HOKKAIDO UNIVERSITY

Title	Changes in Risk Reporting by Japanese and U.S. Corporations, 2010-2019
Author(s)	Suzuki, Shinobu
Citation	Business and Professional Communication Quarterly https://doi.org/10.1177/23294906241234330
Issue Date	2024-03-04
Doc URL	https://hdl.handle.net/2115/91249
Type	journal article
File Information	20240306_BPCQ_ms+tables_accepted_for_HUSCAP.pdf



Hokkaido University Collection of Scholarly and Academic Papers : HUSCAP

Changes in Risk Reporting by Japanese and US Corporations 2010-2019

Author: Shinobu Suzuki

Institutional affiliation: Graduate School of International Media, Communication, and Tourism Studies, Hokkaido University

Mailing address: Graduate School of International Media, Communication, and Tourism Studies, Hokkaido University, N17 W8, Kita-ku, Sapporo, 060-0817, Japan

Email: shinobu@imc.hokudai.ac.jp

Author biography: Shinobu Suzuki is a specially appointed professor in the Graduate School of International Media, Communication, and Tourism Studies at Hokkaido University, Japan.

Manuscript history: An earlier version of this paper was presented at the 2022 Annual Conference of the International Communication Association, Paris.

Abstract

This study undertakes a cross-cultural examination of corporate risk reporting to test for convergence and divergence perspectives on risk communication. It asks whether the frequencies of risk topics communicated by globalizing organizations from different national cultures become isomorphic or remain culturally distinct. It analyzed longitudinal data on risk factors reported by Japanese and US corporations in their annual reports. It focused on the effects of time and national culture on the frequencies of risk topics. The results provided evidence to support the convergence perspective for the risk topics and the divergence perspective for one of the topics, respectively.

Keywords: organizational communication, cross-cultural communication, risk factors, globalization, content analysis

Changes in Risk Reporting by Japanese and US Corporations 2010-2019

Organizations in a globalized environment are exposed to various types of risks that can affect their investors and other stakeholders in decision-making. Effective risk communication is essential for globalizing organizations to manage the risks they face (Deumes, 2008; Knight, 2014). Risk reporting has attracted the attention of stakeholders and researchers as the main component of risk communication in the last few decades (Isiaka, 2021; Mazumder & Hossain, 2018). This study undertakes a cross-cultural examination of corporate risk reporting. By doing so, it aims to address an important issue in cross-cultural organizational communication—convergence or divergence of communicative practices associated with increasing globalization and cultural variability in globalizing environments (Stohl, 2001).

Risk reporting research is multidisciplinary. Researchers in fields such as communication, management, accounting, and finance have advanced the corporate risk reporting study over the past few decades. Research has been conducted on the current practice and problems of risk reporting (Abraham & Shrives, 2014; Lajili & Zeghal, 2005), determinants of risk reporting quantity such as corporate size (Amran, et al., 2008; Linsley & Shrives, 2006) and corporate governance (Saggar, & Singh, 2017) as well as the effects of risk reporting such as enhancing corporate reputation (Louhichi & Zrek, 2015), for example. However, there has been a missing link in research on risk reporting: the influence of national culture on the contents of risk reporting, focusing on the frequencies of risk topics. Risk reporting can vary with national culture (Rajab & Handley-Schachler, 2009) because different cultures can have different stakeholder demands for what and how much risks should be communicated to stakeholders. However, the relationship between national culture and the frequencies of risk reporting topics has not been

closely examined. It is worthwhile to pursue a theory-driven examination of the relationship because it leads to a systematic understanding of cross-cultural similarities and differences in what and how much risks are communicated and why. This study examines the influence of national culture on risk reporting by analyzing data from corporations in two distinctly different national cultures: Japan and the United States. Previous research (e.g., Hofstede, 2001; Jacoby, 2005) found marked differences in organizational values and corporate governance between the two nations.

Corporate risk also changes over time (Bao & Datta, 2014). This is particularly true in today's rapidly changing and globalizing business environment, driven by developments in technology, society, and world politics (Rajab & Handley-Schachler, 2009). Therefore, this study incorporates time into the cross-cultural analysis of risk topics. It investigates how the frequencies of major risk factors communicated in corporate annual reports changed amid tensions between increasing globalization and cultural variability in multinational organizations in the two nations. Analyzing contents of corporate annual reports has been found to be a productive approach to the study of organizational communication (e.g., Palmer-Silveira & Ruiz-Garrido, 2014; Ponce, et al., 2023). Specifically, this study asks: (a) if national culture influences the frequencies of risk topics, (b) if time affects the changes in the frequencies of the topics, and (c) if it does so equally across cultures. Based on the theories of new institutionalism (DiMaggio & Powell, 1983) and institutional logics (Besharov & Smith, 2014), it examines whether the risks communicated by corporations from two national cultures become isomorphic in response to the institutionalizing force of globalization or remain culturally distinct, likely in response to different national institutional logics.

This study examined data from 2010 to 2019. This was a period after the global economic downturn in 2008 and 2009 and before the economic turmoil owing to COVID-19 in 2020. Therefore, this decade is characterized as a generally stable period, which appears to be reflected in the modest GDP growth rates during this time (International Monetary Fund, 2019). However, the business environment has changed, which is evident in the acceleration of the globalized economy (Gygli, et al., 2019; Ministry of Economy, Trade and Industry, Japan, 2020) that coincided with rapid advancements in information technology. Globalization involves greater connectedness of nations, economies, and organizations. It needs to be seen whether organizations have reacted similarly to similar business and economic pressures toward globalization or preserved a few cultural values and conventional practices unique to their particular national cultures.

The knowledge gained through this study can help us understand the complexity of risk communication manifested in corporate risk reporting. This study responds to the call for research on the relationship between national culture and risk communication (Diers-Lawson & Maissner, 2021). It will add knowledge to the teaching of cross-cultural communication which is needed in business and professional communication courses (Chapel & Victor, 1999; Smallwood, 2020).

Risk, Organizational Risk Communication, and Risk Reporting

Risk is defined as "the combination of the probability of an event and its negative consequences" (United Nations Office for Disaster Risk Reduction, 2009, p. 25). Risk communication is defined as "the process of exchanging information among interested parties about the nature, magnitude, significance, or control of a risk" (Covello, 1992, p. 359). In

organizational contexts, risk communication refers to the processes in which organizations provide risk-relevant information to stakeholders, who, in turn, make their decisions based on the information provided.

