



## **The Relationship between Culture and E-Learning Adoption among UTHM Students**

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**Abstract:** Understanding students' needs is important especially for successful implementation of e-learning adoption. There are several factors that influence the adoption of e-learning. However, only few studies have investigated cultural factors in specific. Thus, this study aims explore the relationship between cultural factors and intention to adopt e-learning among UTHM students. Technology Acceptance Model (TAM) is adopted as theoretical background for this study. About 140 undergraduate UTHM students has answered the survey questions. The data has been gathered using quantitative research method where self-administrated questionnaire and online survey been applied. Statistical Package for Social Science (SPSS) software been used to get the demographic information, variables and the relationship between cultural dimensions and intention of adoption. From the analysis, it showed that power distance, individualism collectivism, masculinity femininity and uncertainty avoidance have a positive significant relationship towards e-learning adoption. This study can be used by other researchers to understand more on the adoption of e-learning especially on cultural aspects.

**Keywords:** Cultural, E-learning, Adoption, Intention, TAM

### **1. Introduction**

Education is seen as a tool for human development that embodies independent interaction and self-control towards the environment (Csikszentmihalyi, 2014). The role of education has also been extended towards the development capacities of individuals, communities, groups, institutions, and countries (Turkkahraman, 2012). Further, with substantial improvement in Information and Communication Technology (ICT), education sector has changed a lot in term of delivering the content as well as managing the materials (Mohammadi, 2015). This evolution is called as electronic learning (e-learning) that use computer network to deliver learning instruction to students (Zain *et al.*, 2017). To meet the educational aims and students' demands, e-learning has emerged to be one of the alternatives

in today's educational systems (Alsabawy *et al.*, 2013). There are several factors influence the adoption of e-learning and culture is one of it (Wentling *et al.*, 2013).

### 1.1 Research Background

E-learning has become an alternative for many education institutions as it provides many benefits to students and instructors (Alsabawy *et al.*, 2016). According to Asoodar *et al.* (2016), e-learning make the process learning and teaching more interactive as students able to communicate with peers and their lecturers through online platform. In Malaysia, there are more than 590 private and public higher education institutions with more than 1.3 million of students from all higher education institutions (Zain *et al.*, 2017). The successful adoption of e-learning depends on many factors including availability of the technology, support from the peers and lecturers, an appropriate awareness of cultural diversity and its impact on individual.

### 1.2 Problem Statements

There are many studies looked into e-learning topic including factors that influence the adoption (El-masri & Tarhini, 2017), technologies that suitable for the adoption (Moghavvemi & Janatabadi, 2017) and challenges of e-learning adoption (Tarus *et al.*, 2015). Among all these topics, factors that influence e-learning adoption become quite prominent. A study by El-Masri and Wentling (2017) found individualism and collectivism as the factors that lead to e-learning adoption. Another study by Kamentz *et al.* (2020) found e-learning adoption is influenced by cultural factors. Though culture is an important aspect that led to e-learning adoption, studies on this area still lacking especially investigated the sub-dimension of the cultural factors (Al-rahmi *et al.*, 2015). Further, most of studies have concentrated on students in developed country while very little research has focused on e-learning adoption among students in Malaysia (Abbas, 2016). To understand this scenario, this study has looked into the relationship between cultural factors and e-learning adoption in the context of UTHM students in Malaysia.

### 1.3 Research Questions

- (i) What is the level of cultural factors towards e-learning adoption among UTHM students?
- (ii) What is the level of intention level towards e-learning adoption among UTHM students?
- (iii) What is the relationship between culture and e-learning adoption among UTHM students?

### 1.4 Research Objectives

- (i) To identify the level of cultural factors towards e-learning adoption among UTHM students.
- (ii) To identify the level of intention level towards e-learning adoption among UTHM students.
- (iii) To identify the relationship between culture and e-learning adoption among UTHM students.

### 1.5 Scope of the Study

This study has been conducted Universiti Tun Hussein Onn Malaysia (UTHM) Parit Raja, Batu Pahat main campus where undergraduate students has been the targeted respondents. This study used quantitative approach with questionnaires as the research instrument. UTHM undergraduate students have been selected as they already been exposed in using e-learning for teaching and learning.

