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The relationship between personality traits and Intention to Continuance to use MOOCs (ICM): The role of internal and external motivations to use in high power distance context (i.e. Saudi Arabia) and low power distance context (i.e. Spain)

Abstract

Personality traits could play a major role in the human motivations and intentions. This research uses personality traits to understand the variances in the level of the intention to Continue using the MOOCs (ICM) with taking into consideration motivations (i.e. external in terms of enforced by external source or internal in terms of self-motivated) and cultural aspects. This research studies the personalities in two contexts: High Power Distance (HPD) (i.e. Saudi Arabia) and Low Power Distance (LPD) context (i.e. Spain). This study analyzed 348 responses: 212 from Saudi Arabia, and 136 from Spain and 19 from other countries using Structural Equation Modelling. The main finding is the personality traits, power distance, and motivations influences on the intention to continue to use MOOCs (ICM) in different ways and different combinations. This research is the first to use personality traits, motivation theory, and culture theory to predict the intention to continue use in different cultural contexts.

Introduction

Massive Open Online Courses (MOOCs) is a form of online learning platform used by students from all over the world (Semenova & Rudakova, 2016; Fischer, 2014). Rodriguez, (2012) conceptualized it as an "openness system" to radicalize the learning process in terms of offering an open source of information, the open and agile structure of the course, open and transparent evaluation criteria, and open and flexible processes for learning . MOOCs first termed as an academic concept in academia in 2007 as part of voluntary-to-use and obligatory-to-use in higher education programmes (Annabi & Wilkins, 2016).

As a voluntary-to-use, MOOCs operate as informal learning courses ((Li and Chen, 2014); Colley, Hodkinson & Malcolm, 2002) where individual participants choose how, when and in what ways they engage to be educated on whatever they are interested in. Also, it becomes obligatory to use in many academic institutions as part of the academic programme or to use for job requirement as part of the performance evaluation and recruitment process (Lung-Guang, 2019). Based on these assumptions, there are different motivations to use the MOOCs; it could be for self-development, which is called internal motivation, or could be a job or academic requirement, which could be defined as external motivations (Wang *et al.*, 2012).

Different personalities are behaving differently under different types of motivations (Chamorro-Premuzic and Furnham, 2003; Wang *et al.*, 2012; Al-Qirim *et al.*, 2018). This could indicate that personality could play a role in understanding the adoption, and continue using, of innovative initiatives like this.

User personality plays a critical role in accepting and adopting new technologies (Nass *et al.*, 1995). As nominated an article in Communications of the ACM titled "Does Personality Matter?" (Da Cunha and Greathead, 2007). (Neogi *et al.*, 1999) One of the fundamental models to understand personality traits is the big five model. It has been used by over hundreds of papers in the psychology (BARRICK and MOUNT, 1991; Gosling, Rentfrow and Swann, 2003; Oshio *et al.*, 2018),academic performance (Stajkovic *et al.*, 2017), job performance(BARRICK and MOUNT, 1991), student academic performance (Lounsbury and Sundstorm, 2003), education (Sedrakyan *et al.*, 2018) ,computer science discipline (Azucar, Marengo and Settanni, 2018) and e-learning (Al-Qirim *et al.*, 2018).

Although big five personalities has been studied as a perspective to understand user interactions (Xing *et al.*, 2016; (Huang *et al.*, 2018) the intention to use the system , motivations to use was completely ignored to understand the connection (Rothkrantz, 2016; Rothkrantz et al, 2015). Motivations to use are a necessity to study because if the system is used as obligatory, the possible reactance to not continue using it could happen (Laurin *et al.*, 2013). But not all personalities are reacting under the obligatory context, some of the personalities could justify and embrace in this context (Jost and Burgess, 2000; Jost, Banaji and Nosek, 2004; Jost *et al.*, 2011). Similarly, some personalities are more adopting if they are self-motivated than others. The role of the motivation is missing in the personality theory explaining the intention to continue use after being obliged or volunteered to use. Moreover, the role of culture is also missing in the literature. European countries, which has low power distance culture, have more reactance behavior than middle eastern countries, which has high power distance (Brehm, 1966). This means that similar personalities could react differently if they embrace different cultures. This point has not been examined before in the literature.

To bridge these knowledge gaps, this research aims to propose and test the mediating role that can be played by the motivations to use in understanding the relationship between the personality and intention to continue using the MOOCs in two different contexts: Saudi Arabia and Spain. These gaps are noted by many. For instance, (Deng, Benckendorff and Gannaway,

2019) argued the personality and cultural factors are under-researched and needs more investigations in the MOOCs literature.

This research has several contributions to knowledge. First, this research could contribute and improve the current debate in understanding the factors affecting the intention to continue using the system. Second, it is the first paper to understand the role of external and internal motivations in understanding the connection between the personality and intention to continue using the system. I.e. which personalities could react against the use of the system if the motivation is external and which personalities could accept and continue using the system if it is externally motivated. Last but not least, the current literature is dominated by western low power distance countries which creates a gap as endorsed by a comprehensive review conducted by (Deng, Benckendorff and Gannaway, 2019) that "evidence-based research on nonmainstream consumers of MOOCs is scarce, which may reflect a cultural hegemony that promotes Western value, language, and knowledge systems." (P.85). There is strong evidence in the literature that different cultures can lead to different relationships between personal and social factors and the use of MOOCs (Li, 2019) But it has not contrasted the impacts in terms of motivations, personality traits, and intention to continue use. This research is the first to compare and contrast these relationships between low power distance western country; Spain, where the reactance behavior is prevailing, and high power distance middle-eastern country;Saudi Arabia, where the justifying behavior is prevailing, to show the different countries could have different responses for different reasons to current motivation to use.

