Human Factors

for Ergonomic ITs:

How Culture Affects the way we Interact

with Technology and how we Process Data

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1. Does the Cultural Structure Affect the Acceptance of New ITs?

In my experience, social and economic structures can determine how and why people entertain themselves, including what they find entertaining. The way I, and the people I have met, use mobile media is determined by our cultural and personal aspects and habits. These, in turn, also depend of socioeconomical structures. It makes a lot of sense to me that, when it comes to accept mobile entertainment, for example, Liu et. al. (2010) discovered that "there is an interesting phenomenon (…) contrary with most practitioners' beliefs that good device and good service can always get users (…) [because] social influence plays more important role in traditional agriculture-based Chinese rural areas (…) [and] in modern manufacturing industry-based Chinese rural areas (…) no matter how good the product is, the product will not be accepted if the user is not confident in mastering it" (p. 2210).

What the user is used to and how he interacts in his daily life play a central role that can be bigger the characteristic of the product or service itself. Another example is the study comparing the impact on usability of rich web portal designs and floating animations, where "all Chinese participants were extremely experienced web users (…) [and it was observed that] the influence of the design (rich/simple) on their subjective evaluation becomes smaller as they are used to" (Rau, Gao & Liu, 2007, p. 210) them. When bearing in mind experience, education and interests, these are all marked by socioeconomical factors as well. Hence, we must consider this kind of phenomena when it comes to acceptance of mobile entertainment.

In my experience, if the user is more educated, this can even allow him to accept content in a foreign language like English. Things I've seen needing translation for some users are not a problem for others. But this idea extends furthermore, as I've seen that usability traits and common places are much more familiar to people who, for example, have a background accustomed to digital devices. Considering the importance of self efficacy and social influence for the population on some rural areas in China, it is not strange that some people not only need the content translated. I've seen users require globally accepted icons and standard interactions (like login

or play media) explained to them and made explicit because they just are not familiar with them. All this familiarity also mediates the way in which people adopt new technologies.

Even the purpose people seek to fulfill with entertainment, in my experience, can be very different depending on social elements, economics and the life styles users have. Some people I know seek to entertain themselves alone while having to wait in a line or at the bus station: more of a personal use. Others like to share the content or be able to share their impressions and feelings about the entertainment they consume: a more socially oriented style of entertainment. Different social structures in which people are immerse and the ways of socializing they involve modulate styles and habits, becoming critically important when understanding what kind of mobile entertainment they choose.

2. Some Experiences Regarding How Data is Interpreted in Different Cultures

In my experience, I've had the opportunity to make business with Chinese companies. One thing that struck me was the way the salesman considers their customers, something that somehow differs from the view of business in the West. I used to import industrial machinery for my projects and had an agent that dealt these products from China. He represented a big manufacturer of industrial equipment in China.

On a couple of opportunities, I had the need to import other products from China, products that his company did not sell directly. In my country, Chile, it would not be very common for a representative that doesn't sell the product to offer a solution because sales representatives are more prone to attend only "the focal part of a picture (…) whereas Easterners (…) [do] not separate objects from their environment" (Clemmensen et. al., 2009, p. 215). This means here in Chile, each agent only sells products from his portfolios.

On the other hand, this agent in China offered to manage and send a couple of four wheeled motorbikes, for example, something that the company he worked for did not actually sell. This, of course, boosted our customer-seller relationship. One could argue that he did this because "in sharp contrast to the Western view, the East Asian view of the self is of a connected, fluid, flexible and committed being who is bound to others" (Lu, 2010, p. 335). He was attending not the underlying objects of the commercial relationship (industrial equipment), he was attending the commercial relations themselves so it had total sense to him to sell us this other products. After all, he was the exports salesman and I was the customer importing to Chile.

This is very rare to see in Chile, if one were to ask a seller for something he did not sell, probably he would not feel any need to channel the need in any way: the customer-seller relationship is not so compelling. On the other hand, if a Chilean salesman identifies someone who is not his customer but has the need for his products, he will feel very compelled to try to sell to him. I believe this is a very different way of looking at things. In one case, the relationships affect much more the commercial activities, on the other case, the products/services dictate what kinds of business make or do not make sense for each part involved.

3. Examples of Chilean Cultural Characteristics Understood using Hofstedes' Theory

In my experience, cultural differences are ubiquitous. We can find them across continents, cities, social groups, even families. "No group can escape culture. [Furthermore] creating shared rules (…) is a precondition for group survival" (Hofstede, Hofstede & Minkov, 2010, p. 12).

