

The Role of National Culture on Email Usage among Non-Academic Staff in Malaysian Public Universities

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ABSTRACT

The Malaysian government has made extensive investment in the expansion of ICT and email usage in workplaces, particularly in the Higher Education Institutions. However, the levels of ICT as well as email usage have still not reached its optimum level, particularly in public universities. This study investigates the role of national culture on email usage among non-academic staff in Malaysian public universities using Hofstede's National Culture mediated by the Technology Acceptance Model (TAM). Data was collected by using survey questionnaires among 217 non-academic staff in four public universities in Malaysia. The study found a significant positive relationship between long-term orientation (LT) and indulgence (I) with perceived ease of use (PEOU) while a significant negative relationship between power distance (PD) with perceived ease of use (PEOU). This study also found that the relationship between collectivism (C) and uncertainty avoidance (UA) with perceived usefulness (PU) on email usage is negative. Finally, both PEOU and PU have a significant positive relationship with email usage and PEOU has a significant positive relationship with PU on email usage. In conclusion, Malaysian public universities perceive that emails become more useful when they are easy to be utilised and that individual long-term orientation and indulgence of work affect this thought.

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INTRODUCTION

Information and communication technology are often championed as an essential part of coordination upgrading and logistical ease in improving employee productivity at the workplace. In a workplace surrounding, email or electronic mail is the crucial communication tool out of many ICT platforms that can be used to improve the efficiency and productivity of employees (Jackson *et al.*, 2001; Mano and Mesch, 2010). Despite the fact that email communication precedes most of the current ICT innovation such as social networking, Friendster, Facebook, Twitter etc., email communication is still deemed to be the leading communication tool widely utilised in workplaces. The usage of emails is expanding worldwide and it was estimated that there would be over 2.6 billion email users by the end of 2016. The figure will continuously grow and is estimated to be over 3.0 billion users in 2020. Nearly half of the world population will be using emails by the end of year 2020. Numbers of business and consumer emails sent or received per day is expected to increase annually at the rate of 4.6 percent over the coming four years from 215.3 billion in 2016 to 257.7 billion in 2020. This is due to the substantial use of emails in business transactions where they are primarily used for notification purposes rather than as a simple interpersonal communication tool (Radicati, 2016).

Despite the efforts of the Malaysian government in promoting the use of ICT (specifically email communication) for improving communication and performance at the workplace, the implementation of email usage in the workplace is deemed to be confronted by a number of obstacles as suggested by previous studies for example Husain *et al.* (2009) and Mahomed (2015). Researchers found that 44.3 percent over 1814 respondents did not possess any email account and only 29.8 percent of the respondents who possess email accounts utilised email communication frequently (Osman *et al.*, 2011). This level of email usage is considerably low despite the fact that 75 percent of the substantial respondents of the abovementioned research have experience in browsing internet (Osman *et al.*, 2011). Another study suggested that the usage of emails across the Malaysian region is lower than the average usage in some developed countries namely the United States and the United Kingdom (e-Dialog, 2010). The email usage rate for Malaysians aged from 15 to 64 years old is 33 percent as compared to 75 percent in the United States and the United Kingdom. (Nielsen, 2010).

A more recent study done by the Southeast Asia Consumer Insights surveyed over 3,600 Southeast Asian consumers to see how consumers in the Philippines, Malaysia and Singapore behave online (Beechler, 2014). The study found that consumers in Southeast Asia use emails often both at home and on the go, and they were open to making purchases based on the emails they receive. The percentage of online consumers who check their emails at least once a day in Malaysia is 87 percent i.e. lower than Singapore and the Philippines which has a 90 percent usage each (Beechler, 2014).

In the Malaysian Higher Education Institution; especially in public universities, ICT, particularly email usage has not reached its full potential level. Private universities however, are seemingly better in email usage as compared to public universities. Earlier studies, e.g. Husain *et al.* (2009) and Baninajarian (2009), and a recent study by Mahomed (2015) discovered a distinct gap of email usage between private and public universities. An investigation on 239 staff at a private university was conducted and the results were rather astonishing. The results indicated that 75.5 percent of private university staff use email service five times a day and 71.9 percent have been using emails for the past five years (Baninajarian, 2009). A research done by Husain *et al.* (2009) compared the email usage between Universiti Teknikal Malaysia Melaka (UTeM), a public university in Malaysia and University of Brighton (UB), a public university in a developed country, and found that UTeM had a lower volume of email usage as compared to UB. The number of work-related emails received daily by the administrative staff in UB was between 11 to 50 messages per day which shows that there were 40 messages more than UTeM. UTeM's highest number of received messages is between 5 to 10 per day (Husain *et al.* 2009).

A more recent research done by Mahomed (2015) on email messages that were received and sent among non-academic staff in Malaysian universities found that only 21.9 percent of staff received more than 20 messages in a day. Near one third of the staff received between 6 to 10 messages per day. On email messages sent, the percentage was far lower than email messages received where more than 50 percent of staff sent only 5 messages or less per day. A higher volume of official email usage was found in private universities as compared to public universities with the mean value for private universities and public universities being 234.41 and 173.44 respectively. Similarly, for the usage on email messages sent, private universities preceded public universities with a mean value of 235.79 and 172.26 for public universities (Mahomed, 2015).

From the studies conducted, it is wise to conclude that private higher education institutions have higher volume in email usage as compared to public universities in communicating to the people within or outside the campus. Public universities tend to rely more on the conventional way of communication, especially physical communication, telephone or perhaps letters as suggested by Mahomed (2015).

Apart from many advantages of using emails at the workplace, there are also some limitations of email communication in which both advantages and disadvantages will be discussed in the next section. However, the Malaysian government is seemingly keen to improve the level of email adoption and usage within the workplace (Eighth Malaysia Plan, 2001; Ministry of Higher Education of Malaysia, 2007). The government's effort is due to various positive effects of email usage suggested by a more recent study especially on increasing productivity at the workplace (Chui *et al.*, 2012). Therefore, this study may provide statistical evidence of national culture dimension, in prompting email usage by non-academic administrators in Malaysian public universities. The study may also help governmental bodies and other non-governmental organisations to initiate, cultivate and empower email usage in the workplace in order to enhance the productivity and efficiency of both employers and employees.

REVIEW OF LITERATURE

Email communication is often associated with many advantages as compared to other channels of communication in the workplace. Emails allow employees to disseminate and exchange information at the liberty of time and geographical perspective (Derks and Bakker, 2010). Email communication helps reduce the use of papers which is a well-known environmental-friendly approach. In addition, email communication saves time by enabling the sender to provide information to a large number of people in one single click. Email communication is often associated with its ultimate benefit of overcoming logistical issue which is limited in face-to-face communication (Ratchukool, 2001). Levine *et al.* (2013) conducted a recent case study by using four technology savvy firms in the United States and discovered that email was the most common used communication in firms as it allows employees to transmit, store and search pertinent information easily. In the current technology, there are alternatives for communication in the workplace such as via SMS, or the use of smartphones. However, emails are contended to be the most useful means of transmitting messages with detailed information (Lim *et al.*, 2012) despite the fact that using smartphones or SMS can increase our flexibility and responsiveness should we be absent from the workplace (Derks and Bakker, 2010).

Chui *et al.*'s research (2012, p. 47) found an increase in productivity of between 25 to 30 percent by reading and answering work-related emails. The use of internet and emails at the workplace successfully contribute to high annual returns which is between \$900 billion to \$1.3 trillion across four main industries, namely, consumer packaged goods, retail financial services, advanced manufacturing and professional services in the United States.

There are limitations which can encumber email communication apart from the advantages as abovementioned. Jackson *et al.* (2001) believed that incoming emails can distract employees from conducting priority tasks especially time-wasting chores in emails such as duplication of messages, erroneous content, irrelevant messages or incomplete messages which may require further guideline or explanation from the management (Silverstone, 2010). Silverstone's (2010) study which was conducted in one of the higher education institutions in the United Kingdom designated that the monetary impact of time lost for handling trivial messages will cost about £1.2 million annually. In the study conducted by Eunson (2012) and Udo (2001), another problem encountered in email communication was information overload. This scenario was caused by the ease of sending messages simultaneously to a large group of people in the email which could make the email vulnerable of receiving trivial messages, hence a distraction to the employees. In addition, emails can cause isolation among employees as it serves as a communication link between all employees and reduces the need to engage in actual face-to-face interaction. Physical meetings for example can permeate a sense of warmth, familiarity and solidarity within an organisation (Brocklehurst, 2001).

