

Transforming Government: A Proposed Model for Culture Centred Design Approach

Noliza Saidin¹, Dalbir Singh² and Zainul Akramin Mohd Drus³

¹ Research Center for Software Technology and Management (SOFTAM),
Faculty of Information Science and Technology,
University Kebangsaan Malaysia,
43600 UKM, Bangi Selangor, Malaysia

² Research Center for Software Technology and Management (SOFTAM),
Faculty of Information Science and Technology,
University Kebangsaan Malaysia,
43600 UKM, Bangi Selangor, Malaysia

³ Research Center for Software Technology and Management (SOFTAM),
Faculty of Information Science and Technology,
University Kebangsaan Malaysia,
43600 UKM, Bangi Selangor, Malaysia

Abstract

The focus of the article is to introduce the potential of Culture Centered Design (CCD) approach to cater the diverse social and cultural background of the E-Government users in Malaysia. It focuses on the cultural factors associated with user interface design for E-Government services Malaysia. The article begins with a section that discusses on the emergence of plural society which leads to the birth of multicultural country that consists of three main ethnics groups; Malays, Chinese and Indians. It also explains the growth of ICT industry that triggers the birth and expansion of E-Government services in Malaysia. The second section will further elaborate on the benefit of CCD approach and how to cultivate it into the Malaysian E-Government services. Furthermore, a proposed model was developed that exhibit how cultural elements can be cultivated into the E-Government services that would improve the user's acceptance and satisfaction which are the pivotal aims of e-Government when it was initially started.

Keywords: *Culture-Centered Design, E-Government, Multicultural, User Preferences.*

1. Introduction

The growth of ICT Malaysia has transforms the government's operation toward a better future. In the year of 1996, Multimedia Super Corridor (MSC) was launched as an expansion plan by the Malaysia government to provide responsive and alternative method of delivery for government services. The main aim of e-government initiatives was to increase efficiency and effectiveness e-government services and to propel Malaysia into the

information age [1]. The government has made rapid progress whereby in the year of 2003, Malaysia was ranked as 43 out of 173 member countries for Global e-government readiness survey made by United Nation's [2]. To date, a decade has passed but the e-government services still lack of the cultural awareness in their services. Ironically Malaysia is composed of multicultural citizens who have different thoughts, beliefs, rituals and daily practices. There is a danger of loss of cultural identity and tradition in the globally changing world [3].

Culture centered design (CCD) is such an approach that addresses the differences of the user's background. The preferences of the user are deeply rooted in their culture [3] because they have been socializing within their own environment since they were young [4]. In the earlier days, especially during the British colonialism, Malaysia consists of geographical segregated society whereby each ethnic lives separately. When they migrate to the other places, they tend to socialize with their own group of people who share common social and cultural background. Thus, the article proposes a solution to cater E-Government users with various social and cultural background in Malaysia.

1.1 Research Objectives

The article proposed Culture Centered Design (CCD) approach for e-government services in Malaysia. With respect to this, the research objectives are to develop and utilize the model that captures the cultural preferences

regarding user's socio-cultural differences background. The specific objectives are as following:

- a. Identify characteristic and pattern of preferences for interface based on various users' socio-cultural background
- b. Develop a multicultural interface design model for e-government services based on culture centered design approach
- c. Develop a prototype based on the proposed model

1.2 Research Question

- a. How can we integrate various users' socio-cultural background and Malaysian E-Government's interface design principles?
- b. How to cultivate Culture Centered Design (CCD) approach into Malaysian E-Government's services?

2. Related Work

2.1 Multicultural Society

Plural society was firstly introduced by J.S. Furnivall to describe a society that is separated by race, institutional and cultural patterns [5]. The plural society which exist in Malaysia today was the product of British colonial policy of divide and rule [6] to gain benefit from resources rich Malaysia. The early existence of immigrant can be seen during the Malacca Sultanate, because Malaysia was situated in a strategic geographical position in-term of the trade routes of South East and Far East.

