

## University of Southampton Research Repository

Copyright © and Moral Rights for this thesis and, where applicable, any accompanying data are retained by the author and/or other copyright owners. A copy can be downloaded for personal non-commercial research or study, without prior permission or charge. This thesis and the accompanying data cannot be reproduced or quoted extensively from without first obtaining permission in writing from the copyright holder/s. The content of the thesis and accompanying research data (where applicable) must not be changed in any way or sold commercially in any format or medium without the formal permission of the copyright holder/s.

When referring to this thesis and any accompanying data, full bibliographic details must be given, e.g.

Thesis: Author (Year of Submission) "Full thesis title", University of Southampton, name of the University Faculty or School or Department, PhD Thesis, pagination.

Data: Author (Year) Title. URI [dataset]



**UNIVERSITY OF SOUTHAMPTON**

FACULTY OF PHYSICAL SCIENCES AND ENGINEERING

School of Electronics and Computer Science

**An Investigation of the Motivational Factors Influencing Learners'  
Intentions to Continue Using Arabic MOOCs**

By

**Nada Ali Hakami**

Thesis for the Degree of Doctor of Philosophy

March 2018



**AN INVESTIGATION OF THE MOTIVATIONAL FACTORS INFLUENCING LEARNERS'  
INTENTIONS TO CONTINUE USING ARABIC MOOCs**

Nada Ali Hakami

Massive open online courses (MOOCs) have evolved rapidly in recent years. They provide open educational resources to people around the world. Understanding the factors affecting the retention of existing learners in MOOC platforms and prompting their continued engagement is crucial to the success of such platforms. However, the factors that affect the technology acceptance by users may vary across cultures in terms of their significance and predictive power. Numerous studies have examined MOOCs acceptance and continuance, suggesting a particular need for further research to investigate determinants of learners' continued participation. This study aims to fill this gap by examining the factors affecting learners' intentions to continue using MOOCs. Factors were examined through the lens of Arabic MOOCs and the technology acceptance model (TAM), integrating the model with a range of additional factors: technological, organisational, individual-related, social, and cultural.

Exploratory and explanatory mixed methods approaches were adopted using qualitative and quantitative methods. A systematic review determined the current gaps within the literature pertaining to MOOCs continuance, and was the basis of the research questions. Semi-structured interviews, with twenty-two experts familiar with the popular Arabic platform named Rwaq were carried out. The interviews explored perceptions based on the set of factors and generated measurement items of the questionnaire to be tested in subsequent phase. In general, participants showed positive attitudes towards the proposed factors. In a later stage, a self-administered online questionnaire was used to validate the proposed model and test the research hypotheses. In total, 884 responses were usable for testing the measurement and structural model using, a partial least squares structural equation modelling (PLS-SEM) tool, Warp-PLS 5.0. The results provided evidence of the successful extension of the TAM. Fourteen out of nineteen hypotheses were supported by the observations.

The results confirmed the direct, significant, and positive relationships between continuance intention and intrinsic motivations, perceived usefulness, Arabic language support, perceived ease of use, and perceived reputation. In addition, perceived ease of use, Arabic language support, perceived reputation, intrinsic motivations, and willingness to earn a certificate all have a direct impact on the perceived usefulness. Furthermore, perceived ease of use was directly affected by intrinsic motivations, Arabic language support, and free courses' advantages. Perceived reputation was found to have a direct impact on the willingness to earn a certificate. Finally, in order to interpret the quantitative results, particularly the unexpected results, semi-structured interviews with eight learners using the Rwaq platform were carried out. In light of the findings of this study, recommendations were put forward to MOOC developers and instructors to adopt design strategies which could increase learner loyalty for Arabic MOOCs' use. In addition, academic researchers in the field of MOOCs continuance can test the developed model in this study in different cultural contexts.



# Table of Contents

<b>Chapter 1 Introduction .....</b>	<b>1</b>
1.1.Theoretical Background and Research Problem .....	1
1.2.Research Aims and Objectives .....	3
1.3.Significance and Contributions of This Study.....	4
1.4.Research Methodology Used in This Thesis.....	6
1.5.Context of This Study: Arabic MOOCs.....	8
1.5.1. Open Educational Resources in the Arabic Region .....	8
1.5.2. Rwaq Platform.....	9
1.6.Structure of the Thesis .....	13
<b>Chapter 2 Background and Literature Review .....</b>	<b>15</b>
2.1.Massive Open Online Courses (MOOCs).....	15
2.1.1. Definitions .....	15
2.1.2. The Origin and Scale of MOOCs .....	16
2.1.3. MOOCs' Types: cMOOCs and xMOOCs .....	19
2.1.4. MOOCs' Pedagogy.....	20
2.1.5. MOOCs' Benefits and Drawbacks.....	22
2.1.6. MOOC Providers.....	23
2.1.7. MOOCs and Motivations .....	24
2.1.8. MOOCs Completion.....	25
2.2.Technology Continuance Intention Theories.....	26
2.2.1. IS Continuance Model (ISCM) .....	27
2.2.2. Theory of Reasoned Action (TRA) .....	28
2.2.3. Theory of Planned Behaviour (TPB) .....	29
2.2.4. Technology Acceptance Model (TAM) .....	30
2.2.5. Unified Theory of Acceptance and Use of Technology (UTAUT).....	31
2.2.6. IS Success Model .....	33

2.3.Related Works.....	35
2.3.1. Motivations to Use MOOCs .....	35
2.3.2. MOOCs Acceptance/Continuance.....	37
2.3.3. Discussion of the Related Works.....	51
2.4.Summary .....	61
<b>Chapter 3 Proposed Research Model and Hypotheses.....</b>	<b>63</b>
3.1.Development of the Model of the Present Research .....	63
3.2.Research Hypotheses.....	64
3.2.1. Effect of Perceived Usefulness (PU) on Continuance Intention (CI) .....	64
3.2.2. Effect of Perceived Ease of Use (PEU) on Continuance Intention (CI) .....	66
3.2.3. Effect of Arabic Language Support (ALS) on Continuance Intention (CI).....	66
3.2.4. Effect of Free Courses’ Advantages (FCA) On Continuance Intention (CI).....	68
3.2.5. Effect of Perceived Reputation (PR) On Continuance Intention (CI) .....	69
3.2.6. Effect of Intrinsic Motivations (IM) on Continuance Intention (CI) .....	70
3.2.7. Effect of Willingness to Earn a Certificate (WEC) on Continuance Intention (CI).....	71
3.2.8. Effect of Free Courses’ Advantages on Perceived Usefulness .....	73
3.2.9. Effect of Perceived Reputation on Perceived Usefulness .....	73
3.2.10. Effect of Intrinsic Motivations on Perceived Usefulness .....	73
3.2.11. Effect of Perceived Ease of Use on Perceived Usefulness .....	74
3.2.12. Effect of Free Courses’ Advantages on Perceived Ease of Use.....	74
3.2.13. Effect of Intrinsic Motivations on Perceived Ease of Use .....	74
3.3.Summary .....	75
<b>Chapter 4 Research Methodology.....</b>	<b>77</b>
4.1.Research Design.....	77
4.1.1. Qualitative Data Collection Methods.....	79
4.1.2. Quantitative Data Collection Methods .....	79
4.1.3. Mixed Methods Approach .....	80
4.2.Research Design, Data Collection and Analysis Methods Adopted in This Study .....	81



4.2.1. Exploratory Interviews Method .....	84
4.2.2. Questionnaire Method.....	97
4.2.3. Explanatory Follow-Up Interviews Method .....	123
4.3. Summary .....	123
<b>Chapter 5 Qualitative Findings and Discussion .....</b>	<b>125</b>
5.1. Thematic Analysis Using NVivo .....	125
5.2. Interviews' Findings .....	126
5.2.1. Willingness to Earn a Certificate .....	131
5.2.2. Intrinsic Motivations .....	139
5.2.3. Perceived Reputation.....	143
5.2.4. Free Courses' Advantages .....	146
5.2.5. Perceived Usefulness .....	150
5.2.6. Perceived Ease of Use .....	155
5.2.7. Arabic Culture Support.....	157
5.2.8. Other Factors Suggested by the Participants .....	161
5.3. Discussion of Interviews' Findings .....	164
5.4. Summary .....	171
<b>Chapter 6 Quantitative Results and Discussion.....</b>	<b>173</b>
6.1. Data Screening .....	173
6.1.1. Number of Responses .....	173
6.1.2. Non-Response Bias Assessment .....	173
6.1.3. Respondents' Profile.....	174
6.1.4. Descriptive Statistics of the Construct Items .....	182
6.1.5. Linearity.....	185
6.1.6. Outliers .....	186
6.1.7. Normality of Construct Items.....	188
6.1.8. Collinearity .....	191
6.2. Structural Equation Modelling (SEM) Analysis .....	192

6.2.1. Assessing the Measurement Model.....	194
6.2.2. Assessing the Structural Model.....	201
6.3. Discussion of the Quantitative Results .....	210
6.3.1. Descriptive Statistics of the Constructs' Items.....	210
6.3.2. The Testing of the Hypotheses.....	214
6.3.3. The Developed Model's Performance .....	227
6.4. Summary .....	231
<b>Chapter 7 Conclusion .....</b>	<b>233</b>
7.1. Summary of Research Objectives and Findings .....	233
7.2. Implications of Research Findings .....	236
7.2.1. Implications for Academic Researchers .....	236
7.2.2. Implications for MOOCs Practitioners .....	237
7.3. Limitations and Directions for Future Research .....	241
7.4. Concluding Comments.....	242
<b>List of References.....</b>	<b>245</b>
<b>Appendix A: Motivational Factors that Influence the Use of MOOCs: Learners' Perspectives..</b>	<b>279</b>
<b>Appendix B: Definitions of the Constructs Proposed in the Previous Studies on MOOCs</b>	
<b>Acceptance/Continuance .....</b>	<b>288</b>
<b>Appendix C: Further Reading.....</b>	<b>291</b>
<b>Appendix D: Invitation to Experts Familiar with the Rwaq Platform.....</b>	<b>292</b>
<b>Appendix E: Interview Guide .....</b>	<b>293</b>
<b>Appendix F: Participant Information Sheet for Interviews .....</b>	<b>296</b>
<b>Appendix G: Consent Form for Interviews.....</b>	<b>299</b>
<b>Appendix H: The Online Questionnaire.....</b>	<b>301</b>
<b>Appendix I: Participant Information Sheet for Questionnaire .....</b>	<b>313</b>
<b>Appendix J: The Relationships Between the Latent Variables in this Study .....</b>	<b>316</b>
<b>Appendix K: Follow-Up Interview Guide .....</b>	<b>320</b>
<b>Appendix L: Screenshots of Thematic Analysis Using NVivo Software .....</b>	<b>321</b>
<b>Appendix M: Non-Response Bias Test.....</b>	<b>325</b>
<b>Appendix N: SEM Analysis Results of the Final Revised Model Using Warp-PLS 5.0 .....</b>	<b>326</b>

# List of Tables

Table 1.1 A summary of the statistics of the Rwaq platform .....	12
Table 2.1 The differences between OCW and MOOCs (Martínez, 2014) .....	16
Table 2.2 The languages that are supported by MOOCs (Class Central, 2017) .....	18
Table 2.3 Popular MOOC providers in non-Arabic world (Shah, 2016a; Shah, 2016b; Marsh, 2017) .....	24
Table 2.4 Popular MOOC providers in the Arabic world (Al-Abdulkareem, 2017; Edraak, 2017; Marsh, 2017; Rwaq.org, 2017) .....	24
Table 2.5 Definitions of ISCM variables .....	27
Table 2.6 Definitions of TRA variables .....	28
Table 2.7 Definitions of TAM variables .....	30
Table 2.8 Definitions of UTAUT variables .....	32
Table 2.9 Definitions of IS success model variables .....	34
Table 2.10 Review of MOOCs acceptance and continuance studies .....	37
Table 2.11 Key results of previous studies on MOOCs acceptance and continuance .....	42
Table 2.12 Distribution of papers by journal .....	52
Table 2.13 Distribution of papers by conference .....	52
Table 2.14 Geographic distribution of the participants in previous studies .....	53
Table 2.15 Data analysis methods used in previous MOOCs articles .....	55
Table 2.16 The most frequently proposed factors in prior MOOCs articles .....	56
Table 2.17 Summary of the factors proposed in prior MOOCs articles .....	57
Table 4.1 Strengths and weaknesses of qualitative research (Johnson & Onwuegbuzie, 2004) .....	77
Table 4.2 Strengths and weaknesses of quantitative research (Johnson & Onwuegbuzie, 2004) .....	78
Table 4.3 Strengths and weaknesses of mixed methods design (Doyle, Brady & Byrne, 2009; Johnson & Onwuegbuzie, 2004) .....	78
Table 4.4 The advantages and disadvantages of probability and non-probability sampling (Tansey, 2007) .....	84
Table 4.5 Demographic characteristics of the administrators .....	87
Table 4.6 Demographic characteristics of the instructors .....	87
Table 4.7 Demographic characteristics of the learners .....	88
Table 4.8 Frequency and percentage of the demographic variables of the learners .....	89
Table 4.9 Strategies used in this research to increase the trustworthiness of the qualitative study .....	96

Table 4.10 Low VS high granularity scales (Pearse, 2011, p.163).....	101
Table 4.11 Operationalisation of perceived usefulness .....	105
Table 4.12 Operationalisation of perceived ease of use .....	106
Table 4.13 Operationalisation of Arabic language support.....	106
Table 4.14 Operationalisation of free courses' advantages .....	106
Table 4.15 Operationalisation of perceived reputation .....	107
Table 4.16 Operationalisation of intrinsic motivations .....	107
Table 4.17 Operationalisation of willingness to earn a certificate .....	108
Table 4.18 Operationalisation of social influence .....	108
Table 4.19 Operationalisation of continuance intention .....	109
Table 4.20 Demographic details of the pilot study participants (n=72) .....	113
Table 4.21 Evaluation of the values of Cronbach's alpha reliability (Sekaran & Bougie, 2016) .....	115
Table 4.22 Cronbach's Alpha coefficients of reflective constructs in the pilot study .....	115
Table 4.23 VIF of the formative measures .....	116
Table 4.24 Indicator weights of the formative measures.....	118
Table 4.25 Recommendations regarding using PLS-SEM VS CB-SEM (Lowry & Gaskin, 2014, p.133).....	120
Table 5.1 The main themes and their emergent sub-themes .....	127
Table 5.2 Summary of the research hypotheses .....	170
Table 6.1 Non-response bias assessment.....	174
Table 6.2 Demographic characteristics of the survey respondents (n=886) .....	175
Table 6.3 Descriptive statistics of perceived usefulness .....	182
Table 6.4 Descriptive statistics of perceived ease of use .....	182
Table 6.5 Descriptive statistics of Arabic language support.....	183
Table 6.6 Descriptive statistics of free courses' advantages .....	183
Table 6.7 Descriptive statistics of perceived reputation .....	183
Table 6.8 Descriptive statistics of intrinsic motivations .....	184
Table 6.9 Descriptive statistics of willingness to earn a certificate .....	184
Table 6.10 Descriptive statistics of social influence .....	184
Table 6.11 Descriptive statistics of continuance intention .....	185
Table 6.12 The univariate outliers .....	186
Table 6.13 Skewness and Kurtosis results .....	189
Table 6.14 Full collinearity assessment .....	191
Table 6.15 Vertical collinearity assessment.....	192

Table 6.16 The criteria used to evaluate the reflective measurement model .....	194
Table 6.17 Internal consistency reliability assessment.....	196
Table 6.18 Convergent validity assessment.....	196
Table 6.19 Fornell-Larcker criterion assessment.....	197
Table 6.20 Cross-Loadings assessment.....	198
Table 6.21 The criteria used to evaluate the formative measurement model.....	198
Table 6.22 Multicollinearity and indicators weights assessment.....	199
Table 6.23 Discriminant validity assessment .....	200
Table 6.24 The criteria used to evaluate the structural model .....	201
Table 6.25 Assessment of coefficient of determination.....	202
Table 6.26 Assessment of effect size .....	202
Table 6.27 Predictive relevance assessment .....	203
Table 6.28 Definitions of the model fit and quality indices.....	204
Table 6.29 Model fit and quality indices of the proposed model.....	204
Table 6.30 Structural model results (hypotheses testing) of the proposed model.....	205
Table 6.31 Strength of the influence of the antecedents of the endogenous variables on the endogenous variables.....	206
Table 6.32 Structural model results (hypotheses testing) of the final revised model .....	207
Table 6.33 Strength of the influence of the antecedents of the endogenous variables on the endogenous variables.....	208
Table 6.34 Model fit and quality indices of the final revised model .....	209
Table 6.35 Path coefficients of indirect effects for paths with 2 segments .....	209
Table 6.36 Path coefficients of indirect effects for paths with 3 segments .....	209
Table 6.37 Increasing the explanatory power of TAM when integrating additional variables into TAM .....	227
Table 6.38 Comparing the explained variance in PU, PEU, and BI/CI of models proposed by previous studies to the present research model.....	230
Table 7.1 The research questions along with the methods used to address such questions .....	234

# List of Figures

Figure 1.1 The home page of Rwaq website .....	10
Figure 1.2 Browsing the courses on Rwaq website .....	10
Figure 1.3 Courses' distribution in Rwaq (Rwaq.org, 2017) .....	11
Figure 1.4 Rwaq users' countries of residence .....	11
Figure 1.5 Sample certificate offered by Rwaq .....	12
Figure 2.1 Timeline of MOOCs and Open Education (Adham & Lundqvist, 2015, p.128) .....	17
Figure 2.2 Growth of MOOCs (Shah, 2016a) .....	17
Figure 2.3 Courses distribution by subject (Shah, 2016a) .....	18
Figure 2.4 Key concepts of cMOOCs (Yousef et al., 2014, p.13) .....	19
Figure 2.5 Main concepts of xMOOCs (Yousef et al., 2014, p.13) .....	20
Figure 2.6 The funnel of participation (Clow, 2013, p.186) .....	25
Figure 2.7 IS continuance expectation-confirmation model (Bhattacharjee, 2001) .....	27
Figure 2.8 Theory of Reasoned Action (Fishbein & Ajzen, 1975) .....	28
Figure 2.9 Theory of Planned Behavior (Ajzen, 1991) .....	29
Figure 2.10 Technology acceptance model (Davis, Bagozzi & Warshaw, 1989) .....	30
Figure 2.11 Revised technology acceptance model (Davis, Bagozzi & Warshaw, 1989) .....	31
Figure 2.12 The Unified theory of acceptance and use of technology (Venkatesh et al., 2003) .....	32
Figure 2.13 Original IS success model (DeLone & McLean, 1992) .....	33
Figure 2.14 Updated IS success model (DeLone & McLean, 2003) .....	34
Figure 2.15 Total number of relevant papers in relation to the publication year .....	51
Figure 2.16 Distribution of related works by research objective .....	53
Figure 2.17 Theories adopted in previous MOOCs articles .....	54
Figure 2.18 Data collection methods used in previous MOOCs articles .....	55
Figure 2.19 Classification of the factors proposed in previous MOOCs articles .....	59
Figure 3.1 The proposed research model .....	65
Figure 3.2 EF EPI 2016 Rankings for English proficiency (ICEF Monitor, 2016) .....	67
Figure 4.1 A matrix of mixed methods design (Johnson & Onwuegbuzie, 2004, p.22) .....	80
Figure 4.2 The design of the current research .....	83
Figure 4.3 Screenshot of the estimated sample size by Warp-PLS 6.0 .....	100
Figure 4.4 Screenshot of the welcome page of the online questionnaire .....	104
Figure 4.5 The algorithms used for inner model analysis .....	122
Figure 5.1 Steps taken to conduct the thematic analysis in this study .....	126

Figure 5.2 The revised proposed research model .....	170
Figure 6.1 Use of Rwaq by respondents .....	177
Figure 6.2 Age of respondents.....	177
Figure 6.3 Gender of respondents .....	178
Figure 6.4 Nationality of respondents .....	178
Figure 6.5 Occupation of respondents .....	179
Figure 6.6 Academic college of respondents .....	179
Figure 6.7 Highest level of education achieved by respondents .....	180
Figure 6.8 Number of courses taken by respondents.....	180
Figure 6.9 Number of certificates earned by respondents.....	181
Figure 6.10 English language level of respondents.....	181
Figure 6.11 Graphic example of the SEM model. Adapted from Shah & Goldstein (2006) .....	192
Figure 6.12 A two-step process of PLS path model assessment.....	193
Figure 6.13 Structural model results (hypotheses testing) of the proposed model .....	206
Figure 6.14 Structural model results (hypotheses testing) of the final revised model .....	208
Figure 6.15 Original TAM model .....	228
Figure 6.16 Integrating TAM with ALS .....	228
Figure 6.17 Integrating TAM with ALS & FCA .....	228
Figure 6.18 Integrating TAM with ALS, FCA & PR .....	229
Figure 6.19 Integrating TAM with ALS, FCA, PR & IM .....	229
Figure 6.20 Integrating TAM with ALS, FCA, PR, IM & WEC (the final revised model) .....	230





# Academic Thesis: Declaration of Authorship

I, Nada Ali Hakami

declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

[An Investigation of the Motivational Factors Influencing Learners' Intentions to Continue Using Arabic MOOCs]

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Parts of this work have been published as:

**Hakami, N., White, S. & Chakaveh, S. (2017). Motivational Factors that Influence the use of MOOCs: Learners' Perspectives - A Systematic Literature Review. In: *Proceedings of the 9th International Conference on Computer Supported Education-CSEDU*, Porto, Portugal. pp.323-331. DOI: 10.5220/000625950323033.**

**Hakami, N., White, S. & Chakaveh, S. (2017). Identifying the Motivational Factors That Influence Learners' Intention to Continue to Use Arabic MOOCs. *International Journal of Management and Applied Science*, ISSN: 2394-7926, 3(11), 53-61.**

Signed: Nada Ali Hakami

Date: 05/March/2018

# Acknowledgements

In the name of Allah, Most Gracious, Most Merciful. First and foremost, I direct my heartfelt gratitude to Allah the Almighty God for covering me with his help and love and for blessing me with the chance to extend my study to this level.

I would like to thank all those who supported me during my work on this thesis.

I wish to express my sincere gratitude to my supervisors, Dr Su White and Dr Sepi Chakaveh, for their continuous support throughout my PhD and related research, and for their immense knowledge and valuable advice.

Warm thanks go to my mother and father, who have always given me their unconditional love and support. I would like to express my feelings of pride toward my husband, Hafaz, who has stood by me and supported me every step of the way. I would not have been able to do it without him. I dedicate this PhD thesis to my lovely children, Turki & Naif, who are the pride and joy of my life.

I am indebted to my brothers and sisters for their love and guidance. Special thanks and warm appreciation go to my brother Abdullatif for his help and support during my study.

Last but not the least, I am indebted to Jazan University for funding my PhD study.

# Abbreviations

**MOOCs:** Massive Open Online Courses

**ICT:** Information and communication technologies

**IS:** Information system

**TAM:** Technology acceptance model

**PU:** Perceived usefulness

**PEU:** Perceived ease of use

**ALS:** Arabic language support

**FCA:** Free courses' advantages

**PR:** Perceived reputation

**IM:** Intrinsic motivations

**WEC:** Willingness to earn a certificate

**SI:** Social influence

**CI:** Continuance intention

**SEM:** Structural equation modelling

**PLS-SEM:** Partial least squares- Structural equation modelling



# Chapter 1 Introduction

This chapter will give an introduction to the current study and the rationale behind this work stating the theoretical background and research problems, research aims and objectives, the significance and contributions of the study, research methodology used in this study, context of the study, and structure of this thesis.

## 1.1. Theoretical Background and Research Problem

Information and communication technologies (ICT) have become an integral part of teaching in the educational institutions, significantly contributing to their success and effectiveness. MOOC platforms are an innovation in open and distance education that has gained popularity in the recent years with a number of MOOCs providers and learners growing since their appearance in 2008 (Mulik, Yajnik & Godse, 2016; Shah, 2016a; Ouyang et al., 2017; Wu & Chen, 2017). MOOCs afford large-scale and open educational platforms where teachers and learners across the world can interact, and the learning process is flexible and free of charge. Unlike institutions restricted by the traditional educational systems, a single course in MOOCs can gather learners of different backgrounds, specializations, cultures, ages, motivations, learning habits, goals, and skills. Based on its myriad of advantages, certain researchers see MOOCs as a complement to the traditional education (de Langen & van den Bosch, 2013; Clark, Vealé & Watts, 2017).

Similar to any technology used to enhance learning, MOOCs cannot be maximised or considered successful unless they are accepted and used by their target users (Pituch & Lee, 2006; Alenezi, 2012; Lai, Wang & Lei, 2012; Tarhini, Hone & Liu, 2014). More importantly, the success, long-term viability, and sustainability of information systems are associated with post acceptance (continued use) rather than initial acceptance (first-time use) (Bhattacharjee, 2001; Limayem, Hirt & Cheung, 2003; Barnes, 2011; Lin, Featherman & Sarker, 2017; Ouyang et al., 2017).

In MOOCs, there is a diversity in motivations and intents among learners to sign up for such courses (Bayeck, 2016; Milligan & Littlejohn, 2017; Shapiro et al., 2017). The different motivations result in learners handling the courses differently (Alario-Hoyos et al., 2017). This diversity poses challenges and obstacles to MOOC providers in terms of designing effective courses that would be suitable for all participants (Che et al., 2016). Also, the low completion rates of MOOCs raise a question: if

completion of courses is not a motivation for learners to participate in MOOCs, what are their motivations?.

Studies examining the acceptance and continuance of technology-enhanced learning, e.g. mobile learning and e-learning, in different contexts are well-documented in the literature. However, MOOCs need further studies because they have their own characteristics that distinguish them from the other online educational delivery models such as scalability, openness, and heterogeneity of learners (Greene, Oswald & Pomerantz, 2015). The current research found numerous studies devoted to MOOCs acceptance and the continuance use intention. Nevertheless, nearly all these studies have been validated in non-Arabic cultures, mostly in China, where values and behaviours differ significantly from the Arabic culture. Hofstede (1980) is one of the researchers who conducted a comprehensive study to describe the relation between the society's culture and the behaviour of its members. The culture was defined by Hofstede & Hofstede (2005, p.4) as a *"collective programming of mind that distinguishes the members of one group or category of people from others"*. The cultures differ in five primary cultural dimensions, namely power distance, individualism/ collectivism, uncertainty avoidance, masculinity/ femininity, and time orientation (Hofstede & Hofstede, 2005).

Regarding the technology acceptance, various studies concluded that the national cultures of the technologies users manifested diverse impacts on their acceptance behaviour with varying degrees of intensity or importance (Straub, Keil & Brenner, 1997; Bandyopadhyay & Fraccastoro, 2007; Lee et al., 2007; Oshlyansky, Cairns & Thimbleby, 2007; Dai & Palvi, 2009; Im, Hong & Kang, 2011; Kaba & Osei-Bryson, 2013; Ng, 2013; Pentina, Zhang & Basmanova, 2013; Rashed & Santos, 2013; Tarhini, 2013; Abbasi et al., 2015; Lu et al., 2017). With respect to MOOCs, for example, Christensen et al. (2013) reported that the motivations for learners from diverse national cultures are different. Similarly, Davis et al. (2014) found that learners' reasons to participate in MOOCs can vary significantly across cultures. Furthermore, from the prior studies on MOOCs acceptance/continuance that had been carried out across diverse cultures, it was obvious that both the significance and the predicting power of certain variables were different.

The Arabic culture possesses its own language, cultural and religious values as well as educational policies that vary substantially from the other cultures. There are nineteen Arabic speaking countries in the world including Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya,

Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen (Ridout, n.d.). The Arabic language is the sixth most spoken language in the world with 420 million speakers (Ridout, n.d) and used by 1.5 billion Muslims (UNESCO, n.d.).

The development, popularity, and growth of Arabic MOOCs are still in their initial stages (Adham & Lundqvist, 2015). Accordingly, examining the beliefs of learners towards using Arabic MOOCs can contribute to the growth and proliferation of these platforms. Mutawa (2016) reported the need to design localised version of MOOC platforms for the Gulf region. This thesis aims to address a number of gaps in the existing literature. The choice of the Arabic MOOCs in this study is driven by the lack of research investigating the factors impacting the individuals' motivations towards the continuation of the Arabic MOOCs usage.

## **1.2. Research Aims and Objectives**

Owing to the importance of understanding the willingness to continue using technologies, the main purpose of this research is developing and testing a theoretical model that identifies the determinants predicting the learners' continuance intention towards using Arabic MOOCs exemplified by the Rwaq platform. Consequently, this research seeks to answer the following questions:

- **RQ1:** What is the suitable technology acceptance/continuance model that can be used as a theoretical foundation to investigate the learners' continuance intention towards using Arabic MOOCs?
- **RQ2:** What are the potential motivational factors affect learners' decisions to continue using Arabic MOOCs?
- **RQ3:** What are the potential relationships between the motivational factors which affect learners' intentions to continue using Arabic MOOCs?
- **RQ4:** What factors have significant effects on MOOCs' continuance intention?
- **RQ5:** What factors have the strongest effect on MOOCs' continuance intention?

- **RQ6:** To what extent do the motivational factors of participants in Arabic MOOCs differ or concur with the reported motivations in the studies that have been carried out in different cultural contexts?
- **RQ7:** How well does the proposed model explain the continuance intention towards using Arabic MOOCs?

To achieve the purpose of this research and answer the above research questions, this research intends to meet the following objectives:

1. Explore the current situation of MOOCs in the Arabic world and determine the current usage of Arabic MOOCs (Rwaq platform).
2. Review the literature pertaining to MOOCs acceptance/continuance as well as the motivations that encourage learners to use MOOCs.
3. Develop a theoretical model by including the explanatory variables that drive learners' continued participation in Arabic MOOCs.
4. Empirically validate the proposed theoretical model.
5. Examine the similarities and differences between the results of this study and the results of previous studies conducted in different cultural contexts.
6. Compare the performance of the model developed in this study to the performance of the models proposed by similar prior studies on MOOCs.
7. Provide recommendations for MOOCs providers and instructors based on the obtained results.

### **1.3. Significance and Contributions of This Study**

The present study is vitally important for theoretical and practical reasons. As far as the theoretical aspects are concerned, the present study is one of the first investigations that set out to better understand the variables that are indicative of learners' persistence in using Arabic MOOCs. This



research provides important contributions to a pool of literature on technology continuance theories. The theoretical contributions of this study are as follows:

- 1.** This study is one of the first studies that strives to build a model in a new context: learners' views on continuing to use Arabic MOOCs. The goal of this research is increasing the explanatory power of TAM, taking into consideration culture-related, individual-related, society-related, organisation-related, and technology-related influences.
  - 1.1.** Providing a critical analysis of previous studies related to the MOOCs acceptance/continuance in order to identify their limitations and current gaps in the literature.
  - 1.2.** Adding new variables that have not been examined before in MOOCs acceptance/continuance to fit the context of MOOCs in Arabic settings. The new variables include the Arabic language support, willingness to earn a certificate, and free courses' advantages.
  - 1.3.** Adopting mixed methods approach (qualitative and quantitative data collection methods) in order to increase the validity of this research.
  - 1.4.** Using the interviews to explore the opinions of experts in the Arabic MOOCs regarding the proposed factors that affect the continuance intention.
  - 1.5.** Testing and validating the extended TAM empirically. The model developed in this study can be tested by researchers in the field of MOOCs continuance in different contexts.
  - 1.6.** The quantitative study is based on relatively large sample size (n=884).
- 2.** Developing and validating questionnaire's measurement items, many of which have been self-developed to suit this research context.
  - 2.1.** Intending to capture the influence of different dimensions of the construct by designing the majority of the constructs in this study as formative ones.

**2.2.** Contributing to the existing body of studies in information systems that use the Structural Equation Modelling technique by adopting partial least squares structural equation modelling (PLS-SEM) using Warp-PLS software for analysing the data. This software, which considers the non-linearity nature of the variables, allows to gain a complete picture about the phenomena under study.

- 3.** Shedding insight into the similarities and differences between the Arabic and non-Arabic cultures in terms of the factors affecting the use of MOOCs.

Thus, it is expected that this research will serve as a useful guide for future studies on MOOCs continuance, particularly for empowering open online learning in the Arabic region.

In practical terms, the results of this research offer valuable recommendations for the developers of Arabic MOOC platforms as well as the instructors who teach courses in such platforms to drive the development of the Arabic platforms through the following:

- 1.** Improved understanding of learners' participation in the Arabic MOOCs.
- 2.** Comprehending the culture-related factors in order to:
  - (a) design a localised version of the platform;
  - (b) tailor effective and culturally appropriate courses to enhance learners' satisfaction.

Although the main aim of this research is the investigation of the factors that influence the learners to continue using Arabic MOOCs, this study can also shed light on the factors that may attract new users.

## **1.4. Research Methodology Used in This Thesis**

This research adopts the sequential exploratory and explanatory mixed methods approaches for collecting the data using qualitative and quantitative techniques. The main objective of the exploratory mixed methods approach is exploring a phenomenon in depth at initial stage (Creswell & Plano Clark, 2007), particularly when the topic under investigation has not been researched before. In addition, this approach improves the reliability and validity of results and allows for a comprehensive understanding of the study phenomenon.

Initially, a systematic literature review was conducted so as to determine the gaps and develop the research questions (Hakami, White & Chakaveh, 2017). After that, semi-structured interviews were carried out with the main intent of exploring the experts' perspectives regarding a set of factors that impact the continuance intention towards using Arabic MOOCs. In total, twenty-two participants took part in the interviews; two administrators of the Rwaq platform, ten instructors, and ten learners using the Rwaq platform.

A self-administered online questionnaire was used in a subsequent confirmatory phase to test the proposed theoretical model and hypotheses. The questionnaire was designed using closed-ended questions and five-point Likert type scale for responses. A pre-testing of the questionnaire was conducted by means of cognitive interviews, an expert panel review, and a pilot study. The total number of returned questionnaires was 1,303, of which 886 were usable for the data analysis as only that number of responses met the research criteria. But again, among 886 responses, two respondents were unengaged participants as they answered all the questions with the same single response. Therefore, their responses were excluded from further data analysis, leaving a total of 884 responses for the final data analysis. The final valid responses were coded into the Statistical Package for the Social Sciences (SPSS) version 23.0 for data screening tests in order to ensure the usability, reliability, and validity of the data. The tests include non-response bias, descriptive statistics of the demographic variables and construct items, linearity, outliers, normality, and collinearity.

After examining the assumptions of the structural equation modelling (SEM) analysis technique, a two-step approach was applied as recommended by Anderson & Gerbing (1988). These two steps are: measurement model analysis and structural model analysis. Drawing upon the advantages of partial least squares structural equation modelling (PLS-SEM), Warp-PLS 5.0 was utilized for the present study.

Finally, after conducting the measurement and structural model analyses, the explanatory mixed methods approach was adopted through carrying out semi-structured interviews. Eight learners using the Rwaq platform participated in these interviews in order to interpret the findings of the quantitative study, particularly the unexpected results.

## 1.5. Context of This Study: Arabic MOOCs

This section presents information on the context of this study, including open educational resources in the Arabic region and the platform selected for investigation in this study (Rwaq).

### 1.5.1. Open Educational Resources in the Arabic Region

Compared to the developed countries, the advancement and movement of open educational resources (OER) initiative in the Arabic world are still in their infancy, particularly the Arabic content repositories (Adham & Lundqvist, 2015; Jemni & Khribi, 2017; Sallam, 2017). Because there is no explicit vision or policy for the development of OER in the Arabic countries, most of the ventures in this area failed and did not continue (Jemni & Khribi, 2017).

There are limited number of popular platforms in the Arabic region, for instance Rwaq<sup>1</sup> and Edraak<sup>2</sup> are considered the most famous Arabic platforms (Mutawa, 2016; Sallam, 2017). Compared to the well-known platforms like Coursera and edX that have millions of registered users and thousands of courses, there are about 700,000 and 1,000,000 registered users in Rwaq and Edraak respectively with only hundreds of courses in such platforms.

In the Arabic countries, different factors such as digital infrastructure, technologies such as PCs and smartphones, Internet diffusion, and connection costs affect the development of MOOCs (Sallam, 2017). For example, the uneven Internet usage is reflected in more than 90% and less than 10% of population using the Internet in the Arabic gulf countries and other Arabic countries like Somalia and Comoros, respectively (Sallam, 2017). More importantly, millions of children in the Arabic region are illiterate for reasons such as civil wars, crises, or starvation (Jemni & Khribi, 2017).

The Arab League Educational, Cultural, and Scientific Organization (ALECSO)<sup>3</sup>, which is headquartered in Tunis and consists of 22 Arab countries, is interested in creating and coordinating projects for the development of education, culture, and science in the Arabic region. ALECSO aims to become involved in the international wave of education through promoting open and online

---

<sup>1</sup> <https://www.rwaq.org/>

<sup>2</sup> <https://www.edraak.org/>

<sup>3</sup> <http://www.alecso.org/en/index.php>

learning and increasing the accessibility of education via using ICT. To attain its goals, it has proposed a smart learning framework based on three key dimensions, namely open learning, mobile technology, and cloud computing (Jemni & Khribi, 2017).

Regarding the open learning dimension, ALECSO has realized the importance of providing Arabic MOOCs, and hence created ALECSO MOOCs' Project (Jemni & Khribi, 2017) whose goals are the following:

1. Proposing a platform for delivering Arabic MOOCs.
2. Developing a prototype for Arabic platforms.
3. Running the developed prototype and assessing its effectiveness.

The Rwaq and Edraak platforms are two prevalent MOOCs providers in the Arabic world (Sallam, 2017). As stated by Mutawa (2016), Rwaq has the highest number of visitors in the Arabic world. The numbers of daily unique visitors to Rwaq and Edraak websites were 29,441 (CuteStat, 2017b) and 73 (CuteStat, 2017a), respectively. Moreover, in October 2017, Rwaq had 138,209 followers on its official Twitter account<sup>4</sup> compared to only 35,520 Edraak followers<sup>5</sup>. The researcher selected Rwaq as the platform for the investigation.

### **1.5.2. Rwaq Platform**

Two Saudi citizens named Fouad Al Farhan and Sami Al Hussayen launched Rwaq, an Arabic MOOC platform in September 2013 (Rwaq.org, 2017). The home page of Rwaq website and browsing the courses page are shown in Figures 1.1 and 1.2, respectively. Rwaq offers courses solely in the Arabic language, free of charge. Roughly, 236 courses within ten disciplines are provided by Arab distinguished academics and experts. The distribution of courses in Rwaq is demonstrated in Figure 1.3. As cited by the CEO of the Rwaq platform (Al-Abdulkareem, 2017), in September 2017, the number of registered users in this platform reached about 738,371 from 184 countries. Most of the users of the Rwaq platform come from Saudi Arabia (40%).

---

<sup>4</sup> <https://twitter.com/rwaq?lang=en>

<sup>5</sup> <https://twitter.com/edraak?lang=en>

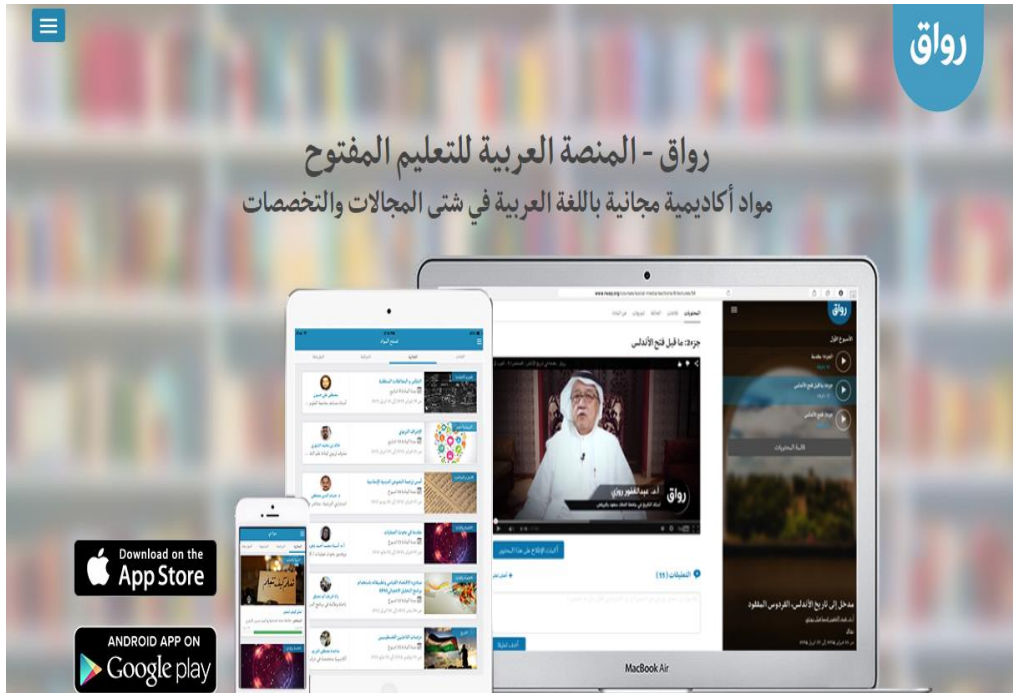


Figure 1.1 The home page of Rwaq website

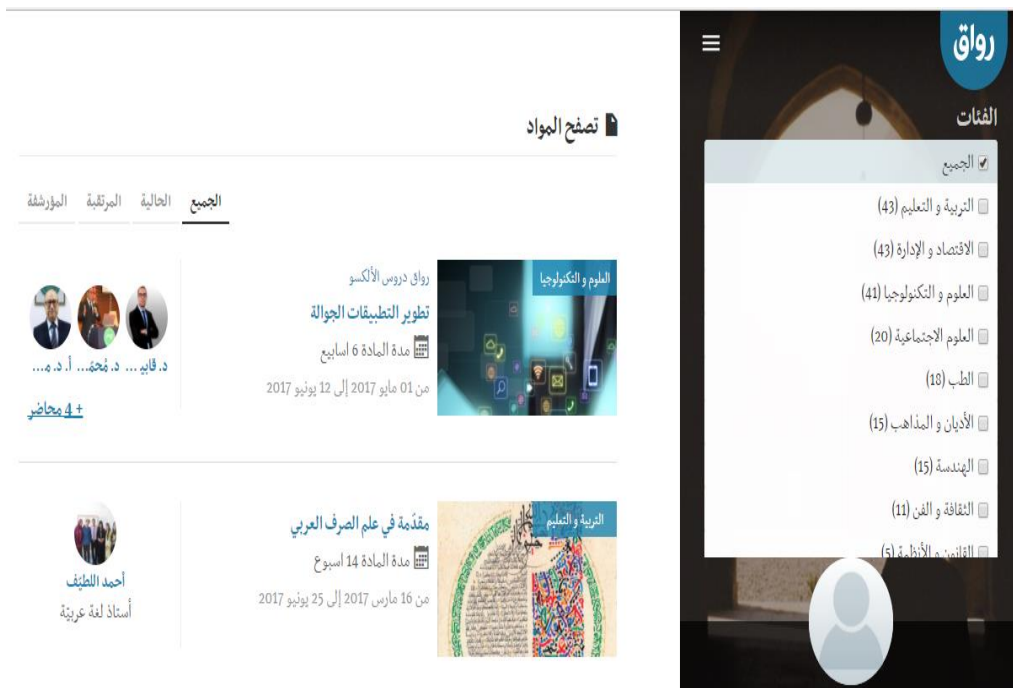
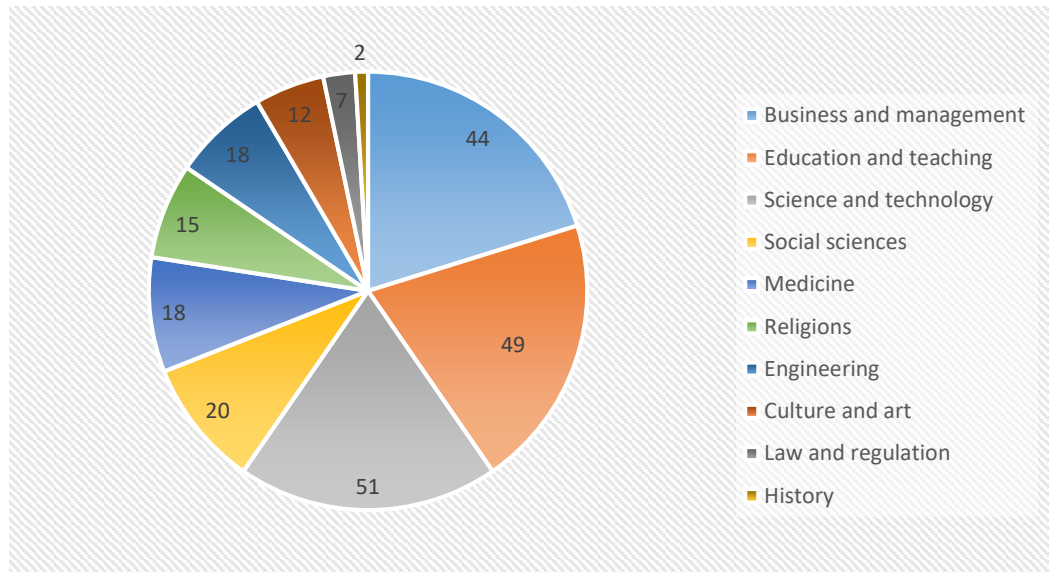
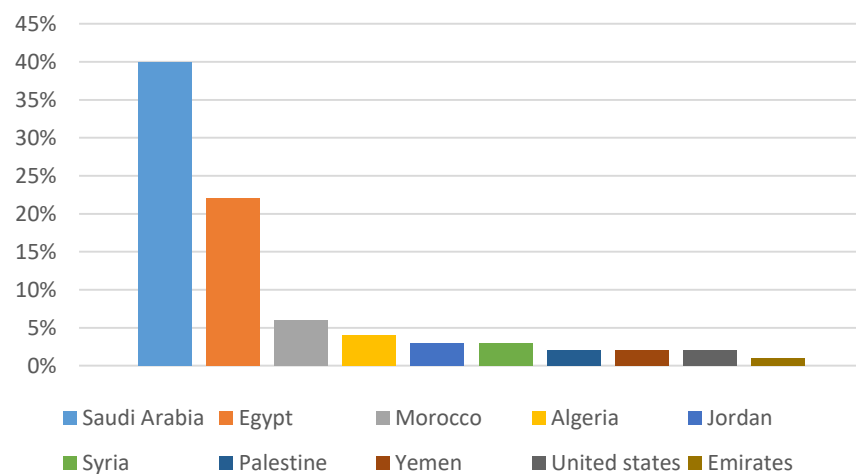


Figure 1.2 Browsing the courses on Rwaq website



**Figure 1.3 Courses' distribution in Rwaq (Rwaq.org, 2017)**

Figure 1.4 presents the top ten countries of residence of Rwaq users. Similarly, the majority of instructors in Rwaq come from Saudi Arabia (Sallam, 2017). 70% of the users are male while 30% are female. The average ages of the users are 18-34 years.



**Figure 1.4 Rwaq users' countries of residence**

The completion rate of courses in this platform attained around 23.39%. As in most MOOCs, Rwaq provides the participants with free certificates when passing the course requirements. Course completion certificates, which are computer generated PDF-documents awarded by the platform, are not verified nor accredited. Issuing the certificates depends on the instructor of a given course with certain instructors offering certificates upon completion while other lecturers preferring not

to award certificates to students for their own reasons. Figure 1.5 shows a sample certificate that is awarded in Rwaq.



Figure 1.5 Sample certificate offered by Rwaq

Rwaq has built relationships with eight partners, namely ALECSO, Microsoft, Cisco, Bayt Al-Maqdes Studies Center, Amneen, Obor, Riyaly, and Silatech. However, the cooperation of Arabic universities with this platform is still non-existent. Table 1.1 shows a summary of the statistics of Rwaq platform as revealed by the CEO of Rwaq (Al-Abdulkareem, 2017).

Table 1.1 A summary of the statistics of the Rwaq platform

	Total No. / %
Total No. of users	738,371
Total No. of instructors	260
Total No. of courses	236
Total No. of enrolments across courses	1,771,568
Total No. of users enrolled in courses before end date	1,174,130
Total No. of users enrolled in courses after end date	590,453
Total No. of unenrolments	98,724
Average No. of enrolments for ended courses	6,837
Average completion for ended courses	570
Average completion percentage	23.39%
Total No. of produced lectures	5000
Total No. of minutes that were viewed	23,000,000
Percentage of users who used smartphone apps or tablets	50%
Total No. of visits to Rwaq website	+20,000,000
Total No. of followers on Rwaq Twitter account	+140,000



## 1.6. Structure of the Thesis

This section outlines the structure of this thesis as follows:

**Chapter one** introduces the current research highlighting the research problem, research aims and objectives, significance and contributions of the study, research methodology used in this thesis, and context of the study.

**Chapter two** provides basic background about MOOCs including definitions, the history and scale of MOOCs, MOOCs' types, pedagogy of MOOCs, benefits and disadvantages of MOOCs, popular MOOCs providers, MOOCs and motivations, and MOOCs completion. Afterwards, the main theories and models in technology acceptance and continuance along with their advantages and limitations are presented. Then, the following section shows the related works in the field of MOOCs acceptance and continuance intention along with critical analysis of these works.

**Chapter three** demonstrates the proposed theoretical model of Arabic MOOCs continuance intention and the research hypotheses to be tested.

**Chapter four** illustrates the methodology adopted in this research to empirically validate the proposed model.

**Chapter five** is dedicated to the qualitative findings and discussion, while **Chapter six** shows the quantitative results followed by the discussion.

**Chapter seven** addresses the summary of this research, the implication of the findings, the limitations of the present study and directions for future research, and concluding comments.



## Chapter 2 Background and Literature Review

Chapter two provides background about MOOCs. Furthermore, the prevalent theoretical models developed in order to predict and understand the continuance intention of users regarding using technologies are highlighted and their advantages and limitations presented. Finally, this chapter surveys previous works on MOOCs acceptance and continuance and discusses their limitations.

### 2.1. Massive Open Online Courses (MOOCs)

This section provides basic background about MOOCs including definitions, the history and scale of MOOCs, MOOCs' types, MOOCs' pedagogy, MOOCs' benefits and disadvantages, popular MOOCs providers in the Arabic and non-Arabic regions, as well as information regarding MOOC participants' motivations and courses completion.

#### 2.1.1. Definitions

The concept of MOOCs was created from open educational resources (OER) and open courseware (OCW) (Atiaja & Proenza, 2016). OER is defined as *"digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research"* (Ischinger, 2007, p.30). Downes (2007, p.30) stated that resources in OER include the following:

*"(1) open courseware and content, (2) open software tools (e.g. learning management systems), (3) open material for e-learning capacity building of faculty staff, (4) repositories of learning objects, (5) free educational courses."*

MOOCs and OCW share many characteristics. The initiative of OCW, which is *"a free and open digital publication of high-quality educational materials, organised as courses"* (Ischinger, 2007, p.43), was started in 2001 in the Massachusetts Institute of Technology (MIT) (Atkins, Brown & Hammond, 2007). Presently, numerous universities offer open resources for their courses which are available to the people around the globe. On the other hand, MOOCs are defined as *"online courses designed for large numbers of participants, that can be accessed by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and*

*offer a full/complete course experience online for free*" (Jansen & Schuwer, 2015, p.4). Table 2.1 shows the differences between OCW and MOOCs (Martínez, 2014).

**Table 2.1 The differences between OCW and MOOCs (Martínez, 2014)**

<b>OCW</b>	<b>MOOCs</b>
<b>Course materials</b>	Full courses and course materials
<b>Static</b>	Dynamic
<b>Always accessible</b>	Accessible during the time the course is open
<b>Without assessment</b>	With assessment
<b>Without accreditation</b>	With accreditation
<b>Individual</b>	Collaborative

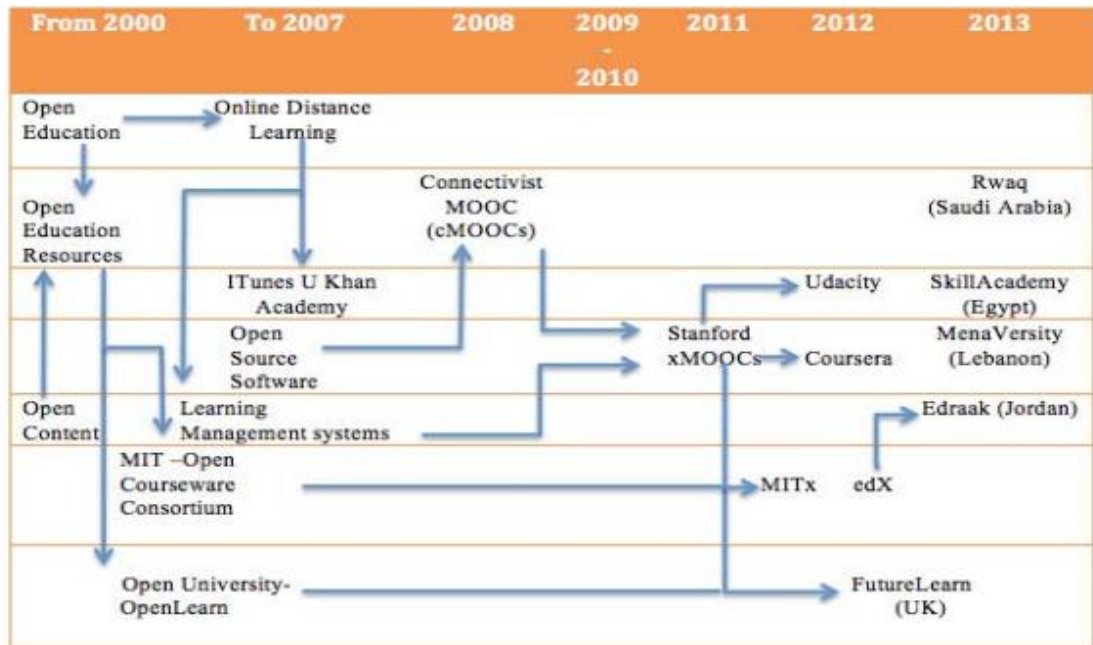
### 2.1.2. The Origin and Scale of MOOCs

In 2008, the term ‘MOOCs’ was coined by David Cormier in order to describe an open online course entitled ‘Connectivism and Connective Knowledge’ provided by Siemens and Downes at the University of Manitoba in Canada (Baker et al., 2015; Sonwalkar & Maheshkar, 2015). This open course attracted over 2,300 learners who participated at no cost (Sonwalkar & Maheshkar, 2015). In 2011, the second MOOC - ‘Introduction to Artificial Intelligence’, to which more than 160,000 students enrolled (Brahimi & Sarirete, 2015), was organised by Sebastian Thrun, a professor at the Stanford University and Peter Norvig, the director of research at Google (Atiaja & Proenza, 2016).

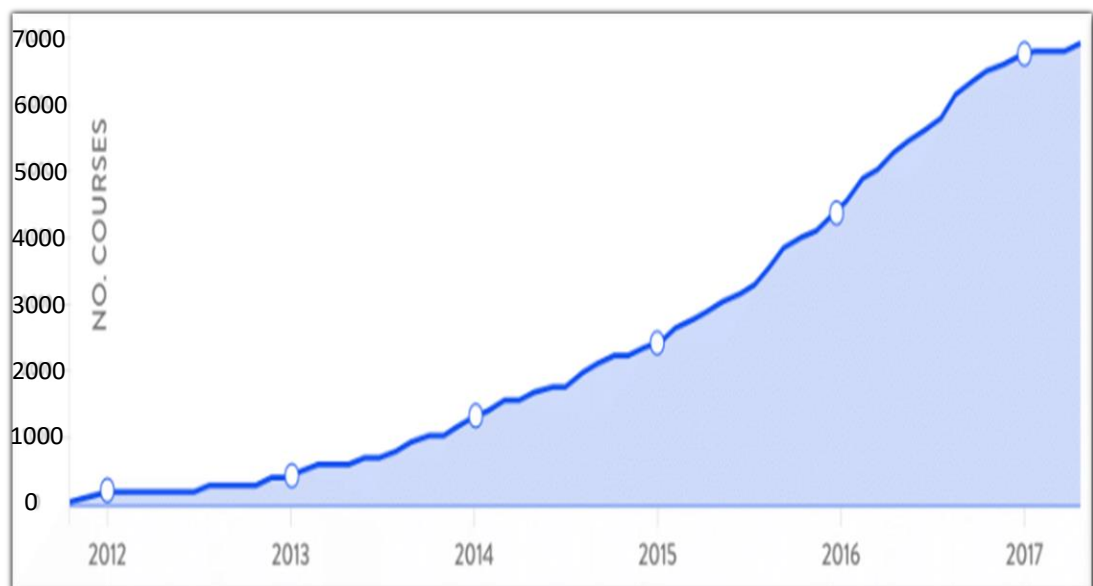
The year of 2012 was called ‘The year of the MOOC’ (Pappano, 2012). Daphne Koller and Andrew Ng started their own company ‘Coursera’ aiming at offering high quality education to interested learners all over the world (Yousef et al., 2014; Brahimi & Sarirete, 2015). MIT and Harvard University launched edX as a non-profit MOOC platform (Yousef et al., 2014). David Stavens formed a company called ‘Udacity’ with Sebastian Thrun and Michael Sokolsky (Pappano, 2012). Open University launched FutureLearn to allow free online access to courses provided by a number of the UK’s top universities (Liyangunawardena, Adams & Williams, 2013). Figure 2.1 illustrates the timeline of Open Education and MOOCs (Adham & Lundqvist, 2015, p.128).

The number of MOOCs have been increasing rapidly since 2008. In 2017, it was reported that there were approximately 6,850 courses offered by over 700 universities (Shah, 2016a). Figure 2.2 displays the growth of MOOCs from 2012 to 2017 (Shah, 2016a). According to Shah (2016a), the estimated total number of learners who registered in at least one course reached about 58 million

in 2016. Recently, Coursera, Edx, XuetangX, FutureLearn, and Udacity, whose total number of users of these platforms are 23, 10, 6, 5.3, and 4 million, respectively, have been listed as the top MOOCs providers in terms of the number of registered users (Shah, 2016a).



**Figure 2.1 Timeline of MOOCs and Open Education (Adham & Lundqvist, 2015, p.128)**



**Figure 2.2 Growth of MOOCs (Shah, 2016a)**

In terms of the number of offered courses, the biggest MOOCs providers are Coursera, EdX, FutureLearn, Miriada X, and XuetangX with 1700+, 1300, 480, 350, and 300+ offered courses,

respectively (Shah, 2016a). Most MOOC courses focus on business and computer science fields. The courses' distribution by subjects is demonstrated in Figure 2.3 (Shah, 2016a). The majority of MOOC courses are offered in 3 key languages: English, Spanish, and French with 6,287, 634, and 323 courses, respectively (Class Central, 2017). Other courses are now being offered in as many as 15 different languages as clarified in Table 2.2 (Class Central, 2017).