As discussed above, the email service has its own advantages and disadvantages. However, for an organisation to utilise emails as organisational communication, it is often associated with many factors. The level of use or acceptance of a new technology in an organisation is often referred to as technology adoption and there have been many theories to investigate the level of adoption of technology including the adoption of ICT in an organisation. Such theories are often in relation to the process where users come to a point to decide whether to utilise that

particular technology. These theories include the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980), the Theory of Planned Behaviour (TPB) (Ajzen, 1985) and the Technology Acceptance Model (TAM) (Davis, 1989).

There are studies aimed to select the most useful and valid theory of technology acceptance. For example, Taylor and Todd (1995) found that TAM was more parsimonious and superior in predicting IT usage when comparing TAM and two variants of TPB for assessing their utility in understanding the usage of IT. The same answer was found in the study conducted by Hong *et al.* (2006) which contended that TAM, although simple, has high explanatory power as compared to other models.

In addition, adoption of ICT into an organisation could also be determined by the subjective perception and attitudes held by the users. Many studies suggest that culture remains as one of the main factors that influence the adoption of new technologies (Straub, 1994; Al-Gahtani *et al.*, 2007; Matusitz and Musambira, 2013; Mahomed, 2015). Ducheneaut (2002) contended that national or organisational culture and individual actors play important roles in ensuring the effective use of emails in an organisation. The form of message to be communicated is also dependant on the predilection of the users towards the selected medium (Straub, 1994, p. 23). Thus, the success or failure of transferring new technology into an organisation is highly influenced by national or organisational cultures (Deal and Kennedy, 1982).

This study seeks to achieve two objectives on email usage among non-academic staff in Malaysian public universities. First, it will identify the influence of national culture on email usage by the non-academic staff in Malaysian public universities. From this finding, it will provide information in understanding how national culture causes suboptimal usage of emails among the mentioned group. Second, it will create a holistic conceptual framework for analysing the relationship between email usage and national culture. This will be achieved by integrating the Technology Acceptance Model (TAM) (Davis, 1989) with Hofstede's Culture Theory (Hofstede *et al.*, 2010). Non-academic executives are engaged in administrative duties in the universities which involve extensive documentation and communication within and outside their organisations. The speed and efficiency that these non-academic executives promote in their work with the use of email can influence overall performance in the administration of the university. The reason for selecting non-academic staff is because it appears that there is a significant difference in the rate of email usage and frequency among non-academic staff in Malaysia in public (Husain *et al.*, 2009) and private universities (Baninajarian, 2009). The more recent study by Mahomed (2015) confirmed the lower level of email usage among non-academic staff in Malaysian public universities compared to private universities.

Hofstede's Culture Model

The objective of this study is to explore the acceptance of email usage at Malaysian universities in relation to the role of national and organisational culture. Thus, it is vital to review several prominent theories that is related to national culture, namely the GLOBE model by House *et al.* (2004), the Social Identity Theory (SIT) by Straub *et al.* (2002) and the dimensions of cultural variability by Hofstede (1980). SIT is a theory which emphasises on individual identification

of themselves as part of four main types of culture, namely, professional, organisational, ethnic, and national culture. In addition, the variety of occasion can influence an individual's perception on the importance of culture. Therefore, SIT is a theory which emphasises the analysis of the culture effect towards individual behaviour rather than the effects of the culture at the organisational level.

The key element of the GLOBE theory is that it contended that value and practices can emerge at both societal and organisational level, however Hofstede's theory on the contrary proposed that values differentiate society and practices differentiate organisation (Shi and Wang, 2011a). Furthermore, GLOBE's sample of research is mostly from European Countries and the region and emphasises solely on managerial level. Hofstede's theory on the other hand, uses more samples from Asian countries and the expanse and Hofstede's study includes managerial and non-managerial level (Shi and Wang, 2011b). This current study is conducted in Malaysia with samples encompassing both managerial and non-managerial level. Therefore, Hofstede's Culture Theory is deemed to be the most suitable theory to be utilised in this study.

Hofstede's Culture Model as abovementioned is deemed to be more adequate to be applied in the context of Asian countries as compared to the other theories' models. The culture model is suggested as a tool to investigate the role of culture in the adoption of ICT in an organisation. Hofstede's model of National Culture serves as the reference point on how to determine the outcome of various cultural variables in adaptation of IT related advances. (Straub *et al.*, 1997). This model is frequently applied in various technology adoption research (McCoy *et al.*, 2007) and more than 60% of researches in IT uses one too many of Hofstede's National Culture dimensions and re-establish the dimension's constancy (Leidner and Kayworth, 2006).

Hofstede *et al.* (2010) defines National Culture as "*the collective programming of the mind which distinguishes the members of one group of people from another*". From the study done by Hofstede, there are four main dimensions that could be taken into consideration while investigating the culture of ICT adoption, namely power distance, uncertainty avoidance, individualism/collectivism and masculinity/femininity (Hofstede, 1980). Subsequently, Hofstede added two other dimensions which are long/short-term orientation and indulgence/restraint (Hofstede *et al.*, 2010).

a) Power Distance (PD)

Power distance (PD) is pertaining to the occasion where unequally distributed power is accepted by less powerful members of an organisation (Hofstede *et al.*, 2010). A more hierarchal-typed organisation will lead to a higher PD. Malaysia is considered as a country which has the highest index score which also means that the unequal power distribution is high with the score of 104. PD is crucial in technology adoption as technology adoption has a negative relationship with PD (Straub *et al.*, 1997; Huang *et al.*, 2003; Saribagloo *et al.*, 2011; Mutlu and Ergeneli, 2012; Mahomed, 2015). For example, the study by Straub *et al.* (1997) suggests that the higher the PD, the lower level of usage of lean medium such as email. Similar results were found in a study done by Mutlu and Ergeneli (2012), i.e. PD and email usage intention among white collared employees in Turkey posted a significant negative relationship. Mahomed (2015) indicated that the relationship between PD, PU and PEOU email usage is negative. Thus, we propose the following hypotheses:

H1a: There is a significant negative influence of power distance (PD) towards perceived usefulness (PU) on email usage in Malaysian public universities.

H2a: There is a significant negative influence of power distance (PD) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.

b) Uncertainty Avoidance (UA)

Uncertainty avoidance (UA) is regarding the extent to which the members of a society feel threatened by a uncertain or unknown situation (Hofstede *et al.*, 2010). Societies which maintain rigid codes of belief or behaviour tend to be intolerant towards any deviant person or idea that is uncertain or uneasy to their rigid codes. These type of societies are associated with high UA. On the other hand, in societies that are have a more relaxed atmosphere where practices seem to be more vital than principles or codes, deviance will be more easily tolerated, and these type of societies seems to be in a lower uncertainty avoidance. Hofstede *et al.* (2010) suggests that Malaysia has the lowest UA among 76 countries under studied. Low UA environment tends to promote faster acceptance of new features such as internet, email or mobile phone etc., however countries with a high UA environment will be reluctant to accept new products and technologies. Thus, it is safe to assume that UA and technology adoption posts a negative relationship. Studies done by various researchers designated that UA posted a negative relationship with the use of internet (Matusitz and Musambira, 2013), email usage in Malaysian universities (Mahomed, 2015) and computer adoption in Tehran University (Sarbagloo *et al.*, 2011). It is hypothesised that:

H1b: There is a significant negative influence of uncertainty avoidance (UA) towards perceived usefulness (PU) on email usage in Malaysian public universities.

