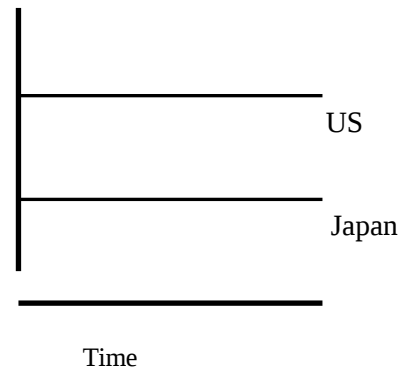
Pattern 3. Unitary Stability

- (a) non-significant
- (b) non-significant
- (c) non-significant



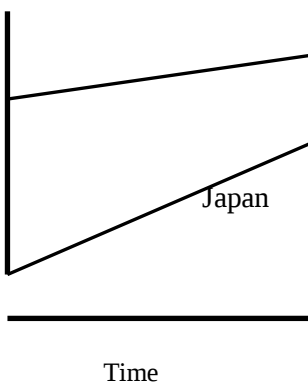
Pattern 4. Parallel Stability

- (a) non-significant
- (b) significant
- (c) non-significant



Pattern 5. Convergence

- (a) significant
- (b) significant
- (c) significant; US slope < Japanese slope



Pattern 6. Divergence

- (a) significant
- (b) significant
- (c) significant; US slope > Japanese slope

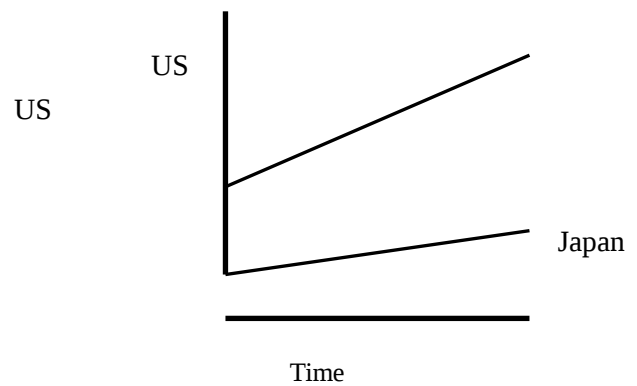


Figure 1. Possible patterns for pairs of regression lines indicating changes in organizational values of Japanese and US

corporations. Effects (a) signify the effects of time in years, (b) effects of national culture, and (c) interaction effects between time and national culture. The vertical axis for each pattern represents the relative frequencies of the terms used in the texts of annual reports, which are related to each value dimension.