

# Cultural Based Adaptive Web Design For Wellington Institute of Technology

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**Abstract**— Currently academic institutions’ websites are used for evaluating the standard of institutions. The institution’s website is an important marketing tool because it is an advertising forum to students. Website is a kind of promotional material which exchanges academic images to students which will in turn provides revenue to institution. Poorly designed website is risky because it will create a negative impact about academic institution. The role of academic website is very important for student’s decision to select an academic institution because every student will examine website before enrolling. There are many features that attract users to a website; one among those factors is cultural attributes. Web designers should adapt a cross cultural web design by considering the culture of the targeted audience. A well-designed website with improved user interface which would incorporate various cultural factors will definitely increase the revenue of institution. The aim of this research is to evaluate the web interface of Wellington Institute of Technology institute (Weltec) based on the various cultural dimensions of Asian students and to provide some suggestions to design an interface layout for Weltec web interface, which can satisfy Asian students’ cultural attributes.

**Keywords** - *Web Interface Design; Academic Institution Website; Cultural Attributes; Website Satisfaction.*

## I. INTRODUCTION

Nowaday’s lots of researches have been conducted in the field of anthropology on the cultural differences and similarities. The primary reason for increasing the number of research in this area is because the web has become a medium for promotion and marketing. Therefore, it is essential that a web interface design reflects the cultural preferences of target audience [1]. According to Hofstede, the culture is the collective program of mind that differentiates the people from a group from another group where the mind stands for thinking, feeling and acting towards beliefs, attitudes and skills [2]. Culture can also be defined as patterns of thinking that influence people how to communicate with user interface [3].

Nowaday’s academic institutions’ websites are used for evaluating the standard of institution [4]. The most important marketing tool for an institution is to have an effective website because website is an advertising forum to students. The website is a kind of promotional material which exchange academic idea to students, which in turn

provides revenue to institution. A poorly designed website is risky because it will create a negative impact about academic institution. When students visit academic institution website they must find it easy to navigate and access information otherwise they will leave the website and institute will lose potential candidates. According to Davis and Lindridge as cited by [5], cultural factors must be considered in web design which can increase aesthetic quality and success of website. A well-designed website with improved user interface incorporated with various cultural factors will definitely increase the revenue [6]. Therefore, while designing a web interface, relevant visitors’ culture attributes should also be considered.

Wellington Institute of Technology (Weltec) is an internationally recognized Centre of education, providing education for more than 11,000 students every year and offering more than 150 programs. In the competitive world, website should be designed efficiently to satisfy and to attract more students to Weltec. The Weltec web interface design should adapt a cross cultural web design by considering the culture of the targeted audience. The aim of this research is to evaluate web interface of Weltec based on the cultural dimensions of Asian students and to provide some suggestions to design an interface layout for Weltec web interface which can satisfy cultural dimensions of Asian students.

In Section II, we describe the influence of cultures on web design. Section III describes the Hofstede’s cultural dimensions. Related works are explained in Section IV. Research approach and findings are described in Section V and finally, Section VI covers the conclusion of research.

## II. THE INFLUENCES OF CULTURES ON WEB DESIGN

In 2001, Sun [7] studied about the effect of culture on web site and stated that users use cultural priorities to evaluate the quality of a website. Studies conducted by Smith, Dunkly, Minoch [8] stated that use of design components according to user’s culture will definitely increases the user satisfaction, usability and friendliness of a website. Marcus and Gould stated in [9] that it is possible to analyze the culture effects in terms of web design components like images, icons and navigation. Galdo, Fernandes, Russo and Boor in [10] emphasized that designer should include the cultural factors such as icons,

symbols and colors in web page design. The culture is very important aspect while designing a web interface because it can help users to interact much better with the interface. Therefore, it is necessary to incorporate cultural characteristics in interface design [11]. Good understanding of cultural preference is necessary before designing web interface. Culture is a major factor that has to be considered to create a global interface design because users will feel more comfortable while interacting with the interface that is designed according to their culture [12]. Global interface should include a diversity of culture to provide support for users [13]. Users will be from different background so that their expectations towards the interface will be also different so it is very important to satisfy cultural features to increase usability of web interface [14].