H2b: There is a significant negative influence of uncertainty avoidance (UA) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.

c) Collectivism (C)

Collectivism (C) is relating to the integration of people in society into strong and cohesive groups that protect themselves throughout their lifetime for unquestioning loyalty however individualism refers to the concept whereby each individual is deemed to be free and is expected to look after themselves or their immediate family (Hofstede *et al.*, 2010). According to Hofstede *et al.* (2010), Malaysia was considered as one of the countries that has high collectivism which is ranked between 21 to 22 out of 76 countries. Thus, the usage of internet and email in Malaysia tends to be lower since email is less attractive and seldom used as well as in Malaysian universities (Mahomed, 2015). The reasons behind a negative relationship between collectivism and usage of internet or email (Arslan, 2009; Hofstede *et al.*, 2010; Mahomed, 2015) could be explained in the study done by Downing *et al.* (2003) where collectivist countries are more inclined to choose information in rich, socially presentable forms of communication such as face-to-face or telephone conversation. However individualists tend to choose much leaner forms of media such as email. We therefore make the following hypotheses based on the previous authors' arguments described above:

H1c: There is a significant negative influence of collectivism (C) towards perceived usefulness (PU) on email usage in Malaysian public universities.

H2c: There is a significant negative influence of collectivism (C) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.

d) Masculinity (M)

Masculinity (M) is pertaining to gender roles in relation to the use of technologies. Men are deemed to be assertive, tough and focused whereas women tend to be more modest, tender and concerned about the quality of life (Hofstede *et al.*, 2010). Therefore, there is evidence which indicates that men tend to easily adopt to technologies (Jackson *et al.*, 2001). However, there are other studies which suggested that masculinity dimension provided no discernible impacts on the PU and PEOU on email usage in Malaysian universities (Mahomed, 2015) and e-government adoption in Jordan (Alhujran, 2009). This study tends to ponder upon the relationship between masculinity on TAM constructs and email usage among Malaysian public universities. We hypothesise that:

H1d: There is a significant negative influence of masculinity (M) towards perceived usefulness (PU) on email usage in Malaysian public universities.

H2d: There is a significant negative influence of masculinity (M) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.

e) Long-term Orientation (LT)

Long-term (LT) and short-term (ST) orientation were included into the dimension of Culture Model whereby long-term orientation is defined as “the fostering of virtues oriented toward future rewards - in particular perseverance and thrift”. On the other hand, short-term orientation (ST) is defined as “---the fostering of virtues related to the past and present - in particular, respect for tradition, preservation of ‘face’, and fulfilling social obligations” Hofstede *et al.* (2010, p. 239). The Malaysian society is deemed to be either future oriented or past and present orientated (Hofstede *et al.*, 2010). Mahomed (2015) however suggests that LT has a positive relationship with PEOU on email usage in Malaysian universities (Mahomed, 2015). In Jordan, a study has also indicated that LT positively influences the PU of internet banking acceptance among bank managers (Al-Sukkar, 2005). It is hypothesised that:

H1e: There is a significant positive influence of long-term orientation (LT) towards perceived usefulness (PU) on email usage in Malaysian public universities.

H2e: There is a significant positive influence of long-term orientation (LT) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.

f) Indulgence (I)

This is a new measurement developed by Hofstede in 2010 as an effect of a study conducted by Minkov (2007). As explained by Hofstede *et al.* (2010) the new dimension of indulgence is

referring to the freedom of speech or personal control which is associated with the willingness of the people to voice out their opinions and giving feedback. Restraint cultures on the other hand will cultivate greater sense of helplessness about personal destiny. Hofstede *et al.* (2010) also believes that people from higher indulgence culture tend to have higher volume in email or internet usage with foreigners compared to those who are in a higher restraint culture. The same result found by various researches indicated that indulgence posted a significant positive relationship with PEOU on email (Mahomed, 2015). Therefore, we propose the following hypotheses:

H1f: There is a significant positive influence of indulgence (I) towards perceived usefulness (PU) on email usage in Malaysian public universities.

H2f: There is a significant positive influence of indulgence (I) towards perceived usefulness (PEOU) on email usage in Malaysian public universities.

Technology Acceptance Model (TAM)

The theory that would be utilised in this study is the Technology Acceptance Model (TAM) as this model is more specific on the information system usage by applying the concept of perceived ease of use and perceived usefulness. TAM is deemed to be more parsimonious and more robust in the applications of various information systems. Besides, TAM has proven to be a very useful model in understanding and explaining the use of behaviour in the implementation of information system. It is one theory that has been tested in many empirical researches and the model's tool has been proven in terms of its quality and its yielded results are also statistically reliable (Davis 1989, 1993; Adams *et al.*, 1992; Baninajarian, 2009; Chen *et al.*, 2011; Mutlu and Ergeneli, 2012; Alharbi and Drew, 2014; Mahomed, 2015). There are two main determinants in TAM, namely Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

A study done by Lin (2007) using 297 Taiwanese customers of online bookstores suggests that 5-variable TAM is more parsimonious than the 12-variable decomposed TPB in the prediction of the buyer's intentions to shop online. Moreover, as explained by Mahomed (2015), using TAM to analyse email usage has been proven to obtain high validity results in Western countries (Adams *et al.*, 1992; Davis, 1989, 1993), Eastern countries (Mutlu and Ergeneli, 2012) as well as Malaysia (Baninajarian, 2009).

Rouibah *et al.* (2011) utilised three models (TAM, TPB and TRA) to explain the user's intention towards Malaysia's internet banking and concluded that TAM is the most suitable model in explaining the usage pattern compared to other models. Lee *et al.* (2013) examined the e-learning system's adoption among employees in the four industries in Taiwan and found that TAM is able to provide a parsimonious model in predicting the employees' intention. Both perceived usefulness and perceived ease of use are the most influential factors in TAM when it comes to explaining the level of acceptance of e-learning system. Therefore, TAM was chosen as the main study framework to investigate the technology adoption given its ease of application and that TAM is able to provide a model which is more parsimonious with its high strength in predicting and explaining.

a) Perceived Ease of Use

The concept of Perceived Ease of Use (PEOU) is to measure the level of a person's belief that the utilisation of a particular system will be effortless and will avoid the user from great difficulty and effort (Davis, 1989). PEOU has shown to possess a significant positive relationship with technology adoption (Davies, 1989; Akour *et al.*, 2006; Baninajarian, 2009; Chen *et al.*, 2011; Ali *et al.*, 2012; Mutlu and Ergeneli, 2012; Alharbi and Drew, 2014). PEOU in relation to email, posted the same significant positive relationship whereby the higher level of PEOU of email, the higher level of email usage in Malaysian universities (Mahomed, 2015). According to Davies (1993), PEOU has causal effect on PU. Therefore, it is safe to assume that developing a user friendly information technology system will likely to construct a useful system. There are many studies which suggest that PEOU posted a significant positive relationship with PU (Davies, 1989; Chau, 2001; Akour *et al.*, 2006; Chen *et al.*, 2011; Alharbi and Drew, 2014, Mahomed, 2015). It is hypothesised that:

H3a: There is a significant positive influence of perceived ease of use (PEOU) towards perceived usefulness (PU) on email usage in Malaysian public universities.

H3b: There is a significant positive influence of perceived ease of use (PEOU) towards email usage (U) in Malaysian public universities.

b) Perceived Usefulness (PU)

Perceived Usefulness (PU) indicates the degree to which a person believe that utilising a particular system would help him or her to enhance job performance (Davis, 1989). Many studies have been done and consistently insinuated that PU has a significant positive relationship with the usage of various technologies (Davies, 1989; Baninajarian, 2009; Chen *et al.*, 2011; Mutlu and Ergeneli, 2012; Alharbi and Drew, 2014). Research done by Mahomed (2015) suggested the same significant positive relationship whereby organisation members will exhibit a high level of email usage if they perceived a high rate of email usefulness. Therefore, we propose the following hypotheses:

H3c: There is significant positive influence of perceived usefulness (PU) towards email usage (U) in Malaysian public universities.

