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## **EXAMINING THE MODERATING ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES BETWEEN RELATIONSHIP OF ORGANIZATIONAL CULTURE AND BUSINESS EXCELLENCE**

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### **Abstract:**

Organizational culture is inclusive of the norms of members within an organization. These are experienced by the individuals working within an organization and do describe the environment at an organization. The organizational culture norms regulate the behaviors of employees working within organization and also influence how the objectives are accomplished. In turn organizational culture results in business performance. Since businesses are affected by the rapidly happening changes in technology. Therefore, the study considered the role of information and communication technologies as a moderator between relationship of organizational culture and business excellence. The study followed the cluster sampling to select Dubai as a preferred place to conduct study and simple random sampling to collect data from respondents. The data were collected from the employees working in the public entities in Dubai, UAE. A total of 500 questionnaire were distributed among the employees, out which 350 questionnaires were returned and finally 338 valid questionnaires were used for data analysis. SPSS and PLS-SEM used for data analysis. The results of the study revealed that ICTs is a significant moderator between relationship of organizational culture (Empowerment, human resources orientation, improvement orientation, and interdepartmental coordination) and business excellence. Whereas results did not support the moderating role of ICTs between relationship of external orientation and business excellence. Overall the study has accomplished majority of the objectives. The results of the study can be utilized by managers of

organizations to refine their cultural orientation which can boost their business excellence. The findings of the study can potentially prove to be economically beneficial for organizations.

**Keywords:**

Business Excellence, Empowerment, Improvement Orientation, External Orientation, Business Results

## Introduction

Dubai government has considered and recognized the importance of quality driven awards for successful quality orientation within organizations. In this regard, they developed a Dubai Quality Award based on Excellence Model of the European Foundation for Quality Management (EFQM). Additionally, Dubai Government Excellence Program was also introduced to ensure that government departments may meet and surpass the required quality standards of world renowned government departments by adopting and complying with the business excellence model in all sectors. Similar to Dubai another government Ras Al Khaimah also developed a quality award Sheikh Saqr Program for Government Excellence (SSPGE) in 2004 for appraisal of business excellence model in Dubai (Shemali & Rashed, 2009). Accordingly, it can be stated that all the organizations and governments always strive hard to accomplish the best performance which can be accomplished through implementing a system i.e. business excellence model.

Business excellence models are implemented by organizations to enhance their performance and they are also used as a tool to measure the business success in different domains. In this regard the present study has emphasized on the business excellence of public entities of Dubai. Mostly organizations adopt the business excellence models as a tool to improve their performance and accomplish the organizational objectives. When organization follows a particular strategy then it may bring positive or negative outcomes for it. It can be stated that the business excellence model serves as a tool for assessment of quality for an organization which can be used as per suitability. Since business excellence models contain the enablers and business excellence in terms of outcomes. Different quality awards in UAE are based on the core concept of EFQM. It is right to state that EFQM is a general model which can be applied in any context as previously studies have used EFQM model to measure the business excellence in different organizational context in Dubai (Kassem, Ajmal, Gunasekaran, & Helo, 2019; Kassem, Ajmal, & Khan, 2017; Shemali & Rashed, 2009). Additionally, EFQM is comprehensive model which provides the “as is” situation of an organization and also provides the areas for further improvement (Randeree & Youha, 2009). Therefore, the present study has considered the EFQM model to measure the business excellence and organizational culture as one of the enabler for the business excellence.

Organizational culture has received prolific interest and research in different research domains such as sociology, management and organizational behavior (Plewa & Rao Hill, 2007). It is regarded as one of the major factor that determines the organizational performance. Organizational culture is a source for a competitiveness for organizations which offer them a way to maintain competitiveness and also ensures the smooth functioning within an organization. It is worthy to note that organizational culture is also considered as the source of

the sustainable competitiveness (Barney, 1991). Many researchers (G. A. Ali, Abdullah, & Gorondutse, 2017; Cameron & Quinn, 2011) have put forward the organizational culture as one of the strongest and important factors that drive the organizational performance both in long-run and short-run. In other words it is the basis on which any organization internally depends for its higher performance.

Although the organizational culture plays a key role in determining the business excellence but possibly it may be affected by the level of information and communication technologies. In this regard exploring the role of ICTs as a moderator is a valuable direction and addition to the existing literature. Hence, the study has also considered the moderating role of ICTs between relationship of organizational culture and business excellence. It is to be noted that ICTs consist of the components that are incorporated to facilitate the collection, storage and processing and dissemination of the information. Such system ensures that organizational communication and collaboration is working smoothly. Additionally, the presence of such systems within an organization help it to develop the latest abilities and skills' set that cannot be solely accomplished (Borges, Hoppen, & Luce, 2009). ICTs can be regarded as information system within an organization and such systems facilitate an organization for developing its capabilities to process the information. For instance, the organizations who have such system they tend to have better skills as compared to organizations that have a complex system of information. These systems cannot be ignored as they are important for organizations to build their capabilities of information processing. ICTs as a system influence the flow of information between organizations ultimately lead them towards the better system (Nyambura, 2018).

With regard to the application of ICTs in their study they reported that UAE is ranked among the top countries which emphasize on the importance of ICTs (Kassem et al., 2019). Additionally, Meško Štok, Markič, Bertoneclj, and Meško (2010) reported that relationship between culture and performance is positive which can be weak and strong as well. Therefore, it is stated that since Dubai is much influenced by the technologies so ICTs may also change the relationship between organizational culture and business excellence. So, the present study fulfills the gap previously highlighted in different studies. First of all it considered the less studied practices perspective regarding organizational culture. Secondly, it studied ICTs as a moderator between organizational culture and business excellence that is also not entertained by the previous studies. Hence, the present study objective is to examine the moderating role of organizational culture and business excellence.

## Literature Review

### *Organizational Culture*

Organizational culture is inclusive of the norms of members within an organization. These are experienced by the individuals working within an organization and do describe the environment at an organization. The organizational culture norms regulate the behaviors of employees working within organization and also influence how the objectives are accomplished. It represents that how do employees interact and stakeholders of an organization (Simoneaux & Stroud, 2014). It can be regarded as a set of values, beliefs and pattern to behave due to which organizations can be distinguished (Ortega-Parra & Sastre-Castillo, 2013).

### ***Business Excellence***

Organizations are persistently striving to become successful in their area of business. They are striving for improvements and different models of business excellence has been developed over the decades. Before discussing the business excellence models it is necessary to discuss about the business excellence. Generally, it can be defined as surpassing the standards and leading the way. Previously various attempts have been made to define the business excellence. In the present study the terms business excellence and organizational excellence are interchangeably used alike previous study. Literature provides various definitions for business excellence and there is no universally admitted definition for business excellence.

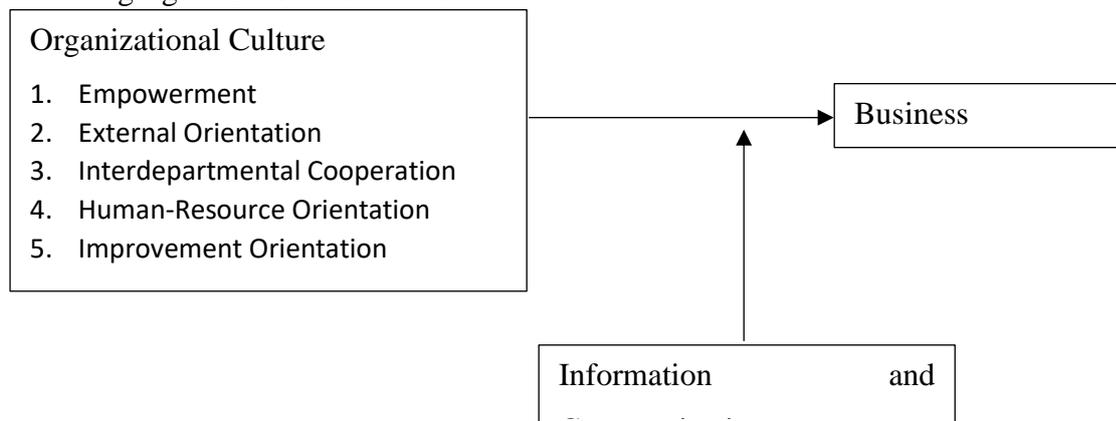
### ***Information and Communication Technologies***

Information and communication technology is a broad term that includes the communication devices or its application in form of radios, phones, TV, software and hardware etc. it also includes the application of communication devices such as wireless communication and having an online conference (Campton, 2007). ICT denotes to the electronic technologies that process data which can be text, any graphic or video. Additionally, the data is processed to have information for better decision making (Baily, 2007). It is regarded as the latest solution which has enabled the business development and also support the growth of business and competitiveness. It is worthy to note that ICTs and e-business applications makes improvement in sharing the knowledge within an organization (Osodo, 2012). Hence, the present study uses the definition of ICT which confines to usage of computers, internet and communications. In short the present study has considered all components of ICTs.

