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MODERATING ROLE OF CULTURE ON INTENTION TO USE THE COMPUTERS: AN UNOBTRUSIVE BUT INFLUENTIAL FACTOR TO BETTER EXPLAIN THE INTENTIONS OF POLICY MAKERS

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ABSTRACT

The impact of culture for use of technology has numerous directions and subject to be investigated thoroughly. This study specifically measures the moderating role of culture on intention to use (ITU) of the computers by policy makers. By adopting the technology acceptance model (TAM). The study uniquely measured the effect of culture in the relationship between perceived usefulness (PU) and perceived ease of use (PEOU) on ITU. Top ranked Officers of government employees were targeted by opting the snow ball sampling. These top officials are directly involved in the policy making based on their ability and experience explicitly. But culture is affecting on their decision implicitly by changing the relation of ITU with other observable factors. By focusing on this importance issue, the study measured the impact of culture as a moderator specifically for policy maker officials. Hierarchical multiple regression was applied to measure the effect of moderation using SPSS. From results, it was found that culture moderates and alters the relationship and strength of PU and PEOU with ITU. It was concluded that for effective use of technology, the impact of culture must be pondered.

Keywords: Culture, Acculturation, Moderation, Perceived Usefulness, Perceived Usefulness, Intention to Use

INTRODUCTION

The impact of culture on use of technology has been investigated by very few researchers (Ertmer & Ottenbreit-Leftwich, 2010; Leidner & Kayworth, 2006; Rose, Evaristo, & Straub, 2003; Sunny, Patrick, & Rob, 2019) by leaving the gap to explore more in this area. To address this issue, this study measured the moderating role of cultural influence in the relationship between PU, PEOU and ITU. It is widely believed that if the cultural values, norms and beliefs are better understood then the pace of adoption and use of technology will boost up and can be fully operationalized in its true sense. To recognize the culture before introducing the new technology in any region may help for better adaptation of that technology rather than applying it forcefully with a traditional approach. In fact, culture can be associated to encourage the use and adoption for better use of computers. By employing the social norms and cultural values in a natural way to enhance the ITU would be more significant rather than legislating as assertion on such routine matters may lead towards failure (Albirini, 2006; Hasan & Ditsa, 1999; Loch, Straub, & Kamel, 2003). To date, a very few studies had observed the role of culture in use of IT and its related services (Choi, Lee, & Kim, 2006).

RESEARCH GAP

Ahmad (2012) measured the impact of culture for management practices in the Pakistani context and emphasized the inclusion of this important factor in later studies. The similar recommendations were made to measure the impact of culture in relation between predictors and observed variables in other studies conducted by (Bashir & Ramay, 2008; Jamali, Bhutto, Khaskhely, & Sethar, 2022). So, this study intended

to measure the strength of culture which may affect the effective use if IT by raising the question that to what extent culture moderates the intention to use (ITU) the computers in relationship with perceived usefulness (PU) and perceived ease of use (PEOU).

The main constructs of the study PU and PEOU and ITU has been selected from technology acceptance model (TAM). TAM devised by (Davis, 1989) is the most widely and referred model in the literature to explain the behaviors of individuals related to effective use of technology basically originated from theory of reason action (TRA) (Davis, 1985, 1993; Dwivedi, Rana, Jeyaraj, Clement, & Williams, 2019; Legris, Ingham, & Collerette, 2003; Marangunić & Granić, 2015; Mathieson, 1991). TAM predicts the usage behavior of individuals with the help of PU and PEOU where PU is the extent of usefulness and PEOU is the easiness or comfortability of individual while accepting and using the technology. As the TAM has more explanatory power (Chau & Hu, 2001; Hu, Chau, Sheng, & Tam, 1999; K. J. Kim & Shin, 2015; Tarhini, Hone, Liu, & Tarhini, 2017) to predict or explain the usage behavior of individuals as compared to other models so by adopting the TAM, this study has been initiated with the following objectives

- To measure the impact of Perceived Usefulness (PU) on Intention to Use (ITU) the computers
- To measure the impact of Perceived Ease of Use (PEOU) on Intention to Use (ITU) the computers
- To measure the moderating effect of Cultural Influence (CI) in the relationship between Perceived Usefulness (PU) and Intention to Use (ITU) the computers
- To measure the moderating effect of Cultural Influence (CI) in the relationship between Perceived Ease of Use (PEOU) and Intention to Use (ITU) the computers

It is pertinent to note that the basic constructs of the study has been opted from technology acceptance model (TAM) (Davis, 1989) while the cultural influence has been opted from (D. Straub, Loch, & Hill, 2001).