Literature Review

MOOCs, Intention to continue use and Motivations

Intentions theories are dominated by the theory of planned behavior (Picazo-Vel*a et al*, 2010; Wu and Chen, 2017) and technology acceptance models (Zhou, 2016a; Joo, So and Kim, 2018)). The main assumption of these theories is the perceptions and attitudes are the major predictable of the behaviours (Wu and Chen, 2017) . A study on a Chinese sample revealed that the attitude towards MOOCs and perceived behavioral control (PBC) were significant predictors of intention to use (Zhou, 2016a).

Intention to continue to use MOOCs (ICM) is defined as the personal attitude and perceptions towards the possibility to use the MOOCs in the future (Alraimi, Zo and Ciganek, 2015; Wu and Chen, 2017a). This concept is slightly different from the intention to use a concept which

could be based on the subjective norms and social pressures (Zhou, 2016b). In the intention to continue use, the users' experience could be a dominating factor more than just others' perceptions. To demonstrate this definition, Tsai et al (2018) conducted a study on 126 students to show that the user experience in terms of liking, enjoyment, and engagement play a significant role on the continuance intention to use MOOCs. Likewise, Alraimi et al (2015) found that the level of differences between the expectations and realization has a significant influence on the continuance intention of MOOCs. Also, Lung –Guang (2019) found that the self-regulated design improves the students experience motivating to them to continue to use the MOOCs in the future and improve their intention to continue use.

Perception does not come merely from the experiences in the usage but also can come from the existed motivations during the experience to use (Simmering *et al.*, 2009). I.e. the current motivations for the current usage could play an important predictor in understanding the attitude and perceptions towards the MOOC and hence, could influence the intention to use.

Some qualitative studies have provided useful insights about diverse types of motivation and their role on the learners' behaviors (e.g., Littlejohn et al., 2016; Milligan & Littlejohn, 2017; Zheng et al., 2015). Zheng et al. (2015) conducted in-depth interviews with students using MOOCs from diverse academic profiles and ethnic backgrounds and found four main categories of MOOC motivations to use: fulfilling current needs, preparing for the future, satisfying curiosity, and connecting with people. Deng et al (2019) extended these findings through their comprehensive systematic review on MOOCs and they classified motivation Key motivation items: Intrinsic (i.e. personal interest and curiosity), extrinsic (i.e. for improving the job performance), and social (i.e. for professional networking). But the sake of this research is to identify the role of power distance in the motivation. Accordingly, another classification could be more useful for this research. Ryan & Deci, 2000 classified motivations according to regulatory styles into non-regulation, external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic regulation). However, because the distinction across these types of motivation is unclear, many studies employ four types of motivational regulation, which are external regulation, introjected regulation, identified regulation, and integrated regulation (Joo et al, 2018).

Motivations could be internal or external. The distinguishing between the internal and external motivation is rooted from the Self-determination theory which explains investigate how and why a particular human behavior occurs (Deci, Koestner, & Ryan, 1999). As "the perceived

origin or source of one's own behavior. Autonomy concerns acting from interest and integrated values. When autonomous, individuals experience their behavior as an expression of the self…" (Deci & Ryan, 2002, p. 8). Human behavior may be encouraged not only by internally evoked incentives (known as "autonomous motivations"), but also by externally induced incentives (known as "controlled motivations"). SDT argues for a controlled-to-autonomous motivation continuum, with external regulation being the most controlled type of extrinsic motivation, and introjected, identified, and integrated motivations being progressively more self-determined (Ryan & Deci, 2000).

Internal motivations are tracked to the students purpose of use is inner and self-motivated whereas external motivations are tracked to the external required such as job or academic requirements. Zhou (2016) employed self-determination theory to examine Chinese university students' acceptance of MOOCs, and found that learners' internal motivation while using MOOCs had a positive effect on their attitude toward MOOCs. For external motivations, how external systems such as certificates and credits influence learner motivation can be examined through external regulation, which is a state that no action occurs when there is no external compensation (Joo et al, 2018).

Big Five Personality

 Big five personality taxonomies the personalities into five main categroies: Neuroticism (anxiety, and angry hostility), Extraversion (warmth, gregariousness, assertiveness), Openness to Experience (fantasy, aesthetics, feelings), Agreeableness (trust, straightforwardness, altruism), and Conscientiousness (competence, order, dutifulness) (DeYoung, 2014). In different technological platforms, the big five personality played a critical role in determining the user intentions and behaviours. It has been found the different big five personality traits play a role in accepting new technologies in terms of intention to use (Svendsen et al, 2013). A study on 179 students in Emirates, agreeableness, extraversion, openness, and conscientiousness respectively were most users of the online learning platform whereas neuroticism scored the lowest (Al-Qirim et al, 2018).

The relationship between the personality traits and intention to use has been done before in very few papers. Hudiburg et al, 1999 studied 95 students and found the big five personality traits is a differential factor in predicting computer anxiety and stress , which can play a role in the intention to use later. Another paper on 96 undergraduate students, the big five personality traits played a role in the relationship between the motivation to use the e-learning

platform and the academic performance (Logan et al, 2017). Both papers used small sample sizes and focuses on certain cultural areas.

