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December 1999

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# Information Technology Choices in Dissimilar Cultures: Enhancing Empowerment

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## Introduction

A subject which has received considerable recent attention is that of intercultural comparison of the usage of Information Technology (IT) [2, 4, refs]. Many such studies have been presented, but those reviewed to date have the unfortunate reality of 1) using comparisons drawn from the impressions of two distinct groups (one group from each culture of interest) [refs], and 2) of paying only passing attention to the subject of IT worker empowerment [33], the ability of IT to assist workers in completing their jobs in a more productive manner.

## Theoretical Basis for the Research

Empowerment has often been cited as the common thread amongst the "best managed companies" [1]. Numerous studies recount positive changes and benefits achieved when empowerment initiatives are implemented in organizations [refs]. Bowen and Lawler reason that employees are empowered if they get information about, have the power to contribute to, and are rewarded for contributing to, organizational performance [5]. Hayes developed the Employee Empowerment Questionnaire (EEQ) [16] as a means to measure empowerment. The EEQ contains eight statements for agreement / disagreement (e.g., "I am allowed to do almost anything to do a high-quality job."). A logical subsequent question is "what creates empowerment / what empowers?". Bowen and Lawler [5] provide an answer in the form of a "contingency approach to empowerment". They list five contingencies which make up empowerment. Among these, technology (in particular IT) and culture have received significant attention in the literature as empowering forces [refs]. However, these studies look at the effects of IT or culture individually on empowerment. This fact is notable because other researchers have shown that IT and culture often affect one another. Bento [3] proposed that cultural factors affect the choice of communication technologies in team projects. Watson and Ho [A2] found that culture had an effect on the selection and design of IT, in particular group support systems. And finally Straub [33] demonstrated that culture affects IT diffusion. Given that cultural factors have been shown to have such a large effect on IT choices and usage, it makes sense that these two prominent empowerment contingencies -- culture and IT -- could be affecting one another in the pursuit of empowerment. A more precise definition of culture is needed to clarify this possibility. The definition of culture used for this study is

Hofstede's [18] widely cited Cultural Paradigm. In this paradigm, Hofstede defines culture as the "collective mental programming of people in an environment" that can be identified by four factors: Individualism / Collectivism, Uncertainty Avoidance, Power Distance, and Masculinity. To study the effect culture has on IT choice in the pursuit of empowerment, it is preferable to select radically different cultural settings, to observe any differences in IT choice [35]. Japan and the United States differ by at least 45 points, out of a possible 100, on the attributes Individualism / Collectivism (Japan = 46, and U.S. = 91, highly individualistic) and Uncertainty Avoidance (U.S. = 46, Japan = 92, highly uncomfortable with uncertainty) in Hofstede's index. Thus, comparing Japanese and American cultures would be ideal. Using the logic of Straub [33] and Bowen and Lawler [5], the following research hypothesis (shown in Figure 1) emerges:

**Research Hypothesis**: IT which is high in information richness will be chosen and used in Japan due to the cultural tendency against comfort with uncertainty to produce a high state of empowerment, while IT which is high in collaborative capacity will be chosen and used in the United States due to the cultural tendency against collectivism to produce a high state of empowerment.



*Figure 1.* Research Hypothesis

Thus, in the Japanese case, one would expect empowerment to be high ("H") if information technologies which were high in richness ("H" under "Richness = R") were employed as partial compensation for the discomfort with uncertainty in the culture ("L" under "Comfort with Uncertainty = U"). However, given the collectivist nature

of the Japanese culture ("H" under "Collectivism = C"), it is not necessarily important that collaborative information technologies are chosen ("H/L" under "Sharing / Collaborative Capacity = S") if empowerment is to be achieved. For purposes of discussion, we will note such a relationship using the symbols E(H) = U(L) + C(H) + R(H) + S(H/L).

