Cultural critical incidents in design: An international perspective

Chang-Geun OH, Hardianto IRIDIASTADI, Tonya SMITH-JACKSON

Department of Biomedical, Industrial and Human Factors Engineering, Wright State University, Dayton, OH, USA, Department of Industrial Engineering, Institut Teknologi Bandung, Indonesia, Department of Industrial and Systems Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA

Abstract. Cultural critical incidents (CCIs) are defined as incidents in which the design of a product or system is culturally incompatible with the needs of the target users. A CCI could result in a range of outcomes; from minor frustrations to major offenses to serious safety problems. In this study, we used an online survey method to elicit case reports of CCIs to identify patterns. Respondents were from Korea, USA, Ethiopia, Eritrea, India, Indonesia, Peru, and China. Some respondents in the USA were from specific ethnic groups within the USA. The types of technologies reported included appliances (such as dishwashers), symbols, protocols, and organizational design. Based on the analyses, the CCIs revealed problems such as hazards associated with misinterpretations, offense because of design assumptions inherent in the product or system, and user confusion because of mismatches of designers’ and users’ mental models.

Keywords. Cultural critical incidents, cultural ergonomics, product design, global design.

1. Introduction

The globalization of products and systems underscores the critical nature of cultural ergonomics practice and the need to ensure product and system design are culturally competent. Cultural critical incidents (CCIs) are defined as incidents in which the design of a product or system is culturally incompatible with the needs of the target users. A CCI could result in a range of outcomes, from minor frustrations to major offenses to serious safety problems. In this study, we used an online survey method to elicit case reports of CCIs and to identify patterns. The results of the survey questionnaire showed respondents have had CCIs in their everyday life. The following sections showed the types of CCIs and the results of the questionnaire.

2. Background

2.1 Definition of CCI

Our research team defines a cultural critical incident from the human factors engineering perspective of product design, process design, or system design. It is an event
involving a design conflict, safety problem, offense to a person, or usability problem that occurs because of cultural differences usually arising from a lack of knowledge of different cultures (by designers, companies, organizations, etc.). A well-known story that describes a cultural critical incident is the Chevrolet NOVA (Shore, 2010). Sales were low in Spanish-speaking countries because NOVA roughly means "It does not go" in Spanish. However, this is an urban legend; it is a story that has been told many times but is not true.

2.2 Origin and influence of CCI to design for product, process, and system

Schwartz, Melech, Hehmann, Burgess, Harris, and Owens (2001) conducted research on the diversity of identifying a comprehensive set of human values recognized across cultures by various ethnic groups. The results from this research showed each ethnic group has a unique value structure, and this fact implies why CCIs are encountered among different cultural groups.

CCIs often become a motivation to consider cultural perspectives in designing products, processes, or systems. From the standpoint of marketing, without considering CCIs, companies that wish to increase their market in foreign countries can have problems. The market development can depend on cultural differences, racial differences, climatic differences, economic differences, religious differences, historical differences, language differences, and differences in actual and potential target groups (Kumar, 1999). To apply those differences to design, researchers should get deeply involved in the culture of interest by interacting with the target group and ensuring the cultural competence of the design activities. Therefore, researchers often become messengers or diplomats in this respect (Konkka, 2003). Honold (2000) asked Indian households to try to use washing machines for three weeks. The washing machines were developed in Germany. He identified climate, the infrastructure of India (such as water or power), the division of labor (such as housewife or house maid), the organization of work (timing due to cultural values), the cultural difference in clothing, and previous experience with top-loading washing machines, as factors that influence the use of products in this specific culture.

To minimize CCIs, there should be cultural considerations in the design procedure. For instance, developing cultural meta-schemas can be adopted in the design process (Smith-Jackson, Iridiastadi, & Oh, 2010). A socio-cultural design model is another example of a way to minimize CCIs (Moalosi, Popovic, Hudson, & Kumar, 2005). Collecting cultural data appropriately by cultural usability research (Sun, 2002) is also an example of a way to minimize CCIs. It is important to cooperate with local experts when gathering and interpreting data (Aykin, Quaet-Faslem, & Milewski, 2006). In this project, we conducted research to identify CCIs using a self-report method. In particular, we identified attributes based on the descriptions provided by respondents to our questionnaires.

3. Methods

3.1 Participants

Participants were recruited using listservs and word of mouth. There were 55 respondents with a mean age of 32.5 (SD = 11.7) years. Respondents’ countries included South Korea, USA, Ethiopia, Eritrea, India, Indonesia, Peru, and China.
3.2 Online Questionnaire

Questions are shown in Table 1. Some respondents in the USA were from specific ethnic groups within the USA. The online survey also included questions to acquire ratings of the seriousness of the design problems.