Theoretical Framework

People who are enforced to do something could behave in three different ways: accepting the obligations and justifying it , psychological rejecting the obligations but confirm to it, rejecting the obligation and not confirm ot it (Jost, Banaji and Nosek, 2004; Jos*t et al>*, 2011) . i.e. in the MOOCs context, if the student is obliged to use it, s/he would use it and defend it, use it but not happy with it and intention to continue use would be low, and not using it at all. The variation in behaviour is due to different factors such as personality traits and cultural factors (Lauren, 2014). The main factors are the culture and personality traits as proposed by different authoers in the literature (Jost, Banaji and Nosek, 2004; Jost *et al.*, 2011, 2012; Laurin *et al.*, 2013).

The role of motivations on the intention to contenue use (ICM)

According to theory of planned behaviour, the motivation is the key driver to the intention to use. Because motivation represents reasons and justification to use, the more the justification to use is, the more intention to use should follow (Picazo-Vela, Chou, Arlyn J Melcher, *et al.*, 2010; Zhou, 2016a). In other words, the more the one is motivated to use the system,

H1: Motivations affects the intention to continue use (ICM)

   H1.1 External Motivations affects the Intention to Continue Use (ICM) positively

   H1.2 Internal Motivations affects the Intention to Continue Use (ICM) positively

Extraversion affects the intention to use

Individuals with high extraversion are more engaged in social gregariousness, optimism, drive, and talkativeness (e.g., Costa & McCrae,1992). Extraversed individual are using technologies for different reasons i.e. being socially connected, being seen in the professional and non-professional communities (e.g., Blackwell, Leaman, Tramposch, Osborne, & Liss, 2017; Kuss & Griffiths, 2011;). They have the tendency to follow the herd and they tend to imitate other peers in their behaviours (Ong et al., 2010; Ross et al., 2009; Feiler & Kleinbaum, 2015) which could lead to intention to continue use.

H2: Extraversion affects the intention to continue use

Extraversion is associated with excitement-seeking activities (Eysenck &Eysenck, 1975) and seeking social attention (Ashton, Lee, &Paunonen, 2002). In cybernetic terms, extraversion is correlated with reward seeking and behavioral exploration (DeYoung, 2015).

H2.1 Extraversion affets the internal motivation

Extraversion, as any other personality, could be motivated to use due to external pressures from the work or academic needs. Extraversion personality is not a rebel personality and can be motivated by enforcement

H2.2. Extraversion affects the external motivatoin

The sum of the motivations is proposed to play a mediating role in the relationship between the personality and intention to continue use.

H2.3. Extraversion affects the intention to use mediated by motivations

Agreeableness are those with high interpersonal orientation towards others, together with sympathy, courteousness, kindness, trust and forgiveness (Costa & McCrae, 1992). Agreeableness is linked with cooperation and supporting others' arguments (DeYoung, 2015). Thus, the research found that low score on agreeableness is associated negatively with forming friendship on the social media (Ross, Orr, Sisic, Arseneault, Simmering, & Orr, 2009).

H3: Agreeablence affects the intention to use

H3.1. Agreeablence improves internal motivations

H3.2. Agreeablence improves external motivations

H3.3. Agreeablence influences the intenation to use mediated by the motivations

Conscientiousness follow the rules, be industrious and dutiful, and resist immediate gratification in the interest of longer-term goals, with less time spent on joy, play or any activity perceived not purposeful (DeYoung, 2015). Conscientiousness are less keen to spend any time on non-purposeful activities, being conservative, and more to follow the social rules (DeYoung, 2015)

H4: Consciensinous affects the intention to use

    H4.1. Consciensinous affects internal motivations

    H4.2. Consciensinous affects the external motivations

    H4.3. Consciensinous affects the intention to continue use mediated by motivations

Power distance is a cultural dimension describing the societal social hierarchy (Hofstede, 1980). It is the textent to which society accepts that power and authority are distributted

unequally (Liu et al, 2016; Bayeck et al, 2018). Therefore, according to hofsted cultural studies (Oliver, 2010, Quick et al, 2009, Graupmann et al, 2012), the high power distance societies are accepting the external requirements without a need for further justifications than for the low power distance.

H5: High Power Distance Country is more affected by the external motivation than low power distance country

H5.1: Agreeablence in high power distance country are higher external motivated to use the MOOCs than for the lower power distance one

H5.2: Extraversion in high power distance country are higher external motivated to use the MOOCs than for the lower power distance one

H5.3: conscientiousness in high power distance country are higher external motivated to use the MOOCs than for the lower power distance one

H6: Low Power Distance Country is more affected by the internal motivation than High power distance country

H6.1: Agreeablence in low power distance country are higher internal motivated to use the MOOCs than for the lower power distance one

H6.2: Extraversion in low power distance country are higher internal motivated to use the MOOCs than for the lower power distance one

H6.3: conscientiousness in low power distance country are higher internal motivated to use the MOOCs than for the lower power distance one

Research Methodology

This research adopted the survey method to test the hypotheses derived from the literature. The questionnaire is distributed online to university students and professionals in the two countried. We used social media websites including Facebook, twitter and LinkedIn to reach the biggest audience. Also, the researchers distribute the link online in Spainish and Saudi universities social media groups. Total sample size is 348; 212 from Saudi Arabia, and 136 from spain and 19 from other countries have completed questionnaire responses. Using t test analysis, we did not find significant differences in the results between university/non-university students and between different age groups. The significant differences are between the countries and they are analysed seperately and summarised in the analysis.