Organizational risk communication can be classified into two types. The first type concerns communicating risks amid a crisis that an organization caused through causes such as operational or management deficiencies (Gould, 2021). The second type concerns communicating risks to organizations that must be monitored and identified in advance to avert a crisis or minimize the influence of risks (Ulmer, et al., 2007). Risk reporting, therefore, is a key component of organizational risk communication of the second type. Organizations must communicate risks appropriately to stakeholders as a form of external communication. Thereby, they can help stakeholders become more confident in making investment decisions (Deumes, 2008). Organizations can use risk evaluations to review performance and make operational and capital investment decisions (Mazumder & Hossain, 2018). Therefore, risk reporting is an important form of organizational communication for stakeholders and organizations, particularly in today's rapidly changing and globalizing business environment. The following sections elaborate on the theoretical frameworks used in this study.

Convergence versus Divergence

Stohl (2001) introduced two distinct perspectives that characterized research on globalization and cultural variability in her discussion of globalizing organizational communication—convergence and divergence—with a reference to Inkeles (1998). Inkeles explains changes in sociopolitical structures, public attitudes, and values in the contemporary world. He argues that individuals and nations generally react in ways comparable to similar

changes in situations. For the present study, we can consider paths or slopes that represent the changes in frequencies of risk topics for corporations from the two national cultures. If the corporations respond to changes in situations in comparable ways, the paths for the frequencies of risk topics may possibly converge and eventually become identical over time, assuming they were different in the beginning. Convergence stands for "moving from different positions toward some common point" (Inkeles, 1998, p. 39).

However, Inkeles allows for other patterns of convergence. Parallel change is one such phenomenon. In this pattern, individuals and nations respond in a similar manner to similar changes in situations, but the paths that these groups follow maintain a specific distance from one another. The perspective also considers the possibility of divergence, meaning "movement away from a given point, common or not, to new points farther apart than in the original condition" (Inkeles, 1998, p. 38). In this pattern, institutional structures, public attitudes, and beliefs become increasingly different, most likely because of the force of their unique cultural traditions. According to Inkeles, the change pattern may vary with factors such as the issue of focus or the strength of motivation for preserving the cultural traditions of each population.

New Institutionalism

A theoretical framework that explains convergence in corporate management and organizational communication is provided by new institutionalism (DiMaggio & Powell, 1983), which explains how the homogenization of organizational forms and practices takes place in the form of isomorphism. Organizational isomorphism can be coercive, mimetic, or normative. Coercive isomorphism results from political pressures or pressures from the external environment. Mimetic isomorphism takes place in response to uncertainty. Normative isomorphism stems from

the professionalization of management, leading to similar structures and practices across organizations.

According to new institutionalism, as organizations are structured into an organizational field, or a collection of organizations representing a recognized area of institutional life, they experience forces that lead them to become identical with each other, particularly under the conditions of goal ambiguity and technical uncertainty. Through such isomorphic change, organizations can achieve institutional legitimacy. In a globalizing economy, where most large corporations are internationalized, it is likely that organizations in the same field or environment may emulate organizational structures and concomitant organizational communication practices of other organizations and increasingly become alike.

New institutionalism can therefore be applied to the study of corporate risk reporting in globalized business environments. Under similar pressures toward globalization, organizations from different national cultures may be structured into an organizational field. They may adopt similar risk reporting practices as a result of isomorphic change to cope well with globalizing forces in the economy, thus achieving institutional legitimacy.

Institutional Logics

A theoretical framework that explains the mechanism of divergence in corporate management and organizational communication draws on the concept of institutional logics (Thornton, et al., 2012), which refer to collectively constructed assumptions, practices, values, and beliefs that offer individuals guidelines on how to interpret and function in various situations. Researchers (e.g., Battilana & Dorado, 2010; Dunn & Jones, 2010) acknowledge that organizations must respond to multiple institutional demands from their environment. They

continually face multiple institutional logics that are often incompatible. Academic institutions face logics of science and commerce, such as knowledge pursuit and open publication versus commercial utilization of results, urging them to pursue different actions under different circumstances, for example (Greenwood, et al., 2011).

In a globalizing economy, it is likely that organizations face multiple institutional logics. For example, they may face a demand to embrace a logic to adapt their structures and communication practices to suit the global standards that are dominant in the same organizational field. They may also face a demand to embody a logic to adhere to their own cultural values and practices, or national institutional logics. The presence of different national logics may lead to divergence in organizational structures and communication practices between different national cultures. The same may be true for corporate risk reporting practices in globalized business environment.

National Institutional Logics: A Cross-Cultural Difference between Japan and the United States

One possible set of national logics that is likely to affect differences in risk reporting between Japan and the United States may concern corporate governance; stakeholder value orientation versus shareholder value orientation (Jacoby, 2005; Meyer & Hollerer, 2010; Vogel, 2019). Corporate governance involves balancing the interests of a company's management, shareholders, and other stakeholders. To that end, corporate governance "provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined" (OECD, 2015, p. 9). Communicating a company's corporate governance through disclosing relevant information, which includes reporting risk

factors, is essential to balancing the relationships of its stakeholders.

Shareholder value orientation has been a symbol of the Anglo-American model of corporate governance, which started in the late 1980s (Jacoby, 2005). It calls for the separation of ownership and control, maximization of returns for shareholders, and a focus on investor relations and short-term returns. Japan historically adopted stakeholder value orientation, which entails insider corporate boards, focus on long-term collaborative relationships among firms and their stakeholders, and long-term employment and investment.

However, as the Japanese economy experienced a burst in the 1990s, Japanese leaders began to implement reforms that pressured Japanese corporations to adopt the Anglo-American shareholder-oriented style of corporate governance to make them more profitable, productive, and competitive. In the meantime, foreign investors increased their presence in the Japanese stock market. In 2019, foreign shareholders accounted for 24.5% ownership of companies listed on the Tokyo Stock Exchange, whereas it was 4.2% in 1990 and 13.2% in 2000 (Japan Exchange Group, 2019). The increase in foreign investors led to the introduction of shareholder activism in Japan, which called for shareholder sovereignty. That movement urged Japanese corporations to pay more attention to shareholder-oriented value and maximize profits to appeal to investors, especially foreign ones. In the 2010s, Japanese corporations experienced waves of corporate governance reforms, which involved shifting logics from stakeholder- to shareholder-oriented value orientation. In examining the influence of national institutional logics on corporate risk reporting, we must see how these different national logics may affect how the Japanese and US corporations communicated their risks.

Research Questions

Based on the theoretical frameworks, the following research questions were proposed. This study first sought to identify the major risk topics discussed in corporate annual reports because it intended to examine risk reporting by focusing on changes in the frequencies of the major risk topics that were common across the two national cultures. More specifically, it examined the frequencies of keywords associated with the major risk topics. Thus, the following research question was asked.