### 1.6 Significance of the Study

There are several significant that can be highlighted with this study. First, this study can be used by future researchers to understand factors that influence e-learning adoption especially among higher institution students. Second, this study can be used by the policy maker which include university top management and ministry to understand factors that influence e-learning adoption; hence, can devise the best method for e-learning implementation.

## 2. Literature Review

### 2.1 E- Learning

E-learning can be defined as a process of transferring knowledge and skills to another person using computer network. While Chadha and Kumail (2012) define e-learning as a delivery of teaching programs using information and communication technologies. E-learning gives lots of benefits to students including flexibility of time and place and it also incorporates the self-motivation, communication, efficiency using the technology (Selwyn, 2016). According to Lee *et al.*, (2012), e-learning plays an important role in education institution especially for learning and teaching purposes. Using online platform, students, and lecturers able to communicate effectively (Cheng *et al.*, 2012)

### 2.2 E-learning Adoption Factors

E-learning used new learning style where it involves complex instructor-student relationships and communications (Moghavvemi & Janatabadi, 2017). E-learning also require a certain learning styles with certain learning needs and pedagogical (Mosa *et al.* 2016). Therefore, there is a need to expose the relationship between user's cultural backgrounds and the intention to adopt e-learning. The process of e-learning influenced by many factors including cultural factors (McGill *et al.*, 2014). Wentling *et al.* (2013) suggest suitable awareness of cultural diversities is vital for a successful implementation of e-learning. Kamentz and Mandl (2017) suggest cultural differences will need to be considered in developing learning programs specifically in designing the layout, navigation, content, interaction the learning styles.

### 2.3 Theoretical Background

There are several theories have been used to study on intention of adoption towards e-learning including Theory of Planned Behavior (TPB), Technology Acceptance Model (TAM) (Davis, 1989; Fishbein and Ajzen, 1975), Theory of Planned Behavior (Ajzen, 1991) and Motivational Theory (Deci *et al.*, 1991). Though there are many other theories have been used in explaining intention of adoption, the above-mentioned theories seem to be more significant to our study. However, only two theories which are Theory of Planned Behavior (TPB) and Theory of Technology Acceptance Model (TAM) have been adopted in this study.

#### (a) Theory of Planned Behavior (TPB)

TPB used to test the relationship between attitude, perceived behavioural control subjective norms towards intention to participate in a specific behaviour, which then relate to actual behaviour. TPB is used widely to study individual acceptance, adoption, and IT usage. For example, Mathieson (1991) found a significant correlation between perceived behavioural control and behavioural intent. The same results were also shown in the Taylor and Todd study (1995).

#### (b) Technology Acceptance Model (TAM)

According to Davis (1989), Technology Acceptance Model (TAM) has been adapted from the TRA model to theorize the computer technology usage behavior of individuals and break down the TRA attitude into two variables which is perceived usefulness (PU) and perceived ease of use (EU) to explain technology usage behavior. In the previous study, TAM model found that it was useful to study factors that could affect the students' attitude toward using the e-learning system (Reiter *et al.*, 2016).

### 2.4 The relationship between cultural factors and intention of adoption e-learning.

The development for this study was adopted from TPB and TAM models by adding two new variables which are masculinity versus femininity and individualism versus collectivism (Bianchi *et.*, 2018). This study has one dependent variable which is intention of adoption towards e-learning and one

independent variable with four dimensions which includes: power distance, masculinity vs femininity, individualism vs. collectivism and uncertainty avoidance.

*(a) Power Distance*

Power distance is linked to different solutions and human inequality issues. It measures the extent to which subordinates react to power and authority and how unequal distribution of power is expected and accepted. In the context of online learning, power distance could measure the accessibility of instructors with students (Wilhelm, 2016). This type of dimension has an impact on the perception that online technology is appropriate as a way of learning and has the right to access information.

*(b) Masculinity vs. Femininity*

The difference between societies with clear gender roles and the expected behaviour of both genders are the focus of the masculinity vs. femininity dimension of culture. The authors believe that this cultural factor will have an impact on students' behavioural intentions in accepting or using e-learning.