### **Research Framework**

The present study proposes the research framework to predict the business excellence. The study has considered the dimensions of organizational culture namely; Empowerment, human resource-orientation, external orientation, interdepartmental cooperation, and improvement orientation to predict the business excellence. Additionally, study has also considered the role of ICTs as a moderator between the relationship between organizational culture and business excellence.

Following figure 2.1 shows the research framework.



**Figure 2.1 Research Framework**

## Hypothesis Development

### *Organizational Culture and Business Excellence*

Suciu (2017) in a study contended that business excellence can be accomplished by using the full potential of employees. So when an organization fosters a culture of empowerment in which employees are highly encouraged, motivated, supported and provided with freedom to confront the situations they confront. Culture of empowerment results in creativity and innovation among the employees working for an organization as it enhances their way of thinking and acting as well. Every organization strives for business excellence and tend to adapt various successful practice. It is worthy to note that people drive the quality. When individuals within an organization are motivated and appraised for their excellent performance. They tend to have higher performance while performing their job duties. Notably, each employee working within an organization do have its role towards the business excellence. If an organization wants to have business excellence in different domains then it should invest and focus on its employees. Additionally, externally available partners when treated as a resource by an organization they tend to have better value creation for organizations (Jankalová & Jankal, 2020). Moreover, external orientation of an organization allows it to extensively focus on the changing environment and customer needs. Resultantly, enable an organization to effectively respond them and results in business excellence. Organizations that emphasize on their markets tend to develop a competitive advantage and have a higher business excellence (Najafi-Tavani *et al.*, 2016). From interdepartmental coordination perspective, Wilderom, Van Den Berg, and Wiersma (2012) conducted a study to assess the relationship between organizational culture and business excellence. Their study findings posit that interdepartmental cooperation may result in business excellence. It is worthy to note that organizations having a good coordination between departments tend to have better outcomes of the activities performed within an organization.

### *Moderating Role of ICTs between Relationship of Organizational Culture and Business Excellence*

Moderator is a variable which do alter the relationship between an independent and dependent variable. It can strengthen or weaken the relationship between two variables. Interestingly, it can change the direction of relationship between variables as well. These variables are useful for to see whether any other potential variable can influence the relationship or not (Mike, 2017). Accordingly, the present study has considered the role of information and communication technologies as a moderator between relationship of organizational culture and business excellence. The purpose is to assess whether the ICTs can moderate the relationship between culture and business excellence as technological developments are happening at rapid pace in current business environment and they are potentially influencing the way businesses are being carried out.

ICTs may moderate the relationship between culture and performance since communication is embedded within the organizations and different technologies are used to communicate. Possibly, ICTs can influence the relationship between culture and business excellence (Kassem, Ajmal, & Khan, 2017). Previously, studies have also supported the moderation of ICT, for instance, Kassem *et al.* (2017) in their study reported that experts in management domain have a consensus about the ICTs and they regard it as an important factor which plays

a key role in decision making, cooperation and motivation which in turn influence the performance of an organization.

Previously studies have considered the moderating role of ICTs between the relationship of culture and excellence. Kassem et al. (2017) in their study reported that ICTs significantly moderated the relationship between culture and business excellence. Additionally, they also added that moderate application of ICTs within the organizations tend to have less influence as compared to organizations using the ICTs extensively. From these findings it can be asserted that greater usage of ICTs tend to greatly influence business excellence. Abd Wahab, Mhemed, and Hashim (2019) in their study considered the moderating role of ICTs between the relationship of management accounting practices and performance. They reported that ICTs significantly moderates the relationship between management accounting practices and firm performance. They contended that ICTs application in SMEs have improved their performance and thus important to have better firm performance.

It is worthy to note the relationship between culture and performance may be moderated by the communication. It happens because communication is the integral part of an organizational culture which may moderate the influence of culture on business excellence (Kassem, 2016). Notably, communication is regarded as one of the key tasks of an organization such as acquisition, transmission, and dissemination of information within an organization which influences the firm performance. Additionally, communication plays a vital role in linking the culture and managing the structures within an organization. It has been agreed that communication can potentially influence the relationship between culture and business excellence. It happens due to the fact that communication can potentially influence the implementation and decision making within an organization. Not only communication influences the relationship between organizational culture and business excellence but technology also plays a vital role within an organization. Communication within organizations happen with the help of technologies so they jointly can moderate the relationship between culture and business excellence (Nyambura, 2018; Sirirak, Islam, & Khang, 2011; Torres, da Silva Abbad, & Santos, 2013).

Based on the literature it is stated that when an organization is adapting to rapidly changing business environment, satisfying the customer needs, focusing on the development of its human resources, creating an environment for smooth coordination between departments and empowering its employees to have them decided about their job duties decisions then it will end up with business excellence as compared to organizations which do not foster such working environment. It is worthy to note that organizational culture is driving their business excellence but they are living in 21<sup>st</sup> century where information and communication technology is vital for every business. It is expected that ICTs can moderate the influence of culture on business. Hence, following are the hypotheses.

***H1: ICTs significantly moderates the relationship between empowerment and business excellence***

***H2: ICTs significantly moderates the relationship between external orientation and business excellence***

***H3: ICTs significantly moderates the relationship between human resource orientation and business excellence***

***H4: ICTs significantly moderates the relationship between interdepartmental coordination and business excellence***

***H5: ICTs significantly moderates the relationship between improvement orientation and business excellence***

## **Methods**

The aim of the present study is to examine the moderating role of information and communication technologies between relationship organizational culture and business excellence. This study is descriptive research as it is described the relationship because the current study objective is to test the relationship of organizational culture dimensions and business excellence of Dubai. The study used the quantitative research design to examine the relationship between organizational culture and business excellence.

The population of the study is the employees of public entities in Dubai, UAE. The study used the cluster sampling to select the state among the different states of UAE. Firstly, all states of UAE divided into clusters and Dubai selected as a preferable cluster for the present study. It is to be noted that Dubai become an international city and known as a travel and trade hub globally. The huge crowd in Dubai is from different nations makes it a hub for cultural diversity and makes it difficult to manage the balance between individuals within an organization as the conflict may disrupt the organizational performance. Approximately, 200 nations live in Dubai (Tesorero, 2019). Later on data were collected by using the simple random sampling technique and no segregation was made in public entities.

Data were collected by using the questionnaires adapted from previous studies. The current study research instrument consist of three main variables. Among of them, organizational culture dimensions are the independent variables, information and communication technologies as a moderator and business excellence is a dependent variable. All of these variables were measured by using 5 point Likert Scale. Olakunke (2003) further explained that the format of five points Likert scale provides a better way to communicate with the respondents. Therefore, the Likert scale had the following five measures; 1-strongly disagree, 2- disagree, 3- Neutral, 4- agree, 5- strongly agree. For the current study, corporate culture (COC) was measured by five dimensions namely, empowerment (EMP), external orientation (EXO), interdepartmental cooperation (IC), improvement orientation (IO) and human resource orientation (HRO). Among of the following dimensions, EMP was measured by six items (Wilderom, Van Den Berg, & Wiersma, 2012) EXO was measured by six items (Wilderom, Van Den Berg, & Wiersma, 2012) IC was measured by four items (Wilderom, Van Den Berg, & Wiersma, 2012), HRO was measured by three items (Wilderom, Van Den Berg, & Wiersma, 2012) and IO was measured by three items (Wilderom, Van Den Berg, & Wiersma, 2012). The business excellence (BE) is a dependent variable that was measured by following four dimensions namely, customer results (CR), employee results (ER), society results (SR) and business results (BR). In the following dimensions, CR was measured by eight items which were adapted from the study of (Eti, 1998). In addition, ER was measured by five items which were adapted from the study of (Eti, 1998). Moreover, SR were measured by 9 items which were adapted from the study of (Eti, 1998). Furthermore, BR were measured by 10 items which were adapted from the study of (Eti, 1998). On the other hand, information and communication technology (ICT) is a moderating variable that was measured by 37 items which were adapted from the study of (Torres et al., 2013). A total of 500 questionnaires were distributed among

the employees working at Dubai public entities. Out of which 350 were returned and 338 valid questionnaires were used for data analysis by using PLS-SEM.

## Results

### *Confirmatory Factor Analysis*

To check the construct items' validity, confirmatory factor analysis was performed to see whether each item in the research conceptual framework is able to measure what it is supposed to measure. For this purpose, a validity test was performed by using the Smart-PLS software.