Table 1: Online survey questions

<table>
<thead>
<tr>
<th>Q1. What is your age?</th>
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<tr>
<td>Q2. On a scale from 1 to 10, please indicate how strongly you identify with your ethnic group.</td>
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<tr>
<td>1(not at all) 2 3 4 5 6 7 8 9 10(very strongly)</td>
</tr>
<tr>
<td>Q3. What is your ethnic group membership?</td>
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<td>Q4. Please tell us the context in which this cultural critical incident occurred.</td>
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<tr>
<td>School or educational setting / Business (Bank, Restaurant, Theater, etc.) / Religious Institution / Work place (Job) / Medical Setting / Home Leisure event (Party, Social Gathering) / other:</td>
</tr>
<tr>
<td>Q5. Which of the following problem areas best describe the cultural critical incident?</td>
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<td>Offensive design / Misleading or confusing design / Usability problem (ease of use, efficiency) / Safety problem (dangerous, hazardous) / Aesthetic problem (attractiveness, shape, form) / other:</td>
</tr>
<tr>
<td>Q6. How many times have you experienced this incident (your best estimate)?</td>
</tr>
<tr>
<td>One time / 2 - 5 times / 6 - 10 times / 11 or more times</td>
</tr>
<tr>
<td>Q7. Please provide any additional comments, including any concerns you have about the cultural inclusiveness of this survey.</td>
</tr>
</tbody>
</table>

4. Results

Some qualitative replications of the survey were not related to the design of products, processes, or systems, although the intention here was to determine the implications related to the design. Still, overall replications were helpful in understanding respondents’ perceptions on general CCIs. The types of technology and the context reported by the respondents included the use of and experiences with appliances (such as dishwashers), symbols, protocols, and organizational design.

Results of the questionnaire showed that almost half (45%) of the respondents identified themselves very strongly (a rating of 10) with their ethnic group. For this survey item, the mean ethnic identity rating was 8.29 (SD = 1.98). The results also showed (Figure 1) that the majority of CCIs occurred in educational, business, or work settings. In addition, a considerable number of CCIs occurred during leisure events. Note that much fewer CCIs were experienced in the home or other settings (religious and medical).

The two problem areas that ranked highest were designs that were offensive or misleading (confusing), as shown in Figure 2. The next problem was designs with usability issues. Fewer issues were found with respect to other design features, such as
safety and aesthetic. Thirteen respondents experienced a one time CCI, whereas more than 20 respondents reported that they encountered between two to five CCIs (Figure 3). A greater number of CCIs (greater than 6) were reported by about one-third of the respondents.

Finally, in the qualitative answers, thirty-four respondents gave comments about their CCIs. Seventeen persons showed the examples they encountered, and eight persons gave personal ideas about the CCIs. Among them, seven meaningful examples of CCIs for product, process, or system design application were identified. Other comments included feelings of dissatisfaction or disagreement with other peoples’ attitudes and behaviors.

![Figure 1: Contexts where CCIs occurred.](image1)

![Figure 2: Categories of CCIs.](image2)
5. Discussion and Future Work

This study sought to explore CCIs experienced by people with various ethnic backgrounds. Findings of this study demonstrated that nearly all respondents experienced at least one CCI throughout their life. Furthermore, many CCIs occurred in a number of specific common places such as schools and work settings, in which a high frequency of interactions occur among people. These CCIs may influence productivity and workplace retention. This phenomenon is somewhat different from those observed at homes or religious places, where the people could have been more homogeneous. Nevertheless, the finding here implies that products, processes, or systems in schools, work places, and leisure places need to be designed with more considerations on cultural diversity.

Another important finding was that many respondents perceived some designs to be offensive. This implies that some design features can have a negative effect on certain ethnic groups, due to a conflict in value structures. This was supported by the fact that there were different value structures among various ethnic groups (Schwartz et al., 2001). For instance, a basketball shoe by Nike (Halflight, 2007) that had ‘air’ printing looked like ‘Allah’ written in Arabic is an example of offensive design. This unintentional feature also existed in a design of Thom McAn shoe (Morrison, & Conaway, 2004).

We also found that some African-Americans in the U.S. were frustrated from what they perceived as Caucasian-centered structures (ethnocentrism). Examples related to this included dresses which gave less consideration to African-American anthropometry (e.g., shorter torso and longer limbs), cosmetics that did not match African-American complexion, and the availability of African-American dolls for children (compared with the number of ‘white’ dolls in the market).

Finally, there were remarks about usability problems including dishwashers that were not very effective for cleaning the dishes used to serve South Asian food. Other examples included dry toilets that don’t reserve any water source beside them. This is a case of challenge for Muslims, who use water with their hand instead of toilet tissues. Again, these are examples of some issues that are critical when designing products and systems.
To solve these problems, design strategies of ‘polycentrism’, ‘regiocentrism’, or ‘geocentrism’ need to be adapted for products, processes, and systems (Kumar, 1999). In the future, CCIs need to be collected for a wider range or narrower range of people. The former is a consideration of cultural factor for inclusive design, and the latter is for localized design.

6. Acknowledgements

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7. References


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1 Orientation towards host country
2 Regional orientation
3 World orientation