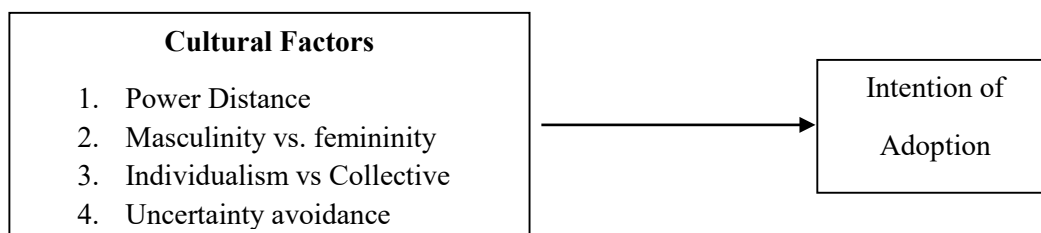
*(c) Individualism vs. Collectivism*

Individualism means the relationship within society and individuals and the individuals should concern about themselves and their immediate families. While collective means the integration of individuals into primary groups. This dimension differs from the point of view of collaborative work as it focuses on what students see on their own achievement. This dimension also explains whether students would like to be part of a student group in e-learning environment, rather than simply having a direct relationship with the instructor.

*(d) Uncertainty Avoidance*

Uncertainty avoidance can be defined as the extent to which an individual feel uncertain or not sure on situations (Dahl *et al.*, 2016). While Barton *et al.* (2016) defines uncertainty avoidance as the level of anxiety of an individual for the unknown future. In e-learning, this dimension is defining as the behaviour of students towards the study structure that is uncertain. It is common for students to unsure on what will happen for their future studies.

## 2.5 Research Framework



**Figure 1: Research Framework**

## 2.6 Hypothesis

H1: There is a significant influence between power distance and e-learning adoption.

H2: There is a significant influence between masculinity vs. femininity and e-learning adoption.

H3: There is a significant influence between individualism vs collective and e-learning adoption.

H4: There is a significant influence between uncertainty avoidance and e-learning adoption.

### **3. Research Methodology**

#### **3.1 Research Design**

Both descriptive and quantitative methods have been used in this study. Descriptive research gives a comprehensive and accurate description of the work. Quantitative method is use in this study to determine the relationship the independent variable and the dependent variable. In addition, the data collected through online questionnaire surveys and secondary data will provide a more reliable result.

#### **3.2 Sampling Method**

This study been conducted in Universiti Tun Hussein Onn Malaysia (UTHM), Parit Raja Johor. The population of the study is 18,446 students. According to Sekaran (2000), the population is the entire group of individuals that researchers want to study. Based on the sampling schedule of Krejcie and Morgan (1970), this study has set a total of 375 respondents to answer the questionnaires.

#### **3.3 Research Instruments**

This research has used quantitative method with set of survey questions has been set. Questionnaire is one of the quantitative method tools for gathering structured data from respondents. The questionnaire is divided into three sections which are Section A, Section B and Section C. Section A explained the background of the respondents while Section B asked the question about intention of adoption and Section C asked about cultural factors that influence e-learning which are individualism vs collective, power distance, uncertainty avoidance and masculinity vs. femininity towards intention and adoption.

#### **3.4 Data collection**

Data collection is a process of gathering information from all relevant sources to find answers to the research problem, to test the hypothesis and to evaluate the results. Data collection can be divided into two categories which is primary data collection and secondary data collection (Harry, 2019).

#### **3.5 Data Analysis**

Data analysis is a process that relies on raw data collection methods and techniques, as well as on the search for insights that are relevant to the research objectives. The data that have been collected in primary data which was questionnaire will be calculated by using descriptive analysis to get the acceptable result.

##### *(a) Descriptive Analysis*

Descriptive analysis is transforming raw data into a form that can be easy to recognize, make interpretation, rearrangement, arranging, and manipulation of data for specific details. In this study, researcher use SPSS software to analyze the collected data. By doing descriptive analysis, researcher can get the information about immediate group of data for the study by looking at the percentage and mean.