LITERATURE REVIEW

Culture has not been considered considerably for effective use computers in previous studies in spite of its significance and influence on technology adoption (Allcott, Gentzkow, & Yu, 2019; Gong, 2009; D. W. Straub, 1994). To enhance the pace of technological development, culture may affect the acceptance of technology with the help of its shared values and beliefs. An advancement in technology should not only be congruent with its internal environment but also be compatible with external environment like economic, social and cultural (Gordon & Killick, 1993; McCoy, Everard, & Jones, 2005; Wildavsky, Lockhart, & Coughlin, 2018). In fact, culture is considered a giant, composite and sensitive experience which encodes the activities and code of conduct of humans for routine life. In literature, many researchers (Castells, 1996; Leidner & Kayworth, 2006; Stover, 2019) highlighted the importance of culture in relation with ITU. Chau et al. (2002) observed that people of various countries with different cultural and ethnic backgrounds use computers for varying reason and these varying reasons leads them to have diverse impressions about the same technology. Ultimately, these are the impressions originated from the core beliefs which set a mindset that the use of this specific technology would be helpful or not.

Kersten, Vetschera, and Koeszegi (2004) worked on high context and low context culture and concluded that user's perception about use of internet based negotiation support system (NSS) not only varies from region to region but sometimes within the same region as well. For example, the IT users of Finland have different attitude regarding use of IT as compared to other European countries. Contrary, Indian users of IT have similar attitude towards use of technology with Canadians and Americans irrespective of entirely different cultural background with western countries. In eastern countries like in Pakistan, culture is rarely studies in context of adoption of technology. The reason for lack of such studies is the collectivist nature of culture of Pakistan highlighted by (Chaudhry, Sajjad, & Khan, 2011).

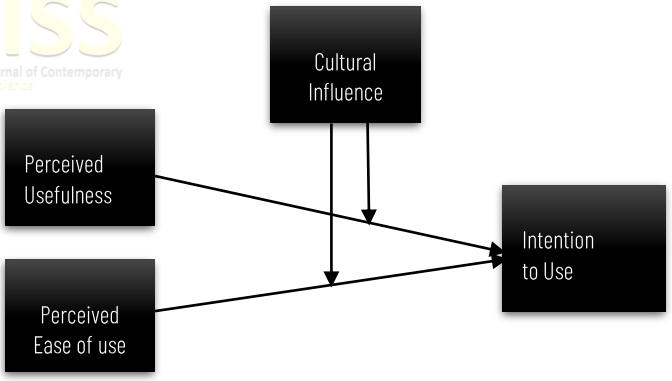
By digging out the etymology of culture, it was revealed that the world culture was taken from the Latin word "Cultura" originated from colere which means "to cultivate". In fact, culture is generally referred as symbolic structure or the patterns of human activities that has importance for them. Different authors tried to define the culture based on the theory or by observing the natural human activities. In its simplest form culture may be termed as the man-made environment (Simon, 2000). (Hofstede (1980), 1998))

defined culture as a collective programming of minds which differentiated the homogenous group of people from other group. Culture has been defined and operationalized in many ways that help researchers to see its impact on ITU but the most cited and agreed upon operationalization of culture by (Hofstede, 1998). He subdivided the culture into 5 dimensions. These dimensions are (i) Individualism vs Collectivism, (ii) Power Distance, (iii) Masculinity versus femininity, (iv) Uncertainty Avoidance and (v) Confucian vs dynamism. The above hofstede's cultural dimensions are frequently quoted to understand the international culture. The same dimensions may be applied to understand the phenomenon of acceptance and effective use of IT. However, there are also critiques on these dimensions of culture. For example, Ford, Connelly, and Meister (2003) claimed that irrespective of its very strong methodological base and worldwide importance, these dimensions failed to explain the impact of acceptance and use of IT. He emphasized for the need of more theoretical research work which might explain the adoption of IT in an unbiased and impressive way. Venaik and Brewer (2013) also criticized the use of Hofstede cultural dimensions for IT adoption and its related studies because of low values of constructs and less importance for individuals in national culture. So based on the frequent criticism for Hofstede cultural dimensions for IT adoption and use, this study has not considered the Hofstede's cultural dimensions.