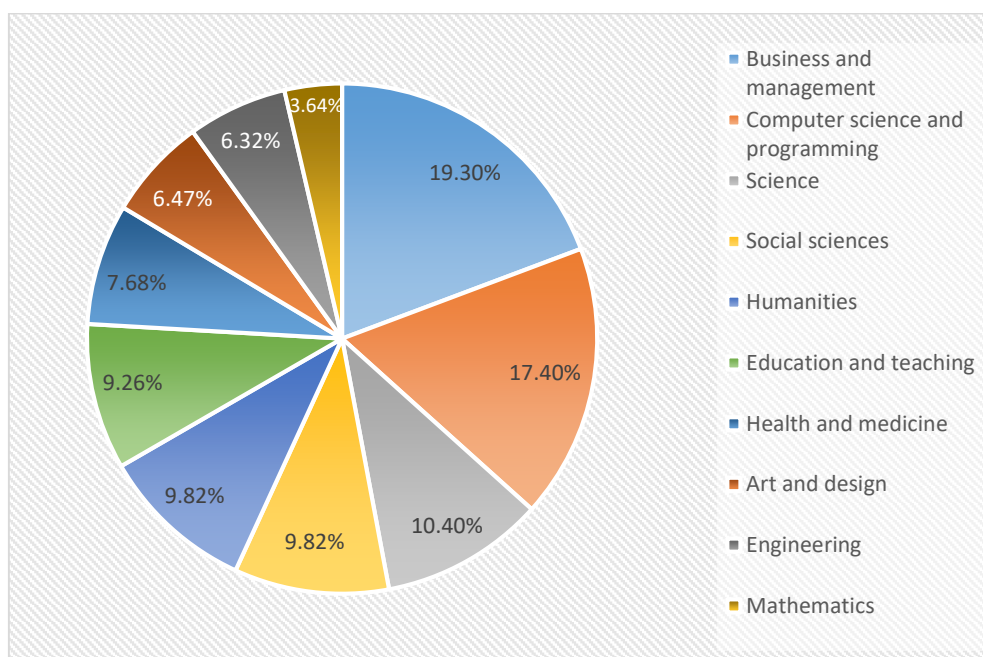


Figure 2.3 Courses distribution by subject (Shah, 2016a)

Table 2.2 The languages that are supported by MOOCs (Class Central, 2017)

Language of a course	Number of courses
Chinese	226
Italian	173
Russian	139
Arabic	126
Japanese	67
Portuguese	65
German	59
Dutch	13
Turkish	11
Hebrew	6
Korean	6
Czech	6
Estonian	2
Basque	1
Swedish	1

### 2.1.3. MOOCs' Types: cMOOCs and xMOOCs

The current MOOCs have been classified into two main distinct types based on their pedagogical design, namely 'cMOOCs' and 'xMOOCs' (Yousef et al., 2014). cMOOCs (connectivist MOOCs) follow the notion of social networked learning, where the knowledge and contents are generated by the participants as they progress through the course (Jasnani, 2013; Yousef et al., 2014). In cMOOCs, the learners themselves have the control over the course by setting the goals of the course, creating contents and activities, and distributing the knowledge to other participants (Yáñez, Nigmonova & Panichpathom, 2014; Admiraal, Huisman & Pilli, 2015). Learners in cMOOCs collaborate and share knowledge using Web 2.0 technologies such as blogs, wikis, Google groups, Facebook, and other social networking tools. There is no formal assessment in cMOOCs, however, learners can either receive informal feedback from participants or undergo self-assessment (Yáñez, Nigmonova & Panichpathom, 2014; Admiraal, Huisman & Pilli, 2015). Examples of cMOOCs include PLENK<sup>6</sup> (Personal Learning Environments, Networked Knowledge), CCK11<sup>7</sup> (Connectivism and Connective Knowledge), ChangeMOOC<sup>8</sup>, etMOOC<sup>9</sup>, etc. (Yeager, Hurley-Dasgupta & Bliss, 2013). Figure 2.4 shows the key concepts of cMOOCs (Yousef et al., 2014, p.13).

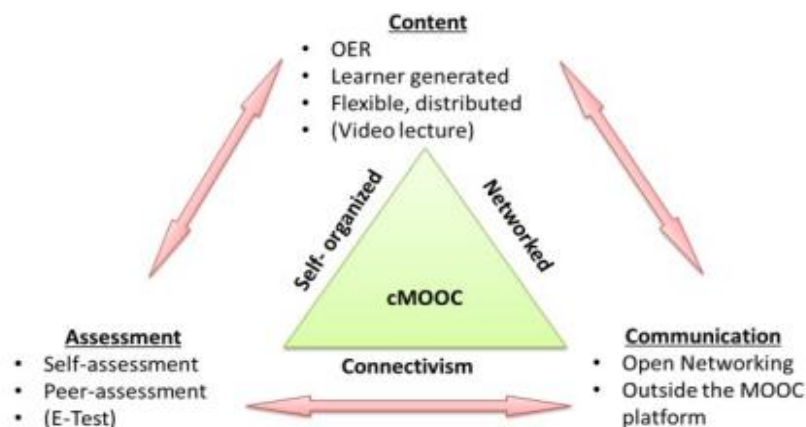


Figure 2.4 Key concepts of cMOOCs (Yousef et al., 2014, p.13)

<sup>6</sup> <http://connect.downes.ca/>

<sup>7</sup> <http://cck11.mooc.ca/>

<sup>8</sup> <http://change.mooc.ca/>

<sup>9</sup> <http://etmooc.org/>

Contrary to cMOOCs, the dominant MOOCs nowadays, offered by providers such as Coursera, Udacity, edX, etc., are termed xMOOCs (extension MOOCs) and are based on behavioural/cognitivist learning (Jasnani, 2013; Yousef et al., 2014; Admiraal, Huisman & Pilli, 2015). xMOOCs are formal courses structured similarly to traditional academic courses, offering video lectures, text-based readings, quizzes, and assignments as the main learning activities. Instructors in xMOOCs play the role of the leaders who are responsible for developing the content, determining the courses' objectives, and assessing the learners (Yáñez, Nigmonova & Panichpathom, 2014; Admiraal, Huisman & Pilli, 2015). Interactions between learners in xMOOCs typically occur in a centralized discussion forum (within the course platform). Learners are evaluated by the instructors of the courses using different methods such as multiple-choice tests, quizzes, computer-marked assignments, and peer assessment using rubrics designed by the teachers (Admiraal, Huisman & Pilli, 2015). The main concepts of xMOOCs are presented in Figure 2.5 (Yousef et al., 2014, p.13).

According to Yousef et al. (2014), new types of MOOCs have appeared recently. For example, smOOCs which are small-scale open online courses with a quite small number of users and blended MOOCs (bMOOCs) which are hybrid MOOCs combining face-to-face and online interactions.

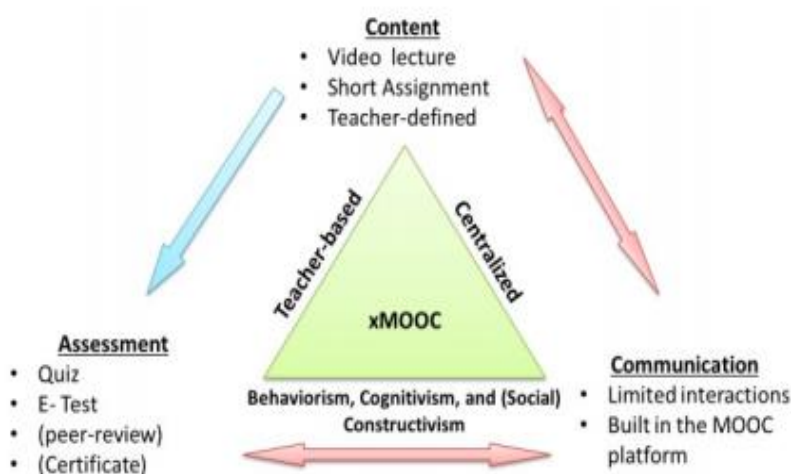


Figure 2.5 Main concepts of xMOOCs (Yousef et al., 2014, p.13)

#### 2.1.4. MOOCs' Pedagogy

Typically, MOOCs' pedagogy depends heavily on the following (Jasnani, 2013; Pundak, Sabag & Trotskovsky, 2014):



1. **A syllabus:** lists the aims and objectives of learning.
2. **Readings and video lectures:** in xMOOCs, these materials are mostly archived while in cMOOCs, the organizers either deliver a presentation weekly or invite a guest lecturer.
3. **Forums:** where most of the learning interactions occur. In xMOOCs, centralized discussions forums are typically utilized, whereas in the case of cMOOCs, the distributed open spaces (mostly blogs, wikis, Facebook pages, etc.) are used.
4. **Quizzes, assignments, and projects:** used for learners' evaluation; may lead to certification.

The video lectures generally last 5-15 minutes. However, there are videos that last up to an hour or more. During a lecture, questions are given in order to examine the students' understanding of the discussed topics in the lecture. Also, students obtain a weekly assignment as part of evaluation. Typically, a massive number of learners engage in a course, which, in most cases, is managed by a chief lecturer and other 2-3 teaching assistants. Currently, most of MOOCs' courses follow a rigorous timetable, which means that the students must submit their weekly assignments on time in order to complete the courses successfully. In contrast, there are self-paced courses which are flexible and do not contain deadlines. However, such flexibility may lead to works' delay (Pundak, Sabag & Trotskovsky, 2014).

The assessment of a vast number of learners poses one of the challenges of MOOCs, and can be solved by the following techniques (Pundak, Sabag & Trotskovsky, 2014):

1. Automatic examination using closed questions;
2. Peer evaluation;
3. Examination through artificial intelligence.

Having fulfilled the course requirements, a student may receive a certificate from the instructor of the course, which often does not constitute an academic credit point (Pundak, Sabag & Trotskovsky, 2014).

### 2.1.5. MOOCs' Benefits and Drawbacks

MOOCs have unique characteristics that distinguish them from the traditional online courses. The following are the key features that act as characteristics differentiating learning in MOOCs (Yuan & Powell, 2013; Lopes, Soares & Vieira, 2014; Badi & Ali, 2016):

1. **Massiveness:** the platforms are scalable where the courses can support massive numbers of learners.
2. **Openness:** the courses are open to anyone to participate at any time and from anywhere for free without commitment or prior requirements.
3. **Diversity (heterogeneity):** the participants are from various cultures, backgrounds, and have various motivations.

As with any learning strategy, MOOCs have advantages and disadvantages. The benefits of MOOCs include the following:

1. Encourage lifelong learning and improve knowledge and skills (Rao, Komaraiah & Reddy, 2015; Sonwalkar & Maheshkar, 2015).
2. Provide a chance to exchange ideas, views, and knowledge with other participants who share the same interest (Rao, Komaraiah & Reddy, 2015; Sonwalkar & Maheshkar, 2015).
3. Offer the opportunity to join high quality courses that are delivered by renowned professors in prestigious universities across the globe (Lopes, Soares & Vieira, 2014; Chengjie, 2015).
4. Remove time and place constraints, barriers of high cost, as well as prerequisites and commitment associated with traditional universities (Baker et al., 2015; Chengjie, 2015).
5. Learners benefit from self-paced learning in MOOCs without the pressure of passing the course or obtaining good grades (Baker et al., 2015).
6. Enhance the cross-cultural relationships due to the interaction among participants from different cultures and countries (Sonwalkar & Maheshkar, 2015; Plangsorn, Na-Songkhla & Luetkehans, 2016).

Despite the several advantages of MOOCs in education, there exists a number of challenges:

1. Lack of face-to-face interaction leading to possible isolation and increasing the feeling of disconnectivity from the peers participating in the course (Lopes, Soares & Vieira, 2014; Baker et al., 2015; Chengjie, 2015).
2. Lack of interaction with instructors, feedbacks, and real-time question answering due to disproportionate student-teacher ratio in a single course (Baker et al., 2015; Atiaja & Proenza, 2016).
3. High dropout rates caused by the openness of MOOCs, where the completion rate reaches only 5-15% (Lopes, Soares & Vieira, 2014; Baker et al., 2015; Chengjie, 2015).
4. Absence of standards to assess the pedagogical quality of MOOCs (Atiaja & Proenza, 2016).
5. Limited usefulness to non-English speakers as most of available MOOCs are offered in English language. Moreover, not all resources are culturally appropriate for all audiences (Sanchez-Gordon & Luján-Mora, 2014).
6. Authentication: difficulty to ensure that the person who takes an exam online is the same person who registered in the course (Chengjie, 2015; Sonwalkar & Maheshkar, 2015).
7. Concerns about the recognition of certificates obtained from the platforms by employers and universities due to the lack of standards for quality across MOOC platforms (Garrido et al., 2016).
8. Low motivation to participate in MOOCs and complete the courses due to the fact that learning in MOOCs is mainly self-directed which entails commitment and self-motivation (Ejreaw & Drus, 2017).

#### **2.1.6. MOOC Providers**

Popular MOOC providers in non-Arabic and Arabic regions are illustrated in Tables 2.3 and 2.4, respectively. Shah (2017) presents a list of MOOC providers worldwide.

Table 2.3 Popular MOOC providers in non-Arabic world (Shah, 2016a; Shah, 2016b; Marsh, 2017)

Platform's name	Headquarter	Launch year	No. of courses	No. of users	Website
Coursera	USA	2012	1700+	23 million	<a href="https://www.coursera.org/">https://www.coursera.org/</a>
edX	USA	2012	1300	10 million	<a href="https://www.edx.org/">https://www.edx.org/</a>
XuetangX	China	2013	300+	6 million	<a href="http://www.xuetangx.com/">http://www.xuetangx.com/</a>
FutureLearn	UK	2013	480	5.3 million	<a href="https://www.futurelearn.com/">https://www.futurelearn.com/</a>
Udacity	USA	2012	170+	4 million	<a href="https://www.udacity.com/">https://www.udacity.com/</a>
Miríada X	Latin American	2013	350	2.7 million	<a href="https://miriadax.net/home">https://miriadax.net/home</a>

Table 2.4 Popular MOOC providers in the Arabic world (Al-Abdulkareem, 2017; Edraak, 2017; Marsh, 2017; Rwaq.org, 2017)

Platform's name	Headquarter	Launch year	No. of courses	No. of users	Website
Edraak	Jordan	2014	68	1,000,000	<a href="https://www.edraak.org/en/">https://www.edraak.org/en/</a>
Rwaq	Saudi Arabia	2013	236	738,371	<a href="https://www.rwaq.org/">https://www.rwaq.org/</a>

### 2.1.7. MOOCs and Motivations

Engagement in MOOCs refers to learners' participation with other learners, teachers, and course contents in the platforms (Pilli & Admiraal, 2017). On the other hand, motivations for using MOOCs are the reasons that encourage individuals to choose MOOCs and participate in the courses. The motivational factors are the main element in self-regulated learning (Schunk & Zimmerman, 1998; Pintrich, 1999). Regardless of the quality of learning resources, the true limitation for learners is not accessing those resources, but their motivation for participating in the learning activities (Fischer, 2014; Chu et al., 2015). According to Salmon et al. (2016), the motivations are responsible for driving the users' behaviours and their persistence. Similarly, numerous scholars stated that the motivations of learners for using MOOCs are associated mainly with their engagement and behaviours in MOOCs (Liyanagunawardena, Adams & Williams, 2013; Milligan, Littlejohn & Margaryan, 2013; Gašević et al., 2014; Kizilcec & Schneider, 2015; Barba, Kennedy & Ainley, 2016). Promoting the motivations of learners can assist in increasing the MOOCs retention (Xiong et al., 2015).

In MOOCs, learners show a wide range of motivations, which is a consequence of the open nature of MOOCs allowing heterogeneous learners to engage in the courses (Kizilcec, Piech & Schneider, 2013; Koller et al., 2013; Kizilcec & Halawa, 2015; Alario-Hoyos et al., 2017). The reasons why

learners select MOOCs as their online learning strategy have been explored by numerous scholars, for example (Belanger & Thornton, 2013; Christensen et al., 2013; Davis et al., 2014; Gütl et al., 2014; Hew & Cheung, 2014; Norman, 2014; Chaiyajit & Jeerungsuwan, 2015; Cupitt & Golshan, 2015; Kizilcec & Schneider, 2015; Li, 2015; Liu, Kang & McKelroy, 2015; Nordin, Norman & Embi, 2015; Zheng et al., 2015; Bayeck, 2016; Garrido et al., 2016; Howarth et al., 2016; Mihalec-Adkins et al., 2016; Salmon et al., 2016; Uchidiuno et al., 2016; Zhong et al., 2016; Alario-Hoyos et al., 2017; Annaraud & Singh, 2017; Egloffstein & Ifenthaler, 2017; Loizzo et al., 2017; Milligan & Littlejohn, 2017; Nagasampige & Nagasampige, 2017; Shapiro et al., 2017).

The cost of developing high-quality platforms with a broad range of various subjects ranges between 60 and 100 million dollars (Mutawa, 2016). Thus, it has become essential for MOOCs providers, practitioners, and policy makers to understand the motivational factors that influence learners to continue to use MOOCs (Xu, 2015; Ouyang et al., 2017). Exploring such motivations offers insights for MOOCs providers into the possible solutions for improving the MOOCs experience for all learners in order to increase their engagement, satisfaction (Gameel, 2017; Junjie, 2017; Othman et al., 2017), and possibly completion or retention rates (Xiong et al., 2015).

### 2.1.8. MOOCs Completion

MOOCs completion describes a situation when a learner fulfils all course requirements or obtains the certificate of course completion. Despite the large number of learners who sign up for MOOCs, roughly 7-10% of them complete the courses (Rai & Chunrao, 2016; Chen, 2017). This phenomenon has been recognized by Clow (2013) who proposed the idea of a 'funnel of participation' as shown in Figure 2.6.



Figure 2.6 The funnel of participation (Clow, 2013, p.186)

The low completion rate is attributed to the variety of motivations of learners to register in the courses (Greene, Oswald & Pomerantz, 2015). Also, one of the reasons that leads to low participation rate is lack of incentive (Fini, 2009). Completion rate may not be an appropriate way to measure MOOCs success (Jordan, 2014) due to the fact that not all learners need to complete the course (Wang & Baker, 2015), and a certain number of participants only want to benefit from parts of the course (Horton-Tognazzini, 2015). Nevertheless, investigating the completion phenomenon would lead us to better understand MOOCs and existing issues (Wang & Baker, 2015; Ouyang et al., 2017).

## **2.2. Technology Continuance Intention Theories**

Technology acceptance theories illuminate the determinants that predict the initial acceptance (first-time use) of technologies. In contrast, information technology (IT) continuance theories centred on the individuals' decision to continue or discontinue using the technologies having used and experienced them (post-adoption). Although IT acceptance and continuance follow similar theoretical trajectory, they are different in that the continuance phenomenon occurs after the first-time use only (initial acceptance) (Bhattacharjee & Lin, 2015).

The theories related to IT continuance are few compared to the theories of IT acceptance that include the innovation diffusion theory, the technology acceptance model (TAM), the theory of planned behaviour (TPB), and the unified theory of technology adoption and use (UTAUT) (Bhattacharjee & Lin, 2015). The following are the most commonly used theories in research on information technology continuance intention (Nabavi et al., 2016):

1. Information System Continuance Model (ISCM).
2. Theory of Reasoned Action (TRA).
3. Theory of Planned Behaviour (TPB).
4. Technology Acceptance Model (TAM).
5. Unified Theory of Acceptance and Use of Technology (UTAUT).
6. IS Success Model.

The following sections will provide brief descriptions of the above listed theories.

### 2.2.1. IS Continuance Model (ISCM)

The expectation-confirmation model (ECM), which was developed by Oliver (1980), is commonly adopted in order to examine consumer's satisfaction and service marketing in consumer behaviour literature. Bhattacharjee (2001) extended the ECM by integrating the perceived usefulness component from TAM in the context of information system (IS) post adoption. In this theory, IS continuance intention is based on three main determinants: users' satisfaction, the confirmation of expectations, and perceived usefulness (Figure 2.7). ISCM has been the most frequently adopted model in the prior studies pertaining to information technology continuance intention (Nabavi et al., 2016). The definitions of the variables of ISCM are presented in Table 2.5.

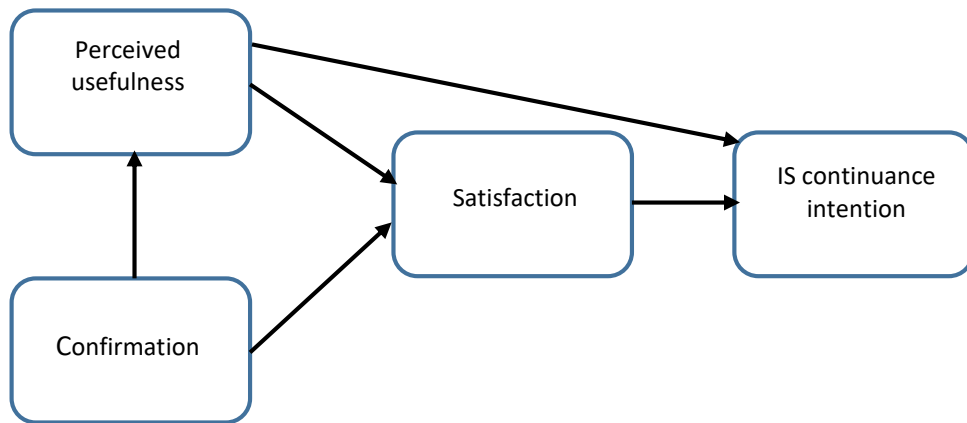


Figure 2.7 IS continuance expectation-confirmation model (Bhattacharjee, 2001)

Table 2.5 Definitions of ISCM variables

Construct	Definition
IS continuance intention	"Users' intention to continue using a technology" Bhattacharjee (2001, p.359).
Satisfaction	"Users' affect with (feelings about) prior technology use" Bhattacharjee (2001, p.359).
Perceived Usefulness	"Users' perception of the expected benefits of technology use" Bhattacharjee (2001, p.359).
Confirmation	"Users' perception of the congruence between expectation of technology use and its actual performance" Bhattacharjee (2001, p.359).

ISCM provides an excellent theoretical starting base for IT continuance research. However, for studying the continuance intention in new technology contexts, ISCM should be expanded through adding new variables accounting for unique attributes of the new technology in order to increase

its robustness and predictive ability (Bhattacharjee, Perols & Sanford, 2008; Lin, Featherman & Sarker, 2017).

### 2.2.2. Theory of Reasoned Action (TRA)

Fishbein & Ajzen (1975) developed the theory of reasoned action which is rooted in social psychology. This theory states that individual's intention to behave in a particular way is the direct determinant of that behaviour. The behavioural intention, attitude, and subjective norm form the primary constructs of TRA (Figure 2.8). Even though this theory has been developed primarily for the social psychology literature, it has been applied by numerous studies in IS with the purpose of predicting the behavioural intention to use a given technology. The definitions of the variables of TRA are shown in Table 2.6.

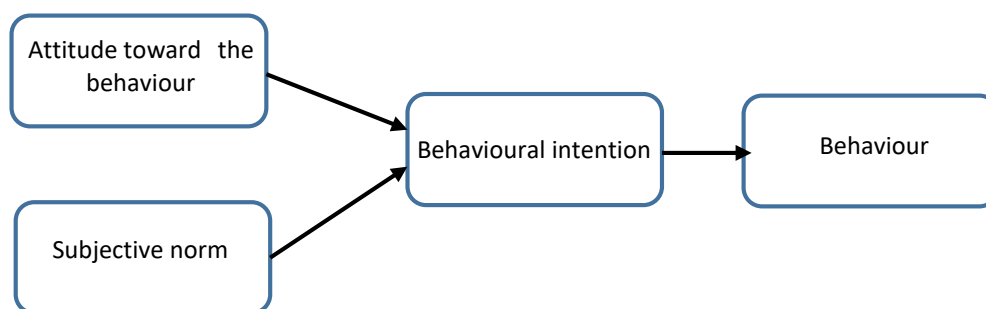


Figure 2.8 Theory of Reasoned Action (Fishbein & Ajzen, 1975)

Table 2.6 Definitions of TRA variables

Construct	Definition
Behavioural intention	Individual's intention to participate in a particular behaviour. (Ajzen, 1991).
Attitude towards the behaviour	"The degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question" (Ajzen, 1991, p.188).
Subjective norm	"Individual's perceived social pressure to perform or not to perform a target behaviour" (Ajzen, 1991, p.188).

Researchers have been criticizing certain aspects of TRA, for example, one of the limitations of TRA is referred to as 'correspondence' (Ajzen, 1985). Correspondence implies that TRA can predict the individual's behaviour if the attitude and intention are linked in action, context, target, and time (Sheppard, Hartwick & Warshaw, 1988; Wright, 1998). Additionally, another limitation is that it is only appropriate for predicting behaviours that are under volitional control (Yousafzai, Foxall & Pallister, 2010). This is due to the fact that TRA postulates that the behaviours are directly predicted



by intention without considering the limitations such as time, money, etc. that may prevent users from behaving in a particular way. Thus, this theory does not reflect other types of behaviours such as habitual actions, irrational decisions, or behaviour that are not consciously considered (Samaradiwakara & Gunawardena, 2014). Furthermore, TRA is recognized as a general model since it does not postulate the beliefs that predict a given behaviour (Davis, Bagozzi & Warshaw, 1989). Samaradiwakara & Gunawardena (2014) also pointed to the problem of confusing attitudes and norms (attitudes can be reframed as norms and vice versa).

### 2.2.3. Theory of Planned Behaviour (TPB)

The theory of planned behavior has been established by Ajzen (1991) as an extension of TRA. TPB suggests that three independent predictors, namely attitudes, subjective norms, and perceived behavioural control explain the intention of engaging in a particular behaviour (Figure 2.9). Perceived behaviour control (PBC) is defined as *“the perceived ease or difficulty of performing the behaviour”* (Ajzen, 1991). Perceived behavioural control was introduced in this model so as to solve the limitation of TRA which assumed that the behaviour is under volitional control.

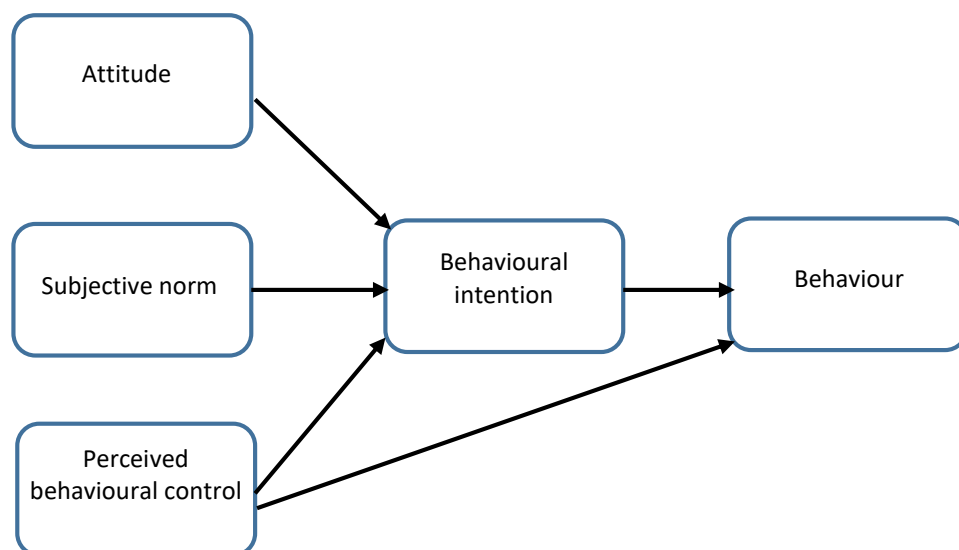


Figure 2.9 Theory of Planned Behavior (Ajzen, 1991)

TPB has also been debated throughout the previous years. Ajzen (1991) himself indicated that this theory is open for additional determinants that can account for the variance in the intention or behaviour. According to Al-Aulamie (2013), previous empirical research revealed that TPB

explained only about 40% of the variance in individuals' behaviour. In addition, Taylor & Todd (1995) criticized combining all non-controllable variables influencing individuals' behaviour in a single variable (PBC).

#### 2.2.4. Technology Acceptance Model (TAM)

Davis (1986) adapted TRA to establish the technology acceptance model in the field of IS. In TAM, the perceived usefulness and perceived ease of use influence the attitude which in turn has an influence on the behavioural intention as illustrated in Figure 2.10. TAM is mainly centred on predicting the initial acceptance of IS (Liao, Palvia & Chen, 2009) with the aim of diagnosing the design problems before the users use the new systems (Morris & Dillon, 1997). Definitions of the core constructs of the TAM are illustrated in Table 2.7.

Davis, Bagozzi & Warshaw (1989) have revised the original TAM by eliminating from the model the attitude because it did not fully mediate the influence of perceived usefulness on intention (Figure 2.11).

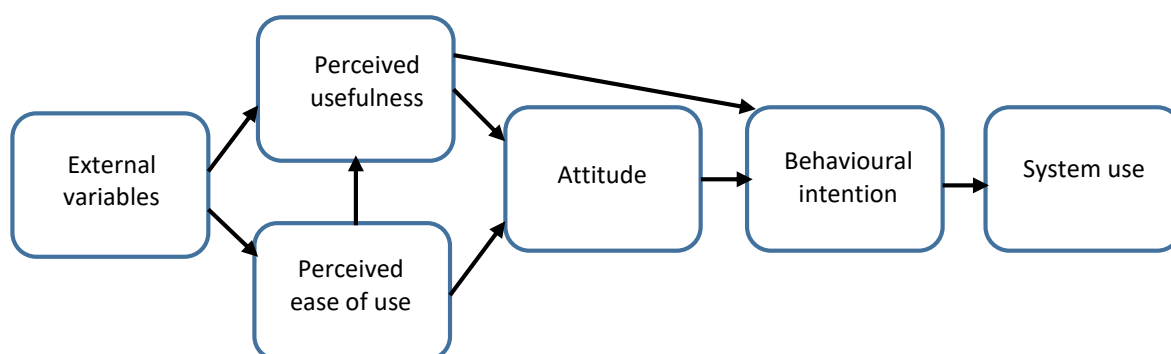
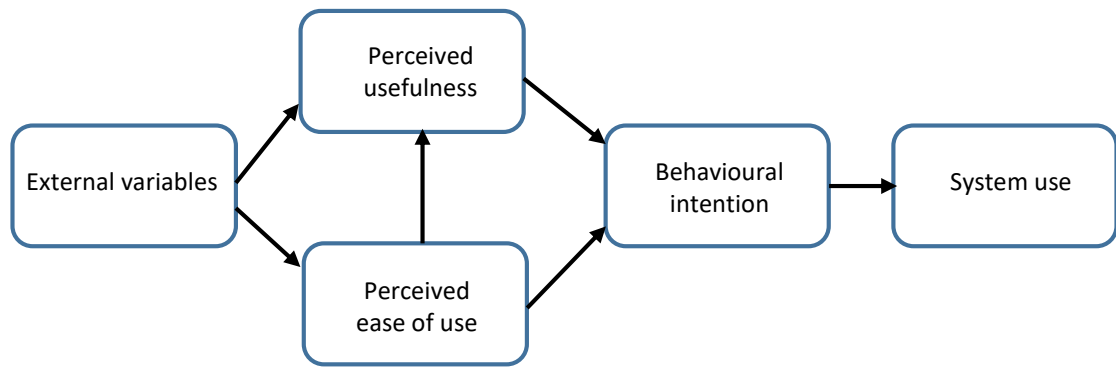


Figure 2.10 Technology acceptance model (Davis, Bagozzi & Warshaw, 1989)

Table 2.7 Definitions of TAM variables

Construct	Definition
Perceived usefulness	"The degree to which person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p.320).
Perceived ease of use	"The degree to which a person believes that using a particular system would be free from efforts" (Davis, 1989, p.320).



**Figure 2.11 Revised technology acceptance model (Davis, Bagozzi & Warshaw, 1989)**

It was revealed that TAM is the second most commonly used theory in the previous works related to information technology continuance intention (Nabavi et al., 2016). Similarly to the case of any theoretical model, TAM has certain limitations. First, Davis (1989) validated the TAM using university students as a sample which may limit the generalizability of the results (Lee et al., 2003; Legris, Ingham & Colletette, 2003). Second, this model explains around 40% of the variance in the behavioural intention (Davis et al., 1989; Venkatesh & Davis, 2000) which is deemed limited explanatory power (Sun & Zhang, 2006; Al-Aulamie, 2013). Adding further external variables to the TAM can help in increasing the explanatory power of this model. Third, the correlations between the TAM variables are inconsistent in different contexts and settings (King & He, 2006; Sun & Zhang, 2006; Al-Aulamie, 2013). For example, the impact of the perceived ease of use on the behavioural intention has been cited as significant in certain studies and insignificant in the others (Al-Aulamie, 2013).

### **2.2.5. Unified Theory of Acceptance and Use of Technology (UTAUT)**

The unified theory of acceptance and use of technology has been created by Venkatesh et al. (2003). It was an attempt to provide a unified view of users' technology acceptance based on a comparison of eight models: TAM, TRA, TPB, Innovation Diffusion Theory (IDT), the motivational model (MM), a model combining the TAM and TPB, the model of PC utilization, and the social cognitive theory (SCT). This model posits that the behavioural intention is a function of three independent variables: performance expectancy, effort expectancy, and social influence, whereas the facilitating conditions factor influences the use behaviour. Gender, age, experience, and

voluntariness of use have been included in the model as moderators. Figure 2.12 shows the UTAUT model whereas Table 2.8 illustrates the definitions of UTAUT variables.

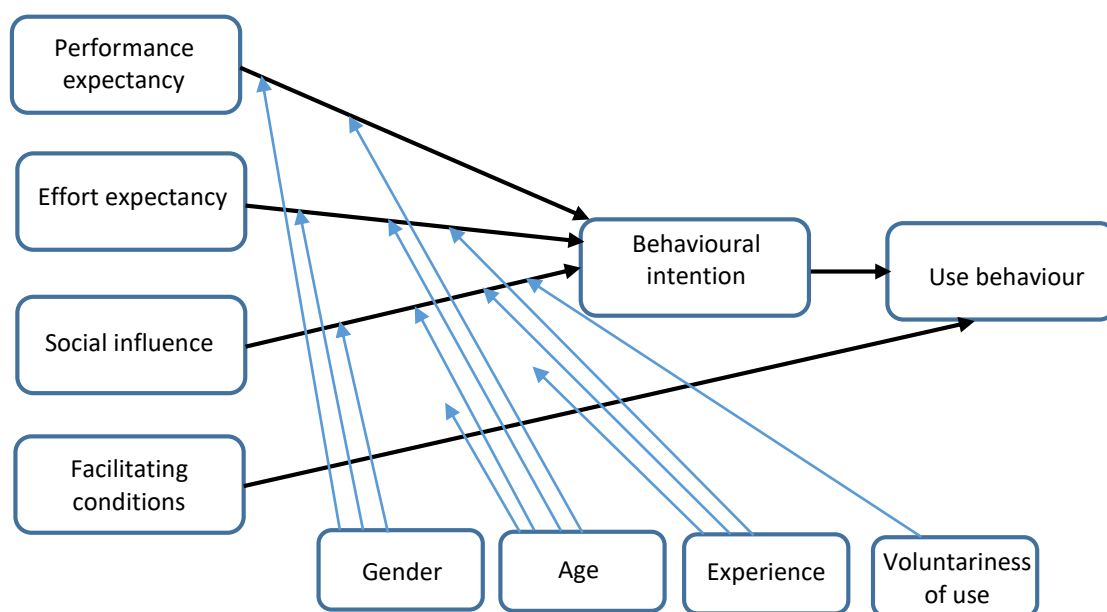


Figure 2.12 The Unified theory of acceptance and use of technology (Venkatesh et al., 2003)

Table 2.8 Definitions of UTAUT variables

Construct	Definition
<b>Performance expectancy</b>	"The degree to which an individual believes that using the system will help him or her to attain gains in performance" (Venkatesh et al., 2003, p.447).
<b>Effort expectancy</b>	"The degree of ease associated with the use of the system" (Venkatesh et al., 2003, p.450).
<b>Social influence</b>	"The degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003, p.451).
<b>Facilitating conditions</b>	"The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh et al., 2003, p.453).

Waehama et al. (2014) mentioned that UTAUT has proven its validity and stability within diverse research contexts. Moreover, this model explains approximately 70% of the variance in the behavioural intention (Venkatesh et al., 2003), whereas most of the other models explain as little as 40% (Waehama et al., 2014). However, UTAUT was primarily developed so as to examine the technology acceptance from employees' perceptions. Hence, it is not known how this theory can be adopted in different contexts such as consumer context (Venkatesh, Thong & Xu, 2012). The results of certain research revealed inconsistencies in UTAUT relationships (Thomas, Singh & Gaffar, 2013), where a number of studies validated the positive effects of performance expectancy and

social influence on the behavioural intention, while the other studies did not validate these relationships (Thomas, Singh & Gaffar, 2013).

### 2.2.6. IS Success Model

In 1992, DeLone & McLean proposed the IS success model, which has been widely used in IS literature (DeLone & McLean, 1992). This model is grounded in six factors: information quality, system quality, use, user satisfaction, individual impact, and organizational impact (Figure 2.13). In 2003, DeLone & McLean updated the model as system quality, information quality, service quality, intention to use/use, user satisfaction, and net benefits became the main determinants of the IS success model (Figure 2.14). The definitions of these determinants are demonstrated in Table 2.9.

The IS success model emphasizes only the IS dimensions itself which gives a partial view of the whole system (Azeemi, Lewis & Tryfonas, 2013). This model is suitable for measuring the success in the static IS contexts (Azeemi, Lewis & Tryfonas, 2013). As an example, other contexts such as the dynamic cloud context require further metrics that can explain the system as a whole. Additionally, the hedonic IS contexts such as gaming and social networking may need different measures or certain of the IS dimensions may not be appropriate (Petter, DeLone & McLean, 2008). Also, Green, Robb & Rohde (2015) claimed that measuring IS success is not one-size-fits-all. In their study, they established that different levels of management impose the use of different metrics to predict the system success precisely.

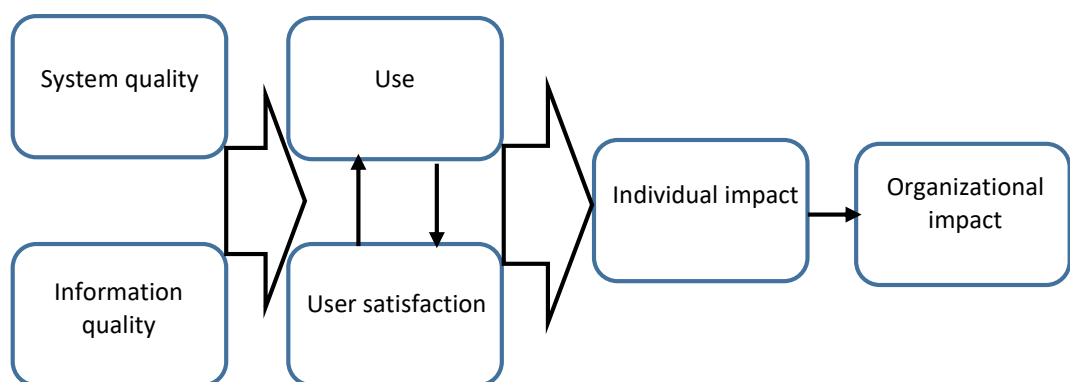


Figure 2.13 Original IS success model (DeLone & McLean, 1992)

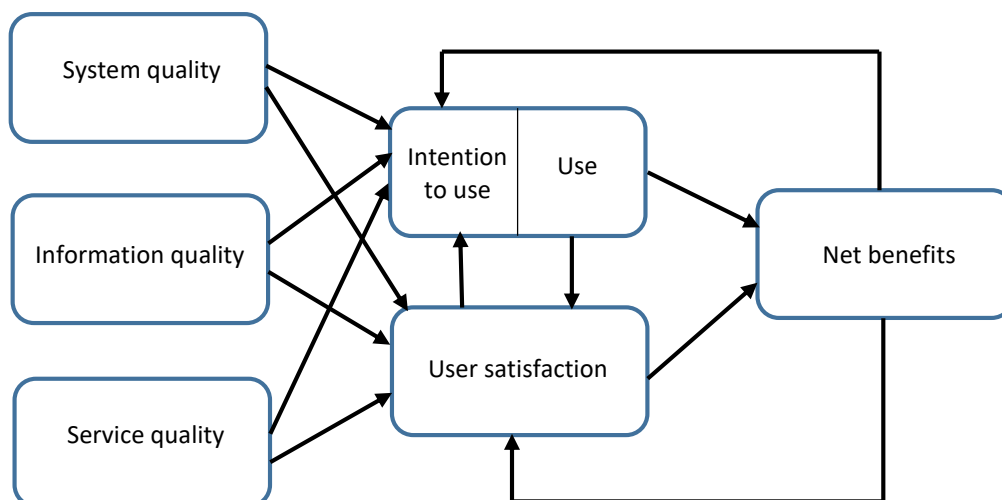


Figure 2.14 Updated IS success model (DeLone &amp; McLean, 2003)

Table 2.9 Definitions of IS success model variables

Construct	Definition
<b>System Quality</b>	"Captures the desire technical characteristics" (Nabavi et al., 2016, p.66).
<b>Information Quality</b>	"Refers to the issue of content" (Nabavi et al., 2016, p.66)
<b>Service Quality</b>	"Refers to the quality of typical service-related activities provided by service providers through IS" (Nabavi et al., 2016, p.66).
<b>System use</b>	"The degree and manner in which staff and customers utilize the capabilities of an information system" (Petter, DeLone & McLean, 2008, p.239).
<b>User Satisfaction</b>	"Reflects users' opinion of system and should meet the entire transaction experience" (Nabavi et al., 2016, p.66).
<b>Net benefits</b>	"The extent to which IS are contributing to the success of individuals, groups, organizations, industries, and nations" (Petter, DeLone & McLean, 2008, p.239).

## **2.3. Related Works**

### **2.3.1. Motivations to Use MOOCs**

A systematic literature review was carried out in order to survey the motivations that encourage the individuals to use MOOCs as learners (Hakami, White & Chakaveh, 2017). There is a lack of systematic synthesis of literature pertaining to factors motivating learners to use MOOCs. Only two literature synthesis pertaining to the topic were found. Hew & Cheung (2014) aimed to identify learners' and instructors' motivations and challenges of using MOOCs. They suggested future issues that need to be resolved. Also, the goal of a study led by Latha & Malarmathi (2016) is examining the factors influencing the learners to complete MOOCs. This study differs from the current research in terms of that its focus is only on MOOCs completion and not motivations for using MOOCs. To the best of the researcher's knowledge, the systematic literature review conducted in this study represents the first effort to review the literature on motivations for using MOOCs from learners' viewpoints for a particular time period (2011 to 2016). The goal of the review is to make better sense of various research trends and provide proposal for further research.

The classifications of papers, theories used, data collection methods, motivational factors proposed and geographic distribution of participants were examined. To address the gaps in the literature, the following research questions were posed:

**RQ1:** What are related papers? How can the papers be classified?

**RQ2:** What theoretical frameworks and reference theories have been applied to study the topic?

**RQ3:** What data collection methods have been used by related papers?

**RQ4:** What key motivational factors were proposed in existing studies?

**RQ5:** What is the participants' geographic distribution in the related studies?

To accomplish the researcher's objective, the systematic literature review strategy suggested by Kitchenham (2004) was used. The approach consists of five activities which are: (A) Define research question, (B) Define search keywords, (C) Select electronic resources, (D) Search process, and (E) Match inclusion and exclusion criteria. The search keywords used were "MOOCs Learner Motivations", "MOOCs Completion OR MOOCs Retention", and "MOOCs Learner Engagement". The papers were identified through searching six educational technology journals and six academic

databases namely, British Journal of Educational Technology, American Journal of Distance Education, Distance Education, Open Learning: The Journal of Open, Distance and e-Learning, European Journal of Open, Distance and E-Learning, Computer Assisted Learning, Google Scholar, IEEE Xplore, Elsevier's ScienceDirect, Wiley Online Library, SpringerLink, and Scopus.

In order to be included in the corpus, each identified paper ought to focus on the motivations for using MOOCs from learner's perspective. This criterion was given the highest priority. However, due to the limited number of related papers, further criteria, with lower priority than the previous criterion, were specified to choose appropriate papers for inclusion in the review which are as follows: the paper ought to focus either on (A) the factors that influence the acceptance of MOOCs (why people accept or reject the use of MOOCs) , or (B) the learner's motivations for MOOCs completion / retention, or (C) the factors influencing the success of MOOCs, or (D) addressing the learners' motivations for using MOOCs as a part of other different objectives. It was expected that these additional papers might present factors that are applicable to the motivations of using MOOCs. Moreover, papers ought to be published between January 2011 and October 2016 and written in English. The reason of selecting year 2011 is that it was the date when MOOCs have been used extensively in online learning (Sunar et al., 2015).

The findings demonstrate that the related literature is limited. Several papers adopted technology acceptance theories. Quantitative survey was the favoured method for researchers. Key motivational factors were learner-related (which are divided into personal, social and educational/professional development), institution and instructor-related, platform and course-related and perception of external control/facilitating conditions-related. The identified studies focused only on few geographic regions. Such findings are important for uncovering the directions in the literature and determining the current gaps that can be addressed in the future. Appendix A is dedicated to presenting the conference paper which shows the systematic literature review conducted in this study.



### 2.3.2. MOOCs Acceptance/Continuance

In recent years, the problem of MOOCs acceptance and continuance intention has gained considerable attention due to the growth of MOOCs popularity with the emergence of numerous MOOCs providers and the increase in the number of their users. This section provides a literature review on the studies that have investigated the factors affecting the learners' intentions towards accepting and continuing the use of MOOCs. The objective of this review is assessing the current state of research on MOOCs acceptance/continuance and identifying the research questions that need further research. Table 2.10 summarizes the research purpose, geographic distribution of participants, used theories, sample size, type of respondents, data collection, and data analysis methods used in the previous MOOCs articles. In addition, the key results reported by such articles are demonstrated in Table 2.11.

**Table 2.10 Review of MOOCs acceptance and continuance studies**

<b>Author(s) (Year)</b>	<b>Research Purpose</b>	<b>Geographic distribution of respondents</b>	<b>Used theory</b>	<b>Sample size and type of respondents</b>	<b>Data collection method</b>	<b>Data analysis method</b>
<b>Adamopoulos (2013)</b>	Examine the factors affecting MOOCs completion	Not available	Self-developed model	<ul style="list-style-type: none"> <li>• Qualitative and quantitative data about 133 courses provided by six platforms: Canvas Network, Codecademy, Coursera, edX, Udacity, and Venture Lab</li> <li>• Analysing 1163 textual reviews submitted online by 842 students</li> </ul>	Grounded theory method in a quantitative study that combines econometric, text mining, and opinion mining	Ordered logistic regression
<b>Xu (2015)</b>	Behaviour intention to use MOOCs	Not available	TAM3	325 (87.1% college students, and 12.9% are other people)	Questionnaire (Network and paper distributing)	Covariance based (CB) SEM using AMOS

<b>Chu et al. (2015)</b>	Behaviour intention to use MOOCs	China	TAM	212 respondents	Online Questionnaire	CB-SEM using AMOS
<b>Huanhuan &amp; Xu (2015)</b>	Continuance intention to use MOOCs	China	TAM	171 respondents	Questionnaire	CB-SEM using AMOS
<b>Gao &amp; Yang (2015)</b>	Continuance intention to use MOOCs	China	<ul style="list-style-type: none"> <li>• TAM</li> <li>• Institutional Theory (IT)</li> </ul>	247 (68% of the participants were employees, 28.3% were students, and 3.6% were unemployed)	Online questionnaire	CB-SEM using AMOS
<b>Alraimi, Zo &amp; Ciganek (2015)</b>	Continuance intention to use MOOCs	Respondents originated from 74 countries (24% from USA, 14% from India, 10% from Greece and Azerbaijan, and 42% from other countries)	Expectation Confirmation Model (ECM)	316 users of Coursera, edX, and Udacity. Sample of students, employees, and others	Online questionnaire	Partial least squares (PLS) SEM using SmartPLS
<b>Xiong et al. (2015)</b>	MOOCs retention	Not available	Self-developed model	17,359 users of Pennsylvania State University MOOCs	Questionnaire	CB-SEM
<b>Zhou (2016)</b>	Continuance intention to use MOOCs	China	<ul style="list-style-type: none"> <li>• TPB</li> <li>• Self-Determination Theory (SDT)</li> </ul>	400 university students	Online questionnaire	CB-SEM using AMOS
<b>Sa et al. (2016)</b>	Behaviour intention to use MOOCs	Korea	TAM	309 respondents	Questionnaire	CB-SEM using AMOS
<b>Mulik, Yajnik &amp; Godse (2016)</b>	Continuance intention to use MOOCs	Not available	TAM	30 working professionals (employees)	Questionnaire	Multiple regression analysis using SPSS
<b>Hone &amp; El-Said (2016)</b>	MOOCs retention	Egypt	Self-developed model	376 university students	Printed questionnaire	PLS-SEM

<b>Aharony &amp; Bar-Ilan (2016)</b>	Continuance intention to use MOOCs	Israel	TAM	102 university students	Questionnaire and open-ended questions	Hierarchical regression analysis
<b>Mohapatra &amp; Mohanty (2016)</b>	Behaviour intention to use MOOCs	India	Self-developed model	128 students and corporate employees	<ul style="list-style-type: none"> <li>• Detailed discussions with educators and MOOC users</li> <li>• Examining a hundred online education websites</li> <li>• Questionnaire</li> </ul>	CB-SEM using AMOS-LISREL
<b>Barba, Kennedy &amp; Ainley (2016)</b>	Examine the factors that influence learners' performance in MOOCs	USA (19.4%), India (7.7%), Australia (6.3%), Spain (5.8%), and Brazil (4.6%)	Self-developed model	862 learners in Coursera	<ul style="list-style-type: none"> <li>• Online questionnaire</li> <li>• Participation data (e.g. video hits and number of quiz attempts)</li> </ul>	CB-SEM using AMOS
<b>Pursel et al. (2016)</b>	Examine the factors affecting MOOCs completion	Not available	Self-developed model	<ul style="list-style-type: none"> <li>• Using participation data of 94711 students in Coursera</li> <li>• 9266 students in Coursera participated in the pre-course survey</li> </ul>	<ul style="list-style-type: none"> <li>• Questionnaire</li> <li>• Participation data (e.g. videos, forums, assessment and course completion information)</li> </ul>	Logistic regression
<b>Wu &amp; Chen (2017)</b>	Continuance intention to use MOOCs	China	<ul style="list-style-type: none"> <li>• TAM</li> <li>• Task Technology Fit (TTF)</li> </ul>	252 (170 were students, 58 were employees, and 14 were others)	Online Questionnaire	PLS-SEM
<b>Huang, Zhang &amp; Liu (2017)</b>	Continuance intention to use MOOCs	China	TTF	246 university students	Questionnaire	PLS-SEM

<b>Ouyang et al. (2017)</b>	Continuance intention to use MOOCs	China	<ul style="list-style-type: none"> <li>• TTF</li> <li>• ECM</li> </ul>	234 university students	Questionnaire	CB-SEM
<b>Yang et al. (2017)</b>	Continuance intention to use MOOCs	China	<ul style="list-style-type: none"> <li>• IS success model</li> <li>• TAM</li> </ul>	294 respondents with e-learning experience in icourse.com	Online questionnaire	PLS-SEM using SmartPLS
<b>Zhang et al. (2017)</b>	Continuance intention to use MOOCs	China	TAM	214 MOOC learners in Coursera (foreign platform) and ICourse163 (domestic platform)	Online questionnaire	PLS-SEM using SmartPLS
<b>Lim,Tang &amp; Ravichandran (2017)</b>	Continuance intention to use MOOCs	Malaysia	UTAUT 2	780 students in six Malaysian universities, who have used MOOCs for taking their online courses	Questionnaire	CB-SEM using AMOS
<b>Gameel (2017)</b>	Learners' satisfaction with MOOCs	Not available	<ul style="list-style-type: none"> <li>• Theory of independent learning and teaching (TILT)</li> <li>• Three types of interaction model (IM) (Learner-content interaction, learner-instructor interaction, and learner-learner interaction)</li> <li>• TAM</li> </ul>	1,786 learners enrolled in four MOOCs	Online questionnaire	Stepwise multiple regression analysis using SPSS
<b>Othman et al. (2017)</b>	Effectiveness of MOOCs' use	Malaysians (91.4%), Middle Easterners (5.7%), Africans	<ul style="list-style-type: none"> <li>• TAM</li> </ul>	513 university students	Online questionnaire	CB-SEM using AMOS

		(1.6%), and Indonesians (1.4%)	• Expectation-Confirmation Theory (ECT)			
<b>Huang &amp; Hew (2017)</b>	Examine factors affecting learners' motivations and their completion rate	43% from Asia (e.g. China, Cambodia), 26% from North America (e.g. USA, Canada), 19% from Europe (e.g. UK, Albania), 9% from Oceania (e.g. Australia), 2% from Africa (i.e. Nigeria), and 2% from Central America (i.e. Guatemala)	ARCS model	<ul style="list-style-type: none"> <li>• <b>Questionnaire:</b> 47 learners in Coursera and Open2study</li> <li>• <b>Interview:</b> 11 participants</li> </ul>	<b>Mixed methods:</b> <ul style="list-style-type: none"> <li>• Questionnaire</li> <li>• Semi-structured interviews</li> </ul>	Spearman's rho Correlation
<b>Junjie (2017)</b>	Continuance intention to use MOOCs	China	Extended ECM (ISCM)	435 respondents	Online questionnaire	CB-SEM using AMOS
<b>Magen-Nagar &amp; Cohen (2017)</b>	Examine the factors that predict the sense of achievement in MOOCs	Israel	Self-developed model	163 students who participated in 'Academy Online–MOOCs in the Israeli Education System'	Online questionnaire	CB-SEM using AMOS
<b>Wang, Dong &amp; Shao (2017)</b>	Acceptance of MOOCs training	China	TAM	224 employees	Questionnaire	CB-SEM using AMOS

**Table 2.11 Key results of previous studies on MOOCs acceptance and continuance**

<b>Author(s) (Year)</b>	<b>Key results</b>
<b>Adamopoulos (2013)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of professors, peer assessment compared to automated feedback, and suggested textbooks on the course completion.</li> <li>• The negative effect of self-paced courses compared to courses that follow a specific schedule, the difficulty of the course, its duration in weeks, and suggested paid textbooks on the syllabus on the course completion.</li> <li>• For difficult courses, longer duration in weeks and more workload have a positive effect on the course completion.</li> <li>• Courses belonging to business and management, computer science, and science have a positive effect on the course completion compared to other disciplines (humanities).</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of assignments and course material on the course completion.</li> <li>• The positive effect of awarding certificates upon completion on the course completion.</li> <li>• The effect of gender of students, students attending a formal educational institution or different MOOC platforms on the course completion.</li> </ul>
<b>Xu (2015)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the MOOCs behaviour intention on MOOCs use.</li> <li>• The positive effect of subjective norm, image, study relevance, and output quality on the perceived usefulness.</li> <li>• The positive effect of computer self-efficacy, perceived enjoyment, and objective usability on the perceived ease of use.</li> <li>• The positive effect of subjective norm on the image.</li> <li>• The positive effect of subjective norm and perceived usefulness on MOOCs behaviour intention.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of result demonstrability and perceived ease of use on perceived usefulness.</li> <li>• The positive effect of computer playfulness and perceptions of external control on perceived ease of use.</li> <li>• The negative effect of computer anxiety on perceived ease of use.</li> <li>• The positive effect of perceived ease of use on MOOCs behaviour intention.</li> </ul>

<b>Author(s) (Year)</b>	<b>Key results</b>
<b>Chu et al. (2015)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the perceived playfulness and perceived ease of use on perceived usefulness.</li> <li>• The positive effect of the perceived ease of use on perceived playfulness.</li> <li>• The positive effect of perceived playfulness on trust towards MOOCs.</li> <li>• The positive effect of perceived usefulness and trust on the intention to attend MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of perceived usefulness and perceived ease of use on trust towards MOOCs.</li> <li>• The positive effect of perceived ease of use and perceived playfulness of MOOCs on the intention to attend MOOCs.</li> </ul>
<b>Huanhuan &amp; Xu (2015)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the perceived reputation on the willingness to use social network.</li> <li>• The positive effect of the perceived reputation on the perceived usefulness.</li> <li>• The positive effect of the willingness to use social network on perceived ease of use and interactivity.</li> <li>• The negative effect of the perceived usefulness on the perceived cost.</li> <li>• The positive effect of the perceived usefulness and perceived ease of use and interactivity on the intention to adopt MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the willingness to use social network on perceived cost.</li> <li>• The positive effect of the willingness to use social network and perceived reputation on the intention to adopt MOOCs.</li> <li>• The negative effect of perceived cost on the intention to adopt MOOCs.</li> </ul>
<b>Gao &amp; Yang (2015)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the perceived ease of use on perceived usefulness.</li> <li>• The positive effect of the perceived usefulness, perceived ease of use, and mimetic pressure on the behavioural intention to use MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of coercive pressures and normative pressures on the behavioural intention to use MOOCs.</li> </ul>

<b>Author(s) (Year)</b>	<b>Key results</b>
<b>Alraimi, Zo &amp; Ciganek (2015)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of confirmation on perceived openness and perceived reputation.</li> <li>• The positive effect of perceived openness and confirmation on perceived usefulness.</li> <li>• The positive effect of confirmation, perceived reputation, and perceived enjoyment on satisfaction.</li> <li>• The positive effect of perceived openness, confirmation, and perceived reputation on perceived enjoyment.</li> <li>• The positive effect of perceived openness, perceived usefulness, satisfaction, perceived enjoyment, and perceived reputation on the continuance intention to use MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of perceived usefulness and perceived openness on satisfaction.</li> </ul>
<b>Xiong et al. (2015)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive correlation between intrinsic motivation (interest, curiosity, and enjoyment) and extrinsic motivation (certificate, credential, academic and job relevance).</li> <li>• The positive correlation between intrinsic motivation and social motivation (connecting with learners and taking a course with friends).</li> <li>• The positive effect of extrinsic motivation on social motivation.</li> <li>• The positive effect of intrinsic motivation and extrinsic motivation on engagement in a MOOC.</li> <li>• The positive effect of engagement in a MOOC on a MOOC retention.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of social motivation on engagement in a MOOC.</li> </ul>
<b>Zhou (2016)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of autonomous motivation on attitude and perceived behavioural control.</li> <li>• The negative effect of controlled motivation on perceived behavioural control.</li> <li>• The positive effect of controlled motivation on the subjective norm.</li> <li>• The positive effect of the attitude and perceived behavioural control on the intention to continue using MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p>