By mediating the PEOU and PU along with Hofstede's Culture Model and Technology Acceptance Model, the research model could be illustrated in figure 1:

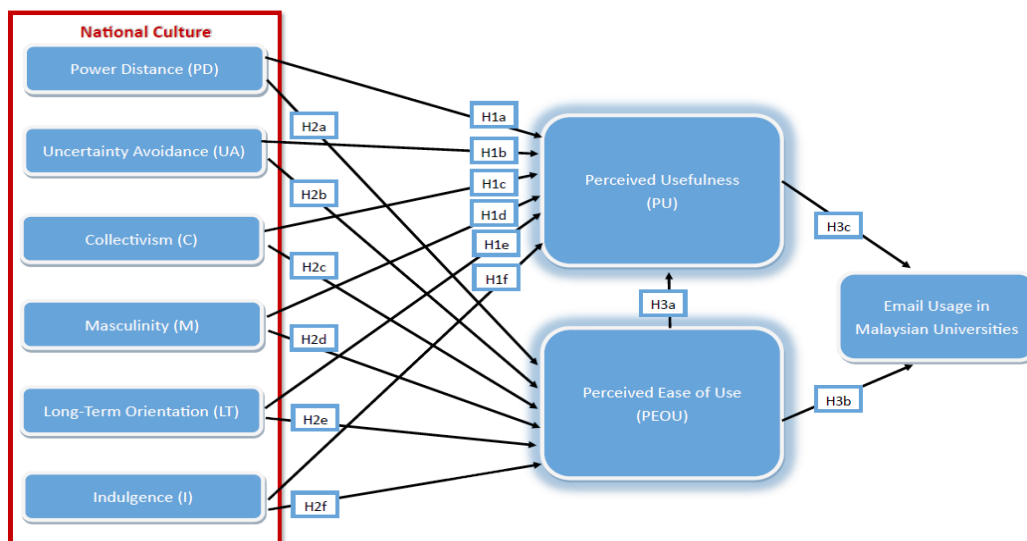


Figure 1: Research Model

RESEARCH METHODOLOGY

A total of 400 questionnaires were distributed at the universities, out of which 217 questionnaires were received, making a response rate of 54.25 percent by using a random sampling through questionnaires which were self-administrated. The distributed questionnaires could be divided into 2 sessions, namely demography, culture and technology acceptance instruments which consist of a) culture - power distance (PD), uncertainty avoidance (UA), collectivism (C), masculinity (M), long-term orientation (LT), indulgence (I) and b) Technology Acceptance Model- perceived ease of use (PEOU), perceived usefulness (PU) and actual usage (U). For culture, this study adopted a scale established by Erez and Earley (1987), Huang (2003), Al-Sukkar (2005), and Hofstede *et al.* (2008) as in Table 1 (Appendix). While for PEOU and PU, this study applied a measurement scale developed by Davis (1989, p. 324 & 340) and Davis *et al.* (1989). Finally, for determining actual usage, the study used scales developed by Hart and Porter (2004, p. 50), used by Hung (2011) and Mahomed (2015) matched with the items of actual usage as claimed by the respondents, i.e. the emails received and sent. Details of the items are explained in Table 2 (Appendix). A 5-point Likert scale was used as the instrument which ranges from 1 (strongly disagree) to 5 (strongly agree), while a number of defined response choices were used for the demographic section.

This study uses the Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) to validate the research model and hypothesis testing. According to Lei and Wu (2007, p. 33). Confirmatory Factor Analysis (CFA) is a confirmatory technique that can be used to test the theoretical relationships among the observed and unobserved variables (Schreiber *et al.*, 2006, p. 323), while structural equation modelling is a statistical modelling tool that has been widely used and has been confirmed to be suitable for validating the relationship between various models or more complicated studies (Chin and Todd, 1995; Lei and Wu, 2007). Hair *et*

al. (2010) suggests that several suitable indices should be evaluated before choosing a model’s goodness-of-fit namely, chi-square (χ^2), incremental fit index (i.e. CFI or TLI), absolute fit index (i.e. GFI, RMSEA or SRMR), goodness-of-fit index (GFI, CFI, TLI, etc), and badness-of-fit (RMSEA, SRMR, RMR, etc.).

This paper has shadowed Hair *et al.* (2010) who asserts on reporting three categories of fit indices; which are absolute, incremental and parsimonious namely 1) Chi-Square (χ^2), 2) Normed chi-square the ratio of the (χ^2) to its degree of freedom (df), 3) Root Mean Square Error of Approximation (RMSEA), 4) Tucker-Lewis index (TLI), 5) Comparative Fit Index (CFI) and 6) Root Mean square Residual (RMR). The threshold values for each index to show good model fit are as follows:

1. χ^2/df : between 1 to 3 (Carmines and McIver, 1981).
2. TLI: $\geq .90$ good fit (Hoe 2008), $\geq .95$ decent fit (Lei and Wu, 2007).
3. RMSEA: $< .08$ good fit (MacCallum *et al.* 1996), $< .05$ decent fit (Wu, 2009).
4. Comparative Fit Index (CFI): $\geq .90$ good fit (Hooper *et al.* 2008), $\geq .95$ decent fit (Lei and Wu, 2007).
5. Root Mean square Residual (RMR): $< .08$ good fit (Hair *et al.*, 2006), $< .05$ decent fit (Brown, 2006; Wu, 2009).

RESULTS AND DISCUSSIONS

The data collection process was conducted with non-academic staff in Malaysian public universities. Data on the demographic background of respondents were collected by categories encompassing gender, race, religion, age group, education level, and respondents’ position in their universities. The detailed information as presented in Table 1.

Table 1: Respondents’ Profile

Gender	Frequency	Percentage (%)
Male	104	47.9
Female	113	52.1
Race		
Malay	210	96.8
Chinese	3	1.4
Indian	1	0.5
Other	3	1.4
Religion		
Muslim	212	97.7
Buddhist	2	0.9
Hindu	3	1.4
Age		
20-25 years	13	6

Table 1 (Cont.)

26-30 years	63	29
31-35 years	44	20.3
36-40 years	31	14.3
41-45 years	11	5.1
46-50 years	22	10.1
51-55 years	26	12
56-60 years	7	3.2
Education		
Diploma	2	0.9
Bachelor Degree	145	66.8
Master Degree	70	32.3
Position		
Senior Deputy Registrar	4	1.8
Deputy Registrar	6	2.8
Head Assistant Registrar	27	12.4
Senior Assistant Registrar	33	15.2
Assistant Registrar	147	67.7

In total, 217 valid questionnaires were used in the analysis of data. Among the respondents, gender distribution were considered equally done with a 47.9 percentage of males. The majority group of public university respondents were Malays (96.8 percent) and bachelor degree holders (67 percent). This study excluded universities from East Malaysia, but due to the standard policy of government towards education (Ministry of Higher Education of Malaysia, 2007), it is safe to assume that all involved universities have similar general practice systems (Mahomed, 2015).

CFA for Measurement Model

Two measurement models i.e. TAM and NCM were employed in this study. For the TAM model, three latent variables were involved namely, perceived usefulness (PU – 5 items), perceived ease of use (PEOU – 5 items), and usage (U – 3 items). NCM has six (6) dimensions, with a total number of twenty seven (27) indicators. During model re-specification, PU3 and PEOU2 were omitted from TAM while PD1, PD2, C2, UA1, UA5, M1, M5, M6, and I4 were omitted from NCM. Subsequently, full model CFA and the results were depicted in Figure 2. Based on the results, clearly, the model has achieved an acceptable fit with public universities. When assessing the TLI and CFI values, it was observed that both were basically greater than 0.90 (0.948 and 0.956), showing that the model has a good model fit. Moreover, both RMSEA and RMR values were below the 0.08 cut-off point (0.050 and 0.037), showing that the model has an acceptable fit. Besides, the model has a good fit supported by the value of a normed chi square of 1.539 posited within the ranges of 1 to 3. Thus, the study concludes that the measurement model has an adequate model fit.

