RESEARCH ARTICLE

Designing Mobile Information Architecture (IA) m-Health Learning Application for Traditional Malay Medicinal Plants with Medicinal Properties Using Cultural Dimensions

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ABSTRACT

There is deficiency of content structuring in existing m-Health application due to weak structuring of information architecture and poor usage user interface design. The reason is explained by the lack of incorporating cultural elements in the design of information architecture. The study purposes two designs for Mobile Information Architecture (IA) m-Health learning application for traditional Malay medicinal plants with medicinal properties using culture dimension. The main objective is to design mobile learning application for m-Health Malay Traditional Plant by using User Cultural Dimensions.

The second research objective is to design mobile learning application for m-Health Malay Traditional plant by using culture dimension. The first design is based on high power distance and uncertainty avoidance. Design showing detail on the function and more structure on the access of the information of the m-Health application design and the second design is based on low power distance and uncertainty avoidance. Design is showing more on the graphics and image to access on information in the m-Health application design. Those designs are being evaluated and user persona prefers designing two over design one. The design was evaluated and the result show it is proven that designing m-Health application towards content, context and navigation is partly influenced by culture. The design can be used by stakeholder, SMEs and end users to conduct mobile learning. As a conclusion, the design was developed for m-Health based on cultural dimensions and user persona. Future work may involve incorporating cultural dimensions and user persona in other different type of applications such as mobile travel, mobile banking, mobile shopping, mobile entertainment, mobile gaming, mobile creative industries, mobile trade, mobile commerce and mobile education.

Introduction

Medicinal plants offer alternative remedies and provide access and affordable medicine to poor people. There are many species of medicinal plants used in folk remedies by various indigenous people in Malaysia (Wiard et al, 2004, Ang, 2008, Fong, 1996, Teo et al, 1990, Saha et al, 2004, Yik-Lin et al, 2009, Heggenhougen, 1980). Malay community had numerous traditional remedies which include medicinal plants are commonly as the basis care for rural communities (Abdulelah et al, 2010).

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There are many information about medicinal plants conserved in herbal gardens in various research institutes, universities, private companies, college and secondary schools. Various information for medicinal plants in Malaysia is available from the Forest Research Institute, Malaysia (FRIM), Ethnobotanic Garden and Rimballmu in University Malaya and Forest Department, National University of Malaysia (Chang and Rasadah, 2004).

As being presented in the "Mobile Health App Market Report 2013-2017: The Commercialization of m-Health Apps" by researchmarkets.com, currently more than 97000 m-Health applications are listed on 62 full catalogue

application stores. The majority of these applications are general health and fitness apps that both facilitate the tracking of health parameters by remote users, and provide users with basic health and fitness related information as well as guidance. There is no specific application that focuses on m-Health Learning application regarding Malay Traditional plant with medicinal properties. Similar products available in the market are unclear and based on popularity of the medicinal plants and are not specific to Malay Medicinal Plants Medicinal Properties.

However, the knowledge of specific Malay traditional plants with medicinal properties in terms of scientific name, location of gene bank, number of plant conserved, identified medicinal values, photographs and morphological of species are rather lacking and unorganized and are not available in form of mobile applications. There is a need to include increased access to traditional medical education in mobile platforms. Currently, there is lacking of mobile learning application to get updated information regarding traditional Malay plant with Medicinal Properties. The existing mobile applications are only concentrated on general popular medicinal plants and not specifically on traditional Malay plant with medicinal properties.

Table 1 and Table 2 show the design related to the findings related to the Malay culture dimension. Social measurements inconsistencies between the discoveries of writing audit and information investigation could be brought about by cultural assimilation consider. Cultural assimilation is characterized as the procedure of culture learning by people who are presented to another culture or ethnic gathering. Globalization additionally advances cultural assimilation around the globe which brought about the sharing of societies and values through music, electronic and print media, and instruction (Organista, Marin and Chun, 2010).