Author(s) (Year)	Key results
	<ul style="list-style-type: none"> <li>• The positive effect of the subjective norm on the intention to continue using MOOCs.</li> <li>• The negative effect of controlled motivation on the attitude.</li> <li>• The negative effect of autonomous motivation on the subjective norm.</li> </ul>
Sa et al. (2016)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of popularity, ubiquity, reputation, and information richness on the perceived ease of use.</li> <li>• The positive effect of popularity, interactivity, reputation, information richness, and the perceived ease of use on the perceived usefulness.</li> <li>• The positive effect of the perceived ease of use and perceived usefulness on the usage intention.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of openness and interactivity on the perceived ease of use.</li> <li>• The positive effect of openness and ubiquity on perceived usefulness.</li> </ul>
Mulik, Yajnik & Godse (2016)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the perceived usefulness and the perceived ease of use on the behavioural intention to use MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the subjective norm and perceived enjoyment on the behavioural intention to use MOOCs.</li> </ul>
Hone & El-Said (2016)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The significant effect of course content on the perceived effectiveness of a MOOC.</li> <li>• The significant effect of instructor interaction and perceived effectiveness of a MOOC on learner retention within a MOOC.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The significant effect of course content on learner retention within a MOOC.</li> <li>• The significant effect of instructor interaction on perceived effectiveness of a MOOC.</li> </ul>

<b>Author(s) (Year)</b>	<b>Key results</b>
<b>Aharony &amp; Bar-Ilan (2016)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the perceived usefulness and the perceived ease of use on future intended use of MOOCs.</li> <li>• The negative effect of high level of threat on future intended use of MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the deep learning strategy and high level of challenge on future intended use of MOOCs.</li> <li>• The negative effect of the surface learning strategy on future intended use of MOOCs.</li> </ul>
<b>Mohapatra &amp; Mohanty (2016)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• <b>Learner's perception</b> Contents, tools, learner, affordability, usability, and availability have a positive significant effect on MOOCs acceptance.</li> <li>• <b>Acknowledgment by stakeholders</b> Student base, recognition by job providers, and recognition by regulatory bodies have a positive significant effect on MOOCs acceptance.</li> <li>• <b>Knowledge providers</b> Renowned faculty and renowned universities have a positive significant effect on MOOCs acceptance.</li> </ul>
<b>Barba, Kennedy &amp; Ainley (2016)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of value beliefs, individual interest, mastery approach, and video hits on the situational interest.</li> <li>• The positive effect of value beliefs on video hits.</li> <li>• The positive effect of mastery approach on quiz attempts.</li> <li>• The positive effect of video hits, situational interest, and quiz attempts on the final grade.</li> <li>• The negative effect of individual interest on the final grade.</li> </ul>
<b>Pursel et al. (2016)</b>	<p><b>Supported hypotheses:</b></p> <p><b>Overall sample:</b></p> <ul style="list-style-type: none"> <li>• Registration date is an indicator of course completion (late registration is associated with a significant reduction in completion rate per day).</li> </ul>

Author(s) (Year)	Key results
	<ul style="list-style-type: none"> <li>• Class activities (videos watched, posts, and comments per week) are positive indicators of course completion.</li> </ul> <p><b>Survey sample:</b></p> <ul style="list-style-type: none"> <li>• Registration date is not an indicator of course completion.</li> <li>• Class activities (videos watched and posts per week) are positive indicators of course completion.</li> <li>• No difference in completion rate between male and female students.</li> <li>• Compared to native English speakers, non-native English speakers with fluent English obtained the highest completion rates.</li> <li>• Previous educational attainment is positively related to completion rate.</li> <li>• Prior online learning experience, including enrolling in past MOOCs, is not an indicator of course completion.</li> <li>• Students' expectations and plans for the course is an indicator of course completion.</li> </ul>
Wu & Chen (2017)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of task technology fit, reputation, social recognition, social influence, and the perceived ease of use on the perceived usefulness.</li> <li>• The positive effect of individual technology fit, task technology fit, and openness on the perceived ease of use.</li> <li>• The positive effect of the perceived usefulness on the attitude.</li> <li>• The positive effect of the perceived usefulness and attitude on the continuance intention to use MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of individual technology fit and openness on perceived usefulness.</li> <li>• The positive effect of social influence and the perceived ease of use on the attitude.</li> </ul>
Huang, Zhang & Liu (2017)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of vividness of course content, teacher's subject knowledge, and interactivity on students' intention to revisit MOOCs.</li> <li>• The positive effect of the course difficulty as a moderator on the relationship between the teacher's subject knowledge and students' intention to revisit MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the course difficulty as a moderator on the relationship between the course content vividness and students' intention to revisit MOOCs.</li> </ul>

Author(s) (Year)	Key results
	<ul style="list-style-type: none"> <li>• The positive effect of the course difficulty as a moderator on the relationship between the interactivity and students' intention to revisit MOOCs.</li> </ul>
Ouyang et al. (2017)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of students' extent of confirmation on the perceived usefulness, task technology fit, and satisfaction.</li> <li>• The positive effect of the perceived usefulness on satisfaction.</li> <li>• The positive effect of the perceived usefulness, satisfaction, and task technology fit on the continuance intention to use MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of students' perceived task-technology fit on their satisfaction with MOOCs.</li> </ul>
Yang et al. (2017)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of system quality on the perceived ease of use and the continuance intention to use MOOCs.</li> <li>• The positive effect of course quality and service quality on the perceived usefulness of MOOCs.</li> <li>• The positive effect of the perceived usefulness on the continuance intention to use MOOCs.</li> </ul>
Zhang et al. (2017)	<p><b>Entire Sample:</b></p> <p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of E-learning self-efficacy on the perceived learner control of MOOC learning.</li> <li>• The positive effect of the perceived learner control of MOOC learning, and E-learning self-efficacy, and personal innovativeness in information technology on the perceived ease of use.</li> <li>• The positive effect of the perceived ease of use, perceived learner control, and personal innovativeness in information technology on the perceived usefulness.</li> <li>• The positive effect of the perceived usefulness and the perceived ease on the intention to use MOOCs.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of personal innovativeness in information technology on the perceived learner control of MOOC learning.</li> <li>• The positive effect of the perceived learner control of MOOC learning on the intention to use MOOCs.</li> </ul>

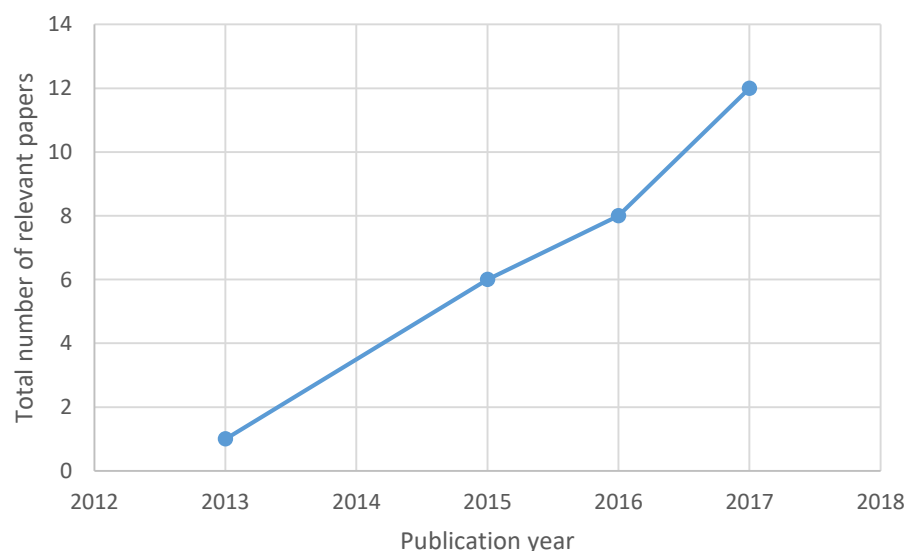
<b>Author(s) (Year)</b>	<b>Key results</b>
<b>Lim, Tang &amp; Ravichandran (2017)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of performance expectancy, social influence, effort expectancy, hedonic motivation, and habit on the intention to enrol in MOOCs.</li> <li>• The positive effect of the facilitating conditions, habit, and intention to enrol in MOOCs on the MOOCs actual usage.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the facilitating conditions on the intention to enrol in MOOCs.</li> </ul>
<b>Gameel (2017)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of learner perceived usefulness, teaching and learning aspects of the MOOC, course flexibility, and learner-content interaction on learners' satisfaction with the MOOC.</li> </ul> <p><b>Unsupported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the learner-learner interaction and learner-instructor interaction on learners' satisfaction with the MOOC.</li> </ul>
<b>Othman et al. (2017)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of readiness and the attitude on the continuance intention to use MOOCs.</li> <li>• The positive effect of the perceived ease of use, perceived usefulness, and perceived enjoyment on the attitude towards using MOOCs.</li> <li>• The positive effect of the attitude and continuance of use on the student's satisfaction with using MOOCs.</li> <li>• The positive effect of student's satisfaction on the effectiveness of the use of MOOCs.</li> </ul>
<b>Huang &amp; Hew (2017)</b>	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive correlation between learners' overall motivation on instructional material with the learners' course completion rate.</li> <li>• The positive correlation between learners' perception on each subscale (i.e. attention, relevance, confidence, satisfaction) with learners' overall motivation.</li> <li>• There is a difference among different age groups' course completion rates.</li> <li>• There is a difference among different age groups' motivation on instructional material.</li> </ul> <p><b>Unsupported hypotheses:</b></p>

Author(s) (Year)	Key results
	<ul style="list-style-type: none"> <li>• The positive correlation between learners' age level and learners' overall motivation on instructional material.</li> </ul>
Junjie (2017)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of learners' confirmation of prior learning experience, their knowledge outcome, and performance proficiency about future use on their satisfaction with MOOCs.</li> <li>• The positive effect of learners' confirmation of prior learning experience on their knowledge outcome and performance proficiency about future use.</li> <li>• The positive effect of social influence, satisfaction, knowledge outcome, and performance proficiency about future use on the learners' continuance intention to use MOOCs.</li> </ul>
Magen-Nagar & Cohen (2017)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of the motivational orientations (intrinsic orientation, extrinsic orientation, beliefs about the value of the course, beliefs about the mastery over the learning, and self-efficacy for learning and performance) on learning strategies (rehearsal, elaboration, organizing, critical thinking, metacognitive self-regulation, time and study environmental management, peer learning, and help seeking) and the sense of achievement in MOOCs.</li> <li>• The positive effect of learning strategies on the sense of achievement in MOOCs.</li> </ul>
Wang, Dong & Shao (2017)	<p><b>Supported hypotheses:</b></p> <ul style="list-style-type: none"> <li>• The positive effect of perceived usefulness and perceived easiness on acceptance of MOOCs.</li> <li>• The positive effect of perceived easiness, perceived flexibility, perceived interactivity, perceived resource advantage, organizational support, and individual creativity on the perceived usefulness.</li> <li>• The positive effect of perceived resource advantage, individual creativity, and perceived self-efficacy on the perceived easiness.</li> </ul>

### 2.3.3. Discussion of the Related Works

The extensive literature review conducted in this research revealed twenty-seven papers pertaining to MOOCs acceptance and continuance intention from the learners' perspective. A study conducted by Alraimi, Zo & Ciganek (2015) is one of the leading studies that investigated the determinants that have a significant impact on the MOOCs' continuance intention from the learners' perspective. They extended the Expectation Confirmation Model successfully as 15 out of 17 hypotheses were supported in their study. Since 2015, several studies have researched the factors affecting the MOOCs' acceptance and continuance intention. In 2017, Wu and Chen examined the predictors of the continuance intention to use MOOCs using a sample of Chinese individuals who had previously joined MOOCs. They extended the TAM effectively where the explained variances in the perceived usefulness, perceived ease of use, and continuance intention were 94.8%, 46.8%, and 95.7%, respectively.

Figure 2.15 shows the total number of the relevant papers in relation to the publication year. It is visible from this figure that the number of papers that have focused on examining the learners' acceptance and continuance intention to use MOOCs has increased significantly since 2013. Fifteen articles from the identified articles were published via journals, whereas twelve articles appeared in conference proceedings as shown in Tables 2.12 and 2.13, respectively.



**Figure 2.15 Total number of relevant papers in relation to the publication year**

Table 2.12 Distribution of papers by journal

<b>Journal name</b>	<b>Article count</b>
Computers and Education	3
Education and Information Technologies	2
Australasian Journal of Educational Technology	2
Journal of Computer Assisted Learning	2
Global Education Review	1
Interdisciplinary Journal of e-Skills and Lifelong Learning	1
Computers in Human Behavior	1
International Journal of Information Management	1
Educational Technology Research and Development	1
American Journal of Distance Education	1

Table 2.13 Distribution of papers by conference

<b>Conference name</b>	<b>Article count</b>
International Conference on Advanced Information and Communication Technology for Education	1
International Conference on Hybrid Learning and Continuing Education	1
IEEE International Conference on Software Engineering and Service Sciences	1
International Conference on E-Business	1
Advanced Science and Technology Letter	1
IEEE International Conference on Technology for Education	1
International Conference on System Sciences	1
International Conference on E-Education, E-Business, E-Management and E-Learning	1
International Conference on Information System and Data Mining	1
International Conference of Reliable Information and Communication Technology	1
International Conference on Management, Information and Communication	1
International conference on information systems	1

As can be seen from Figure 2.16, nearly half of the studies (48.15%, n=13) investigated the factors that influence the intention to continue using MOOCs, whilst 18.52% of the studies explored the variables that affect the intention to use MOOCs (n=5). Additionally, 7.41% of the studies examined the MOOCs retention (n=2) and 7.41% of the research examined the MOOCs completion (n=2). Satisfaction with MOOCs, the effectiveness of MOOCs use, factors affecting motivations and the



completion rate, learners' performance in MOOCs, and the sense of achievement in MOOCs have been studied by 18.5% of the research.

With respect to the geographic distribution of respondents, the previous studies have only been carried out in few geographic regions. Also, it was shown that 40.74% (n=11) of the previous works have focused on users from China. Table 2.14 presents the geographic distribution of the participants in the previous studies. Six papers have not stated the geographic distribution of the participants in their research.

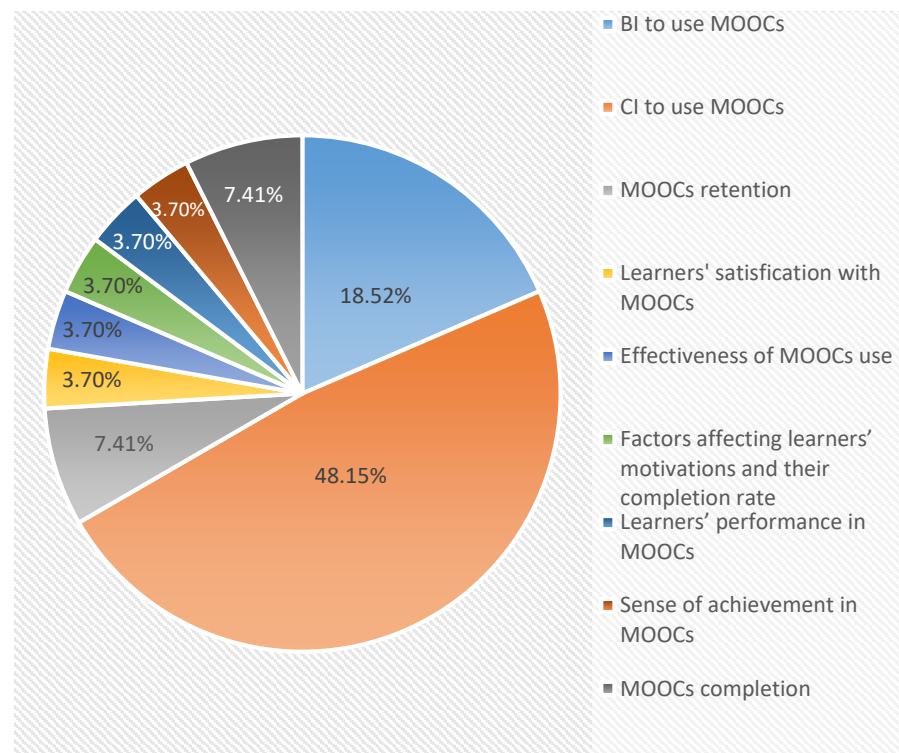


Figure 2.16 Distribution of related works by research objective

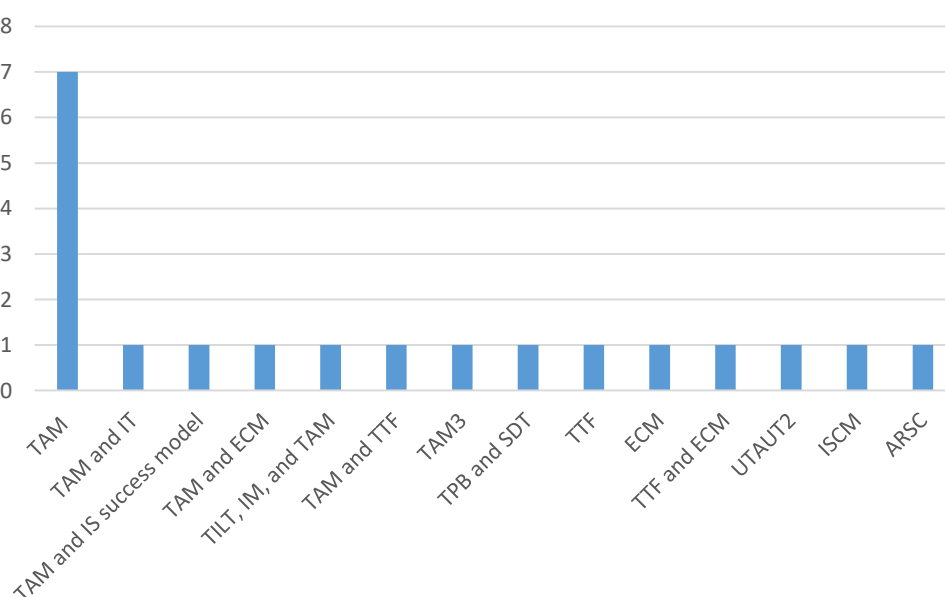
Table 2.14 Geographic distribution of the participants in previous studies

Geographic distribution	No. of papers (%)
China	11 (40.74%)
Malaysia	2 (7.41%)
Israel	2 (7.41%)
Egypt	1 (3.70%)
India	1 (3.70%)
USA, India, Greece, Azerbaijan, and other countries	1 (3.70%)
USA, India, Australia, Spain, and Brazil	1 (3.70%)

Asia, north America, Europe, Oceania, Africa, and central America	1 (3.70%)
Korea	1 (3.70%)

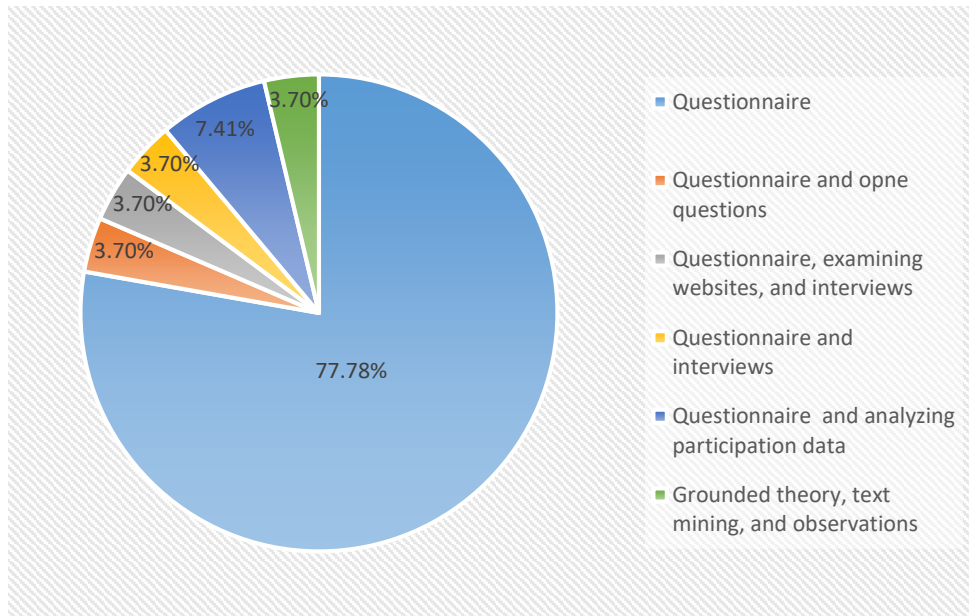
The technology acceptance model (TAM) has emerged as the most frequently adopted theory in the previous works with twelve papers (44.44%) (either used alone or merged with other theories). Seven papers have developed their own models. The theories used in the prior MOOCs articles are clarified in Figure 2.17.

The prior studies have relied upon different sample sizes. The lowest size was 30 participants while the largest size was 17,359. The sizes of the sample in the remaining studies ranged between 102 and 9266. In the related studies, eight papers (29.63%) used a sample of university students, two papers (7.41%) used a sample of employees, and five papers (18.52%) used a sample of a mix of students, employees, and others. The other twelve papers (44.45%) have not reported the type of respondents used in their samples.



**Figure 2.17 Theories adopted in previous MOOCs articles**

In the matter of the data collection methods, the questionnaire was the preferable method among the previous studies. It was revealed that 77.78% (n=21) of the studies used the questionnaire as the only method for data collection. Figure 2.18 shows the data collection methods applied by the prior MOOCs studies.



**Figure 2.18 Data collection methods used in previous MOOCs articles**

In reference to the data analysis methods, CB-SEM was the most frequently used analytic method with fifteen papers (55.56%) followed by PLS-SEM with six papers (22.22%). The data analysis methods utilized by the previous works are presented in Table 2.15.

**Table 2.15 Data analysis methods used in previous MOOCs articles**

Data analysis method	No. of papers (%)
CB-SEM	15 (55.56%)
PLS-SEM	6 (22.22%)
Logistic regression	1 (3.70%)
Ordered logistic regression	1 (3.70%)
Regression analysis	1 (3.70%)
Hierarchical regression analysis	1 (3.70%)
Stepwise regression analysis	1 (3.70%)
Spearman's rho Correlation	1 (3.70%)

From the analysis, the most frequently factors that have been studied in the previous works are stated in Table 2.16. The summary of all the proposed independent variables in the previous studies is demonstrated in Table 2.17. The reader can refer to Appendix B for the definitions of these proposed variables. The key moderating factors that were studied in the related research are the following:

1. Age.
2. Gender.
3. English language level (native VS non-native speakers).
4. Learner's previous education.
5. Course difficulty.

The proposed factors in the related articles have been divided into the following main categories, as presented in Figure 2.19:

1. Platform/course-related factors.
2. Individual-related factors.
  - 2.1. Educational/professional development.
  - 2.2. Learner's skills.
  - 2.3. Learner's attitude.
  - 2.4. Learner's tools.
3. Society-related factors.
4. Instructor-related factors.
5. Supportive factors.

**Table 2.16 The most frequently proposed factors in prior MOOCs articles**

<b>The Factor</b>	<b>No. of papers</b>
Perceived usefulness	17
Perceived ease of use	13
Intrinsic motivations	11
Social influence	8
Interactivity	8

**Table 2.17 Summary of the factors proposed in prior MOOCs articles**

<b>The factor</b>	<b>No. of papers</b>	<b>The factor</b>	<b>No. of papers</b>	<b>The factor</b>	<b>No. of papers</b>
Perceived usefulness/ Performance expectancy / Knowledge outcome/ Performance proficiency	17	Interactivity (Learner-content interaction, learner-learner interaction, and learner-instructor interaction)/ Willingness to use social network/ Social motivation	8	Confirmation	3
Perceived ease of use	13	Perceived cost	1	Popularity/ Popularity of the course	2
Subjective norm (social influence)/ Controlled motivation/ Coercive pressure	8	Ubiquity	1	Image	1
Perceived reputation	6	Information richness	1	Study/work relevance	2
Mimetic pressure	1	Individual technology fit	1	Output quality/ System quality	2
Task technology fit	2	(Computer/E-learning) Self-efficacy	4	Normative pressure	1
Social recognition (by job providers and organizations)	2	Perceptions of external control/ Perceived behavioural control/ Perceived learner control/ Perceived resource advantage	4	Attitude/ Tendency to learn online	4
Vividness of course content / Course content/ Attention (course content page is engaging)	4	Intrinsic motivations / Perceived enjoyment/ Hedonic motivation/ Computer playfulness/ Autonomous motivation	11	Teacher's subject knowledge/ Professor	2
Objective usability/ Usability and availability	2	Course difficulty	2	Result demonstrability	1
Computer anxiety	1	Perceived openness	3	Satisfaction/ Perceived effectiveness	6

<b>The factor</b>	<b>No. of papers</b>	<b>The factor</b>	<b>No. of papers</b>	<b>The factor</b>	<b>No. of papers</b>
Trust towards MOOCs	2	Extrinsic motivations/ Awarding certificates	3	Engagement in MOOCs/ Learners' participation data such as Video hits, quiz attempts, registration date, class activities	3
High level of threat	1	Deep learning strategy/ Surface learning strategy / Learning strategies	2	High level of challenge	1
Available Tools (open forums, video sessions)	1	Affordability	1	Course quality	1
Service quality	1	Learner's experience with MOOCs	2	Personal innovativeness in information technology/ Individual creativity	2
Facilitating conditions	1	Habit	1	Course flexibility	2
Readiness	1	Learners' expectations and plans	1	Course characteristics such as (assignments, course material, peer assessment, etc.)	1
Organisational support	1	Gender	2	English language level (native VS non-native speakers)	1
Learner's previous education	2	Age	1		

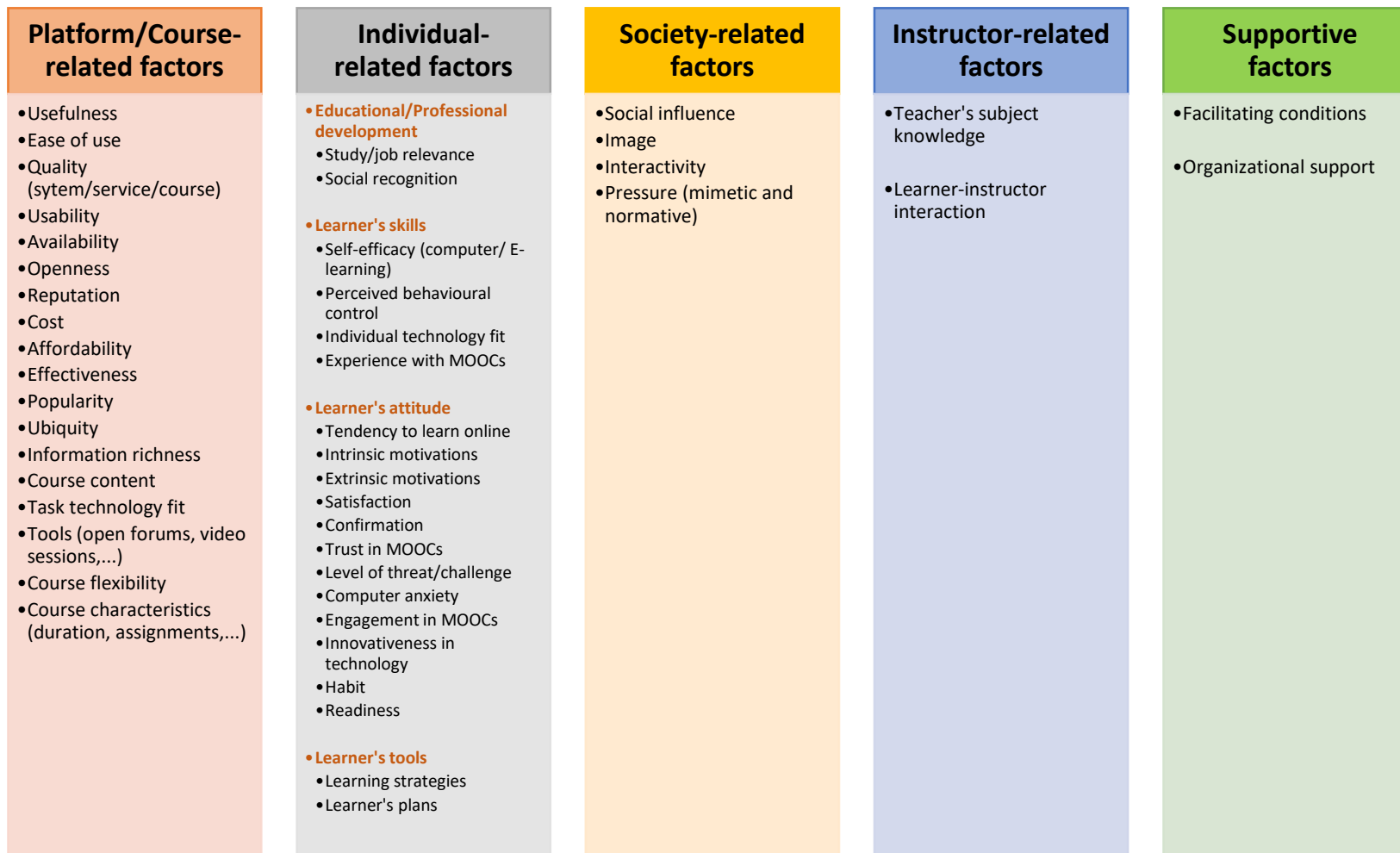


Figure 2.19 Classification of the factors proposed in previous MOOCs articles

The review and analysis of the twenty-seven articles allow us to understand the current research directions in the MOOCs acceptance and continuance from the learners' perspective. Additionally, the review was useful for detecting the research gaps that can be addressed through further research. Based on the findings, it can be concluded that substantial efforts are needed to investigate the topic from different perspectives and angles. Nearly half of the previous research on MOOCs emphasized the learners' continuance intention towards using MOOCs rather than their initial acceptance of MOOCs. On account of the significant impact of the continued usage on the long-term viability of technologies, the aim of this research is to identify the factors influencing the continuance and loyalty for Arabic MOOCs' use.

The related literature concentrated on the perspectives of users from few geographic regions. The intention of learners from China towards using MOOCs has been examined by a high percentage of the previous papers. The motivational factors affecting the continuance intention to use MOOCs may differ from one culture to another. To the researcher's knowledge, no previous published study has given consideration to the Arabic MOOCs continuance intention. Although Hone & El-Said (2016) have conducted a research in an Arabic country, Egypt, their emphasis was on MOOCs retention and not on MOOCs continuance intention. Accordingly, the present research investigates the perspectives of learners using an Arabic MOOC platform regarding their continuance intention to use Arabic MOOCs.

TAM was a valid theoretical base for 44.44% of the MOOCs studies as evidenced by the prior studies. Many factors leading to the usage of MOOCs have been addressed by the previous studies. Nevertheless, there is abundant room for further progress in determining other significant factors affecting the MOOCs use. One of the contributions of the current research is extending the TAM with new factors that have not been tackled before in the context of MOOCs continuance, namely the willingness to earn a certificate, the Arabic language support, and free courses' advantages. Even though Xiong et al. (2015) have examined the impact of extrinsic motivations on MOOCs engagement and retention, they treated the certificate as a single abstract item within the extrinsic motivations construct. In this study, willingness to earn a certificate was treated as a multifaceted construct with a variety of dimensions. Thereby, this study gives a deep understanding of the diverse benefits of obtaining the certificates and their impact on learners' continuance intention. In general, many of the questionnaire items in this research have been self-developed to suit the present research context.



It was clear that the questionnaire is the dominant quantitative method used by the related papers. One recommended method for future research is applying mixed methods. The reason for using mixed methods is that neither quantitative nor qualitative methods are adequate to understand the problem and the details of a phenomenon. Therefore, the quantitative and qualitative methods can complement each other if they become integrated into a single study (Ivankova, Creswell & Stick, 2006). In light of this suggestion, the present study adopts mixed methods (qualitative and quantitative methods) so as to answer the research questions. No previous study has provided information on the nature of the relationships between the studied variables (linear or nonlinear). All these studies used statistical tools that account only for the linear relationships between the variables when analysing the data.

In summary, the extensive literature review on MOOCs acceptance and continuance was effective to find the gaps and generate the research questions that were designed to bridge the identified gaps in the literature.

## **2.4. Summary**

This chapter gave a basic background about MOOCs technology followed by the presentation of the most commonly used theories in the literature on the information technology continuance intention. ISCM and TAM were the most adopted models in the prior works related to the information technology continuance intention. Finally, this chapter reviewed the related works along with their critical analysis. It was obvious that there is a need to study the learners' loyalty for using Arabic MOOCs to assist the development and growth of MOOCs in the Arabic world. The proposed research model and hypotheses are illustrated in the next chapter.



## Chapter 3 Proposed Research Model and Hypotheses

Drawing upon the technology acceptance/continuance theories and previous works on MOOCs acceptance and continuance, a theoretical model has been proposed. This chapter presents the proposed model with the associated research hypotheses. The model extends the TAM by adding a mix of technology-related, individual-related, organisation-related, and culture-related factors.

### 3.1. Development of the Model of the Present Research

In light of the extensive literature review, the researcher identified the variables which may contribute to understanding the participation in Arabic MOOCs. Numerous models and variables have been proposed and examined in the previous studies pertaining to the MOOCs acceptance/continuance. Amongst technology acceptance theories, TAM is one of the most influential and frequently adopted theories for individual's acceptance of information systems (Wangpipatwong, Chutimaskul & Papasratorn, 2008; Chandio, 2011). In the report of Nabavi et al. (2016), TAM is the most widely used theory after ISCM in IS continuance literature. In addition, it is the most frequently used model in the previous studies related to the acceptance of technology-enhanced learning (Abdullah & Ward, 2016). The current study discovered that TAM has emerged as the most frequently adopted model in the MOOCs acceptance/continuance research, for instance Chu et al. (2015); Gao & Yang (2015); Huanhuan & Xu (2015); Xu (2015); Aharony & Bar-Ilan (2016); Mulik, Yajnik & Godse (2016); Sa et al. (2016); Wu & Chen (2017). The reason lies in its simplicity (parsimony), which suggests that the behavioural intention to use a system is a function of only two variables: perceived usefulness and perceived ease of use. Moreover, the TAM has been found robust when applied in diverse settings and samples (Ho, 2010; Wu, 2012). Accordingly, perceived usefulness and perceived ease of use, the main variables of the TAM, were selected to be included in the model developed in this study. Although the TAM primarily targets predicting the acceptance of new technologies in the initial introduction phase (Ho, 2010), it has been revealed that it is valid for explaining the experienced user's continuance intention (Ho, 2010; Yang et al., 2017; Zhang et al., 2017).

Nevertheless, researchers recommend extending TAM with other variables in order to provide a stronger model for new research contexts and settings (Wangpipatwong, Chutimaskul &

Papasratorn, 2008; Al-Aulamie, 2013; Praveena & Thomas, 2014; Fathema, Shannon & Ross, 2015; Wu & Chen, 2017; Zhang et al., 2017). Given these findings, additional variables were integrated into the model in order to better understand and explain the Arabic MOOCs continuance intention from the learners' perspective. The classification of the factors proposed in prior studies, as shown in Figure 2.19, was beneficial for selecting the independent variables. It is apparent from the previous studies on MOOCs acceptance/continuance that the effective implementation of MOOCs depends on a wide range of factors: technology-related, society-related, organisation-related, and individual-related.

Previous findings have shown that the language factor constitutes the main problem for many learners when using MOOCs where most of the MOOCs are provided in English language. Thus, these findings led the researcher to incorporate culture-related factor (Arabic language support) into the developed model in order to examine its influence on Arabic learners. Also, free courses' advantages and willingness to earn a certificate were added to the model because providing free courses and awarding certificates are among the prominent features of MOOCs which have not been examined before in the MOOCs continuance context. Furthermore, perceived reputation and intrinsic motivations were included in the model because the previous studies concluded that they are significant indicators of MOOCs acceptance.

Perceived usefulness, perceived ease of use, free courses' advantages, and willingness to earn a certificate represent the technology-related factors. 'Intrinsic motivations' is an individual-related factor, perceived reputation is an organisation-related factor, and the Arabic language support was chosen as a culture-related factor. Figure 3.1 presents the proposed research model.

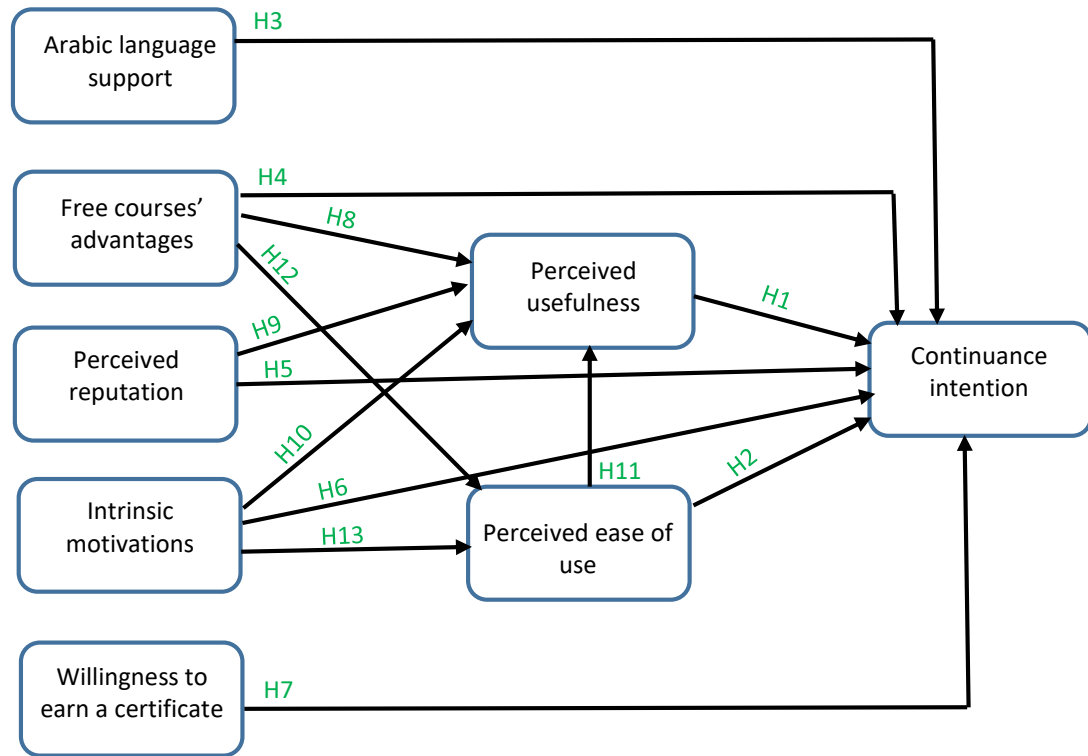
## **3.2. Research Hypotheses**

The formulated hypotheses in this study are presented in the following sections.

### **3.2.1. Effect of Perceived Usefulness (PU) on Continuance Intention (CI)**

Perceived usefulness is defined as *"the degree to which a person believes that using a particular system would enhance his/her job performance"* (Davis, 1989, p.320). Numerous studies found that PU has a significant, positive correlation with the behavioural intention to use or continue to use MOOCs, for example Alraimi, Zo & Ciganek (2015); Chu et al. (2015); Gao & Yang (2015); Huanhuan

& Xu (2015); Xu (2015); Aharony & Bar-Ilan (2016); Mulik, Yajnik & Godse (2016); Sa et al. (2016); Gameel (2017); Junjie (2017); Lim, Tang & Ravichandran (2017); Othman et al. (2017); Ouyang et al. (2017); Wang, Dong & Shao (2017); Wu & Chen (2017); Yang et al. (2017); Zhang et al. (2017).



**Figure 3.1 The proposed research model**

Improving the knowledge and skills has been shown in a lot of studies to be one of the important motivations that lead learners to adopt MOOCs, for instance Belanger & Thornton (2013); Christensen et al. (2013); Chaiyajit & Jeerungsuwan (2015); Chang, Hung & Lin (2015); Cupitt & Golshan (2015); Kizilcec & Schneider (2015); Li (2015); Nordin, Norman & Embi (2015); Wang & Baker (2015); Bayeck (2016); Howarth et al. (2016); Littlejohn et al. (2016); Salmon et al. (2016); Shrader et al. (2016); Annaraud & Singh (2017); Egloffstein & Ifenthaler (2017); Loizzo et al. (2017). Refer to Appendix C (further reading) for additional references on the usefulness of MOOCs in learning.

In the current study, the perceived usefulness is defined as the ability of MOOCs to assist people in learning and expanding their knowledge or skills effectively. With respect to the MOOCs continuance, it is assumed that learners are likely to develop a positive intention towards MOOCs

continuance if they find the platform to be useful for learning. Therefore, in accordance with the previous results, it is hypothesized as follows:

**H1.** *Perceived usefulness will have a significant, positive effect on the continuance intention to use MOOCs.*

### **3.2.2. Effect of Perceived Ease of Use (PEU) on Continuance Intention (CI)**

Davis (1989, p.320) defined perceived ease of use as “*the degree to which a person believes that using a particular system would be free of efforts*”. The research on MOOCs acceptance and continuance validated the significant, positive effect of PEU on the behavioural intention to use or continue to use MOOCs, for example Chu et al. (2015); Gao & Yang (2015); Huanhuan & Xu (2015); Aharony & Bar-Ilan (2016); Mohapatra & Mohanty (2016); Mulik, Yajnik & Godse (2016); Sa et al. (2016); Lim, Tang & Ravichandran (2017); Othman et al. (2017); Wang, Dong & Shao (2017); Wu & Chen (2017); Yang et al. (2017); Zhang et al. (2017).

Regarding the persistence in the platforms, the ease of use factor is valuable particularly because the development of any information technology is subject to improvements. Therefore, the providers and designers of the platforms should take into account the ease of use factor when performing the enhancements on the platform. For the MOOCs continuance, it is supposed that learners are likely to develop a positive intention towards MOOCs continuance if they find the platform to be easy to use. Consequently, the following hypothesis has been formulated based on the prior literature:

**H2.** *The perceived ease of use will have a significant, positive effect on the continuance intention to use MOOCs.*

### **3.2.3. Effect of Arabic Language Support (ALS) on Continuance Intention (CI)**

The majority of courses in MOOCs are offered in English (6,287) while only 126 are provided in the Arabic language (Class Central, 2017). Rwaq is an Arabic MOOC platform that provides courses exclusively in the Arabic language. Joseph & Nath (2013) promoted delivering MOOCs in languages of learners as well as taking under consideration their cultural background/context. International

learners who attend MOOCs offered in a language different than their native language might face difficulty pertaining to language issues depending on their level of skill in the language (Sanchez-Gordon & Luján-Mora, 2014). Sanchez-Gordon & Luján-Mora (2014, p.534) stated that *“non-native speakers read at slower speed than native speakers; the speed difference leads to information overload and cognitive issues. Non-native speakers also experience stress related to workload and visibility of their written responses in essays, forums and textual chats”*. Liangxing (2017) affirmed that learners lacking English skills deem courses provided in English to be the most difficult obstacle, and they are less interested in taking the courses.

Most of the individuals in the Arabic world do not have the English language skills needed to participate in English MOOCs (Adham & Lundqvist, 2015). In 2016, a report released by the EF English Proficiency Index revealed that the Middle East and North Africa populations had the lowest English proficiency among 72 international countries studied, as shown in Figure 3.2 (ICEF Monitor, 2016).



**Figure 3.2 EF EPI 2016 Rankings for English proficiency (ICEF Monitor, 2016)**

A number of researchers are of the opinion that there is a need for MOOCs localization for the reason that learners understand the contents better and communicate faster when engaging in MOOCs offered in their mother tongue (Pang, Wang & Wang, 2014). As cited previously, the Arabic language is the sixth most spoken language in the world with 420 million Arabic speakers.

Furthermore, this language is of great importance to Muslims who are the second largest population in the world because it is the official language of Islam (QuranTutor, 2015).

The effects of the language of MOOCs have not been investigated previously in the context of MOOCs acceptance and continuance. This study is the first effort that supposes that learners are likely to develop a positive intention towards the persistence in MOOCs if the courses are provided in their mother tongue, Arabic. As such, the following hypothesis was developed for this research:

**H3.** *Arabic language support will have a significant, positive effect on the continuance intention to use MOOCs.*

#### **3.2.4. Effect of Free Courses' Advantages (FCA) On Continuance Intention (CI)**

Openness is one of the main features of MOOCs that allows a massive number of learners to access the educational resources freely and flexibly (Yuan & Powell, 2013; Alraimi, Zo & Ciganek, 2015; Wu & Chen, 2017). Few studies have explored the significant, positive effect of MOOCs' openness on the behavioural intention to continue using MOOCs, for instance Alraimi, Zo & Ciganek (2015); Wu & Chen (2017). Mohapatra & Mohanty (2016) found a significant, positive influence of affordability on the behavioural intention to use MOOCs.

Similarly, Davis et al. (2014) and Shrader et al. (2016) have discovered that the openness of MOOCs is a reason which encourages people to join MOOCs. Adham & Lundqvist (2015) as well as Brahimi & Sarirete (2015) stated that students in Middle Eastern countries such as Saudi Arabia, UAE, and Egypt spend money on private tutoring services in order to understand subjects they take in universities. Hence, participating in the free of charge MOOCs related to their curriculums can help them to save money. Also, Eljishi & Taylor (2015) conducted a study to understand the opinions of female students at a private university in Saudi Arabia towards their acceptance of using MOOCs technology. They stated that saving money is one of the reasons that promoted the engagement in the courses.

This study is the first attempt that focuses on considering the advantages of free of charge courses as an interesting factor for learners to continue using MOOCs. In the case of MOOCs continuance, it is anticipated that learners are likely to develop a positive intention towards persistence in



MOOCs if they believe in the advantages of joining free courses. Based on the previous findings, this research proposes the following hypothesis:

**H4.** *Free courses' advantages will have a significant, positive effect on the continuance intention to use MOOCs.*

### **3.2.5. Effect of Perceived Reputation (PR) On Continuance Intention (CI)**

An organisation's reputation has been defined by Feldman, Bahamonde & Velasquez Bellido (2014, p.54) as "*a reflection of how it is regarded by its multiple stakeholders. Its reputational stance can help the organization obtain trust and credibility in society, which will assist in the achievement of its objectives and goals*". Well-known platforms like Coursera and edX offer high-quality courses by partnering with prestigious institutions and universities from various countries. The Co-founder of the Rwaq platform stressed that Rwaq hires qualified lecturers from Arabic universities as well as experts in different fields. This is clearly visible from the CVs of the instructors in the Rwaq platform. Rwaq left its mark in the Arabic world by providing courses in the Arabic language. It also built its excellent reputation through adopting the social responsibility and making courses available to the public free of charge.

A few researchers have found a significant, positive impact of perceived reputation of MOOCs on the behavioural intention to use or continue to use MOOCs such as Alraimi, Zo & Ciganek, (2015); Mohapatra & Mohanty (2016). Likewise, Huang, Zhang & Liu (2017) showed that students' intention to revisit MOOCs is positively influenced by the teacher's subject knowledge. Also, Yang et al. (2017) revealed a significant, positive relationship between the system, course, service quality and learners' continuance intention.

In addition, various studies have reported that the quality of course materials and courses offered by distinguished institutions and qualified professors is one of the incentives that contribute to engaging learners in MOOCs, for example Adamopoulos (2013); Belanger & Thornton (2013); Davis et al. (2014); Khalil & Ebner (2014); Cupitt & Golshan (2015); Kizilcec & Schneider (2015); Li (2015); Liu, Kang & McKelroy (2015); Wang & Baker (2015); Bayeck (2016); Garrido et al. (2016); Rai & Chunrao (2016); Milligan & Littlejohn (2017).

For the MOOCs continuance, it is expected that learners are likely to develop a positive intention towards MOOCs continuance if they believe that the platform has a considerable reputation in the marketplace in terms of the quality of courses and teachers' competence. In light of the prior findings, the present study suggests further hypothesis:

**H5.** *The perceived reputation of MOOCs will have a significant, positive effect on the continuance intention to use MOOCs.*

### **3.2.6. Effect of Intrinsic Motivations (IM) on Continuance Intention (CI)**

According to Ryan & Deci (2000, p.55), "*the most basic distinction is between intrinsic motivation, which refers to doing something because it is inherently interesting or enjoyable, and extrinsic motivation, which refers to doing something because it leads to a separable outcome*". Enjoyment, interest, curiosity, and challenge are the main types of intrinsic motivations (Ryan & Deci, 2000; Logan, Medford & Hughes, 2011; Zhao et al., 2011; Kozinska, 2013). In this research, the operational definition of intrinsic motivations is using Rwaq for learning for reasons such as enjoying the activity itself, curiosity to explore interesting topics, or interest in using Rwaq for learning. It is anticipated that the inner driver is an important influential factor because attending MOOCs is usually voluntary (LiyanaGunawardena, Adams & Williams, 2013).

Several items of literature have shown evidence that the intrinsic motivations, like perceived enjoyment, curiosity, interest, or perceived playfulness, have a significant impact on learners' intention to use or persist in using MOOCs, e.g. Alraimi, Zo & Ciganek (2015); Chu et al. (2015); Xiong et al. (2015); Xu (2015); Zhou (2016); Lim, Tang & Ravichandran (2017); Othman et al. (2017). Furthermore, Barba, Kennedy & Ainley (2016) and Magen-Nagar & Cohen (2017) pointed out that the intrinsic motivation significantly predicts learners' performance and achievement in MOOCs.

Also, it was revealed that different groups of learners (students, workers, and the unemployed) all showed a high level of intrinsic motivations to use MOOCs, however they exhibited different levels of extrinsic motivations (Mihalec-Adkins et al., 2016). Other researchers mentioned that the curiosity, interest, challenge, or fun are motivations that drive the individuals to take MOOCs (Belanger & Thornton, 2013; Christensen et al., 2013; Davis et al., 2014; Hew & Cheung, 2014; Norman, 2014; Cupitt & Golshan, 2015; Kizilcec & Schneider, 2015; Li, 2015; Liu, Kang & McKelroy,

2015; Wang & Baker, 2015; Zheng et al., 2015; Bayeck, 2016; Garrido et al., 2016; Littlejohn et al., 2016; Salmon et al., 2016; Shrader et al., 2016; Alario-Hoyos et al., 2017; Loizzo et al., 2017; Milligan & Littlejohn, 2017; Nagasampige & Nagasampige, 2017; Shapiro et al., 2017).

With reference to the MOOCs continuance, it is presumed that the learners are likely to develop a positive intention towards MOOCs continuance if they are intrinsically motivated to use MOOCs. Thus, consistent with the previous research, it is hypothesised as follows:

**H6.** *Intrinsic motivations will have a significant, positive effect on the continuance intention to use MOOCs.*

### **3.2.7. Effect of Willingness to Earn a Certificate (WEC) on Continuance Intention (CI)**

In the majority of MOOCs, as in the case of Rwaq, the certificates of course completion are granted to the learners upon passing all course requirements. In the present study, willingness to earn a certificate of course completion is defined as a motivation that encourages the individuals to join Rwaq courses with the aim of obtaining the certificates for different purposes.

In the MOOCs' context, Xiong et al. (2015) revealed that the extrinsic motivation (obtaining certificates) has a significant influence on learners' engagement in MOOCs. Also, the recognition and appreciation of MOOCs' certificates by job providers and regulatory bodies were found to have a significant impact on the MOOCs acceptance (Mohapatra & Mohanty, 2016).

Young (2013) indicated that the main reason to participate in MOOCs for a number of learners is collecting as many course certificates as possible. In addition, Kopp & Ebner (2017) concluded that granting certificates influences the learners in MOOCs, however a significant number of factors, such as intended target groups, obligation, and usability, strengthen or weaken this influence. A study led by Norman (2014) showed that the goal of 42.3% of 3, 104 respondents was completing the courses for the sake of obtaining certificates. Similarly, Littlejohn et al. (2016) indicated that as opposed to learners with high self-regulated learning (SRL) skills, learners with low SRL skills were eager to acquire the certificates and passing grades. Garrido et al. (2016) stated that the intent to receive a certificate was common in individuals from the countries studied (Colombia, Philippines,

and South Africa). Kizilcec & Schneider (2015) cited that about half of respondents (45%) confirmed their intention to receive a certificate.

Interviews were conducted by Uchidiuno et al. (2016) with twelve non-native English speakers to explore their reasons for using MOOCs. They declared that the willingness to earn certificates for the purpose of career advancement is one of the motivations to use MOOCs. More interestingly, Davis et al. (2014) found out that 54.4% of all respondents and 61.7% of the Arabic respondents indicated that improving the CV through obtaining certificates is one of the reasons that led them to participate in MOOCs. Similarly, Macleod et al. (2015) revealed that learners in developing countries were interested in participating in MOOCs with the purpose of obtaining a certificate. Greene, Oswald & Pomerantz (2015) reported that 55% of respondents in a pre-course survey informed that they intend to receive certificates, 35% were not sure, and 10% were not seeking to obtain certificates. Certificates are one of the motivations but not the only reason that drives learners to succeed in courses (Zheng et al., 2015; Phan, McNeil & Robin, 2016).

The role of authenticated certificates from trustworthy platforms, particularly edX, in encouraging the individuals to attend MOOCs was emphasized by Rai & Chunrao (2016). Similarly, Belanger & Thornton (2013) demonstrated that formal recognition of certificates from platforms fosters individuals to join and complete the courses. Additionally, Davis et al. (2014) highlighted the necessity for validating certificates for instance by developing assessment centers as in the case of the Udacity and Miriadax platforms.

In another study, the percentage of the participants who stated that obtaining a certificate is one of the reasons to join MOOCs was 18.75% (Liu, Kang & McKelroy, 2015). Further studies reported that the intent of earning certificates is a reason for attending or persisting in courses, however not a significantly important one for most of the participants (Bayeck, 2016; Shrader et al., 2016; Milligan & Littlejohn, 2017). Moreover, Shapiro et al. (2017) concluded that the willingness to receive a certificate is not the goal of learners in MOOCs.

In the context of MOOCs continuance, this research is the first effort that examines the effect of the willingness to earn a certificate on learners' desire to persist in using Arabic MOOCs. It is supposed that learners are likely to develop a positive intention towards MOOCs continuance if

they desire to obtain a certificate of course completion for various purposes. As a result, the following hypothesis is proposed:

**H7.** *The willingness to earn a certificate will have a significant, positive effect on the continuance intention to use MOOCs.*

### **3.2.8. Effect of Free Courses' Advantages on Perceived Usefulness**

Alraimi, Zo & Ciganek (2015) validated the significant, positive effect of the perceived openness of MOOCs on the perceived usefulness. The interpretation of this effect is that the learners will perceive MOOCs as useful if they can learn effectively without incurring costs. Therefore, the following hypothesis is put forward:

**H8.** *Free courses' advantages will have a significant, positive effect on the perceived usefulness.*

### **3.2.9. Effect of Perceived Reputation on Perceived Usefulness**

Wu & Chen (2017), Sa et al. (2016), and Huanhuan & Xu (2015) have mentioned that the perceived usefulness is significantly and positively influenced by the perceived reputation. This effect implies that the learners will strengthen their belief about the usefulness of the courses if they find the courses to be of high quality. Thus, the following hypothesis is formulated:

**H9.** *Perceived reputation will have a significant, positive effect on the perceived usefulness.*

### **3.2.10. Effect of Intrinsic Motivations on Perceived Usefulness**

A previous study led by Chu et al. (2015) in the context of MOOCs acceptance showed that the perceived usefulness is a reaction to the perceived playfulness. This indicates that the learners will develop a strong belief about the benefits of MOOCs if they are intrinsically motivated to join MOOCs. Therefore, this study posits the following hypothesis:

**H10.** *Intrinsic motivations will have a significant, positive effect on the perceived usefulness.*

### **3.2.11. Effect of Perceived Ease of Use on Perceived Usefulness**

As TAM postulates, the perceived usefulness is affected significantly and positively by the perceived ease of use. Numerous research on MOOCs acceptance/continuance validated the significant, positive impact of the perceived ease of use on the perceived usefulness, for example Chu et al. (2015); Gao & Yang (2015); Sa et al. (2016); Wang, Dong & Shao (2017); Wu & Chen (2017); Yang et al. (2017); Zhang et al. (2017). This relationship suggests that the perceived usefulness is enhanced when the platform ensures that the learning experience remains easy. Consequently, the following hypothesis is constructed:

**H11.** *The perceived ease of use will have a significant, positive effect on the perceived usefulness.*

### **3.2.12. Effect of Free Courses' Advantages on Perceived Ease of Use**

Wu & Chen (2017) found that the perceived openness has a significant, positive effect on the perceived ease of use, implying that the perceived ease of use is increased when the learners can join the platforms without financial obstacles. Hence, it is hypothesized:

**H12.** *Free courses' advantages will have a significant, positive effect on the perceived ease of use.*

### **3.2.13. Effect of Intrinsic Motivations on Perceived Ease of Use**

In TAM 3, the computer playfulness and the perceived enjoyment have a significant, positive influence on the perceived ease of use (Venkatesh & Bala, 2008). In the MOOCs context, Xu (2015) identified a significant and positive correlation between the perceived enjoyment and the perceived ease of use. This correlation means that the learners will perceive the platform as an easy to use educational tool when they have intrinsic motivations to learn. Therefore, the next hypothesis is proposed:

**H13.** *Intrinsic motivations will have a significant, positive effect on the perceived ease of use.*

### **3.3. Summary**

This chapter provided the proposed extended TAM model and the research hypotheses. The model consists of five external independent variables besides the TAM variables. A total of thirteen hypotheses with justifications were formulated. New variables that had not been researched in the MOOCs continuance were integrated into the TAM, namely Arabic language support, free courses' advantages, and the willingness to earn a certificate. The following chapter will explain the methodology used with the purpose of answering the research questions and validating the proposed model.





## Chapter 4 Research Methodology

There are different research approaches that can be employed in order to answer the research questions. The present study adopts both the exploratory mixed methods design and the explanatory mixed methods design to explore the study phenomenon and validate the proposed model. This chapter will describe the research design, target populations, sampling approaches and sample sizes, data collection, and data analysis methods.

### 4.1. Research Design

Research design in the field of education can be categorized as qualitative, quantitative, and mixed methods (Johnson & Onwuegbuzie, 2004). Qualitative research is defined as *“an emergent, inductive, interpretive and naturalistic approach to the study of people, cases, phenomena, social situations and processes in their natural settings in order to reveal in descriptive terms the meanings that people attach to their experiences of the world”* (Yilmaz, 2013, p.312). On the other hand, quantitative research is *“a type of empirical research into a social phenomenon or human problem, testing a theory consisting of variables which are measured with numbers and analysed with statistics in order to determine if the theory explains or predicts phenomena of interest”* (Yilmaz, 2013, p.311). Tables 4.1 and 4.2 summarize the strengths and weaknesses of qualitative and quantitative research, respectively (Johnson & Onwuegbuzie, 2004).