RQ1: What major risk topics are discussed in the annual reports of Japanese and US corporations?

Next, this study examined whether the frequencies of each topic changed between 2010 and 2019, which witnessed the acceleration of the globalized economy that came with rapid changes in technology and increased mobility in people, goods, services, and capital. The second research question was whether and how the frequencies of risk topics, communicated through annual reports, for the two national cultures changed over between 2010 and 2019.

RQ2: Does time in years have a main effect on the frequency of each risk topic between 2010 and 2019?

If RQ2 is answered in the affirmative with no interaction effects between time and culture, it suggests that the corporations from the two national cultures reacted in comparable ways to similar changes in situations. This will provide evidence to support the convergence perspective and the premise of new institutionalism: the frequency of risk topics reported by the corporations from two national cultures followed identical paths of change, likely in response to similar pressures in a globalized business environment, and as a result of mimicking other companies' risk disclosing practices.

This study also asked whether national culture influenced the frequency of each topic by having a main effect on the dependent variable Thus, following research questions was asked.

RQ3: Does national culture have a main effect on the frequency of each risk topic?

If RQ3 is answered in the affirmative with no interaction effects between time and culture, it means that the corporations responded in similar manners to similar changes in situations, but the paths followed by these groups maintained a specific distance from one each other. This corresponds to a parallel change, which is a variant of convergence according to Inkeles (1998).

Further, this study also asked whether national culture influenced the frequency of each topic through its interactions with time in years. Thus, the final research question was as follows.

RQ4: Does national culture interact with time in years to influence the frequency of each risk topic?

If RQ4 is answered in the affirmative, it means that the effects of time in years differ between the two national cultures. It could mean divergence or convergence, depending on how the two slopes differ between the two national cultures.

Method

Data

This study used annual reports of 30 corporations, which included 15 each of Japanese and US corporations that were submitted to the US Securities and Exchange Commission (SEC) between 2010 and 2019 as a dataset. The data were downloaded from the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system, where the commission discloses full text electronic filings of all corporations that have stock offerings in the US. Suzuki (2013) made a list of 20 Japanese multinational corporations (MNCs) with stock offerings in the US and 20 US

corporations that were comparable to their Japanese counterparts in terms of industry type, net annual sales, number of employees, key competitors, and corporate size as of 2011. To find a match between a pair of corporations in the industry type, Suzuki (2013) relied on standard industrial classification (SIC) and the American Industry Classification Systems (NAICS) codes. The corporations thus selected, represented a variety of industry types, which included a wide range of manufacturers (e.g., automobiles, apparel, machinery, systems, tools, and industrial materials) as well as corporations offering financial and information technology services and communications. This study selected 15 out of 20 Japanese corporations because it was found that 5 corporations in the original list had stopped offering their stocks in the US after 2012. The 15 Japanese corporations were paired with their US counterparts. For a total of 30 Japanese and US corporations, relevant SEC files (20-F and 10-K forms for Japanese and US corporations, respectively) were downloaded.[1] Although 20-F forms comprise different sections required to be filled from 10-K forms, reports on risk factors are mandatory for both types. The entire section on risk factors was extracted from each file. The dataset for this study comprised 107 and 147 files for Japanese and US corporations, respectively. The average word count for the risk factor reports for Japanese corporations was 5,460.88 words (*SD* = 2,841.92) and that for US corporations was 6,316.76 words (*SD* = 3,358.92).

Analysis

The data were analyzed first by the computational method of topic modeling, using WORDSTAT 9 (Provalis Research, 2021) software for content analysis. Topic modeling was conducted to extract risk topics that were common across the two samples to answer the first research question. Next, linear growth model analysis was conducted using the linear mixed

effects model procedure in SPSS to answer the remaining research questions.

Topic Modeling

Topic modeling helps identify patterns in text data. It classifies words into clusters of keywords based on similarity, which enables researchers to extract topics. Topic modeling methods such as Latent Dirichlet Allocation (LDA; Blei, et al., 2003) have been employed successfully in many social scientific studies in different fields over the past few decades. The present study used the Factor Analysis (FA) technique of topic modeling implemented on WORDSTAT. Peladeau and Davoodi (2018), who compared FA and LDA, pointed out the benefits of employing FA. First, FA produces the exact same solution, whereas LDA's topic solution is subject to variation. Second, the topics extracted by FA are likely to be more independent of one another than those extracted by LDA. Therefore, FA is one of the viable techniques of topic modeling. To extract topics that are common across both samples, the data from both samples were combined and subjected to topic modeling analysis.

The number of topics was initially set to 30 to be inclusive. To exclude stop words, the researcher employed a categorization model provided by the software, which included a list of these words. This formed the exclusion list. The researcher added pronouns to the exclusion list later because they were not relevant to extracting risk topics. The minimum loading for topic extraction was set to 0.30 based on Iker (1974). Topic modeling was based on word occurrences within paragraphs and not within the same document, because the risk reports are organized logically with relevant headings, as per the SEC's instructions to corporations, so that paragraphs can be a unit that constitute a topic. Major topics that were found to be highly coherent were chosen from among 30 topics (RQ1). The absolute frequency of keywords associated with each

risk topic was used as a dependent variable in testing the research questions.

Linear Growth Model Analysis

Linear growth model analysis was conducted to answer the remaining research questions. The data were hierarchical in terms of structure, with corporations being nested within either of the two national cultures. The data were longitudinal, with each of the 30 corporations having repeated measurements. This was handled by incorporating time as a variable, which enables researchers to analyze changes over time. Linear growth model analysis can deal with such nested longitudinal data. Before the analysis, intraclass correlation was computed to see if there was non-independent clustering of scores within groups (i.e., corporations). In the presence of the group effect, conducting the linear growth model analysis is justified to control for non-independence within groups.

In the analysis, corporations (a Level-2 variable) were considered subjects with repeated observations for different years between 2010 and 2019. Year was a Level-1 continuous covariate. If the fixed effect of this variable is significant, it means that there has been a change in the dependent variable over time (RQ2). This study examined linear and quadratic effects of time in years by including two parameters in the analysis: year and year squared. For national culture, Japanese corporations were assigned a value of 0, whereas US corporations were assigned a value of 1. National culture was treated as a Level-2 fixed factor. If the fixed effect of national culture is significant, it means that there is a significant difference in the dependent variable between both cultures (RQ3). This study also examined a cross-level interaction term between year and national culture (RQ4). If the fixed effect of this interaction term is significant, it means that the slope for the year is different between both samples.