I can relate based on Hofstedes' model, using the traditional 'huaso' of my country, Chile, an iconic representative of an historical identity. The 'huaso' is a people's man, a strong cultural archetype continuously playing a role on national imaginary. Resembling some sort of resourceful cowboy or brigand, its distinct image is heavily associated with laboring under the patronage of a landlord. As any model, certainly Hofstedes' has its shortcomings: probed "subjects were from a single company (…) [and it lacks] insight into the richness and

depth of culture" (Rau, Gao & Liang, 2008, p. 288). Also, chileans are more than an exact instantiation of the 'huaso' identity. But still, we can find very interesting insights using the power of generalization and collective imaginary.

Chileans have high hopes on the people in charge and the systems they implement. According to Hofstede et. al. (2010), Chileans are at top quarter of uncertainty avoidance and tolerate averagely power distance. This correlates with the 'huaso'-landlord tenancy relationships. In accordance, today chileans expect to make long careers on the companies they work, they usually demand high workplace standards from their employers and assume clear work procedures.

"Time orientation (…) influences how people do things and how they consume their time resources" (Rau et. al. 2008, p. 288) and according to Hofstede et. al. (2010), in Chile people have a short termed mindset and "main work values include freedom, rights, achievement, and thinking for oneself (...) [setting off a structure in which] managers and workers are psychologically in two camps" (Hofstede et. al., 2010, p. 251).

Chileans have quite an open, flexible and tolerant mind set. This too may be related to the image of the 'huaso', a jack of all trades, even an opportunist at times. Chileans have a low masculinity rate and a collectivist mindset (Hofstede et. al., 2010), strong ties report to this 'huaso', who adapts to conditions and subordinates gender roles to current circumstances.

All that cultural mix is distinct. Workspaces and social processes display this particular complexity. Chileans expect a lot from their leaders, and will accept degrees of power difference just accordingly. Even recent social uprisings within the country relate: when leaders don't live up to standards, people will get very upset. Flexible and creative at problem solving, chileans are highly discouraged by micromanagement. Yet, they sometimes have hard times letting go on the way things have been done traditionally. This explains a lot of the bureaucracy in Chile, and the difficulties the country has had to innovate.

4. How Should we Design AIs to be Culturally Adequate?

According to Rau, Li & Liu (2013), "for dependent variables likability, trust, credibility, and judgment change to robot, culture is the most important influence factor" (p. 594), meaning that the cultural mindset determines these even with certain degree of independence of tone or the language in which the robots interact. Analyzing these traits is a first key factor.

Two main components of the cultural factors are then put forward: the contextual implication of information in communication, and collectivism/individualism. These two are critical determinants. Also we identify interaction modes for the designed system: implicit or explicit, and using native or foreign language.

Collectivism or individualism marks the overall willingness of the user to accept recommendations from the system. This goes beyond the modes of interaction and explains why some users have a more flexible approach to the decisions made, whereas others make more unmovable decisions. Comparatively, if the user has a more individualistic mindset, it will not be so reasonable to expect changes in the decisions frequently, depending on any information the system can provide in any manner. Collectivist mindsets on the other hand tend to average out opinions and draw meaning from the whole group. Even the identity conception in this mindset is not so compartmentalized, interacting with a high-context communication style. This mindset then demands suggestions and context.

A high-context communication style understands situations from relations and from the whole. It is very relevant that all information embedded in the different cues is consistent and synergic because the meanings are constructed holistically. In a low-context scenario, the information is much more abstracted, separated from the context, and definitely conveyed by separate means (for example text or voice).

These also affect how people receive implicit and explicit messages from the machine. "For implicit communication style, Chinese participants (…) were significantly likely to be influenced (…) But for explicit communication style, no significance was found" (Rau, Li & Liu, 2013, p. 594) because familiar communication styles are preferred. The degree of interdependence of the "self-construal [also] plays a central role in one's mental world. For example, it influences, almost always unconsciously, the personal goals and tasks" (Rau, Ploocher & Choong, 2013, p. 8) relating to how the user can perceive the machine as in-group or out-group.

To evoke satisfactory user experiences across cultures, the cultural mindset and communication styles must be taken in consideration. There are cultures in which users are just less prone to accept suggestions and reconsider their answers and opinions. There are cultures in which users expect a more implicit expression from the system. It is not so fruitful to design a system that offers many alternatives and suggestions during usage, hoping to change the decisions, non-collectivistic culture. Efforts may be better put in creating inambiguous instructions and clear simple information. On the other hand, these may be necessary in a high-context collectivist interdependent culture, that requires more context to create a common understanding of things.

5. Bibliography

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