Measuring questionnaire

The questionnaire constrcuts were adapted from the previous literature. They were professionally translated into Spanish and Arabic using the forward-backward method. This

method allows verification of the accuracity and ensure the "face validity". They are also face validated by filling the first 10 surveys in Saudi and 10 surveys in Spain face to face for ensuring the respondents can understand the question as researchers intended.

All items used are on 7-point Liker scale ranging from 1(Totally disagree) to 7 (totally agree). The questionnaire have 6 constructs: Intention to continue use, Internal Motivations to use, External motivations to use, Personality Traits 1 (Extraversion), Personality Traits 2 (Agreeablence), Personality Traits 3 (Conscientiousness).

Intention to continue use: This construct is adopted from Lung-Guang (2019), Zhou, (2016), Wu & Chen, (2017)- Wu and Zhang (2014); Lu and Yang (2014). It focuses on the intention to use in the future and completion of the current registered course. Internal and external motivation items are borrowed from Evans et al (2016); Wu&Chen (2017). Internal motivations items focus on the personal interest in using MOOCs to learn whereas the external motivation focuses on using MOOCs as a job or an academic requirements. The three presonality traits are borrowed from (Kortum and Oswald 2018, Donnellan et al., 2006; Goldberg, 1999). All of the items are self-rating questions. Extraversion is measured based on the self-perception towards the ones interest in talking and knowing other in different occasions and events. Agreeablence items focus on feeling others emotions and being sympathetics to other feelings. Conscientiousness focuses on preferring the order and the structure.

Findings

The analysis was conducted in three steps. In the first step, SPSS 23 was applied to assess the validity and reliability of the questionnaire constructs. In the second step, the correlational analysis is used to explore the relationships between concepts. In the last step, Amos 25 was adapted to test the model fittness, testing direct and indirect effects using structural equation modeling (SEM).

Constructs Reliability and validity

This research adopted five measures to ensure the validity and reliability of the constructs. First, internal consistency can be determined by examining the composite reliability (CR) and Cronbach's Alphaof the constructs (Fornell & Larcker, 1981). The table of reliability and validity analysis shown in the appendix A indicates that all of the constructs' CR and Cronbachs' Alpha values surpassing the accepted threshold value of 0.7 (Hair, Black, Babin,

& Anderson, 2009). Second, convergent validity refers to the degree to which multiple items measure one construct. In the present study, convergent validity was evaluated by verifying that the average variance extracted (AVE) values were greater than 0.5 (Fornell & Larcker, 1981), and the factor loadings (FL) of all items were significant and above 0.6, showing acceptable convergence (Hair et al., 2009). The AVE values of all the constructs were above 0.5, and all the FL values were above 0.6. The required conditions were met, indicating acceptable convergent validity, as the table in the appendix shows B. Last but not least, Rho_A, a measure of validity, for all measures are more than the threshold of 0.6. These indicators are measured for the global, Saudi, and Spain samples to ensure that the questionnaire is valid and reliable to use for the three samples.

Descriptive Data

Descriptive analysis is used to describe and set the correlations between the personality traits, motivations and ICM for the two contexts. Using T test for comparing means as summarised in Table 1, Saudi context is significantly higher than the spanish ones in the conscienceness. This is aligned with the literature that the high power distance societies are more conscienceness than others and keener to accept restrictions than other communities (Oliver and Lee, 2010). Saudi students are significantly higher motivated by internal motivations (difference = .765, P<0.00) whereas they are less significantly by external motivations than their peers in Spain (difference = -.704, P<0.00). The reason for that could be because Spanish universities are setting MOOCs as university and job requirements whereas in Saudi Context it is a job requirement only. Also, Saudi students are significantly keener to use the MOOCs in the future than for Spanish sample (difference =.55, P<0.00) could be because Saudi Students are higher motivated than their spanish peers.

The correlational analysis for the two contexts are tabulated below in Table 1. The spansih correlational matrix is in the upper triangle whereas the Saudi correlational matrix is in the lower matrix. For Saudi and Spainish students, the highest correlation with the ICM is the internal motivation and being agreeablence. The agreeablence personality is higher associated with ICM for Spanish students (38.6%, P<0.00) than for Saudi students (34.5%, P<0.00).The same for internal motivations (55.4%, P<0.00) for spainish students comparing to the association of for Saudi students (51.5%, P<0.00). Interestingly, for Saudi students, the external motivation is not significantly correlated to the ICM whereas for Spanish students the relationship is significantly correlated with 36.3% (P<0.00). This contradicts with this

paper propositions that Saudi students are keener to justify the restrictions than the Spainish ones. But this will be clarified below as the personality plays a significant impact on understanding this figure better.

Table 1: Sample descriptive and correlational analysis

Correlations

Pearson Correlation

	Saudi	Spain	diff	1 ⸆	2	3	4	5	6
1.Exteraversion	4.797	4.529	.267	1	.348**	.352**	.199*	.365**	.280**
2.Agreeaglence	5.573	5.265	.308*	.310**	1	.465**	.421**	.249**	.386**
3.Consc.	5.547	5.195	.35**	.283**	.378**	1	.371**	.282**	.325**
4.Internal Mot	6.130	5.364	.765**	.272**	.345**	.250**	1	.442**	.554**
5.External Mot	4.399	5.103	-.704**	.074	-.005	.117	.193**	1	.363**
6.ICM	6.055	5.501	.55**	.264**	.345**	.334**	.515**	.030	1

**. Correlation is significant at the 0.01 level (2-tailed).

⸆the upper triangle is the Spain correlational data whereas the lower triangle is for Saudi correlational data

Model Fitness

There are three models (i.e. global, Saudi and Spain models) are tested for their suitability to use for producing reliable and valid results. The measures are the goodness-of-fit, the incremental fit of the models, and model parsimony. All of these measures are accepted based on their literature-defined thresholds, as summarised in Table 2.