**Table 4.1 Strengths and weaknesses of qualitative research (Johnson & Onwuegbuzie, 2004)**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Understand complex or new topic from participants' own point of view in detail.</li> <li>• Usually based on limited number of participants (important cases) for in-depth interviews.</li> <li>• Ideal for formulating hypotheses and developing theories (e.g. grounded theory).</li> <li>• Ideal for identifying the causes and effects of a particular phenomenon.</li> </ul>	<ul style="list-style-type: none"> <li>• It may not be possible to generalize the findings to other contexts, people, etc.</li> <li>• Not suited for quantitative predictions and testing hypotheses or theories.</li> <li>• Has lower credibility compared to quantitative research.</li> <li>• Data collection and analysis are time-consuming.</li> <li>• The findings are subject to interviewer' personal biases.</li> </ul>

**Table 4.2 Strengths and weaknesses of quantitative research (Johnson & Onwuegbuzie, 2004)**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Ideal for validating theories, testing hypotheses, and quantitative predictions.</li> <li>• The results can be generalized if: <ul style="list-style-type: none"> <li>- Using a random sample (probability sampling).</li> <li>- Using an adequate sample size.</li> <li>- Replicating the study on different populations.</li> </ul> </li> <li>• Data collection and analysis are less time-consuming.</li> <li>• Suitable for substantial numbers of respondents.</li> <li>• The results are relatively independent of the researcher.</li> </ul>	<ul style="list-style-type: none"> <li>• Based on pre-determined categories and theories.</li> <li>• Confirmation bias (focusing on testing theories rather than constructing theories).</li> <li>• Obtained results may be too abstract or general to be applied in particular contexts.</li> </ul>

The third category of research design is mixed methods which is defined by Johnson, Onwuegbuzie & Turner (2007, p.123) as *“the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration”*. Table 4.3 reviews the strengths of mixed methods research (Doyle, Brady & Byrne, 2009) and its weaknesses (Johnson & Onwuegbuzie, 2004).

**Table 4.3 Strengths and weaknesses of mixed methods design (Doyle, Brady & Byrne, 2009; Johnson & Onwuegbuzie, 2004)**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Give research more validity by combining quantitative and qualitative data.</li> <li>• Integrate quantitative and qualitative methods so that they complement each other and provide more accurate inferences.</li> <li>• Allow the researcher to answer diverse research questions in a single study.</li> <li>• Conduct a follow-up qualitative study (e.g. interviews) to explain previous quantitative survey results, particularly the unexpected findings.</li> <li>• Using the qualitative method at the beginning of the study allows the researcher to formulate hypotheses or develop instruments that can be tested in a subsequent quantitative phase.</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult for a single researcher to conduct qualitative and quantitative studies, particularly using concurrent mixed methods.</li> <li>• The researcher needs to know how to mix the methods in a single study properly.</li> <li>• More expensive and time-consuming.</li> <li>• There is a need for further research to be carried out by methodologists on issues related to mixed methods design (e.g. the problem of explaining inconsistent results).</li> </ul>

#### **4.1.1. Qualitative Data Collection Methods**

Participant observations, in-depth interviews, focus groups, and the examination of artefacts are the main methods used in the qualitative research (Ellis, 2016). Observation is not the proper method for eliciting participants' personal perspectives as its goal is gathering the data on participants' behaviour (Ellis, 2016). An interview is the most common data gathering tool in qualitative research (Dicicco-Bloom & Crabtree, 2006; Myers & Newman, 2007). It is a conversation between the interviewer and the participants with the aim to understand the participants' perspective on the selected topic (Mack et al., 2005). Individuals' personal beliefs, perspectives, experiences, and motivations on specific matters can be obtained via in-depth interviews (Mack et al., 2005; Gill et al., 2008). Unlike the focus groups which are suitable for discovering opinions about group norms, an in-depth interview is best suited for eliciting in-depth personal perspectives and experiences (Mack et al., 2005).

There are three types of interviews: structured, semi-structured, and unstructured (Saunders, Lewis & Thornhill, 2009). The structured interview is defined by Gill et al. (2008, p.291) as *"verbally administered questionnaires, in which a list of predetermined questions is asked, with little or no variation and with no scope for follow-up questions to responses that warrant further elaboration"*. In contrast, Saunders, Lewis & Thornhill (2009) mentioned the following characteristics of the unstructured interview: informal, discovers a general area of interest in depth, and there is no list of prearranged questions to be asked, but the interviewer should have a working idea about the issues to be explored. The third type of interviews, known as a semi-structured interview, is the most widespread form of interviews (Rowley, 2012). It overcomes the limitations of structured and unstructured interviews as this form of data collection contains flexible predetermined main questions which can differ from one interview to another (Saunders, Lewis & Thornhill, 2009). The interviewer can change the questions wording and order, omit inappropriate questions, or add prop and new questions to receive more details.

#### **4.1.2. Quantitative Data Collection Methods**

Data collection methods in quantitative studies can be classified into two categories, namely experiments and questionnaires (Al-Aulamie, 2013). When conducting experiments, the researcher can control the testing environment in order to discover the causes and effects. On the other hand,

the questionnaire method is used to collect the information on opinions, attitudes, and behavioural patterns (Mathers, Fox & Hunn, 2007; Rogers, Sharp & Preece, 2011). There are different approaches to administering quantitative survey-based research, namely self-administered and interview-completion (Mathers, Fox & Hunn, 2007; Mohamadali & Azizah, 2013). Unlike the interview completion, the self-administered questionnaire is completed by the respondents without the presence of the interviewer. Self-administered questionnaires can be distributed through mail or electronic distribution (Rogers, Sharp & Preece, 2011; Kazi & Khalid, 2012). With regards to the questionnaire's questions, they can be designed as closed or open-ended ones (Mathers, Fox & Hunn, 2007). In the closed questions, the respondents select from pre-defined provided responses while in the open-ended questions the respondents answer in their own words.

#### 4.1.3. Mixed Methods Approach

Johnson & Onwuegbuzie (2004) stated that mixing the research methods can be conducted sequentially or concurrently, as shown in Figure 4.1. Moreover, a researcher can emphasize one method over the other. Creswell & Plano Clark (2007) classified the mixed methods designs into four main categories: triangulation, embedded, explanatory, and exploratory. In the triangulation design, the quantitative and qualitative phases are performed concurrently and they are standardly given equal weighting. After that, the data that appears from both phases is merged during the interpretation or analysis phase. The embedded design uses a secondary data collection method as a part of a larger research that is based on another primary data collection method. This design can be conducted sequentially or concurrently.

	Concurrent	Sequential
Equal	QUAL + QUAN	QUAL → QUAN
Dominant	QUAL + quan	QUAL → quan qual → QUAN

Figure 4.1 A matrix of mixed methods design (Johnson & Onwuegbuzie, 2004, p.22)

In the explanatory design, the researcher starts with quantitative data in a first phase which is followed by the phase in which one uses a qualitative data in order to explain the quantitative results. In contrast, in the exploratory design, the study starts with discovering a phenomenon using qualitative methods followed by quantitative methods so as to test the emergent hypotheses and generalize the results.

#### **4.2. Research Design, Data Collection and Analysis Methods Adopted in This Study**

This research was conducted with the purpose of examining the predictors of learners' continuance intention towards participating in the Arabic MOOCs. The majority of TAM research was based on quantitative research method using the questionnaires (Wu, 2012). Similarly, this study found that a quantitative questionnaire was a dominant method in the previous research relating to the MOOCs acceptance/continuance. Wu (2012) argues that applying mixed methods approach is useful to expand the understanding of users' acceptance of technologies. As a result, the mixed methods approach was utilized in the current study by means of using the interviews and the questionnaire to collect the data in order to increase the validity of this research.

This study adopts sequential exploratory and explanatory mixed methods design. At the first stage, an exploratory research was undertaken via a systematic literature review followed by semi-structured interviews. The objective of the literature review was examining the prior theories and studies in the field of MOOCs acceptance and continuance in order to develop the research questions. As mentioned earlier, as an interview is a proper method for obtaining in-depth personal perceptions, it was chosen as a means of collecting data for this study. Semi-structured, one-to-one interviews were then conducted to achieve the following goals:

1. Explore the perceptions of the learners, instructors, and administrators of the Rwaq platform on the influence of a set of factors driving the learners' continuance intention to participate in Arabic MOOCs. The factors include:
  - Perceived usefulness
  - Perceived ease of use
  - Arabic language support
  - Free courses' advantages

- Perceived reputation
  - Intrinsic motivations
  - Willingness to earn a certificate
2. Outline the potential relationships between the factors listed above.
  3. Generate measurement items that better fit the context of this study to be tested in a subsequent quantitative phase.
  4. Explore additional influential factors from the interviewees' perceptions to be included in the proposed research model.

The rationale for selecting the semi-structured interviews for this research is that such means of collecting data combines the advantages of the structured and unstructured interviews through asking flexible questions in order to obtain complex details (Alshenqeeti, 2014). The current study used a combination of face-to-face and telephone interviews. Face-to-face interviews were used with the participants who were physically close to the place of residence of the researcher while telephone interviews were employed with distant respondents. The interviewer in the face-to-face interviews can see the participants' emotions, responses, and non-verbal cues by observing their body language, which contributes to increasing his/her understanding of what is being discussed (Ryan, Coughlan & Cronin, 2009). Besides, the face-to-face interviews outperform telephone interviews in terms of the rich interaction between the interviewer and the interviewee and the possibility to build the rapport with the respondents easily (Rowley, 2012). On the other hand, conducting the telephone interviews offers broader geographical coverage, permits accessing participants who are difficult to reach, and eliminates the cost of travel (Opdenakker, 2006; Rowley, 2012; Iacono, Symonds & Brown, 2016).

At the second stage, a confirmatory research was undertaken via using the questionnaire approach for a correlational study that aimed at understanding the relationships between the variables pertaining to the problem of study (Sekaran & Bougie, 2016). The questionnaire is suitable to test the research hypotheses, investigate the correlations between the variables (Gall, Gall & Borg, 2007), and generalize the results. Furthermore, using the questionnaire can easily translate the participants' beliefs into quantifiable numbers for statistical analysis (Almarwani, 2016). The self-administrated questionnaire method has been employed in this research. The self-administered questionnaire not only makes the researcher neutral (Chandio, 2011) but also allows to maintain

the confidentiality and anonymity of the participants (Murdoch et al., 2014). Additionally, the self-administrated questionnaire is appropriate when (Al-Aulamie, 2013):

1. Using a large sample size;
2. Using Likert scale questions;
3. Using a large number of questions.

A computer-based and structured questionnaire delivered via the Internet known as 'Internet Survey' was utilized in the present study. Such approach allowed for distribution to large populations and geographically spread samples (Mathers, Fox & Hunn, 2007; Mohamadali & Azizah, 2013). Also, it allowed for economical and quick gathering of data by means of removing the barriers (e.g. the costs of travel) (Chandio, 2011; Mohamadali & Azizah, 2013).

Finally, semi-structured, one-to-one interviews were conducted so as to interpret the results that emerged from the quantitative study, especially the unanticipated results. The design of the present study is shown in Figure 4.2.

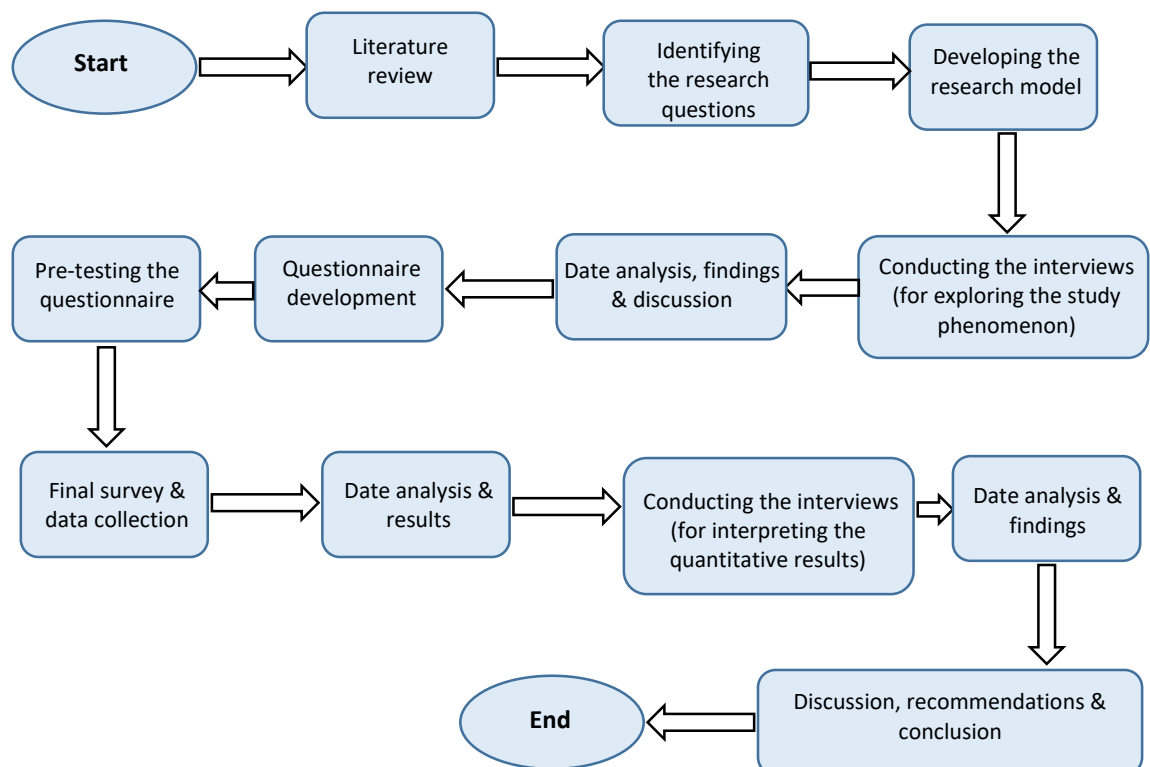


Figure 4.2 The design of the current research

### 4.2.1. Exploratory Interviews Method

This section presents the approaches used to conduct the interviews for this study including population and sampling, sample size, the design of interview guide, ethical considerations, piloting the interview guide, conducting the interviews, strategies used to increase trustworthiness of the interviews, as well as interviews analysis.

#### A. Population and Sampling

The population is defined as *“the entire group of people, events, or things of interest that the researcher wishes to investigate”* (Sekaran & Bougie, 2016, p.236). The sampling refers to selecting adequate and representative elements from the target population (Sekaran & Bougie, 2016). Compared to the census, sampling is a useful approach because it is often impracticable to survey the whole target population (Saunders, Lewis & Thornhill, 2009). In addition, the sampling method is cheaper as well as requires less effort and time when compared to the census (Srivastava, Shenoy & Sharma. 1989).

The key consideration in the qualitative studies is to extract detailed information about the phenomenon rather than the generalizability of the results. This is why qualitative studies use a small number of samples (few informants) that are selected in a non-random manner (Polit & Beck, 2013). Probability and non-probability sampling are main techniques used in sampling. Probability sampling offers everyone in the population an equal chance to be selected in a random manner (Tansey, 2007). In contrast, in non-probability sampling, samples from a larger population are chosen non-randomly (Tansey, 2007). Table 4.4 shows the advantages and disadvantages of the probability and non-probability sampling (Tansey, 2007).

**Table 4.4 The advantages and disadvantages of probability and non-probability sampling (Tansey, 2007)**

<b>Probability sampling</b>	<b>Non-probability sampling</b>
<b>Advantages:</b> <ul style="list-style-type: none"> <li>• Avoiding selection bias.</li> <li>• Enabling generalization.</li> </ul>	<b>Advantages:</b> <ul style="list-style-type: none"> <li>• Controlling the selection process.</li> <li>• Inclusion of important cases.</li> </ul>
<b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• The potential to exclude important respondents because of the random selection.</li> </ul>	<b>Disadvantages:</b> <ul style="list-style-type: none"> <li>• Subject to selection bias.</li> <li>• Limited ability for generalization.</li> </ul>



Marshall (1996) mentioned several reasons behind the inappropriateness of probability sampling for qualitative research. One reason is that the participants' beliefs that constitute the base of qualitative research may not be normally distributed. Another reason is that selecting random samples may exclude important respondents who are experienced and can effectively contribute to the study.

For qualitative studies, there are different types within the non-probability sampling approach such as convenience, volunteer (self-selected), snowball, purposive, and theoretical sampling (Marshall, 1996; Polit & Beck, 2013). The convenience sampling implies selecting the people who meet the criteria for the data collection and are easily accessible. This strategy is often efficient but typically not ideal because the selected informants may not be information-rich sources (Polit & Beck, 2013). The volunteer (self-selected) approach is a form of sampling whereby the individuals voluntarily decide to participate in the study (McMillan, 1996; Saunders, Lewis & Thornhill, 2009; Polit & Beck, 2013). This strategy does not provide the researcher with the opportunity to control the selection process (Bethlehem, 2010). It is frequently used when the availability of study cases is restricted by time and resources (McMillan, 1996).

The snowball is a sampling approach that begins with selecting one or two cases from the population followed by requesting those cases to suggest further cases and ask these new cases to nominate additional cases and so on. This method is suitable in the case of a hidden population and when it is hard to find the members of the studied group (Saunders, Lewis & Thornhill, 2009). The resultant sample, which very likely is a homogeneous sample, is subject to bias because of the small network of acquaintances that may imply that the diversity of the sample frame has not been attained (Saunders, Lewis & Thornhill, 2009; Polit & Beck, 2013; Ritchie et al., 2013).

The purposive (judgemental) sampling is the most common sampling method applied in qualitative research (Marshall, 1996; Gentles et al., 2015; Etikan, Musa & Alkassim, 2016). It is defined as a sampling technique through which the cases are selected based on the researcher's judgment to gain detailed exploration of the central themes or to meet researcher's objectives (Saunders, Lewis & Thornhill, 2009; Ritchie et al., 2013). The cases may be selected based on demographic characteristics, specific knowledge, behavioural patterns, roles, etc.

Within the purposive sampling, various strategies exist. Expert sampling is one form of purposive sampling through which the proficient individuals with rich knowledge and experience in the area of the study are selected by the investigator (Etikan, Musa & Alkassim, 2016). A major benefit of this technique is extracting in-depth and detailed information from the views of important cases and experts (Etikan & Bala, 2017). The theoretical sample *“necessitates building interpretative theories from the emerging data and selecting a new sample to examine and elaborate on this theory”* (Marshall, 1996, p.523). It is primarily linked to the development of grounded theory (Ritchie et al., 2013).

The present study adopts the purposive (expert) sampling approach in order to gain detailed information from the experts’ perspective. The interviews in this research targeted three categories of experts in the Rwaq platform:

1. The instructors who teach the courses. In Rwaq, most of the instructors taught between 1 to 2 courses while only a few taught more than 2 courses. The majority of interviewees in this study taught between 1 to 2 courses with the exception of one who taught more than 2 courses. Also, most of them are assistant professors in Saudi universities.
2. The learners who have joined at least three courses in the Rwaq platform.
3. The administrators namely the Co-founder and the CEO of the Rwaq platform.

The data provided by the instructors, learners, and administrators offer diversity in the opinions from different angles. These experts have been approached by sending invitation letters via email asking them to take part in the interviews (see Appendix D). If an individual chose to participate, he/she was asked to suggest a day, time, and a suitable method of communication.

Triangulation is a technique that combines multiple methods, mainly the quantitative and qualitative ones, with the purpose of investigating the same phenomenon (Hussein, 2009). The objective of the triangulation is gaining a deep and wide understanding of the study phenomenon from different angles as well as increasing the validity and reliability of the research (Hussein, 2009). The triangulation includes five types (Hussein, 2009):

1. **Data triangulation:** the employment of various data sources, namely time, space, and person in a single study for validation purposes.
2. **Theoretical triangulation:** the adoption of different theories in a single study to support or refute the findings.

3. **Investigator triangulation:** the use of multiple researchers in a single study at any phase for confirmation purposes.
4. **Analysis triangulation:** the use of multiple methods for analysing the same set of data for validation purposes.
5. **Methodological triangulation:** the combination of multiple methods (mainly quantitative and qualitative) in a single study for investigating the same phenomenon.

This study uses the data triangulation in the interviews sample in order to increase the research validity by interviewing experts from different categories: instructors, learners, and administrators as well as experts of different ages and both genders (Brink, 1993; Shenton, 2004; Alkharang, 2014). For ethical considerations and to protect the participants' identity, the detailed demographic information about the administrators and instructors was not presented as such information can help to identify them. The Co-founder of the Rwaq platform issued a permission to show his name in this research. All the learners who participated in the interviews come from Saudi Arabia. The demographic characteristics of the administrators, instructors, and learners are shown in Tables 4.5, 4.6, and 4.7, respectively.

**Table 4.5 Demographic characteristics of the administrators**

<b>Participant No.</b>	<b>Role in Rwaq</b>	<b>Gender</b>
P1	Rwaq Co-founder (Mr. Fouad Al-Farhan)	Male
P2	Partner and CEO of Rwaq	Male

**Table 4.6 Demographic characteristics of the instructors**

<b>Participant No.</b>	<b>Gender</b>
P3	Male
P4	Male
P5	Female
P6	Male
P7	Male
P8	Male
P9	Male
P10	Male
P11	Male
P12	Female

**Table 4.7 Demographic characteristics of the learners**

<b>Participant No.</b>	<b>Gender</b>	<b>Age</b>	<b>Occupation</b>	<b>Academic major</b>	<b>Arabic MOOCs used</b>	<b>International MOOCs used</b>	<b>No. of courses taken in Rwaq</b>	<b>No. of certificates earned</b>
<b>P13</b>	Female	25-30	Student	Master in information technology	Rwaq	Shaw academy	3	1
<b>P14</b>	Female	30-35	Employee	Master in computer science	Rwaq and Edraak	Coursera	9	4
<b>P15</b>	Female	25-30	Employee	Master in computer science	Rwaq and Edraak	Coursera	3	2
<b>P16</b>	Female	30-35	Employee	Master in computer science	Rwaq	FutureLearn	3	1
<b>P17</b>	Female	25-30	Employee	Master in computer science	Rwaq	Coursera	9	4
<b>P18</b>	Male	25-30	Employee	Bachelor in Computer science	Rwaq	Coursera	12	12
<b>P19</b>	Female	20-25	Student	Bachelor student in information technology	Rwaq	None	4	None
<b>P20</b>	Male	30-35	Employee	Bachelor in fundamentals of religion	Rwaq	None	3	None
<b>P21</b>	Male	25-30	Employee	Diploma in Engines and motor vehicles	Rwaq	Coursera	3	None
<b>P22</b>	Male	20-25	Student	Bachelor student in information technology	Rwaq	None	4	1

All the administrators of the Rwaq platform were male. Also, the instructors were predominantly male except for two. The frequency and percentage of the demographic variables of the learners are shown in Table 4.8.

**Table 4.8 Frequency and percentage of the demographic variables of the learners**

<b>Demographic variable</b>	<b>Category</b>	<b>Frequency</b>
<b>Gender</b>	Male	4
	Female	6
<b>Age</b>	20-25	2
	25-30	5
	30-35	3
<b>Occupation</b>	Student	3
	Employee	7
<b>Academic major</b>	Master in information technology	1
	Master in computer science	4
	Bachelor in Computer science	1
	Bachelor student in information technology	2
	Bachelor in fundamentals of religion	1
	Diploma in Engines and motor vehicles	1
<b>Arabic MOOCs used</b>	Rwaq	8
	Rwaq and Edraak	2
<b>International MOOCs used</b>	Shaw Academy	1
	Coursera	5
	FutureLearn	1
	None	3
<b>No. of courses taken in Rwaq</b>	3 courses	5
	4 courses	2
	9 courses	2
	12 courses	1
<b>No. of certificates earned</b>	None	3
	1 certificate	3
	2 certificates	1
	4 certificates	2
	12 certificates	1

## **B. Sample Size**

The qualitative studies tend to use a small number of participants compared to the quantitative studies for several reasons (Mason, 2010; Ritchie et al., 2013). Because the objective of the qualitative studies is understanding the meaning rather than the generalization, the frequencies of the data is not important. Additionally, the qualitative studies seek to collect detailed information and they are labour-intensive and time-consuming. Consequently, it is unfeasible to analyse a large sample.

In general, qualitative research concentrates mainly on the sample adequacy and not on the sample size (O'reilly & Parker, 2012). Sample adequacy means that the sample size must be large enough to uncover the key issues within the population and to increase the diversity of views and opinions (Ritchie et al., 2013).

Numerous researchers have provided recommendations for selecting the sample size in the qualitative studies. However, most of these recommendations are not supported with evidence (Guest, Bunce & Johnson, 2006). For example, Bertaux (1981) stressed that in qualitative studies the minimum adequate sample size is fifteen. Another guideline proposed by Creswell (1998) was the use of five to twenty-five interviews for a phenomenological study and twenty to thirty for a grounded theory study. Dworkin (2012) reported that a large number of articles and books suggested that the sample size between five to fifty is adequate.

The majority of qualitative research follows the notion of saturation for determining the required sample size (Mason, 2010; Dworkin, 2012; O'reilly & Parker, 2012). The saturation can take different forms such as thematic/data saturation and theoretical saturation (O'reilly & Parker, 2012). Thematic/data saturation means that adding new participants to the research will not produce any new relevant data (Dworkin, 2012). One important question is how might we decide we have reached data saturation and present evidence for that judgment (Francis et al., 2010). Malterud, Siersma & Guassora (2016) and Hennink, Kaiser & Marconi (2016) stated that qualitative researchers often claim reaching saturation without demonstrating the assessment used to confirm that statement. Numerous studies opine that assessing the saturation in the qualitative research is a vague issue and is not based on evidence and practical guidelines (Kerr, Nixon & Wild, 2010;

Carlsen & Glenton, 2011; Hennink, Kaiser & Marconi, 2016). The saturation is complex to operationalize and explain (Hennink, Kaiser & Marconi, 2016).

Hennink, Kaiser & Marconi (2016) led a study with the purpose of determining the sample size required to reach code (thematic) and meaning (rich understanding of a phenomenon) saturation. They concluded that the code saturation was reached after nine interviews. Nevertheless, sixteen to twenty-four interviews are required for reaching the meaning saturation. Their result concurs with Guest, Bunce & Johnson (2006) who established that the data saturation occurred between seven and twelve interviews. Their finding is also consistent with Namey et al. (2016) who described that the sample size between eight and sixteen interviews is sufficient to reach the saturation.

In light of the previous recommendations, the total sample size selected for this research is twenty-two participants with the aim to reach the meaning saturation (Hennink, Kaiser & Marconi, 2016). In particular, ten instructors, ten learners, and two administrators of the Rwaq platform participated in the interviews. After the qualitative analysis, twenty-two was found to be a satisfactory size as there were diverse views on the suggested factors.

### **C. The Design of the Interview Guide**

The interview guide was prepared drawing upon the proposed research model. Johnson & Christensen (2008) asserted that selecting closed or open-ended type of questions depends on the purpose of the study. The open-ended questions are typically utilised in the exploratory research (qualitative) to obtain in-depth details from the participants' perspective.

A discovery interview, which is an example of the semi-structured interview (Ryan, Coughlan & Cronin, 2009), is a one-to-one interview based on the use of open-ended questions and probes. It is typically used when the goal is giving the respondents the freedom to tell their own stories instead of answering structured questions since each participant understands the world in different subjective ways (Ryan, Coughlan & Cronin, 2009). Therefore, using the open-ended questions and probes was considered ideal for designing the interview guide for this study. Furthermore, the open-ended questions in the interviews can contribute to decreasing the researcher biases (Turner, 2010).

The interview guide includes two sections (see Appendix E). The first section has been designed so as to acquire the demographic and general information about the interviewees. Placing the demographic and general questions at the beginning of the interview helps to establish the rapport quickly as these questions are easily answered and generally non-threatening (Ryan, Coughlan & Cronin, 2009; Babbie, 2013). The second section contains open-ended questions about the participants' viewpoints on the proposed factors influencing learners to continue using the Arabic MOOCs.

#### **D. Ethical Considerations**

Ethics is important to protect the rights of interviewees and notify them about the procedures and any potential risks before collecting their data. The ethical approval from the ethics committee at The University of Southampton was received before approaching the participants and conducting the interviews. The research ethics number for conducting the interviews is 24828.

In conformity with the ethics requirements, the participant information sheet stating the purpose of the research and other important information regarding the participation in the study was sent to the interviewees (see Appendix F). The identity of the participants was kept anonymous. Also, all participants' information including researcher notes, transcripts, and audio recordings were kept confidential. The participants have been told that they have the freedom to accept the participation or not and can withdraw at any time without any penalties or giving reasons. Before starting the interviews, all the participants signed the consent form (see Appendix G) after reading the participant information sheet.

#### **E. Piloting the Interview Guide**

The pilot test is essential to find flaws or weaknesses in the design of the interview guide, and thus allows performing the enhancement and correction before the actual implementation of the study (Turner, 2010; Jacob & Furgerson, 2012). Five Saudi PhD researchers at The University of Southampton who are familiar with the Rwaq platform as well as the qualitative studies checked the clarity of the interview questions. Based on their feedback, certain refinements and changes have been done to make the questions more understandable.



**F. Conducting the Interviews**

1. An invitation letter was sent to the potential participants, describing the research aims along with the participant information sheet that stresses the voluntary aspect of the participation, anonymity, and confidentiality in dealing with the participants' data plus a copy of the consent form. Furthermore, the list of interview questions was sent to the participants to offer them a chance to view the questions before they decide to take part as well as to prepare them for the interviews. If an individual agreed to participate, he/she was asked to suggest a day, time, and means of communication. One day before the interview, a reminder about the interview was sent to the participants.
2. The interviews were conducted from mid-January to mid-March 2017. Also, all the interviews were undertaken in the Arabic language. At the beginning of an interview, a participant was welcomed and the researcher expressed gratitude to him/her for his/her participation to accomplish this research goal. Then, the researcher briefly introduced herself, the aim of the interviews, and the purpose of the present research. It was confirmed that the participant read the participant sheet carefully. Such information is valuable for establishing a rapport between the interviewer and participants which could encourage the participants to provide truthful information and increase the likelihood of their honesty (Gill et al., 2008). Before asking the interview questions, a participant was requested to sign a copy of the consent form and return it to the interviewer.
3. First, the prepared interview guide was used for asking the demographic and general questions such as gender, age, etc., as indicated in Appendix E. Afterwards, the participants were asked open-ended questions on a set of factors driving the learners to keep using Arabic platforms. The probing questions were used to extract detailed information about the factors. Those questions differed from interview to interview depending on the conversation and the participant's answers. During the interview, the conversation was recorded using iPhone app called 'Voice Memos'. The audio recording provides several benefits such as allowing the focus on questioning and listening as well as re-listening to the conversations for using direct quotes (Saunders, Lewis & Thornhill, 2009). Furthermore, notes were taken for the following reasons (Opdenakker, 2006):

- Ensuring that the participants responded to all interview questions.
  - In case of the tape recorder failing to function.
4. On average, an interview took about 30 minutes. Finally, an interview was closed by giving the participant a chance to add any information, suggestions, or ask a question, and then he/she was thanked for his/her valuable information.

### G. Trustworthiness of the Interviews

The validity and reliability of research findings have been addressed in quantitative (positivist) and qualitative (naturalistic) research differently (Shenton, 2004). The validity and reliability constitute the bases of research credibility (Alkharang, 2014). Validity refers to *“the degree to which a study reflects the specific concepts it aims to investigate”* (Alshenqeeti, 2014, p.43). It can be classified into two types: internal and external. As stated by Alshenqeeti (2014, p.43), *“internal validity refers to the extent to which an investigation is actually measuring what it is supposed to measure”*. On the other hand, *“external validity addresses the degree or extent to which such representations or reflections of reality are legitimately applicable across groups”* (Brink, 1993, p.35). Brink (1993, p.35) stated that the reliability is *“concerned with the consistency, stability and repeatability of the informant’s accounts as well as the investigators’ ability to collect and record information accurately”*.

The literature has assigned alternative terms related to the trustworthiness of qualitative research (Shenton, 2004):

1. Credibility (as opposed to internal validity).
2. Transferability (as opposed to external validity).
3. Dependability (as opposed to reliability).

The credibility *“deals with the focus of the research and refers to confidence in how well data and processes of analysis address the intended focus”* (Graneheim & Lundman, 2004, p.109). The transferability answers the question *“Can the findings be generalised?”*. In the qualitative research, the transferability is difficult and may be impossible due to the small number of participants and its dependence on unique contexts (Shenton, 2004). The dependability deals with the repeatability of the findings if the same methods, contexts, and participants are employed. Qualitative research usually fails to maintain high dependability because of the biases (Shenton, 2004; Alshenqeeti,

2014). Table 4.9 reviews the strategies used in this research to increase the trustworthiness of the qualitative study.

## **H. Interviews Analysis**

Content analysis and thematic analysis are the main methods of analysing the qualitative data (Marks & Yardley, 2004; Vaismoradi, Turunen & Bondas, 2013). Content analysis *“is a systematic coding and categorizing approach used for exploring large amounts of textual information unobtrusively to determine trends and patterns of words used, their frequency, their relationships, and the structures and discourses of communication”* (Vaismoradi, Turunen & Bondas, 2013, p.400).

In this research, the thematic analysis which shares certain features with content analysis was selected as a method for analysing the qualitative data. It is broadly used and described as a technique for *“identifying, analysing and reporting patterns (themes) within data”* (Braun & Clarke, 2006, p.79). Typically, a theme is not based on quantifiable measures but it *“captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set”* (Braun & Clarke, 2006, p.82). The thematic analysis offers several advantages including the following (Braun & Clarke, 2006):

1. Flexibility.
2. Being easier for researchers who are not familiar with the qualitative analysis.
3. Providing a thick description of the data set and allowing comparisons among data sets.

A code is a basic meaningful element extracted from the raw data (Braun & Clarke, 2006). Coding the data can be performed without considering a pre-existing coding frame or previous theory which is termed ‘inductive thematic analysis’. Alternatively, a theoretical (deductive) thematic analysis is used to code the data in light of existing theoretical frameworks (Braun & Clarke, 2006). In this study, both inductive and deductive analyses were used whereby coding and theme development were directed by the content of the data as well as the existing concepts and theories. The researcher followed the following steps for conducting the thematic analysis (Braun & Clarke, 2006):

**Table 4.9 Strategies used in this research to increase the trustworthiness of the qualitative study**

	<b>Strategy</b>	<b>The goal</b>	<b>Reference</b>
<b>Credibility</b>	Data Triangulation: <ul style="list-style-type: none"> <li>• Interviewing administrators, instructors, and learners using Rwaq.</li> <li>• Diversity in ages and genders of the participants.</li> </ul>	Provide richer diversity of the phenomena under the study.	Brink (1993); Graneheim & Lundman (2004); Shenton (2004)
	Offering the thick description of the phenomenon.	Report the examined situations and their surrounding contexts honestly with the aim to give the readers a clear picture to be able to evaluate the quality of the work.	Shenton (2004)
	Iterative questioning (rephrased questions).	Detect contradictions and omit suspicious data.	Shenton (2004)
	Comparing the findings of the interview to the findings of the previous studies.	Evaluate the degree to which the interview findings are consistent with the results of the previous studies.	Brink (1993); Shenton (2004)
<b>Transferability</b>	<ul style="list-style-type: none"> <li>• Providing the thick description about the contexts of the fieldwork sites, the number and characteristics of participants, the restrictions of selecting participants, data collection methods and the process of analysis.</li> <li>• Providing detailed findings of the analysis with appropriate quotations.</li> </ul>	Enable the readers to decide on the transferability to other contexts.	Graneheim & Lundman (2004); Shenton (2004); Anney (2014)
	Purposive sampling	Obtain detailed information from knowledgeable sources.	Teddlie & Yu (2007); Anney (2014); Ellis (2016)
<b>Dependability</b>	Dense description of research methods.	Allow the researcher to replicate the study.	Chilisa & Preece (2005)
	Data Triangulation.	Provide diversity in the perceptions and views.	Chilisa & Preece (2005)

1. Familiarizing with the data.
2. Generating initial codes.
3. Searching for themes.
4. Reviewing themes.
5. Defining and naming themes.
6. Producing the report.

The process of coding can be done manually or with an aid of a software (Braun & Clarke, 2006). Manual coding is deemed disorganized, hard to navigate, and a time-consuming process (Hilal & Alabri, 2013). NVivo is a qualitative data analysis computer software package that overcomes the limitations of the manual coding. It speeds and facilitates the tasks of storing, organising, and managing a large amount of data. NVivo allows a researcher who works on a large project to save time and concentrate on extracting themes and interpretation rather than wasting time with manual copy-cut-paste in the manual coding task (Zamawe, 2015). Moreover, the use of NVivo helps to obtain reliable results when compared to the analysis that is conducted manually which is usually prone to human errors (Welsh, 2002). Another advantage is its assistance in discovering connections in the data and finding new insights. One important benefit of using NVivo is that it provides an accurate and transparent data analysis process which allows anyone, familiar with using NVivo, to follow what the researcher did to reach his/her conclusions (Zamawe, 2015). The main tasks provided by NVivo are: managing data, managing ideas, data query, modelling visually, and reporting. Considering the previously mentioned advantages of NVivo, NVivo11 software was employed to analyse the interview transcripts.

#### **4.2.2. Questionnaire Method**

This section presents the methods used for employing the questionnaire for this study including population and sampling, sample size, designing the questionnaire, operationalisation of the variables, validating the translated questionnaire, ethical considerations, pretesting the questionnaire, distributing the final questionnaire, as well as questionnaire analysis.

##### **A. Population and Sampling**

The population of this research is the users of the Rwaq platform registered as learners; either individuals who have an account on the platform but have not started joining the courses or individuals who have attended at least one course in Rwaq, who are 18 years or older. According

to the CEO of Rwaq, in September 2017, the number of users registered as learners was approximately 738,371.

The probability sampling provides the following advantages for the quantitative studies (Tansey, 2007): (a) avoiding selection bias, (b) enabling the generalization. A sampling frame, which is a list that includes all members of the target population, is needed to achieve the probability sampling (Saunders, Lewis & Thornhill, 2009). Because of the large size of the target population as well as the difficulty in obtaining the sampling frame, a volunteer (self-selected), non-probability sampling method, serves as a sampling approach in the quantitative phase in this study. Furthermore, the statistical tests are designed to deal with the samples not the populations (Faber & Fonseca, 2014).

The need for participants was publicised through the social media and Rwaq directory emails. This method is cheap, simple, and can produce relatively large sample quickly (Bethlehem, 2010; Chandio, 2011). Nevertheless, the sample which resulted from this method is subjected to biased estimates (e.g. overestimates), and hence may not be representative of the whole population (McMillan, 1996; Bethlehem, 2010). This is due to the fact that the people who decide to participate in the survey may differ from those who do not in characteristics such as motivations, skills, or experiences (McMillan, 1996).

## **B. Sample Size**

Different statistical analysis techniques entail different sample sizes to produce reliable estimates (e.g. parameter estimates, model fit, and statistical power). In general, it can be stated that SEM analysis needs a large sample size (Kline, 2011). There is no agreement on the ideal sample size required in SEM due to the existence of diverse issues and factors affecting the required size (Weston & Gore, 2006; Kline, 2011). A large sample is essential for missing or non-normally distributed data (Weston & Gore, 2006).

For the CB-SEM analysis, Kline (2011) pointed out that the median sample size used in the previous studies utilizing SEM analysis is around 200 observations. Barrett (2007) also advised that at least 200 cases should be used by the researchers who utilize SEM analysis. Various researchers revealed that in contrast to CB-SEM, PLS-SEM is more flexible and produces stable results when using small sample sizes (Chin & Newsted, 1999; Reinartz, Haenlein & Henseler, 2009; Astrachan, Patel & Wanzenried, 2014; Henseler et al., 2014). PLS-SEM can handle sample sizes smaller than 100

observations (Awang, Afthanorhan & Asri, 2015), whereas CB-SEM requires at least 100 observations for the sample size (Awang, Afthanorhan & Asri, 2015) or even over 100 observations (Nasser & Wisenbaker, 2003). Moreover, Chin & Newsted (1999) concluded that PLS-SEM can converge to the true parameter values when having as low as 20 cases. Based on previous findings, receiving at least 200 usable responses was the key concern of the researcher because the model developed in the current research is complex.

Warp-PLS 6.0, a recent stable version released in mid of 2017, offers a useful feature which is estimating the minimum required sample size for the PLS-SEM analysis (Kock, 2017). The estimated sample size is calculated based on three parameters:

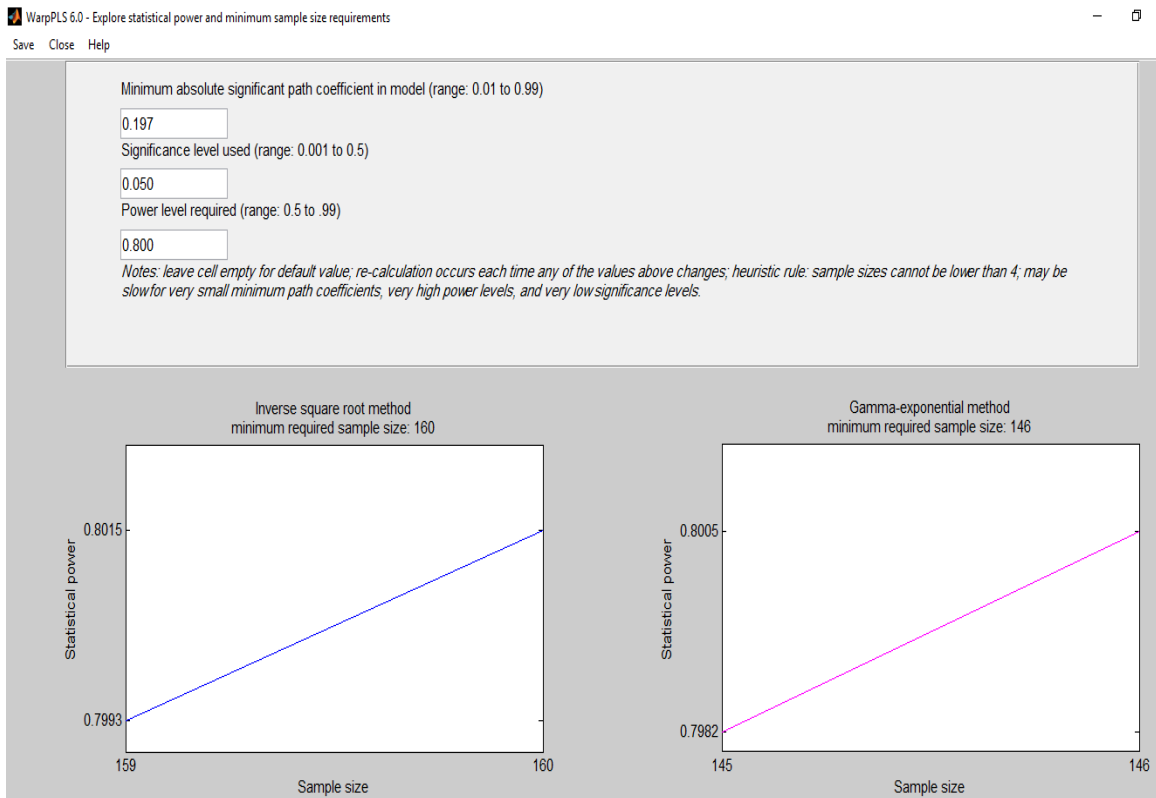
1. The expected minimum absolute significant path coefficient in the model (The default value in Warp-PLS= 0.197).
2. The significance level used (The default value in Warp-PLS= 0.05).
3. The power level required (The default value in Warp-PLS= 0.80).

For estimating the minimum absolute significant path coefficient in the proposed model, the researcher relied on the pilot study results. In the pilot study, the minimum absolute significant path coefficient was found to be 0.197 between ALS and CI, which is the same default value set by Warp-PLS. In this study, three significance levels for hypotheses testing (0.001, 0.01, 0.05) were selected, where  $\alpha=0.05$  is the upper cut-off point for rejecting the null hypotheses. For selecting the desired level of the statistical power ( $1 - \beta$ ), the researcher used the default value set by Warp-PLS (0.80).

Inverse square root and gamma-exponential are two methods used in Warp-PLS to estimate the minimum required sample size, both of which simulate Monte Carlo experiments (Kock, 2017). Kock (2017) suggested using the more conservative estimated sample size so as to assure acquiring the desired statistical power. As shown in Figure 4.3, the estimated sample size by the inverse square root and gamma-exponential are 160 and 146, respectively.

### **C. Designing the Questionnaire**

The investigator should design a questionnaire in such a way that enables him/her to acquire the required information about the research problem (Kazi & Khalid, 2012).



**Figure 4.3 Screenshot of the estimated sample size by Warp-PLS 6.0**

As recommended by Kazi & Khalid (2012), an utmost effort was made to make the language of the questionnaire at the level of the participants' understanding by making the questions clear, easy to understand, and appropriate for their educational level and culture. For designing the questionnaire, the following steps were followed:

1. Determining the objective of the questionnaire which is verifying the research hypotheses.
2. Conducting a literature review to find previously validated questionnaires in similar contexts (Kazi & Khalid, 2012).
3. Taking the advantage of the interviews to generate and refine the measurement items to better suit the context of the current study.
4. Using multiple and high-level items for each construct for the following reasons:
  - A single item is not able to offer a prefect representation of the construct (Chandio, 2011).
  - Having three or more indicators (observed variables) per factor (latent variable) decreases or eliminates the problem of the bias in the parameter estimate (Gerbing & Anderson, 1985).



The objective of the questionnaire was to collect the perspectives of the learners regarding the factors that influence them to continue to use the Rwaq platform. Hence, close-ended (structured) questions and the scaled-response format were appropriate for the questionnaire development. Close-ended questions are used mostly in the confirmatory research when the dimensions of the variables are already defined to test specific hypotheses (Johnson & Christensen, 2008). In addition, this format of the questions makes it easier for researchers to analyse the data as well as for participants because this type of questions do not require much time and effort when completed (AlMohaimmeed, 2012).

Applying continuous methodologies of analysis such as factor analysis is valid when the number of responses' categories is large (e.g. five to seven categories), because the variables approach the continuity (Rhemtulla, Brosseau-Liard & Savalei, 2012). The five-point Likert scale is significantly easier for respondents and quicker to answer (Pearse, 2011). According to Hinkin, Tracey & Enz (1997), using five or seven-point Likert scales is recommended for new items as these scales allow to generate satisfactory coefficient alpha reliability estimates. Consequently, the instrument in this study employs 5-point Likert scale (five categories), ranging from one (strongly disagree) to five (strongly agree). Table 4.10 presents the advantages and disadvantages of the low and high granularity scales (Pearse, 2011, p.163).

**Table 4.10 Low VS high granularity scales (Pearse, 2011, p.163)**

	<b>Advantages</b>	<b>Disadvantages</b>
<b>Low granularity</b>	<ul style="list-style-type: none"> <li>• Quicker to answer.</li> </ul>	<ul style="list-style-type: none"> <li>• Scale exhibits more bias.</li> <li>• Respondents become frustrated if their option is not represented in the options made available.</li> </ul>
<b>High granularity</b>	<ul style="list-style-type: none"> <li>• More likely to have inclusive, exhaustive, and mutually exclusive categories.</li> <li>• More precise data.</li> <li>• Higher reliability and validity.</li> <li>• Increase score variance.</li> <li>• More meaningful statistical results.</li> <li>• Fewer neutral and "uncertain" responses.</li> </ul>	<ul style="list-style-type: none"> <li>• Linguistic differentiation of categories more complex.</li> <li>• More difficult to differentiate categories and to make a choice.</li> <li>• Cognitive ability of respondents may hinder the proper use of the scale.</li> <li>• Respondents may become impatient.</li> <li>• Categories may become trivial.</li> <li>• More prone to the distortion effects of cognitive reference points.</li> </ul>

There are two forms of the measurement models: reflective and formative (Stefura, 2011). *“In the reflective model, the constructs are a common effect for all the indicators. Modifications which occur in the latent variable determine modifications also on its items”* (Stefura, 2011, p.2). In contrast, in formative models, *“the indicators determine a set of dissimilar causes, everyone representing a small part of the whole construct”* (Stefura, 2011, p.2).

Constructs can be modelled as reflective or formative depending on the research purpose. If a researcher wants to examine the effect of a holistic construct containing highly intercorrelated items, the reflective indicators are appropriate (Albers, 2010). On the other hand, the formative indicators are suitable for a researcher interested in investigating the main drivers of a construct that affect a dependent variable (Albers, 2010). In this case, a researcher should design the construct using a number of different facets of such construct to gain a detailed view and capture different dimensions of the constructs being measured (Hoehle & Huff, 2012). Accordingly, most of the constructs in this study were modelled as formative in order to capture the influence of different dimensions of these constructs. Perceived usefulness, perceived ease of use, and continuance intention were modelled as reflective constructs, whereas the following factors are formative:

1. Arabic language support
2. Free courses' advantages
3. Perceived reputation
4. Intrinsic motivations
5. Willingness to earn a certificate
6. Social influence

Kline (2011) indicated that the confirmatory factor analysis requires at least two indicators per construct for models containing two or more constructs. Nevertheless, having only two indicators per construct may raise problems in the analysis, particularly when using a small sample (Kline, 2011). Therefore, using a minimum of three to five indicators per factor is recommended so as to avoid such problems in the analysis (Kline, 2011). Thus, all the constructs in this study were designed with five indicators or more except for the continuance intention and social influence constructs which were designed using three and four indicators, respectively.

For developing the online questionnaire, the researcher investigated different online survey tools in order to select a well-suited tool for this study. The iSurvey tool provided by the University of

Southampton was not chosen because the researcher encountered certain problems in designing the questionnaire in Arabic since this tool does not fully support the Arabic language. The other alternatives that have been examined were SurveyMonkey, Google Forms, and SmartSurvey, all of which completely support the Arabic language. Among these tools, SmartSurvey<sup>10</sup> was selected for creating the online questionnaire because it fully complies with the Data Protection Act 1998 (DPA)<sup>11</sup> where the respondents' data are stored and backed up on UK-based servers.

The welcome page of the questionnaire described the research aims and information concerning the participation in the survey. In addition, a link to a detailed participant information sheet was provided on the welcome page, at the end of the which the participants were asked to tick a box if they were willing to participate in the survey and start answering the questions. The screenshot showing the welcome page of the online questionnaire is presented in Figure 4.4.

The online questionnaire involves three main sections (see Appendix H for both Arabic and English version of the instrument). The first section is designed to ensure that the respondents meet the research criteria where non-qualified respondents, either individuals under 18 years or individuals who do not have an account on Rwaq, were directed to a termination page where they were thanked for their time and informed that they are not the target of the survey. The second section is dedicated to obtaining responses on the factors driving the learners' intent to continue to use the Rwaq platform by means of Likert scales. The final section collects demographic and general information about the participants, such as age, gender, nationality, etc. using nominal scales. The demographic information about the respondents is useful for gaining a rich profile of the participants that may help in explaining the quantitative results. At the end of the questionnaire, the participants were asked to provide their email if they wished to engage in follow-up interviews and then were appreciated for their collaboration.

In brief, the questions were grouped by factors and placed in a logical sequence. All questions were required compulsory to be answered by the participants except for the last question asking about their willingness to participate in subsequent interviews.

---

<sup>10</sup> <https://www.smartsurvey.co.uk/>

<sup>11</sup> <https://www.legislation.gov.uk/ukpga/1998/29/contents>



Figure 4.4 Screenshot of the welcome page of the online questionnaire

As an attempt to ensure the appropriateness of the sampling, two approaches were used. First, the Smart-Survey was set up to allow only one response per computer. Second, although incentives in a survey motivate the participants to complete the survey and increase the response rate (Fan & Yan, 2010), they were not used in this research. This is because the researcher had a concern that such incentives may encourage individuals who do not satisfy the survey criteria (non-users of Rwaq or users under 18 years) to input incorrect information in the hope of winning a reward. Also, the potential respondents who meet the survey criteria may rush through the survey just for the same reason.

#### D. Operationalisation of the Variables

The prior relevant studies and interviews' findings were used for operationalizing the theoretical constructs. Several measurement items were self-developed while other items were adapted from the previous research to fit the context of the current research. Many of the measurement items adopted in this study were developed in English. All the constructs were measured on a five-point Likert scale with 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5= strongly agree. The number of items developed for each construct was as follows: continuance intention (3 items), perceived usefulness (7 items), perceived ease of use (5 items), the Arabic language support (7 items), free courses' advantages (7 items), perceived reputation (8 items), intrinsic motivations (7 items), willingness to earn a certificate (8 items), and social influence (4 items). In total, 56 measurement items were generated in the present study. Tables 4.11 to 4.19 illustrate the operationalisations of the variables in the proposed model.

**Table 4.11 Operationalisation of perceived usefulness**

<b>Code</b>	<b>Item</b>	<b>Reference</b>
<b>PU1</b>	Using Rwaq assists me in learning.	Alraimi, Zo & Ciganek (2015); Gao & Yang (2015); Aharony & Bar-Ilan (2016); Ouyang et al. (2017); Wu & Chen (2017); Yang et al. (2017)
<b>PU2</b>	Using Rwaq helps me to develop my knowledge or skills.	Self-developed
<b>PU3</b>	Joining a course in Rwaq increases my understanding of the subject of that course.	Self-developed
<b>PU4</b>	Rwaq makes learning more effective (e.g. boosts the ability to learn through online learning, flexibility in accessing resources from anywhere and at any time, increases participants' independent learning skills, etc.).	Alraimi, Zo & Ciganek (2015); Gao & Yang (2015); Aharony & Bar-Ilan (2016); Ouyang et al. (2017); Wu & Chen (2017); Yang et al. (2017) <b>The examples used in this item were self-developed.</b>
<b>PU5</b>	Using Rwaq helps in increasing the amount of knowledge or skills obtained.	Self-developed
<b>PU6</b>	Using Rwaq assists me in developing my knowledge or skills in the field of academic study or career.	Self-developed
<b>PU7</b>	In general, the use of Rwaq contributes to the achievement of my educational objectives (e.g. developing a specific skill for a particular purpose).	Self-developed

Table 4.12 Operationalisation of perceived ease of use

Code	Item	Reference
PEU1	Learning how to use the Rwaq platform was easy for me.	Gao & Yang (2015); Wu & Chen (2017)
PEU2	It is easy for me to become skilful in using Rwaq (e.g. accessing the desired information on the platform quickly and easily).	Gao & Yang (2015); Aharony & Bar-Ilan (2016); Wu & Chen (2017); Yang et al. (2017) <b>The example used in this item was self-developed.</b>
PEU3	Using Rwaq and the interaction with it is clear and understandable.	Gao & Yang (2015); Wu & Chen (2017)
PEU4	The use of Rwaq does not require a lot of mental effort.	Yang et al. (2017)
PEU5	In general, I find Rwaq easy to use.	Gao & Yang (2015); Aharony & Bar-Ilan (2016); Yang et al. (2017)

Table 4.13 Operationalisation of Arabic language support

Code	Item	Reference
ALS1	Compared to the English language supported by the foreign educational platforms, Rwaq courses provided in the Arabic language are easier to understand and learn.	Self-developed
ALS2	Compared to the English language supported by the foreign educational platforms, Rwaq courses provided in the Arabic language make me achieve a better and deeper understanding of the contents of the course.	Self-developed
ALS3	Compared to the English language supported by the foreign educational platforms, communicating with teachers and learners in Rwaq using the Arabic language is better for me.	Self-developed
ALS4	I will face language problems when using an educational platform that does not support my Arabic language.	Alkharang (2014)
ALS5	Compared to the educational platforms providing courses in English, platforms such as Rwaq that support the Arabic language are better for learning Islamic and Arabic subjects.	Self-developed
ALS6	The Arabic platforms such as Rwaq are an opportunity to enrich and enhance the Arabic content on the Internet (e.g. Rwaq helps to increase the number of the Internet sources of information in Arabic).	Self-developed
ALS7	In general, I find the platforms provided in the Arabic language like Rwaq to be an advantage for those interested in learning.	Self-developed

Table 4.14 Operationalisation of free courses' advantages

Code	Item	Reference
FCA1	Joining the free courses provided by Rwaq helps me to save money.	Self-developed

<b>FCA2</b>	When I want to develop my knowledge, I look for free courses to join.	Self-developed
<b>FCA3</b>	The free courses offered by Rwaq encourage me to join the Rwaq platform.	Self-developed
<b>FCA4</b>	I can join as many courses as I need in Rwaq because the courses are free.	Self-developed
<b>FCA5</b>	Free Rwaq courses help those with poor financial status to develop their knowledge.	Self-developed
<b>FCA6</b>	Free Rwaq courses are useful to me if I am not sure of my commitment to complete the courses.	Self-developed
<b>FCA7</b>	In general, I think that the free courses in Rwaq are useful to me.	Self-developed

**Table 4.15 Operationalisation of perceived reputation**

<b>Code</b>	<b>Item</b>	<b>Reference</b>
<b>PR1</b>	I trust that the instructors who teach courses in Rwaq have a scientific efficiency and extensive experience.	Schwaiger (2004)
<b>PR2</b>	I think that Rwaq is a unique educational platform in the Arab world.	Schwaiger (2004)
<b>PR3</b>	I think that the Rwaq platform provides courses with reliable scientific information.	Self-developed
<b>PR4</b>	I think that the Rwaq platform offers courses of excellent quality.	Schwaiger (2004); Feldman, Bahamonde & Velasquez Bellido (2014); Foroudi, Melewar & Gupta (2014)
<b>PR5</b>	I trust the Rwaq platform and the services it provides.	Schwaiger (2004); Foroudi, Melewar & Gupta (2014)
<b>PR6</b>	I have a positive feeling about the Rwaq platform (e.g. respect or admiration).	Schwaiger (2004); Feldman, Bahamonde & Velasquez Bellido (2014); Foroudi, Melewar & Gupta (2014)
<b>PR7</b>	In my opinion, Rwaq is interested in communicating with the users regarding their problems or needs.	Schwaiger (2004)
<b>PR8</b>	In general, I think that the Rwaq platform has a good reputation.	Self-developed

**Table 4.16 Operationalisation of intrinsic motivations**

<b>Code</b>	<b>Item</b>	<b>Reference</b>
<b>IM1</b>	I enjoy learning new topics in Rwaq.	Jha & Bhattacharyya (2013)
<b>IM2</b>	I enjoy viewing diverse topics in Rwaq.	Jha & Bhattacharyya (2013)

<b>IM3</b>	I find it fun to learn in Rwaq.	Jha & Bhattacharyya (2013)
<b>IM4</b>	I get intrinsically motivated to constantly expand my knowledge using Rwaq.	Jha & Bhattacharyya (2013)
<b>IM5</b>	Using Rwaq satisfies my curiosity to explore interesting topics.	Self-developed
<b>IM6</b>	In Rwaq, I have the curiosity to explore topics in disciplines that have nothing to do with my academic specialization.	Self-developed
<b>IM7</b>	I think that using Rwaq is interesting for me.	Self-developed

**Table 4.17 Operationalisation of willingness to earn a certificate**

<b>Code</b>	<b>Item</b>	<b>Reference</b>
<b>WEC1</b>	In Rwaq, the courses that offer a certificate of course completion upon meeting the requirements encourage me to join that course.	Self-developed
<b>WEC2</b>	Obtaining a certificate of course completion from Rwaq enhances and supports my resume.	Self-developed
<b>WEC3</b>	Obtaining a certificate of course completion from Rwaq may help me in order to differentiate myself in the workplace, apply for a job, compete in a competition, etc.	Self-developed
<b>WEC4</b>	Obtaining a certificate of course completion from Rwaq is a proof to others that I have knowledge in a given subject (e.g. proof to my employer, university teachers, etc.).	Self-developed
<b>WEC5</b>	Obtaining a certificate of course completion from Rwaq motivates me to commit to complete the course.	Self-developed
<b>WEC6</b>	Obtaining a certificate of course completion from Rwaq gives me a positive feeling (e.g. a sense of accomplishment, a sense of appreciation for my efforts in the course, etc.).	Self-developed
<b>WEC7</b>	Obtaining a certificate of course completion from Rwaq gives others an impression that I am an educated person and a seeker of knowledge.	Self-developed
<b>WEC8</b>	In general, obtaining a certificate of course completion from Rwaq helps me to achieve my goals.	Self-developed

**Table 4.18 Operationalisation of social influence**

<b>Code</b>	<b>Item</b>	<b>Reference</b>
<b>SI1</b>	People who influence my behaviour encourage me to use Rwaq (e.g. friends, co-workers, teachers, relatives, my employer, etc.).	Chang, Liu & Chen (2014); Sun et al. (2014) Bhattacharjee & Lin (2015); Wu & Chen (2017)
<b>SI2</b>	People who are important to me advise me to use Rwaq (e.g. friends, co-workers, teachers, relatives, my employer, etc.).	Chang, Liu & Chen (2014); Sun et al. (2014); Bhattacharjee & Lin (2015); Zhou (2016)



<b>SI3</b>	People whose opinions I respect and value think that it is better for me to use Rwaq (e.g. friends, co-workers, teachers, relatives, my employer, etc.).	Chang, Liu & Chen (2014); Sun et al. (2014); Zhou (2016)
<b>SI4</b>	In the social networking accounts of Rwaq, such as Twitter and Facebook, the views of people who have used Rwaq for learning and who have held a positive stance about the platform have encouraged me to utilise it.	Self-developed

**Table 4.19 Operationalisation of continuance intention**

<b>Code</b>	<b>Item</b>	<b>Reference</b>
<b>CI1</b>	I intend to continue to use Rwaq in the future.	Chang, Liu & Chen (2014); Maruping et al. (2017); Yang et al. (2017)
<b>CI2</b>	I predict I would continue to use Rwaq in the future.	Chang, Liu & Chen (2014); Maruping et al. (2017)
<b>CI3</b>	I plan to continue to use Rwaq in the future.	Chang, Liu & Chen (2014); Maruping et al. (2017); Yang et al. (2017)

### **E. Validating the Translated Questionnaire**

Developing the questionnaire using the native language of the target respondents is important for them to understand the questions and complete the questionnaire properly (AlMohaimmeed, 2012; Alshehri, 2012). Having been originally developed in the English language, numerous measurement items adopted in this study were translated into Arabic by the researcher as the survey targeted the Arabic-speaking learners in Arabic MOOCs. After translating the original items into the target language, it is fundamental to validate the translated instrument and assure that the intent of the original measures was maintained (Sperber, 2004; Sousa & Rojjanasrirat, 2011). To achieve this, the researcher sent the original instrument and the Arabic version of the instrument to two Saudis holding a bachelor degree in translation so as to receive their feedback on the quality and accuracy of the translation. Certain changes were introduced to the Arabic version based on their comments.