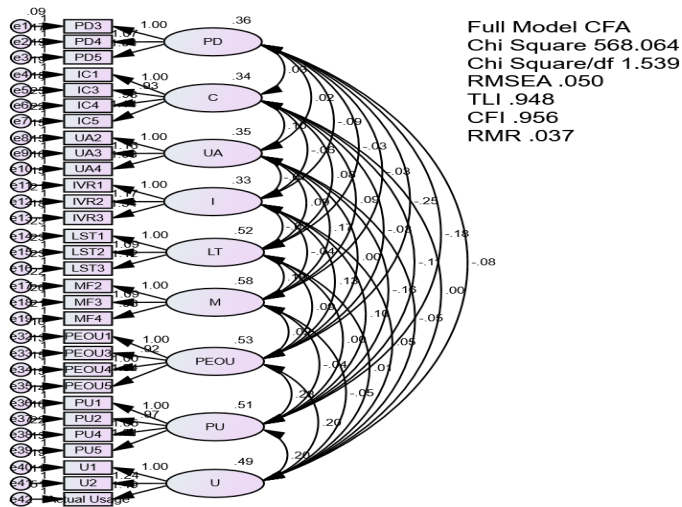


Figure 2: CFA for Full Model

Reliability and Validity of Measurement Model

For reliability and validity of measurement model, the study refer to the guidelines suggested by Hair *et al.* (2006, p. 707). Table 2 reports the factor loadings (BETA) for each item, average variance explained (AVE) values and composite reliability (CR) as advised by Hair *et al.* (2010). Based on the results, high factor loading (0.747 to 0.933) was detected together with AVE values which were greater than 0.5 (0.616 to 0.777), and this proves that the model has convergent validity with at least 61.6 percent of variance in the item explained. Moreover, the composite reliability values ranged from 0.865 to 0.933, suggesting that the model has good reliability.

Table 3 reports the squared multiple correlation matrix as well as the dimensions' corresponding AVE value. All AVE values are basically higher than their corresponding squared multiple correlation value, indicating that each construct is able to discriminate itself (their own items) from other construct. Therefore, the study concludes that the measurement model exhibited good convergent validity, construct reliability and discriminant validity.

Table 2: Convergent validity and reliability for measurement model

Path	B	Beta	P	AVE	CR	
Power Distance (PD)						
PD3	<---	PD	1	0.897	0.731	0.891
PD4	<---	PD	1.065	0.843	***	
PD5	<---	PD	1.043	0.823	***	
Collectivism (C)						
C1	<---	C	1	0.796	0.617	0.865
C3	<---	C	0.931	0.784	***	
C4	<---	C	0.975	0.747	***	

Table 2 (Cont.)

C5	<---	C	1.143	0.813	***		
Uncertainty Avoidance (UA)							
UA2	<---	UA	1	0.84		0.727	0.889
UA3	<---	UA	1.159	0.871	***		
UA4	<---	UA	1.079	0.846	***		
Indulgence (I)							
I1	<---	I	1	0.827		0.712	0.881
I2	<---	I	1.172	0.827	***		
I3	<---	I	1.34	0.877	***		
Long/Short Term Orientation (LST)							
LT1	<---	LT	1	0.833		0.720	0.885
LT2	<---	LT	1.093	0.852	***		
LT3	<---	LT	1.122	0.861	***		
Masculinity (M)							
M2	<---	M	1	0.853		0.727	0.889
M3	<---	M	1.091	0.855	***		
M4	<---	M	0.963	0.85	***		
Perceived Ease of Use (PEOU)							
PEOU1	<---	PEOU	1	0.875		0.777	0.933
PEOU3	<---	PEOU	0.922	0.879	***		
PEOU4	<---	PEOU	0.999	0.88	***		
PEOU5	<---	PEOU	1.043	0.892	***		
Perceived Usefulness (PU)							
PU1	<---	PU	1	0.882		0.761	0.927
PU2	<---	PU	0.974	0.867	***		
PU4	<---	PU	1.049	0.849	***		
PU5	<---	PU	1.009	0.891	***		
Usage (U)							
U1	<---	U	1	0.849		0.757	0.903
U2	<---	U	1.238	0.933	***		
Actual Usage	<---	U	1.487	0.825	***		

Table 3: Discriminant validity (squared multiple correlation matrix)

	U	PU	PEOU	M	LT	I	UA	C	PD
U	0.757								
PU	0.166	0.761							
PEOU	0.155	0.303	0.777						
M	0.008	0.006	0.001	0.727					
LT	0.000	0.000	0.028	0.106	0.720				

Table 3 (Cont.)

I	0.013	0.062	0.100	0.009	0.002	0.712			
UA	0.014	0.144	0.000	0.147	0.043	0.042	0.727		
C	0.000	0.069	0.004	0.044	0.033	0.028	0.089	0.617	
PD	0.040	0.177	0.338	0.004	0.004	0.070	0.002	0.005	0.731

AVE value: Bold and diagonal value

Normality and Outliers

In reference to Table 3 (Appendix), Skewness and Kurtosis' value for each item or indicator were between ± 2 , indicating no violation of univariate normality. Mardia's multivariate kurtosis value of 16.952 is much lower than the threshold value of 960 ($30 \times (32)$), suggesting that the data has multivariate normality. Mahalanobis d-squared method was employed to detect multivariate outliers and the results are as shown in Table 4 (Appendix). In reference to the Table, it shows that the study retained 2 potential outliers as having relatively small values in column p1 and p2 after considering the generality of data.

SEM Model Fit Assessment

Prior to evaluating the hypotheses, this study assesses the SEM model fit as illustrated in Figure 3. The model showed a chi square value of 573.345. The normed chi square value of 1.529 that posited within the ranges of 1 to 3 indicate a satisfactory model fit. Besides that, both TLI and CFI values of 0.949 and 0.956 were greater than the 0.90 cut-off point, clearly showing that the model has satisfactory fit with the public university data. In addition, both RMSEA and RMR values of 0.049 and 0.039 were lower than 0.08, definitely showing a good model fit towards public university data. Therefore, this model will be used for SEM analysis as well as hypotheses testing.

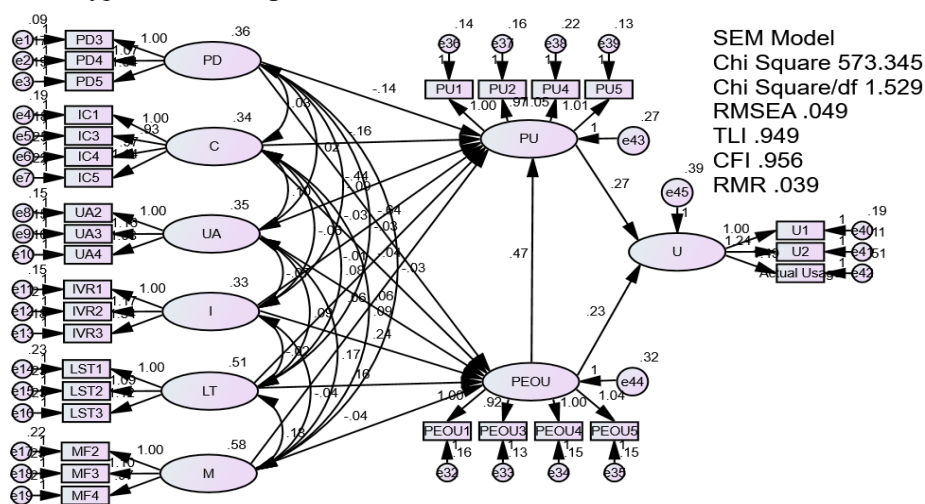


Figure 3: Structural Equation Model

Results of SEM

For the SEM result assessment, factor loadings and p values for path estimated were reported in Table 4. Based on the results, the study found that 8 out of 15 paths estimated statistically significant at the 0.05 level of significance. In reference to the Table, it was observed that C, UA and M were found to insignificantly influence PEOU at 0.05 significance level. Furthermore, PD, I, LT and M were also found to have insignificant effect on PU at 0.05 significance level. Therefore, M alone has no significant effect on PEOU nor PU at 0.05 significance level.