##### *(b) Correlation Analysis*

Correlation method can be used to analyze the extent and relationship between two variables. In this study, researcher will use correlation analysis to measure the relationship between the two variables, which are intention to adopt and cultural factors. The data for this study not normal; thus, Spearman's correlation coefficient has been used to examine the relationships between variables.

## 4. Data Analysis and Results

### 4.1 Response Rate

A total of 375 sets of questionnaires have been distributed to undergraduate students in Universiti Tun Hussein Onn Malaysia (UTHM) but only 140 sets were received back which is equal to 37.33% response rate.

### 4.2 Reliability Test

The Cronbach's alpha reliability test had been used to know the internal consistency approach for each item of scale in the study. For pilot test, 30 questionnaires have been distributed 30 undergraduate students and the result questionnaires have been analyzed using SPSS. The table below shows the reliability test of pilot study. Table 1 shows the Cronbach's alpha value for 30 respondents while Table 2 shows the Cronbach's alpha value for the actual data in this study. The value of Cronbach's alpha value acceptable if the value is more than 0.6 (Bonnet and Wright, 2014).

**Table 1: Cronbach Alpha value for 30 respondents**

Factors	Cronbach's Alpha	No. Item
Power Distance	0.649	4
Masculinity/Femininity	0.820	4
Individualism/Collectivism	0.776	4
Uncertainty Avoidance	0.924	4
Adoption of E-Learning	0.787	4

**Table 2: Actual Study for 140 respondents**

Factors	Cronbach's Alpha	No. Item
Power Distance	0.744	4
Masculinity/Femininity	0.755	4
Individualism/Collectivism	0.735	4
Uncertainty Avoidance	0.867	4
Adoption of E-Learning	0.668	4

### 4.3 Descriptive Analysis (Demographic)

**Table 3: Gender of Respondents**

Gender	Frequency	Percentage (%)
Male	62	44.3
Female	78	55.7
Total	140	100

Table 3 shows the number of male respondents which equal to 62 respondents while the number of female respondents is 78 students.

**Table 4: Race of Respondent**

Gender	Frequency	Percentage (%)
Malay	108	77.1
Chinese	22	15.7
Indian	10	7.1
Total	140	100

Table 4 shows the ethnicity answering the survey question. From the table is shows that Malay students are the majority answering the questions with 108 respondents. For Chinese student 22 respondents and Indian 10 respondents.

#### 4.4 Descriptive Analysis (Variables)

Descriptive analysis is used to examine the characteristic of individual variables. The researcher has examined the data to describe the mean and standard deviation of all variables. Besides, this analysis is a good way to differentiate each part in the mean distribution based on Likert scale to measure the level of all independent variable and dependent variables.

##### (a) Power Distance

**Table 5: Mean and Standard Deviation for Power Distance**

No.	Item Power Distance	Mean (M)	Std. Deviation (SD)
1.	Lecturers should not make most decision consulting students.	3.61	0.88
2.	Lecturers should not ask students' opinion too frequent.	3.40	0.99
3.	Lecturers should avoid social interaction with students.	3.47	1.06
4	It is necessary for lecturers to use power and authority when dealing with students.	3.90	0.70
Total Average		3.60	

The average mean scale is based on the scale set by previous researcher in the study conducted. The level of agreement is low if the level is between 1.00 to 2.33. Besides, the mean average is counted as moderate if the level is between 2.34 to 3.67. Lastly, the average mean range is high if the level value is between 3.68 to 5.00. Table 5 shows the value of mean, standard deviation and the level of agreement for each item for power distance variable. It shows that the average of mean value is 3.60.

##### (b) Masculinity vs Femininity

**Table 6: Mean and Standard Deviation for Masculinity vs Femininity**

No.	Item Masculinity or Femininity	Mean (M)	Std. Deviation (SD)
1.	It is better to have a male leader in high-level position.	3.83	0.56
2	Female students do not value outstanding academic achievement in their studies as much as male students do.	3.34	1.10

3	Male students usually solve problems with logical analysis while female students usually solve problems with intuition.	3.77	1.76
4	Male students are more determined and competitive focusing on achievement and material success, while female students are modest and humble focusing on relationships and quality of life.	3.80	0.82
Total Average		3.70	

Table 6 shows the value of mean, standard deviation and the level of agreement for each item for masculinity or femininity variable. It shows that 3.70 is the average of mean value for masculinity or femininity.