Raub et al. (2001) devised a remedy to tackle the issues of IT usage and cultural constraints. They presented the social identity theory by providing a theoretical framework which recognize, assimilate, aggregate and evaluate the social influences for individuals. As per their discussion, people learn about new technology in two ways, i-e, (1) Formal way (2) Informal way. Through formal way, people learn from technically advanced societies or from formal institutions while through informal way, people may learn from friends, relatives or from peer groups. However, the development in technology and its impact on culture is still a controversial debate. As technology has been originated from western countries especially the advent of IT, so it has certain cultural and traditional patterns of western culture in it. The patterns and dimensions of these cultural issues in relation with effective use of IT has not been addressed properly for developing countries like Pakistan. Usually, introduction of IT is associated with development and economic growth but this initiation of technology is not a simple phenomenon as it entails a diverse nature of political, social and cultural bubbles (Chen, 2019; Farahani, 1996; Sajjad & Zaman, 2020).

Ford et al. (2003) concluded that for successful implementation of technology from one region to another region the local culture of new region must be considered. Culture is relatively a complicated phenomenon for understanding and its relation with technological constructs. The revolutionized inventions and fast pace of technology exerted a lot of pressure on policy makers, managers and owners to understand the role of culture for enhanced and productive use of technology. It is essential to note that when organizations failed to achieve the desired goals after introducing the new technology, culture is often blamed (Bartis & Mitev, 2008; Kane, Palmer, Phillips, Kiron, & Buckley, 2015). Keeping the importance of culture from literature, this study counts the culture as a moderator in between PU, PEOU and ITU.

Figure 1
Theoretical Model



HYPOTHESES

H1: Perceived usefulness (PU) has a direct and significant effect on Intention to Use the Computers

H2: Perceived ease of use (PEOU) has a direct and significant effect on Intention to Use the Computers

H3: Cultural influence (CI) will moderates the relationship of PU and ITU

H4: Cultural influence (CI) will moderates the relationship of PEOU and ITU

METHODOLOGY

A survey instrument was developed to measure the cultural values embedded in information systems used by public policy makers. The study is non contrived with no interventions from the researchers. Ethical norms were the top priority of the researchers. Since the respondents are top ranked public office holders, so the anonymity of the respondents was ensured. Researchers own institutional permission was not required as there exist no such internal formal board (IRB). Apart from this, being senior research fellows, the authors by themselves conformed the ethical norms at each step of this study. The quantitative data was collected through primary source by floating the questionnaires. Two layers of ethical norms were adapted in this study while collecting the data. First, a formal permission and time availability to fill the questionnaire were sought before dispatching the questionnaire. Second, the respondents' anonymity was ensured in written paragraph by the researchers which was placed at the start of the questionnaire. The respondents has the choice and liberty to quit from form filling without mentioning any reason. The target population were the top ranked officers including CEOs, Directors and head of the institutions working in the capital territory of Islamabad, Pakistan. As per annual statistical bulletin 2020-2021 of federal government of Pakistan for employees, there are 660,657 sanctioned posts for federal employees for the year of 2020-21, out of which 581,240 posts are filled while 79,417 federal posts are still vacant. As per this bulletin, 28,937 officers are working as federal employees on basic pay scale (BPS) 17-22 (Habib, Alvi, & Nemati, 2022).

