

A New Model for Cultural-Based Emoticon in Distributed Collective Interaction via CMC

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Abstract— Emoticons have become the prominent language, especially in distributed collective interaction via computer-mediated communication. This is because emoticons are capable to avoid misunderstanding of the message content, save the attention to optimum and improved the communications among different native speakers. However, as emoticons been widely used in distributed collective interaction where the participants may come from different geography and culture, the study of emoticons in cultural perspective are still less. Besides that, there are also demand for the cultural-based emoticons to be developed particularly for culture that are different from the culture of developer. Since emoticons are crucial in global communication, culture should be one of the extensively research aspect in distributed collective interaction. Therefore, this study attempt to explore and develop model for cultural-based emoticon by utilizing the 3 cultural models that have been used in Human Computer Interaction studies which are the Hall Culture Model, Trompenaars and Hampden Turner Culture Model and Hofstede Culture Model.

Index Terms— Cultural element; Distributed collective interaction; Emoticons; Human computer interaction.

I. INTRODUCTION

As the number of mobile phone application and its user keep increasing from time to time [1], the role of Human Computer Interaction (HCI) is crucial because mobile interaction is an aspect of HCI that deals with the manner to which mobile phone is the medium of interaction between its user [2], especially mobile phone application that enable its user to perform distributed collective interaction. To name a few application that enable distributed collective interaction are WhatsApp, Telegram, Facebook Chat, WeChat, LINE and many more. The distributed collective interaction is possible to happen because these applications have the function to create a group for its user to add participants and communicate by many-to-many communication either in synchronous or asynchronous communication. Synchronous communication means that the user communicate in real-time communication, where the receiver respond to the sender right after the sender sent the message [3]. While asynchronous communication means that the user communicate as schedule permit rather than according to clock that are synchronize for real-time, where receiver can screen the message first and determine when or whether to respond to the sender.

During distributed collective interaction via CMC, physical sense and information are less compare to face-to-face (F2F) interaction. So, the usage of emoticons are popular in expressing emotions, gestures and actions distributed collective interaction via CMC. Past research stated that the usage of emoticons are more effective in

expressing emotion during distributed collective interaction because emoticons add extra cues of emotional information compare to text-only message [4]–[6]. When there are extra cues of emotional information, the misunderstanding of the message also can be avoided. By using emoticons, receiver of the message can have a better understanding on the intention and mood of the sender. By knowing the direction of emotion by the sender, receiver can respond appropriately to the sender. For example, if we put a tears of joy emoticons in an angry message, it can be interpreted as a joke message rather than an angry message. This help the receiver to understand that the sender is actually try to joke with the receiver. So, the receiver may responds with a jokes messages as well.

Emoticon also help user in attention saving [7]. Attention saving in this context is saving the time and energy for user to type, read, interpret and understand the meaning of the message. The usage of emoticons helps in optimizing the time and energy spent. Without emoticons, user need to spend more time in typing, reading and interpreting the message. But, by the addition of emoticons, user can save the time to type, read and interpret the message by a single glance. The usage of emoticons also have been proved to be able to improve the efficiency of communication [8], [9]. Emoticons provide a way for easy and efficient communication because emoticons simply aid the meaning of the text message and act like an additional explanation. Studied has proved that user from different native speakers able to increased their level of understanding by using emoticons. When the level of understanding improved, the volume of interaction are also improved.

Beside all the benefits that emoticons can provide, existing emoticons are still incompatible and missing some human actions, emotions and expression that limit the user from choosing the suitable emoticons to express their intention [10], especially in term of cultural perspective. The study regarding emoticons for cultural perspective are still lacking, even though the usage of emoticons are keep going and represent a crucial part in distributed collective interaction [11]. As emoticons offer a lot to global communication network through the CMC, culture should be one of the extensively research aspects in distributed collective interaction. Besides that, a survey by [12] shows that there are demand for cultural-based emoticon to be developed, especially for countries that have different culture compare to the society of the emoticon's developer. To develop cultural-based emoticon that best describe and express the cultural elements, an appropriate and valid model is required so that a set of suitable, meaningful, worthwhile and trendy cultural-based emoticon can be created. Therefore, this study attempt to explore and develop

a cultural-based emoticon for distributed collective interaction. In doing so, researcher has explored the cultural models that have been used in HCI where the dimensions in these cultural models will be used to develop the cultural-based emoticon model. Next section will discuss on cultural models to be used in this study, followed by the proposed of initial model for cultural-based emoticon, discussions and conclusion.

