# Factors Influencing Undergraduates Attitudes towards ICT: An Empirical Study in Kheis

**Dr. Alyya Meerza**
*Cardiff Metropolitan University*
*researcherq8@hotmail.com*

**Professor Gary Beauchamp**
*Cardiff School of Education, Cardiff Metropolitan*

**ABSTRACT**
The increasing use of information and communication technology (ICT) in higher education has been explored largely in relation to undergraduate's attitude towards the usage of ICT in the universities. However, the success of ICT in any learning institution including Higher Education Institutions (HEIs) depends on the attitudes of undergraduates towards using ICT in their daily learning. Therefore, this paper aimed to investigate the critical factors that impact undergraduates use of ICT in learning at Kuwait universities. The Technology Acceptance Model (TAM) was applied to reach the aim of the study.

A sample of 717 undergraduates was selected from a public and a private university in Kuwait. The critical factors examined in this study are the type of university, language of learning and ICT support. Mixed methods such as quantitative and qualitative methods were conducted for the data collection.

The quantitative results suggested that the Usefulness of ICT and Ease of use of ICT factors are the key dimensions of undergraduates' attitudes towards ICT. Another result showed that the examined factors have had a direct impact on undergraduates' attitudes. Moreover, the qualitative results suggested the factor of peer learning had a strong impact on undergraduates' attitudes towards the use of ICT.

**Keywords:** ICT, undergraduates attitudes, TAM, Type of university, Language of learning, ICT support, peer learning, Kuwait universities.

## INTRODUCTION
Integrating ICT into education and the intention of achieving a positive influencing of the quality of teaching as well as learning is evolving rapidly over the past two decades (Agbo, 2015). However, despite the high standards of living within Kuwait, the country severely lags behind other countries because of its relatively low innovation and productivity capabilities. So, recently there has been an emerging trend devoting an increasing amount of pressure on educational organizations to use ICT to improve their capacity in order to respond to learning needs (Alkharang & Ghinea, 2013).

It has been asserted by Williams (2003), that undergraduates who use ICT were found achieving better results in communication, cooperation and problem solving in learning. Graff (2003) and Mikropoulos et al. (2003) further claimed that the use of ICT supports the improvement of undergraduate's mental and creative activities. Most importantly, in a study conducted by Kreisel (2003) reported that undergraduates themselves were highly ranked in using animations software, visual design and design software. Moreover, Sife et al. (2007) point out that any technological change in educational practice necessitates the development of positive user attitudes toward the new technology.

A majority of the literature reviewed, directed towards a significant association between undergraduates positive attitudes and successful ICT integration. Rhoda and Gerald (2000) revealed that positive attitude towards ICT is widely recognized as a necessary condition for effective ICT use in learning. Moreover, for further support to the association between attitudes and the effective use of ICT, a study by Becta (2004) demonstrated that undergraduates' negative attitudes served as a barrier towards their use of ICT in learning. Selwen(2003) believed that undergraduates attitude towards ICT is influenced by several factors, and these factors could be unpredictable or irregular among different HEIs.

Ever since the integration of ICT into the educational sector, several studies have tried to explore factors that influence its successful implementation. Undergraduates' attitudes, being a significant determinant, as noted

above, have gained significance in such studies. The attitudes of undergraduates towards the use of ICT in learning, in turn, depend on various factors (Khan, Hasan and Clement, 2012). In Kuwait, types of Universities, i.e., public or private, differ considerably in terms of their physical features, technological availability and advancements, policy implications, etc. These differences can further affect the attitudes of their undergraduates towards the use of ICT in their daily learning.

Another factor has been arising with the appearance of different private universities in Kuwait; this factor is the language of learning. Since Arabic language consider being the first language for Kuwait, and it is adopted as the language of learning in public institutions in most of its departments, whereas the English language is popularly used as the basic language of learning in the private institutions. The inability of undergraduates to understand and fully adapt to English can severely hamper their e-learning process. This can further have an impact on their attitudes towards a particular technological change as well as to the use of ICT in their daily learning.

Moreover, a crucial factor affecting undergraduates' attitudes in HEIs is the ICT support that undergraduates receive at their respective universities. This support could be in the form of encouragement given by their tutors when using the technology. Another support is the extent of ICT availability at the institution that increases the usage of ICT by undergraduates.