The study targeted these federal employees working countrywide on gazetted officer grades on (BPS) 17-22 with a total population of 28,937 employees out of 581,240 total employees. The data were collected only from those employees who are working as the head of a unit or organization. The reason for selection of top ranked offices is that they are directly and actively involved in policy making and their cultural values reflect in their decisions. According to Krejcie and Morgan (1970), sample size of 379 is sufficient for the population up to the size of 30,000 units. Since the size of our target population was 28,937 employees, so sample size is required with more than 378 officers. After scrutiny a usable sample size of 521 federal employees were included in the study who were working on officer grades or with BPS ranging from 19 to 22. The sample size of 521 is adequate as it is sufficient high from recommended sample size of 378. These officer grades employees were selected as they have ample influence in country policy making and its implementation and ultimately reflect the cultural code of conduct.

Structured questionnaires were floated to the respondents by using non probability sampling technique of snow ball. Snow ball sampling also known as chain referral sampling is used when potential subjects are difficult to locate or approach. Due to security concerns and very busy schedule of respondents, it was very hard to approach the large number of respondents. So, the snow ball sampling was the only best technique for this study to approach the respondents (Biernacki & Waldorf, 1981).

Items of the questionnaire were adopted from well validated instruments from the literature. Questionnaire were consisting of two major portions. First portion was related to demographics and profile of the respondents while the second portion measured the responses about PU, PEOU, ITU and CI. Demographics were measured on nominal, ordinal or ratio scales as per needed while the main constructs of the study PU, PEOU, ITU and CI were measured through 5-point likert scale. As per Nemoto and Beglar (2014) likert scale is the most common and widely used scale used in social science studies. It has the advantage to collect the data on larger scale with relatively ease. All questions were close ended and there was no open-ended question in the instrument. English was the medium to get responses and there was no issue of language as the all the respondents are highly qualified and comfortable with English because the same language is used for official correspondence as well.

Items of PU, PEOU and ITU were directly taken from technology acceptance model (TAM) developed by (Venkatesh & Davis, 2000) while the items of cultural influence was taken from (D. Straub et al., 2001). Since the cultural influence (CI) is not the predictor of intention to use (ITU) in the original model of TAM, so it cannot be taken as independent or predictor of ITU. At the same time, culture itself cannot explain or mediate the relationship of

predictors and ITU as suggested in the study model. So, the Sobel test or structural equation modeling (SEM) is not suitable to measure the proposed model of the study. So the culture was taken as moderator which either strengthens or weaken the relationship of ITU with the predictors. The same relationship was vet by (K. Kim, Dansereau, Kim, & Kim, 2004) The participation in the survey was purely on voluntarily basis. Respondents were given surety that the responses were only used for academic purpose. As the officer grades respondents were usually busy in their routine tasks so in spite of referrals and acquaintances, multiple reminders had been utilized for returning back the filled questionnaires. A total of 800 questionnaires were floated out of which 521 usable questionnaires were included in the analysis. For analysis, SPSS version 23.0 was used. Before the main analysis of the data, reliability of the constructs were ensured through the conventional measure of cronbach's alpha.

Table 1
Reliability Analysis

Construct	Cron Bach's Alpha	No. of Items
PU	0.877	6
PEOU	0.846	6
ITU	0.845	5
CI	0.776	10

RELIABILITY ANALYSIS

From table 1 above, it is obvious that the reliability of all the constructs of the study are in acceptable range. A rule of thumb is that that reliability of any single construct should be above 0.7. In fact, Cronbach's alpha measures the internal consistency of the items which shows the strength of that particular construct and provide authenticity in the form of reliability (Cronbach, 1951). It should be noted that Cronbach's alpha is not a statistical test rather it stated that as a group, how closely the set of items are related with each other. Cronbach's alpha is one of the most commonly used and reliable estimates which is to measure the authenticity of the scale in social sciences. As a matter of fact, Cronbach's alpha estimates the proportion of variance in a consistent or systematic way in the given set of data. The values of alpha is affected by positively or negatively skewed data so the shape of distribution of must be considered before applying it (Brown, 2002; Santos, 1999).

RESULTS AND DISCUSSION

Table 2
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.618[a]	.382	.380	.45098

a. Predictors: (Constant), PEOU, PU

The study applied the statistical analysis of regression which is considered to be the powerful tool to measure the relationship of independent and dependent variables (Fornell & Larcker, 1981; Nusair & Hua, 2010). Table 2 above shows the summary and relationship of predictors with dependent variable without the presence of moderator. The value of R (0.618) shows as very strong and positive relationship between PU, PEOU and ITU. From the value of R Square i-e, (0.38), it is also estimated that 38 percent of the variation in ITU is because of PU and PEOU.