## **F. Ethical Considerations**

Ethical approval was obtained from the ethics committee at The University of Southampton before distributing the questionnaire (research ethics number: 25284). The participant information sheet was provided to the participants via a hyperlink on the welcome page of the online questionnaire (see Appendix I). The participants were informed that their participation is voluntary and they can withdraw at any time without giving reasons and without penalties. All participants' data were kept anonymous and confidential, and analysed as a group. Before answering the questions, all participants were requested to tick a box as an indication of their consent to participate in the survey.

## **G. Pretesting the Questionnaire**

Pretesting the survey instrument is important to detect and minimize the impact of the mistakes associated with the design of the instrument such as misunderstanding the questions, vagueness of the words, etc. (Grimm, 2010; Hilton, 2017). Haynes, Richard & Kubany (1995, p.238) defined the content validity as *“the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose”*. Different sources can be used to evaluate the content validity, namely the literature review, a sample from the target population, and experts (Burns & Grove, 1993). In addition, cognitive interviews can play a role in enhancing the content validity and reliability of the instrument (Knafl et al., 2007).

Numerous questionnaire items were self-developed for this study, and thus pretesting the questionnaire was of particular importance to validate the new measures (Hilton, 2017). As recommended by Aziz & Kamaludin (2015) as well as Brace (2013), the present research adopted three approaches to pre-testing the questionnaire before distributing it to the real respondents, namely cognitive interviews, an expert panel review, and a pilot study.

### **G.1. Cognitive Interviews**

Cognitive interview is a qualitative study that is *“paying explicit attention to the mental processes respondents use to answer survey questions and thus allows covert as well as overt problems to be identified”* (Collins, 2003, p.235). There are two methods used for the cognitive interview: think-aloud and probing. In the think-aloud method, an interviewer asks participants to speak their

thoughts aloud as they respond to questions while in the probing method the interviewer asks the respondents precise questions or probes. The probing method (interviewer-driven) was used as it makes the interview easier for the respondent (Collins, 2003). Moreover, parts of the questionnaire that are possible sources of flaws can be emphasized by the interviewer when using the probing method (Dietrich & Ehrlenspiel, 2010).

Probing can be achieved concurrently or retrospectively (Dietrich & Ehrlenspiel, 2010). In concurrent probing, the interviewer asks probes after each survey question or a series of questions. On the other hand, in retrospective probing, a respondent is given probe questions after answering all the survey questions. Concurrent probing was selected in this study because it is easier for respondents to answer each probe immediately as the memory of respondents is usually limited (Willis, 2004).

Four Saudi learners using the Rwaq platform engaged in one-to-one cognitive interviews for testing the questionnaire. Several cognitive probes have been used during the interviews including the comprehension/interpretation probe, paraphrasing, and other probes (Willis, 2004). Furthermore, the respondents were asked to provide suggestions for revising the questionnaire, mention additional important items, and comment on the questionnaire length, questions' sequence, and wording. Also, the participants were asked to evaluate the response format (five-point Likert scale).

Based on the findings of cognitive interviews, a few questions were modified because the participants did not understand the meaning of these questions. Additionally, a few participants suggested reducing the size of the questionnaire to enhance the response rate. All the participants preferred the five-point Likert scale to the seven-point Likert scale as they found it is easier and quicker as far as completing the questionnaire is concerned.

## **G.2. Expert Panel Review**

The aims of the expert review are: eliminating irrelevant items, re-phrasing the wording of the items, and identifying the potential respondent comprehension and data analysis problems. There are two types of experts: content and lay experts (Rubio et al., 2003). The content experts are specialists who have researched in a particular field whereas the lay experts are *"people for whom the topic is more salient"* (Rubio et al., 2003, p.96).

A panel of five content experts was invited to review a 56-item questionnaire. The experts are Saudi instructors in Saudi universities who have experience in questionnaire design, the SEM statistical analysis technique, and MOOCs. They have been sent an invitation letter through email with a survey link that was designed to collect their feedback. The survey included the defined theoretical constructs and their related measurement items. Three main questions were asked about each item: statement's applicability with the construct being measured, statement's clarity, and suggested modifications. Other questions concerned experts' opinions on the size of the questionnaire and the response format (five-Likert scale). The questionnaire was revised based on their valuable feedback. All the experts were satisfied with the measurement items with only a few suggestions provided such as the one suggesting not measuring more than one element in a single item and adding examples to clarify certain terms or phrases.

To estimate the average time required to complete the online questionnaire, three learners using Rwaq participated in answering the questionnaire. The time required to complete the questionnaire was about 10 minutes. Furthermore, the participants approved of the design, colours, font size, and the sequence of the questions.

### **G.3. Pilot Study**

The objectives of pilot studies include examining the item's difficulty, item discrimination, internal consistency, response rate, and parameter estimation (Hertzog, 2008; Johanson & Brooks, 2010). Piloting the questionnaire was employed in this study in order to evaluate the reliability and validity of the questionnaire measures. Lampard & Pole (2015) stated that in order to attain the quantitative objectives of the pilot study, a sample size of at least 50 participants is desirable. One instructor teaching in the Rwaq platform has distributed the questionnaire link among her students in the platform. The period of the pilot survey was one day, from 16<sup>th</sup> March 2017 to 17<sup>th</sup> March 2017. A total of 110 responses were received. Among the 110 responses received, 20 responses were excluded from the analysis because they include more than 50% of missing data. With regards to the 90 responses, 18 responses were filled by unqualified participants who do not have an account on the Rwaq platform or the participants whose age was under 18. Therefore, only 72 responses were complete and met the research criteria, and hence were retained for the analysis.

### G.3.1. Demographic Profile of Respondents in the Pilot Study

SPSS 23.0. was used to report the descriptive statistics (frequency and percentage) for the demographic variables of the respondents in the pilot study as shown in Table 4.20. The demographic variables include use of Rwaq, age, gender, nationality, occupation, academic college, highest level of education achieved, number of courses taken in Rwaq, number of certificates earned, and English language level.

**Table 4.20 Demographic details of the pilot study participants (n=72)**

<b>Variable</b>	<b>Category</b>	<b>Frequency</b>	<b>%</b>
<b>Use of Rwaq</b>	Have an account on Rwaq but have not joined any courses previously	4	5.6
	Joined at least one course in Rwaq previously	68	94.4
<b>Age</b>	Between 18-24 years	38	52.8
	Between 25-30 years	17	23.6
	Between 31-35 years	9	12.5
	Between 36-40 years	6	8.3
	Between 41-45 years	1	1.4
	Between 46-50 years	1	1.4
<b>Gender</b>	Male	19	26.4
	Female	53	73.6
<b>Nationality</b>	Saudi	64	88.9
	Omani	1	1.4
	Kuwaiti	1	1.4
	Yamani	3	4.2
	Syrian	1	1.4
	Qatari	1	1.4
	UAE	1	1.4
<b>Occupation</b>	Student	32	44.4
	Employee in government sector	15	20.8
	Employee in private sector	11	15.3
	Unemployed	14	19.4
<b>Academic College</b>	Education and literature	17	23.6
	Science	4	5.6
	Applied Medical Sciences	4	5.6
	Engineering	4	5.6
	Business	9	12.5
	Community college	3	4.2

Variable	Category	Frequency	%
	Computer science	17	23.6
	Science and literature	1	1.4
	Other	13	18.1
<b>Highest level of education achieved</b>	Secondary school	18	25.0
	Diploma	5	6.9
	Bachelor	36	50.0
	Master	12	16.7
	PhD	1	1.4
<b>Number of courses taken in Rwaq</b>	None	4	5.6
	1-3	35	48.6
	4-6	17	23.6
	7-9	9	12.5
	10-12	2	2.8
	More than 12	5	6.9
<b>Number of certificates earned</b>	None	18	25.0
	1-3	38	52.8
	4-6	8	11.1
	7-9	6	8.3
	10-12	1	1.4
	More than 12	1	1.4
<b>English Language Level</b>	I do not know the language at all	1	1.4
	Beginner	15	20.8
	Intermediate	35	48.6
	Advanced	19	26.4
	Proficient in the language	2	2.8

As can be seen from Table 4.20, the majority of participants (n=68) have joined at least one course in Rwaq with only 4 participants who only have an account on Rwaq without the experience of joining a course. Most of the respondents were young adults of ages between 18-24 years (n=38) followed by respondents whose ages ranged from 25 to-30 years (n=17). Female as well as Saudi participants were dominant in the pilot study with n=53 and n=64 respectively. The occupation of most of the participants was a student with 44.4%. Additionally, the top two majors of the respondents were education and literature, and computer science with n=17 for each. With respect to the education level of the respondents, the majority of them held a bachelor degree (n=36) followed by participants holding a secondary school certificate (n=18). The number of courses taken in Rwaq by most participants was between 1-3 courses (n=35). Similarly, the number of certificates earned as reported by most of the respondents was between 1-3 (n=38). 48.6% of the respondents

stated that their English language level is intermediate followed by participants with an advanced level who constituted 26.4%.

### G.3.2. Reliability and Validity of the Instrument

In order to examine the internal consistency of the reflective measures, Cronbach's alpha was calculated using Warp-PLS. The internal consistency is *"the extent to which measures are positively correlated, with higher correlations resulting in higher estimates of internal consistency reliability"* (Edwards, 2011, p.374). According to Sekaran & Bougie (2016), the closer the value of Cronbach's alpha reliability is to 1, the more reliable the measurements are. Table 4.21 shows the evaluation of the values of Cronbach's alpha reliability as stated by Sekaran & Bougie (2016).

**Table 4.21 Evaluation of the values of Cronbach's alpha reliability (Sekaran & Bougie, 2016)**

<b>Value of Cronbach's alpha reliability</b>	<b>Evaluation</b>
Less than 0.6	Poor
In 0.7 range	Acceptable
Above than 0.8	Good

The Cronbach's alpha coefficients of all the reflective constructs measured in the pilot study are presented in Table 4.22. It can be seen from the data in this table that the internal consistency reliabilities of all the constructs are considered good (over 0.8). Accordingly, all the measures were retained for the final questionnaire.

**Table 4.22 Cronbach's Alpha coefficients of reflective constructs in the pilot study**

<b>Construct</b>	<b>No. of Items</b>	<b>Cronbach's Alpha</b>
PU	7	0.886
PEU	5	0.856
CI	3	0.890

Diamantopoulos, Riefler & Roth (2008) stated that the correlations between the formative indicators may be positive, negative or zero, therefore assessing the reliability of the constructs by computing the internal consistency is not suitable for the formative measurement. In the formative measurement models, the existence of negative indicators does not necessarily mean that these indicators are not related to the construct (Diamantopoulos, Riefler & Roth, 2008). Similarly, tests such as construct validity (e.g. convergent and discriminant validity) are also not appropriate when

using the formative measurement models (Petter, Straub & Rai, 2007; Henseler, Ringle & Sinkovics, 2009; Hair, Ringle & Sarstedt, 2011).

Following a suggestion by Cenfetelli & Bassellier (2009), the multi-collinearity test was employed for the formative measures using the variance inflation factor (VIF) statistics provided by Warp-PLS. VIF refers to “*how much of an indicator's variance is explained by the other indicators of the same construct*” (Urbach & Ahlemann, 2010, p.20). A VIF value lower than 3.3 denotes a lack of multi-collinearity between the items (Diamantopoulos & Siguaw, 2006; Petter, Straub & Rai, 2007). Another less restrictive rule of thumb stated by Hair, Ringle & Sarstedt (2011) is that the value of VIF should be lower than 5.0. Also, a harmful multicollinearity occurs when the value of VIF exceeds 10 (Henseler, Ringle & Sinkovics, 2009). The results presented in Table 4.23 demonstrate the lack of multicollinearity among most of the indicators (VIF<3.3). ALS1, ALS2, FCA4, PR3, PR4, PR5, PR6, WEC8, and SI1 have VIF values less than 5, whereas the VIF values of SI2 and SI3 are lower than 10, indicating that no harmful multicollinearity was found between the indicators. Thus, all the indicators were kept for the final questionnaire.

**Table 4.23 VIF of the formative measures**

<b>Indicator</b>	<b>VIF</b>
ALS1	4.045
ALS2	3.533
ALS3	2.144
ALS4	1.338
ALS5	1.157
ALS6	1.460
ALS7	1.866
FCA1	1.462
FCA2	2.249
FCA3	2.712
FCA4	3.384
FCA5	1.584
FCA6	1.339
FCA7	1.935
PR1	1.589
PR2	2.984
PR3	4.051
PR4	3.896
PR5	3.877
PR6	3.468
PR7	1.467



<b>Indicator</b>	<b>VIF</b>
PR8	3.119
IM1	3.048
IM2	2.983
IM3	2.731
IM4	2.808
IM5	1.816
IM6	1.253
IM7	2.436
WEC1	2.223
WEC2	2.351
WEC3	2.553
WEC4	2.858
WEC5	2.729
WEC6	2.421
WEC7	2.446
WEC8	3.402
SI1	3.673
SI2	5.026
SI3	5.013
SI4	1.087

Further, the weights (relative importance) and p values of the indicators were computed for measurement validity (Söllner et al., 2010; Hair, Ringle & Sarstedt, 2011; Van Reijssen, 2014). According to Hair et al. (2014a) and Kleine-Kalmer (2016), the formative indicators are retained if:

1. The indicators' weights are significant, or
2. The indicators' loadings (absolute importance)  $\geq 0.50$ , or
3. The indicators' loadings are significant.

If none of the previous requirements is satisfied, then the indicators' relevance to the construct in terms of theories should be examined (Hair et al., 2014a). In addition, Henseler, Ringle & Sinkovics (2009) advised to retain the significant and insignificant formative indicators provided they are theoretically grounded. The formative measures are considered valid if they show significant weights at 0.05 level (Kock, 2014). The results displayed in Table 4.24 denote that 16 indicators have significant weights at different significance levels ( $p < 0.001$ ,  $p < 0.01$ ,  $p < 0.05$ ) and 25 indicators have insignificant weights ( $p \geq 0.05$ ). However, these indicators with insignificant weights have loading values exceed 0.50, with exception of ALS5, FCA6, IM6, and SI4. Nevertheless, ALS5 and IM6 have significant loadings at 0.01 level, whereas FCA6 and SI4 have significant loadings at 0.001 level.

Therefore, all the indicators were retained for the final questionnaire as they show satisfactory validity.

**Table 4.24 Indicator weights of the formative measures**

Indicator	Indicator Weight	P value
ALS1	0.265	0.008**
ALS2	0.257	0.010*
ALS3	0.238	0.016*
ALS4	0.157	0.082
ALS5	0.101	0.191
ALS6	0.156	0.085
ALS7	0.225	0.022*
FCA1	0.154	0.087
FCA2	0.218	0.026*
FCA3	0.235	0.018*
FCA4	0.246	0.014*
FCA5	0.166	0.071
FCA6	0.126	0.136
FCA7	0.215	0.028*
PR1	0.128	0.131
PR2	0.164	0.074
PR3	0.169	0.068
PR4	0.176	0.060
PR5	0.176	0.059
PR6	0.156	0.084
PR7	0.118	0.151
PR8	0.165	0.073
IM1	0.195	0.041*
IM2	0.200	0.037*
IM3	0.204	0.034*
IM4	0.211	0.030*
IM5	0.186	0.050
IM6	0.082	0.239
IM7	0.202	0.036*
WEC1	0.160	0.078
WEC2	0.154	0.087
WEC3	0.145	0.100
WEC4	0.166	0.071
WEC5	0.163	0.074
WEC6	0.156	0.085
WEC7	0.166	0.071
WEC8	0.177	0.058
SI1	0.336	0.001**

Indicator	Indicator Weight	P value
SI2	0.340	<0.001
SI3	0.343	<0.001
SI4	0.125	0.136

\*  $p < 0.05$ ; \*\*  $p < 0.01$  (one-tailed test)

The pilot study showed that the expected average time for filling in the online questionnaire was 10 minutes.

#### H. Distributing the Final Questionnaire

The questionnaire hyperlink was distributed through the official Twitter and Facebook accounts of Rwaq. In addition, two instructors teaching in Rwaq distributed the questionnaire hyperlink to all students in their courses in Rwaq through the Rwaq platform email directory. The data collection process was conducted over sixteen days, from 19<sup>th</sup> March 2017 to 4<sup>th</sup> April 2017. After collecting sufficient amount of responses, the questionnaire hyperlink was closed. The present research carried out a cross-sectional study where the data were collected via the questionnaire once over a period of time.

#### I. Questionnaire Analysis

SPSS is a commonly adopted statistical software for analysing the data in research in various fields such as social sciences, business studies, and information systems. In the current research, SPSS 23.0 and Warp-PLS 5.0 were used in order to conduct data screening tests including non-response bias, the descriptive statistics of the demographic variables and construct items, linearity, outliers, normality, and collinearity.

One example of the second generation (2G) techniques in the statistical analysis is Structural Equation Modelling (SEM) which is a “*statistical methods for modelling causal networks of effects simultaneously—rather than in a piecemeal manner*” (Lowry & Gaskin, 2014, p.125). SEM offers advantages not provided in the first generation (1G) statistical analysis techniques, such as the simple linear regression (Astrachan, Patel & Wanzanried, 2014; Lowry & Gaskin, 2014). Advantages of SEM include the following:

1. Testing the validity of the measurement and structural model simultaneously.
2. Directly testing complex models consisting of chains of causes and effects (indirect effects).

### 3. Analysing all the propositions (the paths between the variables) concurrently.

SEM analysis can be conducted using two main different approaches, namely the covariance based SEM (CB-SEM) and the partial least squares SEM (PLS-SEM) (Astrachan, Patel & Wanzenried, 2014; Hair et al., 2014b). The goal of CB-SEM is *“reproducing the theoretical covariance matrix, without focusing on explained variance”* (Hair, Ringle & Sarstedt, 2011, p.139). Conversely, PLS-SEM *“aimed at maximizing the explained variance of the dependent latent constructs”* (Hair, Ringle & Sarstedt, 2011, p.139). The guidelines for selecting the highly suited SEM approach are demonstrated in Table 4.25 (Lowry & Gaskin, 2014, p.133).

**Table 4.25 Recommendations regarding using PLS-SEM VS CB-SEM (Lowry & Gaskin, 2014, p.133)**

<b>Model requirement</b>	<b>PLS-SEM</b>	<b>CB-SEM</b>
<b>Includes interaction effects</b>	Preferable, as it is designed for easy interactions.	Difficult with small models, nearly impossible with large ones.
<b>Includes formative factors</b>	Easier.	Difficult.
<b>Includes multigroup moderators</b>	Can use, but difficult.	Preferable.
<b>Testing alternative models</b>	Can use.	Preferable, as it provides model fit statistics for comparison.
<b>Includes more than 40-50 variables</b>	Preferable.	Sometimes unreliable if it does converge; sometimes will not converge.
<b>Nonnormal distributions</b>	Preferable (although it will still affect results, just to a lesser extent).	Should not be used; results in unreliable findings.
<b>Nonhomogeneity of variance</b>	Preferable (although it will still affect results, just to a lesser extent).	Should not be used; results in unreliable findings.
<b>Small sample size</b>	It will run (although it will still affect results negatively).	Unreliable if it does converge; often will not converge.

PLS-SEM was chosen for analysing the quantitative data in this research for the following main reasons:

1. Unlike CB-SEM which is appropriate for confirmatory research (testing well-established theories), PLS-SEM is recommended for exploratory research (developing or testing new theories) (Wetzels, Odekerken-Schröder & Van Oppen, 2009; Hair, Ringle & Sarstedt, 2011; Roldán & Sánchez-Franco, 2012; Mohamadali & Azizah, 2013; Henseler et al., 2014; Jannoo et al., 2014; Lowry & Gaskin, 2014; Sarstedt et al., 2014; Richter et al., 2016). Therefore, PLS-SEM was used in this study as the context of the phenomenon under investigation is

new with a new proposed model and a number of newly observed and latent variables that were not tested previously.

2. The goal of this study is predicting the key factors affecting the continuance intention, perceived usefulness, and perceived ease of use. Unlike CB-SEM which is parameter-oriented, PLS-SEM is more appropriate for the current study because it is prediction-oriented.
3. PLS-SEM can cope efficiently with complex models that have a large number of endogenous and exogenous constructs, indicator variables, and relationships (Astrachan, Patel & Wanzenried, 2014).
4. PLS-SEM is preferable when having formative constructs. Most of the constructs in this study are modelled as formative including the Arabic language support, free courses' advantages, perceived reputation, intrinsic motivations, the willingness to earn a certificate, and social influence.

It is crucial to use SEM tools (PLS-SEM or CB-SEM) only if the assumption of linearity (linear relationships between the endogenous and exogenous variables) is satisfied (Lowry & Gaskin, 2014). However, in the natural and behavioural phenomena, most of the relationships between the variables are nonlinear, but usually U-shaped curve or inverted U-shaped curve (Kock, 2015a). Thus, applying non-linear techniques in this case results in strong and reliable results (Brewster, 2011). In this study, as shown in Appendix J, it was evident that all the relationships between the latent variables are linear or quasi-linear ones, excluding four relationships that are warped (nonlinear), namely  $PEU \rightarrow CI$ ,  $ALS \rightarrow CI$ ,  $FCA \rightarrow CI$ , and  $WEC \rightarrow PU$ . All current SEM statistical software tools do not handle the nonlinear associations between the latent variables except Warp-PLS software (Kock, 2017). Consequently, Warp-PLS 5.0 is suitable for the analysis in this research because it accounts for both linear and curvilinear relationships, and estimates the path coefficients accordingly (Lowry & Gaskin, 2014). Moreover, Warp-PLS facilitates model's construction through utilizing a step-by-step and user-friendly interface guide.

PLS regression algorithm, the default outer model algorithm in Warp-PLS, was used in the current research because it provides stable coefficients and tends to reduce collinearity (Kock & Mayfield, 2015).

For the inner model analysis, Warp-PLS offers several algorithms including Linear, Warp2, Warp2 basic, Warp3, and Warp3 basic. Following a recommendation by Kock (2012), for each individual path in the proposed model, the algorithm that resulted in the most stable path coefficient (less p value) was selected as presented in Figure 4.5.

The Warp2 algorithm “*identifies U-curve relationships among linked latent variables, and, if those relationships exist, the algorithm transforms (or “warps”) the scores of the predictor latent variables so as to better reflect the U-curve relationships in the estimated path coefficients in the model*” (Kock, 2015a, p.24). Differently, Warp3 algorithm “*tries to identify relationships among latent variables defined by functions whose first derivatives are U-curves*” (Kock, 2015a, p.25).

With regards to the significance assessment, Stable 3 method was applied in the present research because it produces accurate p values and reliable path coefficients compared to other resampling methods such as Bootstrapping and Jackknifing (Kock, 2015a).

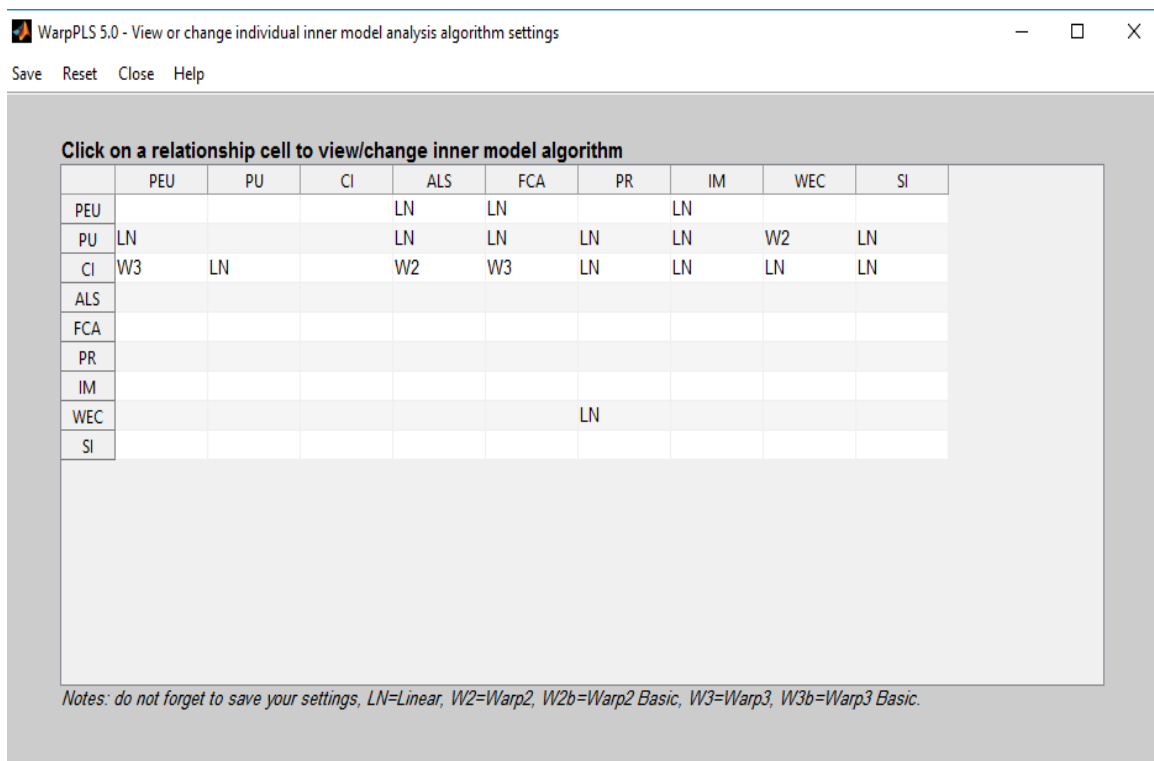


Figure 4.5 The algorithms used for inner model analysis

### **4.2.3. Explanatory Follow-Up Interviews Method**

The purpose of the follow-up interviews is to understand the possible causes that led to some unexpected quantitative results. The potential interviewees were selected randomly from a list of respondents who indicated their initial consent to participate in follow-up interviews when filling in the questionnaire. Then, an invitation letter was sent to those participants illustrating the objective of the interviews along with the participant information sheet, the consent form, and the list of interview questions (see Appendix K for follow-up interview guide). Eight female learners using the Rwaq platform have engaged in one-to-one, semi-structured, telephone interviews from 19<sup>th</sup> July 2017 to 26<sup>th</sup> July 2017. The average duration of an interview was 20 minutes. The code numbers of the interviewees range between P23-P30.

### **4.3. Summary**

The methodologies used to answer the current research questions were presented in detail in this chapter with justification. A description of the research design, target population, sampling approaches, data collection, and data analysis methods have been demonstrated in this chapter. Literature review and exploratory interviews were employed to develop the research model and hypotheses. The questionnaire method was selected to test the proposed model and hypotheses. Also, this chapter presented details about developing and validating the instrument. Finally, follow-up interviews served as an approach for explaining the rejected hypotheses. The next chapter is devoted to the qualitative findings and discussion.





## Chapter 5 Qualitative Findings and Discussion

Chapter 5 is dedicated to relating the interviews' findings. The analysis of the qualitative data was carried out using the thematic analysis approach. The discussion of the findings will be presented afterwards.

### 5.1. Thematic Analysis Using NVivo

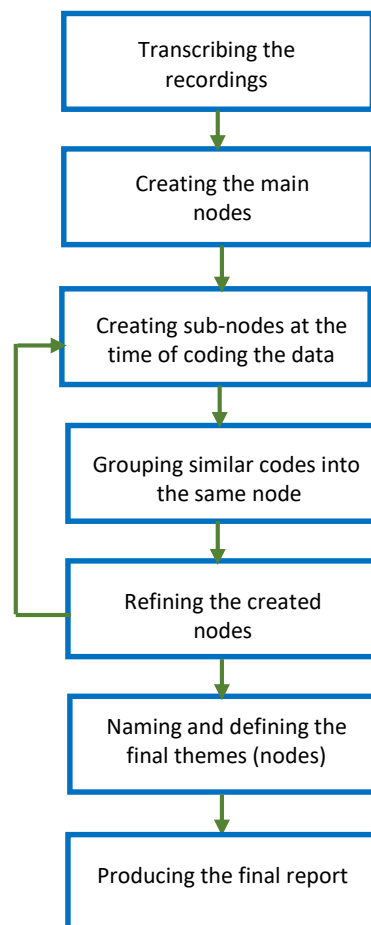
As mentioned earlier, the purpose of conducting the interviews was to explore the participants' perspectives on a set of seven factors that affect the retention of existing learners in Arabic MOOCs. Twenty-two participants took part in the interviews. The set of factors includes the following:

1. Willingness to earn a certificate
2. Intrinsic motivations
3. Perceived reputation
4. Free courses' advantages
5. Perceived usefulness
6. Perceived ease of use
7. Arabic culture support

The qualitative data were analysed using the thematic analysis approach with the help of NVivo software. NVivo does not fully support the right to left languages such as Arabic. Therefore, as the interviews were undertaken in the Arabic language, the researcher decided to transcribe the audio recordings into Arabic transcripts first and then have the transcripts translated into English by a specialist Arabic team of translators. The rationale for using the Arabic transcripts is that the researcher is an Arabic, and hence the Arabic transcripts help the researcher to become familiarized with the data as well as to understand the data deeply and easily. For accuracy, the transcripts were cross-checked with the audio recordings before the coding. After that, the English transcripts were imported into NVivo to be coded and analysed.

The deductive and inductive thematic analysis methods were used in the qualitative analysis. The deductive analysis was applied through the creation of parent nodes representing the main themes (the main factors discussed within the interviews) prior to data coding and analysis. On the other hand, sub-nodes (sub-themes) were created at the time of coding the data, which is termed

inductive analysis. The researcher read the transcript and then coded interesting data segments representing meaningful data at the nodes. Then, similar codes were grouped in the same node (theme) (Appendix L.1). The created themes were refined based on reviewing the coded data in an iterative process until reaching satisfactory themes and sub-themes. Figure 5.1 presents a summary of the steps that were followed for conducting the thematic analysis. Appendices L.2, L.3, and L.4 show the word frequency query, chart and summary of the nodes that were most used to code the source, respectively.



**Figure 5.1 Steps taken to conduct the thematic analysis in this study**

## 5.2. Interviews' Findings

The details regarding the findings of the interviews are presented in the following subsections. The eight main themes and the sub-themes which emerged from them can be seen in Table 5.1.

**Table 5.1 The main themes and their emergent sub-themes**

Main theme	Emergent sub-themes
<b>Willingness to Earn a Certificate</b>	<ul style="list-style-type: none"> <li>• Interest in obtaining certificates</li> <li>• Certificates are pillars of any open education</li> <li>• Encourage learners to join the courses</li> <li>• Support experience and the main qualification               <ul style="list-style-type: none"> <li>◦ Certificates are not important for learners who hold high qualifications</li> </ul> </li> <li>• Certificates with high grades for CVs</li> <li>• Employers focus on certificates</li> <li>• Learners focus on understanding the difficult curriculum rather than certificates</li> <li>• Give a sense of obligation to the learner and teacher</li> <li>• Give learners a sense of achievement</li> <li>• Give others good impression</li> </ul>
<b>Free Courses' Advantages</b>	<ul style="list-style-type: none"> <li>• Importance of certificates accreditation</li> <li>• Interest in earning certificates from prestigious platforms</li> <li>• Lack of interest in certificates because of the newness of the notion of MOOCs</li> <li>• Linking success of the platform to providing certificates</li> <li>• Obsession about collecting certificates</li> <li>• Obtain certificates whilst learning</li> <li>• Consequences of non-accreditation of certificates</li> <li>• The main end goal is earning the certificate</li> <li>• The main purposes of obtaining the certificates</li> <li>• The value of certificates' being accredited alongside the courses' being flexible</li> <li>• Willingness to earn certificates depends on the needs of the learners</li> </ul>
	<ul style="list-style-type: none"> <li>• Negative consequences               <ul style="list-style-type: none"> <li>◦ Attracting people who are not interested in learning</li> <li>◦ Decreases the commitment to complete the courses</li> <li>◦ Give negative impressions about those courses</li> </ul> </li> <li>• Contributing to platforms' popularity               <ul style="list-style-type: none"> <li>◦ Challenges on the teachers to cope with large number of learners</li> </ul> </li> <li>• Looking for free courses               <ul style="list-style-type: none"> <li>◦ Facilitate one's joining the greatest number of courses</li> <li>◦ Looking for free courses if such courses fulfil their requirements</li> </ul> </li> <li>• No prior requirements               <ul style="list-style-type: none"> <li>◦ People from different countries</li> </ul> </li> <li>• Opportunity to try the courses</li> <li>• Spread education to people of different classes</li> </ul>

Main theme	Emergent sub-themes
	<ul style="list-style-type: none"> <li>• Spread education to people who cannot learn at universities</li> <li>• Universities should open education in cooperation with platforms</li> </ul>
<b>Intrinsic Motivations</b>	<ul style="list-style-type: none"> <li>• Curiosity to explore new subjects</li> <li>• Employees have intrinsic motivations more than students</li> <li>• Famous instructors motivate learners to learn intrinsically</li> <li>• Interest, creativity, and long-term goals <ul style="list-style-type: none"> <li>◦ Interest in religious courses</li> </ul> </li> <li>• Lack of interest in certificates</li> <li>• Learners have extrinsic motivations</li> <li>• Life-long learning</li> <li>• Love knowledge for its own sake</li> <li>• Low turnout of employees</li> <li>• Feeling of pleasure when exploring new subjects</li> <li>• Self-desire to experience new challenges <ul style="list-style-type: none"> <li>◦ Learning using MOOCs is not as easy as other means</li> </ul> </li> <li>• Some have intrinsic motivations and others have extrinsic ones</li> <li>• Willingly engage in optional tasks without much coercion</li> </ul>
<b>Perceived Reputation</b>	<ul style="list-style-type: none"> <li>• Quality of the course</li> <li>• Famous trainers <ul style="list-style-type: none"> <li>◦ Negative consequences of focusing on famous trainers</li> </ul> </li> <li>• Importance of certificates from prestigious universities</li> <li>• Learning from prestigious universities is an opportunity <ul style="list-style-type: none"> <li>◦ Trust in prestigious universities</li> </ul> </li> <li>• Popularity and number of current users</li> <li>• Rwaq is distinguished because it supports Arabic</li> <li>• Rwaq only hires qualified teachers <ul style="list-style-type: none"> <li>◦ Hiring qualified instructors for building public trust</li> </ul> </li> <li>• Reputation of the instructor is not a powerful factor for using Rwaq</li> </ul>

Main theme	Emergent sub-themes	
Perceived Usefulness	<ul style="list-style-type: none"> <li>• Achieve educational goals</li> <li>• Beneficial for unemployed</li> <li>• Advantages of learning from pioneers in a given field</li> <li>• Arabic language support</li> <li>• Audio and video materials</li> <li>• Awarding certificates</li> <li>• Complementing curricula               <ul style="list-style-type: none"> <li>○ Increasing marks at universities</li> <li>○ Understanding the information in different ways than ways used at universities</li> </ul> </li> <li>• Convenient learning               <ul style="list-style-type: none"> <li>○ Useful for people who live in remote areas</li> <li>○ Useful for people with tricky schedule</li> <li>○ Convenient learning is a double-edged sword</li> <li>○ Remove commuting costs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Discovering specialisations</li> <li>• Diversity of the subjects</li> <li>• Duration of the courses</li> <li>• Facilitate learning</li> <li>• Free courses</li> <li>• Gain skills needed at work</li> <li>• Gradually learning</li> <li>• Importance of courses' benefits</li> <li>• Learners with intrinsic motivations perceive the platform to be useful</li> <li>• Remove the notion of initiation</li> <li>• Support self-directed learning</li> <li>• Viewing various teaching methods</li> </ul>
Perceived Ease of Use	<ul style="list-style-type: none"> <li>• Ease of use is important factor</li> <li>• Access information quickly</li> <li>• Competition with other platforms</li> <li>• Distance and flexible learning</li> <li>• Ease of use is important for certain classes of people</li> <li>• Ease of use is important for optional tasks</li> <li>• Features facilitate the use of Rwaq               <ul style="list-style-type: none"> <li>○ Dividing videos into small chunks</li> <li>○ Easy enrollment</li> <li>○ Providing user manual</li> <li>○ User friendliness of Rwaq website</li> </ul> </li> <li>• Finding alternatives when facing difficulties when using Rwaq</li> </ul>	
Arabic Culture Support	<ul style="list-style-type: none"> <li>• The Arabic language is important factor</li> </ul>	

Main theme	Emergent sub-themes
	<ul style="list-style-type: none"> <li>• Disapproval of focusing on other languages than Arabic</li> <li>• Feeling of enthusiasm and belonging</li> <li>• Give Arabic atmosphere</li> <li>• Increasing the number of users</li> <li>• Learning in Arabic is easier</li> <li>• Learning religious and Arabic subjects</li> <li>• Low English proficiency</li> <li>• No alternative to the Arabic language</li> <li>• Choosing Arabic or English MOOCs depending on the individual's skills and needs</li> <li>• Pride in enrolling in Arabic platforms</li> <li>• Solution to the lack of Arabic content on the Internet</li> <li>• The need to provide Books in the Arabic language</li> <li>• Understand subjects in Arabic context</li> </ul>
<b>Factors Suggested by the Participants</b>	<ul style="list-style-type: none"> <li>• Accreditation of certificates</li> <li>• Contextualise the content of Arabic MOOCs</li> <li>• Cooperation of educational institutions</li> <li>• Diversity of Subjects</li> <li>• Marketing</li> <li>• Providing distinguished courses</li> <li>• Social influence</li> <li>• Quality of the courses</li> <li>• Time management skills</li> </ul>

### 5.2.1. Willingness to Earn a Certificate

According to the participants, willingness to earn a certificate is an influential and motivational factor which affects the learners' decision to continue using MOOCs. Generally, the objective of some learners is just to obtain certificates, while other are only looking for knowledge, whereas still others are wishing to obtain both a certificate and knowledge (P4). The certificate is one of the elements about MOOCs which are of most interest to learners.

Mr. Fouad Al-Farhan, the Co-founder of Rwaq, for instance said that enquiries regarding the certificates granted by Rwaq is very common:

*"For Sure, if I was asked about the most frequent questions that the students ask to Rwaq, definitely my answer is the certificates. I can say that issues regarding certificates are asked on a daily basis. It is obvious that acquiring a certificate is becoming a high priority for learners. Furthermore, the non-accreditation of the certificates does not reduce the percentage of learners' participation in the platform. If the certificate was accredited, though, the number of students would increase significantly."* (P1, Administrator)

Moreover, the executive director of Rwaq supported the previous perspective by adding that:

*"95% of received inquiries from users are about the certificate. The participants in Rwaq are eager to obtain certificates, even though these certificates are not accredited. The percentage of course completion and, ergo, the gaining of certificates in Rwaq reached around 20%, four times higher than the average of completion rate of popular MOOCs in developed countries, which is around 5-7%."* (P2, Administrator)

One interviewee linked the success of the platform to providing certificates when he reported that:

*"Yes, I think it is an important factor. It is difficult for any Arabic platform to succeed if it does not award certificates. The certificates are important for Arab learners. The main goal of the students is to obtain a certificate so that they may mention it in their CVs. Very few students join the platforms for the knowledge only."* (P9, Instructor)

As one participant noted, the certificates encourage learners to join the courses:

*“Courses that provide certificates are more valuable for us than the courses that do not offer certificates.” (P17, Learner)*

A few respondents resented the fact that some learners only have the main end goal of earning the certificate without ever focusing on learning from the course. One respondent, for instance, mentioned that:

*“Unfortunately, this is true. The main target of more than 50% of participants in platforms is to obtain a certificate, rather than to benefit from the course, even if the certificate is not recognised. Learners lack sufficient awareness about the accreditation of certificates. Many people just want to collect a lot of certificates, no matter what type of course it is and no matter which source it is taken from. Some people want to obtain certificates no matter whether they are accredited or not, and no matter whether they are useful for them or not.” (P3, Instructor)*

The same participant added that:

*“Personally, I am happy that the Rwaq certificate is not accredited because that means that they probably are wanting to learn for their own benefit. It would actually be better if Rwaq did not grant certificates at all since that would better guarantee that the learners’ objective is only that of gaining knowledge.” (P3, Instructor)*

Other participants supported this same perception by saying that:

*“Unfortunately, the certificate is important for a large number of students, which is a negative thing. This is not limited to Saudi people only, but applies to all students in general. I noticed the same while I was giving online courses in Britain. The main objective of some people is to obtain a certificate. Nevertheless, some are attempting to raise awareness and show that gaining a certificate is not everything.” (P5, Instructor)*

*“Yes, unfortunately. The main target of the free Arabic or foreign platforms is the spread of knowledge. From my personal experience in teaching through the Rwaq*



*platform, most questions were about whether a certificate was offered at the end of the course or not. This is a problem! Their main aim is that of obtaining a certificate instead of gaining knowledge. Although it is not accredited, they still ask about it. If we say that the certificates are not accredited, they may lose their interest in the course and this is a negative thing.” (P8, Instructor)*

As one participant stated, most, if not all, employers focus on certificates, thereby making the learners have the end goal of earning certificates and not actually learning:

*“Personally, I think the giving of certificates is one of the biggest problems of such platforms for the certificate has become an end and not a means. This is because certificates are very important for finding jobs. For example, if I did not obtain my PhD certificate from a reputable university, I would not have been given my current job.” (P9, Instructor)*

He also opined that employers should consider the skills the applicants have instead of their certificates:

*“Educational platforms are the new model for education, where students choose the subjects to decide their path in a certain field. So, companies should not care about certificates and should employ people based on their abilities. They can use tests similar to the General Aptitude Test in order to test their abilities regardless of whatever certificates they might possess.” (P9, Instructor)*

Moreover, as one of the respondents suggested, some learners care much more about obtaining certificates which show that they have received high grades in order to mention them in their CVs:

*“Some re-enrolled in the course in order to increase their marks, which means they have to get 100/100 (the participant laughs). One student asked me ‘How can I display this mark “70” on my CV — it is so bad!” (P5, Instructor)*

As indicated by a few of the interviewees, there are types of learner who may be obsessed about collecting certificates. One of them, for example, said:

*"I remember that one learner told me that she enrolled in ten courses at the same time only to collect the certificates!" (P5, Instructor)*

One participant demonstrated that Saudis care about acquiring certificates when she expounded:

*"For sure. Saudi people always seek certificates, even when attending conferences. For instance, I attended one conference and requested to obtain a certificate; they told me that they did not give certificates. I felt upset." (P13, Learner)*

The main purposes of learners wanting to receive certificates from open platforms are their wishing to: demonstrate their mastery; support job applications; impress potential employers; and/or acquire benefits or promotions at work. As an example, a few participants said that:

*"For sure, certificates are important for getting job or for receiving career promotions. Individuals need proof — in other words, a recognised certificate." (P2, Administrator)*

*"Such simple certificates can be useful for differentials, receiving awards, or getting career promotions or bonuses. The usefulness of these certificates differs according to the estimation of them by the employers or the educational institutions. For instance, such certificates may only be added to CVs without any academic benefit, while they may be valued by some universities." (P3, Instructor)*

One interviewee mentioned an example of the advantages of obtaining certificates for employees:

*"Some employees try to prove to their bosses that they are knowledge seekers by obtaining certificates from these platforms. Sometimes, it is necessary to obtain a certificate in order to gain a promotion. It is a different issue, though, in my field. For instance, if the head of department wants to nominate a few lecturers to present on a certain subject, those who hold certificates in this subject will have a greater chance to be chosen by the head." (P15, Learner)*

Certificates from respectable platforms are appreciated when applying for jobs. One participant mentioned this fact by saying:

*"If I were a chairman of a company and a student who holds a certificate issued by Coursera (which is paid and full of valuable projects) came to me, such certificates*

*would be more preferable in my opinion than certificates issued by less reliable sites. For sure, certificates issued by Udacity and other reputable companies are more valuable.” (P8, Instructor)*

One respondent supported the same view when she explained that she is only interested in earning certificates from prestigious platforms for the purpose of applying to jobs:

*“Since I am searching for a job, I would not participate in Rwaq because its certificates are not accredited. Instead, I would search for platforms which give accredited certificates. On the other hand, even though I was given a certificate from Shaw Academy, I did not know whether it was accredited or not. Nevertheless, I thought that the certificate might be valuable to me because Shaw Academy is a popular and reputable platform.” (P13, Learner)*

One participant stressed that certificates are pillars of any open education by reporting that:

*“Not obtaining a certificate means that the learner has taken a certain course purely for their own benefit. This contradicts the main objective of open education. Open education is not an educational method only, but also leads to employment. Certificates are evidence which help people transfer to the next stage of their education or career.” (P6, Instructor)*

Another advantage of certificates is that of giving a sense of obligation to both the learner and teacher. For instance, one interviewee expressed his opinion by saying:

*“As for lecturers, certificates are important because they force lecturers to be held accountable. If there is no certificate, the lecturer may be careless. As for learners, certificates increase the likelihood that they will complete the course and all of its tests because they will be more serious. Course flexibility (i.e. learning at any time and any place) will lead to lower commitment by the learner. The presence of a certificate, therefore, promotes the commitment of the learner.” (P6, Instructor)*

As noted by a few respondents, certificates support experience and the main qualification:

*"This is the most important factor in the Saudi educational system. Experience is not considered unless accompanied by a certificate issued by an approved entity." (P7, Instructor)*

*"Why not; It will be useful in one's career and knowledge and will give learners the chance to find jobs in the future. We need certificates and other skills in order to support the main qualification — something which is not enough in and of itself for employment." (P14, Learner)*

Contrary to the perceptions expressed previously, one participant believed that certificates do not add anything powerful to people who already hold high qualifications when she commented:

*"Yes, it is useful for some people who need to improve their CVs or who need to find a certain job. For me, I was not interested in obtaining certificates, but I cared about gaining knowledge. Certificates were not so important for me because I hold a Master's degree." (P16, Learner)*

Earning certificates gives learners a sense of achievement. For example, a few participants explained that:

*"Students are very interested in obtaining certificates due to their having a motive for accomplishing and completing their course." (P10, Instructor)*

*"Learners consider certificates as awards for their efforts, even when such certificates are not accredited. People care about obtaining certificates, even when those certificates may be useless to them." (P17, Learner)*

Individuals who had earned certificates gave other people good impressions about themselves. Indeed, a few participants stated that:

*"A certificate also indicates that the person is well educated and has background knowledge in his [or her] field." (P14, Learner)*

*"When people see that I have attended courses and earned certificates, they say 'Wow!'" [The respondent means that people express their admiration at their having earned such certificates]. (P17, Learner)*

One respondent highlighted the value of certificates' being accredited alongside the courses' being flexible:

*"Their value will be even greater if certificates are accredited. I do not, however, want certificates to be accredited if that will make the course and its requirements more complicated, as is the case with traditional e-learning. If that was the case, I would prefer to attend traditional online courses offered by universities rather than platforms seeing as they are more reliable."* (P14, Learner)

Some participants spoke about the consequences of the non-accreditation of certificates from online platforms. One interviewee, for instance, said:

*"Certificates granted by platforms are important for employment, but certificates are not the criteria of acceptance or refusal due to the fact that those certificates are not accredited. If there are unaccredited online degrees awarded by universities, so what about the platforms?! Nevertheless, I don't believe that this is the case for Rwaq because it has a good reputation and a huge public."* (P5, Instructor)

More supportive views were given as well:

*"Unfortunately, online qualifications are not accredited by universities, but for some companies, they can be considered."* (P14, Learner)

*"I think that certificates are not very useful for employment purposes, especially with regards to the government sector, because certificates are not accredited."* (P21, Learner)

In sum, many participants posited the view that certificate accreditation is an important issue seeing as it allows for the certificate to be appreciated more highly (P1, P4, P8, P10, P13, P14, P20, P21). As mentioned by a few respondents, the key advantage of MOOCs is that they allow one to obtain certificates whilst learning:

*"I don't think that earning a certificate was a motivating factor for me when registering to MOOCs like Rwaq or Coursera. The certificate may be useful but, for me as a learner, my main goal in enrolling in MOOCs was to gain knowledge and experience in my field"*

*in an easy and seamless way. Nevertheless, certificates are a useful proof to employers that we did, in fact, attend the courses.” (P18, Learner)*

*“My reason for joining Rwaq was the acquisition of additional knowledge and skills. I did not care whether I received a certificate or not. Nevertheless, my having received certificates may benefit me when applying for jobs in companies. This is valuable because companies will know that I am a knowledge seeker and that I have additional experience besides my main qualification.” (P19, Learner)*

*“I am more interested in learning programming languages than obtaining certificates from MOOCs. Nevertheless, having such certificates could be beneficial for me when trying to find jobs in the future.” (P22, Learner)*

Moreover, one participant opined that, although many learners are eager to obtain certificates, most of her students in Rwaq were more concerned with understanding the difficult curriculum than earning certificates:

*“It depends on the goals of the learner. Many individuals want to add certificates to their CVs. From my experience, I taught a course via the platform which was similar to courses taught in a university setting. The number of students who obtained a certificate from the course was 12/3330, which is a very low number. Most of my students, however, did not care about the certificate as much as they cared about knowledge and enlightenment because they genuinely wanted to understand the difficult curriculum.” (P12, Instructor)*

Similarly, some participants reported that the willingness to earn certificates from MOOCs depends on the needs of the learners; for example:

*“If I want to learn something, I will use YouTube, even if there are no certificates. But if I am wanting to look for jobs, as is my case now, then certificates are important for me.” (P13, Learner)*

*“Well, it depends... If I want to enrich my knowledge, then certificates are not important for me. Nevertheless, the fact still remains that certificates will increase a platform’s enrolment levels, especially if they are accredited.” (P20, Learner)*

One interviewee, on the other hand, attributed the lack of interest in certificates to the newness of the notion of open platforms in the Arabic community, as well as to the lack of trust that employers give to such platforms:

*“I do not think that obtaining certificates is an important factor in the meantime because open education platforms are new to the Saudi and Arab communities in general. Furthermore, companies’ lack of trust in such platforms, the lack of seriousness which is accorded by educational institutions to such platforms’ courses and exams, and their lack of familiarity with open learning systems reduce the turnout of students. Nevertheless, around 800/6000 students passed my course in Rwaq. I also received many questions about the delay experienced in the issuing of certificates and the errors experienced in the printing of names on those certificates.”* (P11, Instructor)

### 5.2.2. Intrinsic Motivations

From the discussions, the important role that intrinsic motivations play in encouraging learners to persist in using Rwaq was affirmed by the interviewees. In general, the personal motivations for using the platforms are different. Some students are interested in the knowledge itself, whereas others need the knowledge in order to find a job, to change their career, and to improve themselves (P10). The learners who love knowledge for its own sake (i.e. who are not interested in any of the benefits associated with study or employment) are one type of learner who participate in Rwaq (P1, P15). For instance:

*“One of the types of individual who participate in Rwaq are people who love knowledge for knowledge’s sake and are purely self-motivated. This type is different from other types which are affected by public and/or peer pressure. These latter types of individual’s motives are that of imitating. Indeed, only a few of these types of individual complete the courses that they have enrolled in.”* (P1, Administrator)

Some learners exploit the opportunity provided by open platforms to join courses which are in no way related to their respective fields of study or career because they are simply curious to explore new fields and expand their perceptions (P1, P3, P4, P7, P8, P9, P11, P12, P13, P14, P15, P16, P19); e.g.:

*“Some people sign up for courses that are not related to their work or their field of study at university simply because the title of the course attracted them, or because they were curious about that field in general, or, if they had attended another course relevant to the field in question, they may sign up because they want to know more about that field via the platform.” (P3, Instructor)*

*“A person may, from childhood, have certain tendencies towards a certain field but certain circumstances may have prevented them from studying it. The Rwaq platform allows them to explore that field in a more practical and organised way.” (P7, Instructor)*

*“For example, I was reading about mindfulness and found a course offered by the platform about it. I was curious to explore the nature of the course, so I joined it. Definitely, curiosity is one of the most important factors.” (P16, Learner)*

Additionally, the sense of pleasure that some learners obtain from the curiosity that they have for some field leads them to explore some topics more in their field of study or career (P18, P19, P20, P21, P22). One participant, for example, explained that:

*“In the colleges, teachers just give us the key and basic points about the topics. Usually, however, I am interested to discover more about the topics I am learning about.” (P22, Learner)*

A few participants perceived that some learners in Rwaq are interested in the course that they have enrolled in, are creative, and have long-term goals — all of which are signs of their having intrinsic motivations:

*“I noticed that many of the students from Umm Al Qura and Imam Universities who enrolled in the course I delivered for Rwaq have creative goals and personal innovations in the digital domain. They try to find solutions for certain problems using technology. What is beautiful is that there are students who have long-term, useful, economic, and social goals. Surely, it varies from one student to another, but I can, nevertheless, see it in some students.” (P4, Instructor)*

What follows is another example of a learner having long-term goals:



*“After my graduation, I wanted to study the fundamentals of medicine using MOOCs. I did not care whether I would take a certificate or not. For instance, since I have no physicians in my family, I wanted to learn the basics of medicine for the purpose of being able to take appropriate actions in difficult emergency situations. In addition, I wanted to learn about depression specifically because one of my family members suffers from depression.” (P13, Learner)*

Life-long learning is one of the intrinsic incentives that promotes individuals to use the platforms to constantly boost their knowledge and skills (P10). One participant believed that some individuals have a self-desire to seek out new experiences and challenges by means of online platforms (P15). Similarly, intrinsic motivations for learning using Rwaq is an important factor, particularly because learning using MOOCs in general is not as easy as when one learns using other means:

*“Unlike easy learning methods, such as watching YouTube videos or searching the Internet, platforms are a complicated method by which to gain knowledge due to their obligations, time, and other requirements. Platforms, nevertheless, would be a good choice for those who have the time and self-motivation to learn.” (P15, Learner)*

Few respondents linked the intrinsic motivations that drive learning in Rwaq to the lack of care about certificates, which they considered an extrinsic form of motivation (P5, P8, P11, P12, P13, P15):

*“I think that, due to an increase in awareness, people became interested in knowledge and tried to improve themselves regardless of whether they received grades or obtained a certificate. Many students attended courses without paying any attention to whether they would receive certificates. It was enough for them to simply gain the knowledge that they had wanted to learn.” (P5, Instructor)*

Furthermore, some intrinsically motivated learners were likely to willingly engage in optional tasks like enrolling in MOOCs without much coercion. As one participant explained:

*“I asked students who attended my course in Rwaq to do an optional project. I think that a good number of students participated in the project because they like to improve their skills and increase their capabilities to learn and gain knowledge.” (P5, Instructor)*

One participant believed that the presence of famous instructors in the Rwaq platform motivated learners to learn intrinsically (e.g. stimulating their curiosity to learn) (P6). Employees often have intrinsic motivations to learn using Rwaq more than students do. As one participant confessed:

*"I do not find university students, or even graduates for that matter, interested in our courses; however, after they become employees, they begin to be more interested in taking courses in order to improve themselves in their fields so as to better compete with their colleagues."* (P9, Instructor)

On the other hand, few participants expected that the turnout of employees is low compared to students at universities (P1, P16):

*"Very few employees are interested in the platforms due to their sense of job security. Even the certificate does not contribute to job promotions seeing as it is not accredited. There are a few employees, however, who are interested in platforms because of their curiosity to learn other different specialisations."* (P1, Administrator).