First, Goodness-of-fit criteria had to be deployed the results of the model were reliable and valid by assessing the degree to which the overall model and the structural and measurement models fitted the sample data (Hair et al., 1998). Chi-square per degree of freedom (x2 /df) Goodness-of-fit index (GFI) and Root Mean Square Effort of Approximation (RMSEA) were used to measure the absolute overall fit of the model in the present research. The Chi-square per degree of freedom (x2 /df) were .994, 1.020 and 1.212 for the three models, which were lower than 2.0 as the predefined cut off point (Byrne, 1989; Marsh and Hocevar, 1985). The GFI was .977, .961, and .930 for the three models, which were higher than the cut-off point of 0.9. In addition, RMSEA were 0.00, 0.010, and .040 with confidence of 90% maximum .031, .042, and 0.040 which are all below the cut-off of 0.1 (Browne et al., 1993). These measures indicate the good fit of the three samples data.

Second, incremental fit measures were used to compare the proposed model with the baseline model. The Adjusted Group Fitness Index (AGFI), the Tucker-Lewis Index (TLI), Normed Fit Index (NFI) and Comparative Fit Index (CFI) were the indicators used for measuring the incremental impact of the model which assume zero population covariance between the observed values (the baseline model). Indeed, all measures indicated that this model was significant in relation to the baseline model because the AGFI, TLI, NFI, and CFI were more than 0.9 (Hu and Bentler, 1999).

Third, parsimony measures (model parsimony) were used to assess whether the model fit had been achieved by over-fitting the data with too many coefficients. Indicators were adjusted from previous indicators, such as NFI, GFI, and CFI, to consider the parsimony of the model. All the adjusted indicators, PGFI, PCFI, and PNFI were higher than 0.5, which indicated a parsimonious fit (James et al., 1982; Hu and Bentler, 1999).

Testing Hypothesis

The testing analysis section is structured as follow. First, testing the hypotheses related to the role of the motivation on the ICM. Second, testing the impacts of each personality traits. The role of the culture is integrated into all sections.

The role of motivations in the intention to continue to using

Regarding H1, Motivations affects the intention to continue use (ICM), this research found mixed results. External motivations do not have a significant impact in all models but Internal motivations have a positive effect on ICM for all models with significant differences between models. The summary of the hypotheses testing are in Table 2 and Figure 1.

External motivation has negative but insignificant impacts in all models whereas internal motivations have positive significant impacts on all models. For Saudi context, against the hypothesis, the impact is negative and much higher than for Spain with -.114 for Saudi compare to -0.36 for Spain, although all of these figures are not significant P<0.1. In other words, this research failed to find evidence to support H1.1. Because there are no significant differences in the impacts of external motivations on the ICM, this research could not find supporting evidence to accept H5.

 Regarding internal motivational, it seems that regardless of the context, there is a strong significant impact on the intention to continue use for the three contexts with .503, .435, and

.549 for Global, Saudi, and Spain context with all P<0.00. This confirms H1.2 that internal motivation has a significant effect on the ICM. Indeed, the internal motivation effect for Spain is significantly higher than for the Saudi ones (differences = 114**, P<0.05). This confirms H6 that low power distance countries are more affected by the internal motivations than for low power distance countries.

Extraversion Personality Traits Impacts

For H2, Extraversion affects the intention to continue use, there is a mixed result based on the model. Extraversion has a significant total standardized impact on the intention to continue use in the global ($\beta_{Glo} = .11, P < 0.1$) and spain models ($\beta_{Spa} = .236, P < 0.05$) but not in the Saudi Model ($\beta_{Sau} = .063, P > 0.1$). The difference in the impacts across the contexts are significant by .173 (p<0.00). This means that the Extraversion personality traits has a stronger impact on the ICM for low power distance contexts than for those who live in high power distance context.

This research failed to support H2.3 because it could not find an evidence to support the mediation role for the motivation on the relationship between extraversion personality traits and intention to continue use. The mediation test is done after bootstraping 500. This is for all models. The direct impact, but no significant indirect impact noticed, is noted only for the Spain Model ($unstandardised\ \beta_{Sau} = .189, P < 0.1$).

Regarding H2.1 and H2.2, the impacts of being extraversion on the motivations to use the MOOCs, the results are mixed based on the model. Extraversion has a significant effect on external motivation in the global ($\beta_{Glo} = .187, P < 0.05$) and Spain models ($\beta_{Spa} = .247, P < 0.05$) but not in the Saudi Models ($\beta_{Sau} = .107, P > 0.1$). The differences in the impacts of being extraversion on the external and motivation across the models is significant to support H5.2 and H6.2 but in a reverse sign. I.e. extraversion is significanlty higher on the impact on the external motivation for the low power distance (difference = .14, P<0.00) but significantly lower on the internal motivation (difference=.224, P<0.00). This means that the extraversion personality plays a different role for different cultures. I.e. although the low power distance are more influence by internla motivations and less influence by external motivation as supported in H1.1 and H1.2 above, the extraversion personality in the low PD contexts has lower effect ona the internal motivatoin but higher effect fthe or the external motivation.