Table 4: Regression Weights

	Path		B	Beta	P	Hypothesis
PEOU	<---	PD	-0.637	-0.524	<0.001	Supported
PEOU	<---	C	-0.037	-0.029	0.666	-
PEOU	<---	UA	0.065	0.053	0.462	-
PEOU	<---	I	0.237	0.187	0.005	Supported
PEOU	<---	LT	0.157	0.154	0.022	Supported
PEOU	<---	M	-0.045	-0.047	0.511	-
PU	<---	PD	-0.142	-0.12	0.111	-
PU	<---	C	-0.157	-0.128	0.045	Supported
PU	<---	UA	-0.437	-0.364	<0.001	Supported
PU	<---	I	-0.030	-0.024	0.706	-
PU	<---	LT	-0.007	-0.007	0.919	-
PU	<---	M	0.06	0.064	0.341	-
PU	<---	PEOU	0.466	0.477	<0.001	Supported
U	<---	PEOU	0.233	0.242	0.004	Supported
U	<---	PU	0.268	0.272	0.001	Supported

The phantom model approach developed by Macho and Ledermann (2011) which was also applied by Mahomed (2015) in his study (Figure 4) was employed to estimate the mediation effect of PU and PEOU. Table 5 reports the standardised indirect effect (also known as mediation effect) of PU and PEOU on the relationship of each exogenous latent variable on Usage (U). There is a significant mediation effect of PU on the relationship of UA and C on U at 0.05 significance level. At the same time, PEOU was found to mediate the relationship of LT, I, and PD on U at 0.05 significant level. In addition, PU mediates the relationship of PD on U if the significance level were 0.10.

Table 5: Mediation effect of PU and PEOU

	Beta(PU)	p	Mediate	Beta(PEOU)	p	Mediate
M	0.157	0.282	No	-0.081	0.490	No
LT	-0.016	0.852	No	0.265	0.006	Yes
I	-0.059	0.665	No	0.320	0.002	Yes
UA	-0.888	0.000	Yes	0.090	0.451	No
C	-0.313	0.030	Yes	-0.050	0.670	No
PD	-0.292	0.074	Yes*	-0.900	0.000	Yes

*Significance level 0.10

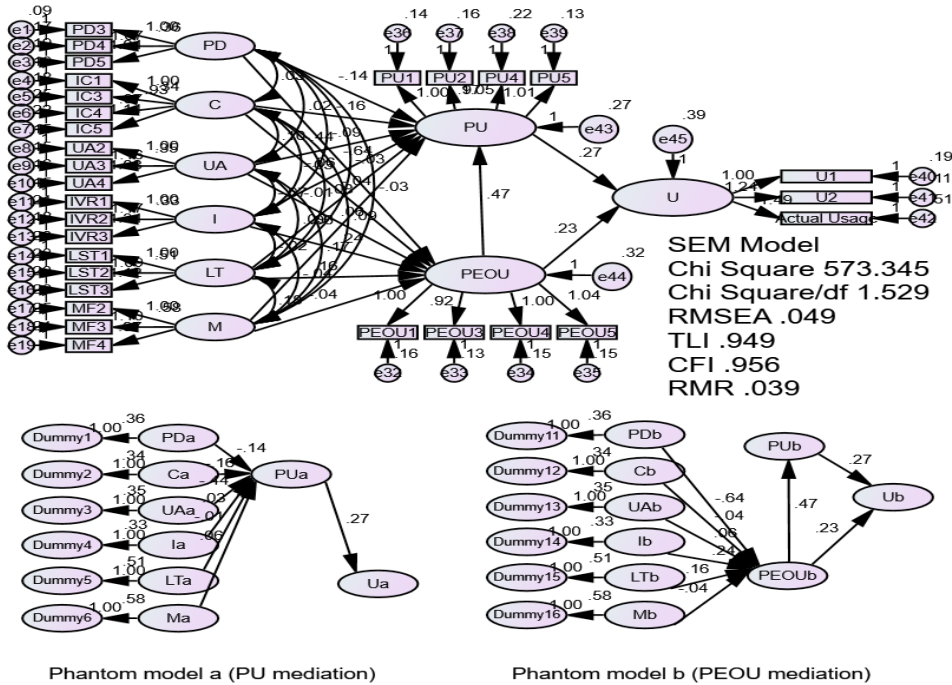


Figure 4: Phantom model for specific mediation effect

This study integrates the culture model and the technology acceptance model to analyse the email usage among non-academic staff in Malaysian public universities. Data was collected using survey questionnaires among 217 non-academic staff in four Malaysian public universities to explore the role of culture on email usage in Malaysian public universities by incorporating constructs of culture (PD, UA, C, M, LT and I) with technology acceptance model (PEOU, PU, U). The findings of the hypotheses are as summarised in the table below:

Table 6: Summary of Hypothesis Testing Results

Hypothesis	Study Results
National Culture, Technology Acceptance Model on Email Usage in Malaysian public universities	
H1a: There is a significant negative influence of power distance (PD) towards perceived usefulness (PU) on email usage in Malaysian public universities.	Rejected
H1b: There is a significant negative influent of uncertainty avoidance (UA) towards perceived usefulness (PU) on email usage in Malaysian public universities.	Supported
H1c: There is a significant negative influent of collectivism (C) towards perceived usefulness (PU) on email usage in Malaysian public universities.	Supported
H1d: There is a significant negative influent of masculinity (M) towards perceived usefulness (PU) on email usage in Malaysian public universities.	Rejected
H1e: There is a significant positive influent of long-term orientation (LT) towards perceived usefulness (PU) on email usage in Malaysian public universities.	Rejected

Table 6 (Cont.)

H1f: There is a significant positive influent of indulgence (I) towards perceived usefulness (PU) on email usage in Malaysian public universities.	Rejected
H2a: There is a significant negative influent of power distance (PD) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.	Supported
H2b: There is a significant negative influent of uncertainty avoidance (UA) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.	Rejected
H2c: There is significant negative influent of collectivism (C) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.	Rejected
H2d: There is a significant negative influent of masculinity (M) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.	Rejected
H2e: There is a significant positive influent of long-term orientation (LT) towards perceived ease of use (PEOU) on email usage in Malaysian public universities.	Supported
H2f: There is a significant positive influent of indulgence (I) towards perceived usefulness (PEOU) on email usage in Malaysian public universities.	Supported
Technology Acceptance Model on Email Usage in Malaysian Universities	
H3a: There is a significant positive influent of perceived ease of use (PEOU) towards perceived usefulness (PU) on email usage in Malaysian public universities.	Supported
H3b: There is a significant positive influent of perceived ease of use (PEOU) towards email usage (U) in Malaysian public universities.	Supported
H3c: There is a significant positive influent of perceived usefulness (PU) towards email usage (U) in Malaysian public universities.	Supported

The study found a significant negative relationship between power distance (PD) with perceived ease of use (PEOU) on email usage. The findings of this study were consistent with the recent study done on email usage by Mahomed (2015) which suggests a negative relationship between power distance (PD) with perceived ease of use (PEOU). Moreover, many previous studies also suggested a negative relationship between PD and technology adoption (various technology/system used) (Straub *et al.*, 1997; Huang *et al.*, 2003; Saribagloo *et al.*, 2011; Mutlu and Ergeneli, 2012; Mahomed, 2015). This study confirmed the study done by Straub *et al.* (1997) and Mahomed (2015) on email usage which suggested that the higher the PD, the lower level of use of a lean medium like email. However, this study only confirms the negative relationship between PD with PEOU, and found no relationship between PD and PU.

This study also found a positive relationship between long-term orientation (LT) and indulgence (I) with perceived ease of use (PEOU). The findings of this study were in line with the previous study done by Mahomed (2015) which suggested a positive relationship between long-term orientation (LT) and indulgence (I) with perceived ease of use (PEOU) while there was no relationship between LT and I with PU. Furthermore, the study found a significant negative relationship between collectivism (C) and uncertainty avoidance (UA) with perceived usefulness (PU) on email usage i.e. in line with the previous study done by Mahomed (2015) which suggested a negative relationship between C and UA with PU. Some previous studies, for example the study done by Saribagloo *et al.* (2011) suggests that both TAM constructs namely PEOU and PU have indirect negative relationship with UA on computer adoption in

Tehran University. However, this study found no relationship between UA and PEOU. While previous studies suggested a negative relationship between collectivism and technology adoption (various technology/system used) (Arslan, 2009; Hofstede *et al.*, 2010) this study only confirms a negative relationship between collectivism (C) with perceived usefulness (PU) and found no relationship between collectivism with PEOU.