II. CULTURAL MODEL IN HCI

Cultural models have been applied in HCI in various way. [13] stated that cultural model can be applied to i) identify information that is cross-culturally appropriate, ii) identify cross-cultural bias by applying the models to designer's own culture, iii) identify effective metaphors, iv) access the degree of localization that will be necessary, v) avoid cross-cultural mistakes which can caused offence and vi) evaluate how suitable an international interface is. Besides that, cultural model also can be used as the framework and design guideline for developer or designer to develop an interface or products. Based from the previous literature, the cultural models that will be used in this study are the Hall Culture Model, Trompenaars and Hampden Culture Model and Hofstede Model.

A. Hall Culture Model

One of several cultural model that have been applied in HCI is Hall culture model. According to [14], culture is a set of learned and shared behaviors as well as the way people communicate, understand and relate to each other and to the world. Hall develop the theory of culture which is Primary message System (PMS). PMS is the human aspects that are based from the non-lingual communication forms and biological, that make up the understanding of a culture. The aspects are i) interaction, ii) association, iii) subsistence, iv) bisexuality, v) territoriality, vi) temporality, vii) learning, viii) play, ix) defense and x) exploitation.

Interaction, is the primary of culture because everything people do involves interaction while association may happened when there is interaction between people and groups. From the interaction, societies can be structured and organized. The third aspect which is subsistence refers to food, economy, work status, values placed of work and any action for maintaining or supporting oneself. Bisexuality aspect refer to the concepts of masculinity and femininity and what is considered appropriate for male and female behavior. Territoriality refer to the relationship to possessions as well as the use and defense of territory while temporality refer to the cycles and rhythm of the life and importance of life. Learning aspect is about how people adapt to own culture and different cultures. Play aspect also relates with the learning aspect as play also is part of learning only that it involve humor and joke for learning process. Defense aspect is about the religion, war, medicine and law which are the devices of defense. The last aspect which is exploitation is the use of environment and our extension of self into the environment.

B. Trompenaars and Hampden Turner Culture Model

[15] defined culture as a shared definition of a situation as a group. The shared components include share of meanings, beliefs and mutual dependence that makes up the connected system of a group. The classified culture in 3 layer. The

outer layer is artifacts and products which refer to the explicit culture. Explicit culture is an observable reality like the language, food, buildings, houses, monuments and symbol of a culture. The middle layer is norms and values that refer to the implicit culture. Norms is the mutual sense of what is 'right' and 'wrong' while values refer to what is 'good' and 'bad'. The last layer, which is he core layer is assumption. Assumption is about how to organize life and people to solve the problem of survival geographically. These 3 layers influence the behaviors and actions of the people. In addition to these layers, based from their research, they also defined seven dimension of culture. The seven dimensions are i) universalism – particularism, ii) individualism – communitarianism, iii) neutral – emotional, iv) specific – diffuse, v) achievement – ascription, vi) sequential – synchronic relation to time and vii) internal – external attitude towards nature.

Universalism – particularism dimension is about how we defined other people's behavior. Universalism means that there are rules where all people are applied to it equally while particularism is the actions that were influenced by the relationship of a person without the restriction of the rule. Individualism – communitarianism dimension is about how people relate to other people, what they want as an individual and group. Individualism is the prime orientation to self while communitarianism is a prime orientation to common goals and objectives. In neutral – emotional dimension, neutral is the relationship approach that focused on objective while emotional is the relationship approach that focused more on human relationship. In specific – diffuse dimension, specific is the relationship approach that that are limited by contracts and strictly agreed business while diffuse is the relationship approach that are built by personal contact and getting to know the people involved in the relationship. In achievement – ascription dimension, achievement refer to the status of a person that is built based on experience and triumphant, while ascription is the status of a person that is assigned or based on connection or birth right.

In sequential – synchronic relation to time dimension, sequential culture is the people that are tend to understand the structure of time as sequential and to value different importance to past, present and future. While in synchronic culture, people see the past, present and future as interlocked and flexible periods that enable them to work multitasking at once and view plan and commitment as flexible. The last dimension, which is internal – external attitude towards nature where internal is the people that believe nature is complex mechanism but can be controlled by the right person with expertise to nature. External culture is the people that believe they have to adapt with the nature and environment to achieve goals.