It was a strategic location for merchants to trade their good and transit point for travelers [6]. However during this time, the migration did not change the cultural structure [7]. The vast changes in Malaysia's history was during the colonial period where a large scale of workers were brought in from India and China. Chinese immigrants become a labors in tin mines while Indians become labors in rubber plantations [8]. The influx of workers has transform Malaysia to a multinational and multicultural society with diverse population, primarily that consist of three main ethnic groups which are Malays, Chinese and Indians [9]. They brought along their heritage, belief, ritual and religion. They started their family and practiced their own culture within their own society in Malaysia [10]. Although the society has changed into a complex of mixture of cultures but they still compartmentalized their social activities and free to practice their own tradition, language, customs and life style [11], [10]. The plural society turned into a culturally divided along labor lines, laying the foundation for communal divisions in Malaysia [12]. The

spatial segregation further reinforced socio cultural differences due to lack of social interaction among different ethnic groups [5].

To live in a peaceful country, every race need to respect the other cultures [13]. Even the government has launches several campaigns to strengthen the community, which is meant to strengthen the relationship among the races at the same time to ensure peacefulness in the country and a better Malaysia. Currently 1Malaysia campaign is launched in order to cultivate Malaysian characteristics that consists of common thinking, enthusiasm, ideology and behavior that reflect Malaysia [14].

Malaysia needs to have an identity of her own with a national culture having definite goals which include promoting national unity as well as enriching and raising the quality of physical and spiritual life that is in balance with socio-economic development. [15]

Malaysian society today shapes the future of Malaysia. To make the citizen more respectful towards the country, government need to provide them with multicultural qualities and common understanding. The interface design for E-Government services in Malaysia is not for all races neither not specifically intended to any race at all. According [16] user interface design in Malaysian government website does not represent any culture or race in Malaysia but includes certain general metaphors and values. Previous research [17] has shown that culturally driven product designs can be successful in the long term. Indirectly, it would ensure positive acceptance and adoptability of these culturally driven product designs.

2.2 E-Government in Malaysia

There are many definitions of E-Government and no standard definition to describe E-Government and its functionality [18]. However the various definitions are revolving around usage of ICT to gain certain objectives; [19] using technology to perform internal and external operation, [20] using technology to overcome traditional method and creation of paperless management, [21] using technology to improve the accessibility of government services, [22] using technology to provide an alternative way to deliver the services without locational and time constraint and [23] using technology to provide communication between government and citizen. However from Malaysian perspective, E-Government is paperless management with multimedia and networking technology that connect public sector agencies in Malaysia to provide the efficient services to the citizen [24].

The main aim of Malaysian E-Government initiates was to increase efficiency and effectiveness of government

services [1]. E-government plays important role in shaping the development and aligned with the user need based on their involvement in the whole process [2]. Such an effort is needed to streamline the government internal process to improve quality of services, at the same time reduce cost and increase productivity [25]. According to a study by [26] MyEG services has interface related issues. Research by [16] also shows similar finding related to interface design, specially to user preferences and needs. Therefore, several studies has shown that to ensure the success of E-Government services, user preferences and needs must be taken into consideration. According to [17] E-Government's current trend is focused at providing personalized interface for its users. Furthermore, it is a challenge for the public sector to promote E-Government services to the users to ensure its optimized usage [27]. The implementation success depends on the actual users of E-Government services in Malaysia [24] whereby their needs and preferences must be given a high priority while designing the interface in order to gain their attention and continuous usage.

2.3 Culture-Centered Design

2.3.1 Culture

Culture is firstly defined by [28] to show the pattern of thinking and feeling. [29] define culture as human built environment which can be seen from the use of symbol, manifested through artifact or shown in the form of behavior. Culture are learned behavior management [30] [31] which can be shared among the members, develop the concept of meaning [32], become a guidance to them [33] and shape their personality [34].

According to [35] culture is inherited through generation, in contrast [36] belief and culture is the collective programming of mind that emerges from social environment, not genetic inherited. Human are born very incompletely preprogrammed, they learned through the transfer of collective mental programs which goes on during the entire lives in their social environment. Previous study also have similar views, he believes that the individual started socializing in their group of culture since birth and learned the values, beliefs and behave according to the respective cultural norms [37]. Culture is the important factors that influence the interaction between each other but sometimes can also cause misunderstanding [38] [39].