Hofstede's Cultural Dimensions theory is also not without its reactions. Schwartz (as referred to in Jones, 2007) contended that a review is not the most proper instrument to precisely decide and measure social uniqueness, particularly when measuring a variable which is socially touchy and subjective esteem. Regarding measurable trustworthiness, Hofstede's investigation depends on a similar poll thing which is utilized on more than one scale. The utilization of just few "subjects" in an investigation depends extraordinary on shot, which may likewise improve the probability of test mistake (Jones, 2007).

Another element that may influence the result of the social qualities record figuring is the size and representativeness of the example. Comfort examining could prompt to the under-representation or over-representation of specific gatherings inside the specimen, which consequently would create predisposition comes about. A bigger and more spoke to test may deliver diverse outcomes.

There are two designs m-Health learning application for traditional Malay medicinal plants with medicinal properties proposed by this study. In order to determine the preferable design by user persona, the study used high and also low power distance and uncertainty avoidance in the design interface.

Table 1. Summary Culture Dimension Interface design of Mobile IA (Adopted from: Wan Mohd Isa et al, 2009)

Results (Score)		IA Dimension	IA Design
Collectivism	10.5 indicating Low individualism	Content	• Chunk information by modular (Mccool, 2006) • Include family theme, clubs or chatrooms, loyalty programs, community relations, symbols of group identity, newsletter and links to local websites (Singh, et al., 2003)
		Navigation	Contextual navigational system (Mccool, 2006)
LPD	26.2 indicating Low Power Distance (LPD)	Content	• Shallow hierarchy in mental models (Marcus, 2003) • Low structured access to information (Marcus, 2003)
		Context	• Trifling and infrequent use of the social and moral order (e.g. portrayal of nationalism or religion) and its symbols (Marcus, 2003)
STO	38.8 indicating Short Term Orientation (STO)	Content	• Content focused on truth and certainty of beliefs (Marcus, 2003) • Rules as a source of information and credibility (Marcus, 2003)
LUA	-6.08 indicating Low Uncertainty Avoidance (LUA)	Content	• Mental models and helps systems that focus on understanding concepts rather than narrow tasks (Marcus, 2003) • Coding of color, typography and sound maximize information (Marcus, 2003) • Chunk information by task (Mccool, 2006)
		Navigation	• Less control of navigation; for example, links might open new windows leading away from the original location (Marcus, 2003) • Complexity with minimal content and choices (Marcus, 2003) • Providing global and local navigation system (Mccool, 2006)

Results and Discussion

Malay Cultural Dimensions Analysis

Table 2. Malay Cultural Dimension Index

Dimension	Formula	Index Value	Result
PD	35(m07-m02) + 25(m23-m26) + C	26.2	LPD
IDV vs COL	35(m04-m01) + 35(m09-m06) + C	10.5	COL
MAS vs FEM	35(m05-m03) + 35(m08-m10) + C	-1.05	FEM
UA	40(m20-m16) + 25(m24-m27) + C	-6.08	LUA
LTO vs STO	40(m18-m15) + 25(m28-m25) + C	38.8	STO

Note: m refers to mean score of VSM question, for example m02 refers to mean score for question number 2 in Hofstede's VSM. C refers to a constant, either a positive or negative value, which could be used to shift value of result between 0 to 100.

The survey being conducted was adapted from Hofstede's Values Survey Module 2008. The analysis of the survey revealed the following findings related to the cultural dimensions for the Malay ethic group were determined by using the values' index formula as stated in table 2.

Information Architecture Diagram

Understanding increased about user route, user inclinations, highlights covered in the end moved into the laying out of data design of the application as appeared in Figure 4.3. After logging into the application, there are different sections on the home screen. Icons available access to Malay herbs, disease, video tutorial, about us and feedback. Health tips and notifications are also seen from time to time as necessary right on the home screen. Thus, the various features and functions are laid out and navigation of the application is designed.