A different respondent added that:

*"For the employees, because they are satisfied by their jobs, it depends on the person themselves. If he or she needs to attain a certain skill, wants to improve him or herself, or is self-motivated, he or she will join platforms; otherwise, he or she will not use platforms unless he or she is forced to by their boss."* (P16, Learner)

One interviewee attributed the learners' interest in the course that he delivered via Rwaq to the religious nature of the course:

*"The subject I taught through Rwaq was a religious one, so I expect that most of those enrolled were keen on knowledge itself because Saudi people, in general, care much about religion. Therefore, I believe that the certificate was not useful for them."* (P9, Instructor)

The desire to learn from platforms due to intrinsic motivations depends on the individual:

*"For me, I love to take courses, even if they are irrelevant to developing myself in my field. Unlike my husband, if the course is useful to him, he will take it; otherwise, he will*

*not waste his time in attending the course. This is because he is a Masters student, and hence is busy most of the time.” (P14, Learner)*

One participant, on the other hand, did not believe that learners join MOOCs based on their intrinsic motivations. Namely, she reported that:

*“I think the target of most of the students is to obtain a certificate or to develop the skills they need to succeed at university or in their jobs. I have never known of students who take courses simply for the enjoyment of the knowledge that they would obtain.” (P17, Learner)*

### **5.2.3. Perceived Reputation**

Perceived reputation was viewed by the participants as an effective factor. As the Co-founder of the Rwaq states, the Rwaq platform only employs qualified instructors based on some conditions and criteria:

*“One of our conditions for employment is that the lecturer should belong to a legally recognised Arabian university. The other one is that the lecturer should deliver lectures in his or her specialisation. For example, if his or her specialisation is economy, he or she should not deliver maths lectures.” (P1, Administrator)*

The CEO of Rwaq supported the previous view by mentioning that:

*“This is a very influential and strong factor for the students; i.e. that they enrol in classes given by lecturers from famous universities. In Rwaq, we only accept academic lecturers who have experience in teaching. We know that the CV of the lecturer should be strong in order to convince the learner that he or she will be taught by a qualified expert and not by an amateur.” (P2, Administrator)*

One participant believes that Rwaq is a distinct platform in the Arabic world, especially because it supports the Arabic language (P21). In MOOCs, being taught by teachers from prestigious universities and institutions are an opportunity for many people around the world (P2, P8, P11, P13, P15). For example:

*“In open education, who can imagine that individuals can study law from Harvard University while residing in Riyadh? This is the biggest benefit offered by the platforms of open education, where they provide the best lecturers from the best universities in the best specialisations from any place from around the world so that individuals can learn at any place and time.” (P2, Administrator)*

One participant expressed her pride and dream to be taught by lecturers from reputable institutions:

*“I believe that attending a course at Stanford University, the University of Cambridge, or any other reputable university would be a great thing and incomparable to attending courses from other less reputable institutions! Saudi students who study abroad prefer to join respectable and distinguished universities. Furthermore, Saudi society would be proud to have Saudi students who have graduated from reputable universities.” (P15, Learner)*

As one participant noted, enrolling in a popular university is usually difficult:

*“The opportunity of registering in a course delivered by a reputable university through platforms is much easier and may be the only available opportunity to learn from prestigious institutions due to stiff competition and the limited number of admissions at such institutions.” (P15, Learner)*

Another respondent demonstrated her trust in prestigious universities:

*“The reputation of the teacher has a great impact on my decision to join a certain course. For teachers whom I don’t know about their previous research, the name of the university to which he or she is affiliated may affect my decision to join their course because I trust reputable universities.” (P17, Learner)*

Famous trainers in the media may have a great role in increasing the number of registrants in any given platform (P1, P4, P9, P22); for instance:

*"I was following one famous professor in Computer Science on a YouTube channel. When I heard that he was teaching a course on the Rwaq platform, I did not hesitate joining his course."* (P22, Learner)

Concentrating only on this aspect, however, has negative consequences as well (P4, P8, P13). For instance, one interviewee commented that:

*"There are many famous trainers in the media who have a large turnout, but their academic and educational level may be very low. When the content of the course and lecture is neglected, the participants may have a negative experience seeing as they took courses provided by famous and well-known teachers without any tangible benefits."* (P4, Instructor)

The Rwaq platform realised the value of famous trainers, so it started recruiting famous trainers in order to build its reputation (P6). Learners are always eager to ask about the teachers before joining their courses:

*"In traditional education, for example, students ask about the teacher before enrolling in the course. In educational platforms, students often can't ask about the efficiency of the lecturer because many of the courses provided are brand new. If the teacher is well-known, this encourages the student to invest a part of his or her time in attending the course."* (P6, Instructor)

Even though the reputation of an instructor might be an attractive marketing factor for students' registering in courses, actually continuing the course is another issue which depends on the quality of the course and the tools used by the instructor in order to facilitate the teaching (P7, P10, P13, P19); for example:

*"Reputation may attract individuals at first, but after student views some lectures, he/she may continue or not based on the quality of teaching style and course's presentation. The lecturer may hold many certificates and has a great knowledge, but he/she is unable to deliver information easily."* (P7, Instructor)

Hiring skilled experts or academics who are experienced in teaching courses for MOOCs is also a crucial factor for building public trust (P5, P10, P11, P12, P13, P14, P15, P16, P20):

*“For example, a number of students asked me to teach a specific subject in Rwaq when they knew from Twitter that I am a specialist in this field. For sure, expertise gives confidence to lecturers and convinces learners to listen and learn from them.” (P5, Instructor)*

*“It is an extremely important factor. I trust that platforms employ experienced teachers, so I know that I will gain reliable information and will learn a lot. I can also consider the platform as a trustworthy source and do not need to check the credibility of their information.” (P13, Learner)*

The factor of the reputation of platforms is also an influential factor, especially for those learners who want to obtain certificates which show the names of the trainers and the universities which have provided the courses (P15). Popularity, the spread of the platform, and the number of its users are all motivations which encourage individuals to use the platform (P18, P21); for instance:

*“Rwaq has a large number of users. It could not attract this large number without having a good reputation.” (P21, Learner)*

Nevertheless, one participant held a different opinion, saying that the reputation of the instructor is not a powerful factor for using Rwaq:

*“The main factor that affects the decision of the participant to join a certain course is the title of the course and the ‘demo video’ that explains the course’s contents and objectives. Being a free and open platform, the factor of the teacher’s reputation is ineffective, except if the person is looking for a certain teacher who knows him or her already and has found that they teach courses over the platform. The general public...are not academic, so they do not care whether the lecturer holds a PhD or is a lecturer or a professor.” (P3, Instructor)*

#### **5.2.4. Free Courses’ Advantages**

The participants reported that the openness of platforms is an important aspect for encouraging people to learn through such platforms. As the Co-founder of Rwaq has expounded, learners look for free courses for the purpose of gaining knowledge:

*“As for non-practical academic scientific content, as in the Rwaq platform, learners do not prefer to pay to learn; but, as for courses that have a skill orientation and which teach them the skills necessary for work, as in our experience with the Mahara platform, learners are ready to pay for such courses.” (P1, Administrator)*

Free education is important for all individuals of different classes who wish to save money — particularly for that class of individuals who do not have a good financial situation, students, or the unemployed (P6, P12, P13, P15, P17, P18, P19, P21):

*“Open and free courses provide an excellent alternative for learners. The economic situation in Saudi Arabia, for example, has somehow become hard. The majority of registrants in these courses are seeking jobs or promotions, so they need free courses. If the platforms were not for free, the number of learners would fall.” (P6, instructor)*

In general, people like to join free courses if such courses fulfil their requirements (P11, P16):

*“For me, I do not need to take courses which require me to pay as long as free courses meet my needs. Some learners, however, need to enrol in paid platforms (e.g. Mahara) which impose fees on their students for gaining higher advantages, such as obtaining a certificate from a reputable university or acquiring a certain skill in a certain field.” (P11, Instructor)*

Moreover, free education eases one’s joining the greatest number of courses according to one’s needs without restrictions (P18, P21). In addition, one of the main benefits of open platforms is that they do not restrict the learners by means of posing requirements, such as having certain academic backgrounds, in order to join the courses (P1, P17):

*“Many of those who have joined Rwaq enrol in courses unrelated to their own specialisations. This is because they are not satisfied with the specialisation that they studied at their own universities due to certain circumstances. They, therefore, want to discover a specialisation which they could not study at university for the purpose of comparing it with their current specialisation.” (P1, Administrator)*

Another interviewee expressed his suffering from the constraints posed by the education given at universities:

*"I tried to complete post-graduate studies in the field of Computer Sciences at a university, even though it was not for free, but the university that I had applied to refused because my bachelor was not in Computer Sciences. This is very disappointing. Why did the university not allow me to study the specialisation that I wanted to? If I had not succeeded, they would simply not have provided me with a certificate. Certificates and the name of specialisations became an obstacle here. Open platforms, on the other hand, provide opportunities to learners and make all of them equal."* (P4, Instructor)

A wonderful feature of open platforms is that people from different countries can attend their courses:

*"Having participants of different nationalities in open platforms is one of Rwaq's advantages. For example, some Syrian students who cannot learn due to the war there can use Rwaq's free courses in order to continue their learning."* (P10, Instructor)

In general, open and free education is the solution for spreading education to all people who cannot learn at universities (P2, P12). For example, one participant demonstrated that:

*"Enrolment in universities has many obstacles and attendance is a big problem for many. We believe that open and free education is a solution for education in the future because, with the expansion of populations, universities will not be able to accommodate all individuals. The only things that they need are a computer and an internet connection and they will be able to learn at any time and from anywhere, whatever their age and without any conditions or barriers."* (P2, Administrator)

Another participant said that:

*"Girls who did not complete their studies at university due to marriage or work can benefit from platforms in order to further develop themselves and their communities."* (P12, Instructor)

Universities should open education to the public in cooperation with platforms such as Rwaq in order to spread learning and in order to open discussions raising the awareness of communities regarding certain issues (P10). Some interviewees attributed the prevalence of platforms and the



large number of participants in such platforms to their being free and open (P3, P5, P7, P15, P16, P20). On the other hand, as one participant explained, this aspect also produces negative returns:

*“I think that anything for free, whether it be educational or non-educational, will attract all people (with different goals, ages, and cultures) to join the courses, even if they are not interested in the courses’ contents. For instance, unlike individuals interested in the content of the course, individuals who join the platform for the sole purpose of obtaining a certificate will complain when they face difficulties in the course. Thus, if there are at least some simple charges (e.g. 10 SR), this disparity will not occur!”* (P3, Instructor)

Other participants stated that free education encourages enrolment but, unfortunately, it often decreases the commitment of learners to complete the courses (P8, P19). Other respondents, however, believe that free courses provide them with opportunities to try the course, even if they are not sure about their commitment to completing the course for any reason, such as shortage of time or feeling bored (P14, P16, P22). For example, one participant mentioned that:

*“When I join a course and review its first lectures, I sometimes feel that I do not want to complete it. Therefore, if the course is free, I will easily be able to withdraw from it but it would be difficult to do so if I were paying for the course.”* (P14, Learner)

Free and open education attracts a large number of registrants in the courses which, in turn, poses challenges on the teachers to cope with that large number of learners. As one instructor reported:

*“2008 students joined the first course I taught for Rwaq, with 1500 students joining the second one. Openness is an important factor seeing as a large number of students can enrol for any particular course. This, however, places burdens on the teacher since he or she receives a lot of questions from students through personal messages, discussion boards, or other means. In my course, I asked students to work on a project. I received a lot of projects via e-mail and they were all waiting for my evaluation of their work. I did my best to evaluate all of the projects. Whereas some students were angry because I could not evaluate theirs as quickly as they would have liked, others appreciated that their teacher did not have a sufficient amount of time to answer all of their questions.”* (P5, Instructor)

Nevertheless, free courses may provide learners, especially Saudis, negative impressions about those courses. As one participant related:

*"I think that Saudi people do not know the value of anything unless they pay for it. They think if the courses are free, they will be less valuable. Having free courses gives them the negative impression that they are not high-quality courses. This is simply due to their not understanding the notion of open educational platforms."* (P9, Instructor)

### **5.2.5. Perceived Usefulness**

From the interviews, perceived usefulness was seen by all the respondents as a key and necessary factor in making the decision as to whether or not to use MOOCs. A common view among all the participants was that platforms like Rwaq support learning. All the participants agreed that Rwaq is a valuable source of knowledge for all individuals, whether they be students, employees, job seekers, unemployed, etc. People can attain their diverse goals by learning with open platforms. For instance, one respondent indicated that platforms allowed her to achieve her objective of designing mobile applications after joining a course covering that topic (P13). As outlined by one of the participants, Rwaq facilitates the learning and gaining of knowledge:

*"Platforms remove confusion and loss of time in the search for information. Eight or ten years ago, I was searching for certain information and was very confused because I did not know from which forum or person I could receive that information. Currently, a certain course on the platform in a certain specialisation can satisfy my curiosity and answer all my questions."* (P4, Instructor)

Students can also take advantage of open platforms to discover specialisations (P3, P14). As one of the participants commented:

*"Some students who have not specialised yet may benefit from courses provided by the platform by viewing some specialisations and discovering their tendencies. This, in turn, enables them to choose an appropriate specialisation at universities."* (P3, Instructor)

All the respondents believe that the usefulness of Rwaq for students in universities is that of complementing curricula and expanding knowledge in their fields. For example, learners can use

MOOCs to practice the application of what they learned in class (P22). Another advantage of using Rwaq for supplementing academic courses are as follows:

*“Some learners study subjects in Rwaq which are related to their specialisation in universities because some subjects are very difficult, so they join the platform in order to better understand the difficult curricula. For instance, a lecturer at Rwaq taught a course that many deemed difficult in the field of engineering, but was taught in a very different and distinctive style. For that reason, many students joined his class.”* (P1, Administrator)

Also, a few participants reflected that platforms enable learners to gain and understand the information in different ways than from the way they learn them at universities (P12, P13, P15). Students can increase their opportunities by obtaining excellent marks at universities when they supplement their learning there by enrolling in related courses on platforms (P13). Also, the diversity of subjects given by MOOCs is another one of their benefits because learners are then able to explore different, or new, fields (P12, P19). For instance, a fantastic feature of platforms is that learners can study physics today and Arabic the next day (P12). Moreover, as one instructor noted, the duration of the courses is another positive factor:

*“Instead of reading books about a certain topic, I prefer to engage in a short course composed of 4 lectures in order to obtain comprehensive understanding about the subject.”* (P12, Instructor)

Modern generations prefer receiving information via audio/video materials. So, as one of the participants illustrated, the platforms are a useful source for them:

*“The modern generation does not like academic reading; instead, it has become more visual. Now, students prefer learning through audio, images, multimedia, and video. This generation has gotten used to them, which is different from my generation in that it was ready to read a whole chapter just in order to get one piece of information. I think multimedia materials are a better method of retaining information in mind.”* (P6, Instructor)

Recent teaching methods in universities is that the professor explains to students the basics of a subject and asks them to search for more details regarding the subject using different sources, such as the Internet. Open platforms are, thus, one of the educational methods used for these reasons and are useful for both the teacher and the student (P6, Instructor). As one instructor noticed, MOOCs promote the self-directed learning ability of learners:

*“Most Saudi students lack self-regulated learning skills, as university students in the country still rely on the teacher. Open education will change this because it teaches students how to learn independently from the teacher.”* (P11, Instructor)

Likewise, as one participant explained, online platforms remove the notion of initiation which had prevailed in the traditional education system:

*“In platforms, students listen to the lecture and discuss the issue with their colleagues in a critical way without the teacher’s intervention. Learning via videos differs from traditional education as it is not based on initiation and the power of the teacher; it gives the learner the ability to either accept the information or not. Teaching via videos should simulate learners’ thoughts, allow students to search for information, and allow them to know that it is not necessary to accept the information that they receive.”* (P9, Instructor)

He also added that:

*“The problem in Rwaq, however, is that teachers do not know how to modify or change the teaching method in halls to a new one that can be suitable for online platforms for the purpose of developing the critical thinking of students and not to follow initiation notion.”* (P9, Instructor)

Another great advantage of the platforms compared to other means such as YouTube or searching the Internet is that learners can learn about the topic gradually because they offer comprehensive courses divided into weekly lectures, as in learning at universities (P14). For a reason highlighted by one participant, without benefits, learners would not use platforms:

*“To be honest, online courses offered by platforms are not as pleasurable as watching a match or playing online games. If there is no benefit, the learner will not join a platform.” (P8, Instructor)*

Signing up to courses taught by pioneers with a high level of experience in given fields is one of the gains for learners (P8). Also, gathering teachers’ experiences in one platform is a useful feature in open platforms (P20). Furthermore, all participants observed that open platforms allow employees to work on given projects but that they oftentimes lack a certain skill to develop the needed skills in order to accomplish their tasks and goals.

As demonstrated by some respondents (P5, P6, P8, P13, P15), another advantage of platforms for lecturers is viewing various teaching methods and courses’ contents for the purpose of better transferring information to their students:

*“As for the benefits to employees, some members of the teaching staff of certain universities asked my permission to use the content of my course which was presented on the platform for the purpose of presenting it to their students while also reserving my rights to the contents.” (P5, Instructor)*

*“I am teaching a networking course at a university so, in order to enrich my information, review, and widen my understanding of the modern methods of teaching, I watched videos from the Coursera platform which explained the subject.” (P6, Instructor)*

In addition, job seekers can utilise some useful courses in reputable platforms to help them find a future job (P8, P10, P15). All the participants opined that platforms like Rwaq are widespread and distinguished because they provide convenient online learning (asynchronous learning) at any time, from anywhere, and through any device, such as laptops, smartphones and tablets. For example, people who live in remote areas like villages can benefit from the training courses provided by the platforms (P6, P10, P13):

*“Many training courses are often held in the main areas of the Kingdom of Saudi Arabia, such as Riyadh and Jeddah. Accordingly, those people who live in far off areas and villages can easily benefit from the courses presented by those platforms. All they need*

*is the Internet, which, itself, is now available at any time and at any place.”* (P13, Learner)

Likewise, another feature which benefits platforms, and which is hard to imagine them as being without, is their flexibility. Platforms remove commuting costs, such as traveling, time, money, etc. (P5, P6, P9, P11, P12, P13, P14, P15, P17, P18) — they even eliminate the constraints of commuting during bad weather (P12, P15). What is more, platforms archive the courses that have been given so that learners can join the courses at any time after the end of the courses. Hence, people with tricky schedules can effectively organise their schedules accordingly (P5, P6, P7, P9, P16, P17). A number of respondents, however, indicated that convenient learning is a double-edged sword (P3, P13, P15, P19). For instance, one expressed this view by saying that:

*“From a trainee’s perspective, it is an attractive and appropriate factor, as they can watch lectures at any time. Nevertheless, temporal and spatial freedom leads to delay, negligence, or sometimes even abandonment of the courses. Studies have shown that temporal and spatial freedom (lack of deadlines) is the primary reason for non-completion of courses in the platforms.”* (P3, Instructor)

Another interviewee also appreciated the online (distance) learning provided by platforms, but also requested open platforms to activate direct communication between learners and instructors:

*“It is a good thing that accessing platforms is flexible. Direct interaction (synchronous voice communication) between students and teachers, however, is very important in order to answer certain inquiries in the minds of students. This is what distinguishes the education provided by universities. Answering questions adds value to the course in the platform, and makes sure that knowledge has reached the learner. The number of students using the platform, though, is very big. That is why I cannot answer all the questions posited to me by my students, which is very annoying.”* (P4, Instructor)

When the participants were asked about the usefulness of the Rwaq platform, some of them linked the other proposed factors to the perceived usefulness factor. Few respondents perceived Rwaq as being useful in terms of their courses’ being free (P19, P11). Additionally, other participants thought that people with intrinsic motivations, such as curiosity, perceived the platform to be useful (P1, P3). Awarding certificates is one of the benefits offered by Rwaq (P3). Also, its offering its content

in the Arabic language is another valuable feature of the Rwaq platform (P21, P11). Furthermore, learning from pioneers and experts is another benefit of MOOCs in general (P8, P20).

### **5.2.6. Perceived Ease of Use**

It also emerged from the interviews that there is no doubt amongst any of the respondents that the ease of use of platforms is an important factor which affects learners' intentions to continue using platforms. The ease of use of Rwaq is an attractive factor, particularly for optional tasks, which is often the case when using the platforms (P1, P2). One administrator, for instance, said that:

*"Unlike Blackboard, which is usually a compulsory and complicated system, because Rwaq is an optional method, the system should be easy to use (interface design, data flow, interaction, participation in courses, watching lectures, and the examination system); otherwise, students will simply choose not to use it."* (P1, Administrator)

Another respondent remarked that finding alternatives is an axiomatic solution when facing difficulties when using Rwaq:

*"I remember that I found one website that was difficult to use. Although it was useful, I will not use it again because it requires a lot of mental effort. When facing difficulties while using a website, I always try to find an easier alternative that offers me the same service. I do not want to waste my time just trying to understand how to use a system."* (P15, Learner)

Most of the participants believe that ease of use is one of the most important features, particularly for certain classes of people, such as people with special needs or people who are not familiar with technologies (P2, P15, P17, P18):

*"For me as a specialist in computers, it is easy for me to use the Internet and computers. Ease of use is more imperative for old people or those who are not experts in using the Internet or technologies in general (e.g. they might not be able to watch videos because they need to download a certain software). Even for me, the efficient organisation of courses is required to facilitate my engagement in a platform."* (P17, Learner)

Accessing the desired information easily and quickly may increase learners' engagement in the platforms (P18). All the participants praised the user friendliness of Rwaq. For instance, one described the feature of dividing the videos into small chunks of short periods as follows:

*"Every week, a 50-minutes video lecture is uploaded. The 50 minutes are divided into 5 parts, with each part consisting of 10-minute chunks for the purpose of facilitating learning and to make it easier for students to know where he or she has stopped and from where they should resume the following day."* (P2, Administrator)

As stated by one interviewee, other features which facilitate the use of Rwaq include the following:

*"(a) The learners can watch the video lectures at any time, as they are available at all times. (b) Joining and leaving a course requires just a few clicks. The 'leaving' button is clearly evident in order to indicate that there is no problem for students from withdrawing from any given course. (c) Enrolment only requires the following information: name, e-mail, and password. (d) While establishing the platform, we tried to make each course a social environment where the courses are divided into parts: the contents of lectures and two public discussion forums, one for things relating to the particular course, and one for miscellaneous things unrelated to the course."* (P2, Administrator)

A few participants described a difficult enrolment process as being an obstacle for some platforms (P11, P13, P22); one participant, for example, commented that:

*"The information required for enrolment in some platforms is a two-edged sword. It is better in the initial stage to get simple information, like the name and email of the registrants only, and additional information can be taken during the final stages before the issuance of the certificate."* (P11, Instructor)

The Rwaq platform also provides a user manual to both the learner and teacher which shows them how to use the platform in order to make their usage of it easier (P5). Moreover, the platforms should be easy to use in order to allow them to compete with other platforms and retain existing users (P7, P8):



*“If a platform is difficult to use, that will not encourage learners to join it; and, even if they do join it, they will soon leave it. The ease of use of any site, including educational platforms, is an integral part of the user’s experience that has an impact on everything.”*

(P8, Instructor)

Many respondents believed that Rwaq is easy to use since it supports distance and flexible learning (at any time, from anywhere, and via any device) (P2, P3, P6, P13, P14).

### 5.2.7. Arabic Culture Support

Obviously, the participants confirmed the important role of providing MOOCs in the Arabic language. Rwaq gives learners an Arabic atmosphere which, in turn, develops a sense of belonging. As the Co-founder of Rwaq propounded:

*“In one course offered by Rwaq, the explanation was in Arabic, along with use of teaching methods in English. I see this as being a good combination. The psychological factor is influential here because the lecturers like me — they speak the same language and accent, and give examples from Arabic culture. This feature contributed to the joining of more than 30000 students to one of the courses offered by Rwaq.”* (P1, Administrator)

Also, Arabic platforms allow learners to understand subjects in Arabic contexts:

*“Students may study marketing in Coursera. Nevertheless, when he or she studies that subject using Rwaq, he or she will learn the same theories but within an Arabic context and it will be easier for them to understand. For instance, the lecturer will give examples about the Al-Marai company in Saudi Arabia or others.”* (P1, Administrator)

Interaction with peers using the same mother tongue also gives students a feeling of enthusiasm and belonging (P1). Furthermore, as few participants posited, there is no alternative to the Arabic language (P1, P4):

*“Even if the Arabic learner is fluent in English, he or she can join the Arabic platforms in order to find an Arabic atmosphere and in order to communicate with an Arab community.”* (P1, Administrator)

Some respondents held the opinion that the supporting nature of the Arabic language in the Rwaq platform led to an increase in the number of learners who used Rwaq (P2, P3, P8, P10, P11):

*“Sure. The number of learners using Rwaq has been increasing continuously. Although the Coursera platform has existed since 2012, the number of Arab participants in Coursera is very few. We found that the Arab world needs Arabic educational platforms. Indeed, in Arabic countries, illiteracy rates are high. Universities in the region even have admissions problems.”* (P2, Administrator)

Another participant supported the previous perspective by saying:

*“The evidence is that, even though Coursera, edX, and others were formed before Rwaq, the concept of platforms did not spread amongst the Saudis except after the appearance of Rwaq and others in Arab countries.”* (P3, Instructor)

Many informants believed that the majority of Arabic individuals cannot easily use English MOOCs because their English language skills may not be good enough, or may even be non-existent (P3, P5, P6, P8, P10, P13, P14, P16, P17, P20, P22):

*“Most Saudi people have no English background or only have an academic English one. Some have an idea about English platforms, but could not use them due to their having a low English language proficiency.”* (P3, Instructor)

*“One of my sisters is weak in English, and she cannot benefit from foreign platforms to develop her skills. She is in high school and wants to know more about specialisations in order to choose the one that best suits her. Hence, Arabic platforms are more appropriate for her.”* (P14, Learner)

Because the Arabic language is the mother tongue of the Arabic people, courses provided in Arabic make learning easier, quicker, and deeper for such people (P6, P7, P12, P14, P16, P19, P21):

*“Arabic courses are much easier to understand than courses delivered in other languages, as the learner will find it difficult to understand and analyse information if they are provided in a foreign language.”* (P6, Instructor)

*“Foreign platforms require English skills. If a student faces a difficulty in a language, he or she will withdraw from the class. Nevertheless, ‘mother tongue’ is still dominating the issue of education. This is understandable.” (P7, Instructor)*

*“It was difficult for me to understand some terms and slang language used in foreign platforms. For example, I tried to take a course about water offered by edX, but I could not understand it because my English proficiency was low. When I studied it in Arabic, however, I was able to understand it properly.” (P12, Instructor)*

*“Although my English level is advanced, taking a course in Arabic will allow me to understand the information more easily and quickly. It is also better to support Arabic explanations using English terms, something which is rarely used in Arabic platforms.” (P14, Learner)*

A few participants believe that Rwaq and other Arabic platforms are solutions to the problem of there being a lack of Arabic content on the Internet (P4, P5):

*“Teaching using these Arabic platforms forces me to translate subjects presented in English into Arabic in order to teach them to students in Arabic. This contributes to enriching the digital Arabic content.” (P5, Instructor)*

A few interviewees admired the advantage of Arabic platforms to learning religious, Arabic, or Islamic historical subjects (P8, P9). One participant, for example, said that:

*“The Arabic language is better when teaching Arabic language and Islamic subjects. Depending on the subject, you may prefer a certain language.” (P8, Instructor)*

Another participant expressed her disapproval of focusing on other languages than Arabic in Arabic countries:

*“In King Abdul-Aziz University, for example, students study scientific specialisations in foreign languages. This irritates me because we can study science in Arabic seeing as many scientific subjects were originally invented or developed upon by Arabic scientists such as Ibn Sina and Abu Bakr Al-Razi, all of whom were pioneers in medicine. Why do we not study in Arabic and even make Arabic a reference for the world?” (P13, Learner)*

She also highlighted her opinion that more books should be translated into the Arabic language:

*“In the future, I think that books about technologies or others should be available in the Arabic language because it is our language and our identity and I believe that we should learn them in Arabic.”* (P13, Learner)

In addition, a few participants demonstrated their pride in enrolling in Arabic platforms which disseminate knowledge (P13, P14):

*“For the social network course, I am delighted at having taken it in Arabic via the Rwaq platform. I know that many platforms present it in English, but I wanted to learn it in Arabic.”* (P13, Learner)

Individuals with high English levels may prefer using English MOOCs for different reasons (P8, P9, P17, P18):

*“For me, I prefer English platforms because it is easier for me and because English is the language of science. Translation of some terms from English to Arabic or vice versa is impossible and very difficult. The English language is preferable in learning modern science, such as computer sciences and engineering.”* (P8, Instructor)

*“For students who are fluent in English, they favour English platforms because such platforms are more advanced. Meanwhile, other students are interested in Arabic platforms and await its being further developed.”* (P9, Instructor)

Registering in Arabic or English MOOCs depends on the language proficiency of the learner in particular fields:

*“Often, I use MOOCs to take courses in Computer Sciences, which is my specialisation. I join English platforms instead of the Arabic ones because I am more familiar with Computer Sciences in English. If I want to learn subjects related to fields other than Computer Sciences, such as acquiring personal, administrative, communication, and social skills, however, I will search for Arabic courses — unless, of course, I am wanting to improve my English.”* (P15, Learner)

Likewise, a few respondents remarked that some individuals who are proficient in both Arabic and English chose the suitable platforms (Arabic or English) based on the type and content of the subject (P16, P18):

*“Some fields, like public relations and media, are advanced in Arabic communities, with lots of training courses and books provided by Arabic pioneers. So, in this case, I favour using Arabic platforms for learning such subjects.” (P18, Learner)*

### **5.2.8. Other Factors Suggested by the Participants**

Some additional factors have been suggested by the participants, including diversity of subjects, accreditation of certificates, a cooperation between educational institutions and Rwaq, the provision of distinguished courses, marketing, the quality of courses, social influence, time management skills, and the contextualisation of the content provided by Arabic MOOCs.

#### **A. Diversity of Subjects**

Offering courses in different specialisations and at different levels (basic, intermediate, and advanced) which meet users' needs is an influential factor (P2, P8, P10, P18).

#### **B. Accreditation of Certificates**

Recognition of Rwaq certificates and the cooperation of universities with the Rwaq platform for the purpose of authenticating certificates are motivational factors (P2, P6, P7, P8, P11, P14):

*“The accreditation of certificates by governmental entities is still an issue for Arabic platforms, although the Rwaq platform chooses lecturers carefully and accurately based on their experiences and certificates. It will be a very influential and motivating factor and the value of MOOCs will be clear for everyone [if, and when, they are accredited].” (P7, Instructor)*

#### **C. Cooperation of Educational Institutions**

Few participants see that educational or other institutions must support MOOCs by providing lecturers, experts, educational content, financial support, etc. (P3, P9, P10, P11):

*“The cooperation between educational or social institutions and platforms as well as the provision of teachers and academic experts will contribute to the professionalisation of the platforms. This will serve as a marketing factor for raising awareness and spreading the importance and concept of platforms.” (P3, Instructor)*

#### **D. Providing Distinguished Courses**

One participant suggested that providing unique courses has attracted more individuals to join the platforms in order to discover such courses (P5):

*“When the course is unique and presents a new subject, meaning that it is one of its kind, it definitely will have a large turnout. For example, the course I taught via Rwaq was related to my PhD specialisation. Thus, a large number of learners registered in my course in order to explore this new subject.” (P5, Instructor)*

#### **E. Marketing**

The Rwaq platform can benefit from social media for the purpose of promoting its services and reaching more users (P5, P10, P14).

#### **F. The Quality of Courses**

Courses in Rwaq must be designed and presented with high quality as per the users' needs and standards (P10):

*“The teaching method and content of the course are imperative. The content of a course should be interactive. For instance, after each video lecture, some exams and discussions should be provided to the learners. The course length is another important factor because I think that learners favour short courses.” (P10, Instructor)*

#### **G. Social Influence**

Social influence, like encouragement from trusted persons, such as friends or experts, affects individuals' decisions to join some courses and persist using MOOCs (P14, P18, P21):

*"I can easily be influenced by my friends' views to select and join some courses in MOOCs. Their positive opinions may motivate me to join courses and continue using MOOCs." (P21, Learner)*

*"Professors at universities should also encourage students to join platforms to improve their knowledge and skills." (P14, Learner)*

#### **H. Time Management Skills**

One respondent believed that learners will not continue using MOOCs if they do not manage their time effectively:

*"Time management skills are very important for me to complete such courses. Education is open in MOOCs, so learners need to organise their time to study and deliver assignments on time. For instance, unlike publishing in journals, in conferences, I always complete writing papers during the time specified because conferences specify deadlines for submitting papers, but if there are no deadlines, I would delay my writing." (P15, Learner)*

#### **I. Contextualise the Content of Arabic MOOCs**

Learners appreciate the contents of Arabic MOOCs like Rwaq since they are adapted to suit their Arabic culture:

*"There is a problem in Arabic platforms; they do not provide subjects that are suitable for Saudi or Arabic cultures. For example, marketing strategies differ from one culture to another. Hence, we need courses in the Arabic platforms which explain the marketing methods adopted in Saudi societies." (P17, Learner)*

### 5.3. Discussion of Interviews' Findings

The interviews aimed at exploring the influential factors that affect learners' intentions to continue using Arabic MOOCs. In general, the participants have shown positive attitudes towards the proposed factors that affect learners' retention on the Arabic MOOC Rwaq platform. In addition, the findings of the interviews uncovered important dimensions of the proposed factors influencing the use of MOOCs. The interviews' findings correspond with previous studies' findings which were presented in Chapter Three.

Based on the qualitative analysis, **certificates of course completion** promote individuals to engage in platforms. Such certificates can support the main qualification and may be beneficial for CVs, employment, or simply providing them with a sense of obligation and accomplishment. This finding is in agreement with findings revealed by Wu & Chen (2017) who showed evidence about the positive significant correlation between social recognition of MOOCs' certificates and perceived usefulness. Also, this result is consistent with Mohapatra & Mohanty (2016) who showed that the acceptance of MOOCs is significantly related to the recognition of certificates by job providers. Xiong et al. (2015) also found that extrinsic motivations, including certificate, credential, and the courses' relationships to both academia and the field of employment, have a stronger relationship with engagement in MOOCs than intrinsic motivations. Furthermore, Pursel et al. (2016) expounded that 66.2% of 9266 students in one course in Coursera agreed on the importance of obtaining a statement of accomplishment. In addition, around 38% of respondents from developing countries, namely Colombia, the Philippines, and South Africa, when asked to identify reasons for joining MOOCs, indicated their intention to obtain professional certification from the platforms (Garrido et al., 2016).

Nevertheless, a great majority of the respondents in the interviews asserted the necessity of awarding accredited and official certificates in order to be more attractive to learners and appreciated by different institutions. Popular platforms like Coursera and edX realised the importance of such certificates at assuring their academic integrity. That is why such platforms grant verified certificates. In order to obtain such a certificate, however, the participants have to verify their identities via webcam or by sending them a photocopy of a government-issued ID (Coursera, 2014; edX, n.d.). Currently, the Rwaq platform provides non-verified, computer-generated pdf certificates upon completing some courses. In line with Coursera and edX platforms,



it is recommended for Rwaq to increase its efforts towards supplying verified certificates. Indeed, Rwaq hopes to conclude an agreement with an academic body in the near future to supervise the platform and certify its certificates (Rwaq.org, 2017).

Regarding **intrinsic motivations**, the participants mentioned that some learners have internal desires to join platforms because they love knowledge and learning, feel pleasure in engaging in online courses, have a curiosity to explore MOOCs and new topics, and/or are interested in MOOCs in general. Intrinsic motivations constitute an effective reason for people using MOOCs — particularly for the reason that enrolling in these platforms are often optional plus that the certificates that they provide are not accredited

This is consistent with the findings of Othman et al. (2017) who showed evidence that perceived enjoyment is the strongest predictor of attitude towards using MOOCs. Furthermore, it was reported that hedonic motivation has the second strongest impact on intention to enrol in MOOCs (Lim, Tang & Ravichandran, 2017). Belanger & Thornton (2013), Christensen et al. (2013), and Liu, Kang & McKelroy (2015) also indicated that enjoyment, curiosity, and general interest were all identified as being the top motivations of learners to sign up for MOOCs. Similarly, the motivation of a majority of registrants in MOOCs (28.6%) was life-long learning (Norman, 2014). Moreover, compared to extrinsic motivations, intrinsic motivations are stronger and more likely to lead learners to success (Salmon et al., 2016).

Like any organisation, **perceived reputation** is another motivational factor that impacts the use of MOOCs. From the analysis, the interviewees highlighted the positive influence of learning from qualified and skilled experts in the field and providing courses of high quality. Alraimi, Zo & Ciganek (2015) indicated that perceived reputation was the strongest predictor of a learner's decision to continue using MOOCs. Wu & Chen (2017) cited that the perceived reputation of MOOCs has the most significant influence on perceived usefulness. Also, reputation was the second strongest determinant of perceived usefulness (Sa et al., 2016). Similarly, the trust in MOOC technology was found to be the most significant factor which influences learners' intention to sign up for MOOCs (Chu et al., 2015). Furthermore, the teacher's subject knowledge has the strongest effect on learners' intentions to revisit MOOCs (Huang, Zhang & Liu, 2017). Mohapatra & Mohanty (2016) mentioned that MOOCs' collaborating with renowned faculties and universities has the most positive impact on MOOC acceptance. Likewise, as was pointed out by 91.6% of her respondents,

Bayeck (2016) outlined the positive effect that the reputation of the professors who teach courses via platforms had on learners' motivations to enrol in MOOCs. Also, Adamopoulos (2013) showed that a professor who teaches the courses has the largest positive impact on the course completion.

The **openness of MOOCs** has been addressed in the literature as an influential motivational factor for using MOOCs. In line with the previous literature, the findings of interviews revealed that providing free courses is an important feature which affects learners' intentions of whether to keep using MOOCs or not. The participants clarified the benefits of attending free courses including, that of saving money, spreading knowledge to all classes (including low economic classes), facilitating the learners' joining as many courses as are needed for them, and the ability to drop out of the courses at whatever time and for any reason. The significance of free courses was cited by Alraimi, Zo & Ciganek (2015), who showed that perceived openness was the second strongest predictor of the intention to continue using platforms. Likewise, Davis et al. (2014) revealed that courses' being free was the most important factor which attracted most respondents (67%).

With respect to the **usefulness of MOOCs**, undoubtedly, all the interviewees stressed the role of usefulness as a key driver which positively affected the intention of continuing to use MOOCs. Based on the interviews' findings, the greatest advantages of MOOCs include supporting learning, gaining knowledge and skills, providing comprehensive and complete courses, complementing and supporting curricula, improving academic achievement, and promoting flexible and convenient learning at any time and from any place. Xu (2015), Aharony & Bar-Ilan (2016), Sa et al. (2016), Huanhuan & Xu (2015), and Zhang et al. (2017) all detected that perceived usefulness had the most positive effect on behavioural intention to use MOOCs. Moreover, the knowledge outcomes factor has the most significant influence on learners' continuance intentions to use MOOCs (Junjie, 2017).

In addition, in a study by Shapiro et al. (2017), 92% of interviewees used MOOCs in order to improve their knowledge about a given topic. The desire to gain skills pertaining to a job has been determined as being the top motivation for one's engaging in MOOCs (Garrido et al., 2016) as well as the second most important for participating in such platforms (Christensen et al., 2013; Norman, 2014; Liu, Kang & McKelroy, 2015). Milligan & Littlejohn (2017), on the other hand, noted that the top motivation for attending courses is the learning of their contents, followed by the relevance of those courses to their respondents' needs. A large percentage of the respondents (81.2%) outlined

that they selected MOOCs to acquire knowledge and skills (Bayeck, 2016). These findings suggest that learners will continue to use MOOCs if the provided courses are beneficial and useful.

The interviews' findings also showed that **perceived ease of use** is an effective and influential determinant in the context of MOOCs continuance. This finding is consistent with the findings reported by Ayub, Wei & Yue (2017), which showed that the user-friendly design of course contents is an important factor affecting learners' acceptance of MOOCs. From the analysis, it was clear that the ease of use of technology is essential, especially for individuals who lack digital literacy (a computer or the Internet). In addition, one of the vital criterion for the selection of any technology is its ease of use. This criterion is more important in the case of selecting MOOC platforms. This reaffirms the fact that using such platforms is often optional for individuals. If people find the platform difficult to use, they will easily choose another, easier platform to use. The interviewees demonstrated that easy to use platforms require fewer clicks to perform tasks, such as less information required for registration, their having a friendly user interface, their supporting tools being easy and quick to navigate, and their providing the contents of their courses in an organised way. Gao & Yang (2015), Mulik, Yajnik & Godse (2016), and Wang, Dong & Shao (2017) all conclude that perceived ease of use is the strongest predictor for learners' willingness to use MOOCs.

Furthermore, according to the interviews' findings, **having Arabic as a support** is one of the most appealing aspects of Arabic MOOCs. The benefits of offering courses in Arabic include: its offering an Arabic atmosphere; allowing one to understand subjects in an Arabic context; making learning easier, faster and deeper; enriching Arabic digital content; and enabling one to learn religious and Arabic subjects. Arabic MOOCs are opportunities for Arabic-speakers without adequate English-language proficiencies to develop their education easily.

This finding supports the suggestion provided by Che et al. (2016) which highlights the advantages of localising MOOCs to suit a specific user group's language as well as their particular cultures. The language barriers evident from using MOOCs in English for non-English speaking populations has been highlighted by some researchers (Taneja & Goel, 2014; Adham & Lundqvist, 2015; Stratton & Grace, 2016; Aydin, 2017). It is worth mentioning that statistics have shown that the rate of Arabic content on the Internet does not exceed 0.3% of the global content of other different languages (Albadri, 2012). Supplying MOOCs in Arabic is one of the solutions which may contribute to the resolution of this problem.

Among the suggested influential factors by the participants, **the social influence** was selected to be included in the proposed model as well. As the theory of reasoned action (TRA), theory of planned behaviour (TPB), and unified theory of acceptance and use of technology (UTAUT) suggest, social influence shapes individuals' intentions towards a specific behaviour. Social influence means "*the degree to which an individual perceives that important others believe he or she should use the new system*" (Venkatesh et al., 2003, p.451). In the context of MOOCs' acceptance/continuance, a few studies have validated the significant positive impact that social influence has on behavioural intentions to use/continue using MOOCs (Xu, 2015; Junjie, 2017; Lim, Tang & Ravichandran, 2017; Wu & Chen, 2017). Xu (2015) found that subjective norm is the second strongest predictor of the behavioural intention to use MOOCs. Moreover, Junjie (2017) has cited that social influence was the second strongest determinant of learners' having the intention to continue using MOOCs. Bhattacharjee & Lin (2015) also have presented a unified model of information technology (IT) continuance in the context of using primary work systems for processing new member enrolment, claims requests, etc., by insurance agents in an insurance company in Taiwan. They reported that subjective norm had a significant positive influence on the IT continuance intention.

Chang, Hung & Lin (2015) examined the reasons that learners have for using MOOCs, explaining that the top reason for taking MOOCs was that of being suggested to do so by their instructors. Similarly, individuals are affected by social influence, whether positive (like the recommendation of trusted friends) or negative (such as lacking the encouragement of friends who have had experience with MOOCs) (Zheng et al., 2015). When exploring the motives of individuals to use MOOCs, Bayeck (2016) revealed that 99.7% of respondents indicated that they attended courses because they were influenced to do so by their friends who had already taken courses from those MOOCs.

In this research, the factor of social influence includes two dimensions: interpersonal and external influences (Bhattacharjee, 2000). Interpersonal social influence refers to word-of-mouth from trusted reference groups like friends, colleagues, relatives, bosses, etc. On the other hand, external social influence denotes the effect that people's views regarding the Rwaq platform, expressed using social media, have on the individual. In the context of MOOCs continuance, the researcher supposes that learners are likely to develop positive intentions toward MOOCs continuance if interpersonal and external social influences encourage them to use MOOCs. Hence, it was postulated that:

**H14.** *Social influence will have a significant, positive effect on the continuance intention to use MOOCs.*

Wu & Chen (2017) showed that, in the context of MOOCs continuance, social influence has a significant positive effect on perceived usefulness. Therefore, this study hypothesises the following:

**H17.** *Social influence will have a significant, positive effect on perceived usefulness.*

Furthermore, based on the interviews' findings, the proposed model has been modified slightly with the addition of four relationships between the factors as follows:

- **H15.** *Arabic language support will have a significant, positive effect on perceived usefulness.*
- **H16.** *Willingness to earn a certificate will have a significant, positive effect on perceived usefulness.*
- **H18.** *Arabic language support will have a significant, positive effect on perceived ease of use.*
- **H19.** *Perceived reputation will have a significant, positive effect on willingness to earn a certificate.*

Moreover, the findings of the interviews were helpful in developing measurement items for the questionnaire that better suit the context of the present study. Also, the interviews' results were beneficial particularly because some variables which were included into the model are new and have not been investigated previously in the MOOCs continuance context. Most of the measurement items in this study were developed in light of the interviews' findings. For example, the item FCA4 "I can join as many courses as I need in Rwaq because the courses are free" reflects the views of a few participants who mentioned the advantage of joining the greatest number of free courses in Rwaq. Another example is that the item WEC2 "Obtaining a certificate of course completion from Rwaq enhances and supports my resume" is a reflection of the beliefs of some interviewees who think that MOOCs' certificates can be valuable to CVs when applying for jobs. In general, every aspect of the qualitative findings was useful for developing the questionnaire for the present study.

Figure 5.2 shows the revised proposed model after carrying out the interviews. Dashed and blue arrows and boxes in this figure indicate additional relationships and factors which were integrated

with the proposed model according to the interviews' findings. Table 5.2 demonstrates a summary of the research hypotheses.

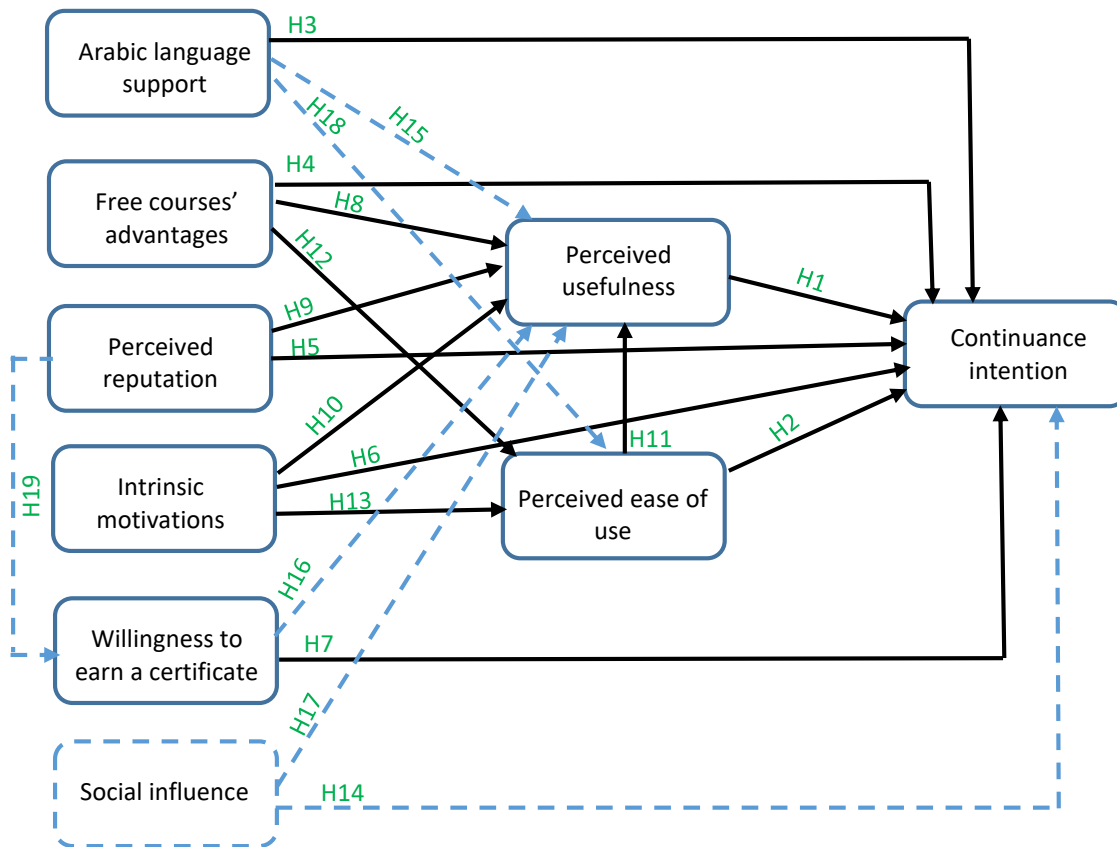


Figure 5.2 The revised proposed research model

Table 5.2 Summary of the research hypotheses

Hypothesis No.	Proposed Hypothesis
H1	Perceived usefulness will have a significant positive effect on the continuance intention to use MOOCs.
H2	Perceived ease of use will have a significant positive effect on the continuance intention to use MOOCs.
H3	Arabic language support will have a significant positive effect on the continuance intention to use MOOCs.
H4	Free courses' advantages will have a significant positive effect on the continuance intention to use MOOCs.
H5	Perceived reputation will have a significant positive effect on the continuance intention to use MOOCs.
H6	Intrinsic motivations will have a significant positive effect on the continuance intention to use MOOCs.

<b>H7</b>	Willingness to earn a certificate will have a significant positive effect on the continuance intention to use MOOCs.
<b>H8</b>	Free courses' advantages will have a significant positive effect on the perceived usefulness.
<b>H9</b>	Perceived reputation will have a significant positive effect on the perceived usefulness.
<b>H10</b>	Intrinsic motivations will have a significant positive effect on the perceived usefulness.
<b>H11</b>	Perceived ease of use will have a significant positive effect on the perceived usefulness.
<b>H12</b>	Free courses' advantages will have a significant positive effect on the perceived ease of use.
<b>H13</b>	Intrinsic motivations will have a significant positive effect on the perceived ease of use.
<b>H14</b>	Social influence will have a significant positive effect on the continuance intention to use MOOCs.
<b>H15</b>	Arabic language support will have a significant positive effect on the perceived usefulness.
<b>H16</b>	Willingness to earn a certificate will have a significant positive effect on the perceived usefulness.
<b>H17</b>	Social influence will have a significant positive effect on the perceived usefulness.
<b>H18</b>	Arabic language support will have a significant positive effect on the perceived ease of use.
<b>H19</b>	Perceived reputation will have a significant positive effect on the willingness to earn a certificate.

#### 5.4. Summary

This chapter presented the qualitative analysis of the interviews' data using the thematic analysis method. Roughly, all the participants supported the positive influence of the proposed factors on the retention of learners in the Arabic MOOCs. The interviews allowed the researcher to understand the phenomenon of this study more deeply. Moreover, the proposed model was revised based on the interviews' findings. The items for the questionnaire were prepared with the help of both the qualitative findings of this research, as well as other previous researches. The next chapter will present the quantitative results of analysing the questionnaire's data with the purpose of validating the proposed model and hypotheses.





## **Chapter 6 Quantitative Results and Discussion**

This chapter will present the quantitative results of testing the developed model that were obtained from analysing the questionnaire data. SPSS and Warp-PLS were used as statistical analysis tools for this research. Three steps were followed to analyse the questionnaire: (a) data screening, (b) measurement model analysis, and (c) structural model analysis. Additionally, the discussion of the emerged results is shown at the end of this chapter.

### **6.1. Data Screening**

Data screening is a fundamental step before proceeding to conducting further statistical analysis for the hypotheses test (Tabachnick and Fidell, 2007; Kline, 2011). Data screening was performed using SPSS 23.0 and Warp-PLS 5.0 so as to ensure the usability, reliability, and validity of the data before conducting the SEM analysis.

#### **6.1.1. Number of Responses**

In total, 1,303 questionnaires were received in the final stage of this study. However, among the received questionnaires, 151 responses were discarded as they were completed by disqualified respondents, i.e. either non-users of Rwaq or users who were aged under 18 years old. In addition, 266 responses were removed as they contained more than 70% of missing data. Therefore, the remaining 886 questionnaires were used for further data analysis.

#### **6.1.2. Non-Response Bias Assessment**

Survey estimates may be biased when there are significant differences between respondents and non-respondents of the survey (Chandio, 2011). Demographic information of all non-respondents cannot be obtained to compare them with the demographic information of the respondents. Therefore, it was supposed that the non-respondents are similar to late respondents in their characteristics to check the non-response bias (Amoako-Gyampah & Salam, 2004; Wu & Wu, 2005; Kwahk & Lee, 2008; Yousafzai, Foxall & Pallister, 2010; Chandio, 2011). All the demographic variables (e.g. age, gender, highest level of education achieved, etc.) were contrasted between the

first 300 and the last 300 respondents as these pieces of data were collected at different points of time. The analysis of variance (ANOVA) statistical test was employed in order to estimate the non-response bias where the mean values of the first 300 respondents were compared to the mean values of the last 300 respondents for each demographic variable (Table 6.1 & Appendix M).

**Table 6.1 Non-response bias assessment**

<b>Respondents' Characteristics</b>	<b>ANOVA (First 300-Last 300)</b>	
	<b>F</b>	<b>Sig.</b>
Use of Rwaq	.216	.643
Age	21.473	<0.001
Gender	1.927	.166
Nationality	25.368	<0.001
Occupation	.055	.815
Academic college	.267	.605
Highest level of education achieved	.374	.541
No. of courses taken in Rwaq	5.383	.021*
No. of certificates earned from Rwaq	11.376	0.001*
English language level	14.279	<0.001

\*  $p < 0.05$

As illustrated in Table 6.1, the significance values of the use of Rwaq, gender, occupation, academic college, and highest level of education achieved were above 0.05, which implies that there were no statistically significant differences between the early and late respondents according to these demographic variables. On the contrary, the age, nationality, number of courses taken in Rwaq, number of certificates earned from Rwaq, and English language level showed significant values ( $p < 0.05$ ). Based on this result, it may be concluded that the non-response bias possibly poses a little concern in this research.

### 6.1.3. Respondents' Profile

The demographic information on the respondents of the questionnaire is demonstrated in Table 6.2. This profile can help in interpreting the results of the quantitative analysis, particularly the unexpected results.

Table 6.2 Demographic characteristics of the survey respondents (n=886)

Variable	Category	Frequency	%
Use of Rwaq	Have an account on Rwaq but have not joined any courses previously	63	7.1
	Joined at least one course previously in Rwaq	823	92.9
Age	Between 18-24 years	174	19.6
	Between 25-30 years	230	26.0
	Between 31-35 years	170	19.2
	Between 36-40 years	151	17.0
	Between 41-45 years	88	9.9
	Between 46-50 years	45	5.1
	Between 51-55 years	19	2.1
	Between 56-60 years	9	1.0
Gender	Male	447	50.5
	Female	439	49.5
Nationality	Saudi	437	49.3
	Yemini	27	3.0
	Libyan	8	.9
	Lebanon	4	.5
	Algerian	40	4.5
	Kuwaiti	6	.7
	Syrian	72	8.1
	Jordanian	27	3.0
	Egyptian	102	11.5
	Iraqi	6	.7
	Sudanic	18	2.0
	Moroccan	66	7.4
	Omani	13	1.5
	Palestinian	16	1.8
	UAE	11	1.2
	Tunisian	5	.6
	Qatari	4	.5
	Somali	1	.1
	Bahraini	1	.1
	Mauritanian	3	.3
	Other	19	2.1
Occupation	Student	192	21.7
	Employee in government sector	329	37.1
	Employee in private sector	157	17.7

<b>Variable</b>	<b>Category</b>	<b>Frequency</b>	<b>%</b>
<b>Academic college</b>	Business man/women	17	1.9
	Retried	7	.8
	Unemployed	184	20.8
	Computer Science	126	14.2
	Engineering	45	5.1
	Education and Literature	293	33.1
	Administration and Economics	69	7.8
	Science and Literature	56	6.3
	Sciences	104	11.7
	Applied Medical Sciences	10	1.1
	Community College	13	1.5
	Nursing	2	.2
	Pharmacy	7	.8
	Medicine	8	.9
	Home Economics	10	1.1
	Law and Political Science	9	1.0
	Military College	2	.2
	Other	132	14.9
<b>Highest level of education achieved</b>	Secondary School	116	13.1
	Diploma	71	8.0
	Bachelor	471	53.2
	Master	193	21.8
	PhD	34	3.8
	Lower than Secondary education	1	.1
<b>No. of courses taken in Rwaq</b>	None	63	7.1
	1-3	342	38.6
	4-6	230	26.0
	7-9	105	11.9
	10-12	42	4.7
	More than 12	104	11.7
<b>No. of certificates earned from Rwaq</b>	None	280	31.6
	1-3	353	39.8
	4-6	132	14.9
	7-9	42	4.7
	10-12	29	3.3
	More than 12	50	5.6
<b>English Language Level</b>	I do not know the language at all	48	5.4
	Beginner	246	27.8
	Intermediate	400	45.1
	Advanced	160	18.1
	Proficient in the language	32	3.6

### A. Use of Rwaq

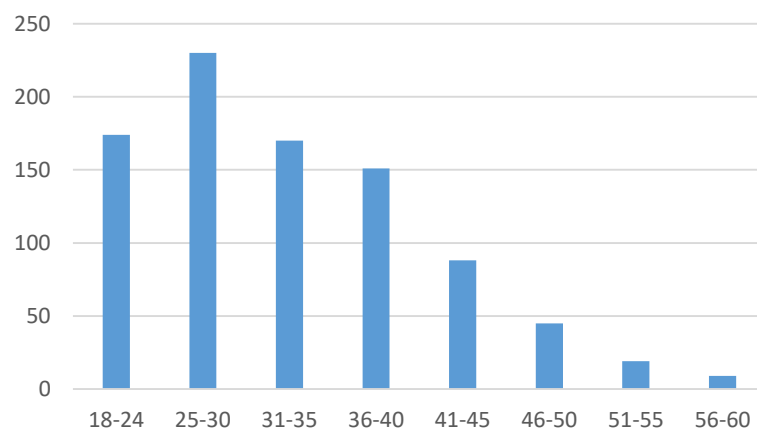
When asking the respondents about their use of the Rwaq platform, most of them have had an experience in joining at least one course in Rwaq ( $n=823$ ), while only 63 respondents have an account on the platform but have not registered in any course in the past (Figure 6.1).



**Figure 6.1 Use of Rwaq by respondents**

### B. Age

As shown in Figure 6.2, the range of ages of the majority of respondents is between 25 and 30 years ( $n=230$ ) followed by the range between 18 and 24 years ( $n=174$ ). This finding is consistent with the finding cited by Deng, Benckendorff & Gannaway (2017) who revealed that the ages of most MOOC participants are 45 years or younger.



**Figure 6.2 Age of respondents**

### C. Gender

The percentages of male and female respondents are nearly equal, with 50.5% and 49.5% respectively (Figure 6.3).