Agreeableness Personality Traits Impacts

This research failed to find evidence supporting H3 which argues that Agreeableness personality trait has a significant effect on the intention to continue use for the three models. H3.2 is supported because through the mediation analysis after bootstrapping of 500 times, it has been found that the relationship is fully mediated by the motivations in the three models. The mediation impacts are not similar in the three models. Apart from the global unstandardized coefficients of $\beta_{Glo} = .175, P < 0.01$, Spain model the mediating impact is significant higher than for the Saudui model with unstandardised coeffecients of $\beta_{Sau} = .121, P < 0.01, and \beta_{Spa} = .367, P < 0.01$. This means that in lower power distance contexts motivations for agreeablence people could play a greater role in influencing the intention to continue use for those who live in higher power distance contexts.

This research failed to accept H3.2 but accepted H3.1. For the three models, there is insignificant negative impacts of the agreeable on the external motivation but positive significant impacts on internal motivations. The impacts on the internal motivation are significant for the three models, but in the Spain model the impact is much higher than for the Saudi one of $\beta_{Sau} = .277, P < 0.01, and \beta_{Spa} = .585, P < 0.01.$

 The differences across the models are not significant for external motivations which means the inability to prove the H5.1. This is not the case for H6.1. This research approved this because the differences across the models are significant .308 (P<0.00) which proves that the agreeableness persons living in low power distance cultures are more influenced by the international motivations than those who are living in high power distance context. This explains the reason behind the mediation role of the motivation in Spain is much higher than for Saudi Agreeablence personality trait, as noted above.

Conscientiousness Personality Traits Impacts

H4 is accepted in the Saudi and global model but not for the Spain model. Conscientiousness personality trait has a significant total standardized impact in the global ($\beta_{Glo} = .223, P < 0.01$) and Saudithe model ($\beta_{Sau} = .234, P < 0.01$) but not in the Spain model ($\beta_{Spa} = .197, P > 0.1$). This research failed to prove H4.3 in the three models. Through the mediation analysis, it has not been found an evidence that this relationship is mediated by motivations; rather it is direct impacts. In Global and Saudi Models, the direct unstandardised impact is

significant with $\beta_{Glo} = .213, P < 0.01$ and $\beta_{Sau} = .190, P < 0.01$ but not significant in the case of Spain with unstandardised impact of $(\beta_{Spa} = .201, P > 0.1)$. Although the impacts for spain are high but still insignificant and can not be accepted at P>0.1.

The H4.1., regarding the impacts on the internal motivation, is failed to be accepted for Spain and Saudi Arabia but not for the global model. Regarding the internal motivation, it is significant only on the global sample $\beta_{Glo} = .180, P < 0.01$ but not for Spain $(\beta_{Spa} = .035, P > 0.1)$ nor Saudi Sample $\beta_{Sau} = .112, P > 0.1$. Also, the differences between the spain and saudi model is insignificant which affects the ability to prove the H5.3.

The Conscientiousness person is more motivated externally than being motivated internally for using the MOOCs. For the impacts of Conscientiousness personality trait on the external motivations the impacts are significant for all contexts to support H4.2. But in Spain $(\beta_{Spa} = .346, P < 0.01)$ the relationship is more stronger for the Saudi context $(\beta_{Sau} = .196, P < 0.01)$ to support H6.3. I.e. the Conscientiousness living in high power context is more externally motivated to continue using the MOOCs than for those peers who are living in high power distance contexts.

Table 2: Summary of the findings

H		Model Global	Model Saudi (1)	Model Spain (2)	Diffe (H5&6) (1-2)
	N	367	212	136	
1.1	External Motivation → Intention to continue use	-.086	-.114	-.036	-.078
1.2	Internal Motivation → Intention to continue use	.503***	.435***	.549***	-0.114**
2.	**Extraversion → the intention to continue use (Total Standardised Effect)**	**.110***	.063	.236**	-0.173***
2.1.	Extraversion → the external motivation	.187**	.107	.247**	-.14***
2.2.	Extraversion → the internal motivation	.114	.182**	-.042	.224***
2.3.	Extraversion → the intention to use mediated by motivations	DI =.084 Ind = .032	DI=.041 Ind=.044	Di=.189* Ind=-.026	Di= -0.148 Ind= 0.07
3.	**Agreeablence → the intention to continue using (Total Standardised Effect)**	**.001**	.048	-.066	0.114
3.1	Agreeablence → the external motivation	-.128	-.098	-.048	-.05
3.2	Agreeablence → the internal motivation	.326***	.277**	.585***	-0.308***
3.3	Agreeablence → the intention to use mediated by motivations	DI= .001 Ind=.175 ***	Di= .044 Ind=.121 ***	Di=-.075 Ind=.367**	Di= 0.119 Ind= -0.246**

4.	**Conscientiousness → the intention to continue use (Total Standardised Effect)**	**.223*****	.234***	.197	.037
4.1	Conscientiousness → the external motivation	.178**	.196**	.346**	-.15*
4.2.	Conscientiousness → the internal motivation	.180**	.112	.035	0.077
4.3	Conscientiousness → the intention to use mediated by motivations	DI=.213*** IndI=.072	DI=.190** Ind=.022	DI=.201 Ind=.007	Di= -.011 Ind= .015
R2	Intention R2	43.5%	34.7%	48.6%	-13.9%***
	External R2	6.1%	4.7%	22.3%	-17.6%***
	Internal R2	26.6%	20.9%	34.7%	-13.8%**
	Chi-Squar/Df	.994	1.020	1.212	
	GFI, AGFI, PGFI	.977,.957,.538	.961,.929,.529	.930,.879,.535	
	RMR, RAMSEA	.046, 0.00 (HI90=.031)	.066, 0.010 (Hi90=.042)	.079, .040 (Hi90= .067)	