Finally, this study showed that PEOU and PU have significant positive relationship with email usage. The findings supported previous studies on positive relationship of TAM constructs (Davies, 1989; Akour *et al.*, 2006; Baninajarian, 2009; Ramayah, 2010; Chen *et al.*, 2011; Mutlu and Ergeneli, 2012; Alharbi and Drew, 2014; Mahomed, 2015). In contrast, Saeed *et al.* (2012) concluded that PU and PEOU did not show significant influence on the Twitter usage intention of students in Australian universities. Holsapple and Wu (2007) explained that TAM might not be able to explain the dynamics in today's technology environment. Furthermore, PEOU was found to have a significant positive impact on PU. These findings supported previous studies on the positive relationship of PEOU with PU (Davies, 1989; Chau, 2001; Akour *et al.*, 2006; Chen *et al.*, 2011; Alharbi and Drew, 2014, Mahomed, 2015). Moreover, this study also suggested that PU has a direct impact on usage ($\beta=0.272$) rather than impact of PEOU ($\beta=0.242$) on usage. Many studies in the existing TAM research also showed that PU was a better predictor of adoption rather than PEOU (Alhujran, 2009; Davis, 1989; Li, 2013; Alharbi and Drew, 2014; Mahomed, 2015). In addition, this study also found that the variance explained by the model on PEOU accounted for 38.9 percent, PU was 47.3 percent and the actual usage accounted for was 20.4 percent. In addition, the Malaysian public university staff tend to think that emails were useful if they were easy to be utilised.

CONCLUSIONS

The study provides significant contributions in bringing the knowledge gap that exists in the literature and practical contributions for the development of ICT in Malaysian higher education institutions. On theoretical contributions, this study used an integrated model of culture and technology acceptance model to analyse email usage in Malaysian public universities. This study employed Hofstede's culture model with the technology acceptance model. This study included the sixth dimension of Hofstede's model namely indulgence. As mentioned by Mahomed (2015), this dimension was rarely used in the research and this study included all dimensions of Hofstede's model including indulgence to look as a whole and to cover all of Hofstede's dimensions that may have relationships with TAM and email usage. As a result, this study found a positive relationship between indulgence (I) with perceived ease of use (PEOU) on email usage which may suggest that this dimension needs to be used regularly in investigating the reason behind accepting or rejecting technology adoption. This study also used the phantom model developed by Macho and Ledermann (2011) which is quite new in the SEM analysis area. The method allows the specific mediation effect to be calculated simultaneously, thus study confirms the applicability of phantom model in analysing research model that has more than one mediator and as a guideline for future research.

All the dimensions of Hofstede's national culture have an impact on one variable of

perception, either PEOU or PU except masculinity/femininity (M). For example, the dimensions of LT and I impact on PEOU rather than PU, which means that when an employee perceived positive long-term future returns in their workmanship, they tend to perceive email as a medium which is easy to use. The same goes to indulgence dimension. Once an employee is able to practice freedom of speech and is happy in his/her working environment, they too tend to perceive email as an easy to use medium. Although Malaysian executives with positive LT and I may perceive email as easy to use they may not necessarily perceived email as useful. This does not mean that the results of this study about these dimensions are inconclusive, instead it shows that they do not exert a unilateral effect on usage, but each has a bearing only on one variable of perception. In fact, the contradictory evidence for these dimensions in existing studies could perhaps be explained due to the divergent effect of each of these dimensions exercises on PU and PEOU.

In relation to practical contribution, the findings of this study especially on the effect of Power Distance (PD) may assist Malaysian public universities to exit the PD culture and apply methods that could reduce the PD culture in order to hinder its negative effects on cultivating email usage among governmental executives and employees. For example public sectors could encourage a more unified and equality in workplace culture, and practice open organisational culture which encourage freedom of speech among employees in order to promote improvement as suggested by Mahomed (2015). Such modifications will not only deliver approaches to promote rapid and effective adoption of email, it will also improve the general levels of collaboration and communication in public universities (Mahomed 2015).

This study showed that PEOU and PU have significant positive relationship with email usage. PEOU and PU are the key features contributing to email usage. Employees will use email if they think that email was easy to use and they perceive email as a useful medium for conveying and receiving messages within the organisation. Policy-makers should engage both employees and their managers in courses which could show them the effective way of use email in order to convince employees that email was easy to use. Secondly, certain measures could be taken to develop confidence about the usefulness of email in the workplace. This could be done by providing statistical evidence on email usefulness, giving out courses on proper and effective email works and influencing the most resistant type of employees.

This study has some limitations where the model only accounted for 20.4 percent of the actual email usage. This study also covers only Peninsular Malaysia and excluded the Borneo region. The measurement items for most of the culture dimensions showed an acceptable level of reliability. However, some of the items such as PD1, PD2, C2, UA1, UA5, M1, M5, M6 and I4 were dropped due to their low-level of factor loading, particularly lower than 0.5. Finally, this research used survey questionnaires to measure culture. While this method has been used widely in many studies particularly those related with information system (McCoy *et al.*, 2007; Taras *et al.*, 2009; Mahomed, 2015), some researchers such as Triandis (1993) and McSweeney (2002) have voiced doubt over the validity of measuring culture by using survey questionnaires.

The model explained only 20.4 percent of the variance in email usage. Future studies are encouraged to refine the actual usage and improve its measurement which possibly includes more actual usage as this study is representing one item as the actual usage which is insufficient

to explain or represent the overall model. Secondly, it is also essential to look into more recent ICT channels such as WhatsApp, Twitter etc., in the context of the influence of culture on technology acceptance study.

These findings will optimistically deliver some beneficial data for the managerial level in public universities, private universities and governmental agencies to enhance email usage as an effective communication tool in their organisations in order to increase overall productivity and organisational efficiency.

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APPENDIXS

Table 1: National Culture Items

No	Constructs	Code	Statement
1.	Power distance (PD)	PD1	“Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manager might appear to be weak and incompetent” (Huang 2003, p. 115; Al-Sukkar 2005, p. 188).
		PD2	“Managers should make most decisions without consulting subordinates, because managers should look powerful and authoritative” (Huang 2003, p. 115).
		PD3	“Employees should not question their manager’s decisions” (Huang 2003, p. 115; Al-Sukkar 2005, p. 188).
		PD4	“Employees should not show their disagreement to their managers” (Huang 2003, p. 115).
		PD5	“Decision-making power should stay with top management in the organisation and not be delegated to lower-level employees” (Al-Sukkar 2005, p. 188).
2.	Collectivism (C)	C1	“Individual rewards are not as important as group welfare” (Huang 2003, p. 115; Al-Sukkar 2005, p. 188).
		C2	“Being accepted as a member of a group is more important than having autonomy and independence on the job” (Huang 2003, p. 115; Al-Sukkar 2005, p. 172).
		C3	“Group success is more important than individual success” (Huang 2003, p. 115; Al-Sukkar 2005, p. 188).
		C4	Working within a team is better than working alone (Erez & Earley 1987, p. 660).
		C5	“It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative” (Huang 2003, p. 115; Al-Sukkar 2005, p. 172).
3.	Uncertainty avoidance (UA)	UA1	“It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do” (Huang 2003, p. 116; Al-Sukkar 2005, p. 188).
		UA2	“People should avoid making changes because things could get worse” (Huang 2003, p. 116).
		UA3	“Rules and regulations are important because they inform workers what the organisation expects of them” (Huang 2003, p. 116; Al-Sukkar 2005, p. 188).
		UA4	“It is better to have a bad situation that [I] know about, than to have an uncertain situation that might be better” (Huang 2003, p. 116).

Table 1 (Cont.)