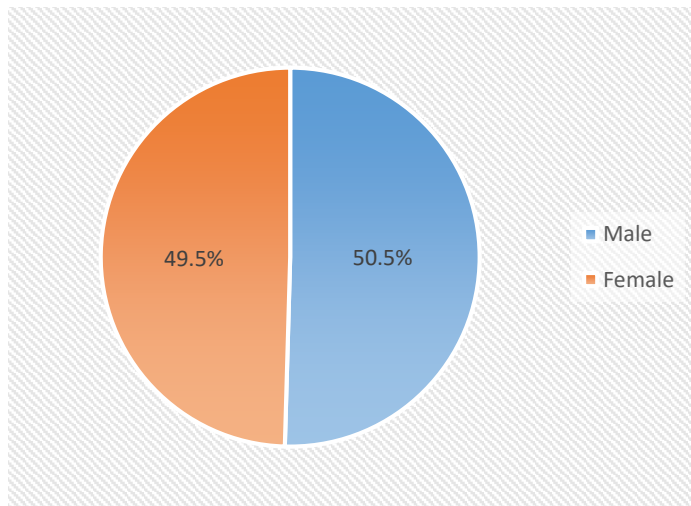


Figure 6.3 Gender of respondents

### D. Nationality

As expected, because the Rwaq platform is headquartered in Saudi Arabia, Saudis constitute the largest number of respondents with  $n=437$  (Figure 6.4). The second highest number of respondents was of the Egyptian nationality ( $n=102$ ).

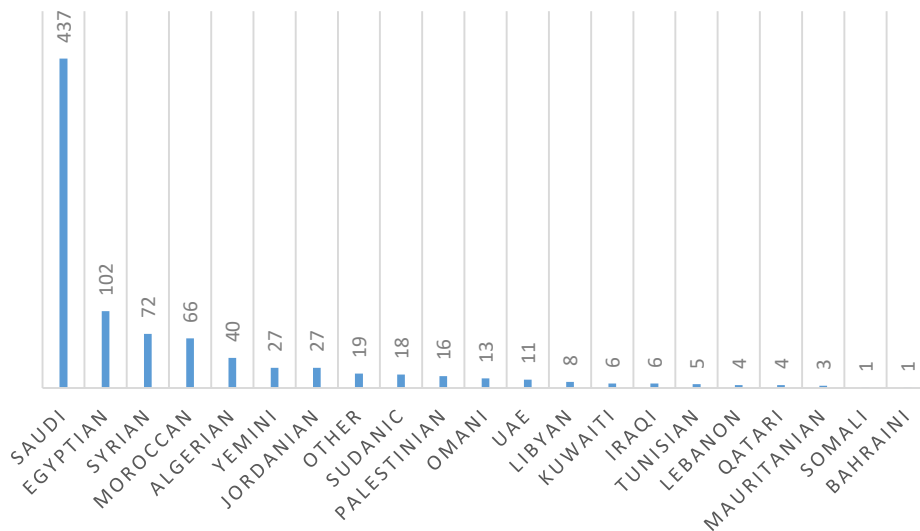


Figure 6.4 Nationality of respondents

### E. Occupation

As can be seen from Figure 6.5, most of the survey respondents were employees in government sectors ( $n=329$ , 37.1%) followed by students ( $n=192$ , 21.7%). This endorses prior studies that found that employees constitute a large part of MOOCs' users (Christensen et al., 2013; Gao & Yang, 2015; Bayeck, 2016).

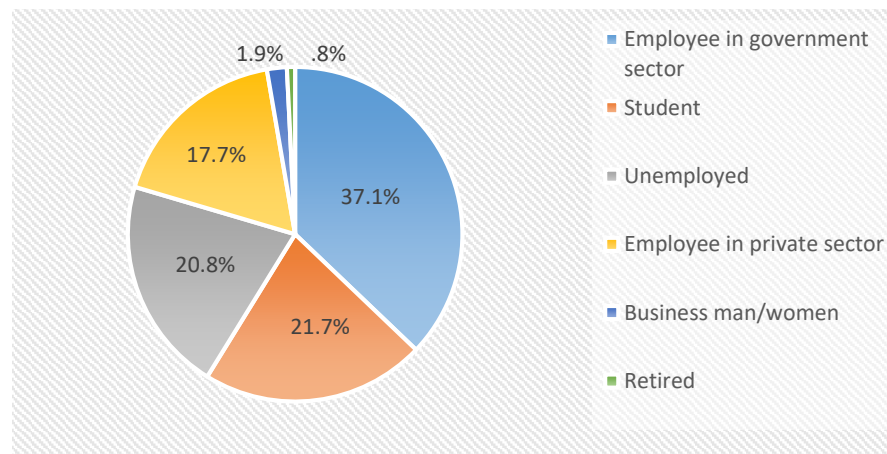


Figure 6.5 Occupation of respondents

### F. Academic College

The top two academic colleges to which the respondents belong were education and literature ( $n=293$ , 33.1%) and computer science with  $n=126$  (14.2%) (Figure 6.6).

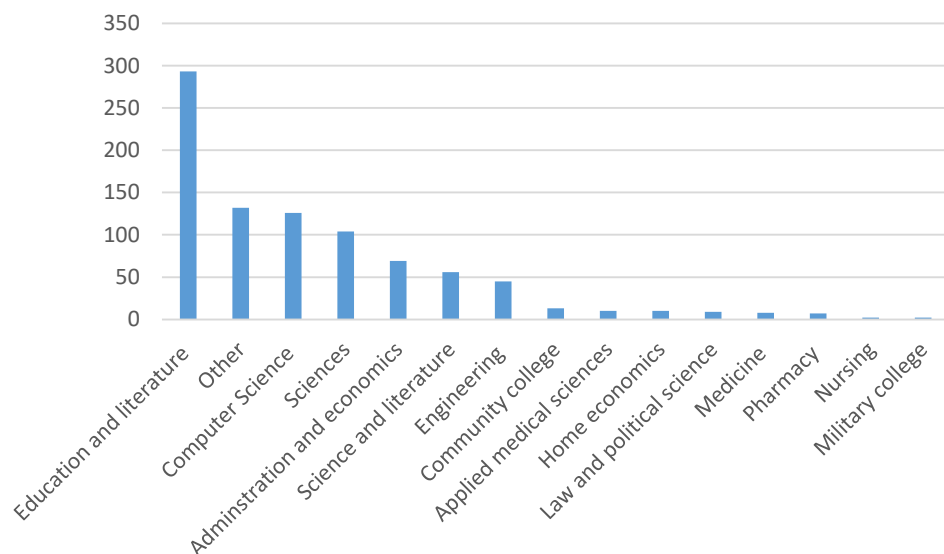


Figure 6.6 Academic college of respondents

### G. Highest Level of Education Achieved

As shown in Figure 6.7, the majority of respondents hold a bachelor's degree ( $n=471$ , 53.2%) followed by a master's degree with 193 respondents (21.8%). These results agree with Deng, Benckendorff & Gannaway (2017) who stated that most users of MOOCs hold a bachelor's degree.

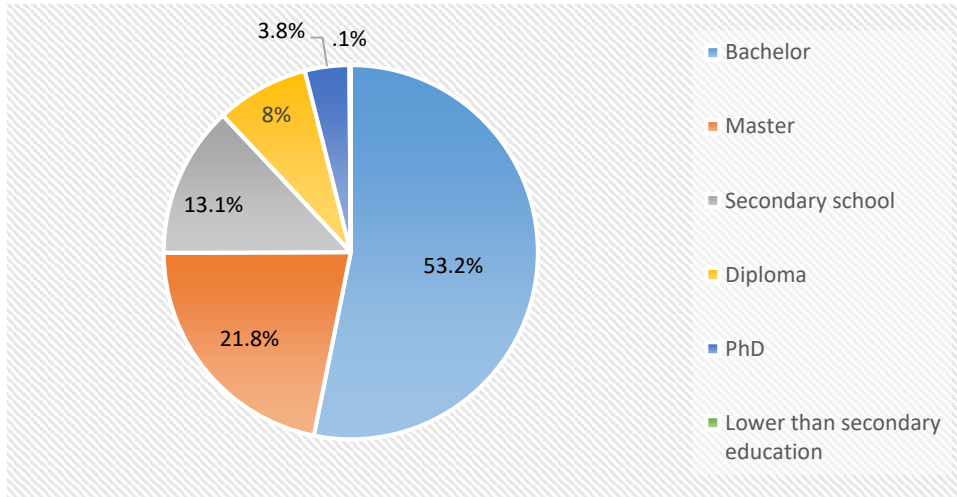


Figure 6.7 Highest level of education achieved by respondents

### H. Number of Courses Taken in Rwaq

The vast majority of respondents ( $n=342$ , 38.6%) joined between one to three courses followed by 26% ( $n=230$ ), who took four to six courses (Figure 6.8).

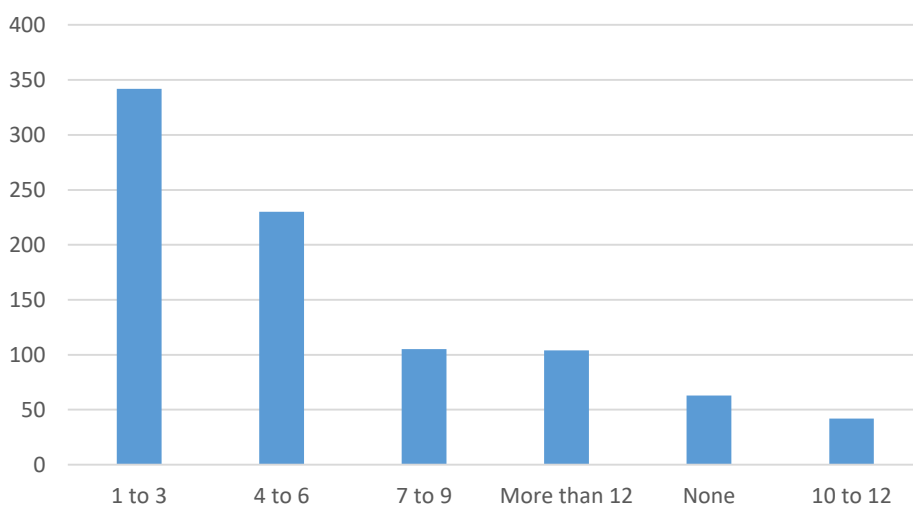


Figure 6.8 Number of courses taken by respondents



### I. Number of Certificates Earned from Rwaq

Most of the respondents obtained between one to three certificates from Rwaq (n=353, 39.8%) followed by 280 respondents (31.6%) who did not acquire any certificate from the platform (Figure 6.9).

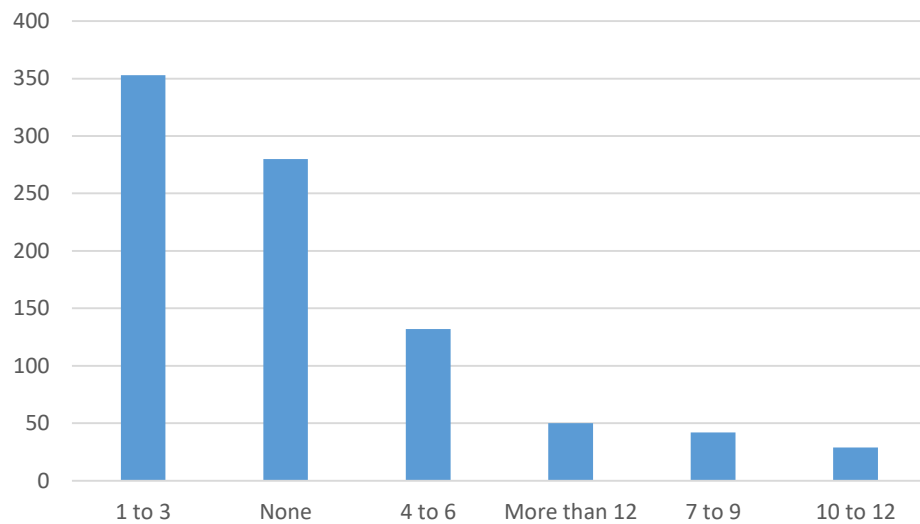


Figure 6.9 Number of certificates earned by respondents

### J. English Language Level

Looking at Figure 6.10, it is apparent that the majority of respondents reported their level in English to be on the intermediate level (45.1%) followed by 27.8% of who stated that they are beginners in the English language.

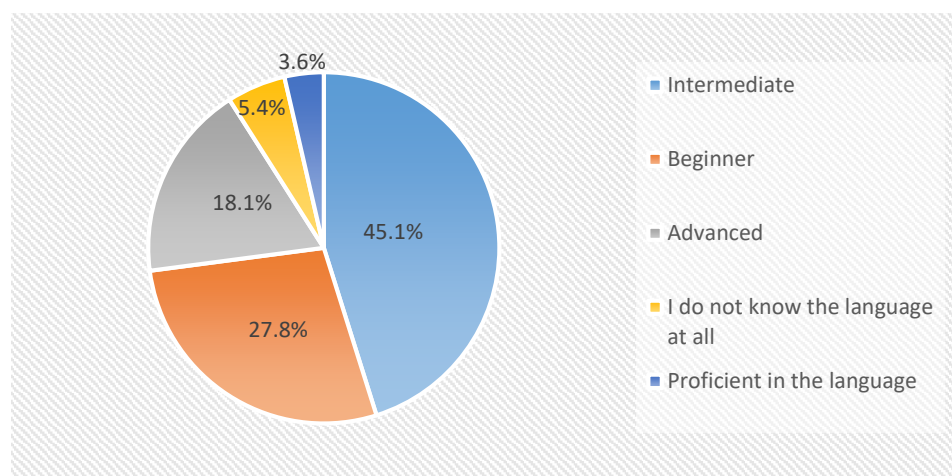


Figure 6.10 English language level of respondents

#### 6.1.4. Descriptive Statistics of the Construct Items

This section presents the descriptive statistics of the survey constructs as follows.

##### A. Perceived Usefulness

As shown in Table 6.3, the mean scores ranged between 4.30 ( $\pm .745$ ) and 4.52 ( $\pm .610$ ).

**Table 6.3** Descriptive statistics of perceived usefulness

	<b>Mean Statistic</b>	<b>Std. Deviation Statistic</b>	<b>Variance Statistic</b>
PU1	4.49	.625	.390
PU2	4.52	.610	.372
PU3	4.45	.641	.411
PU4	4.47	.644	.414
PU5	4.45	.619	.383
PU6	4.30	.745	.554
PU7	4.35	.670	.449

##### B. Perceived Ease of Use

It can be seen from the data in Table 6.4 that the mean scores ranged between 4.26 ( $\pm .866$ ) and 4.51 ( $\pm .648$ ).

**Table 6.4** Descriptive statistics of perceived ease of use

	<b>Mean Statistic</b>	<b>Std. Deviation Statistic</b>	<b>Variance Statistic</b>
PEU1	4.51	.662	.438
PEU2	4.40	.707	.500
PEU3	4.46	.692	.479
PEU4	4.26	.866	.750
PEU5	4.51	.648	.420

##### C. Arabic Language Support

Table 6.5 shows that the mean scores ranged between 3.72 ( $\pm 1.160$ ) and 4.63 ( $\pm .580$ ).

Table 6.5 Descriptive statistics of Arabic language support

	<b>Mean Statistic</b>	<b>Std. Deviation Statistic</b>	<b>Variance Statistic</b>
ALS1	4.39	.793	.628
ALS2	4.40	.771	.595
ALS3	4.41	.759	.576
ALS4	3.72	1.160	1.347
ALS5	4.31	.865	.748
ALS6	4.63	.580	.336
ALS7	4.63	.591	.350

#### D. Free Courses' Advantages

As can be seen from Table 6.6, the mean scores ranged between 4.20 ( $\pm .926$ ) and 4.72 ( $\pm .550$ ).

Table 6.6 Descriptive statistics of free courses' advantages

	<b>Mean Statistic</b>	<b>Std. Deviation Statistic</b>	<b>Variance Statistic</b>
FCA1	4.61	.652	.425
FCA2	4.33	.853	.728
FCA3	4.61	.621	.385
FCA4	4.48	.795	.632
FCA5	4.72	.550	.303
FCA6	4.20	.926	.858
FCA7	4.64	.603	.364

#### E. Perceived Reputation

The mean scores ranged between 3.96 ( $\pm .903$ ) and 4.58 ( $\pm .584$ ), as presented in Table 6.7.

Table 6.7 Descriptive statistics of perceived reputation

	<b>Mean Statistic</b>	<b>Std. Deviation Statistic</b>	<b>Variance Statistic</b>
PR1	4.26	.757	.574
PR2	4.51	.634	.402
PR3	4.41	.640	.410
PR4	4.29	.732	.536
PR5	4.40	.642	.412
PR6	4.58	.584	.341
PR7	3.96	.903	.816
PR8	4.47	.620	.385

## F. Intrinsic Motivations

The mean scores ranged between 4.33 ( $\pm .797$ ) and 4.52 ( $\pm .614$ ) (Table 6.8).

**Table 6.8** Descriptive statistics of intrinsic motivations

	<b>Mean Statistic</b>	<b>Std. Deviation Statistic</b>	<b>Variance Statistic</b>
IM1	4.52	.614	.377
IM2	4.48	.630	.397
IM3	4.41	.683	.466
IM4	4.52	.644	.415
IM5	4.40	.726	.527
IM6	4.33	.797	.636
IM7	4.47	.613	.376

## G. Willingness to Earn a Certificate

As displayed in Table 6.9, the mean scores ranged between 3.86 ( $\pm 1.052$ ) and 4.54 ( $\pm .679$ ).

**Table 6.9** Descriptive statistics of willingness to earn a certificate

	<b>Mean Statistic</b>	<b>Std. Deviation Statistic</b>	<b>Variance Statistic</b>
WEC1	4.34	.852	.725
WEC 2	4.21	.951	.905
WEC 3	3.86	1.052	1.106
WEC 4	4.02	.984	.969
WEC 5	4.31	.871	.759
WEC 6	4.54	.679	.461
WEC 7	4.10	.956	.914
WEC 8	4.20	.878	.772

## H. Social Influence

The mean scores ranged between 3.43 ( $\pm 1.087$ ) and 3.95 ( $\pm .893$ ) (Table 6.10).

**Table 6.10** Descriptive statistics of social influence

	<b>Mean Statistic</b>	<b>Std. Deviation Statistic</b>	<b>Variance Statistic</b>
SI1	3.45	1.081	1.170
SI2	3.43	1.087	1.181
SI3	3.46	1.058	1.118

SI4	3.95	.893	.798
-----	------	------	------

### I. Continuance Intention

As can be seen from Table 6.11, the mean scores ranged between 4.56 ( $\pm .631$ ) and 4.61 ( $\pm .595$ ).

**Table 6.11 Descriptive statistics of continuance intention**

	Mean Statistic	Std. Deviation Statistic	Variance Statistic
CI1	4.61	.595	.354
CI2	4.56	.631	.398
CI3	4.58	.623	.389

**Mean:**

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x$$

**Variance:**

$$s^2 = \frac{1}{n-1} \sum_{i=1}^n (x - \bar{x})^2$$

**Standard deviation:**

$$s = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (x - \bar{x})^2}$$

$\bar{x}$ =mean;  $n$ =the sample size;  $x$ =the observed valued

### 6.1.5. Linearity

The nature of the relationships between the variables was examined using Warp-PLS. As shown previously (section I: Questionnaire analysis, page No. 121) that most of the relationships are linear except for four which are non-linear, namely PEU→CI, ALS→CI, FCA→CI, and WEC→PU (Appendix J). As a result, Warp-PLS software was used in the present study as it takes into consideration the linear and nonlinear relationships when estimating the path coefficients.

### 6.1.6. Outliers

Outliers are defined as “scores that are different from the rest” (Kline, 2011, p.54). There are two main forms of outliers: univariate and multivariate outliers (Kline, 2011). According to Kline (2011, p.54), “a case can have a univariate outlier if it is extreme on a single variable. A multivariate outlier has extreme scores on two or more variables, or its pattern of scores is atypical”.

#### A. Univariate Outliers

For each observed variable, the univariate outliers were examined by means of calculating the standardized value ( $z$ ). One guideline is that  $|z| > 3.29$  indicates a potential outlier (Tabachnickand & Fidell, 2007). However, studies with an extremely large sample size are expected to find that cases exceed such recommendation value (Tabachnickand & Fidell, 2007). Due to an extremely large sample size in this study, a cut off value of  $|z| > 4.0$  was selected as suggested by Hair et al. (2010).

In total, 54 observations were identified as univariate outliers for this study. The identified observation numbers are as follows:

(778, 574, 696, 473, 584, 820, 818, 492, 366, 1068, 446, 1049, 258, 1034, 377, 743, 803, 1025, 277, 579, 413, 947, 964, 484, 855, 799, 896, 1082, 624, 260, 248, 231, 1048, 741, 685, 203, 255, 1119, 817, 870, 856, 1019, 450, 299, 871, 717, 948, 1086, 1101, 680, 226, 983, 1083, 350).

In all the outlier cases,  $z$ -scores were negative (below the mean). Table 6.12 demonstrates the univariate outliers that were identified per an observed variable.

**Table 6.12 The univariate outliers**

Observed variable	Observation No.
PU1	778, 696, 741
PU2	778, 696, 741, 584, 231, 820, 685
PU3	778, 696, 741, 584, 820
PU4	778, 696, 741, 584
PU5	778, 696, 741
PU6	778, 696, 741, 231, 203, 255
PU7	778, 696, 741, 231, 584
PEU1	778, 696, 741, 1119, 817

Observed variable	Observation No.
PEU2	778, 696, 741, 1119, 817, 870
PEU3	778, 696, 741, 1119, 817, 685
PEU5	778, 696, 741, 1119, 817, 584
ALS1	778, 696, 203, 856, 1019, 450
ALS2	778, 696, 450, 299
ALS3	778, 696, 203, 255
ALS6	778, 696, 584, 1119, 377, 871
ALS7	778, 696, 584, 855, 717, 948, 1086, 1101
FCA1	778, 696, 1034
FCA3	778, 696, 579, 413, 947, 964, 484, 584, 818
FCA4	778, 696, 413, 855, 743, 799
FCA5	778, 696, 413, 855, 896, 1082, 624, 584, 260
FCA7	778, 696, 855, 896, 1082, 584, 248, 231, 579, 1048
PR1	778, 696, 584, 743
PR2	778, 696, 584
PR3	778, 696, 584
PR4	778, 696, 584, 803, 1025
PR5	778, 696, 584, 803
PR6	778, 696, 584, 277
IM1	778, 584, 696, 820, 818, 492
IM2	778, 696
IM3	778, 696, 584
IM4	778, 696, 584
IM5	778, 696, 584, 366, 1068
IM6	778, 696, 446, 1049
IM7	778, 696, 584, 258, 1034, 377
WEC6	778, 574, 696, 473, 584
CI1	778, 696, 584, 231, 855, 680, 226
CI2	778, 696, 584, 231, 983, 1083, 226, 350
CI3	778, 696, 584, 231, 820, 226, 258, 818

**Standard score (z):**

$$\frac{x - \bar{x}}{s}$$

x=the observed valued;  $\bar{x}$ =mean; s=standard deviation

## B. Multivariate Outliers

Mahalanobis distance ( $D^2$ ) is “the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables” (Tabachnick and

& Fidell, 2007, p.74). One conservative recommendation is that a value of  $D^2$  should not exceed the critical chi-square value ( $\chi^2$ ) at the probability of  $p < 0.001$  (Tabachnick and Fidell, 2007; Kline, 2011).  $D^2$  was measured using SPSS and then  $D^2$  values were compared to 94.461 (the  $\chi^2$  value with a degree of freedom (df) = 56 observed variables and  $\alpha = .001$ ). Only one observation numbered '741' was found with  $D^2 = 133.281$ , which is deemed higher than the recommended value (94.461).

#### **Mahalanobis distance**

$$D^2 = (\mathbf{x} - \mathbf{m})^T \mathbf{C}^{-1} (\mathbf{x} - \mathbf{m})$$

$\mathbf{x}$  = vector of data;  $\mathbf{m}$  = vector of mean values of independent variables;  $\mathbf{T}$  = transposed vector;  $\mathbf{C}^{-1}$  = inverse covariance matrix of independent variables

### **C. Handling Outliers**

After detecting the outliers, it is up to the researcher to select how to proceed. Deleting the outliers could improve the multivariate analysis in terms of obtaining a better model fit and accurate estimators (Osborne & Overbay, 2004). However, simply removing the outliers from the analysis may affect the generalisability (Harrington, 2009). Furthermore, it is not advisable to delete the outliers unless they are a result of a mistake in the experiment (Altman & Krzywinski, 2016). Because outliers may be produced accidentally or due to the biological variability, "*removing them would lead to underestimation of the variability in the data and unduly influence inference.*" (Altman & Krzywinski, 2016, p.282).

A recurrence of three observations (778, 696, 584) was noticed as univariate outliers in most of the observed variables. After examination, it was noticed that the two observations (778 & 696) are unengaged respondents. Unengaged response in this respect implies a suspicious response pattern, namely entering the same response for every single survey item (Park, Yoh & Park, 2015). Therefore, it was decided to eliminate only the unengaged responses as they clearly deviated from the anticipated ranges of response. Thus, 884 responses are remaining for subsequent analysis.

#### **6.1.7. Normality of Construct Items**

As reported by Kline (2011, p.60), multivariate normality denotes the following:



*“(1) All the individual univariate distributions are normal, (2) The joint distribution of any pair of the variables is bivariate normal; that is, each variable is normally distributed for each value of every other variable, (3) All bivariate scatterplots are linear, and the distribution of residuals is homoscedastic.”*

It is impractical to check all aspects of the multivariate normality (Kline, 2011). Statistical tests such as Mardia’s test (Mardia, 1985) and Cox–Small’s test (Cox & Small, 1978) can be used to assess the multivariate normality. Nevertheless, such tests are sensitive to large sample size as a minor departure from normality could be reported as statistically significant (Kline, 2011). Univariate distributions can assist in detecting aspects of multivariate normality (Kline, 2011).

The univariate normality for each observed variable was assessed via skewness and kurtosis statistics. *“Skewness has to do with the symmetry of the distribution; a skewed variable is a variable whose mean is not in the centre of the distribution. Kurtosis has to do with the peakedness of a distribution; a distribution is either too peaked (with short, thick tails) or too flat (with long, thin tails)”* (Tabachnickand & Fidell, 2007, p.79). Kline (2011) suggested that the absolute values of skewness and kurtosis that exceed 3.0 and 10.0 respectively may indicate a non-normal distribution. Table 6.13 illustrates that all the observed variables showed satisfactory values of skewness and kurtosis as suggested by Kline (2011).

**Table 6.13 Skewness and Kurtosis results**

<b>Latent variable</b>	<b>Observed variable</b>	<b>Skewness Statistic</b>	<b>Kurtosis Statistic</b>
<b>Perceived usefulness</b>	PU1	-1.062	1.854
	PU2	-1.100	1.837
	PU3	-1.073	2.381
	PU4	-1.177	2.465
	PU5	-.823	1.076
	PU6	-.990	1.399
	PU7	-.861	1.586
<b>Perceived ease of use</b>	PEU1	-1.490	3.623
	PEU2	-1.300	2.825
	PEU3	-1.563	4.027
	PEU4	-1.514	2.831
	PEU5	-1.586	4.725
<b>Arabic language support</b>	ALS1	-1.247	1.436
	ALS2	-1.188	1.143
	ALS3	-1.119	.863

Latent variable	Observed variable	Skewness Statistic	Kurtosis Statistic
	ALS4	-.626	-.609
	ALS5	-1.237	1.286
	ALS6	-1.535	3.205
	ALS7	-1.606	3.604
Free courses' advantages	FCA1	-1.847	3.972
	FCA2	-1.245	1.177
	FCA3	-1.533	2.349
	FCA4	-1.725	3.059
	FCA5	-2.130	5.522
	FCA6	-1.078	.630
	FCA7	-1.815	4.361
Perceived reputation	PR1	-.804	.499
	PR2	-1.128	1.568
	PR3	-.751	.615
	PR4	-.895	1.124
	PR5	-.813	1.252
	PR6	-1.139	1.670
	PR7	-.559	-.087
	PR8	-.805	.549
Intrinsic motivations	IM1	-1.157	2.447
	IM2	-.939	.780
	IM3	-1.044	1.387
	IM4	-1.226	1.765
	IM5	-1.271	2.221
	IM6	-1.204	1.369
	IM7	-.885	1.234
Willingness to earn a certificate	WEC1	-1.277	1.269
	WEC2	-1.102	.587
	WEC3	-.578	-.440
	WEC4	-.888	.318
	WEC5	-1.372	1.763
	WEC6	-1.697	-4.038
	WEC7	-.931	.388
	WEC8	-1.068	.939
Social influence	SI1	-.311	-.445
	SI2	-.262	-.527
	SI3	-.313	-.334
	SI4	-.601	.207
Continuance intention	CI1	-1.464	2.940
	CI2	-1.637	4.787
	CI3	-1.629	4.369

**Skewness:**

$$\frac{n}{(n-1)(n-2)} \sum_{i=1}^n \left( \frac{xi - \bar{x}}{s} \right)^3$$

**Kurtosis:**

$$\left\{ \frac{n(n+1)}{(n-1)(n-2)(n-3)} \sum_{i=1}^n \left( \frac{xi - \bar{x}}{s} \right)^4 \right\} - \frac{3(n-1)^2}{(n-2)(n-3)}$$

$xi$  = the  $i^{\text{th}}$  observed value;  $\bar{x}$  = mean of the sample;  $n$  = sample size;  $s$  = the sample standard deviation

### 6.1.8. Collinearity

Collinearity between the latent variables should be examined as the existence of collinearity leads to extremely misleading inferences (Kock & Lynn, 2012) and biased estimates of coefficients (Yoo et al., 2014) due to the presence of redundancy between the latent variables. As cited by Kock & Lynn (2012), vertical collinearity is a predictor-predictor collinearity, whereas lateral collinearity is a predictor-criterion collinearity. Lateral collinearity has not been assessed clearly in previous studies on multivariate analyses (Kock & Lynn, 2012).

Kock (2015a) recommended reporting the full collinearity VIFs, which accounts for both vertical and lateral collinearity, along with the block variance inflation factors (VIFs) assessment which measures the severity of vertical collinearity in the model. Both tests are offered by Warp-PLS. The absence of multicollinearity can be inferred when the value of full collinearity VIFs <3.3 (Kock & Lynn, 2012). Similarly, the value of Block VIFs <3.3 suggests the non-existence of vertical multicollinearity in a latent variable block. The results shown in Tables 6.14 and 6.15 suggest that the multicollinearity and vertical collinearity are not a concern in the proposed model.

**Table 6.14 Full collinearity assessment**

	PEU	PU	CI	ALS	FCA	PR	IM	WEC	SI
<b>Full collinearity VIFs</b>	1.450	2.167	1.952	1.706	1.413	2.444	2.655	1.671	1.461

Table 6.15 Vertical collinearity assessment

	PEU	PU	CI	ALS	FCA	PR	IM	WEC	SI
PEU				1.452	1.358		1.480		
PU	1.331			1.652	1.414	2.310	2.106	1.702	1.461
CI	1.448	2.094		1.650	1.418	2.441	2.238	1.662	1.453

Variance inflation factor (VIF) for variable i:

$$\frac{1}{1 - R_i^2}$$

$R^2$ =the coefficient of determination

## 6.2. Structural Equation Modelling (SEM) Analysis

Model validation refers to “the process of systematically evaluating whether the hypotheses expressed by the structural model are supported by the data or not” (Urbach & Ahlemann, 2010, p.18). The SEM model includes two types of models: measurement and structural (Henseler, Ringle & Sinkovics, 2009). The measurement model which is also called ‘outer model’ concerns the relationships between a latent variable and its observed variables. On the other hand, the structural model (inner model) concerns the correlations among the latent variables. Figure 6.11 presents a graphic example of the SEM model.

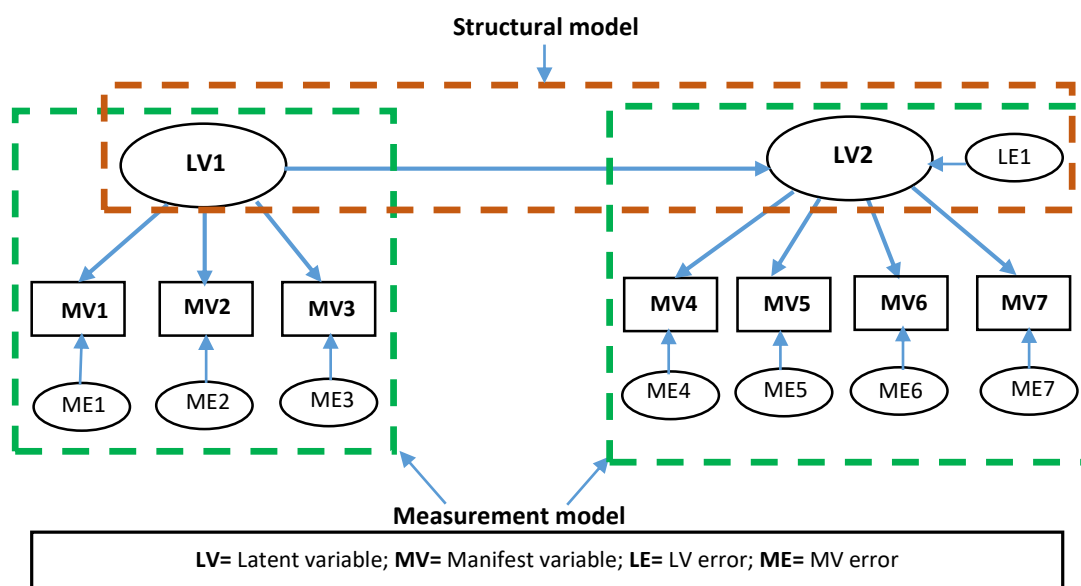
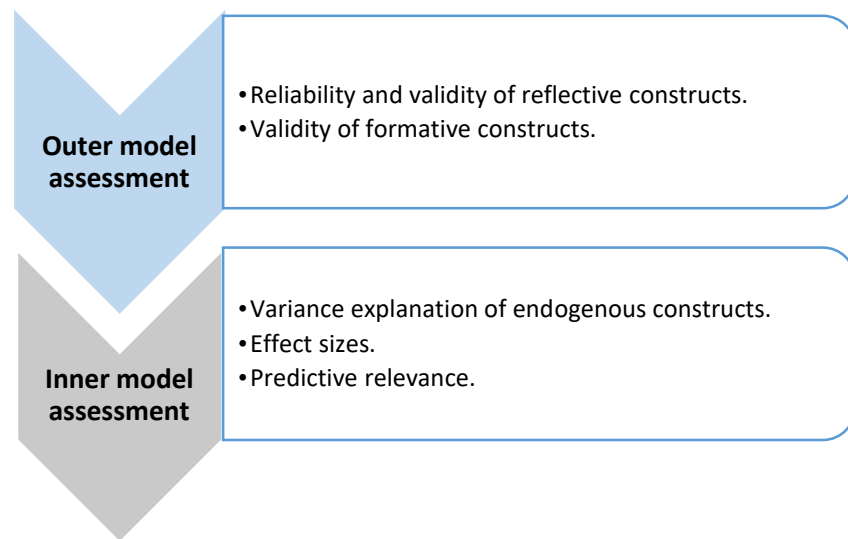


Figure 6.11 Graphic example of the SEM model. Adapted from Shah & Goldstein (2006)

To assess PLS path models, two steps should be taken: the outer model assessment and inner model assessment (Henseler, Ringle & Sinkovics, 2009), as shown in Figure 6.12.



**Figure 6.12 A two-step process of PLS path model assessment (Henseler, Ringle & Sinkovics, 2009, p.298)**

## 6.2.1. Assessing the Measurement Model

Different evaluations should be applied to validate both the reflective and formative measurement models (Henseler, Ringle & Sinkovics, 2009; Urbach & Ahlemann, 2010). When the measurement model assessment shows evidence of satisfactory reliability and validity, the next step is evaluating the structural model.

### A. Reflective Measurement Model

Table 6.16 gives a summary of the criteria used to evaluate the reflective measurement model that comprises three factors: perceived usefulness, perceived ease of use, and continuance intention.

**Table 6.16 The criteria used to evaluate the reflective measurement model**

Validity type	Definition	Criterion	Description	Proposed threshold value	Reference
<b>Internal consistency reliability</b>	<i>"Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test"</i> (Tavakol & Dennick, 2011, p.53).	Cronbach's alpha	Provide a measure of the internal consistency.	<ul style="list-style-type: none"> <li>Value &gt;.70</li> <li>Value must not be lower than .60</li> </ul>	Cronbach (1951) Nunnally & Bernstein (1994) Henseler, Ringle & Sinkovics (2009)
<b>Construct validity:</b>	<i>"Convergent validity is used to assess whether items within the same construct</i>	Factor loading	<i>"Measures how much of the indicators variance is explained by the corresponding latent variables"</i> (Urbach & Ahlemann, 2010, p.19).	Value should be significant and above .70	Chin (1998)

Validity type	Definition	Criterion	Description	Proposed threshold value	Reference
<b>Convergent Validity</b>	<i>are highly correlated with each other"</i> (Huang, Zhang & Liu, 2017, p.88).	Composite reliability (CR)	<i>"Measure the sum of latent variable's factor loadings relative to the sum of the factor loadings plus error variance"</i> (Urbach & Ahlemann, 2010, p.19).	CR > .70	Werts, Linn & Jöreskog (1974) Nunally and Bernstein (1994) Bagozzi & Yi (2012)
		Average variance extracted (AVE)	Measure the amount of variance in indicators explained by the underlying construct relative to the amount due to measurement error.	AVE > 0.500	Fornell & Larcker (1981)
<b>Construct validity:</b> <b>Discriminant Validity</b>	<i>"Assess whether items load more on their intended construct than on others"</i> (Huang, Zhang & Liu, 2017, p.88).	Fornell-Larcker criterion	Average variance extracted (AVE) of each factor should be compared to squared correlations with other factors in the model.	The squared correlations should be lower than the AVE values.	Fornell & Larcker (1981) Henseler, Ringle & Sarstedt (2015)
		Cross-loadings	<i>"Cross-loadings are obtained by correlating the component scores of each latent variable with all other items"</i> (Urbach & Ahlemann, 2010, p.19).	Factor loadings should be higher than 0.70	Chin (1998)
				Cross-loading occurs when one indicator loads at .32 or higher on two or more factors.	Tabachnick & Fidell (2007)

### A.1. Internal Consistency Reliability

All the constructs met the guideline where all the values were greater than 0.8, as presented in Table 6.17.

Table 6.17 Internal consistency reliability assessment

	PU	PEU	CI
<b>Cronbach's alpha</b>	0.907	0.853	0.936

**Cronbach's alpha:**

$$\frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

N = the number of items;  $\bar{c}$  = average covariance between item-pairs;  $\bar{v}$  = average variance

### A.2. Convergent Validity

As Table 6.18 illustrates, the results of the tests for the convergent validity exceeded the recommended threshold values shown in Table 6.16.

Table 6.18 Convergent validity assessment

Construct	Indicator	Factor loading	CR	AVE
Perceived usefulness	PU1	0.799	0.926	0.642
	PU2	0.844		
	PU3	0.798		
	PU4	0.755		
	PU5	0.806		
	PU6	0.805		
	PU7	0.801		
Perceived ease of use	PEU1	0.763	0.895	0.631
	PEU2	0.805		
	PEU3	0.829		
	PEU4	0.722		
	PEU5	0.847		
Continuance intention	CI1	0.949	0.959	0.886
	CI2	0.935		
	CI3	0.941		



**Composite reliability (CR):**

$$\frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum \epsilon_i}$$

**Average variance extracted (AVE):**

$$\frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \epsilon_i}$$

$\lambda$ = the standardized factor loading for item i;  $\epsilon$ = the respective error variance for item i

### A.3. Discriminant Validity

#### A.3.1. Comparing Average Communality and Shared Variance (Fornell-Larcker criterion)

As Table 6.19 shows, the result of discriminant validity is satisfactory where all the inter-construct correlations (non-shaded values) are lower than the square roots of the AVEs (shaded values).

Table 6.19 Fornell-Larcker criterion assessment

	<b>PU</b>	<b>PEU</b>	<b>CI</b>
<b>PU</b>	0.801	0.504	0.534
<b>PEU</b>	0.504	0.795	0.391
<b>CI</b>	0.534	0.391	0.941
<b>ALS</b>	0.523	0.377	0.449
<b>FCA</b>	0.401	0.321	0.385
<b>PR</b>	0.628	0.421	0.538
<b>IM</b>	0.619	0.418	0.669
<b>WEC</b>	0.407	0.171	0.341
<b>SI</b>	0.292	0.091	0.199

The shaded values are square roots of the AVEs for each construct; all other entries are the inter-construct correlations.

#### A.3.2. Assessing Cross-Loadings

Table 6.20 illustrates that all the indicators' loadings (shaded values) are above .70 and the cross-loadings are below 0.32. Consequently, the indicators demonstrate adequate discriminant validity.

Table 6.20 Cross-Loadings assessment

	PU	PEU	CI	ALS	FCA	PR	IM	WEC	SI
<b>PU1</b>	0.799	0.039	-0.004	0.064	-0.055	0.000	0.005	-0.013	-0.002
<b>PU2</b>	0.844	-0.055	0.035	0.028	-0.064	0.006	0.029	-0.070	-0.026
<b>PU3</b>	0.798	0.033	-0.046	0.043	-0.052	-0.012	0.003	0.017	0.010
<b>PU4</b>	0.755	0.031	-0.014	-0.007	0.123	-0.047	0.075	-0.026	-0.044
<b>PU5</b>	0.806	-0.030	0.011	-0.077	0.041	-0.062	0.071	-0.023	-0.063
<b>PU6</b>	0.805	-0.027	0.006	-0.010	-0.010	0.051	-0.143	0.064	0.053
<b>PU7</b>	0.801	0.013	0.010	-0.041	0.025	0.061	-0.036	0.054	0.070
<b>PEU1</b>	-0.002	0.763	-0.031	-0.023	-0.011	0.000	0.031	0.034	-0.030
<b>PEU2</b>	0.011	0.805	-0.044	-0.002	-0.061	0.000	0.019	0.072	-0.037
<b>PEU3</b>	0.072	0.829	0.035	-0.009	-0.015	0.023	0.031	-0.022	-0.025
<b>PEU4</b>	-0.090	0.722	0.022	0.061	0.060	-0.075	-0.058	-0.088	0.100
<b>PEU5</b>	-0.004	0.847	0.016	-0.020	0.030	0.041	-0.027	-0.003	0.002
<b>CI1</b>	0.003	0.005	0.949	0.015	0.023	-0.004	0.020	-0.011	-0.003
<b>CI2</b>	-0.019	0.012	0.935	0.002	-0.027	-0.015	-0.042	0.054	-0.020
<b>CI3</b>	0.016	-0.017	0.941	-0.017	0.004	0.019	0.022	-0.042	0.024

## B. Formative Measurement Model

A summary of the criteria employed for the formative measurement model assessment, which consists of six factors: Arabic language support, free courses' advantages, perceived reputation, intrinsic motivations, the willingness to earn a certificate, and social influence, is presented in Table 6.21.

Table 6.21 The criteria used to evaluate the formative measurement model

Validity type	Criterion	Description	The proposed threshold value	Reference
Indicator validity	Indicators weights	Indicator weight is a measure of its relative importance. A significant weight indicates that the indicator is appropriate for the construction of the formative index.	<ul style="list-style-type: none"> <li>Estimated weights should be significant at 0.05 level.</li> <li>Certain authors suggest the path coefficients to be above .100 or .200.</li> </ul>	Lohmöller (1989) Chin (1998) Kock (2014)
	Variance inflation factor (VIF)	VIF is a measure of the degree of multicollinearity between the indicators. "The VIF indicates how much of an indicator's variance is explained by the other	VIF<10	Fornell & Bookstein (1982) Cassel, Hackl & Westlund (2000)

		<i>indicators of the same construct" (Urbach &amp; Ahlemann, 2010, p.20).</i>		Gujarati (2003) Diamantopoulos & Siguaw (2006)
<b>Construct validity:</b> <b>Discriminant validity</b>	Inter-construct correlations	Examine how each formative construct is distinct from other constructs in the model by assessing the correlations between the constructs.	The correlations between the formative and the remaining constructs should be <.71	MacKenzie, Podsakoff & Jarvis (2005) Bruhn, Georgi & Hadwich (2008)

### B.1. Indicator Validity: Multicollinearity and Indicators Weights

It can be seen from the data in Table 6.22 that most indicators have shown the ideal value of VIF (less than 3.3). PR5, IM1, and SI1 have VIF values below 5, while SI2 and SI3 have VIF values lower than 10, which means that no harmful multicollinearity was detected among the formative indicators. Further, the results of indicators weights and p values revealed that all the weights are significant at the 0.001 level. In addition, all the path coefficients (indicator weights) are greater than .100. Therefore, all the indicators were kept in the measurement model for further analysis.

**Table 6.22 Multicollinearity and indicators weights assessment**

Indicator	VIF	Indicator Weight	P value
ALS1	2.198	0.247	<0.001
ALS2	2.363	0.251	<0.001
ALS3	1.872	0.250	<0.001
ALS4	1.186	0.152	<0.001
ALS5	1.243	0.174	<0.001
ALS6	1.647	0.191	<0.001
ALS7	1.649	0.206	<0.001
FCA1	1.560	0.181	<0.001
FCA2	1.635	0.184	<0.001
FCA3	2.633	0.223	<0.001
FCA4	1.984	0.204	<0.001
FCA5	1.767	0.195	<0.001
FCA6	1.238	0.140	<0.001
FCA7	2.177	0.214	<0.001
PR1	2.158	0.156	<0.001
PR2	2.362	0.162	<0.001
PR3	3.042	0.173	<0.001
PR4	3.154	0.171	<0.001
PR5	3.383	0.174	<0.001

Indicator	VIF	Indicator Weight	P value
PR6	1.954	0.151	<0.001
PR7	1.476	0.120	<0.001
PR8	2.051	0.153	<0.001
IM1	3.319	0.186	<0.001
IM2	3.054	0.182	<0.001
IM3	2.586	0.182	<0.001
IM4	2.775	0.185	<0.001
IM5	2.423	0.180	<0.001
IM6	1.537	0.139	<0.001
IM7	2.290	0.176	<0.001
WEC1	2.359	0.151	<0.001
WEC2	2.869	0.160	<0.001
WEC3	3.197	0.153	<0.001
WEC4	3.276	0.158	<0.001
WEC5	3.180	0.164	<0.001
WEC6	2.214	0.144	<0.001
WEC7	2.047	0.148	<0.001
WEC8	2.591	0.161	<0.001
SI1	4.530	0.299	<0.001
SI2	6.253	0.307	<0.001
SI3	5.159	0.305	<0.001
SI4	1.395	0.218	<0.001

## B.2. Construct Validity: Discriminant Validity

As presented in Table 6.23, the correlations between the formative constructs and the remaining constructs (non-shaded values) are below .71, indicating that the constructs differ from each other (non-presence of redundancy).

**Table 6.23 Discriminant validity assessment**

	PEU	PU	CI	ALS	FCA	PR	IM	WEC	SI
ALS	0.377	0.523	0.449	0.669	0.437	0.550	0.507	0.396	0.216
FCA	0.321	0.401	0.385	0.437	0.739	0.453	0.454	0.313	0.224
PR	0.421	0.628	0.538	0.550	0.453	0.789	0.676	0.467	0.391
IM	0.418	0.619	0.669	0.507	0.454	0.676	0.810	0.434	0.321
WEC	0.171	0.407	0.341	0.396	0.313	0.467	0.434	0.806	0.523
SI	0.091	0.292	0.199	0.216	0.224	0.391	0.321	0.523	0.878

In summary, the assessment of the measurement model showed evidence that the measurement model fulfilled the desired quality criteria. Therefore, the next step is evaluating the structural model.

### 6.2.2. Assessing the Structural Model

Table 6.24 illustrates the criteria used to evaluate the structural model in the current study.

**Table 6.24 The criteria used to evaluate the structural model**

Criterion	Description	Proposed threshold value	Reference
<b>Coefficient of determination (<math>R^2</math>)</b>	"Measure the explained variance of a latent variable (LV) relative to its total variance" (Urbach & Ahlemann, 2010, p.21).	<b>Substantial:</b> values around 0.670 <b>Moderate:</b> values around 0.333 <b>Weak:</b> values around 0.190	Chin (1998) Ringle (2004)
<b>Path coefficient (<math>\beta</math>)</b>	Provide estimates of the algebraic sign, magnitude, and significance of hypothesised correlations between the latent variables.	<b>Sign:</b> + or –. <b>Magnitude:</b> the effect of exogenous variable on endogenous variable increases as the value of path coefficient increases. <b>Significance:</b> $p < 0.05$	Huber et al. (2007)
<b>Effect size: Cohen's <math>f^2</math></b>	"Measure if an independent LV has a substantial impact on a dependent LV" (Urbach & Ahlemann, 2010, p.21).	<b>Too weak:</b> below 0.020 <b>Small:</b> between 0.020 and 0.150 <b>Medium:</b> between 0.150 and 0.350 <b>Large:</b> above 0.350	Cohen (1988) Chin (1998) Ringle (2004)
<b>Predictive relevance (<math>Q^2</math>)</b>	Measure how well observed values are reproduced by the model.	$Q^2 > 0$	Stone (1974) Geisser (1975) Fornell & Cha (1994)

#### A. Assessment of Coefficient of Determination, $R^2$

The antecedents of the perceived usefulness and the perceived ease of use explain 53.3% (relatively moderate) and 22.1% (relatively weak) of the variance in perceived usefulness and perceived ease of use, respectively. The perceived reputation explains 21.8% (relatively weak) of the variance in

the willingness to earn a certificate. Finally, the antecedents of the continuance intention explain 49.1% (relatively moderate) of the variance in the continuance intention. Table 6.25 demonstrates the coefficient of determination for each of the endogenous variables in the proposed model.

**Table 6.25 Assessment of coefficient of determination**

	<b>PU</b>	<b>PEU</b>	<b>WEC</b>	<b>CI</b>
<b>R<sup>2</sup></b>	0.533	0.221	0.218	0.491

**The coefficient of determination, R<sup>2</sup>:**

$$1 - \frac{SS_E}{SS_{YY}}$$

$$SS_E = \sum (Y - \hat{Y})^2$$

$$SS_{YY} = \sum (Y - \bar{Y})^2$$

Y = the actual value;  $\hat{Y}$  = the predicted value of Y;  $\bar{Y}$  = the mean of Y values

## **B. Assessment of Effect Size, f<sup>2</sup>**

Table 6.26 presents the effect size of the exogenous latent variables on the endogenous latent variables' R<sup>2</sup> value. Most of the variables were shown to have a small effect size, while five variables were revealed to have a too weak effect (FCA→PU, FCA→CI, WEC→CI, SI→PU, and SI→CI), and only two variables have had a medium effect (PR→WEC and IM→CI). As shown in Table 6.26, the values of the effect size range between 0.007 and 0.313.

**Table 6.26 Assessment of effect size**

<b>Path</b>	<b>f<sup>2</sup></b>	<b>Inference</b>
PU→ CI	0.060	PU has a small effect on CI
PEU→ PU	0.116	PEU has a small effect on PU
PEU→ CI	0.028	PEU has a small effect on CI
ALS→ PEU	0.072	ALS has a small effect on PEU
ALS→ PU	0.073	ALS has a small effect on PU
ALS→ CI	0.043	ALS has a small effect on CI
FCA→ PEU	0.037	FCA has a small effect on PEU
FCA→ PU	0.007	FCA has too weak effect on PU
FCA→ CI	0.014	FCA has too weak effect on CI
PR→ PU	0.149	PR has a small effect on PU
PR→ CI	0.033	PR has a small effect on CI
PR→ WEC	0.218	PR has a medium effect on WEC

Path	f <sup>2</sup>	Inference
IM → PEU	0.113	IM has a small effect on PEU
IM → PU	0.148	IM has a small effect on PU
IM → CI	0.313	IM has a medium effect on CI
WEC → PU	0.034	WEC has a small effect on PU
WEC → CI	0.011	WEC has too weak effect on CI
SI → PU	0.007	SI has too weak effect on PU
SI → CI	0.012	SI has too weak effect on CI

Cohen's f<sup>2</sup>:

$$\frac{R^2}{1 - R^2}$$

R<sup>2</sup> = the coefficient of determination

### C. Predictive Relevance, Q<sup>2</sup>

As illustrated in Table 6.27, the predictive relevance of each of the endogenous variables exceeds the cut-off point proposed in the literature, as all the values are higher than zero.

Table 6.27 Predictive relevance assessment

	PU	PEU	WEC	CI
Q <sup>2</sup>	0.535	0.222	0.219	0.491

Predictive Relevance, Q<sup>2</sup>:

$$1 - \frac{\sum_D E_D}{\sum_D O_D}$$

**E** = The sum of squares of prediction error; **O** = The sum of squares error using the mean for prediction; **D** = Omission distance

### D. Model Fit and Quality Indices

Evaluating the model fit indices is a useful step before examining the hypothesised correlations. In general, the model fit statistics provide evidence of how well the model fits the observations from the field. In Warp-PLS, there is no established universal GoF indices as in CB-SEM tools (Roxas, 2014). Thereby, five model fit and quality indices provided by Warp-PLS were used in this study,

namely the average path coefficient (APC), the average  $R^2$  (ARS), the average block variance inflation factor (AVIF), the average full collinearity VIF (AFVIF), and the Tenenhaus GoF (GoF). The definitions of each of these indices are demonstrated in Table 6.28 (Kock, 2015a).

**Table 6.28 Definitions of the model fit and quality indices**

Fit indices	Definition
APC	Average strength and significance of the paths in the model.
ARS	Average predictive power of the exogenous variables to explain the variations in the endogenous variables.
AVIF	Average of the degree of vertical collinearity in the model's latent variable blocks.
AFVIF	Average of the degree of full collinearity (multicollinearity) in the model.
GoF	A measure of a model's explanatory power.

As illustrated in Table 6.29, all the indices showed satisfactory values, demonstrating that the model fits the data well. The model's explanatory power is 0.488 which is deemed large.

**Table 6.29 Model fit and quality indices of the proposed model**

Model Indices	Value	Criterion
APC	0.155, $p < 0.001$	Acceptable if $p < 0.05$
ARS	0.366, $p < 0.001$	Acceptable if $p < 0.05$
AVIF	1.704	Acceptable if $\leq 5$ , ideally $\leq 3.3$
AFVIF	1.880	Acceptable if $\leq 5$ , ideally $\leq 3.3$
GoF	0.488	Small $\geq 0.1$ , medium $\geq 0.25$ , large $\geq 0.36$

## E. Assessment of the Proposed Hypotheses

Table 6.30 and Figure 6.13 present the structural model results (path coefficients and p values for the model's paths). In this study, the null hypothesis is rejected (accepting the alternative hypothesis) if the p value  $< 0.05$ . The p values in this study were reported using a one-tailed test supported by Warp-PLS as it is suggested to use this type of test if the path coefficients are hypothesized to have a sign (+ or -) (Kock, 2015b). Fourteen out of nineteen hypotheses were supported by the data (positive and significant path). The hypotheses H4, H7, H8, and H17 were rejected because the p values associated with these hypotheses were not statistically significant. H14 was not supported due to the negative sign of the estimated path coefficient, which is the opposite of what was assumed.



Table 6.30 Structural model results (hypotheses testing) of the proposed model

Hypothesis	Path coefficient, $\beta$	P value	Standard error	Result
H1: PU $\rightarrow$ CI	0.113	<0.001	0.033	Supported
H2: PEU $\rightarrow$ CI	0.069	0.020*	0.033	Supported
H3: ALS $\rightarrow$ CI	0.093	0.003**	0.033	Supported
H4: FCA $\rightarrow$ CI	0.037	0.134	0.034	Not supported
H5: PR $\rightarrow$ CI	0.061	0.034*	0.033	Supported
H6: IM $\rightarrow$ CI	0.468	<0.001	0.032	Supported
H7: WEC $\rightarrow$ CI	0.034	0.158	0.034	Not supported
H8: FCA $\rightarrow$ PU	0.018	0.298	0.034	Not supported
H9: PR $\rightarrow$ PU	0.237	<0.001	0.033	Supported
H10: IM $\rightarrow$ PU	0.239	<0.001	0.033	Supported
H11: PEU $\rightarrow$ PU	0.230	<0.001	0.033	Supported
H12: FCA $\rightarrow$ PEU	0.115	<0.001	0.033	Supported
H13: IM $\rightarrow$ PEU	0.270	<0.001	0.033	Supported
H14: SI $\rightarrow$ CI	-0.061	0.035*	0.033	Not supported
H15: ALS $\rightarrow$ PU	0.139	<0.001	0.033	Supported
H16: WEC $\rightarrow$ PU	0.081	0.008**	0.033	Supported
H17: SI $\rightarrow$ PU	0.025	0.230	0.034	Not supported
H18: ALS $\rightarrow$ PEU	0.190	<0.001	0.033	Supported
H19: PR $\rightarrow$ WEC	0.467	<0.001	0.032	Supported

\*  $p < 0.05$ ; \*\*  $p < 0.01$  (one-tailed test)

According to the estimated path coefficients, the antecedents that have the strongest and significant effect on each of the endogenous variables are shown in Table 6.31. In this table, for each endogenous variable, the antecedents are presented in descending order according to the strength of their influence on the endogenous variables ( $\beta$ ).