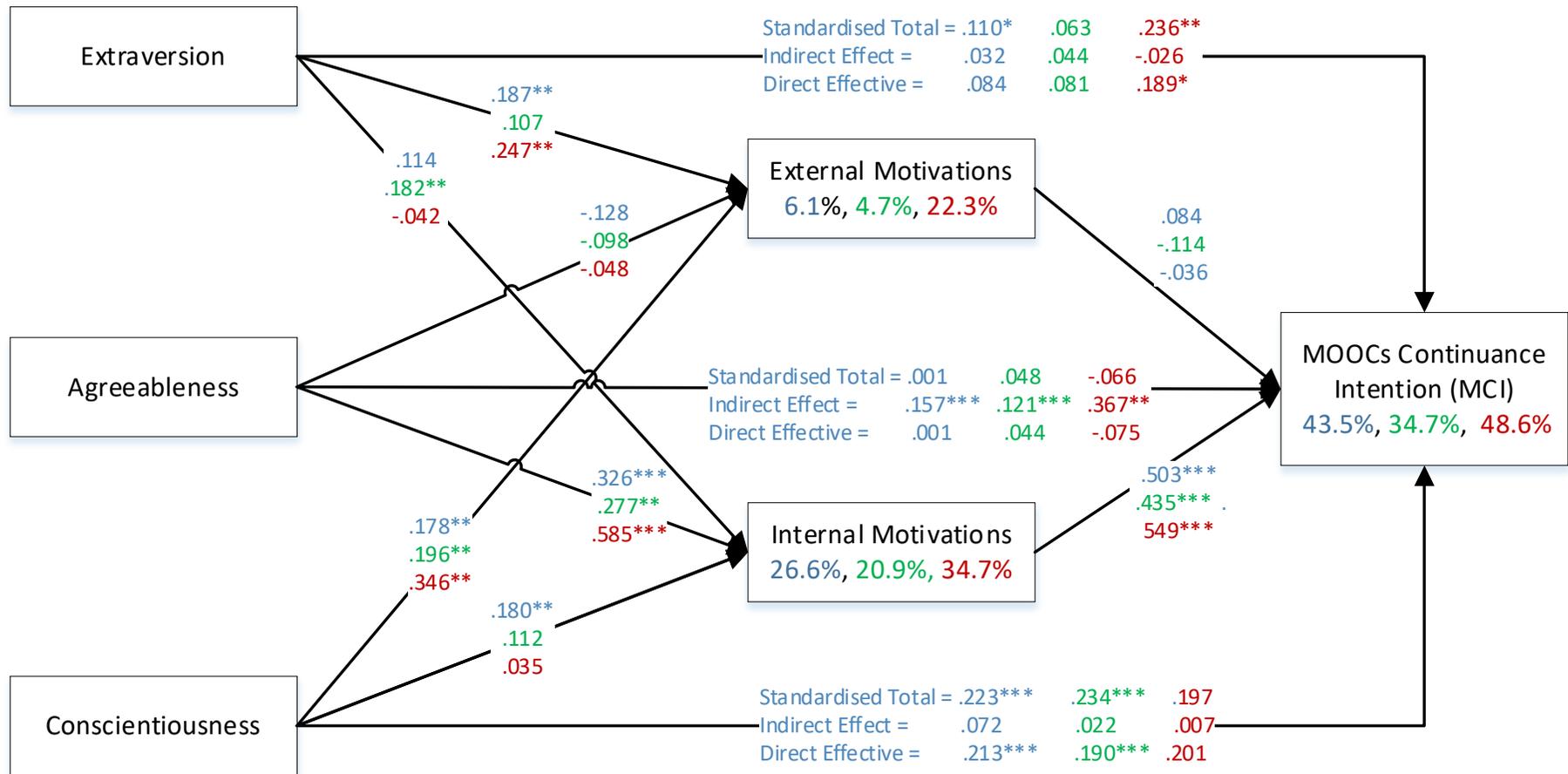Bootstrapping 500 times, *** P<0.00, **P<0.05, *P<.1

Figure 1: The research model (Blue is global, green is Saudi Arabia and Red is Spain;

*** P<0.00, **P<0.05, *P<.1

Discussion and Conclusion

This research has several contributions to knowledge. It is the first research to set a theoretical framework for understanding the relationship between personality traits, culture, motivations, and intention to continue use MOOCs (ICM). This research adopted (Faridi & Ebad, 2018; Moore, 2002) framework for classifying motivations into internal, i.e. personal internal needs, and external motivations, i.e. required by job or academics. This research is novel by finding that the internal motivation affects the intention to continue use whereas external motivation is not. This has an important implication that internal beliefs are important reasons for the current use, if it is only required by externals, this can hardly motivate the students to use it again and could even lead to reactance and avoid using it in the future for some people.

Following the research path of (Chen et al, 2016; Liyanagunawardena et al, 2013;Rothkrantz, 2016; Rothkrantz et al, 2015) on the role of the personality traits on the intention to use and interaction with MOOCs. This research is novel in establishing direct and indirect analysis for understanding the mechanisms that can influence to intention to continue use. It has been proposed that the key three personalities that could play a significant role on the ICM are the agreeablence, extraversion, and conscientiousness. Each of these personality traits has it is unique effect in terms of being direct or indirect impact.