In the analysis, the fixed effects of the intercept signified the mean of the dependent variable when the covariate, year, was 0. The fixed effect of year signifies a change in the dependent variable expected for 1-unit increase in year. The fixed effect of national culture signifies the mean differences in the dependent variable between both samples. The fixed effect of the interaction term between year and national culture signifies the effect of national culture on the slope for year. Between-corporations intercept was included as a random parameter to account for variations in individual group means from the grand mean.

The analysis tested a series of models derived from the predictors of interest, starting with an intercept-only null model. To find the best-fitting model, comparisons were conducted for each dependent variable by taking the difference in the values of -2 log likelihood, a measure of model fit to the data, between a pair of models. The deviance difference had an approximate chi-square distribution, where the degree of freedom is equal to the difference in the number of parameters between a pair of models. In either case, the difference in the number of parameters was 1. The difference in the -2 log likelihood values, therefore, was found to be significant when it was over 3.84 at $p < .05$.

Results

The significance level for testing the research questions in this study was set at .05. Table 1 reports the major risk topics with keywords and associated phrases. Tables 2 to 6 report the results of the linear growth model analysis for dependent variables. Table 7 reports a summary of the results. The intraclass correlations, which indicate the degree to which differences in the outcome variables exist between the Level 2 groups (i.e., corporations), were examined for the dependent variables. They ranged between .47 and .58, which suggests that pursuing linear

growth model analysis is justified to control for the non-independent clustering within groups. A multilevel linear growth model analysis was conducted to answer RQs 2-4 with the frequency of each major topic as the dependent variable. Model comparisons were conducted by taking the difference in -2 log likelihood values between a pair of models.

RQ1

RQ1 investigated the major risk topics discussed in the annual reports of Japanese and US corporations. Topic modeling identified 30 topics that were common across both samples. Of these, the top five topics were selected because they had relatively high coherence scores (NPMI > .40 and Pearson's $r > .20$). Coherence is the weighted average of the correlation of words associated with the topic. The five topics were IT security (Topic 1), shareholders' rights (Topic 2), stable supply (Topic 3), currency exchange (Topic 4), and intellectual property (Topic 5) in descending order of coherence. Table 1 shows the keywords and associated phrases for each topic. Next, a series of linear growth model analyses were conducted to answer RQs 2-4. As a result of model comparisons, Model 2 was found to be the best-fitting model for Topic 1 (IT security), Model 5 for Topic 2 (shareholders' rights), Model 2 for Topic 3 (stable supply), Model 1 for Topic 4 (currency exchange), and Model 2 for Topic 5 (intellectual property). See Tables 1 for details.

[Table 1 about here]

RQ2

The next research question asked about the influence of time in years on the frequency of each risk topic between 2010 and 2019. The absolute frequency of each risk topic associated with the topic's keywords was used as the dependent variable. Linear growth model analysis showed

that the linear effect of year was significant on Topics 1 (IT security, $t = 3.27$, $df = 226.58$, $p < .001$), 4 (currency exchange, $t = -2.36$, $df = 231.80$, $p < .05$), and 5 (intellectual property, $t = 3.53$, $df = 226.54$, $p < .001$). The quadratic effect of year was significant on Topics 1 (IT security, $t = -4.00$, $df = 225.24$, $p < .001$), 3 (stable supply, $t = -2.42$, $df = 225.32$, $p < .05$), and 5 (intellectual property, $t = -4.07$, $df = 225.37$, $p < .001$). RQ2 was mostly answered in the affirmative.

RQ3

RQ3 asked whether there was a significant difference in the frequency of each risk topic between both national cultures. Linear growth model analysis was conducted with each major risk topic as the dependent variable. National culture did not have a significant main effect on the frequency of either topic. RQ3 was answered in the negative.

RQ4

RQ4 asked whether the effect of time in years would differ between the two national cultures. The linear growth model analysis showed that the interaction effect between the quadratic effect of year and national culture was significant for Topic 2 (shareholders' rights, $t = -2.12$, $df = 224.28$, $p < .05$), which meant that the effect of year was different between both national cultures. As a follow-up, a linear growth model analysis was conducted separately for both samples. The effects of year and year squared on the dependent variable were tested for each sample. The result indicated that both the linear ($t = 2.74$, $df = 93.70$, $p < .01$) and quadratic effects ($t = -2.95$, $df = 92.70$, $p < .01$) of year were significant for the Japanese sample. In contrast, they were non-significant for the US sample: the linear effects ($t = 1.01$, $df = 131.95$, $p = .32$); the quadratic effects ($t = -0.62$, $df = 132.18$, $p < .54$). The frequency of Topic 2 increased at the

beginning and the trend slowed down later only for the Japanese sample, suggesting that the paths for both groups revealed a sign of divergence in the beginning and shifted toward convergence later. RQ4 was partially answered in the affirmative.

[Tables 2 through 6 about here]

[Table 7 about here]

Discussion

Based on computational analysis of word frequency data on risk factors in corporate annual reports, this study examined the influence of time and national culture on corporate risk reporting. RQ1 focused on major risk topics common across both samples. Five major risk topics were extracted. All extracted topics—IT security, shareholders' rights, stable supply, currency exchange, and intellectual property—are understandably among the risk topics in a globalized economy. Globalization and interdependence in the economy are realized through interrelatedness in the economy and among organizations. This is evident as many organizations have international connections in making investments, purchasing materials, and selling their goods and services overseas, with their employees moving around the globe on overseas business assignments. Advancements in information technology facilitates this change, which comes with the risks of IT security and intellectual property rights. As corporations build global networks of supplies, such as materials and component parts, they are at risk of losing the networks in the event of conflicts and disasters in other parts of the world. Fluctuations in currency exchange rates can be a major risk for global corporations, as they can directly influence their profits. With increasing diversity among investors, shareholders' rights are important for corporations in a globalized economy.

RQ2 to RQ4 concern the influence of time in years (RQ2), national culture (RQ3), and the interaction between time and culture (RQ4). The frequency of risk topics significantly changed with time for most topics. The main effect of culture on topic frequency was non-significant for all five topics. Topics 1 (IT security) and 5 (intellectual property) had identical trajectories, with significant positive linear and negative quadratic effects, suggesting an increasing trend in the beginning, followed by a decreasing rate of growth later. Topic 3 (stable supply) revealed a significant negative quadratic trajectory. The frequency of Topic 4 (currency exchange) revealed a significant linear trend of decrease. It appears that some risk topics, such as Topics 1 and 5, increased their presence over the decade, constantly attracting the management's attention in both national cultures. However, Topics 3 and 4, decreased their presence in the same decade, likely because the magnitude of these risks diminished. However, the corporations in both national cultures appear to have reacted to these risk topics in comparable ways, plausibly under similar sociopolitical and economic situations and pressures from a globalized environment.