In the path modelling assessment, composite reliability (CR) and Cronbach's alpha are utilized to evaluate the variables' reliability. The measurement model is used to evaluate the validity and internal consistency of the scale items (Hair, Hult, Ringle, & Sarstedt, 2014). It provides the factor loadings for all the scale items, the Cronbach's alpha of every variable, the CR for every construct, the convergent validity (average variance extracted or AVE) of every construct, and the discriminant validity (cross-loadings, Fornell-Larcker criterion and Heterotrait-Monotrait Ratio of Correlations (HTMT) of the constructs. This is to confirm that the measurements are reliable and valid before assessing the relationships in the structural model. Figure 4.1 shows the measurement model of the study.

Table 4.1 shows that all items in the model were loaded on their respective constructs' item. All the items in the model exceeded the recommended cut-off value of 0.5. All items below 0.5 were deleted one by one to achieve the significant threshold and items with very low loadings (below 0.4) were also deleted (Hair et al., 2014; Joe F Hair, Ringle, & Sarstedt, 2011). The following items were cut off from the model due to low loading values (ICT12, ICT13, ICT19, ICT22, ICT23, ICT25, ICT26, ICT33, ICT34, ICT35, ICT34, ICT35, ICT36, ICT37, CR8, ER1, SR8, SR9). Moreover to assess the internal consistency reliability of the construct, composite reliability (CR) was determined. Mallery and George (2003) provided the boundaries for Cronbach's alpha namely  $\alpha > 0.90$  as excellent,  $\alpha > 0.80$  as good and  $\alpha > 0.70$  as acceptable and the lowest threshold value. Joseph F Hair, Ringle, and Sarstedt (2013) further suggested the same rule of thumb for CR whereby the coefficient should be equal to or greater than 0.70. However, the CR values of the latent constructs in the current study ranged from 0.871 to 0.940 which exceeded the recommended cut-off value of 0.7 (Joseph F Hair, Hult, Ringle, & Sarstedt, 2016). Moreover, AVE recommended criteria is 0.5. As explained by Joseph F Hair, Hult, Ringle, and Sarstedt (2017) and (Becker, Klein, & Wetzels, 2012), if the AVE and CR fulfill the criteria of the findings, then a loading of less than 0.5 is also considered acceptable. All of the values for CR and Cronbach's alpha are depicted in Table 4.1.

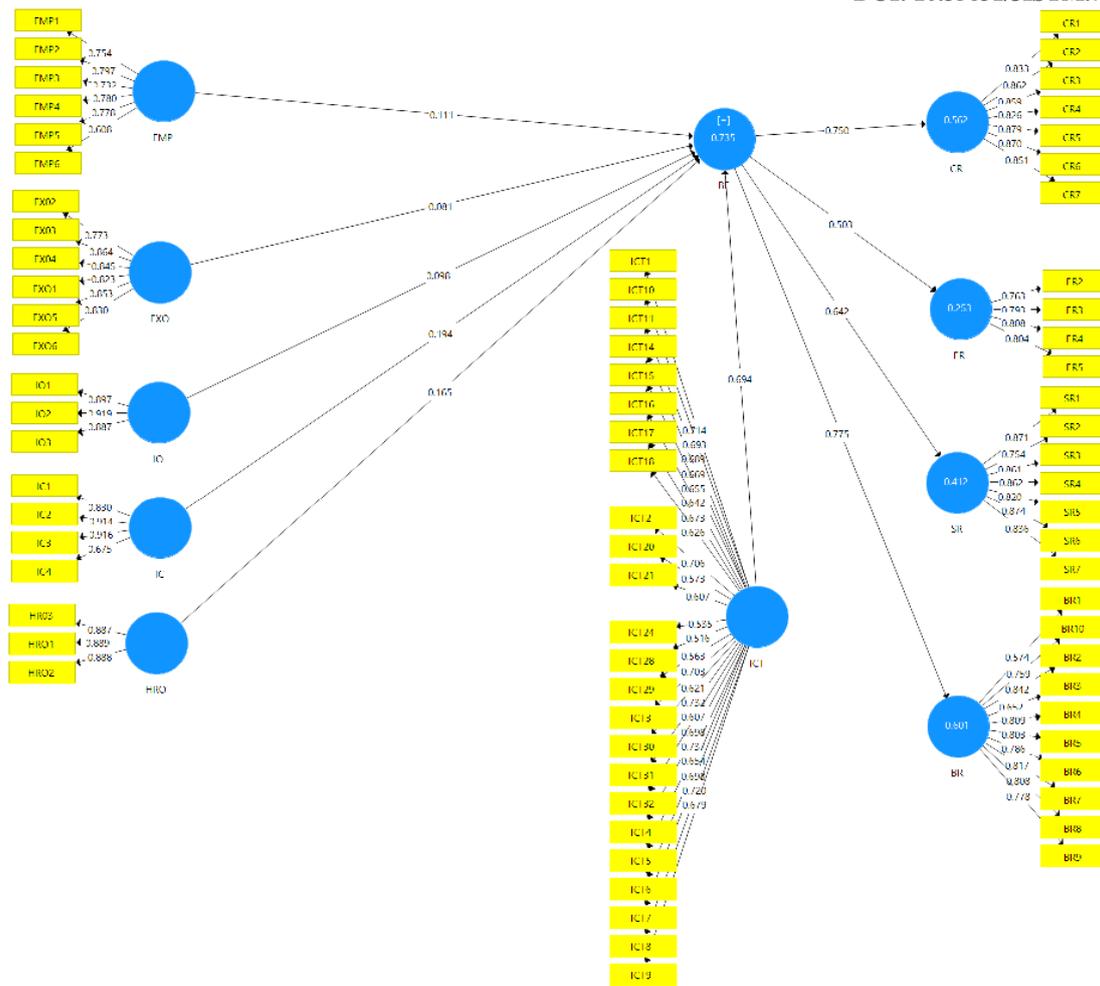
**Table 4.1 Reliability And Validity Of The Model**

Constructs	Items	Loadings	Alpha	CR	AVE
Empowerment	EMP1	0.754	0.839	0.881	0.554
	EMP2	0.797			
	EMP3	0.732			
	EMP4	0.78			
	EMP5	0.778			
	EMP6	0.608			

External Orientation	EX02	0.773	0.911	0.931	0.692
	EX03	0.864			
	EX04	0.845			
	EX01	0.823			
	EX05	0.853			
	EX06	0.83			
Human Resource Orientation	HR03	0.887	0.866	0.918	0.788
	HRO1	0.889			
	HRO2	0.888			
Interdepartmental Cooperation	IC1	0.83	0.859	0.904	0.7 05
	IC2	0.914			
	IC3	0.916			
	IC4	0.675			
Improvement Orientation	IO1	0.897	0.885	0.929	0.813
	IO2	0.919			
	IO3	0.887			
Information and communication technology	ICT1	0.714	0.942	0.948	0.532
	ICT10	0.693			
	ICT11	0.689			
	ICT14	0.669			
	ICT15	0.655			
	ICT16	0.642			
	ICT17	0.673			
	ICT18	0.626			
	ICT2	0.706			
	ICT20	0.573			
	ICT21	0.607			
	ICT24	0.535			
	ICT28	0.516			
	ICT29	0.563			
	ICT3	0.703			
	ICT30	0.621			
	ICT31	0.732			
	ICT32	0.607			
	ICT4	0.698			
	ICT5	0.737			
	ICT6	0.654			
	ICT7	0.698			
	ICT8	0.72			
	ICT9	0.679			
Customer Results	CR1	0.833	0.889	0.924	0.64

	CR2	0.862			
	CR3	0.859			
	CR4	0.826			
	CR5	0.879			
	CR6	0.87			
	CR7	0.851			
Business results	BR1	0.574	0.92	0.934	0.588
	BR10	0.759			
	BR2	0.842			
	BR3	0.652			
	BR4	0.809			
	BR5	0.803			
	BR6	0.786			
	BR7	0.817			
	BR8	0.808			
	BR9	0.778			
Society Results	SR1	0.871	0.93	0.944	0.706
	SR2	0.754			
	SR3	0.861			
	SR4	0.862			
	SR5	0.82			
	SR6	0.874			
	SR7	0.836			
Employee Results	ER2	0.763	0.802	0.871	0.627
	ER3	0.793			
	ER4	0.808			
	ER5	0.804			

**Note:** HRO-human resource orientation, EXO-external orientation, HRO-human resource orientation, IO-interdepartmental orientation, IC-improvement orientation, ICT-information and communication technology, CR-customer results, ER-employee results, SR-society results, BR-business results.



**Figure 4.1 Measurement Model**

**Discriminant Validity**

The measurement analysis assesses whether a construct has the best relationship with its indicators (in comparison to any other construct) within the PLS model (Joseph F Hair et al., 2017). To evaluate discriminant validity the heterotrait-monotrait ratio of correlations (HTMT).