This paper aims to investigate the critical factors that influence undergraduates' attitudes towards using ICT in learning at KHEIs. The study focused on three critical institutional factors, namely, the type of university, language of learning and the ICT support available.

### RESEARCH QUESTIONS
1. Does the type of university influence undergraduates' attitudes towards using ICT at KHEIs?
2. Does the language of learning influence undergraduate's attitudes towards using ICT at KHEIs?
3. Does the ICT support influence undergraduates' attitudes towards using ICT at KHEIs?

## LITRETURE REVIEW
Selim (2007) found that factors such as instructor & undergraduate characteristics, technology, and technical support are crucial determinants of the ICT success. Brummelhuis (1995) proposed that the researcher must identify influencing factors continually over the different phases of development since these variables are asserted to have a varying impact during all stages of innovation process of ICT usage in learning (cited in Agbo, 2015).

ICT usage in higher educational institutions, is concerned not only with the evolution in hardware and software, but also a wide range of extensions, such as actual accessibility to ICT, interactive learning, communication, instructional delivery enhancement, etc. (Dias & Atkinson, 2001). The present study has focused on the following three influential factors determining undergraduate's attitudes towards ICT in learning, particularly in KHEIs.

### Type of university
Kuwait's Higher Educational sector comprises of private as well as public institutions. There have been studies that have shown that these two sectors differ drastically regarding their cultures, availability of ICT, quality of ICT, the language of learning, availability of internet for studying, etc. (Aldoub and Goodwin, 2007). They further claimed that the language of learning being Arabic in the public institutions, and English at the private ones, gives rise to varied attitudes in undergraduates towards their perceived advantages gained from ICT usage in their respective universities.

Another significant difference between the two kinds of universities relates to undergraduates access to the internet at their home, and their resultant attitudes. This is majorly due to the restricted access at their place of study. In the private sector, it can be assumed that undergraduates have access to the Internet at their institutions as well as home, and thus their preferred way of accessing the e-learning materials is via the Internet or Web. However, in comparison, the public sector undergraduates prefer CD/DVD, external resources, and personal computers in the laboratory, due to lack of access to the internet or wireless network at the institution (Doub, Goodwin & Hunaiyyan, 2008). The difference that this varied access brings about is, in the attitudes of undergraduates due to the differences in ease of usage of ICT.

### Language of learning
In the study conducted by Alkharang & Ghinea (2013), among the higher educational undergraduates , the authors found out that 60% of their interviewees reported Language barriers as the most discouraging factor for

adopting ICT in their everyday learning. They further stated that English being the only language adopted for any e-content, serves as a significant barrier. Ali & Magalhaes (2008) also identified the language of learning, being a major hindrance to the adoption of the technology in its most benign form by the undergraduates. Bernárdez (2003) recognized language problems as a personal issue in the adoption of ICT, along with time management issues, and undergraduates' attitude towards learning styles or preferences.

It is interesting to note the study findings of Doub, Goodwin & Hunaiyyan (2008), among the undergraduates at College of Business Studies (CBS), a government institution, and the Gulf University for Science and Technology (GUST), a private institution, for the effect of language of learning on the undergraduates' attitudes towards ICT. The results reported that 50% of undergraduates at the public institution supported the adoption of ICT, only if it was available in Arabic, their first language.

### ICT support

The ICT support provided to undergraduates during their learning in HEIs consider an important factor for the success of ICT during its implementation in Higher Education institutions. According to Warschauer (1998), tutors occupy a top position in enhancing undergraduates' motivation (Liu, 2009). Poor preparation, poor instructor awareness and training in using e-learning facilities, availability of fewer connections, slow downloads, etc. can affect the use of e-learning services, and eventually discourage undergraduates from using e-learning (Doub, Goodwin, & Hunaiyyan, 2008).

Hence, it has rightly been argued that adequate technical support is an important part of the implementation and integration of ICT in an education system (Rhema et al., 2013; Sife et al., 2007). Various literatures have brought forward numerous of ICT support which affects the undergraduates' interests and attitudes towards incorporating ICT in their learning. Rhema & Miliszewska (2010), in their study, reported that the Libyan higher institutions lack the access to adequate network facilities. Also, the study revealed that technical support was almost unavailable, resulting in delays in installation, operation, and maintenance of equipment. The authors argued that these hindrances regarding the ICT support severely discouraged undergraduates to use ICT in learning at their universities.