## Methodology

To explore the appropriateness of the research hypothesis, case study methodology was used. In contrast to studies which have made cross-cultural comparisons using distinct groups in each culture [2, 4, 17, 20, 23, 26, 33], this research used case investigators who had spent significant time in both the United States and Japan. This opportunity was afforded by the Manufacturing Technology Fellowship ("MTF") Program. The U.S.-Japan Manufacturing Technology Fellowship is a unique program that provides U. S. engineering managers the opportunity to spend a year in Japan learning Japanese work techniques, culture and language. The U.S.-Japan Manufacturing Fellowship is a joint project of the U.S. Department of Commerce (USDOC) and the Japanese Ministry of International Trade and Industry (MITI). Each fellowship had a duration over 15 months. Twelve Fellows participated in this research, with six participating the full two years and helping the research reach its conclusion.

## Research Design

The research design had the authors acting as coordinating investigators, and the six participating MTF Fellows acting as individual case investigators. The coordinating investigators used surveys, written questionnaires and formal interviews to communicate and gather data from the case investigators. The case investigators used lengthy and detailed Participant Observer status, and both formal and informal interviews to collect their data. Participant Observer status was maintained during the entire duration of each individual's fellowship. Interviews were exhaustive and detailed, in some cases lasting more than one day. As more than one unit of analysis was used to draw conclusions, and multiple sites were used for the cases, the case study research design employed was Yin's Type 4; an Embedded, Multiple Case Design [35]. This design type allows for comparisons to be made using literal replication logic as well as theoretical replication logic. Literal replication logic predicts similar results (as hypothesized, to other cases, etc.), while theoretical replication logic allows for contrary results, but for predictable reasons [35]. Both circumstances were expected in this case study research. For example, in the literal replication case, a Japanese company which used information technologies which were high in richness ("H" under "Richness = R") would be expected to be high in empowerment ("H"), or E(H) = U(L) + C(H) + R(H) + S(H/L). However, in the theoretical replication case, a

Japanese company which used information technologies which were low in richness ("L" under "Richness = R") would be expected to be low in empowerment ("L"), or E(L) = U(L) + C(H) + R(L) + S(H/L).

## Planned Analysis

A predominant method of analysis in case research is "pattern matching", where an attempt is made to fit result patterns to proposed hypotheses, and an attempt is made to rule out other possibilities or rival hypotheses. The five attributes of interest (as enumerated in Figure 1) were determined to be "H - high" or "L - low" using Yin's [35] gross matches or mismatches reasoning. The cultural attributes of Comfort w/ Uncertainty and Collectivism were taken as givens, based on Hofstede's index. Richness and Collaborative were rated as "H" or "L" based on the definitions presented previously. The Employee Empowerment Questionnaire (EEQ) is a reliable and valid measure of the state of empowerment at an organization [16], and thus "Empowerment" was determined by having investigators agree or disagree with the eight statements from the EEQ. Investigators were asked whether cultural aspects aided or inhibited the level of empowerment, and also which information technologies were chosen as a remedy for these aspects. Responses to all questions were detailed and investigated in-depth. All responses to the EEQ were coded on a 1-7 scale. A company was ranked "H" or "L" in a certain attribute only if the majority of responses were close to the appropriate extreme side of the scale.

## Results

Twelve Fellows participated extensively in the survey process, and of those six took part in the refined interview process throughout the subsequent year. Table 1 summarizes the findings from these six case studies.