Table 3
Coefficients

		B	Std. Error	Beta	T value	P
1	(Constant)	.518	.074		6.984	.000
	PU	.439	.046	.398	9.618	.000
	PEOU	.325	.044	.302	7.302	.000

a. Dependent Variable: ITU

Table 2 above consists of beta's, T value and P value. All these values altogether show the strength of relationship among the observed variables and significance of the model. The beta coefficient measures the mathematical relationship between independent and dependent variables while T and P values show the significance of the model (Taylor, 1990). From P values (0.000), (0.000) and T values (9.618), (7.302) of PU and PEOU respectively, it is evident that the model is statistically significant. From P values, hypothesis 1 and 2 of the study are

supported and it can be said that PU has a direct and significant impact on ITU. Similarly, for hypothesis 2, it is also stated that PEOU has a direct and significant impact on ITU. Whilst from the beta values of PU and PEOU (0.439), (0.325), it can be said that one-unit change in PU and PEOU can enhance the IT usage to 43% and 32% respectively. From above, values, it can be stated that both PU and PEOU are the good predictors of ITU which is also supported in the original model of TAM (Davis, 1989). Keeping in view the above values, it is clear that PU and PEOU are also acting as the good predictor of ITU based on the data collected in this study, so further analysis can be done by taking the CI as a moderator.

Moderating Effect:

Table 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change
1	.657[a]	.431	.428	.43310	.000
2	.661[b]	.437	.431	.43191	.000

a. Predictors: (Constant), CI, PU, PEOU
b. Predictors: (Constant), CI, PU, PEOU, PUCI, PEOUCI

The moderator explains the relationship of independent and dependent variables. Moderation is implied through interaction term. When a moderator or interaction term is introduced it can not only change the relationship of predictors and outcome but also specifies the direction of that relationship. The moderator is the third variable that stipulates the conditions in which the independent variables are related to dependent variable (Baron & Kenny, 1986). In table 4 above, it was observed that the value of R has enhanced from 0.657 to 0.661 which shows that in the presences of interaction terms the relationship of predictors and outcome have been enhanced. Similarly, the explained variation has also increased from 42 percent to 43 percent showing the impact of moderators i-e, PUCI and PEOUCI. The major change in the presence of moderator can be observed form the significance change in F where the significant relationship of predictors and outcome turned to be insignificant. It means that the complete moderation has occurred and CI can be considered an effective moderator for information technology usage and acceptance.

The moderator may affect the relationship of predictors and outcomes in three ways (1) The moderator may increase the impact of predictors for outcome, known as enhancing (2) Moderator may decrease the impact of predictors for outcome, known as buffering (3) Moderator may reverse the impact of predictors for outcome, known as antagonistic (Fairchild & MacKinnon, 2009; Toothaker, 1994). Here from the above table 4, it is clear that the CI has enhanced the impact of predictors for outcome of ITU by satisfying the moderator 1st condition of moderation i-e, enhancing. Moreover, the effect of moderation can also be observed from F value in table 4 which has been changed from 0.000 to 0.000 for interaction terms of CI with PU and PEOU.

Table 5

Coefficients

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.129	.092		1.399	.162
	PU	.395	.044	.357	8.893	.000
	PEOU	.257	.044	.240	5.870	.000
	CI	.238	.036	.240	6.682	.000
2	(Constant)	.390	.249		1.567	.118
	PU	.034	.180	.031	8.188	.000
	PEOU	.410	.187	.381	3.196	.000
	CI	.140	.098	.141	5.437	.000
	PUCI	.258	.125	.431	4.059	.000
	PEOUCI	.107	.137	.188	4.778	.000