A few studies have also indicated that the above mentioned three influential factors can be inter-related. The study conducted by Liu (2009), as opposed to its earlier studies, found out no correlation between the ICT competence and the respective attitudes of the undergraduates. The explanation put forward by the author, who pointed out that to test this relationship, it is a must to consider the effect of the language of learning, rather than a mere involvement of level of technological adoption, in the first place. Moreover, Rhema et al. (2013) in their study on Libyan HEIs, found that the reason for a limited use of educational software within institutions was the non-availability of products in the market using Arabic as their language of learning.

### RESEARCH METHODOLOY

The study was carried out in Kuwait universities, one public university and one private university. The sample of the study consists of a total of 717 undergraduates from the first year and final year of study, the sample was collected from three different academic departments of both universities, and they are the department of Computer science, the department of computer Engineering and Administration science department. Mixed method was used for the data collection, quantitative and quantitative approaches were applied for data gathering. A structured questionnaire was distributed to the sample, and only 717 were completed and delivered. Moreover, 17 participants from the same sample accepted to be interviewed. The distributed questionnaire was constructed on the basis of previous ICT literature, this study had benefited from Edmunds, Thorp and Conole (2012) and Davis (1986) studies by adapting some of their questions to fit the study objectives.

The questionnaire of the study was constructed in to two parts; the first part consists of demographic questions about type of university, the main language of learning and the ICT support received. Part two of questionnaire consists of 20 paragraphs related to TAM variables and the attitude variable. For measuring the attitude, a 5-point Likert scale was used to give participants the choice to select one answer for each paragraph (McLeod, 2008). Moreover, to ensure the reliability and the consistency of the constructed questionnaire before conducting the actual study, Cronbach's Alpha was measured and showed .941 which is acceptable.

### TECHNOLOGY ACCAPTANCE MODEL (TAM)

Technology Acceptance Model (TAM) was used to reveal individual's attitudes and their actual use of technology [see Figure 1]. It is used to provide an explanation of the determinants of computer acceptance that is Due to the ability and simplicity of the framework for understanding individual's attitudes towards technology. TAM and its extensions have been widely used in numerous researches conducted on ICT (King and He, 2006).

Therefore, the original TAM model was chosen as the basic framework for the present study, as each of its components is similar to what is aimed at in the study undertaken. However, the factors investigated to their relation to undergraduates' attitudes towards the use of ICT, considered the external factors of TAM in this study.
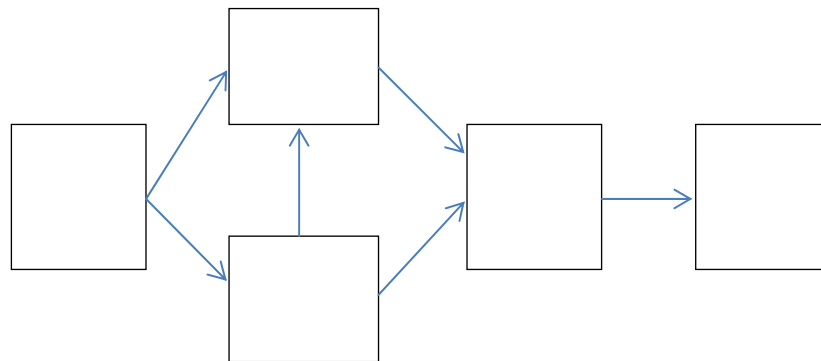


Figure 1: Technology Acceptance Model (TAM), Davis (1986)

**RESULTS**
The quantitative data gathered from the sample of the study at both private and public KHEIs have been tabulated and analysed. Also the qualitative data obtained from the interviews with undergraduates was analysed using the NVIVO software. It is noted that the results obtained from both the quantitative and qualitative analysis are in sync with each other.

**Type of university factor**
To understand whether the type of university influences the undergraduates' attitudes towards using ICT at KHEIs, T-test has been used to analyse the responses of undergraduates of both universities (private and public). Table 1 shows the means and standard deviations of the responses of undergraduates. According to the results, all T values appear significant at the level $\alpha < 0.01$. However, undergraduates of public university have a higher means as compared to the private counterparts, with respect to usefulness, ease of use and general attitude towards ICT learning.