Table 4.2 show the HTMT by means of a simulation study for the constructs respectively. This approach was introduced by (Henseler, Ringle, & Sarstedt, 2015) which compares the new approach to the Fornell-Larcker criterion and the (partial) cross-loadings assessment. Finally, they also provide a proper guideline on how the issue of discriminant validity is handled in the variance-based Structural Equation Modeling (SEM). For this purpose, the HTMT criterion results if the HTMT value is below 0.90 (Henseler et al., 2015) together with the discriminant validity are to be recognized within two constructs.

**Table 4.2 Heterotrait-Monotrait Correlation**

	BR	CR	EMP	ER	EXO	HRO	IC	ICT	IO
BR									
CR	0.442								
EMP	0.322	0.381							
ER	0.251	0.299	0.369						
EXO	0.404	0.335	0.448	0.688					
HRO	0.483	0.467	0.56	0.188	0.274				
IC	0.36	0.741	0.217	0.17	0.116	0.385			
ICT	0.618	0.658	0.671	0.554	0.752	0.825	0.425		
IO	0.208	0.782	0.314	0.118	0.124	0.304	0.484	0.432	
SR	0.314	0.227	0.692	0.405	0.587	0.334	0.092	0.58	0.141

**Note:** HRO-human resource orientation, EXO-external orientation, HRO-human resource orientation, IO-interdepartmental orientation, IC-improvement orientation, ICT-information and communication technology, CR-customer results, ER-employee results, SR-society results, BR-business results.

### Assessment of Structural Model

#### Direct Relationship

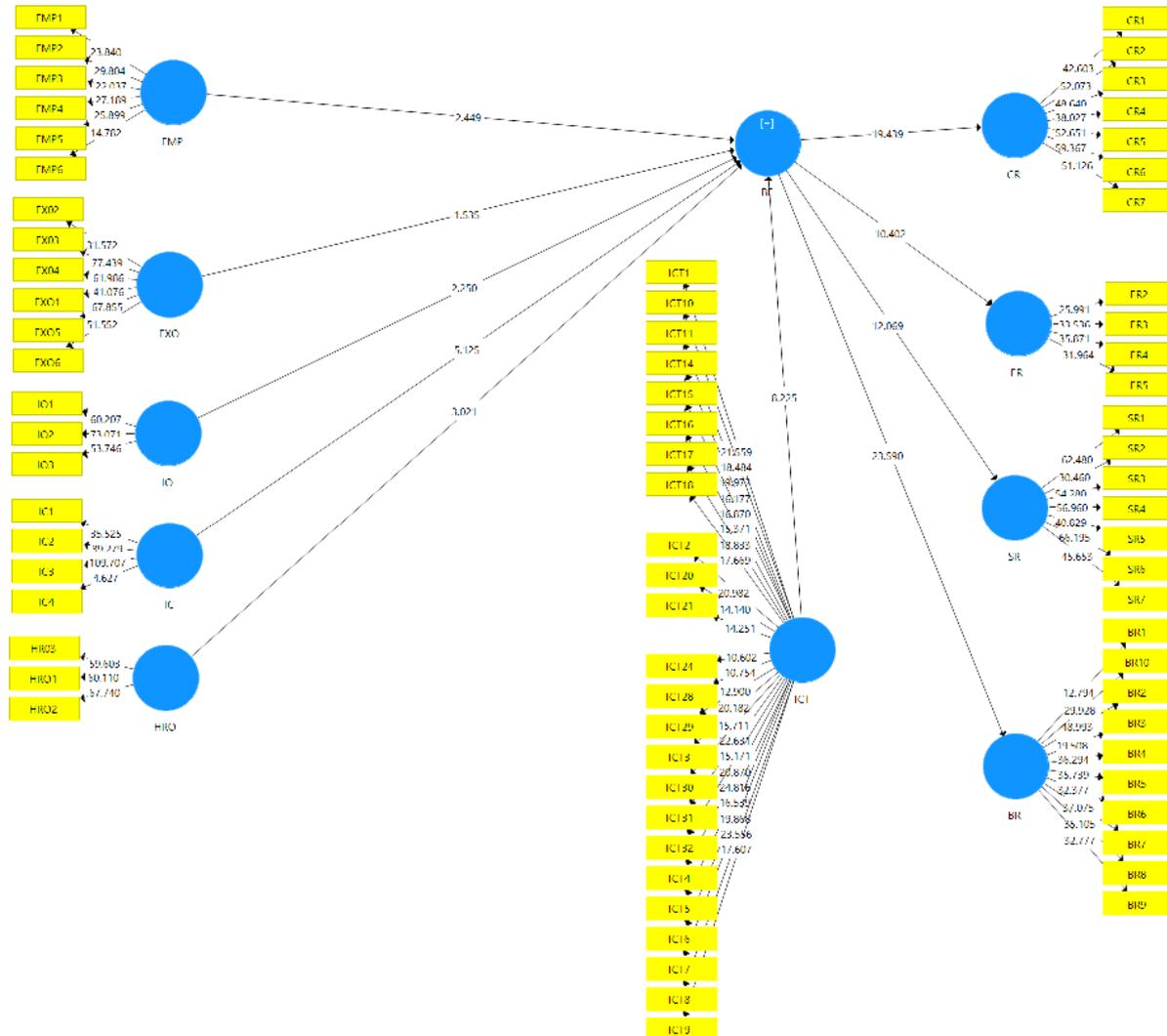
For testing the hypotheses significance, the t-value of 1.96 with  $p < 0.5$  and 1.645 with  $p < 0.10$  were considered as the threshold value to support or not support the hypothesis. The result of the Structural Equation Modelling (SEM) presented in Table 4.5 and Figure 4.2 depicts the relationship between the exogenous and endogenous constructs. It shows that there is a positive and significant association ( $\beta = 0.109$ ; t-statistics = 2.449,  $p = 0.015$ ) between empowerment (EMP) and business excellence (BE) that is being supported to the proposed hypothesis (H1). In other context, external orientation (EXO) had a positive and insignificant ( $\beta = 0.081$ ; t-statistics = 1.535,  $p = 0.125$ ) with the BE which is not supported to proposed hypothesis (H3). On the other hand, human resource orientation (HRO) had a negative and significant ( $\beta = -0.166$ ; t-statistics = 3.021,  $p = 0.003$ ) association with the BE that is being supported to the propose hypothesis (H2). Interdepartmental orientation (IO) had a positive and significant ( $\beta = 0.89$ ; t-statistics = 2.250,  $p = 0.025$ ) relationship with the BE that is being supported to the proposed hypothesis (H4). Further, SEM analysis had shown that improvement orientation (IO) had also a positive and significant ( $\beta = 0.019$ ; t-statistics = 5.125,  $p = 0.0000$ ) relationship with the BE that is being supported to the proposed hypothesis (H5). The overall  $R^2$  was found to be 72.9%, which implies that the exogenous variables namely EMP, EXO, IC, HRO, and IO explain 72.9% of the variance of the endogenous construct (BE). All of the following results are depicted in Table 4.3 below.

**Table 4.3 Direct Hypothesis**

	Original Sample	Standard Deviation	T Statistics	P Values	Results
EMP -> BE	0.109	0.044	2.449	0.015	Supported
EXO -> BE	0.081	0.053	1.535	0.125	Not Supported

HRO -> BE	-0.166	0.055	3.021	0.003	Supported
IC -> BE	0.19	0.037	5.125	0	Supported
IO -> BE	0.089	0.039	2.25	0.025	Supported

**Note:** significance level,  $p < 0.05$ ,  $p < 0.10$ , HRO-human resource orientation, EXO-external orientation, HRO-human resource orientation, IO-interdepartmental orientation, IC-improvement orientation, BE-business excellence.