However if the culture is not inherited, they are very dependent on the environment which tailors their pattern of thinking and behavior in their own social network. If a

person is exposed to the same cultural values since young, then it means that they have learned the values which are embedded in their personalities. They tolerate others but the feeling of belonging to a certain group cultural is permanent. Back to the Malaysian culture, the segregation during colonial period lead to polarization, which makes vast differences among the ethnics which tend to stay out of other cultural groups. The majority of them socialized in their own group of people. Every ethnic practices their own culture rituals and it is difficult to remove these elements of traditional heritage in their life [10, 34]. Culture is a historical phenomenon, which is created and disseminated. The diffusion process resulting in the absorption of a good element, which are sometimes concrete and abstract from other groups which is accepted by the group member and tailored to their existing system of life [40]. Cultural values, traditions and beliefs can be the essence of teaching to enhance the acceptance, recognition and respect for ethnicity and cultural groups in Malaysia [6].

2.3.2 Cultural Differences

Cultural differences exist when different groups of ethnicity that live together and co-exist in their daily life. Every ethnic group has a unique sets of cultural element [41] inclusive of language, religion, clothing, food preferences, distinctive rites of passage, housing styles, or any other cultural traits which indicates group membership and differentiates the group from other groups. Important aspects of the environment are shared and these constitute a particular culture [39]. In Malaysia, traditionally, three primary ethnic groups could be distinguished through all of these traits without difficulties. The differences can be seen vividly not only from the physical appearance, but also through preferences, needs and expectation [42].

The people who belong to the same cultural group perceive and process information in similar ways [43] which influence their acceptance and interaction with computers [42]. Each group is culturally unique because it differently adopts attitudes, values, and beliefs of the group to which they belong. The challenge is to examine the differences that make them unique and discover ways to be more effective [39] in overcoming the barriers that has impeded communication and interaction [44]. Members of a common culture not only share information, they share coding, storing and retrieving attributes. Communication experts estimate 90 percent or more of all communication is conveyed through cultural based non-verbal messages, not entirely through language [44].

2.3.3 Issues Regarding Culture Based Interface Design

Most software are developed based on metaphor, representations, colour associations and navigational logic that are primarily based on American culture. Research by [3] on the CCD approach in China results in the use of Chinese garden metaphors to represent the icon in certain web pages. The appropriate choice of metaphor and its consistent use are believed to be the keys to successful user-computer interaction. As a result, Chinese garden metaphor is used and show positive outcomes for the users. The Japanese prefer no pictorial representations of any body parts in their icons [3].

Asian prefers image and graphical presentation; in contrast the European prefers textual information. A research by [45] about Driver Information System (DIS) on the menu structure discovered that the process of localization is very important because preferences and ease of use vary between cultures. The differences occur in the shaped of favorites choices, preferentially order of opinion and navigation structure.

The West prefers left to right, top to bottom layout. While Chinese culture is different because they prefer right to left writing style as their reading orientation are back to front [3]. Even the studies in the same country shows difference preferences of colour such as people from northern region in China prefer more bright colours while from southern region prefer subdued colours. Asian websites tend to use colorful and animated user interfaces meanwhile Europeans seem to prefer a more factual and structured information web site. Different countries has different perception and preferences of user interfaces which are collectively shared by certain cultural groups. [46]

2.3.4 Importance of CCD

According to [47] interface design should consider user's cultural values because there is a need to focus on prototypical user and apply the concept of persona. No group is homogenous and one design does not fit all especially if they are from different cultural background. Perception is the process of the mind which concerns interpretation of the meaning. It is strongly affected by the customs, ethics and fashion which are a part of the user's culture. The designers need to consider user's culture and be aware of relevant culture differences. According to [48] user interface design varies and it is a matter of preferences that are associated with cultural values.