**Table 1**: Means and standard deviations of the participants' responses towards ICT

| Content of the attitude | public (457=n) | | private (260=n) | | T | P value |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | |
| Ease of use | 4.37 | 0.51 | 4.25 | 0.56 | 2.832 | **0.005** |
| Usefulness | 4.31 | 0.55 | 4.16 | 0.65 | 3.427 | **0.001** |
| General attitudes | 4.34 | 0.49 | 4.21 | 0.57 | 3.366 | **0.001** |

**Language of learning factor**
To understand whether the language of learning influences the undergraduate's attitudes towards using ICT at KHEIs or not, the means and standard deviations of the responses of undergraduates from both public and private universities to using ICT were analysed with regard to the different languages of study The mean of participants' responses from amongst undergraduates at both universities studying through the medium of the English language to the 'ease of use', 'usefulness' and 'general attitudes' is higher than for the responses of those studying in both Arabic and English in both universities [see Table 2].

**Table 2**: Means and standard deviations of participants' responses towards ICT, regarding differences in the language of learning

| Content of attitudes | Arabic (n = 17) | | | English (n = 431) | | | | | Arabic & English (n = 269) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pubic (n = 13) | | private (n = 4) | public (n = 212) | | private (n = 219) | | | public (n = 232) | | Private (n = 37) | |
| | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD |
| Ease of use | 4.21 | 0.54 | 4.45 | 0.47 | 4.39 | 0.51 | 4.29 | 0.53 | 4.36 | 0.51 | 4.05 | 0.71 |
| Usefulness | 3.96 | 0.77 | 4.03 | 0.67 | 4.34 | 0.54 | 4.19 | 0.62 | 4.31 | 0.54 | 3.93 | 0.80 |
| General attitudes | 4.09 | 0.64 | 4.24 | 0.43 | 4.36 | 0.49 | 4.24 | 0.53 | 4.34 | 0.49 | 3.99 | 0.73 |

**ICT support factor**

To understand whether the ICT support influences the undergraduate's attitudes towards using ICT at KHEIs or not, the means and standard deviations of the responses of undergraduates from both public and private universities towards using ICT, and towards the component of attitudes were calculated with regard to differences in ICT support, as shown in Table 4. The mean of participants' responses from undergraduates at the public university to 'usefulness', 'ease of use', and 'general attitudes' is higher than for the responses from the private university undergraduates. Table 3 shows the results of analysing this question.

**Table 3:** Means and standard deviations of participants' responses towards ICT, regarding differences in ICT support

| Content of attitude | AgreeStrongly agree - (n = 515) | | | | | | Neutral (n = 119) | | | | | | Disagree - Strongly disagree ( n = 83) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | KU (n= 330) | | AUK (n=185) | | Total (n =515) | | KU (n = 57) | | AUK (n = 62) | | Total (n =119) | | KU (n=70) | | AUK (n=13) | | Total (n= 83) | |
| | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD |
| Ease of use | 4.43 | 0.46 | 4.32 | 0.51 | 4.39 | 0.47 | 4.24 | 0.56 | 4.14 | 0.60 | 4.19 | 0.58 | 4.19 | 0.64 | 3.82 | 0.78 | 4.14 | 0.67 |
| Usefulness | 4.37 | 0.50 | 4.23 | 0.61 | 4.32 | 0.55 | 4.19 | 0.58 | 4.03 | 0.69 | 4.10 | 0.64 | 4.13 | 0.69 | 3.69 | 0.73 | 4.06 | 0.71 |
| General attitude | 4.40 | 0.44 | 4.28 | 0.53 | 4.36 | 0.48 | 4.22 | 0.53 | 4.08 | 0.60 | 4.15 | 0.57 | 4.16 | 0.64 | 3.76 | 0.71 | 4.09 | 0.66 |

## DISCUSSION

The discussion section elaborately presents the entire study. The focus of this study is to identify the critical factors that influence undergraduate's attitudes towards using ICT in learning at Kuwait Higher Education Institutions (KHEIs).