C. Hofstede Culture Model

The last culture model to be used in this study is Hofstede culture mode. [13] defined culture as the collective programming of mind that distinguishes the members of one group or category of people from others. Pattern of thinking, feeling and potential activity are the example of the collective programming. [13] explained that the culture is learnt from people's life experiences. The process of culture learning start at home, where children learn the family practice from their parents. Then, the learning process continue at school where they experience the culture

through the interaction with teacher and their friends. This chronology of culture learning process is what [13] mean about the culture is the collective programming where young person follows the programming set by people before them. [13] formulated the culture dimensions based from the large sample of employees from IBM that he studied during 1960s and 1980s. The dimensions are i) power distance, ii) uncertainty avoidance, iii) individualism versus collectivism, iv) masculinity versus femininity, v) long term versus short term and vi) indulgence versus restraint.

For the first dimension, power distance defined by [13] as the extent to which the less powerful member of organizations and institutions accept and expect that power is distributed unequally. In small power distance, everyone has the same power in decision making while in large power distance, the decision making are centralized by the management and superiors. For second dimension, uncertainty avoidance means the extent to which the people of the culture cope with the anxiety by minimizing uncertainty. To minimize uncertainty, strict behavioral, laws and rules are employed. By following these law and rules, the uncertainty situations can be minimized. The third dimension, individualism versus collectivism is about how the people in the society defined themselves as part of a larger group. For fourth dimension which is masculinity versus femininity refer to the distribution of values between genders that are the fundamental issue in society. For the fifth dimension, long term versus short term is the extent to which the society focus on the future as opposed to the past and present. Last dimension, indulgence versus restraint are the extension from the fifth dimension. Indulgence is the state where people in the society are allowed to freely gratify the basic and human desire to enjoy life and have fun while restraint is the state where people’s gratification are controlled by the society.

III. PROPOSED INITIAL CULTURAL-BASED EMOTICON MODEL

Based from the 3 cultural model, researcher found that some of the dimensions belong to the same classification of dimension. The classification of dimension are summarized as Table 1 below.

Based from the dimensions in the 3 culture models, researcher categorized these dimensions into 13 classification which are relationship between people, possession/power in society, importance of time, reaction to law, attitude towards nature, difference in gender, survival, adaptation learning, humorous/jokes in learning, interaction with people, relationship approach, emotional relationship and freedom of life. These classification of dimensions are used by researcher in determining the sub-classification in the initial cultural-based emoticon model.

For the initial cultural-based emoticon model, researcher will adapt the 3 layer culture model from [15] as the main classification. The layers are comprised of artifacts and products, norms and values and lastly, assumptions. Based from these classification, it will be broke down into several dimensions based from the classification of dimensions from the 3 cultural models

Table 1
Summarization of Cultural Model

Classification	Hall	Trompenaars & Hampden	Hofstede
Relationship between people	Association	Individualism - communitarianism	Individualism vs collectivism
Possession/ power in society	Territoriality	Achievement - ascription	Power distance
Importance of time	Temporality	Sequential - synchronic relation to time	Long term vs short term orientation
Reaction to law	Defense	Universalism - particularism	Uncertainty avoidance
Attitude towards nature	Exploitation	Internal – external attitude towards nature	
Difference in gender	Bisexuality		Masculinity vs femininity
Survival	Subsistence		
Adaptation learning	Learning		
Humorous/jokes in learning	Play		
Interaction with people	Interaction		
Relationship approach		Specific - diffuse	
Emotional relationship		Neutral - emotional	
Freedom of life			Indulgence vs restraint

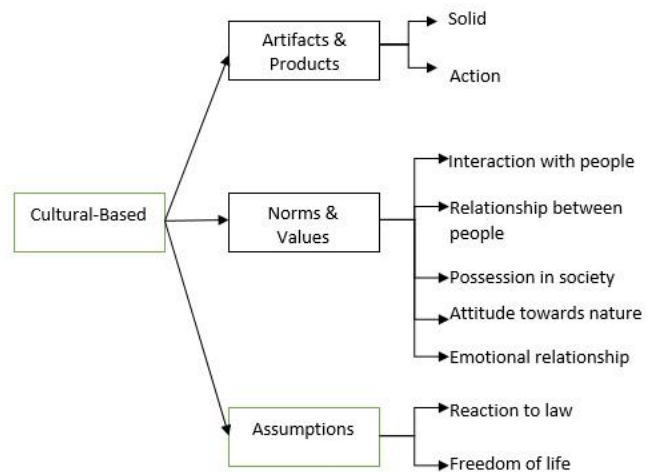


Figure 1: Culturicon model

The first dimension is artifacts and product that reflect the explicit culture, which are observable by people. The dimensions can be classified into two category, which are the explicit solid and explicit action. The explicit solid are something that are touchable like the foods, buildings, houses, monuments and any symbol that represent the culture of societies. While the explicit action category are like learning, play and celebrations [14]. The process of learning, play and celebrations are different according to the culture. Each culture has their own style for these process

that make the culture unique. For example, in Malay culture, there are a lot of traditional games for play dimensions such as wayang kulit, gasing, congkak, sepak raga and many more. While for the celebration dimension, there are a lot of celebration in Malaysia such as Thaipusam, Chinese New Year, Hari Raya Aidilfitri and many more. These explicit culture are important component of a culture because these explicit culture result to the first impression and judgement from strangers towards the culture.