Because of geographical differences, Westerners and Asian think and perceive information differently [43]. This can be proved through research by [49] found that

the behavior of internet users in Hong Kong and USA are different. Hong Kong user use internet as a hobby or as a medium of communication to strengthen their social relationship because Hong Kong is collectivist country which is concerned about relationship and loyalty. Meanwhile American is individualist country and use internet as a medium to get information [36]. This finding shows that culture itself shapes the technology [50]. [51] present cross cultural survey result on Vehicle Area Network in three difference countries; Austria, USA and Korea. Findings shows that there is a need for standardized service across these cultures as culturally tuned in vehicle interfaces. [42] research on older adults in Malaysia proves that culture is the only way to attract and encourage users to use online application. To overcome these barriers, adaption of culture in user interface is used to create atmosphere that the users are familiar. [52] investigate the various culture using directional kiosk discovered that there are differences between culture in their preferences of user interface. Study by [53] reveals that Chinese ethnic group, university degree holder and credit card or check books owners are more significant to do online shopping in Malaysia.

2.4 Hofstede Cultural Model

Most of cultural based studies utilize Hofstede's five culture dimension as a guidance to find cultural background differences. Every dimension will be elaborated in regards to Malaysia's score index for each dimension. The choices of interfaces related to the index are also discussed. The dimensions of culture are power distance, uncertainty avoidance, individualism versus collectivist, masculinity versus femininity and time orientation. Every dimension has a score index that explains the country's cultural dimensions.

2.4.1 Power Distance

Power distance represents the relationship between the powerful and less powerful members of the institution in hierarchical order. How the power is distributed and accepted among the members. Less power distance means the power is shared equally [36]. In contrast high power distance shows the power is distribute unequally. Asian countries are high power distance where the employee respect the employer and accept that the decision is in the hand of the powerful person in the organization. Western countries have low power distance where they are freely to give their opinion and negotiation is accepted.

Malaysia scores 104 in this dimension whereby is the highest score that reflect the people in Malaysia accept hierarchical order where less powerful people keep their distance from the superior and let them to make decisions.

2.4.2 Uncertainty Avoidance (UAI)

The way people cope with uncertainty and risk indicates how the society accepts the future. High UAI tend to plan ahead their future because they feel insecure with surprising situations. Schedule is very important and must be followed strictly. Low UAI people are very flexible regarding their future planning and work hard when needed. They accept any uncertainty in future as their fate.

Malaysia scores 36 on this dimension and thus has a low preference for avoiding uncertainty. Malaysian societies maintain relaxed attitude and accept any changes in their life plan. No hard working is needed since their schedule is flexible and could tolerate more easily. Precision and punctuality do not come naturally, innovation is not seen as threatening.

2.4.3 Individualism vs Collectivism

The extent of individual's attachment and feeling to a certain group. They perceive group objective or perceive their own goal. Individualist people are independent and prioritize their own goal more than their group. Collectivist people are very dependent and attach to their own groups such as family, relative, work group or ethnicity. The sense of belonging to a certain group makes them loyal and respect to the group more than their own.

Malaysia scores 26 shows that Malaysia is collectivist country, people respect and belong to certain groups and loyalty is important. Regarding culture, every ethnic has their own loyalty towards their culture and try to make their culture as their own goal which eventually will become their part of life.

2.4.4 Masculinity vs Femininity

Masculine and feminine are used to describe about gender roles. Masculine role of assertiveness, competitiveness and toughness are different from feminine role which are focus on tenderness and motherhood. Masculine countries are determined to succeed in every field. In order to success they have to face competition to prove their achievement and capability. Feminine countries take more responsibility and are concern toward others. Their aim is focused on quality of life. To be dominant in front of others is not in their vision.

Malaysia scores 50 shows that Malaysia is masculine country which is full of competition and the society strives to achieve success and to be dominant in their field. The interface for a masculine country is precise, and information is clearly given. Meanwhile interface in feminine country contain more aesthetic values.