**Figure 4.2 Structural Model Direct Effect**

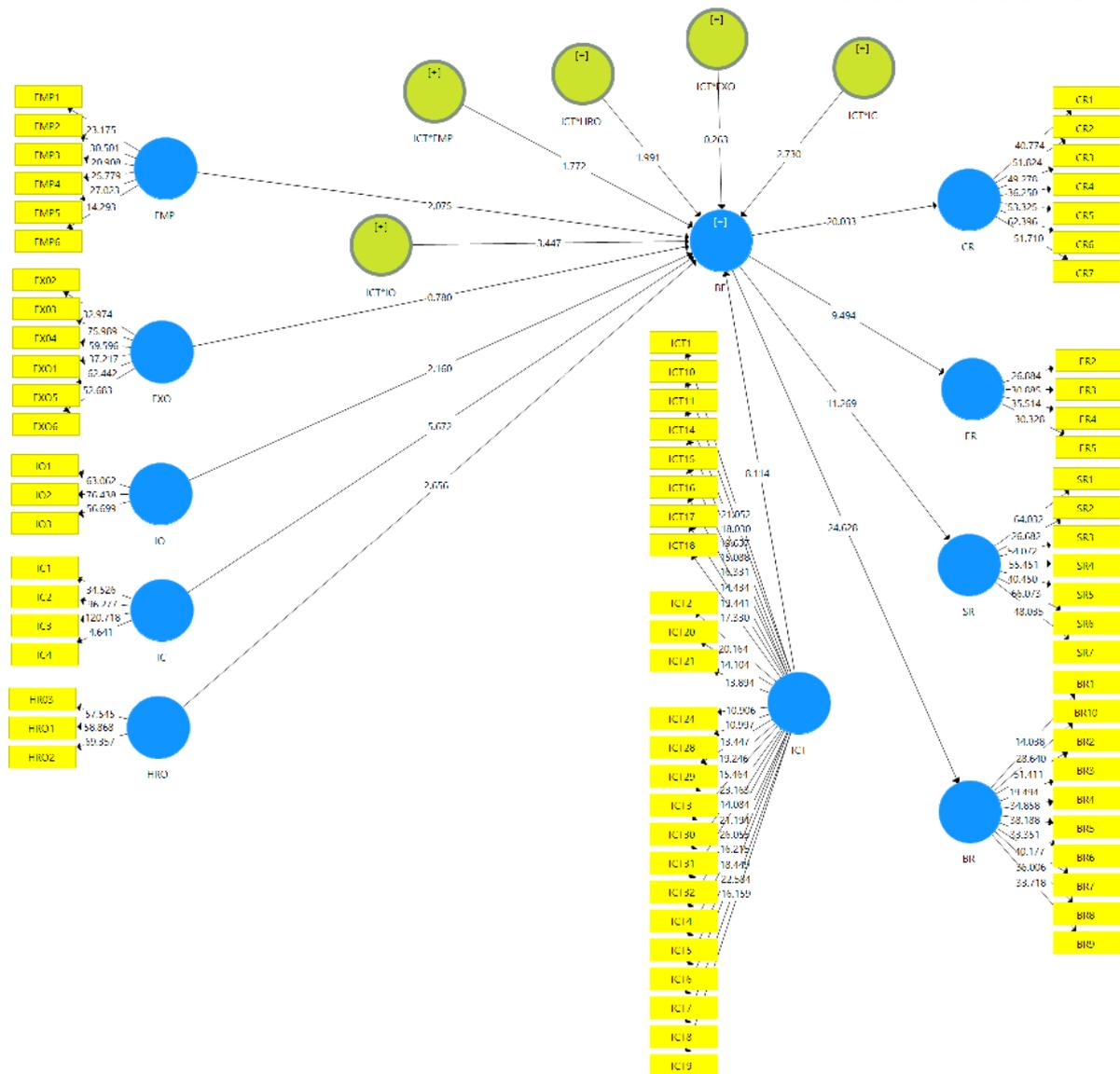
This study examined the moderating effect of information and communication technology (ICT) by employing the PLS-SEM using the Two-Stage approach. The two-stage approach for the moderation calculation could be applied if the objective of the study is to determine whether the moderator variable exerts a significant effect on the relationship between the exogenous and endogenous variables (Joseph F Hair et al., 2017).

As the objective for the moderation is to investigate whether the ICT significantly moderates the relationship between the corporate culture (COC) dimensions and the business excellence (BE) of the Dubai public entities. Therefore a two-stage calculation approach for the moderating effect was employed in the current study. Following the suggestion of Joseph F Hair et al. (2017), this study had applied the two-stage approach for calculating the moderation effect of information and communication technology (ICT) on the relationship between the independent variables namely empowerment (EMP), human resource orientation (HRO), interdepartmental orientation (IO), external orientation (EXO), and improvement orientation (IO) with the dependent namely business excellence (BE). The findings of the model had shown that ICT significantly moderates on the relationship of four exogenous variables namely EMP, HRO, IC, IO and the endogenous variable (BE). In the meantime, ICT was shown to have a insignificant effect on the relationship between one independent variable namely EXO with the BE. All of the above discussed findings are predicte in the following Table 4.4 below.

**Table 4.4 Moderating Effect Results**

Hypothesis	Original Sample	Standard Deviation	T Statistics	P Values	Results
ICT*EMP -> BE	-0.063	0.035	1.772	0.077	<b>Supported</b>
ICT*EXO -> BE	-0.012	0.045	0.263	0.792	<b>Not Supported</b>
ICT*HRO -> BE	0.077	0.038	1.991	0.047	<b>Supported</b>
ICT*IC -> BE	-0.095	0.035	2.73	0.007	<b>Supported</b>
ICT*IO -> BE	0.102	0.029	3.447	0.001	<b>Supported</b>

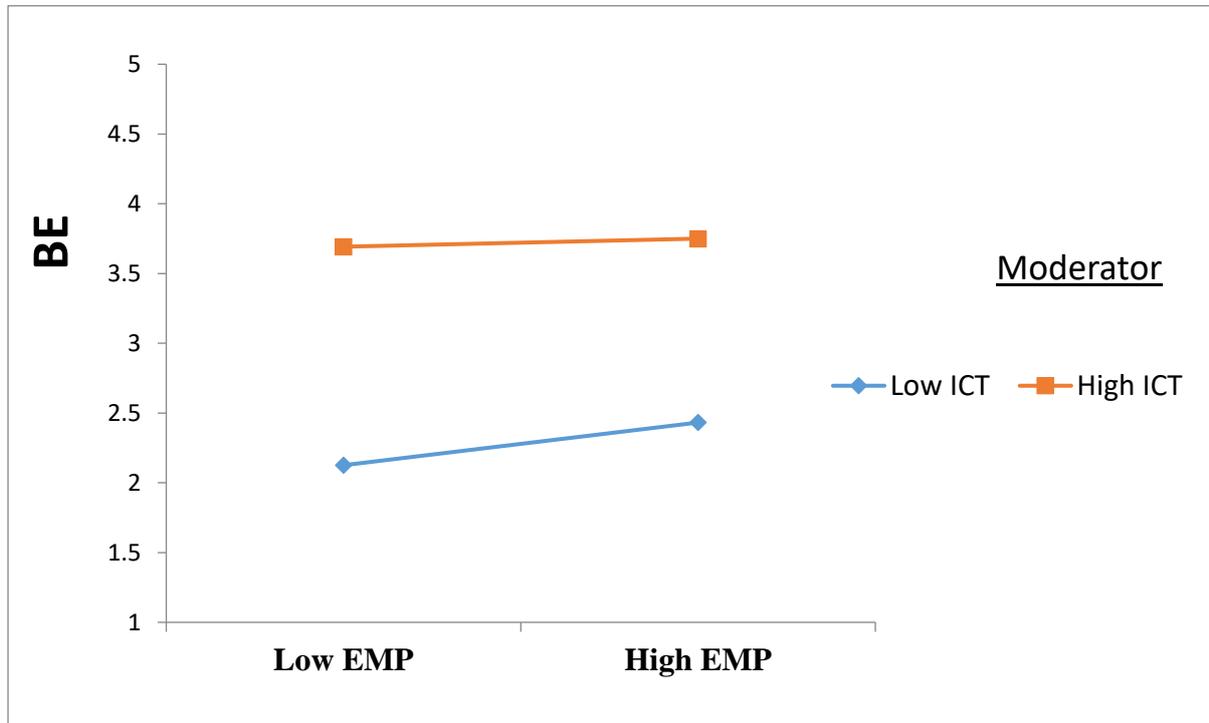
**Note:** significance level,  $p < 0.05$ ,  $p < 0.10$ , HRO-human resource orientation, EXO-external orientation, HRO-human resource orientation, IO-interdepartmental orientation, IC-improvement orientation, BE-business excellence, ICT-information and communication technology.



**Figure 4.3 Moderating Effect Model**

The results depicted in Table 4.4 and Figure 4.3 signify that ICT has a positive and statistically significant ( $\beta=-0.063$ ,  $t$ -statistics=1.772,  $p=0.077$ ) moderating effect on the relationship between EMP and BE; thus, hypothesis (1) is supported. Conversely, EMP and BP also has a directly statistically significant and positive relationship. But with the moderating effect it had a negative relationship. Therefore, these findings had shown that ICT is negatively moderates on the relationship of EMP and BE. This shows that EMP has a direct and significant association with BP as moderated by BC. This result implies that the relationship between EMP and BE would decrease according to the size of the interaction term which means that firms with high ICT becomes less important for explaining the BE of the UAE public organizations. In addition, in Figure 4.3 which represents the ICT–EMP interaction plot, the line tagged as low BC indicating a low level of ICT has a steeper gradient against the high ICT. This indicates that companies could achieve greater performance with greater emphasis on EMP under the

condition of low ICT. This shows that ICT moderates the relationship between EMP and BE, and that the negatively nexuses in EMP and BE become stronger for firms with high ICT.