Objective Two: To design mobile learning application for m-Health Malay Traditional Plant by using User Cultural Dimensions.

The second research objective is to design mobile learning application for m-Health Malay Traditional plant by using user persona and culture dimension. Based on user persona, there are two related designs being proposed. Design one and Design two as follows:

i. Design one is based on high power distance and uncertainty avoidance. Design showing detail on the function and more structure on the access of the information of the m-Health application design. The nested doll pattern drives users in a straight form to more point by point. Moreover, filtered view pattern permits the users to explore inside an arrangement of information by selecting channel choices to make an option see.

ii. Design two is based on low power distance and uncertainty avoidance. Design is showing more on the graphics and image to access on information in the m-Health application design. Moreover, tabbed view a gathering of areas entwined by a toolbar menu. Plus, a hub and spoke pattern gives a focus list from which users will explore out. Beside that's Bento Box or dashboard conveys a more definite substance straightforwardly to the list screen by utilizing parts to show bits of related devices or substance.
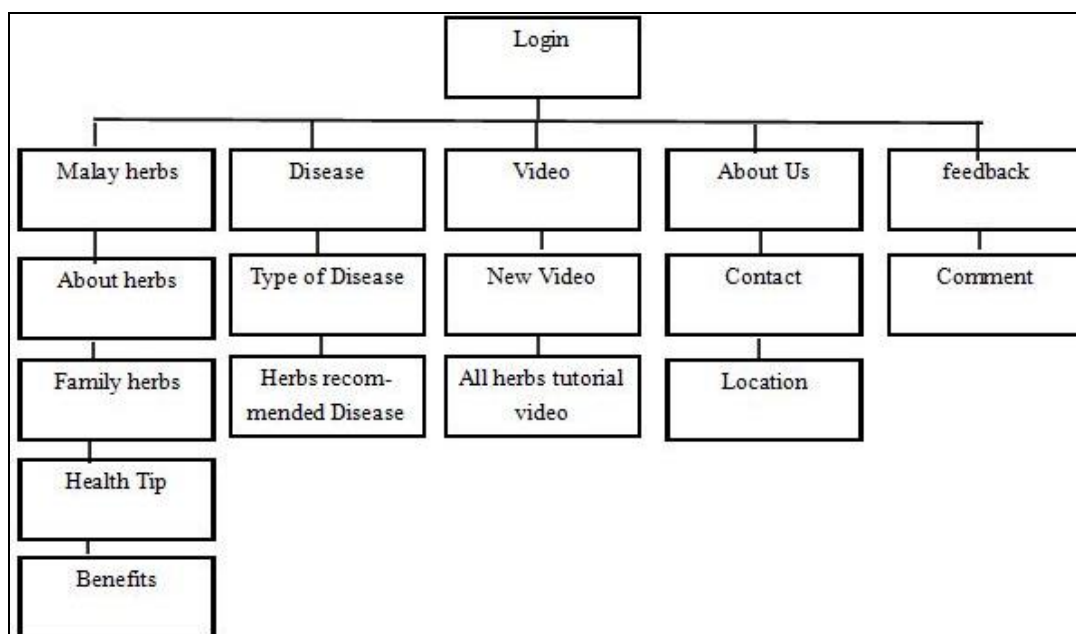

Figure 4. Information Architecture Diagram

Conclusion

With the support of empirical evidence, it is clear that this research has achieved its aim of investigating the Malay culture influences on design m-Health application. Built on the empirical findings, it is proven that designing m-Health application towards content, context and navigation is partly influenced by culture. The result of the empirical analysis provided significant support to two design m-Health applications, proving that there are two valid relationships between user persona and cultural dimensions. As a conclusion, this research, through its literature review and empirical findings shall provide a better understanding and direction for future research on the subject of cultural influence towards designing mobile information architecture (IA) m-Health learning application for traditional Malay medicinal plants with medicinal properties.

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