(c) *Individualism or Collectivism*

**Table 7: Mean and Standard Deviation for Individualism or Collectivism**

No.	Item Individualism or Collectivism	Mean (M)	Std. Deviation (SD)
1.	Individuals should sacrifice self interest for the group that they belong to.	3.91	0.52
2	Group welfare is more important than individual rewards.	3.90	0.88
3	Group success is more important than individual success.	4.07	0.68
4	Being accepted as a member of a group is more important than having autonomy and independence.	4.16	0.65
Total Average		4.01	

Table 7 shows the value of mean, standard deviation and the level of agreement for each item in Individualism or Collectivism variable. It shows that the average of mean value is 4.01.

(d) *Uncertainty Avoidance Variable*

**Table 8: Mean and Standard Deviation for Uncertainty Avoidance**

No.	Item Uncertainty Avoidance	Mean (M)	Std. Deviation (SD)
1.	It is important to have specific requirements and instructions spelled out in detail so that I always know what I am expected to do.	4.11	0.52
2	It is important to closely follow instructions and procedures related to their learning.	4.14	0.60
3	Standardized work procedures are helpful for my learning.	4.20	0.67



4	Instructions for operations are important for my learning.	4.26	0.69
	Total Average	4.18	

Table 8 shows the value of mean, standard deviation and level of agreement for each Uncertainty Avoidance. It shows that the average mean value is 4.18.

#### 4.5 Normality Test

Normality analysis is used to examine whether the sample population is normally distributed or not normally distributed (Driscoll & Brizee, 2017). Pearson correlation test will be used to perform the parametric data test if the data is normally distributed while if the data is not usually distributed, the Spearman correlation test will be used to run a non-parametric test. In addition, researchers must use Kolmogorov-Smirnov test or the Shapiro-Wilk test to determine the normal distribution of data.

**Table 9: Normality Test Analysis**

Variables	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Power Distance	0.249	140	.000	0.886	140	.000
Masculinity or Femininity	0.191	140	.000	0.920	140	.000
Individualism or Collectivism	0.193	140	.000	0.939	140	.000
Uncertainty Avoidance	0.219	140	.000	0.891	140	.000
Intention of Adoption	0.198	140	.000	0.898	140	.000

##### a. Lilliefors Significance Correction

Table 9 shows that the results of normality test using Kolmogorov-Smirnov and Shapiro-Wilk test. The analysis used 140 respondents and Kolmogorov-Smirnov and Shapiro-Wilk test. The analysis used 140 respondents and Kolmogorov-Smirnov value were taken into account it was exceeded 50 respondents. This analysis shows that all the value of variables is 0.000 which p-value is < 0.005. Thus, this data is non-normal and non-parametric test of Spearman's Rho correlation test will be used to describe the relationship between dependent variable and independent variables, and to achieve the objectives of the study.

#### 4.6 Correlation Analysis

In this study, the tools used to measure the relationship between two variables is Spearman Rho's correlation.

##### (a) The Relationship between Cultural Factors and Intention of Adoption

**Table 10: Result of Correlation Analysis**

Item	Correlation Coefficient
Correlation between Power Distance (PO) and intention of e-learning adoption (AO).	0.170*
Correlation between Masculinity vs Femininity (M) and intention of e-learning adoption (AO).	0.415**
Correlation between Individualism vs Collective (I) and intention of e-learning adoption (AO).	0.604**

Correlation between Uncertainty avoidance (U) and intention of e-learning adoption (AO).	0.699**
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Table 10 shows the Spearman correlation results for the relationship cultural factors and intention of adoption. From the table 10, it shows that the result of power distance is 0.170, masculinity vs femininity is 0.415 while for individualism vs collective is 0.604 and lastly for uncertainty avoidance is 0.699. There is relationship between all the variables if the value of p is more than 0.05. Thus, the correlation coefficient shows that there is a significant relationship between all four variables with intention of e-learning adoption.