2.4.5 Long Term Orientation

Long term-orientation have a pragmatic future-oriented perspective, meanwhile short term orientation have conventional historical perspective. Long term orientation focuses on the future which is concerned on tangible benefit and their persistence to achieve benefit. Long term orientation refers to people's concerns with the past, present and future [54].

While short term orientation focuses on the current and past situation, respect the traditional values and aim to fulfill social needs. The summary of interface design preference according to each Hofstede's cultural dimension is shown in table 1.

Table 1: Interface design preferences according to Hofstede Culture Model

<i>Culture Dimension</i>	<i>High Score</i>	<i>Low Score</i>
Power distance	Axial symmetry layout. Emphasize on the leaders, employer. Use of national and authority symbols.	Asymmetric layout Emphasize on the workers, employee, citizen. Free to use any symbols.
Uncertainty Avoidance	Provide simplicity of the interface through simple content, easy navigation, help system use to reduce errors and ambiguity.	Complexity of the content with the use of uncontrolled navigation, information overloads and guidance/help system is needed to understand the concept.
Masculinity versus femininity	Precise and direct information is given for quick result. Easy to navigate and multimedia element used to enhance ease of use.	Multimedia use for aesthetic to gain attention. Blurring of information.
Individualism versus collectivism	Focus on individual achievement. Emphasis on the visitors' goal.	Focus on group achievement that can be seen through the group image and official slogans to emphasize on the group.
Long term Orientation	Structured content focus on practical value which rely on relationship. Patience in achieving result.	Content focused on truth which rely on rules. Immediate result.

Adapted from Marcus & Gould [55]

[56] in [57] has pointed out that Hofstede's sample of four nations which are Canada, Belgium, Malaysia and United States are non-representative of the whole nation because those nation are composed of more than one culture[57]. Hofstede dimensions was also further tested in four populated regions in China (Taiwan, Hong Kong, Beijing and Wuhan) revealed that strong subcultural differences. This research uses Hofstede dimensions to find the

ethnicity differences and as a guidance for utilizing the concept of CCD.

3. Problem Statement

Malaysia consists of three main ethnics which are Malays, Chinese and Indians. The existences of various cultural heritages make Malaysia unique multicultural country. However the E-government service does not reflect this multicultural society. Malaysian government invests nearly 12.9 billion through RMK 9 with the goal to enhance the public services to the citizen. However the expected outcome still cannot be ascertained [42]. The perception of Malaysians towards E-government project is still low. Malaysians are still reluctant and doubtful about the effectiveness and efficiency of the E-government's online services [58]; [59]. According to the previous research, the preferences towards certain interface design for a government related portal is determined by its user's socio-background. The lack of understanding of users' local culture [60] causes Malaysia e-government websites to have significant web accessibility problems [61]. Adapting web pages to local customs would enhance user trust and appreciation of the website [62] which will bring respect and loyalty towards the offered services. To date, the vast majority of studies regarding CCD have found that user around the world have different requirements and their understanding are influenced by the local culture[63].

Therefore, this study is conducted to explore Culture Centered Design (CCD) approach for E-government services among Malaysians. The investigation focuses on the cultural factors that influence the interface design to cater the various ethnics in Malaysia and foreign immigrants who represent the overall users of E-government services. This will lead to the discovery of multicultural persona attribute based on the approach.

4. Proposed Method

Seven phases use to achieve the objectives are briefly discussed in this section.

A. Phase 1

Usability Analysis on the specific pattern of preferences among Malaysian toward certain interface design for E-Government services.

B. Phase 2

Critical Analysis of the socio-cultural attributes to determine the pattern of preferences.

C. Phase 3

Formulation of the multicultural interface design model for E-government services based on the findings from phase 1 and 2.

D. Phase 4

Prototype development as a proof of concept for the model as proposed in phase 3.

E. Phase 5

This phase focus on planning the evaluation prototype and evaluate the prototype.

F. Phase 6

Validation and refinement of the proposed model based on the findings from phase 5.

G. Phase 6

Documentation of the research outcome based on the refinements on the proposed model from phase 6.