These findings support the convergence perspective and the premise of new institutionalism. Both Japanese and US corporations generally reported similar kinds of risk factors to similar extents between 2010 and 2019, likely in response to similar economic pressures in a globalized business environment, and partly as a result of mimicking other companies' risk disclosing practices to respond to uncertainty in their environment. The presence of some topics increased during the period, whereas that of others decreased, probably in response to environmental changes. Therefore, corporations may have been structured in the same field in a globalized economy, reporting their risks similarly owing to isomorphic change, thus communicating them similarly in their risk reporting.

The effect of culture was manifest only as a moderator of the relationship between time and frequency of Topic 2 (shareholders' rights). For the Japanese sample, the linear and quadratic effects of year were significant, suggesting that the frequency of Topic 2 increased at the beginning and decreased later, whereas those effects on Topic 2 were non-significant for the US sample. The issue of shareholders' rights was an increasing concern for Japanese corporations, perhaps because they experienced a rapid increase in the presence of foreign investors who owned shares, which led to shareholder activism in Japan. For Japanese corporations offering stocks in foreign markets, that issue may have particularly been critical, which explains the difference in change patterns between both national cultures.

The findings support the operation of different national logics: stakeholder versus shareholder value orientation. Japanese corporations underwent legislative reforms that were intended to facilitate a move toward Anglo-American style shareholder value orientation, increasing foreign share ownership, seeking to raise corporate profitability over the past few decades. The period between 2010 and 2019 was still a time for this gradual transition in values or logics for Japanese corporations. This is a likely reason that the presence of shareholders' rights increased as a major risk factor only for Japanese corporations during the first half of this period, a sign of divergence from the path for the US corporations. However, the presence of shareholders' rights for the Japanese corporations decreased in the second half of the period, which is a sign of convergence.

The results of this study suggest that both Japanese and US corporations shared many similarities in risk reporting practices. However, nation-specific logics also operate in the management of multinational corporations in a globalized economy. The multiplicity of national

institutional logics has significant implications for considering organizational communication in a globalized economy. As Stohl (2001) pointed out, neither convergence nor divergence perspectives alone can adequately explain corporate communication practices such as risk reporting in a globalized economy. Both convergence and divergence perspectives and the theories of new institutionalism and institutional logics can be productively applied to the explanation of risk reporting practices in globalizing organizations.

This study fills a gap in risk reporting research by revealing the influence of national culture on the frequencies of risk topics in the context of organizational communication, providing an important theoretical implication for cross-cultural organizational communication research. This study is expected to invite future research to examine the relationships between national culture and risk topics from diverse regions of the world, which will draw attention to a theory-driven understanding of cross-cultural similarities and differences in risk reporting, giving depth and significance of the findings of this study. This study demonstrated the utility of the computational analysis of word frequency data in corporate discourse using topic modeling. For cross-cultural management practitioners, this study demonstrated that corporations in the global economy share major risk concerns, whose appearance frequencies change with time. It also demonstrated that cultural differences are manifest in the management's communication of some of the risk concerns to the stakeholders. Acknowledging cultural diversity in risk reporting across nations and understanding the plausible reasons behind it within the framework of nation-specific logics have important implications for cross-cultural management practitioners as well as for instructors of business and professional communication courses.

This study has limitations. The fact that it examined only two cultures for a specific period

of time limits the generalizability of the findings. Also, Japanese corporations whose data were analyzed may not be the most typical ones. They have stock offerings in the US market and submit their annual reports to SEC in English. They may be more sensitive to changes in the global economy than other domestic corporations. It is possible that the influence of national institutional logics may be more distinctly manifest in the Japanese reports by Japanese corporations that have stock offerings only in the Japanese domestic market than the Japanese corporations in the present study. Future studies may address these issues to advance research on risk communication in general and risk reporting in particular.

References

Abraham, S., & Shrives, P. J. (2014). Improving the relevance of risk factor disclosure in corporate annual reports. *The British Accounting Review, 46*(1), 91-107. https://doi.org/10.1016/j.bar.2013.10.002

Amran, A., Bin, A. M. R., & Hassan, B. C. H. M. (2008). Risk reporting: An exploratory study on risk management disclosure in Malaysian annual reports. *Managerial Auditing Journal, 24*(1), 39-57. https://doi.org/10.1108/02686900910919893

Bao, Y., & Datta, A. (2014). Simultaneously discovering and quantifying risk types from textual disclosure. *Management Science, 60*(6), 1371-91. https://doi.org/10.1287/mnsc.2014.1930

Battilana, J., & Dorado, S. (2010). Building sustainable hybrid organizations: The case of commercial microfinance organizations. *Academy of Management Journal, 53*(6), 1419-1440. https://doi.org/10.5465/AMJ.2010.57318391

Besharov, M. L., & Smith, W. K. (2014). Multiple institutional logics in organizations: Explaining their varied nature and implications. *Academy of Management Review, 39*(3), 364-381. https://dx.doi.org/10.5465/amr.2011.0431

Blei, D. M., Ng, A. Y., Jordan, M. I. (2003). Latent Dirichlet Allocation. *Journal of Machine Learning Research, 3,* 993-1022. https://dx.doi.org/10.1162/jmlr.2003.3.4-5.993

Chapel, S. B., & Victor, D. A. (1999). Using scenarios and vignetts in cross-cultural business communication instruction. *Business Communication Quarterly, 62*(4), 99-103. https://doi.org/10.1177/108056999906200415

Covello, V. T. (1992). Risk communication: An emerging area of health communication research. In S. A. Deetz (Ed.), *Communication yearbook 15* (pp. 359-373).