**ICT dampens the positive relationship between EMP and BE.**

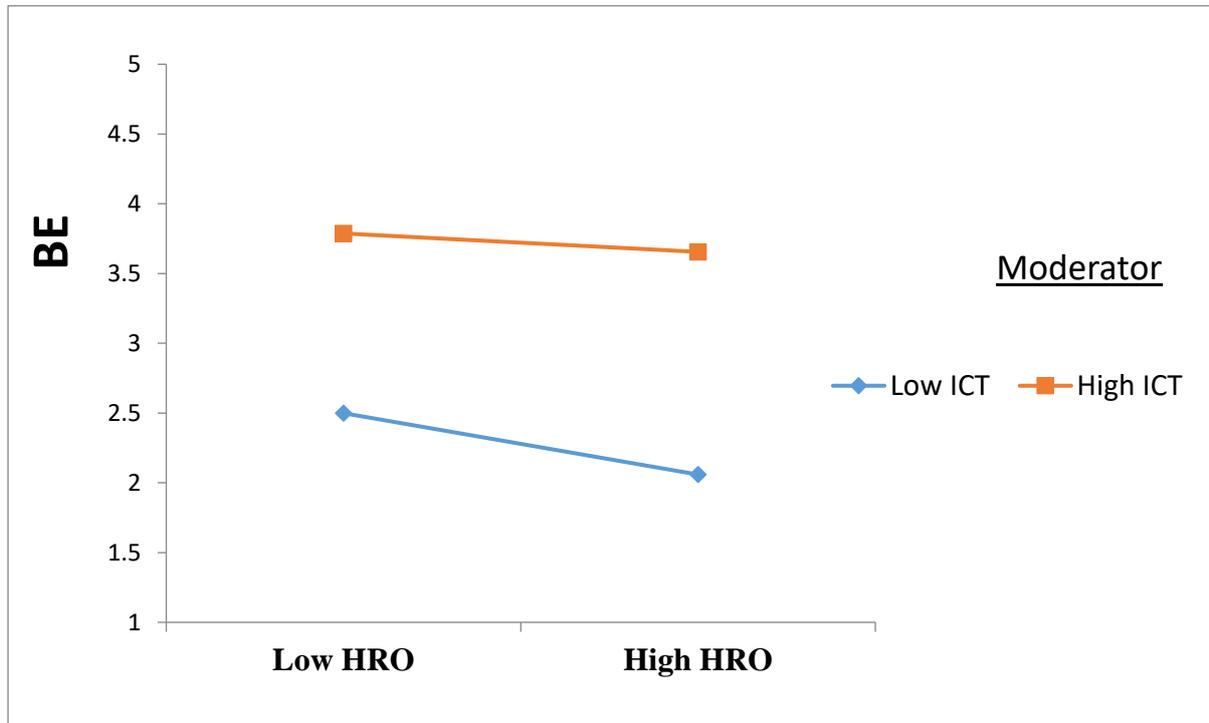
**Figure 4.3: Moderating Effect of Information and Communication Technology on The Relationship of Empowerment and Business Excellence.**

Source: Author's estimation based on data analysis

Furthermore, EXO has a direct and with the moderating variable has statistically insignificant ( $\beta=-0.012$ ,  $t$ -statistics=0.263,  $p=0.792$ ) association with BP. These findings show that ICT does not moderate the relationship between EXO and BE and hence, hypothesis (2) is not supported. A possible reason for this explanation is, as the direct relationship was significantly insignificant with the BE. Therefore, indirect insignificant effect probability was also increased.

On the other hand, the direct relationship between HRO and BE was shown to be statistically significant and negative. However, the indirect moderating effect shows that ICT has a statistically significant and positive ( $\beta=0.077$ ,  $t$ -statistics= 1.991,  $p=0.047$ ) moderating effect in the relationship between HRO and BP; thus, hypothesis (2) is supported. This result implies that the negative association between HRO and BP would decrease according to the size of the interaction term which means that in companies with high ICT-HRO becomes more important for explaining BE. In addition, in Figure 4.3 which represents the ICT-HRO interaction plot, the line tagged as high ICT which indicates a high level of ICT has a steeper gradient against the low ICT. This indicates that companies can achieve better performance with greater investment in HRO under the condition of a higher ICT. This result signifies that the positive nexuses of HRO and BE become stronger for firms with high ICT. This shows that the

moderating role of ICT strengthens the effect of HRO on BE which dampens the negative effect on BE. This moderating effect of HRO and BE is clearly shown in Figure 4.4.

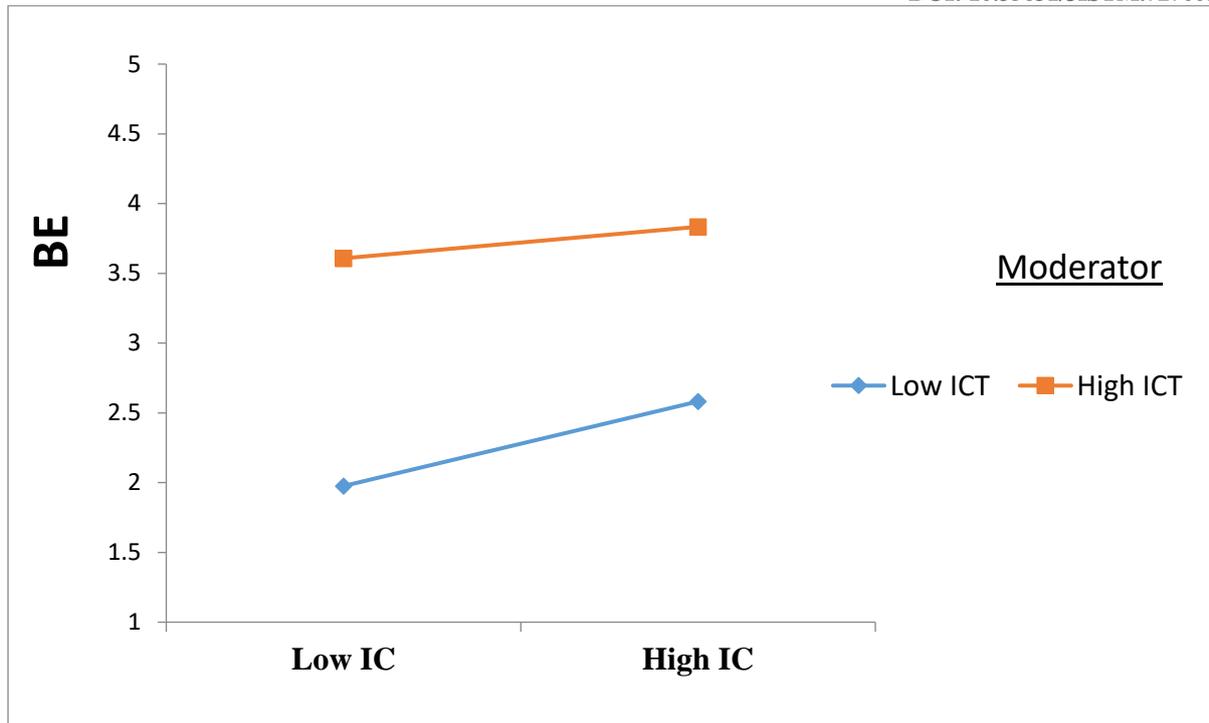


**ICT dampens the negative relationship between HRO and BE.**

**Figure 4.5 Moderating Effect of Information and Communication Technology on The Relationship of Human Resource Orientation and Business Excellence.**

Source: Author's estimation based on data analysis

In addition, the direct relationship between IC and BP was positive and significant and hence the hypothesis was supported. Whereas, when the moderating effect with the ICT is tested. The results signify that ICT has a statistically significant and negative ( $\beta=-0.095$ ,  $t\text{-statistics}=2.730$ ,  $p=0.007$ ) moderating effect in the relationship between IC and BE that is being support to the proposed hypothesis (3). These results show that ICT moderates the relationship between ICT and BE. These results also signify that the negative relationships between IC and BE become stronger for firms with high ICT. Subsequently, the plotting showed that the moderating role of ICT weakens the effect of IC on BE.

