Cultural Dimensions of IA: A Case Study

A Summary and Analytical Discussion of "Website Information Architecture Influences on User Performance: An Experimental Approach"

by Wan Abdul Rahim Wan Mohd Isa, Nor Laila Md Noor, and Shafie Mehad

Presented by Andrea Atkins

LIS 690 – Information Architecture

Assignment #3, Part 2

Presentation Overview

- Follow-up of my previous presentation from Week 6.
  - In the article for *this* presentation, the same authors test their theoretical framework expounded in the article of the previous presentation.
- Overview
  - About the Article
  - Theoretical Framework of Study
  - Research Framework of Study
  - Research Method
  - Results of Research
  - Conclusions of Study
  - My Questions to You

This article is unpaginated, please refer to cited section.

About the Article

- This study tests whether a there is a relationship between user performance and website design based on culturally-prescribed IA.
- The article outlined in this presentation is a report of a study that tested whether culture-specific websites enhance user performance.
- The study tests 44 Malaysian student volunteers and 44 Middle Eastern student volunteers.
- A culture-specific website was constructed using two of Hofstede's culture dimensions purportedly aligned with Islamic religious cultural prescriptions.
- Citation: Wan Abdul Rahim, W. M. I.; Nor Laila, M. N.; Shafie, M., "Website information architecture influences on user performance: An experimental approach", International Symposium on Information Technology, 2008. ITSim 2008, vol.1, 26-28 Aug. 2008.

Theoretical framework – *Cognitive metabolism*

- Cognitive metabolism
  - "the process to facilitate access to knowledge and assimilation of knowledge" (Section 2.1)
- The notion of cognitive metabolism necessitates that website designers need some understanding of the culture of website users.
  - "Designers are not known for producing new knowledge but designers can play significant role in the *presentation* of knowledge." (Section 2.1)
- Cognitive metabolism was theorized by Gui Bonsiepe in 2000
  - Describes cognitive metabolism as "the assimilation of knowledge"*
  - *Bonsiepe, G. (2000). Design as Tool for Cognitive Metabolism: From Knowledge Production to Knowledge Presentation. Paper für das International. (See also http://www.guibonsiepe.com/pdffiles/descogn.pdf)

Theoretical framework – *Ontological design*

- Ontological design
  - The interface is the central category of design and connects the user, the tool, and the task to each other.
    - "The design of the interface arranges the procedural space of the person who is using the products" (Section 2.2)
    - [The design of the interface] "reveals the tool-like characteristics of objects" (Section 2.2)
    - [The design of the interface] reveals "the informational contents of data." (Section 2.2)

Theoretical framework – *CCT*

- Cultural Cognition Theory (CCT)
  - "a theory that frames the concept that culture profoundly influence the contents of thought through shared knowledge structures and ultimately impact the design and development of website." (Section 2.3)
- CCT was introduced by Faiola & Matei in 2006
  - "To build sites that are robust environments for content delivery, Web designers must understand how cognitive style can directly impact Web interface and content design and user interaction, especially in terms of holistic and analytic orientations, and their consequences for user behavior in interactive, hyperlinked media environments."*

*Faiola, A. and Matei, S. A. (2005), Cultural Cognitive Style and Web Design: Beyond a Behavioral Inquiry into Computer-Mediated Communication. *Journal of Computer-Mediated Communication*, 11: 375–394. doi: 10.1111/j.1083-6101.2006.tb00318.x http://onlinelibrary.wiley.com/doi/10.1111/j.1083-6101.2006.tb00318.x/full

Theoretical framework – *Hofstede's cultural dimensions*

- Hofstede's cultural dimensions
  - High Power Distance (HPD)
    - The power distance dimension relates to the state of accepted and expected inequality.
      - LPD suggests cultural equality; HPD suggests cultural inequality.
    - Also "the relative distance and relationship between a supervisor and a subordinate" (Kim, Week 6 – Topical Presentation, posted 10/3/13 9:03 PM)
  - High Uncertainty Avoidance (HUA)
    - The uncertainty avoidance dimension relates to the tolerance that members of a society have for uncertainty and ambiguity.
      - LUA suggests comfort in unstructured and/or changeable environments; HUA suggests need for rules, laws, and regulations.
    - Also "the extent to which members of a particular culture feel uncomfortable or threatened by unknown outcomes" (Kim, Week 6 – Topical Presentation, posted 10/3/13 9:03 PM)