### III. HOFSTEDE'S CULTURAL DIMENSIONS

One of the goals of this study is to identify the cultural dimensions that must be considered in website design. For this purpose, we have done literature review on several cultural models, such as Victor's Model [15], Hall's Model [16], Trompenaar's Model [17] and Hofstede's Model [18]. In this study, we selected Hofstede's cultural model because Hofstede's theory describes clearly the attributes of culture. Hofstede's theory is very popular in field of cultural research and has been cited more than 3500 times and included in more than 9000 articles [1]. Hofstede is the ninth most cited European in 2011 according to social science citation index [19]. Ford and Kotze argue in their article [1] "Designing usable interfaces with cultural dimensions" that the web interface that follows the Hofstede's cultural dimensions will provide more user friendliness in web layout.

Greet Hofstede worked as a psychologist for IBM and conducted a study during the period from 1978 to 1983. He collected data from more than 100,000 IBM employees from 53 countries through interview and survey. Statistical analysis of large set of data was done and each country was given a rating from 0 to 100 [9]. In 1990, Hofstede published 'Software of mind' with more details of culture in an organization with his five cultural dimensions Power Distance, Individualism Vs Collectivism, Masculinity Vs Femininity, Uncertainty avoidance and Long Term orientation Vs Short term orientation. Power distance refers to inequalities among the people in society and how power is distributed [20]. Individualism refers to individuals are expected to take care of themselves and collectivism expect family member or relatives can look after a person [21]. Masculinity refers to difference in the emotional roles between genders [22]. Uncertainty Avoidance deals with feel of anxiety for a member of society in a particular situation [23]. Long term orientation stands for encouragement towards the future growth whereas short term orientation stands for present and past [24].

### IV. RELATED WORK

*Work1- Cultural Similarities and Differences in the design of University web sites* [25]: This research was done by Ewa Callahan to understand the cultural differences and similarities in the web interface design of universities based on the Hofstede's Cultural dimensions. To conduct the study 900 universities website from 45 different countries like Malaysia, Austria, United States, Japan, Sweden, Greece and Denmark were chosen. Graphical elements and information organization of home page were mainly analyzed by content analysis methods. Correlation between each cultural dimension was calculated. The result of analysis with respect to power distance positively, individuals/collectivism negatively masculinity/femininity positively and uncertainty avoidance positively were correlated. The result of analysis shows web page layout choices are different all around the world but still there were a few similarities like simple menu that were chosen by most of the countries.

*Work 2- Arabic Interface analysis based on cultural markers* [26]. The primary goal of this research was to analyze the most important cultural markers in the educational websites of Arabic countries. Nine universities including Zayden University, UAE University, Sharjah University, the global university of science, Kuwait institute of Medical specialization from Saudi Arabia, Kuwait, Dubai, Abu Dhabi and Sharjah were selected for analysis. After identifying the cultural markers, the markers were related to Hofstede's cultural dimensions. Hofstede's power distance value for Arabic nation is high. The findings of this study for power distance is also high. The individualism and collectivism is less according to Hofstede's dimension. The result supports Hofstede's claim. Hofstede said Arab countries have a more score in masculinity. This study supports masculinity therefore value of Hofstede for Arabic country can be partially correlated to findings. Hofstede claims that Arab countries have high uncertainty avoidance and there is no score for the long term versus short term orientation. Moderate support for long term orientation was found in this study.

*Work 3- Cultural Variability in Web Content* [27]: A comparative analysis of American and Turkish Websites has been done in this work. This research was conducted in Bebek Istanbul University in Turkey in January 2010. US based company websites and their Turkish counterparts were selected for study. Web content analysis was used to verify Hofstede's cultural dimension in 88 websites. Firstly, after literature review a list of website features were identified which represents different cultural traits. Then focus group study with six students were conducted to find out the website features. The web features identified by students in US and Turkish websites were evaluated. Finally, fourteen web features that represent Hofstede's cultural dimensions were discovered. The websites were analyzed with the absence and presence of the website features. There was a difference in ten features among the

fourteen features between Turkish and Us Websites. There was no Power distance in Turkish website. Turkish website displayed more collectivism than US website. Turkish websites show lower Masculine. US websites displayed more Uncertainty avoidance than Turkish websites.