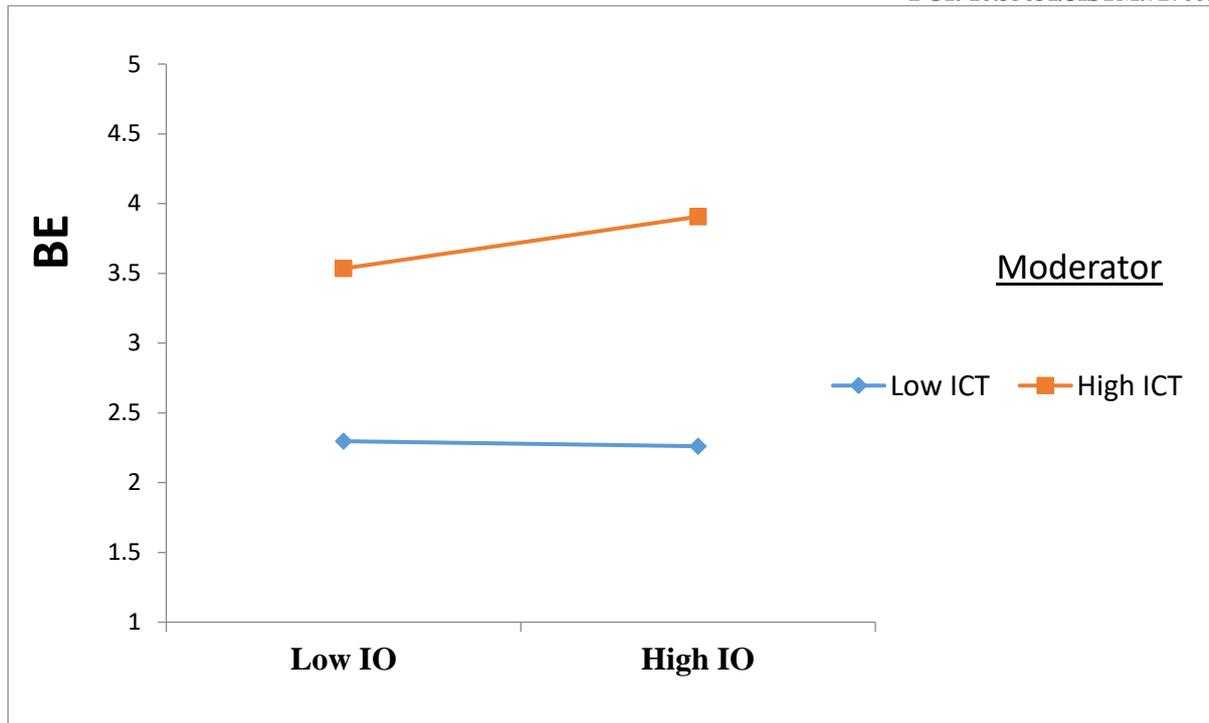


**ICT dampens the positive relationship between IC and BE.**

**Figure 4.6 Moderating Effect of Information and Communication Technology on The Relationship of Improvement Cooperation and Business Excellence.**

Source: Author's estimation based on data analysis

Furthermore, the direct relationship also showed a positive and statistically significant association between IO and BE. In the same vein, the results signify that ICT has a statistically significant and positive ( $\beta=0.102$ ,  $t$ -statistics=3.447,  $p=0.001$ ) moderating effect in the relationship between IO and BE, and thus hypothesis (5) is supported. These results imply that the relationship between IO and BE would increase according to the size of the interaction term which means that in companies with high ICT, IO becomes more important for explaining BE. Furthermore, in Figure 4.10 which represents the ICT-IO interaction plot, the line tagged as high ICT which indicates a high level of ICT has a steeper gradient against the low ICT. This indicates that companies could achieve greater performance when there is greater emphasis on IO with the condition of a high ICT. This result signifies that the positive nexuses for IO and BE become stronger for companies with high ICT. This further shows that ICT strengthens the relationship between IO and BE.



**ICT Strengthens the Positive Relationship Between EMP and BE.**

**Figure 4.7 Moderating Effect Of Information And Communication Technology On The Relationship Of Interdepartmental Orientation And Business Excellence.**

Source: Author's estimation based on data analysis

#### ***Determining the Strength of the Moderating Effects.***

To assess the moderating effect between the exogenous and endogenous variables, the researcher compared the proportion of variance explained which is the coefficient of determination ( $R^2$ ) of the main direct effect model without moderating effect with the full moderating effect model (Henseler & Fassott, 2010). The  $R^2$  value in terms of interaction plays a significant role, but the main decision is entirely based on the effect size of the moderating  $R^2$ . The effect size ( $f^2$ ) shows the strength on the relationship of the degree of approximation to which a phenomenon has occurred in the population. This is the determination of the effect size at both phases of the analysis which shows whether or not a moderation effect exists within the relationship between the exogenous and endogenous variables. Thus, the moderating effect strength could be assessed using the following formula (Cohen, 1988; Henseler & Fassott, 2010);

$$\text{Effect size } f^2 = \frac{R^2_{\text{model with moderator}} - R^2_{\text{model without moderator}}}{1 - R^2_{\text{model with moderator}}}$$

A moderating effect size ( $f^2$ ) value of below than 0.02 is deemed as a very small effect, between 0.02 and 0.15 as a small effect, between 0.15 and 0.35 as a moderate effect, whereas above 0.35 as a strong effect (Cohen, 1988; Henseler & Fassott, 2010). Nonetheless, according to Chin *et al.* (2003), a low effect size does not mean that the underlined moderating effect is not significant. Even a small interaction term could be assessed as significant with respect to the extreme moderating situations; if the changes in beta are meaningful, then it is very essential

to take them into consideration (Chin *et al.*, 2003). Table 4.5 predicted the information about the overall  $R^2$  (with and without the moderating effect) for the overall analysis and then calculated the effect size. In this study, the moderation term effect size is  $0.050 > 0.02$  which is a small effect; this implies that ICT has a moderating effect on the association between the COC dimensions and the BE of UAE public sector organizations. The change in moderation is predicted in the following Table 4.5.

**Table 4.5 R-square of Endogenous Latent Constructs After Moderation**

Constructs	R square	Result
BE	0.050%	Small

**Note:** BE-business excellence

This significant increase in the  $R^2$  has shown that information and communication technology (ICT) could be explained as a significant moderator in the relationship between corporate culture (COC) dimensions and business excellence (BE). Information regarding the change in  $R^2$  and effect size is also presented in Table 4.5 whilst the value of  $R^2$  is presented in Figure 4.8.

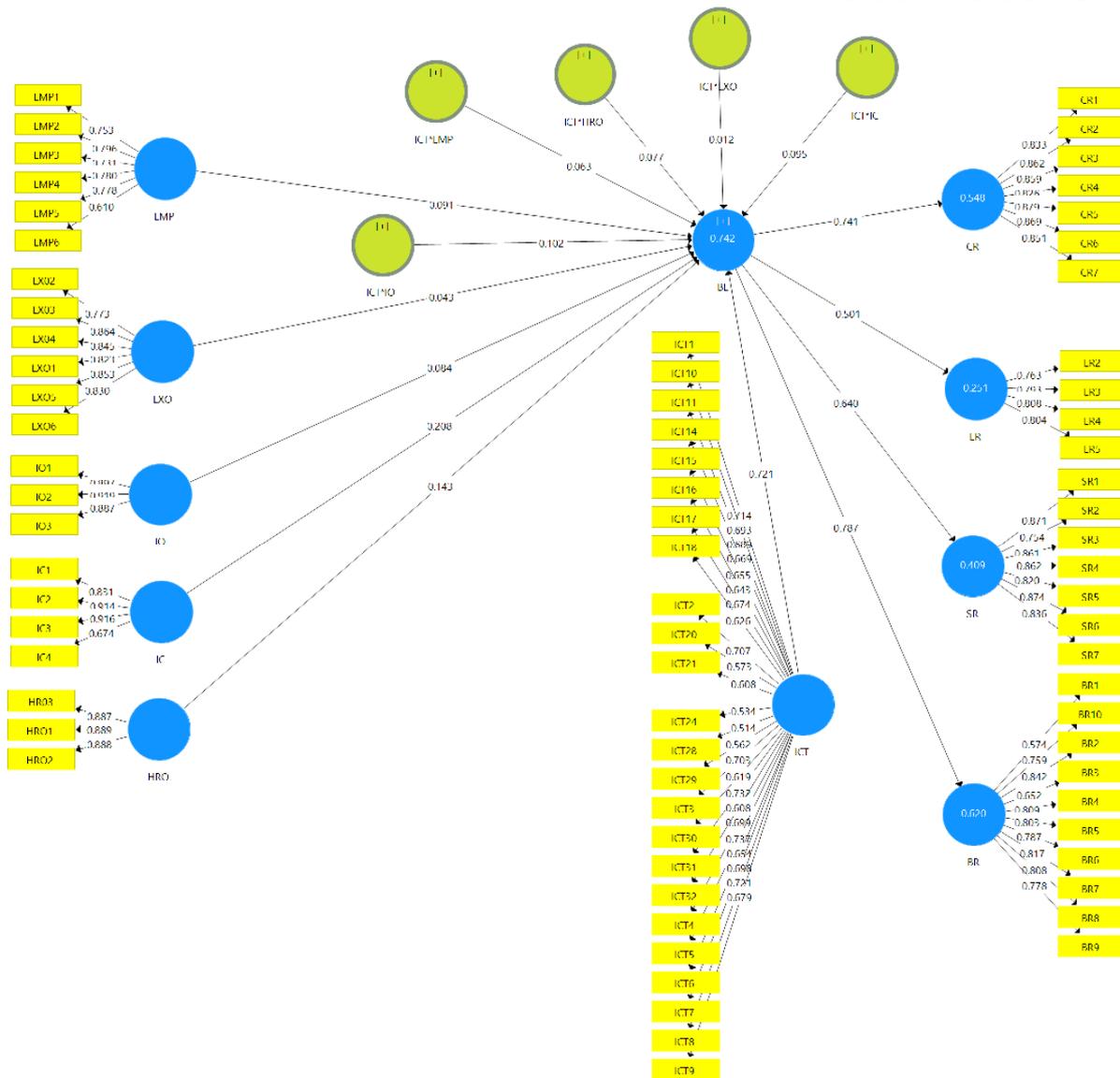


Figure 4.8 R Square with Moderator

## Discussion and Conclusion

### Discussion

The study examined the moderating role of information and communication technologies between relationship of organizational culture and business excellence. In this regard the study considered the different components of organizational culture namely; empowerment, human resources orientation, external orientation, improvement orientation, and interdepartmental coordination. The study objective is to examine the moderating role of information and communication technologies between relationship of organizational culture and business excellence.