Theoretical framework – *proposed dimensions of study*

- Rationales for proposed cultural dimensions of Islamic religious culture
  - High Power Distance (HPD) was chosen as a cultural dimension of Islamic religious culture because...
    - "Muslims are expected to behave according to the rules defined by God's revelation and authoritative resources" (Section 2.4.1)
    - "[R]esources of Muslims tend to be dependable and trusted as they rely back on their holy book, prophet and authoritative sources." (Section 2.4.1)
  - High Uncertainty Avoidance (HUA) was chosen as a cultural dimension of Islamic religious culture because...
    - "Islam is a religion much concerned with Truth" as "Islam is a religion that is based on Truth." (Section 2.4.2)

Theoretical framework – *Website IA*

- Design prescriptions of website IA
  - *Content*
    - "refers to the properties, dimension and principle of information"
  - *Navigation*
    - "relates to the elements and system path of information hypertext space"
  - *Context*
    - "refer to the appropriateness of the underlying surface"
- Content, navigation, and context were the design heuristics by which the culture dimensions were expressed in the test website constructed for the study.

Research framework

- The conceptual model of the study
  - The three factors of ontological design
    - the user
    - the tool
    - the task

  Hypotheses
  - H_1: Websites for a particular target culture produce better time performance than website with the *opposite* culture dimensions.
  - H_2: Middle Eastern and Malaysian users perform faster in doing tasks when using websites *for their own culture*.

    (italics added)

Research method

- Test subjects were 88 student volunteers
  - 44 from the Middle East (Evenly divided to comprise Groups 1 & 2)
  - 44 from Malaysia (Evenly divided to comprise Groups 3 & 4)
- Test apparatus – one laptop used for all 88 test subjects
- Two contrasting websites were constructed specifically for the study.
  - Iqra Book Store Website 1
    - the experimental website imbued with the culture-specific dimensions (HPD & HUA)
  - Iqra Book Store Website 2
    - the experimental website imbued with the opposing culture-specific dimensions (LPD & LUA)

Research method

- Experiment Design
  - To counter *learning effects* (which could invalidate the results)
    - Groups 1 & 3 performed tasks on Iqra 1 first.
    - Groups 2 & 4 performed tasks on Iqra 2 first.

- The Task to be performed for the study
  - Register with website
  - Find price info of two specified books
    - Two different books for each website.
  - Add books to shopping cart and make purchase
  - Log out of the website
    - Groups 1 & 3 performed tasks on Iqra 1 first.
    - Groups 2 & 4 performed tasks on Iqra 2 first

Results of the Research

- Descriptive statistics – background info on test subjects
  - 55.7% male
  - 52.3% between 26-35 years old
  - 97.7% use the Internet more than three times a week
- Inferential statistics
  - Significant increase in user performance relative to time-on-task for Iqra 1 than for Iqra 2
    - Results support H_1: Websites for a particular target culture produce better time performance than website with the *opposite* culture dimensions.
    - Results support H_2: Middle Eastern and Malaysian users perform faster in doing tasks when using websites *for their own culture*.
- Conclusion: Incorporating users' culture-specific dimensions into website IA enhances user performance.

Conclusion of the Article

- Concluding thoughts of authors:
  - Whereas most research in this field focuses on cognitive style of individual users, the study here focused on the connection among culture, cognition and user performance.
  - This study provides empirical evidence that within the context of Islamic religious culture, a culture-specific website can improve user performance.
- Authors caution that "findings in this study have to be carefully interpreted in the light of its limitations"
  - Respondants, i.e. test subjects, were not randomly selected
  - There were "uncontrolled surrounding influences such as noise, humidity and lack of privacy"
- "The main value of this study is in its contribution to the building of the body of knowledge in website IA domain."

My Questions to You!

- Is the study legitimate?
  - Is there such a thing as Islamic religious culture? Could it span from the Middle East to Malaysia and remain unitary?
  - Is time-on-task a legitimate metric for this study? Why not user enjoyment? Or a metric of user error?
  - Does this study really provide empirical evidence that, within the context of Islamic religious culture, a culture-specific website can improve user performance?
  - Given the cultural dimensions (HPD & HUA) proposed for Islamic religious culture, do you think that a Muslim user would different from a Christian user? An atheist user?
    - What else could account for the results? Economy? Education-level? Could characteristics such as education-level better account for results?
    - Are the cultural dimensions too generalized to be meaningful?
- Do OPACs differ from country-to-country?
  - If yes, how? If no, is this problematic in light of culture-specific website IA considerations?

For more on this topic, see....

- Wan Abdul Rahim Wan Mohd Isa, Nor Laila Md. Noor, Shafie Mehad. "Cultural Prescription vs. User Perception of Information Architecture for Culture Centred Website: A Case Study on Muslim Online User." *Proceedings of HCI* (12) 2009, pp. 535-544.
  - *Proceedings of HCI* also appears as
    - A.A. Ozok and P. Zaphiris, eds. (2009). *Online communities and social computing* (Vol. 5621). *Lecture Notes in Computer Science*, pp. 535–544.