Table 1. Case Study Results. Empowerment, Cultural, and Technology Patterns
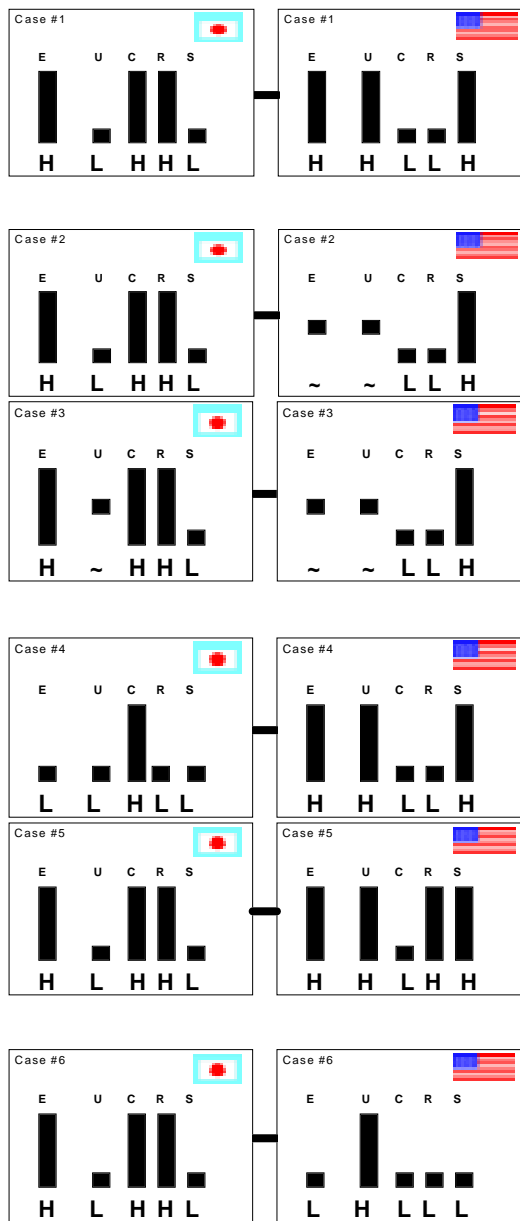


Each case study is indicated by two linked boxes, the right box representing the Fellow's United States company, and the left box representing his/her assigned Japanese company. A tilde ("~") is used where high ("H") or low ("L") could not be determined. These final "high and low" ratings were determined using Yin's [35] "non-subtle pattern" reasoning. For example, empowerment in Case 1 for the Japanese company was given an "H" because 5 out of 8 EEQ questions were strongly agreed with (response = "7") and the other 3 were agreed with (response = "6"), and all ratings for the Bowen and Lawler scenarios were at least 6 out of a possible 7. Final patterns for the other five cases

were determined similarly. Cases 1 and 5 demonstrate literal replication patterns for both cultures, Case 4 shows a theoretical replication pattern for the Japanese company and a literal replication pattern for the United States company, and Case 6 shows a literal pattern for the Japanese company and theoretical pattern for the United States company. Most importantly, no patterns emerged as threats to the validity of the research hypothesis.

## Discussion and Conclusions

The cases with literal replication patterns suggest, as hypothesized, that cultural factors affected information technology choice in the pursuit of empowerment. Supporting this notion are the cases demonstrating theoretical replication, which are contrary to what was expected, but for predictable reasons. These cases had low states of empowerment at the companies being studied, possibly because the technologies chosen and used were not appropriate for the problematic cultural attributes. In Case 4, the Fellow's Japanese company had a low state of empowerment, but given that the employees of the company did not extensively employ rich technologies to offset the culture's discomfort with uncertainty, this is expected. In Case 6, the Fellow's United States company had a low state of empowerment, but given that the employees of the company did not extensively employ collaborative technologies to offset the culture's individualistic nature; this is also expected.

In all six cases studied, technology was a critical element in the empowerment process (especially to the extent that it provided a balance to cultural characteristics), and the following results were noticed:

- Japanese workers, while having far inferior communications technology, are empowered at an equal as American workers.
- The rich information technologies used in Japan helped overcome the discomfort with uncertainty present in that culture in the pursuit of empowerment.
- The exceptional collaborative technologies moved the individualist culture of the US to empowerment.

These results have important implications for both researchers and practitioners. Evidence has been presented that cultural factors can be tempered by technology in the pursuit of empowerment. Thus, management would be well-advised to consider technology infrastructure strategies which were geared toward the organization's culture.

**REFERENCES AVAILABLE FROM CHARLES E. DOWNING UPON REQUEST**