It was hypothesized that ICTs play a significant moderating role between relationship of empowerment and business excellence. The results of the study revealed that there is positive moderating influence of ICTs between relationship of empowerment and business excellence. It can be asserted that empowerment culture within an organization results in optimal business results as the managers and employees can emphasize on their job duties independently and fulfill them diligently resulting in higher performance. Al-Omari et al. (2020) in their study revealed that when employees of an organization gets empowered they tend to have the sense of responsibility and try to take decisions about job duties. Such empowerment perceptions among employees improves their cognitive abilities and they tend to provide different outcomes for instance, empowered employees tend to drive customer satisfaction, growth of an organization, improved internal processes which ultimately falls in business excellence. Whereas the presence of ICTs makes the relationship between empowerment and business excellence stronger as compared to organizations which do not consider the role of ICTs in their business operations.

It was hypothesized that ICTs is a significant moderator between association of human resources orientation and business excellence. Previously studies have supported the relationship between human resources orientation and business excellence. For instance, each employee working within an organization do have its role towards the business excellence. If an organization wants to have business excellence in different domains then it should invest and focus on its employees. Additionally, externally available partners when treated as a resource by an organization they tend to have better value creation for organizations (Jankalová & Jankal, 2020). Employees' exposure to the latest ICTs increase their skills and abilities to perform their jobs. Therefore, based on the findings of the study it is contended that organizational focus on employees drives the business excellence and this drive of business excellence becomes greater in presence of ICTs.

Organizations that consider the external environment tend to drive business excellence as compared to the organizations that do not emphasize on the external environment. However, this relationship can be moderated by different factors and the current study attempted to examine the moderating role of ICTs between relationship of external orientation and business excellence. The study findings revealed that ICTs is not a significant moderator between the relationship of external orientation and business excellence. It is to be noted that external orientation is one of the important cultural dimensions considered under the study. The external orientation and business excellence relationship can be influenced by the level of ICTs development and application in business context. It is worthy to note that when organizations emphasize on the external environment including their customers, market, and stakeholders they tend to have better business excellence.

It was hypothesized that ICTs facilitates the external orientation of an organization to drive excellence. However, the findings did not support the argument due to several reasons. First of all, it may have happened due to the fact that when an organization meets all the changing needs of the customers then it cannot be more strengthened by external factor such as ICTs. Further when an organization also considers the changing needs of the society, address them and meet them successfully then it is possible that ICTs may not influence such relationship. Secondly, the reason of such results may be attributed to the fact that since organization is focusing on the external environment and it is implied that role of communication technologies

is also considered so ICTs as an independent may not fully moderate the relationship as they are included in the organizational cultural orientation.

It was hypothesized that ICTs significantly moderates the relationship between interdepartmental coordination and business excellence. The study findings are consistent with the previous studies and also supported both the direct and moderating relationship findings. For instance, Sokiyna and Aqel (2020) conducted a study related to software application. They considered the departmental collaboration as a mediator between software application and excellence. Their study findings revealed that departmental collaboration significantly and positively contributes towards the operational excellence. It is asserted that the interdepartmental cooperation will also add to business excellence. The study has presented the ICTs as a significant moderator which strengthens the influence of departmental coordination and business excellence. It is worthy to note that Lee (2020) in their study contended the only having the interdepartmental coordination may bring positive outcomes for an organization. For instance, it can result in optimal resources allocation and utilization leading towards the business performance or it can ensure that functions of an organization are aligned and skills set is complete which also lead towards the excellence. But interdepartmental coordination solely does not lead towards the excellence.

Additionally, quality improvement is one of the core purposes of any business which can be influence by the role of technologies available. Bearing in mind the importance of issue the study hypothesized a moderating role of information and communication technologies between the relationship of improvement orientation and business excellence. The results of the study also highlighted a positive moderation of ICTs between the relationship of improvement orientation and business excellence. Based on the results of the study it can be asserted that rapidly happening technological developments can potentially influence the impact of improvement orientation on business excellence. Organizations which develop their technological competencies tend to have better performance as they can respond to the changing customer needs and result in higher performance. Accordingly, contended that technologically engineered support applications are required for quality management efforts (Pratono & Mahmood, 2015). Additionally, it is worthy to note that organizations are required to invest in ICTs, entrepreneurial skill development and adaptive capabilities to have better results of their corporate strategy (Pratono and Mahmood (2015). Organizations which are focused on their continuous improvement they are required to focus on ICT application as well (Noor-UI-Amin, 2013) because customers constantly demand for better quality products and this can be achieved through ICT acquisition and integration in a firm's operational base (Osei et al., 2016). Similarly, the present study also put forward that organization following a drive to persistently improve themselves in their operations and dealings tend to have better results in generating the business outcomes. Their business excellence drive gets more strength in presence of ICTs. Hence, the study findings are consistent with the previous studies which also contend that organizations ICTs can potentially influence the impact of improvement orientation towards the business excellence. The study findings supported the H10 and objective to study the moderating role of ICTs between relationship of improvement orientation and business excellence is accomplished.

### ***Conclusion***

The present study investigated the moderating role of ICTs between relationship of organizational culture and business excellence. It considered the following dimensions of organizational culture; external orientation, human resource orientation, empowerment, improvement orientation, and interdepartmental coordination as a predictor of business excellence moderated by ICTs. Conclusively the study is valuable addition to literature and provided new direction to research related to culture and business excellence relationship. It is to be noted that study has established that organizational culture can influence the business excellence and can be moderated by ICTs. It is worthy to note that some of the organizational culture dimensions and business excellence relationship are moderated by ICTs and some are not moderated by ICTs. There may be different reasons for such results but key reason can be attributed to the fact that some of the culture support the use of ICTs and possibly all of them do not support the use of ICTs (Welch & Feeney, 2014). However, majority of the moderation hypotheses were supported by the study results.

### ***Limitations and Future Directions***

Although the research study objectives are accomplished but the study carries number of limitations that can serve as a potential area for future research studies. First of all study is carried out in Dubai public entities context which warrants more research in other sectors of UAE. For instance, future studies may replicate the current research model by considering the firms under different quality awards such as Dubai Quality Award. In this way, future studies may enhance the generalization of the current research model. Additionally, the current research may also be replicated in different states of UAE to make comparison and know the presence of the most common cultural practices among UAE public entities. It is also recommended that future studies should consider the current research model in other countries and conduct a comparative study to have better insights about the culture and business excellence. In this way, future findings will enhance the generalization. Moreover, the current study has not considered any of the personality aspect of managers which plays a vital role in determining the organizational culture. For instance, Upper Echelons Theory (UET) (Hambrick, 2007) holds that managers' perceptions, their personality attributes, and experiences tend to influence how do they interpret the environment and drive the policy for particular organization. Accordingly, it is recommended that future studies must consider the role of managers as a predictor of organizational culture or as a moderator which can potentially influence the relationship between culture and business excellence. Data collected from single source which may lead towards the response bias. Additionally, the study has used the perceptual measures to collect data. Possibly, the responses about the perceptual measure may differ in both the individual and organizational settings. Therefore, the present study recommends that data should be collected from different sources in order to mitigate the response bias. It can also be done by using the mix-methods research approach to have better and reliable research study findings. The present study has used the cross-sectional research design which involves one time data collection and lacks the assessment of the changes which occur in constructs over the time. There are some concerns related to cross-sectional research design. For instance, there may be some economic and social changes over time that cannot be gauged by the cross-sectional research design. Therefore, future studies may also consider longitudinal research design to measure the difference of responses at two different times.

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