The second dimension is norms and values that reflect the implicit culture. Norms will represent the sense of what is right and what is wrong from the culture while values will represent the sense of what is good and what is bad. It can be classified into interaction with people, relationship between people, possession in society, attitude towards nature and emotional relationship. In interaction with people, there is dimension from Hall Model which is interaction. Interaction according to [14] is the primary element of every culture. From interaction people got connected to people in the culture. In relationship between people dimensions, there are dimensions from the 3 models which are association [14], individualism – communitarianism [15] and individualism vs collectivism [13]. All these 3 are about how society are structured and how the people define other people in the society. In possession in society classification, there are dimensions from the 3 models which are territoriality [14], achievement – ascription [15] and power distance [13]. This classification is about how people defence their territory and the status of person in the society. In attitude towards nature classification, the dimensions are exploitation [14] and internal – external attitude [15]. The classification is about how people exploit and adapt with the nature and environment. In emotional relationship classification, the dimensions is neutral – emotional. This classification is about how people define their relationship with other people, either by objective or emotional.

The third dimension is assumptions, that reflect on the rules and laws that are used to organized the society. The classification in this dimension are reaction to law and freedom of life. In reaction to law, the dimensions include defense [14], universalism – particularism [15] and uncertainty avoidance [13]. This classification is about how people define rule that makes up a system in society and how people handle unstructured situations. In freedom of life, the dimension is indulgence vs restraint [13]. This dimension is about how society controls the needs of people. The need can be freely enjoyed by people or need to be controlled by rules and laws.

IV. DISCUSSION

The cultural element can be categorized into many categories. Some element are explicit while some element are implicit. Explicit element means that the culture elements are observable by people sight that include a solid element such as food, artifacts, buildings and monuments. The other explicit culture elements are actions that performs by the people such as learning, play and celebrations. These explicit culture are important since it belong in the first layer of the classification where foreign people may observe these layer first as their first impression and judgement towards the culture.

Implicit culture elements are the culture that cannot be

observe from people's sight or untouchable culture. It can be categorized into two category which are norms and values and assumptions. Norms are the cultural elements that define what is right and what is wrong, while values are define as what good and bad culture is. This classification is about people's attitude towards other people and nature. It is about how they interact with others, how their relationship going on, how they are valued in the society and how do they adapt with the environment. Their relationship with other people and nature is important in this classification.

The assumptions classification is more on the implementation of law in the society. Reaction to law and freedom of life are for the cultural elements that makes up the rules and laws to ensure that there is a system capable in controlling these people in the society. Without the rules and laws, the society cannot control the unstructured situations. People have their own needs and desires that need to be satisfied but not all the needs can be enjoyed freely by them. This is where these laws play their roles in controlling the people's needs.

By having these 3 category, it could be easier for developer to manage and design the cultural-based emoticon accordingly. The developer may gain benefit by knowing which culture belong to explicit and implicit culture. When user use the cultural-based emoticon model, they could gain extra knowledge about other culture and their own culture too. When people can understand about other culture, their level of understanding can be increased hence having a healthy distributed collective interaction.

V. CONCLUSION

The objectives of this study is to explore and develop a model for cultural-based emoticon. The model developed are based from the 3 cultural models that have been used in HCI study previously which are the Hall Culture Model, Trompenaars and Hampden Turner Culture Model and Hofstede Culture Model. The dimensions from these 3 models are summarized into 13 categories. These categories are then apportioned into 3 classifications which are artifacts and products, norms and values and assumptions.

The cultural-based emoticon model can be used by the developer in designing and developing the emoticons that are capable of expressing the cultural elements. For future work, researcher will perform the validation process to the developer and user to ensure that the model is valid. First, the developer will perform a test to ensure that the model is developed appropriately. Then, prototype of cultural-based emoticon will be created to be used during the validation process to the user. Researcher expects that there will be an increase level of understanding between people from different culture when they are using the cultural-based emoticon model for distributed collective interaction.

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