a. Dependent Variable: ITU

The above table 5 describes the beta coefficients, t values and level of significance for both models of the study. i-e, before introducing the interaction terms (Model 1) and after the inclusion of interaction terms or moderators (Model 2). It is obvious in the table 5 that the standardized beta coefficient values for PU and PEOU has been changed from 0.357 to 0.031 and from 0.240 to 0.381 respectively. This change in the beta coefficients confirmed the impact of moderators in ITU with the predictors of PU and PEOU. The notable change can be observed when the significance values of PU and PEOU with CI after introducing the interaction terms where significant values remained as 0.000 less than from the threshold value of 0.005. These significant values ensure that the complete moderation has occurred and the role of culture must be considered for enhanced and

effective utilization of information technology for policy makers. The same significant impact can also be observed from t values which have been changed from 8.893 & 5.870 to 8.188 & 3.196. From the values of t and level of significance for PU and PEOU, the study hypotheses 3 and 4 have been supported and it can be said that CI can effectively moderates the relationship of PU and PEOU with ITU.

CONCLUSION

The study indicated that considering the impact of culture in the context of information technology is very critical as it can lead towards success or failure of ITU for computers. Two models were tested in the study to determine the effect of culture as a moderator in the relationship between PU, PEOU and ITU for computers. First the multiple regression was run to measure the impact of PU and PEOU on ITU as in the original model of TAM (Davis, 1989). Both the variables of PU and PEOU found to be significant to ITU with the observed or collected data. The results showed that 62 percent of the variance is explained by the predictors of PU and PEOU. The results shown in table 3 supported the H1 and H2 of the study and ensures that PU and PEOU had significant impact on ITU.

Second, to measure the effect of moderator (CI), hierarchical multiple regression was applied. In the first step, two new interaction terms were introduced in the data set. These new interaction terms were CIPU and CIPEOU which are the product of cultural influence (CI), Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). The results of moderation effect can be observed from table 4 and 5. It has been observed that the inclusion of moderator (CI) changed the explained variance of observed variables (PU & PEOU) from 65 percent to 66 percent. The significance relationship of PU and PEOU has also changed with ITU by the inclusion of CI clearly observed in table 5. The change in significance values of p in table 5 confirmed that CI completely moderates the relationship of PU and PEOU with ITU and supported the hypothesis 3 and 4 of the study. These findings are consistent with the previous studies (Al-Gahtani, Hubona, & Wang, 2007; Leidner & Kayworth, 2006; Scherer, Siddiq, & Tondeur, 2019; Srite & Karahanna, 2006; Zhang, Weng, & Zhu, 2018) and showed the explanatory and predictive power of culture in explaining the relationship of intention to use the computers with its predictors.

This study explicitly measured the moderating effect of culture in explaining the relationship of effective technology usage rather than a generalized view of culture or belief. All the observed values in the statistical tests proved that there is very strong and positive influence of culture on the predictors of PU and PEOU in relation with ITU for computers. Empirical analysis and findings of the study may be valuable for the scholars and policy makers who intended to see the effect of cultural beliefs and norms on ITU. Based on the results of the study, it is inferred that the public organizations must consider the micro level beliefs and norms before introducing the new technology in their organizations. As culture is an independent variable and are depicted in everyday life of people, so the policy makers must consider the influence the culture on ITU. It is concluded that the cultural patterns must be followed and accommodated with the existing technology for effective use rather than ignoring or opposing its values. Policies to introduce the new technology in the organizations should be devised in such a way that the cultural values can be accommodated and not be altered because the commandments of cultural values are inevitable.

LIMITATIONS

Contacting to high ranked government officials were not a very cumbersome job. Instead of using referral groups and snow ball sampling, the response rate of this study is still low in this study. This is the shortcoming of the sampling technique which may be overcome by devising a new and mixed sampling technique.

FUTURE RECOMMENDATIONS

The study is cross sectional and the official of the policy makers were contacted only one time. However, the policy making is a time taking and rigorous process which needs multiple revisions due to many factors. So, a longitudinal study is recommended for further studies. Moreover, government officials are not only responsible for policy making. Inclusion of other stakeholders including politicians and community representatives

will add more value in the future studies of this domain.

CONFLICT OF INTEREST

There is no conflict of interest by any author by publishing this research article in International Journal of Business and Management.

AUTHORS CONTRIBUTION

All authors contributed equally in producing this research work

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