*Work 4- Cultural Values and Interpersonally in Spanish and British University Websites* [28]: This research was conducted in Spain by Francisco Miguel Ivorra. The primary goal of research was to study the impact of Individualism in Peninsular Spanish and British University websites. According to Hofstede findings, Spain is moderately individualistic and UK is highly individualistic. In this study 30 university websites from Spain and UK were selected randomly. The section “Reason to study at the university” was selected to analyze. The Observation and quantitative analysis were used and statistical analysis with Chi square test was done to find result. The findings of the research show Spain has highly tribal culture with the presence of Individualism. Similarly, UK also has tribal culture in a moderate rate.

*Work 5- Website Design and localization* [29]: A Comparison of Malaysia and Britain has been done in this research. Two researchers Tanveer Ahmed and Haralambos Mouratidis conducted a study to explore the cultural values in Malaysian and British websites and how these values are reflected in web interface design based on Hofstede’s two cultural dimensions Power distance and Individualism/Collectivism. For this purpose, the author selected six different websites from three areas like Banking, Tourism and Education. Research method for analyzing the cultural elements, was content analysis framework and analysis procedure for analyzing the cultural elements. After analysis the authors found a considerable difference in the cultural values in Malaysian and British websites. The findings of research show Malaysia have high index of power distance whereas British value for power distance is low. The Malaysian’s have high collectivism in contrast Britain is highly individualistic.

V. RESEARCH APPROACH

Based on Hofstede’s cultural model, we designed a questionnaire and distributed among 80 Asian students at Weltec that come from India, China, Philippine, Sri Lanka, Nepal and Middle East countries. Subsequently, based on the survey results, Weltec website was evaluated to examine whether the website interfaces meet all the cultural criteria of Asian students.

A. Data Collection

In this study, a quantitative survey was conducted. Among the 19 questions of questionnaire, 5 questions were related to power distance, 3 questions were related to uncertainty avoidance, 4 questions were related to masculinity, another 4 were related to collectivism and last 3 questions were about short-term orientation. For each

question, respondents may select five rating fields strongly agree, agree, neither agree nor disagree, disagree and strongly disagree respectively shown by number 5 to 1.

B. Data Analysis

The opinion of respondents was firstly separated based on nationality and entered in separate spreadsheets. Statistical data analysis was performed using Microsoft Excel. The response for each question was entered as numeric value; strongly disagree=1 to strongly agree=5. For each cultural dimension average was calculated.

The table below shows the result of data analysis (PD= Power Distance, MAS = Masculinity, COL=Collectivism, ST = Short- term orientation, UA = Uncertainty avoidance).

TABLE I. RESULT OF CULTURAL DIMENSIONS VALUE

	PD	MAS	COL	ST	UA
INDIA	2.52	2.35	3.94	3.92	4.62
CHINA	2.61	2.58	3.67	3.55	4.33
PHILIPPINES	2.16	2	3.77	3.33	4.90
SRI LANKA	2.60	2.70	3.72	3.43	4.40
NEPAL	1.9	1.72	3.47	3.43	4.36
MIDDLE EAST	2	2.42	3.90	3.10	4.53

The survey results for all six asian countries (India,China,Philippines,Sri Lanka,Nepal and Middle East) were similar for five cultural dimension as shown in Figure1. The cultural dimension values for asian countries in Uncertainty, Collectivism, Short term orientatin are high, and low for power distance and masculinity.

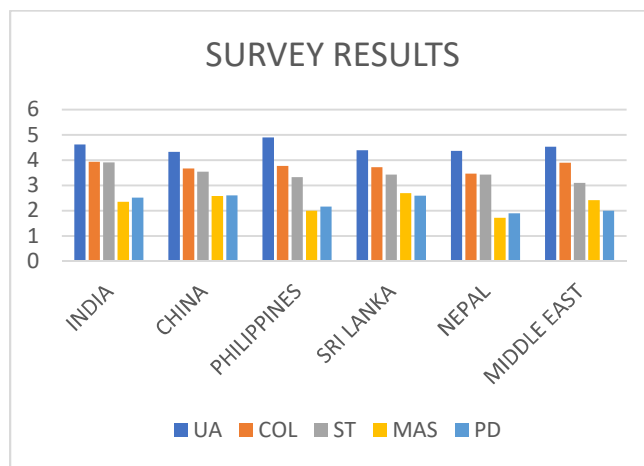


Figure 1. Cultural dimensions value for 6 asian countries

C. Research Findings

The major aim of our research is to investigate whether cultural dimensions of Asian students are reflected in Weltec website. In this research, we examined design

characteristics of Weltec website using a set of guidelines developed by Marcus for mapping of Hofstede’s cultural dimensions into web design components.