#### 4.7 The level of Correlation

The result shows that uncertainty avoidance has a significant relationship with intention of e-learning adoption with  $r = 0.699$  which is moderate strength of relationship. However, individualism vs collective, masculinity vs femininity, power distance has a significant relationship with intention of e-learning adoption  $r = 0.604$  and  $r = 0.415$ ,  $r = 0.170$  which is weak strength of relationship.

## 5. Discussion, Recommendation and Conclusion

### 5.1 Discussion

#### (a) Research objective 1

**Table 11: Cultural level towards e-learning adoption**

No	Item Cultural influence	Average Mean Score	Level
1	Power Distance	3.60	Medium
2	Masculinity / Feminity	3.70	Medium
3	Individualism / Collectivism	4.01	High
4	Uncertainty Avoidance	4.18	High

Based on table 11 shows that all two of them which are power distance and masculinity or femininity are at medium level. While individualism or collectivism and uncertainty avoidance are at high level. The result that has analyzed significantly confirm the hypothesis that have been set. Even two of them is at medium level and another two at high level but have the highest average mean score among the four. Respondents agree that using e-learning more quickly as well as increasing their productivity and makes their life easier.

#### (b) Research Objective 2

**Table 12: Result of hypothesis between independent variables and dependent variable**

Item	Correlation Coefficient	Level
H <sub>1</sub> = There is a significant influence between power distance towards intention of e-learning adoption.	0.415**	Positive significant relationship
H <sub>2</sub> = There is a significant influence between individualism vs collective towards intention of e-learning adoption.	0.604**	Positive significant relationship
H <sub>3</sub> = There is a significant influence between individualism vs collective	0.604**	Positive significant relationship

towards intention of e-learning adoption.

H4= There is a significant influence

between uncertainty avoidance

towards intention of e-learning

adoption.

0.699\*\*

Positive significant relationship

Based on table 12 the result shows that three of the variables have a positive significant relationship which are power distance, masculinity or femininity, individualism or collectivism and uncertainty avoidance and intention of adoption towards e-learning among UTHM students. In conclusion, four hypotheses have been accepted which are H1, H2, H3 and H4. Based on the result, uncertainty avoidance has a moderate relationship towards intention of e-learning adoption it is because the correlation coefficient is 0.699.

## 5.2 Limitation of Study

Just like other studies, this study also has its own limitations in order to complete this research. First limitation is the selection of respondents. Since this study has chosen respondents which are students in UTHM in Batu Pahat, so the result could not represent the whole Malaysia. Second limitation is the data collection technique. Even the questionnaire is easy to spread through online technique, fast, cheap and just need a few minutes to answer, respondents may feel bother to finish them. It also takes a long-time period to get the feedback from respondents. It differences with the paper survey technique. If using the paper survey, we can get a fast feedback because we can personally give the survey to respondent and collect it on the spot. Lastly, a lot of afford should be taken to get the respondent feedback.

## 5.3 Recommendation for Future Research

First recommendation is the future research can expand the target population of respondents which is students to represent the whole public University in Malaysia regarding their intention towards e-learning and not focus on UTHM students only. Second, future research can use the different method of methodologies such as qualitative method to get the data about social influence towards e-learning adoption among students. If the future researchers use the quantitative method, the question of questionnaire should be easy to understand, use a simple word and not too much questions. Besides, researchers can also add the other components factor that may give effect on intention of adoption e-learning among students such as cultures, behaviour, facilities and others. This way can help to increase and improve the various results from previous researchers and at the same times can enhance the analysis model.

## 5.4 Conclusion

As a conclusion power distance, masculinity or femininity, individualism or collectivism and uncertainty avoidance becomes the most important cultural factor of dimension towards intention of adoption e-learning among UTHM students which are in high level. Besides, the intention level towards e-learning among UTHM students for interpersonal, external and instructor influence also high. In addition, this study also states that there is a positive significant relationship between the power distance, masculinity or femininity, individualism or collectivism and uncertainty avoidance dimension and intention to adopt on e-learning with the correlation coefficient of 0.170, 0.415, 0.604 and 0.699. Thus, all these three objectives that have been stated in the early of this study have been achieved. Hence, this research can contribute to enhance the knowledge for the education sector to understand the respondents' perceptions on cultural factors dimensions towards of e-learning adoption.

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