5. Proposed MODEL

This model has applied Hofstede's five cultural dimensions as a guideline to develop the proposed model. Cultural element suggested by [64] are used as a guide to find the highest selected element in several research studies. 15 research article regarding cultural differences were reviewed. The elements with the highest frequencies are selected to be the cultural element in this research. The results were shown in table 2.

Table 2: Element of highest frequencies results

Culture Element	Frequency	Proposed Culture Element	Frequency
Architecture	4		
Colour	11	Colour	15
colour combination	4		
flag	1		
font	2		
geography	3		
grouping	7	Page Layout	7
html specific	5		
icon/metaphors	9	Metaphors	20
icon	5		
symbol	6		
links	4		
language	9	Language	9
orientation	4		
regional	2		

shapes	1		
sound	3		
specific colour	1		
navigation	9	Navigation	9

[63] also used five cultural element which are colour, page layout, metaphors, language and navigation. These five elements are mostly used in cultural studies.

To develop the proposed model, culture element, social attribute, demographic factors and Hofstede cultural dimensions were studied in depth to find cultural markers for the targeted user. Multicultural personas of every ethnic group are created which can provide better understanding of the users according to their cultural requirements.

Multicultural personas are used to design product that synthesize the cultural values to understand user's requirement. In 1999, Alan cooper created the 'personas' and define it as fictitious, specific and concrete representation of the targeted users. Persona helps the product teams to better understand the users and thus improve their products [65].

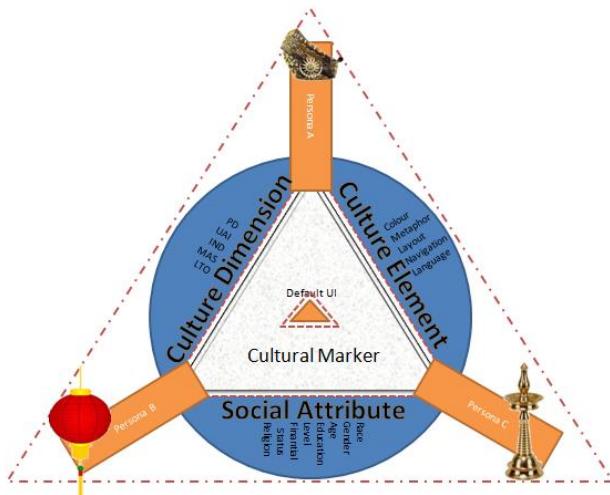


Figure 1 Proposed beam former

Proposed model figure 1 shows how the default user interface was reviewed. From the user interface, three main cultural factors that effect the interface are studied thoroughly which are cultural dimension, cultural element and social attribute. The users' data will be collected regarding their cultural background to find the interface design elements and features that are prevalent, and possibly preferred, within a particular cultural group which are called cultural marker. From the cultural marker, the multicultural persona are created that leads to the

development of unique persona of every ethnic group in Malaysia.

6. Conclusion

The proposed model is intended to be used for e-government services as a guidelines in designing user interfaces. Colonial period were discussed briefly to understand the existence of plural society in Malaysia. CCD approach is discussed to cater the multicultural user and to enhance the e-government services. Hofstede cultural dimensions were used to guide the researcher in discovering the cultural differences. Culture elements are discovered based on the most occurrence for each element in several related studies. Three main ethnic groups – Malays, Chinese and Indians are involved in this study. The future research will involve the finding of specific pattern of preferences among Malaysian toward certain interface design for E-Government services based on the proposed model.

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Norliza Saidin is a postgraduate student at Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia. She obtain scholarship from Malaysian Ministry of Higher Education for her research.

Dalbir Singh received his degree in Computer Science from the Universiti Sains Malaysia in 2002. He received his Ph.D. degree in Computer Science from University Malaya in 2009. Currently, he is an Associate Professor and a member of the Strategic Information System Research Group at Universiti Kebangsaan Malaysia. His research interest includes Human Factor and Adoption in Information System.

Zainul Akramin Mohd Drus is a postgraduate student at Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia. He obtain scholarship from Malaysian Ministry of Higher Education for his research.