*Power Distance:* Survey data shows Asian countries have low power distance. Therefore, the Weltec website should have the five design features listed in the table below.

TABLE II. CULTURAL WEB COMPONENTS FOR LOW POWER DISTANCE

	Components of cultural factors	Identified in Weltec Website
1	Less Structured access to Information	Yes (Pass)
2	Less Focus on Authority	Yes (Pass)
3	Shallow Hierarchies	Yes (Pass)
4	Photos of Students	Yes (Pass)
5	Images of public space and everyday activities	No (Fail)

Among the five web characteristics, only four web characteristics were satisfying, the fifth feature images of public space and everyday activities is absent in Weltec website (please refer to TABLE 2). As example, there is no public image in homepage of Weltec (shown in Figure 2).



Figure 2. No public images in home page.

*Masculinity:* The study shown low score for Masculinity which means Asian students of Weltec prefer femininity in website design. TABLE III shows the failure of Weltec website.

TABLE III. CULTURAL WEB COMPONENTS FOR LOW MASCULINITY

Components of cultural factor	Identified in Weltec website
1. Vivid color scheme	No (Fail)
2. Presence of female themed images	No (Fail)

For example, when students open the information technology page they wish to see different color schemes with female oriented themes in Weltec website instead of pictures of only male students. The Figure 3 shows there is no female image in homepage of School of IT at Weltec. Another design issue, in the picture below we can see only one font color (Green) is used instead of multiple colors.

*Collectivism:* From the survey result, collectivism has high score so the Weltec website should reflect images of group achievement and group learning activities. Table IV shows the failures.

## Information Technology



Figure 3. No female Theme in weltec website.

TABLE IV. CULTURAL WEB COMPONENTS FOR HIGH COLLECTIVISM

Components of cultural factor	Identified in Weltec website
Images of group learning activities	No (Fail)
Images of group achievements	No (Fail)
Images of institutional success	Yes (Pass)



Figure 4. No group success stories.

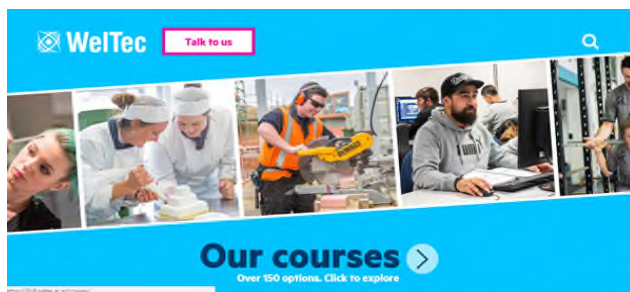


Figure 5. No group learning activities.

The Weltec website displayed individual success stories and pictures instead of group success stories and group achievement images (shown in Figures 4 & 5). When we observed Weltec website we were not able to find images with a group of students sitting together chatting or learning. In the courses web page, among the four photos only one is displaying image of two students and rest of all photos are presenting a single person (shown in figure 5).

*Uncertainty Avoidance:* From survey results, it is very clear that Asian students of Weltec prefer high uncertainty avoidance which means students expect assistance facilities. TABLE V describes the website characters to meet high uncertainty.

TABLE V. CULTURAL WEB COMPONENTS FOR HIGH UNCERTAINTY

Components of cultural Factor	Identified in Weltec website
Simple, Clear, prominent and limited choices	Yes (Pass)
Navigation stated with strict rules	No (Fail)
Presence of site map	No (Fail)
Messages, contents & visuals with direct meaning	No (Fail)
Presence of Search engine and Institutional calendar	Yes (Pass)

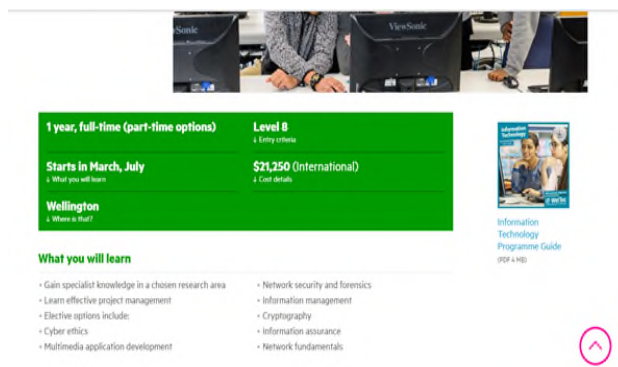


Figure 7. No clear description about the course.