First, this research failed to find evedence to support that agreeablence personality traits in itself can have a direct impact on the ICM. This research is novel in showing the effect is significantly mediated by internal motivations to use. Agreeablence personality are self-motivated personality (DeYoung, 2008). It is not recommended to enforce them to use the MOOCs as a job or academic requirements. This findings is applicable on all contexts.

Second, although extraversion has been noted in the literature to have an effect on the MOOCs usage , this research drilled down into this statement to show that extraversion personality has different motivations and different impacts on intention to continue use in different contexts. Low power distance communities do not accept to be enforced externally whereas the high power distance ones could accept that. Using the same theory, this research found a significant evidence that extraversion personality in low power distance has an impact on internal motivation only whereas in high power distance it affects the external motivation only. Surprisingly, although the variance of the impacts on the motivations in the two contexts, neither contexts show motivations as a mediating factor in the relationship between the

extraversion and intention to continue use. Extraversion personality, only for low power distance context, has a direct effect on the intention to continue use. But this research could not explain why extraversion can have a significant direct effect in Spain but not in Saudi Arabia. This could be investigated in the future research.

Third, conscientiousness personality has different effects in different contexts. The conscientiousness personality is more to accept the rules and orders than any other personality. Accordingly, this research contributes to the knowledge by finding that conscientiousness personality traits in the all contexts are more accepting the external motivations than other personality traits. Interestingly, by integrating with culture theory, the high power distance societies, there is a tendency towards justifying and accepting restrictions (Oliver and Lee, 2010; Quick and Kim, 2009; Graupmann et al, 2012). Thus, this research comes to support this argument by showing that in high power distance context has a significant effect on the intention to continue use and has a significant effect on the external motivation.

 This research missed a vital element in understanding the relationship between personality traits and ICM. It is the user experience and user interaction. The experience could play a significant role in influencing these relationships. I.e. if the intention is to reject the system due to the external enforcement, this intention could be changed if the experience is positive and the interface is engaging this particular personality. Each of these personality traits has different types of interactions and engagement style with the technology, whereas extraversion are keener to use social media more than others, conscientiousness is less keen to use any types of gamification (Liu and Campbell, 2017). Openness tends to have larger social online networks (Quercia *et al.*, 2012), and being more engaged on the social media (Quercia *et al.*, 2012; Kosinski *et al.*, 2014) . Additionally, Agreeableness are keener to "comment" or "like" than initiating new topics for discussions, whereas the neuroticism are keener to post new topics for discussion (Schwartz et al., 2013). These differences in behavior could lead to differences in interacting with the MOOCs which can influence their intentions to continue use the system.

Appendix A: Validity and Reliability of the constructs- Factor loads in the three models

	Model 1	Model 2	Model 3
Intention to continue using the MOOCs			
CR	0.867	0.931	0.919
AVE	0.62	0.818	0.792
rho_A	0.868	0.893	0.869
α	0.867	0.889	0.868
Internal Motivation to use			
CR	0.867	0.904	0.905
AVE	0.62	0.703	0.704
rho_A	0.868	0.865	0.864
α	0.867	0.858	0.86
External Motivation to use			
CR	0.784	0.895	0.871
AVE	0.647	0.81	0.772
rho_A	0.794	0.988	0.756
α	0.779	0.783	0.711
Personality Traits - Extraversion			
CR	0.785	0.898	0.92
AVE	0.646	0.815	0.851
rho_A	0.785	0.773	0.826
α	0.785	0.773	0.825
Personality Traits – Agreeableness			
CR	0.719	0.869	0.865
AVE	0.563	0.769	0.762
rho_A	0.728	0.721	0.724
α	0.715	0.702	0.693
Personality Traits – Conscientiousness			
CR	0.756	0.901	0.893
AVE	0.611	0.821	0.806
rho_A	0.774	0.851	0.76
α	0.746	0.787	0.76

Appendix B: Constructs sources and factor loadings

Items (7 scales)	Factors Loadings			Reference
	1	2	3	
Intention to continue using the MOOCS: *Are you going to use this learning platform in the future?*				(Zhou, 2016a) - (Wu and Chen, 2017b)- Lung-Guang (2019)
I intend to continue to use it for learning in the future.	0.897	0.889	0.891	
I will continue using it increasingly in the future.	0.921	0.934	0.9	
I will insist using it to complete the courses I registered	0.89	0.89	0.879	
Internal Motivation to use: Why did you register in this module?				

The MOOCs I registered for prepare me for future career challenges.	0.809	0.77	0.841	Evans et al. (2016); Wu & Chen (2017)
The MOOCs I registered for motivate me to better myself.	0.848	0.843	0.837	
The MOOCs I registered for teach me to see a wide range of possibilities in my life.	0.885	0.873	0.87	
The MOOCs I registered for encourage me to explore my potential.	0.839	0.862	0.806	
External Motivation to use				
The MOOCs I registered for fit the academic requirements of my learning.	0.921	0.955	0.916	
The MOOCs I registered for fit the Job requirements of my learning.	0.887	0.841	0.84	
Personality Traits – Extraversion: *How can you describe yourself?*				
I am the life of the party	0.911	0.901	0.92	(Kortum and Oswald, 2018) (Donnellan *et al.*, 2006) ;
I talk to a lot of different people at parties	0.903	0.904	0.925	
Personality Traits – Agreeableness				
I sympathize with others' feelings	0.902	0.902	0.907	
I feel others' emotions	0.861	0.851	0.838	
Personality Traits – Conscientiousness				
I get chores done right away	0.918	0.938	0.894	
I like order	0.866	0.873	0.902	

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