Deumes, R. (2008). Corporate risk reporting: A content analysis of narrative risk disclosures in prospectuses. *Journal of Business Communication, 45*(2), 120-157. https://doi.org/10.1177/002194363307313992

Diers-Lawson, A., & Meissner, F. (2021). Editor's essay: Moving beyond Western corporate perspectives: On the need to increase the diversity of risk and crisis communication research. *Journal of International Crisis and Risk Communication Research, 4*(1), 165-176. https://doi.org/10.30658/jicrcr.4.1.6

DiMaggio, P., & Powell, W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147-160. https://doi.org/10.2307/2095101

Dunn, M. B., & Jones, C. (2010). Institutional logics and institutional pluralism: The contestation of care and science logics in medical education, 1967-2005. *Administrative Science Quarterly, 55*(1), 114-149. https://doi.org/10/2189/asqu.2010.55.1.114

Gould, K. P. (2021). Organizational risk: "Muddling through" 40 years of research. *Risk Analysis, 41*(3), 456-465. https://doi.org/10.1111/risa.13460

Greenwood, R., Raynard, M., Kodeih, F., Micelotta, E. R., & Lounsbury, M. (2011). Institutional complexity and organizational responses. *Academy of Management Annals, 5*(1), 317-371. https://doi.org/10.5465/19416520.2011.590299

Gygli, S., Haelg, F., Potrafke, N., & Sturm, J. (2019). The KOF globalization index – revisited. *The Review of International Organization, 14,* 543-574. https://doi.org/10.1007/211558-019-09344-2

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and*

organizations across nations (2nd ed.). Sage.

Iker, H. P. (1974). A historical note on the use of word-frequency contiguities in content analysis. *Computer and the Humanities, 8,* 93-98. https://www.learntechlib.org/p/168697/

Inkeles, A. (1998). *One world emerging: Convergence and divergence in industrial societies.* Westview Press.

International Monetary Fund (2019). *World economic outlook database, April, 2019.* https://www.imf.org/en/Publications/WEO/weo-database/2019/April

Isiaka, A. (2021). Risk factor disclosure: A review and directions for future research. *Accounting Perspectives, 20*(4), 583-615.https://doi.org/10.1111/1911-3838.12278

Jacoby, S. M. (2005). *The embedded corporation: Corporate governance and employment relations in Japan and the United States.* Princeton University Press.

Japan Exchange Group (2019). *Stock distribution survey in year 2019.* https://www.jpx.co.jp/markets/statistics-equities/examination/01-archives-02.html

Knight, M. (2014). Managing risk and crisis communication. *Business and Professional Communication Quarterly, 77*(4), 355-356. https://doi.org/10.1177/2329490614561021.

Lajili, K., & Zeghal, D. (2005). A content analysis of risk management disclosures in Canadian annual reports. *Canadian Journal of Administrative Sciences, 22*(2), 125-142. https://doi.org/10.1111/j.1936-4490.2005.tb00714.x

Linsley, P. M., & Shrives, P. J. (2006). Risk reporting: A study of risk disclosures in the annual reports of UK companies. *The British Accounting Review, 38*(4), 387-404. https://doi.org/10.1016/j.bar.2006.05.002

Louhichi, W., & Zreik, O. (2015). Corporate risk reporting: A study of the impact of risk

disclosure on firms reputation. *Economic Bulletin, 35(4),* 2395-2408.

Mazumder, M. M. M., & Hossain, D. M. (2018). Research on corporate risk reporting: Current trends and future avenues. *Journal of Asian Finance, Economics and Business, 5*(1), 29-41. https://doi.org/10.13106/jafeb.2018.vol5.no1.29

Meyer, R. E., Hollerer, M. A. (2010). Meaning structures in a contested issue field: A topographic map of shareholder value in Austria. *Academy of Management Journal, 53*(6), 1241-1262. https://doi.org/10.5465/amj.2010.57317829

Ministry of Economy, Trade and Industry, Japan (2020). (White paper on international trade) *Tsuushou hakusho 2020*. Retrieved from: https://www.meti.go.jp/report/tsuhaku2020/index.html

OECD (2015). *G20/OECD principles of corporate governance.* OECD Publishing. http://dx.doi.org/10.1787/9789264236882-en

Palmer-Silveira, J. C., & Ruiz-Garrido, M. F. (2014). Examining U.S. and Spanish annual reports: Crisis communication, *Business and Professional Communication Quarterly, 77*(4), 409-425. https://doi.org/10.1177/2329490614543176

Peladeau, N., & Davoodi, E. (2018). Comparison of Latent Dirichlet Modeling and factor analysis for topic extraction: A lesson of history. *Proceedings of the 51st Hawaii International Conference on System Sciences.* https://doi.org/10.24251/HICCS.2018.078

Ponce, H. G., Gonzalez, J. C., Al-Mohareb, M. (2023). Annual reports readability from linguistic and communication perspectives: Systematic literature review, *Business and Professional Communication Quarterly, 86*(4), 446-497.

Provalis Research (2021). *WORDSTAT 9* [Computer software]. Provalis Research.

https://provalisresearch.com.

Rajab, B., & Handley-Schachler, M. (2009). Corporate risk disclosure by UK firms: Trends and determinants. *World Review of Entrepreneurship, Management and Sustainable Development, 5(3),* 224-243. http://dx.doi.org/10.1504/WREMSD.2009.026801

Saggar, R., & Singh, B. (2017). Corporate governance and risk reporting: Indian evidence. *Managerial Auditing Journal, 32(4),* 378-405. https://doi.org/10.1108/MA-J-03-2016-1341

Smallwood, M. G. (2020). The need for cross-cultural communication instruction in U.S. business communication courses, *Business and Professional Communication Quarterly, 83*(2), 133-152. https://doi.org/10.1177/2329490620904730

Stohl, C. (2001). Globalizing organizational communication. In F. M. Jablin, & L. Putnam (Eds.), *The new handbook of organizational communication* (pp. 323-375). Sage.

Suzuki, S. (2013). Culture change in organizational public discourse 1998-2008: Examining annual reports of Japanese and US corporations. *International Journal of Intercultural Relations, 37(5),* 579-593. http://dx.doi.org/10.1016/j-ijintrel.2013.06.002

Thornton, P. H., Ocasio, W., & Lounsbury, M. (2012). *The institutional logics perspective: A new approach to culture, structure and process.* Oxford University Press.

Ulmer, R. R., Sellnow, T. L., & Seeger, M. W. (2007). *Effective crisis communication: Moving from crisis to opportunity.* Sage Publications.

United Nations Office for Disaster Risk Reduction (2009). *2009 UNDRR terminologies on disaster risk reduction.* Geneva, Switzerland: United Nations Office for Disaster Risk Reduction.