### Impact of type of university factor on undergraduates attitudes towards ICT

As per the results, there is a significant difference between the attitude of undergraduates of private university towards ICT and the attitudes of undergraduates of public university towards ICT. The average general attitudes, ease of use and usefulness towards using ICT amongst undergraduates at the public university amounted to 4.34, 4.37 and 4.31 respectively. On the other hand, the average of general attitudes of the ease of use and usefulness factors for undergraduates at the private university amounted to 4.21, 4.25 and 4.16 respectively. This indicates that the undergraduates ' attitudes at the public university towards using ICT are strongly positive than those at the private university. When projected onto the TAM framework, the results related to this question harmonize with what has been expected. Also, the qualitative results obtained from the interviews with the undergraduates of both the universities, it was observed that all the undergraduates agreed on the usefulness of ICT. The results also indicated that the public university conducted training courses and workshops by implementing ICT in learning processes. This encouraged the undergraduates and facilitated their positive attitude towards using ICT.

Selwyn, Potter & Cranmer (2009) stated in their research that undergraduates ' attitudes towards using ICT is highly influenced by school's authority and provisions adopted by them. Their study revealed that the educational use of ICT depends on the nature of schools. The results of the current study is consistent with the previous researches as it is discovered here, that the usage of ICT is promoted in the public universities and not in the private universities in Kuwait that affects the attitude of undergraduates .

### Impact of language of learning factor on undergraduates attitudes towards ICT

As per the results, it is observed that the language of study has a positive impact on the undergraduates' attitudes towards using ICT. It is found that the undergraduates (of both public and private) learning through English language alone have more positive attitude towards using ICT than those undergraduates studying Arabic or both the languages. The most positive mean value of general attitudes, ease of use and usefulness are for undergraduates studying English at the public university. As for the qualitative analysis, the results indicated that undergraduates do not consider the English language as a barrier to using ICT in their studies. Also, it was observed that using ICT for educational purposes enhanced the language skills of the undergraduates of both the universities.

According to Doub, Goodwin & Hunaiyyan (2008) conducted their research to understand the role of language in the usage of ICT among the undergraduates. The study revealed that 50% of the undergraduates supported the adoption of ICT, only if it is made available to them in Arabic, their first language. Hoque and Alam (2010)

stated that the international language of ICT is English. Therefore, the lack of skills in this language amongst undergraduates is considered as an obstacle to the use of ICT in learning. The results of the current study are consistent with the previous studies as English language is considered as the international language of ICT which affects the attitudes of undergraduates in the positive way or negative way, depending upon the language knowledge of the undergraduates.

**Impact of ICT support factor on undergraduates attitudes towards ICT**
As per the results, it is observed that ICT support factor has a positive impact on the undergraduates ' attitudes towards using ICT in learning. The mean value of undergraduate's (of public university) "agreement" with respect to ICT support and its influence on their general attitudes, ease of use and usefulness were found to be 4.40, 4.43 and 4.37 respectively which is the highest as compared to "disagreement" and "neutral". In case of undergraduates of private university, the mean value of "agreement" was the highest. The results clearly indicate that the attitudes of individuals are influenced by the ICT support which is in alignment with the TAM framework. Also, the interviews indicated that the public university undergraduates received support for ICT use from the tutors and their friends within the university. With respect to the private university undergraduates, the results indicated that undergraduates receive limited ICT support from their tutors and communicate with them solely via the university email service, and then only during working hours.

According to Fu (2013) and Selwyn, Potter & Cranmer (2009), ICT support from educational institutes is the most significant and fundamental external factors in influencing undergraduates attitudes and their use of ICT in learning. The attitudes of tutors and their beliefs on ICT use highly impacts the attitudes of undergraduates. The support factor provided from the tutors as well as parents highly contributes to the formation of positive attitudes of undergraduates towards using ICT. As the results of this study are in alignment with the discoveries of previous studies, the implications of this research are justified.

**CONCLUSSION**
The integration of ICT in education is considered as an asset for encouraging technological growth. Its use not only changes the traditional ways of teaching, but also requires tutors to be more creative in adapting and customizing their own teaching materials and strategies for encouraging undergraduates to adapt this new form of learning. The success of ICT in any learning institution including the KHEIs depends on the attitudes of undergraduates towards using ICT in their daily learning process. For this purpose, it is essential to understand that what factors may influence the usage of ICT among the undergraduates. In this paper, the factors such as the type of universities, the language of study and the ICT support have been explored in the higher education institutions of Kuwait.