		UA5	“Working in a structured environment is better than working (rules and regulations) in an unstructured work environment” (Al-Sukkar 2005, p. 188).
4.	Masculinity (M)	M1	“It is more important for men to have a professional career than it is for women to have a professional career” (Huang 2003, p. 115; Al-Sukkar 2005, p. 172).
		M2	“It is preferable to have a man in a high-level position rather than a woman” (Huang 2003, p. 115; Al-Sukkar 2005, p. 188).
		M3	“Men usually solve problems with logical analysis; women usually solve problems with intuition” (Al-Sukkar 2005, p. 188).
		M4	“Solving organisational problems usually requires an active, forcible approach which is typical of men” (Al-Sukkar 2005, p. 188).
		M5	“Women do not value recognition and promotion in their work as much as men do” (Huang 2003, p. 115; Al-Sukkar 2005, p. 172).
		M6	“There are some jobs in which a man can always do better than a woman” (Huang 2003, p. 116; Al-Sukkar 2005, p. 172).
5.	Long-term orientation (LT)	LT1	“Respect for tradition hampers performance” (Al-Sukkar 2005, p. 188).
		LT2	“The exchange of favours and gifts is not necessary to excel” (Al-Sukkar 2005, p. 188).
		LT3	“Upholding one’s personal image makes little difference in goal achievement” (Al-Sukkar 2005, p. 188).
6.	Indulgence (I)	I1	It is important to keep time free for fun (Hofstede et al. 2008, p. 1).
		I2	It is important to have moderation: having few desires (Hofstede et al. 2008, p. 1).
		I3	I’m a happy person in the workplace (Hofstede et al. 2008, p. 2).
		I4	There are no other people or circumstances that ever prevent me from doing what I really want to do in the workplace (Hofstede et al. 2008, p. 2).

Table 2: TAM Items

No	Constructs	Code	Statement
1.	Perceived usefulness (PU)	PU1	Using email for work enables me to accomplish tasks more quickly (Davis 1989, p. 324 & 340).
		PU2	Using email for work improves my job performance (Davis 1989, p. 324 & 340).
		PU3	Using email for work increases my job productivity (Davis 1989, p. 324 & 340).
		PU4	Using email for work enhances my effectiveness (Davis 1989, p. 324 & 340).
		PU5	Email for work is useful in my job (Davis 1989, p. 324 & 340).
2.	Perceived ease of use (PEOU)	PEOU1	Learning how to use email is easy (Davis 1989, p. 324 & 340).
		PEOU2	My interaction with email is clear and understandable (Davis 1989, p. 324 & 340).
		PEOU3	I find email to be very flexible (Davis 1989, p. 324 & 340).
		PEOU4	I find it easy to get email to do the work I want it to do (Davis 1989, p. 324 & 340).
		PEOU5	Overall, I find that email is easy to use (Davis 1989, p. 324 & 340).
3.	Usage (U)	U1	Currently, I use email frequently at my workplace (Hart & Porter 2004, p. 50).
		U2	Currently, I use email more than any other communication channels (Hart & Porter 2004, p. 50).
		Actual Usage	The actual email usage (received and sent).

Table 3: NCM and TAM normality assessment

Variable	min	max	skew	c.r.	kurtosis	c.r.
Actual_Usage	3.000	7.000	-.281	-1.692	-1.064	-3.199
U2	1.000	5.000	-.470	-2.829	-.026	-.077
U1	1.000	5.000	-.487	-2.930	.181	.545
PU5	1.000	5.000	-.329	-1.979	-.022	-.066
PU4	1.000	5.000	-.467	-2.809	.116	.349
PU2	1.000	5.000	-.325	-1.953	.236	.708
PU1	1.000	5.000	-.048	-.286	-.268	-.805
PEOU5	2.000	5.000	-.278	-1.670	-.544	-1.635
PEOU4	1.000	5.000	-.491	-2.950	.081	.245
PEOU3	1.000	5.000	-.277	-1.666	.132	.397
PEOU1	2.000	5.000	-.133	-.802	-.553	-1.662
M4	1.000	5.000	-.598	-3.596	.344	1.034
M3	1.000	5.000	-.357	-2.146	-.595	-1.790
M2	1.000	5.000	-.339	-2.038	-.591	-1.777
LT3	1.000	5.000	-.442	-2.657	-.204	-.613
LT2	1.000	5.000	-.313	-1.880	-.575	-1.729
LT1	1.000	5.000	-.497	-2.991	-.201	-.605
I3	1.000	5.000	.406	2.441	-.344	-1.036
I2	1.000	5.000	.389	2.337	.007	.022
I1	1.000	4.000	.369	2.221	.024	.073
UA4	2.000	5.000	-.305	-1.833	-.136	-.408
UA3	2.000	5.000	-.289	-1.740	-.272	-.818
UA2	2.000	5.000	-.272	-1.637	-.013	-.040
C5	2.000	5.000	-.077	-.461	-.885	-2.660
C4	2.000	5.000	-.619	-3.724	.081	.242
C3	2.000	5.000	-.427	-2.566	-.218	-.655
C1	2.000	5.000	-.317	-1.909	-.096	-.289
PD5	3.000	5.000	-.253	-1.524	-1.233	-3.709
PD4	3.000	5.000	-.069	-.415	-1.256	-3.778
PD3	3.000	5.000	-.344	-2.069	-.804	-2.417
Multivariate					16.952	2.849

Table 4: NCM and TAM Multivariate outliers

Observation number	Mahalanobis d-squared	p1	p2
1	63.188	.000	.078
92	55.751	.003	.133
96	49.812	.013	.535
100	49.219	.015	.407
29	48.628	.017	.316
35	47.967	.020	.268
217	47.463	.022	.216
165	47.004	.025	.175
172	44.326	.045	.633
52	43.744	.050	.656
65	43.448	.053	.615
91	42.316	.067	.796
147	41.867	.073	.813
8	41.854	.074	.734
42	41.624	.077	.705
3	41.274	.082	.715
40	41.211	.083	.643
185	41.151	.084	.566
32	40.261	.100	.760
170	40.251	.100	.684
211	40.192	.101	.618
113	39.847	.108	.653
58	39.789	.109	.589
62	39.676	.111	.545
158	39.590	.113	.492
119	39.471	.116	.453
68	39.376	.118	.407
138	39.374	.118	.330
180	39.251	.120	.300
121	39.199	.121	.250
55	39.043	.125	.237
190	38.931	.127	.212
215	38.901	.128	.168
90	38.673	.133	.178
213	38.661	.134	.136
214	38.415	.139	.152
195	38.370	.140	.121
70	38.328	.142	.095
198	38.272	.143	.076

Table 4 (Cont.)

25	38.120	.147	.074
23	38.042	.149	.061
82	37.849	.154	.066
98	37.751	.156	.057
146	37.664	.159	.049
212	37.507	.163	.049
143	36.935	.179	.121
148	36.848	.182	.108
168	36.550	.191	.145
153	36.242	.200	.195
129	36.140	.204	.183
179	36.043	.207	.171
183	36.031	.207	.136
56	36.027	.207	.105
81	35.878	.212	.109
69	35.787	.215	.100
101	35.743	.217	.083
16	35.481	.226	.111
107	35.467	.226	.087
14	35.365	.230	.083
207	35.117	.238	.109
104	34.948	.245	.121
24	34.620	.257	.183
128	34.498	.261	.185
189	34.468	.263	.157
54	34.237	.271	.196
88	34.235	.272	.158
34	33.765	.290	.298
49	33.682	.294	.285
125	33.628	.296	.260
144	33.601	.297	.226
48	33.584	.298	.191
61	33.537	.300	.169
208	33.524	.300	.139
19	33.478	.302	.121
41	33.452	.303	.101
209	33.368	.307	.096
105	33.211	.313	.108
31	33.199	.314	.086

Table 4 (Cont.)

99	32.953	.325	.122
46	32.483	.345	.257
135	32.398	.349	.250
67	32.337	.352	.233
77	32.322	.353	.198
20	32.199	.358	.208
93	32.163	.360	.183
50	32.145	.361	.154
89	31.766	.378	.269
22	31.401	.396	.411
47	31.337	.399	.393
160	31.066	.412	.495
133	31.035	.414	.459
167	30.978	.416	.437
200	30.843	.423	.462
13	30.611	.435	.544
108	30.429	.444	.597
111	30.327	.449	.603
37	30.208	.455	.619
103	30.205	.455	.569
2	30.174	.457	.533
80	29.984	.466	.592