Vogel, S. K. (2019). Japan's ambivalent pursuit of shareholder capitalism. *Politics and Society, 47(1),* 117-144. https://doi.org/10.1177/003232921825160

Table 1

Top Five Risk Topics

1	**Topic 1: IT Security** *Keywords: security; attacks; information; cyber; systems; data; unauthorized; computer; confidential; networks; disclosure; measures; personal; damage; access; employees* *Associated phrases: information technology; information systems; personal information; unauthorized access; computer viruses; confidential information; security breaches; information security; information technology systems*
2	**Topic 2: Shareholders' Rights** *Keywords: depositary; holders; dividends; shareholders; shares; record; derivative; underlying; pay; law; rights; connection; accounting; efforts; make* *Associated phrases: rights of shareholders; exercise those rights; record date; common stock*
3	**Topic 3: Stable Supply** *Keywords: materials; components; parts; suppliers; raw; supply; production; supplies; supplier; shortages; manufacture; source; timely; manufacturing; products* *Associated phrases: raw materials; products and services*
4	**Topic 4: Currency Exchange** *Keywords: currency; currencies; exchange; dollar; fluctuations; foreign; rates; yen; rate; local; interest* *Associated phrases: currency exchange; interest rates; foreign currency; interest rate; currency fluctuations; currency exchange rates; exchange rate; foreign exchange; foreign currencies; exchange rate fluctuations; currency exchange rate; foreign currency exchange rates*
5	**Topic 5: Intellectual Property** *Keywords: intellectual; property; rights; protect; patents; proprietary; parties; license; unauthorized; trace* *Associated phrases: intellectual property; intellectual property rights; exercise those rights; unauthorized access*

Table 2

Linear Growth Models for Topic 1: IT Security

Model	Null Model	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effects[a]						
Intercept[b]	51.22 (5.24)***	55.51 (5.77)***	46.06 (6.15)***	54.85 (7.84)***	54.23 (8.13)***	54.57 (8.41)***
Year[c]		-1.14 (0.59)	6.57 (2.01)***	6.48 (2.01)***	6.64 (2.09)**	7.91 (2.65)**
Year squared[d]			-0.88 (0.22)***	-0.88 (0.22)***	-0.88 (0.37)** *	-1.03 (0.29)***
National culture[e]				-17.45 (10.08)	-16.17 (10.98)	-12.51 (11.96)
Year x National culture					-0.35 (1.19)	-3.37 (4.06)
Year squared x National culture						0.35 (0.45)
Random parameters[f]						
Residual variance	673.48 (63.60)	660.33 (62.39)	618.29 (58.41)	617.58 (58.28)	617.09 (58.25)	615.11 (58.06)
Between-corporation variance	734.02 (212.11)	758.14 (218.91)	742.65 (213.11)	673.57 (193.70)	675.93 (194.53)	679.12 (195.39)
-2 log likelihood[g]	2443.23	2439.61	2424.12	2421.24	2421.15	2420.55

a. The estimates of the fixed effects are unstandardized regression coefficients (standard errors in parentheses). Statistically significant estimates based on *t*-tests are marked with asterisks. *$p < .05$. **$p < .01$. ***$p < .001$.

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

c. Year was recoded as 0 (2010) through 10 (2019). The estimate is the expected linear change, or the mean growth rate, in the dependent variable for 1-unit increase in year.

d. This parameter tests for the quadratic rate of change.

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

f. The estimates, with standard errors in parentheses, of residual variance and between-corporation variance were all found to be significant ($p < .001$) based on *Wald z*-tests.

g. Model comparisons based on the -2 log likelihood values found Model 2 to be the best-fitting model.

Table 3

Linear Growth Models for Topic 2: Shareholders' Rights

Model	Null Model	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effects[a]						
Intercept[b]	41.94 (5.39)***	55.51 (5.77)***	34.28 (6.32)***	19.35 (7.36)*	16.92 (7.73)*	21.63 (7.97)**
Year[c]		0.48 (0.61)	5.23 (2.10)*	5.54 (2.10)**	6.19 (2.18)**	2.59 (2.74)
Year squared[d]			-0.54 (0.23)*	-0.56 (0.23)*	-0.58 (0.23)*	-1.17 (0.29)
National culture[e]				-29.43 (9.21)**	34.41 (10.34)**	24.07 (11.33)*
Year x National culture					-1.37 (1.24)	-7.17 (4.21)
Year squared x National culture						-0.98 (0.47)*
Random parameters[f]						
Residual variance	692.46 (65.40)	690.49 (65.21)	674.91 (63.73)	677.18 (64.14)	671.64 (63.66)	615.11 (58.06)
Between-corporation variance	779.03 (224.03)	779.33 (224.53)	770.67 (221.62)	539.94 (166.04)	553.93 (170.41)	679.12 (195.39)
-2 log likelihood[g]	2451.14	2450.50	2445.01	2436.43	2435.21	2430.74

a. The estimates of the fixed effects are unstandardized regression coefficients (standard errors in parentheses). Statistically significant estimates based on *t*-tests are marked with asterisks. *$p < .05$. **$p < .01$. ***$p < .001$.

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

c. Year was recoded as 0 (2010) through 10 (2019). The estimate is the expected linear change, or the mean growth rate, in the dependent variable for 1-unit increase in year.

d. This parameter tests for the quadratic rate of change.

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

f. The estimates, with standard errors in parentheses, of residual variance and between-corporation variance were all found to be significant ($p < .001$) based on *Wald z*-tests.

g. Model comparisons based on the -2 log likelihood values found Model 5 to be the best-fitting model.

Table 4

Linear Growth Models for Topic 3: Stable Supply

Model	Null Model	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effects[a]						
Intercept[b]	81.80 (7.85)***	90.28 (8.44)***	82.30 (9.07)***	87.33 (11.99)***	84.07 (12.33)***	82.03 (12.68)**
Year[c]		-2.24 (0.81)**	4.28 (2.81)	4.22 (2.81)	5.10 (2.91)	6.65 (3.70)
Year squared[d]			-0.75 (0.31)*	-0.73 (0.31)*	-0.77 (0.31)*	-0.94 (0.40)*
National culture[e]				-9.98 (15.68)	-3.30 (16.78)	1.20 (18.01)
Year x National culture					-1.85 (1.66)	-5.56 (5.67)
Year squared x National culture						0.43 (0.63)
Random parameters[f]						
Residual variance	1279.87 (120.85)	1237.53 (116.85)	1205.38 (113.82)	1205.46 (113.83)	1199.37 (113.25)	1196.82 (113.01)
Between-corporation variance	1675.30 (474.90)	1685.81 (476.22)	1697.50 (478.16)	1672.89 (471.78)	1666.94 (470.26)	1667.73 (470.39)
-2 log likelihood[g]	2611.24	2603.79	2598.01	2597.61	2596.38	2595.91

a. The estimates of the fixed effects are unstandardized regression coefficients (standard errors in parentheses). Statistically significant estimates based on *t*-tests are marked with asterisks. *$p < .05$. **$p < .01$. ***$p < .001$.

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

c. Year was recoded as 0 (2010) through 10 (2019). The estimate is the expected linear change, or the mean growth rate, in the dependent variable for 1-unit increase in year.

d. This parameter tests for the quadratic rate of change.