TAM model is used as the framework of this study to critically investigate undergraduate's attitudes towards the use of ICT in daily learning. To examine these factors, quantitative and qualitative data was collected from the undergraduates of KHEIs and then analysed by using SPSS software.

The study helped in understanding the position of ICT in learning at both public and private KHEIs. The results indicate that all factors examined have a strong impact on undergraduate's attitudes towards and undergraduates use of ICT tools in learning. Apart from that, these results helped in generating a new model regarding the use of ICT in KHEIs.

The model portrays a clear perspective of the ICT position and its application to undergraduates ' learning at both private and public universities in Kuwait, as well as showing the important factors that influence undergraduates ' attitudes towards using ICT during their university studies, see [Figure 2].
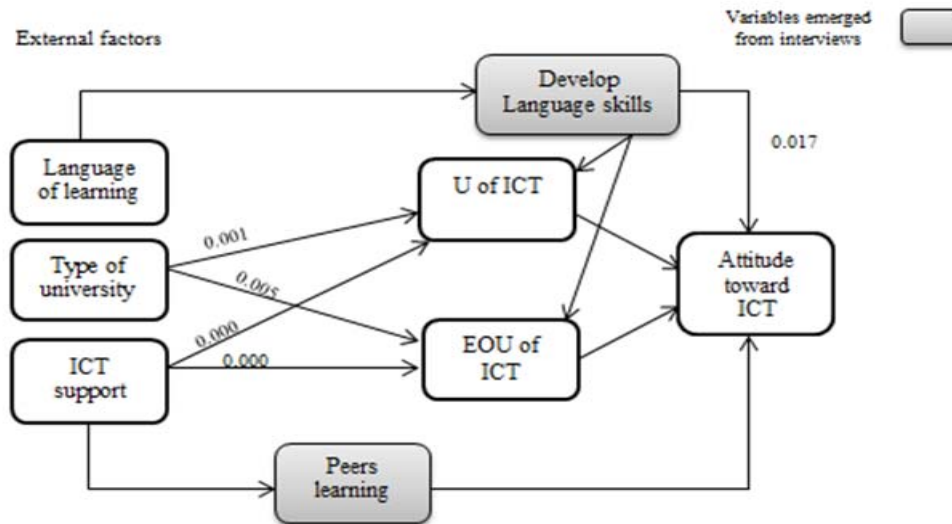
Figure 2: Suggested model for ICT use in KHEIs

The above Figure shows the important factors that emerged from the study concerning influences on undergraduates ' attitudes towards using ICT in their daily learning at KHEIs. The model retains the basic structure of Davis's (1986) model (external factors, PU of ICT, PEOU of ICT, Attitudes towards ICT). In addition, the model adds other factors the emerged from the qualitative results, such as peer learning and developing language skills as the factors to motivate the use of ICT among the undergraduates. It was evident through this research that peer learning has a significant role in improving undergraduates attitudes towards ICT.

Therefore, this study proposes facilitating ICT facilities and services through which peer learning is feasible. Also, the current study makes a significant contribution that might concern the tutors and educators at KHEIs in providing their undergraduates with a better education and learning through improving undergraduates' English skills. The analysis of the current research indicated that using the English version of ICTs (e.g. software applications) in undergraduates' daily learning has helped them to develop their English language skills. It is suggested that universities should focus on these two aspects in integrating this modern technology with education and alleviate the success of the undergraduates.

## RECOMENDATION
Based on the above results and conclusions of this research paper, different factors were found to influence undergraduates' attitudes towards using ICT in their daily learning. Apart from the suggested model, following are the few recommendations that might improve the position of ICT in learning at KHEIs:

1. The peer learning factor amongst undergraduates should be reinforced, providing ICT facilities and an environment equipped with modern ICT, where undergraduates can exchange their experiences, skills and ICT activities at both the universities (public and private).
2. Tutors in the public university in Kuwait should encourage their undergraduates to use ICT in their English language version to enhance their language skills.
3. The tutors at both the universities in Kuwait should be motivated to use ICT in undergraduates' learning, by providing them with training sessions and workshops on the use of ICTs. This will develop their experience and skills in ICT, and they will feel more confident in utilising them for undergraduates' learning.
4. An important lesson for the institutions/decision makers is that they must lay emphasis on the cultural specifications as well as the primary language followed, in their particular institutions, rather than just adopting a standard e-learning adoption framework.

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