Figure 8. No direct Meaning.

When we investigated Weltec website for high UA features, we couldn't find the strict rules for navigation. Refer to Figure 6 when user clicks on the international tab, it navigates to the screen displayed in the Figure 7 and then when user clicks the top program tab it again takes user back to home page (Figure 8). In this navigation, user will be expecting to view list of programs offered by Weltec but there are no strict navigation rules. The Figure 7 displays the details about post graduate diploma in Information Technology. That page provides details regarding course fee and intake but course subject details and prerequisite of course are missing which is very important for a student to choose a program. In Home page there is a tab named "Current Student" but when clicked on the tab thinking it will be displaying details about current students but it takes user to a page where rules and regulations for newly enrolled students are listed. Moreover, there is no site map in Weltec website to provide support in uncertain situation. *Short-term Orientation:* The survey response for short term orientation score is high. Table VI shows the failure of Weltec website for components of this attribute.

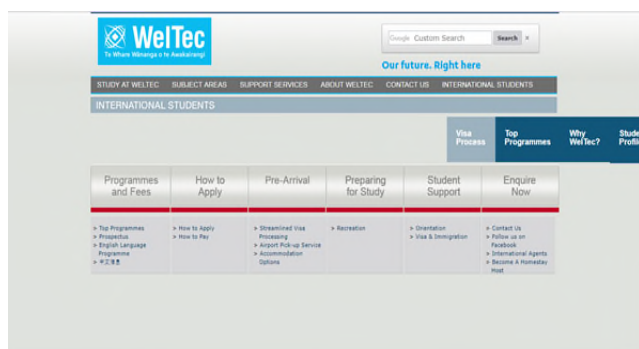


Figure 6. Navigation stated without strict rules.

TABLE VI. CULTURAL WEB COMPONENTS FOR HIGH SHORT TERM ORIENTATION

Components of cultural factors	Identified in weltec website
Daily routine indicator of weltec	No (Fail)
Allow students to complete task quickly	No (Fail)
Daily activities or current events of weltec	No (Fail)
Presence of short term goals of weltec	No (Fail)

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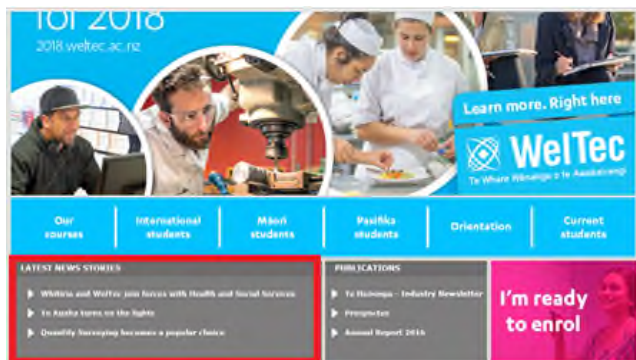


Figure 9. No daily activities.

Daily routine indicator of Weltec was not displayed in home page. Daily activities or current events of Weltec were not listed. Short-term goal of Weltec was not given. The most important one, enrolling into a course is a long process taking the students into many long pages that need scrolling and its time consuming. In Figure 9, we can see the latest stories but not the daily activities or current events. The short-term goals of Weltec is not displayed in home page of Weltec.

VI. CONCLUSION

Based on the discussion of Hofstede’s cultural dimensions, this article explored how academic institutions might make their websites design more usable and attractive for Asian students. The important question which is brought up in this research is ‘What is the approach to design a website which would appeal to diverse cultural backgrounds?’. This paper represented an approach aiming to enhance academic institution website interface attractiveness via an attending majority of Asian visitors’ culture. We proposed an approach for website design with focusing on cultural factors of website visitors. Based on our survey, it was proved that the Weltec website is not fully Asian culture oriented and does not fully reflecting the cultural requirements of Asian students. Weltec website designed according to Cultural factors will increase usability and attract more students to Weltec. Weltec should consider cultural factors of target audience to achieve more desirable outcomes.

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