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

f. The estimates, with standard errors in parentheses, of residual variance and between-corporation variance were all found to be significant ($p < .001$) based on *Wald z*-tests.

g. Model comparisons based on the -2 log likelihood values found Model 2 to be the best-fitting model.

Table 5

Linear Growth Models for Topic 4: Currency Exchange

Model	Null Model	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effects[a]						
Intercept[b]	40.00 (2.66)***	42.83 (2.89)***	40.69 (3.16)***	38.43 (4.10)***	37.53 (4.25)***	37.23 (4.41)***
Year[c]		-0.74 (0.31)*	1.00 (1.10)	1.03 (1.10)	1.27 (1.14)	1.51 (1.45)
Year squared[d]			-0.20 (0.12)	-0.20 (0.12)	-0.21 (0.12)	-0.23 (0.16)
National culture[e]				4.49 (5.22)	6.33 (5.72)	6.99 (6.27)
Year x National culture					-0.51 (0.65)	-1.05 (2.22)
Year squared x National culture						0.06 (0.25)
Random parameters[f]						
Residual variance	190.37 (18.00)	186.33 (17.62)	183.99 (17.40)	183.93 (17.39)	183.59 (17.36)	183.53 (17.35)
Between-corporation variance	186.47 (55.19)	182.00 (53.83)	183.02 (54.03)	178.48 (52.73)	177.28 (52.41)	177.31 (52.42)
-2 log likelihood[g]	2119.46	2113.94	2111.21	2110.48	2109.88	2109.81

a. The estimates of the fixed effects are unstandardized regression coefficients (standard errors in parentheses). Statistically significant estimates based on *t*-tests are marked with asterisks. *$p < .05$. **$p < .01$. ***$p < .001$.

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

c. Year was recoded as 0 (2010) through 10 (2019). The estimate is the expected linear change, or the mean growth rate, in the dependent variable for 1-unit increase in year.

d. This parameter tests for the quadratic rate of change.

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

f. The estimates, with standard errors in parentheses, of residual variance and between-corporation variance were all found to be significant ($p < .001$) based on *Wald z*-tests.

g. Pair-wise model comparisons based on the difference in the -2 log likelihood values found Model 1 to be the best-fitting model.

Table 6

Linear Growth Models for Topic 5: Intellectual Property

Model	Null Model	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effects[a]						
Intercept[b]	27.72 (3.30)***	29.35 (3.57)***	23.77 (3.78)***	27.19 (4.97)***	26.88 (5.12)***	26.00 (5.28)***
Year[c]		-0.43 (0.34)	4.12 (1.16)***	4.08 (1.17)***	4.17 (1.21)***	4.84 (1.54)**
Year squared[d]			-0.52 (0.13)***	-0.52 (0.13)***	-0.52 (0.13)***	-0.60 (0.17)***
National culture[e]				-6.79 (6.45)	6.16 (6.97)	4.21 (7.49)
Year x National culture					-0.17 (0.69)	-1.78 (2.34)
Year squared x National culture x National culture						0.19 (0.26)
Random parameters[f]						
Residual variance	224.62 (21.20)	222.68 (21.03)	257.84 (19.62)	207.73 (19.60)	207.62 (19.59)	207.05 (19.54)
Between-corporation variance	296.50 (83.82)	301.15 (85.12)	296.99 (83.46)	286.82 (80.55)	287.41 (80.75)	288.64 (81.09)
-2 log likelihood[g]	2169.48	2167.94	2151.93	2150.85	2150.79	2150.28

a. The estimates of the fixed effects are unstandardized regression coefficients (standard errors in parentheses). Statistically significant estimates based on *t*-tests are marked with asterisks. *$p < .05$. **$p < .01$. ***$p < .001$.

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

c. Year was recoded as 0 (2010) through 10 (2019). The estimate is the expected linear change, or the mean growth rate, in the dependent variable for 1-unit increase in year.

d. This parameter tests for the quadratic rate of change.

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

f. The estimates, with standard errors in parentheses, of residual variance and between-corporation variance were all found to be significant ($p < .001$) based on *Wald z*-tests.

g. Model comparisons based on the -2 log likelihood values found Model 2 to be the best-fitting model.

Table 7

Summary of Results

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
Predictors / Covariates					
Year	+ +			−	+ +
Year^2	− −		−		− −
National culture					
Year x National culture					
Year^2 x National culture		−			
Best-fitting model	**2**	**5**	**2**	**1**	**2**

Note. Significant positive predictors and covariates (those with significance levels $p < .05$) are denoted by +, whereas significant negative ones by −. The stronger predictors and covariates (those with significance levels $p < .001$) are denoted by + + or − −.

Topics 1 through 5 are: Topic 1 (IT security), Topic 2 (shareholders' rights), Topic 3 (stable supply), Topic 4 (currency exchange), and Topic 5 (intellectual property).

The best-fitting models are: Model 0 (null model), Model 1 (year significant), Model 2 (year and year^2 significant), Model 3 (year, year^2, and national culture significant), Model 4 (year x national culture significant), and Model 5 (year^2 x national culture significant).

Footnotes

[1]The 15 Japanese (1- **) and 15 United States (2- **) corporations that were selected for this study are listed in the following. The two corporations sharing the same ** number signify that they were paired based on the similarities in terms of industry type, net annual sales, number of employees, key competitors, and corporate size as of 2011 in reference to Standard Industrial Classification (SIC) and the American Industry Classification Systems (NAICS) codes (see Suzuki, 2013 for details). Japanese corporations: 1-1 Canon Inc, 1-2 Honda Motor Co Ltd, 1-3 Komatsu Ltd, 1-4 Kubota Corp, 1-5 Kyocera Corp, 1-6 Makita Corp, 1-7 NIDEC Corp, 1-8 Nomura Holdings Inc, 1-9 NTT Corp, 1-10 Orix Corp, 1-11 Panasonic Corp, 1-12 Ricoh Co Ltd, 1-13 Sony Corp, 1-14 Toyota Motor Corp, and 1-15 Wacoal Corp. United States corporations: 2-1 Xerox Corp, 2-2 General Motors Co, 2-3 Caterpillar Inc, 2-4 Deere & Co, 2-5 Corning Inc, 2-6 Black & Decker Inc, 2-7 Emerson Electric, 2-8 Bank of America Corp, 2-9 AT & T Inc, 2-10 Agco Corp, 2-11 Motorola Inc, 2-12 Eastman Kodak Co, 2-13 Microsoft Corp, 2-14 Ford Motor Co, and 2-15 Guess Inc.