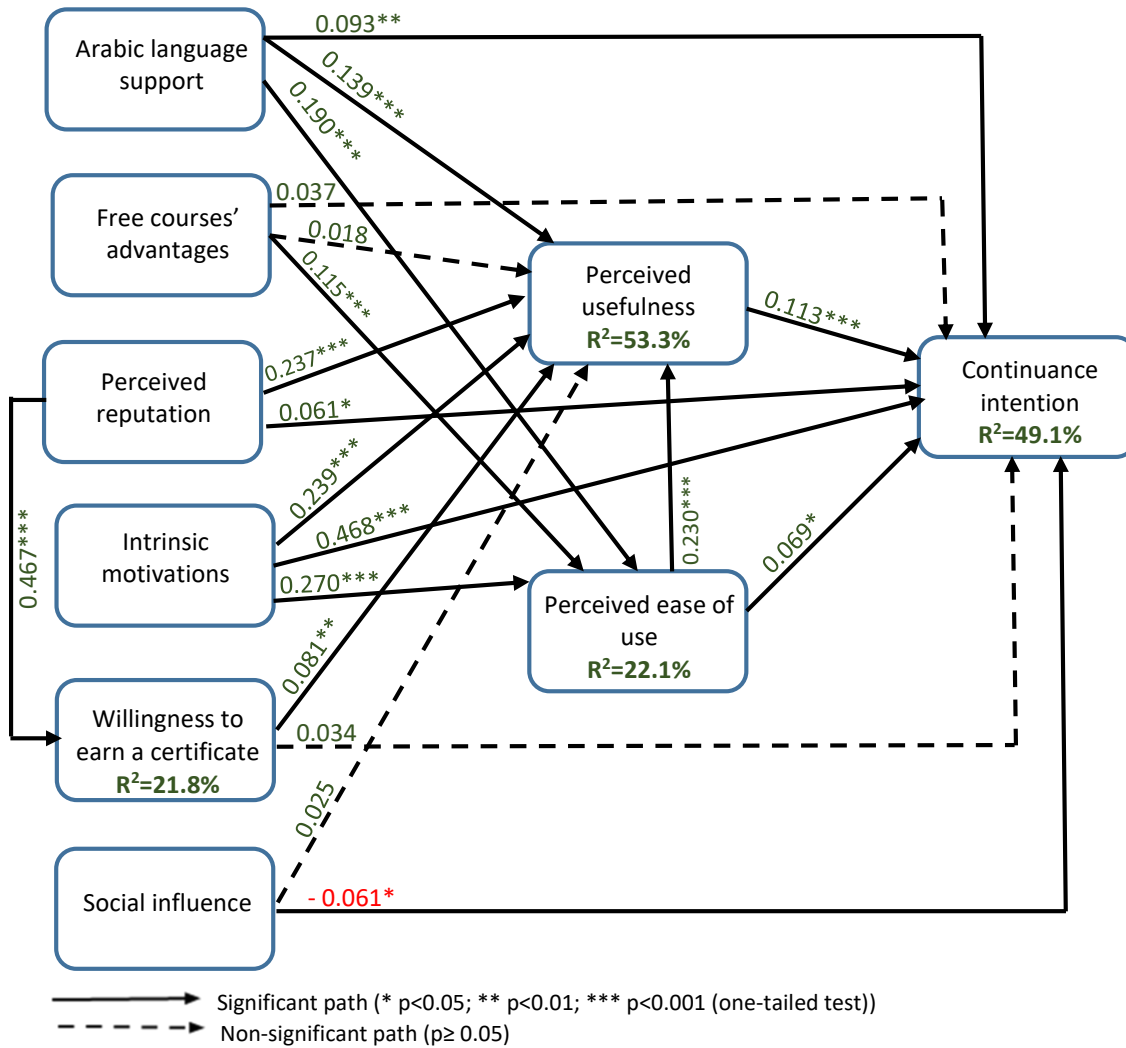


Figure 6.13 Structural model results (hypotheses testing) of the proposed model

Table 6.31 Strength of the influence of the antecedents of the endogenous variables on the endogenous variables

Endogenous variable	Antecedent	Path coefficient, $\beta$
PU	IM	0.239
	PR	0.237
	PEU	0.230
	ALS	0.139
	WEC	0.081
PEU	IM	0.270
	ALS	0.190
	FCA	0.115
WEC	PR	0.467
CI	IM	0.468
	PU	0.113
	ALS	0.093
	PEU	0.069
	PR	0.061

### F. Modifying the Structural Model by Removing the Non-Significant Paths (Theory Trimming)

As shown in the preceding section, five hypotheses out of nineteen hypotheses were not accepted. Hence, the structural model was re-specified through eliminating the insignificant correlations to possibly yield a parsimonious model that better fits the observations (Pedhauzer, 1982; Chandio, 2011; Barba, Kennedy & Ainley, 2016). The model fit indices of the initial model are approximately similar to the model fit indices of the modified model (the model without the insignificant paths). Consequently, the model was modified by deleting the insignificant paths. Table 6.32 and Figure 6.14 demonstrate the structural model results of the final revised model after deleting the non-significant paths.

**Table 6.32 Structural model results (hypotheses testing) of the final revised model**

Hypothesis	Path coefficient, $\beta$	P value	Standard error	Result
H1: PU $\rightarrow$ CI	0.119	<0.001	0.033	Supported
H2: PEU $\rightarrow$ CI	0.078	0.010*	0.033	Supported
H3: ALS $\rightarrow$ CI	0.078	0.010*	0.033	Supported
H5: PR $\rightarrow$ CI	0.063	0.030*	0.033	Supported
H6: IM $\rightarrow$ CI	0.479	<0.001	0.032	Supported
H9: PR $\rightarrow$ PU	0.245	<0.001	0.033	Supported
H10: IM $\rightarrow$ PU	0.243	<0.001	0.033	Supported
H11: PEU $\rightarrow$ PU	0.230	<0.001	0.033	Supported
H12: FCA $\rightarrow$ PEU	0.115	<0.001	0.033	Supported
H13: IM $\rightarrow$ PEU	0.270	<0.001	0.033	Supported
H15: ALS $\rightarrow$ PU	0.141	<0.001	0.033	Supported
H16: WEC $\rightarrow$ PU	0.094	0.003**	0.033	Supported
H18: ALS $\rightarrow$ PEU	0.190	<0.001	0.033	Supported
H19: PR $\rightarrow$ WEC	0.467	<0.001	0.032	Supported

\*  $p < 0.05$ ; \*\*  $p < 0.01$  (one-tailed test)

Table 6.33 presents the antecedents that have the strongest influence on each of the endogenous variables after re-estimating the model. The estimated model fit indices after deleting the insignificant paths are illustrated in Table 6.34. From this table, it can be seen that only the value of APC showed improvement after re-estimating the model where the average strength of the relationships between the variables is increased. In contrast, the model before re-specification has a larger average predictive power of the exogenous variables (ARS), a lower degree of vertical collinearity (AVIF), a lower degree of multicollinearity (AFVIF), and a larger explanatory power (GoF). Consequently, it can be concluded that deleting the insignificant correlations from the model

did not produce better data-model fit. Appendix N shows the SEM analysis results (all the estimates) of the final revised model using Warp-PLS 5.0.

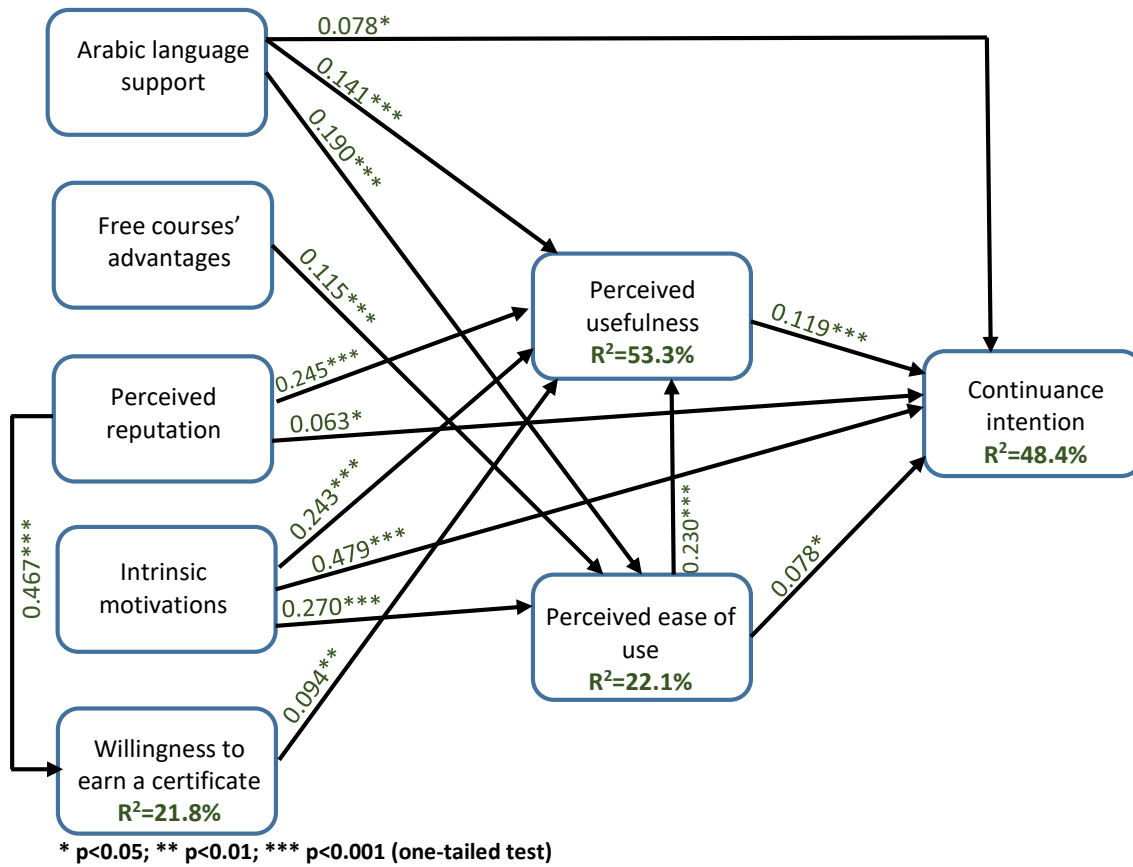


Figure 6.14 Structural model results (hypotheses testing) of the final revised model

Table 6.33 Strength of the influence of the antecedents of the endogenous variables on the endogenous variables

Endogenous variable	Antecedent	Path coefficient, $\beta$
PU	PR	0.245
	IM	0.243
	PEU	0.230
	ALS	0.141
	WEC	0.094
PEU	IM	0.270
	ALS	0.190
	FCA	0.115
WEC	PR	0.467
CI	IM	0.479
	PU	0.119
	ALS	0.078
	PEU	0.078
	PR	0.063

**Table 6.34 Model fit and quality indices of the final revised model**

Model Indices	Value	Criterion
APC	0.201, $p < 0.001$	Acceptable if $p < 0.05$
ARS	0.364, $p < 0.001$	Acceptable if $p < 0.05$
AVIF	1.719	Acceptable if $\leq 5$ , ideally $\leq 3.3$
AFVIF	1.884	Acceptable if $\leq 5$ , ideally $\leq 3.3$
GoF	0.481	Small $\geq 0.1$ , medium $\geq 0.25$ , large $\geq 0.36$

### G. Indirect Effects

This study did not formulate hypotheses regarding the indirect effects and mediation. Nevertheless, Tables 6.35 and 6.36 show the results of mediation analysis and indirect effects using Warp-PLS. The results shown in these tables indicate that all the indirect effects on the continuance intention are statistically non-significant. Only the following indirect effects on perceived usefulness were found to be statistically significant:

1. The indirect effect of ALS on PU mediated by PEU.
2. The indirect effect of IM on PU mediated by PEU.
3. The indirect effect of PR on PU mediated by WEC.

**Table 6.35 Path coefficients of indirect effects for paths with 2 segments**

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU								
PU				0.044*	0.026 <sup>n</sup>	0.044*	0.062**	
CI	0.027 <sup>n</sup>			0.032 <sup>n</sup>	0.009 <sup>n</sup>	0.029 <sup>n</sup>	0.050 <sup>n</sup>	0.011 <sup>n</sup>

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; n=non-significant

**Table 6.36 Path coefficients of indirect effects for paths with 3 segments**

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU								
PU								
CI				0.005 <sup>n</sup>	0.003 <sup>n</sup>	0.005 <sup>n</sup>	0.007 <sup>n</sup>	

n=non-significant

Next section shows the discussion of the quantitative results obtained in this study.

### 6.3. Discussion of the Quantitative Results

This study set out to examine the factors which motivate learners to develop positive intentions towards continuing to use Arabic MOOCs exemplified by the Rwaq platform. The TAM was adopted as a theoretical foundation. Many variables were added, however, to the TAM by the researcher namely, Arabic language support, free courses' advantages, perceived reputation, intrinsic motivations, the willingness to earn a certificate, and social influence. The empirical results supported the effectiveness of extending the TAM for investigating the adoption of MOOCs in the Arabic world. In general, a majority of respondents agreed with the constructed items which were measured in the proposed model and were willing to continue using Arabic MOOCs in the future. This result suggests the advantage of delivering localised (domestic) Arabic MOOCs to fit Arabic learners' culture and empower open online learning in the Arabic region.

The results of testing the hypotheses have shown that perceived usefulness, perceived ease of use, Arabic language support, perceived reputation, and intrinsic motivations have a direct influence on the continuance intention of learners. In addition, perceived ease of use, Arabic language support, perceived reputation, intrinsic motivations, and willingness to earn a certificate all have a direct impact on the perceived usefulness. Furthermore, perceived ease of use was directly affected by intrinsic motivations, Arabic language support, and free courses' advantages. Perceived reputation was found to have a direct impact on the willingness to earn a certificate. Managerial implications were provided for MOOC developers, policy makers, and instructors based on this research's results. Such implications can guide Arabic MOOCs providers to take appropriate means and actions to retain learners in the platforms.

#### 6.3.1. Descriptive Statistics of the Constructs' Items

The ratings of the constructs' items (Tables 6.3 to 6.11) are discussed in the following sub-sections. Based on the 5-point Likert scale used in this research, the item or the construct with a mean score greater than 3 (neutral point) implies that the respondents have positively agreed on that item or construct.

##### A. Perceived Usefulness

Item PU2, 'Using Rwaq helps me to develop my knowledge or skills', received the highest mean

score (4.52), suggesting that the respondents believe that Rwaq courses have the ability to improve one's knowledge or skills. In contrast, item PU6, 'Using Rwaq assists me in developing my knowledge or skills in the field of academic study or career', was found to have the lowest mean score (4.30). One possible reason for this result is that Rwaq courses do not cover a wide enough range of topics in order to cater to the curricula that students are receiving at their universities or the tasks which employees need to have in their workplaces. Thus, this finding may encourage the Rwaq platform to provide more courses which meet the needs of their learners, either in terms of academia or career. Overall, the average mean score of all the items of the perceived usefulness factor was 4.43, which denotes that the respondents agreed on the usefulness of Rwaq courses in learning.

#### **B. Perceived Ease of Use**

The average mean score of all the items of perceived ease of use was 4.43. This finding shows that the sample agreed that the Rwaq platform is easy to use. The highest mean score was 4.51 for the statement coded PEU5, 'In general, I find Rwaq easy to use', pointing out that the participants agreed on Rwaq's ease of use. On the other hand, PEU4, 'The use of Rwaq does not require a lot of mental effort', received the lowest mean score (4.26) compared to the remaining items.

#### **C. Arabic Language Support**

The measurement item ALS6, 'The Arabic platforms such as Rwaq are an opportunity to enrich and enhance the Arabic content on the Internet (e.g. Rwaq helps to increase the number of the Internet sources of information in Arabic)', has the highest mean score (4.63). This result shows that the participants agreed that digital Arabic content needs to be enriched and that developing Arabic platforms is one of the possible solutions to this dilemma. On the other hand, item ALS4, 'I will face language problems when using an educational platform that does not support my Arabic language', has the lowest mean score (3.72), indicating that the other languages — often the English language — are not a great barrier for the participants to engage in MOOCs that do not support Arabic language. Overall, the average mean score of all the items of this construct is 4.36. This reveals that the respondents were agreeable to the positive role that the Arabic language plays in facilitating learning for them as learners.

#### **D. Free Courses' Advantages**

The participants gave the highest rate (4.72) to item FCA5, 'Free Rwaq courses help those with poor financial status to develop their knowledge', demonstrating their belief that the free courses offer a great advantage to those people receiving low incomes seeing as they assist them in receiving an education. Conversely, item FCA6, 'Free Rwaq courses are useful to me if I am not sure of my commitment to complete the courses', was rated low (4.20) when compared to the other items under this construct. This perhaps means that the respondents did not strongly link the advantage of free courses to their commitment to complete those courses. Overall, the average mean score of all the items of this construct was 4.51. Since this is above the neutral point, this reflects the fact that the respondents liked the advantages of courses at no cost.

#### **E. Perceived Reputation**

The average mean score of all the items of this factor was 4.36. This highlights the fact that the respondents of the survey thought Rwaq to be a reputable platform. Item PR6, 'I have a positive feeling about the Rwaq platform (e.g. respect or admiration)', received the highest mean score among all the other items (4.58), suggesting that Rwaq is a highly regarded platform. On the other hand, the mean score for item PR7, 'In my opinion, Rwaq is interested in communicating with the users regarding their problems or needs', was the lowest (3.96). This indicates that the Rwaq platform is not very effective at providing customer service and replying to complaints and suggestions.

#### **F. Intrinsic Motivations**

It was found that item IM1, 'I enjoy learning new topics in Rwaq', has the highest rate, obtaining a mean score of 4.52. This implies that the main intrinsic motivation of learners for joining Rwaq was the joy that they received when exploring new subjects. Contrariwise, item IM6, 'In Rwaq, I have the curiosity to explore topics in disciplines that have nothing to do with my academic specialization', received the lowest mean score (4.33). This finding suggests that the respondents may be more interested in exploring topics related to their academic specialization for the purpose, perhaps, of applying that knowledge to their own study or job. In general, the average mean score for the intrinsic motivations' items was 4.45, indicating that the participants expressed positive responses to the intrinsic motivations factor.



### **G. Willingness to Earn a Certificate**

Item WEC6, 'Obtaining a certificate of course completion in Rwaq gives me a positive feeling (e.g. a sense of accomplishment, a sense of appreciation for my efforts in the course, etc.)', was rated highly among the participants, obtaining a mean score of 4.54. This means that the main advantage of earning the certificates for learners is associated with self-satisfaction and a feeling of being pleased with what they have done. On the other hand, item WEC3, 'Obtaining a certificate of course completion from Rwaq may help me in order to differentiate myself in the workplace, apply for a job, compete in a competition, etc.', was rated low by the respondents of the questionnaire, obtaining a mean score of 3.86. This result suggests that certificates granted by MOOCs are often not recognised or valued by employers or educational institutions. The average mean score of all the items pertaining to the willingness to earn a certificate was 4.20, which indicates that the participants were in agreement regarding the benefits of earning certificates.

### **H. Social Influence**

Item SI4, 'In the social networking accounts of Rwaq, such as Twitter and Facebook, the views of people who have used Rwaq for learning and who have held a positive stance about the platform have encouraged me to utilise it', was found to have the highest mean score (3.95). Although this value surpasses the neutral point (3), it suggests that the respondents are not influenced much by the people's opinions about Rwaq in social networks. The lowest mean score (3.43) was assigned to item SI2: 'People who are important to me advise me to use Rwaq (e.g. friends, co-workers, teachers, relatives, my employer, etc.)'. This means that there was an absence of strong encouragement from the participants' friends, relatives, or their reference groups. This result could be due to the fact that the prevalence of the notion of MOOCs in the Arabic region is still in its early stage or that the reference groups of the respondents are not satisfied with the Rwaq platform. In general, the average mean score of the construct's items is 3.57, suggesting that the respondents moderately agreed upon the presence of encouragement from their reference groups with regards to using Rwaq.

### **I. Continuance Intention**

The results of this study show that the mean scores for the three items which measure the continuance intention range between 4.56 ( $\pm 0.631$ ) and 4.61 ( $\pm 0.595$ ). The mean score of item CI1, 'I

intend to continue to use Rwaq in the future', was the highest (4.61), while the mean score of item CI2, 'I predict I would continue to use Rwaq in the future', was the lowest (4.56). Overall, the average mean score of the items of this construct was 4.58, which is greater than the neutral point (3). This reflects the strong positive continuance intention of the participants towards using Arabic MOOCs (Rwaq).

Generally, the results of rating the constructs' items indicated a positive attitude towards the factors measured among the sample surveyed in this study.

### **6.3.2. The Testing of the Hypotheses**

In this study, most of the hypothesised paths (14 out of 19) were supported by the data. This finding points out to a successful extension of the TAM model in the context of this study. The discussion of the results of the testing of the hypotheses is presented in the following subsections.

#### **A. Perceived Usefulness and Its Effect on the Continuance Intention**

In this study, the theoretical model hypothesised that perceived usefulness would have a significant positive effect on the continuance intention to use MOOCs (H1). The path coefficient and p value for this hypothesis are: ( $\beta=0.119$ ,  $p<0.001$ ). As such, this hypothesis was supported. Perceived usefulness is the second strongest antecedent of the continuance intention towards using MOOCs.

It was highly expected that this hypothesis would be supported. This result concurs with TAM, UTAUT, ISCM, and, as was indicated before in Chapter 3, with the results of previous studies. This finding strongly and obviously implies that if the individuals achieve their educational goals in MOOCs (e.g. acquiring useful knowledge or skills and learning effectively), they will readily use MOOCs in the future.

#### **B. Perceived Ease of Use and Its Effect on the Continuance Intention and Perceived Usefulness**

In this research, it was hypothesised that the perceived ease of use would have a positive significant effect on the continuance intention to use MOOCs (H2). It was also hypothesised that the perceived ease of use would have a significant positive effect on the perceived usefulness (H11). The parameter estimates for these hypotheses are: ( $\beta=0.078$ ,  $p=0.010$ ) and ( $\beta =0.230$ ,  $p<0.001$ ), respectively. Accordingly, both hypotheses were accepted. It was shown that the perceived ease of

use is the third strongest predictor of the continuance intention. This may suggest that most of the respondents of this survey are technologically savvy (El-Masri & Tarhini, 2017), particularly because they are experienced users of the platform. Therefore, the other factors (intrinsic motivations, perceived usefulness) were more influential than the perceived ease of use.

The significant and positive influence of the perceived ease of use on the intention to persist to use platforms is, as outlined earlier, consistent with the TAM model and with prior research findings. Nevertheless, this result does not agree with the results reported by Xu (2015) and Chu et al. (2015), who stated that learners' intention to attend MOOCs is not significantly affected by the perceived ease of use. The ease of use of the platforms is an effective factor, particularly because engagement in the platforms is usually not mandatory. Therefore, it is obvious that an easy-to-use platform could affect a learner's preference, while difficulties whilst using the platform may create learner resistance. It can consequently be said that, if individuals cannot overcome the difficulties associated with using the platform, they will simply leave the platform and find other, easier-to-use alternatives which require less effort to achieve tasks.

In addition, this study showed evidence that perceived usefulness is significantly impacted by perceived ease of use. Perceived ease of use is the third strongest predictor of perceived usefulness. Nevertheless, Xu (2015) proffered a different result, where perceived ease of use was found to have an insignificant influence on perceived usefulness. The justification of the result obtained in this research is that, if learners found that the platform requires minimum effort to learn and use (e.g. it provides a friendly user interface or organised contents), their perceptions about the usefulness of the platform would be strengthened. This is because the ease of use of platforms would save them time and effort, thereby allowing them to learn more effectively, complete more tasks quickly and easily, and engage more in the platforms. Furthermore, the Rwaq platform is easily accessible and facilitates flexible learning at any time, from anywhere, and via a milieu of devices, such as desktop PCs, laptops, smartphones, and tablets. In this way, learners using the platform, whether they be busy employees or students, can arrange their schedules and the tasks required of them both more effectively and easily.

### C. The Arabic Language Support and Its Effect on the Continuance Intention, Perceived Usefulness, and Perceived Ease of Use

In the proposed model, it was hypothesised that the Arabic language support factor would have a significant and positive influence on the continuance intention to use MOOCs (H3), perceived usefulness (H15), and perceived ease of use (H18). The path coefficient and p value for these hypotheses are: ( $\beta=0.078$ ,  $p=0.010$ ), ( $\beta=0.141$ ,  $p<0.001$ ), and ( $\beta=0.190$ ,  $p<0.001$ ), respectively. Based on this result, all of these hypotheses were accepted. It was revealed that the Arabic language support is the third strongest indicator of the continuance intention.

According to the respondents' profile in this study, it was apparent that the number of respondents with an intermediate level in English was 400; the number of respondents with an advanced level of English was 160; and the number of respondents who were skilled in English was 32. Although the English level of most of the respondents ( $n=592$ ) was above the level of novice, the factor of Arabic language support was important for deciding whether or not to continue using MOOCs. The obvious explanation for this result is that Arabic is their native language and, hence, their being able to learn via Arabic-supported platforms would be easier and better for them (P23, P27, P30).

Arabic language support is the fourth strongest indicator of perceived usefulness. The acceptance of hypothesis 15 was anticipated because it was thought that Arabic-speaking learners would find courses provided in Arabic more useful for them seeing as they would be able to understand the topics more easily, quickly, and deeply which would, in turn, help them to perform the required tasks quickly. One respondent explained that:

*"The lack of Arabic and respectable MOOCs in the Arabic world makes learners perceive the usefulness of the Rwaq platform because it is distinguished in terms of supporting the Arabic language."* (P23, Learner)

One of the other participants added that:

*"Arabic platforms, like Rwaq, allow me to understand the lecture in a short period of time, as well as more deeply. I have joined Coursera courses provided in English but I did not complete them because of the language barrier. For example, I was not able to*

*understand everything presented and was not confident enough to communicate in English (e.g. asking questions or enquires)."* (P27, Learner)

Other advantages of supporting the Arabic language in Arabic platforms which strengthen the learners' perceptions of the course's usefulness include:

1. Teaching Islamic and Arabic subjects (e.g. the Quran and Arabic poetry);
2. Increasing the Arabic content on the Internet and, hence, promoting learning in the Arabic region.

With respect to hypothesis 18, Arabic language support was found to have the second strongest effect on perceived ease of use. Arabic learners, whether they had any skills in English or not, would understand courses more easily and deeply if the courses were provided in Arabic since it is their mother language (P23). This result suggests that providing Arabic platforms makes the use of platforms and the interaction with them easier and more understandable for Arabic learners. This, in turn, allows them to perceive the usefulness of the courses.

#### **D. Free Courses' Advantages and Its Effect on the Continuance Intention, Perceived Usefulness, and Perceived Ease of Use**

The free courses' advantages factor was assumed to have a significant and positive effect on the continuance intention (H4), perceived usefulness (H8), and perceived ease of use (H12). The parameter estimates for these hypotheses are: ( $\beta=0.037$ ,  $p>0.05$ ), ( $\beta=0.018$ ,  $p>0.05$ ), and ( $\beta=0.115$ ,  $p<0.001$ ), respectively. Therefore, hypotheses 4 and 8 were rejected, whereas hypothesis 12 was supported.

The result of not supporting hypothesis 4 does not concur with the result published by Alraimi, Zo & Ciganek (2015). They had shown that perceived openness significantly and positively affects users' intention to continue using MOOCs. The most likely explanation for this surprising result is that learners in MOOCs have different goals and tasks. In general, people are willing to pay for courses if these courses are effective (Huanhuan & Xu, 2015). Individuals who need some courses to understand difficult subjects in universities and for the purpose of helping them to pass exams, to gain some needed skills for completing essential tasks at work, or to prepare for some required tests, like IELTS or TOEFL, are ready to use MOOCs and sign up for courses, even when those courses

are not free (P23). In addition, some learners participate in MOOCs to develop themselves and to continue learning; thus, these people are also ready to pay if needed (P23, P27):

*"I think that individuals who are interested in learning and love to explore new topics or enjoy learning in platforms do not hesitate to pay for a course to achieve their goals."*  
(P23, Learner)

Also, learners who already had experience using the platform and who had found it to be useful are more motivated to continue using it than newer users, even if some fees were imposed for joining the courses (P27). One interviewee stated one possible reason for this result:

*"People develop positive or passive attitudes to keep using the platform based on more critical factors like ease of use, usefulness of the courses, and experience of the teachers without paying more attention to the fact that courses are free or not."* (P24, Learner)

Another participant held a similar opinion:

*"To me, the Rwaq platform provides valuable courses in terms of useful and comprehensive lectures with homework and tests which are easy to access and use. All these features make me enthusiastic about using Rwaq even if it is not a free platform."*  
(P26, Learner)

Rejecting hypothesis 8 accords with earlier studies conducted by Wu & Chen (2017) and Sa et al. (2016), who revealed that the openness of MOOCs does not have a significant influence on perceived usefulness. This finding, however, is contrary to that of Alraimi, Zo & Ciganek (2015) who indicated that perceived openness has a positive and significant impact on perceived usefulness. This rather unexpected result could be due to individuals' evaluating the usefulness of MOOCs because they were able to gain beneficial knowledge or skills which they needed in an easy and enjoyable way irrespective of whether the courses were free or not. The interviewees declared that people who use the platforms concentrate more on gaining knowledge and not on saving money when they sign up for the courses (P23, P25, P28):

*"I do not assess the usefulness of courses based on factors like openness (i.e. whether courses are free or not). Maybe some free courses are useless, while other paid courses are effective and useful, so I would favor joining the paid courses in this case. People*

*usually do not perceive the usefulness of the courses depending on its monetary costs, but on the content of these courses.” (P23, Learner)*

Also, this result is likely to be related to the fact that employees constitute a high percentage of the respondents of the questionnaire in this research (56.77%), so usually they have a good source of income. Consequently, unlike students or unemployed individuals, employees’ evaluation of the courses’ usefulness is not primarily based on the courses’ monetary cost. A different explanation for this might be that individuals think that, compared to paid courses, the free courses are of bad quality, which may affect their perception of the usefulness of the courses. This, in turn, helps form a negative intent to persist using MOOCs in the future (P29):

*“Some learners may think that free courses are not comprehensive and do not fulfil their needs. It is like brands in the market: most people think that expensive products are better than free or cheap ones, although this is not always true.” (P29, Learner)*

Furthermore, the free courses often decrease the commitment of learners to complete courses. Therefore, they do not get the full benefits of these courses which, in turn, plays an important role in their not realising the usefulness of these courses. In other words, if the courses are paid, the users will respect the deadlines and value the importance of such courses more than if the courses are free (P30).

As expected, the significant and positive influence of the advantages of free courses on the perceived ease of use was supported in the present study. This result matches a result reported in an earlier study by Wu & Chen (2017). On the other hand, this result is not aligned with the result found by Sa et al. (2015), who showed evidence that the effect of openness on perceived ease of use is not significant. Also, the result of this study showed that the factor of the free courses’ advantages has the least impact on perceived ease of use compared to the effects of intrinsic motivations and Arabic language support.

The rationale behind supporting hypothesis 12 is that free courses allow learners of different classes to join any course easily without the restriction of paying money. In other words, the free courses let all people— particularly individuals in a less fortunate financial situation— to overcome the difficulties associated with joining the platforms. Another similar interpretation is that free courses aid learners to take fast decisions to join as many courses as desirable easily because the

courses are free (P23). On the other hand, if the courses are paid, the individual may choose to attend the most important course(s) for him/her according to his/her budget. One of the participants clarified this by saying that:

*“The advantage of providing free courses in Rwaq greatly encourages me to join the platform. If the courses are paid for, it will not be as easy for me to join the platform because I would not be sure whether the course would be useful for me or not.”* (P25, Learner)

Additionally, some learners who are not able to commit to completing the courses for different reasons, such as a shortage of time or not having sufficient motivation, will not consider withdrawing from paid courses as easily vis-à-vis from free courses. That is to say, if the courses are not free, it will be difficult for an individual to withdraw from those courses because he/she will lose the money that they paid for the course. In general, advantages of free courses, like saving money by attending free courses, is an important factor which determines a platform’s perceived ease of use.

#### **E. Perceived Reputation and Its Effect on the Continuance Intention, Perceived Usefulness, and Willingness to Earn a Certificate**

In this study, perceived reputation was hypothesised to have a significant and positive effect on the continuance intention to use MOOCs (H5), perceived usefulness (H9), and willingness to earn a certificate (H19). The parameter estimates for these hypotheses are: ( $\beta=0.063$ ,  $p=0.030$ ), ( $\beta=0.245$ ,  $p<0.001$ ), and ( $\beta=0.467$ ,  $p<0.001$ ), respectively. Consequently, all these hypotheses were supported.

Accepting hypothesis 5 reflects prior research findings, as denoted earlier. On the other hand, this result is different from a result cited by Huanhuan & Xu (2015), who found that perceived reputation has an insignificant impact on the intention to adopt MOOCs. Rationally, learners would want to continue to use MOOCs if they have a good reputation in terms of providing high quality courses taught by experts and qualified teachers (P24, P29). All the other factors (intrinsic motivations, perceived usefulness, Arabic language support, and perceived ease of use), however, have a stronger effect on the continuance intention than the effect of perceived reputation. A plausible explanation for this result is that the learners may focus on the usefulness of MOOCs in



terms of getting the required information (e.g. the courses are related to their study or job) more than concentrating on the reputation of the platforms when choosing to continue using MOOCs or not (P26).

This study confirmed that perceived reputation is the strongest indicator of perceived usefulness. Thus, perceived reputation acts as an essential faith in determining perceptions regarding the usefulness of platforms. This means that, if the courses are taught by non-qualified teachers, or if the courses are of bad quality, the learner will not learn effectively and, hence, not perceive the usefulness of the courses, thereby making it more likely that they may abandon the platform.

As anticipated, perceived reputation has a significant positive effect on the willingness to earn a certificate. This result strongly suggests that learners are eager to obtain certificates from reputable and well-respected platforms seeing as such certificates are appreciated by employers and educational institutions. Perceived reputation has an indirect effect on perceived usefulness mediated by the willingness to earn a certificate.

#### **F. Intrinsic Motivations and Its Effect on the Continuance Intention, Perceived Usefulness, and Perceived Ease of Use**

In the proposed theoretical model, it was hypothesised that intrinsic motivations would have a significant and positive effect on the continuance intention to use MOOCs (H6), perceived usefulness (H10), and perceived ease of use (H13). The path coefficient and p value for these hypotheses are: ( $\beta=0.479$ ,  $p<0.001$ ), ( $\beta=0.243$ ,  $p<0.001$ ), and ( $\beta=0.270$ ,  $p<0.001$ ), respectively. Thus, all of these hypotheses were supported.

The intrinsic motivations factor, such as enjoyment, curiosity, and interest, was found to be the strongest antecedent of the continuance intention towards using MOOCs. This result was expected and coincides with the findings of previous studies, as was shown earlier. Nevertheless, it was shown that perceived playfulness (Chu et al., 2015) and perceived enjoyment (Mulik, Yajnik & Godse, 2016) have no significant relation with learners' intention to use MOOCs.

Because participation in MOOCs mainly depends on an individual's interest in using open platforms (Liyanagunawardena, Adams & Williams, 2013), the intrinsic motivations factor is the most influential predictor of the continuance intention. This is due to the fact that participation in such

platforms is primarily voluntary rather than mandatory, as well as to the fact that the certificates given are not official. Some learners do not want to simply learn the content of the courses, but also love to interact with others and enjoy themselves. This result denotes that learners who do not see engagement in platforms as pleasurable or interesting are unlikely to continue using them.

Additionally, the factor of intrinsic motivations has the second strongest impact on perceived usefulness. Clearly, learners driven by intrinsic motivations perceived the usefulness of platforms since they will be able to satisfy their curiosity to explore interesting topics and learning new, diverse, challenging or enjoyable things by using them (P23).

Moreover, the intrinsic motivations factor emerged as the strongest predictor of perceived ease of use. This result contradicts a result cited by Xu (2015), who revealed that computer playfulness has an insignificant positive correlation with perceived ease of use. The finding of this study, on the other hand, evidently denotes that learners who join MOOCs because of intrinsic motivations perceive the ease of use of the platforms, thereby affecting their perceptions regarding the usefulness of courses positively. The rationale is that people who have intrinsic motivations for performing given tasks are willingly engaging in such tasks without external pressures. Therefore, they love to challenge themselves when facing difficulties whilst performing the desired tasks. Another similar explanation is that individuals who enrol in courses because of their intrinsic motivations underestimate the difficulty associated with using the platforms. This is because they enjoy the activity itself and do not realise the strenuous effort or time which would be required of them when using them (P23; Venkatesh, 2000).

#### **G. Willingness to Earn a Certificate and Its Effect on the Continuance Intention and Perceived Usefulness**

In the proposed model, it was hypothesised that the willingness to earn a certificate will have a significant and positive effect on the continuance intention to use MOOCs (H7), as well as on the perceived usefulness (H16). The parameter estimates for these hypotheses are: ( $\beta=0.034$ ,  $p>0.05$ ) and ( $\beta=0.094$ ,  $p=0.003$ ), respectively. Based on this result, hypothesis 7 was refused, whereas hypothesis 16 was accepted.

This study has been unable to demonstrate the significant influence of the willingness to earn a certificate on the continuance intention. This result is analogous to a result of Adamopoulos (2013),

who found a positive but insignificant relation between awarding certificates and course completion. It seems possible that this result is due to the fact that the certificates issued by platforms such as Rwaq are neither accredited nor even verified, thereby diminishing their value and appreciation by employers (P27, P28, P30). So, the decision whether or not to use MOOCs is not dependent on providing certificates. This is also relevant to a finding proffered by Rosendale (2017); viz., that hiring managers prefer to hire applicants who have been educated traditionally over applicants educated via MOOCs. Moreover, employees may think that receiving a certificate is a less important factor in making their decisions to participate in MOOCs, either because their employers usually do not value such certificates or because their credentials do not reflect their competencies (Egloffstein & Ifenthaler, 2017). Furthermore, Muhammad, Mustapha & Haruna (2016) pointed out that learners in MOOCs accept that MOOCs' certificates are not recognised by the institutions.

From the respondents' profile, 280 participants had not earned any certificate in the past. This may mean that the certificates awarded by the platforms are of less importance to some learners. A likely similar interpretation could be that platform learners have different goals and motivations. So, some learners sign up for courses only in order to gain useful knowledge and experiences or in order to enjoy the activity itself and do not, in turn, care about obtaining certificates (P23, P24, P26, P27, P29):

*"I think there is a class of learners who are only interested in enriching their knowledge, especially since Rwaq initially attracted them by offering courses in varied fields (e.g. medicine, religion, engineering, computer science, etc.)"* (P26, Learner)

Another possible alternative explanation of this finding is that some individuals have a goal to learn the interesting parts of a course without the need to complete the whole course and acquire the certificate.

In this study, the willingness to earn a certificate was found to affect the perceived usefulness both positively and significantly. This result aligns with the research conducted by Wu & Chen (2017), where social recognition (i.e. the recognition of MOOCs' credentials) was found to have a significant impact on perceived usefulness. In addition, this hypothesis was expected to be supported because a high percentage of the respondents (42.53%) were students and unemployed who might value

the attainment of such certificates in order to apply to new jobs more than those respondents who were employees. Moreover, 353 respondents of this survey completed some courses and attained between 1 to 3 certificates. This result may point out to the potential advantage of earning certificates for learners.

The willingness to earn a certificate has the least effect on perceived usefulness when compared to the other determinates. This again could be attributed to the fact that the certificates are not accredited, thereby reducing their impact on perceived usefulness. The benefits of certificates for the learners include the following:

1. Supporting their main qualification and resumes;
2. Their applying for jobs;
3. Their demonstrating mastery in a given topic or field;
4. Their motivation to complete the courses;
5. Giving them a sense of achievement;
6. Giving their acquaintances a good impression (i.e. that they are educated).

#### **H. Social Influence and Its Effect on the Continuance Intention and Perceived Usefulness**

It was hypothesised that social influence will have a significant and positive effect on the continuance intention to use MOOCs (H14) and perceived usefulness (H17). The path coefficient and p value for these hypotheses are: ( $\beta = -0.061$ ,  $p = 0.035$ ) and ( $\beta = 0.025$ ,  $p > 0.05$ ), respectively. Accordingly, this study did not detect any evidence for supporting either of these hypotheses.

The result of this study shows that social influence has a significant but negative effect on learners' intention to continue using MOOCs. This finding is similar to the results reported by Zhou (2016), Mulik, Yajnik & Godse (2016), and Gao & Yang (2015). They all revealed a negative correlation between the social influence and intention to use MOOCs, but not one which is significant. This unexpected finding suggests that positive encouragement from others may yield an opposite result, where it leads learners to abandoning the platform. This result is inconsistent with UTAUT, TRA, TPB, and previous studies mentioned earlier, all of which confirmed the positive and significant impact that social influence has on using technologies.

The negative sign of the path coefficient could be attributed to the existence of outliers. Also, it can be said that the impact of intrinsic motivations is very strong, meaning that people join MOOCs

because they are driven by internal rewards rather than external pressure, like social influences (P30). In addition, this result can be attributed to the fact that ‘word-of-mouth’ exerts a stronger positive impact on shaping individual’s attitudes and intentions to use MOOCs during the initial adoption phase, but not during the post-adoption phase (Venkatesh et al., 2003; Teo & Pok, 2003; Lee, Lee & Lee, 2006). This is because inexperienced individuals, in using MOOCs, think highly of recommendations from friends and trusted relatives and rely on them seeing as they do not have complete information about the innovation. In contrast, experienced individuals depend mainly on their own experiences and past usage rather than on others’ beliefs. Also, they are more likely to resist changing or adjusting their beliefs regarding MOOCs according to the perceptions of others (P23).

Venkatesh et al. (2003), Yoon & Rolland (2015), and Lee, Lee & Lee (2006) stated that the correlation between social influence and behavioural intention was found to be insignificant in previous technology acceptance studies in voluntary contexts. Thus, another reasonable explanation for this finding is that the opinions of trusted persons, like supervisors’ proddings or experts’ opinions, could have a positive impact on people who perform mandatory tasks rather than voluntary ones (Gao & Yang, 2015). For instance, a person would like to listen to people whom he/she trusts when making critical or important decisions.

In this regard, one participant stated the important factors affecting the continuance intention to use MOOCs:

*“I think that individuals decide whether to keep using Rwaq or not by relying on two factors: their needs from the courses and the ease of use of the platform. So, if their reference group has a passive attitude towards the Rwaq platform, this will not affect their leaving the platform.” (P26, Learner)*

Because MOOCs support a high level of self-directed learning, this may weaken the positive role of social influence in using Rwaq for learning in general, as one interviewee put it:

*“I think that learning in Rwaq emanates from the self. For instance, I participate in Rwaq because I need some courses or enjoy the learning experience. It satisfies my curiosity to explore MOOCs and topics. That is why social influence has no strong positive effect on learners’ decisions to use Rwaq.” (P27, Learner)*

Also, because the certificates awarded by Rwaq are not accredited, the positive effect of external pressure, like encouragement from others, is non-existent (P27). Zhou (2016) suggested that social influence is a multidimensional construct which is affected by different sources, including media, instructors, peers, etc. So, it is advisable to decompose the social influence factor into different dimensions, where each dimension captures the influence of a specific source of belief.

In addition, this study found that learners' perceptions of the usefulness of MOOCs is not significantly impacted by social influence. Wu & Chen (2017) and Xu (2015) showed different findings, such that the social influence factor affects perceived usefulness both positively and significantly. The participants attributed this result to the fact that the perceived usefulness of courses depends on the learners' insights— something which might be different from one person to another (P23, P25, P28); for example:

*"I do not rely mainly on my friends' views when joining particular courses in Rwaq because I believe that every person has his own experience, impression, and goal. So, I attend a course based on my goals, interests, requirements, and perceptions, regardless of the opinions that my friends or relatives have. As an example, some friends may strongly suggest a basic course about learning the Java programming language because they found it helpful. I, however, am proficient in Java, so my goal is instead to find more advanced courses."* (P23, Learner)

In general, joining platforms usually depends on the learner's self-desire and his/her own experiences and evaluations regardless of others' views (P29). One more explanation is that the significant effect of social influence on perceived usefulness was absent because the learners have been encouraged by friends or colleagues who have not participated in MOOCs before which, in turn, diminishes their influence on learners. This is perhaps because learners will be more influenced when they are encouraged by people who have had experiences with MOOCs and their usage seeing as their recommendations will be stronger and more relevant.

Furthermore, the low turnout of participants in Arabic platforms may play a role seeing as the prevalence of online open platforms in the Arab region is still in its early phase. So, perhaps most individuals in this region are not aware enough about the benefits of using the platforms, let alone their existence (Mulik, Yajnik & Godse, 2016). Hence, there could be a lack of shared beliefs in

Arabic society regarding the advantages of MOOCs. Besides, the mass media may not contribute significantly to promoting the benefits of MOOCs, thereby limiting the spread of these platforms amongst the members of that society.

### 6.3.3. The Developed Model's Performance

#### A. Increasing the Explanatory Power of TAM

This part of the study shows the increment in the  $R^2$  values when integrating the additional variables into the original TAM after removing the insignificant paths. What stands out in Table 6.37 is that the values of explained variance in perceived usefulness, perceived ease of use, and continuance intention improve after adding new variables to the original TAM model. The integrated TAM, which included the ALS, FCA, PR, IM, and WEC variables, made the largest contribution to  $R^2$  when compared to the original TAM and to all of the other models presented in Table 6.37. Figures 6.15, 6.16, 6.17, 6.18, 6.19, and 6.20 show the results of integrating the variables into the original TAM model.

**Table 6.37** Increasing the explanatory power of TAM when integrating additional variables into TAM

<b>The model</b>	<b>Explained variance in PU</b>	<b>Explained variance in PEU</b>	<b>Explained variance in CI</b>
Original TAM model	25.4%	None	31.2%
Integrated TAM with ALS	38.3%	14.2%	34.1%
Integrated TAM with ALS and FCA	38.3%	17.2%	34.1%
Integrated TAM with ALS, FCA, and PR	49.1%	17.2%	37.7%
Integrated TAM with ALS, FCA, PR, and IM	52.6%	22.1%	48.4%
Integrated TAM with ALS, FCA, PR, IM, and WEC	53.3%	22.1%	48.4%

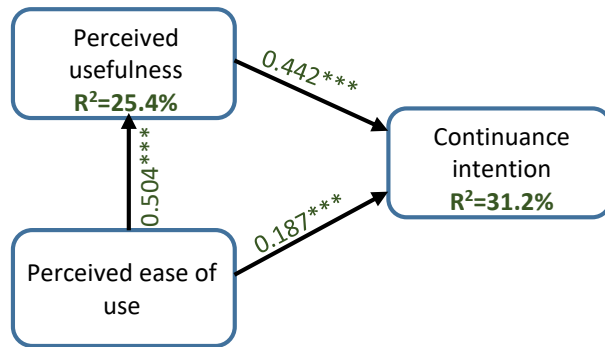


Figure 6.15 Original TAM model

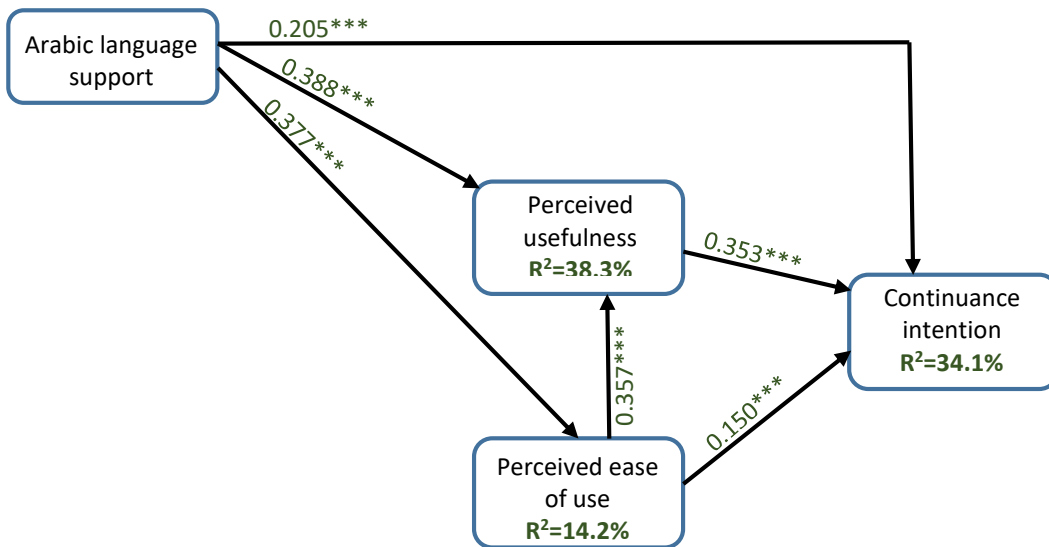


Figure 6.16 Integrating TAM with ALS

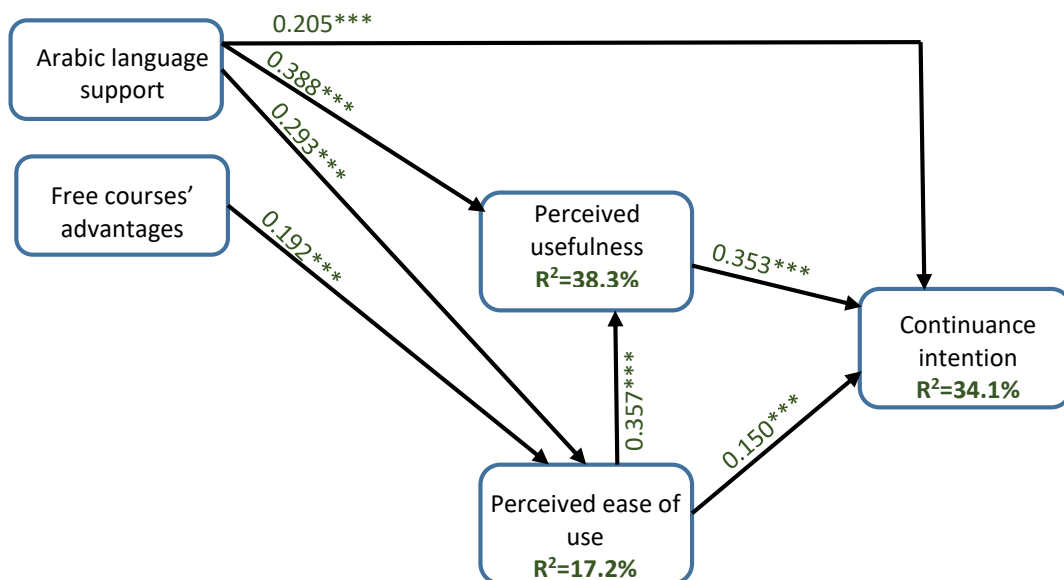


Figure 6.17 Integrating TAM with ALS &amp; FCA



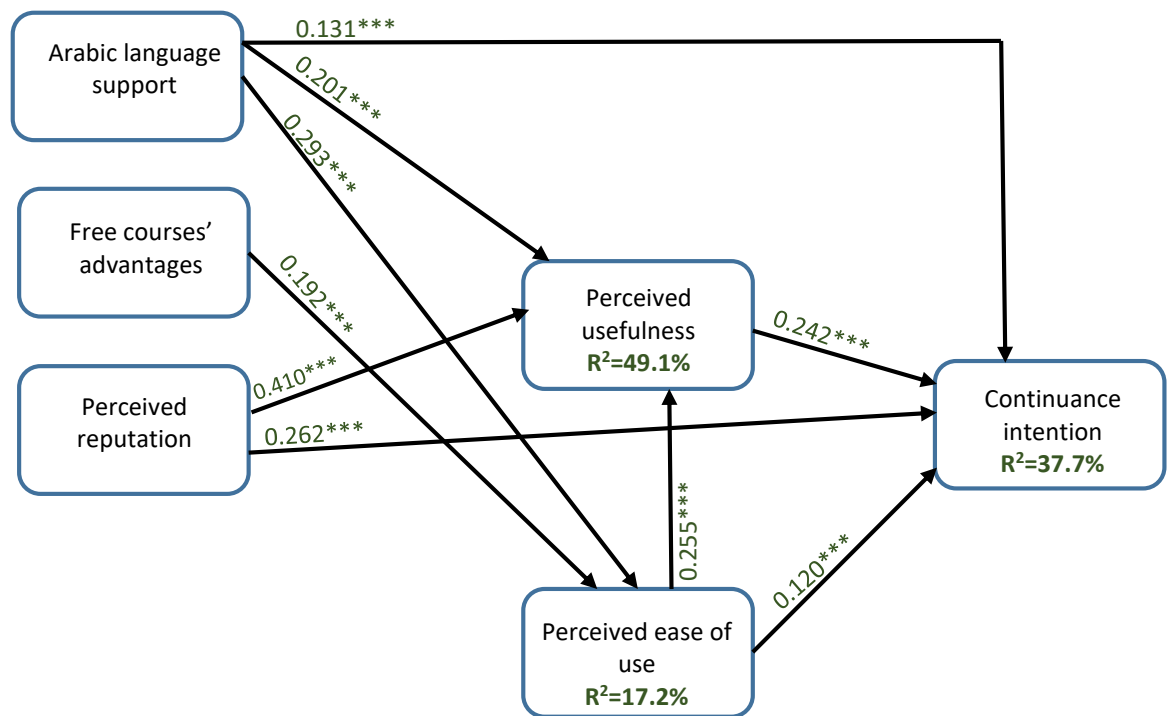


Figure 6.18 Integrating TAM with ALS, FCA &amp; PR

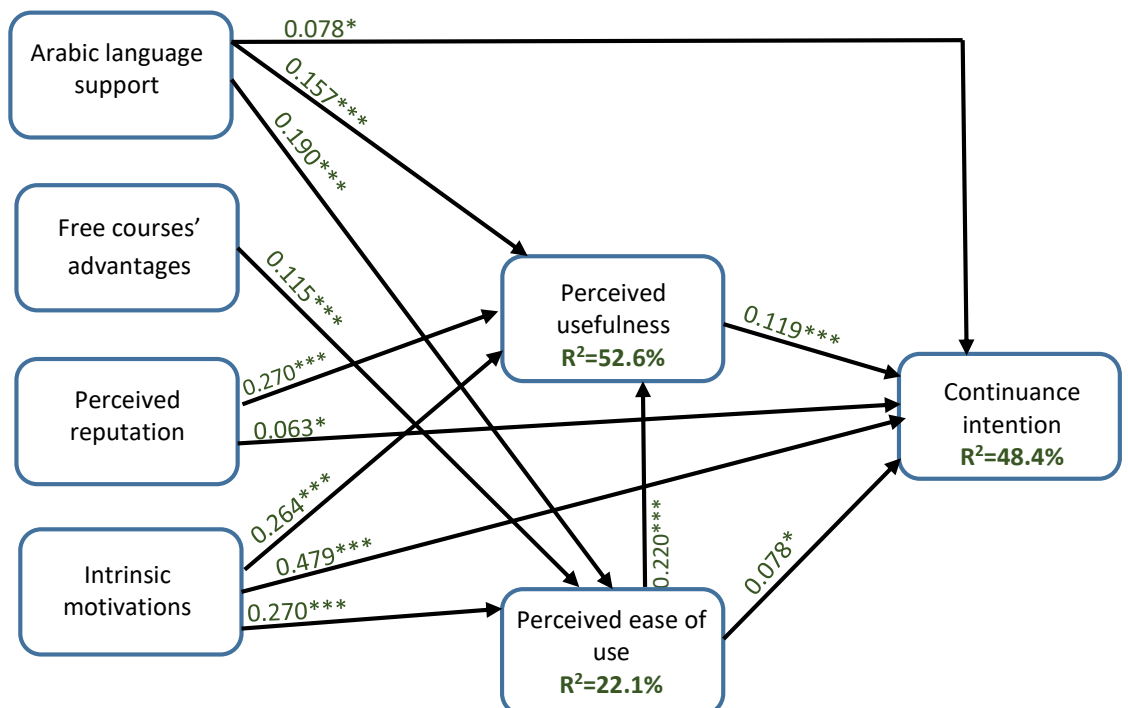


Figure 6.19 Integrating TAM with ALS, FCA, PR &amp; IM

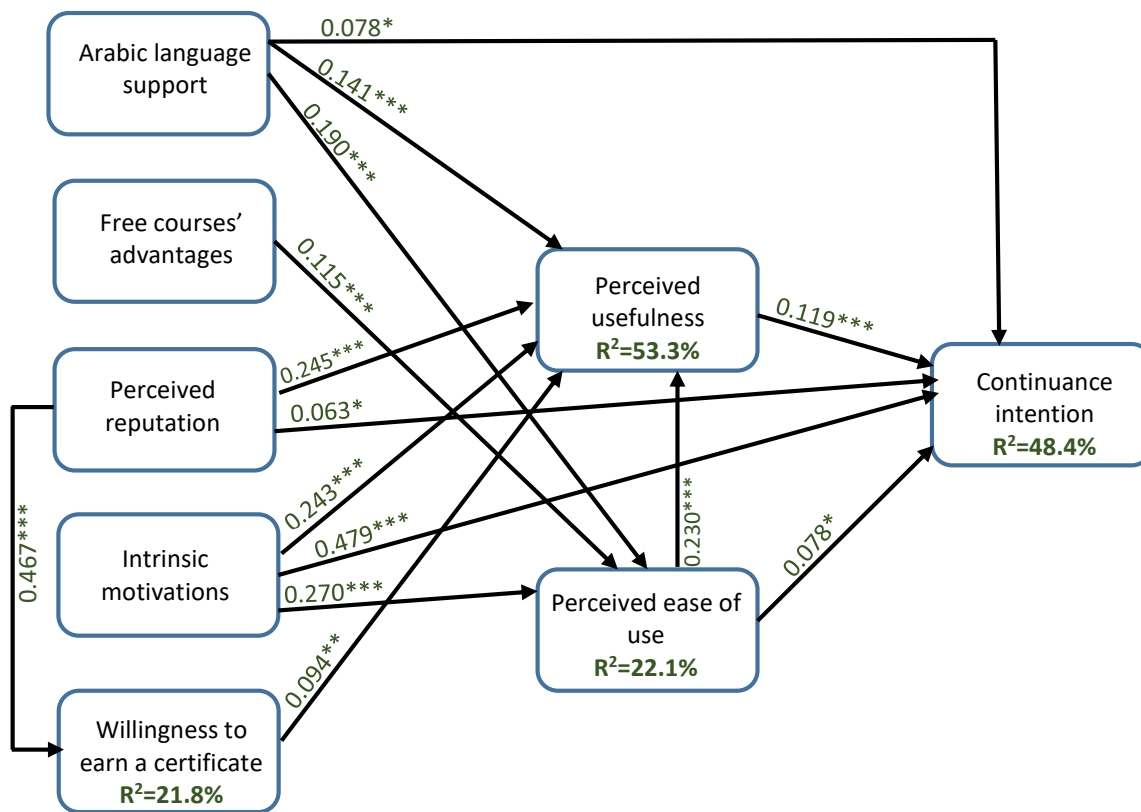


Figure 6.20 Integrating TAM with ALS, FCA, PR, IM & WEC (the final revised model)

## B. Comparing the Performance of this Research Model with the Performance of Models Developed by Prior Studies

As shown before, the explained variances in the perceived usefulness, perceived ease of use, and continuance intention are 53.3% (relatively moderate), 22.1% (relatively weak), and 48.4% (relatively moderate), respectively. To answer RQ7, the performance of this research model was compared to the performance of the models developed by similar previous MOOCs studies by using  $R^2$ , the explained variance in the perceived usefulness, perceived ease of use, and behavioural intention (BI) /continuance intention (Table 6.38).

Table 6.38 Comparing the explained variance in PU, PEU, and BI/CI of models proposed by previous studies to the present research model

Study	Variance Explained ( $R^2$ )		
	PU	PEU	BI/CI
Wu & Chen (2017)	94.8%	46.8%	95.7%
Junjie (2017)	37.8%	None	79.4%

Study	Variance Explained ( $R^2$ )		
	PU	PEU	BI/CI
Mulik, Yajnik & Godse (2016)	None	None	72.9%
Mohapatra & Mohanty (2016)	None	None	68.1%
Gao & Yang (2015)	42%	None	66%
Alraimi, Zo & Ciganek (2015)	54%	None	64.4%
Zhou (2016)	None	None	64.1%
Zhang et al. (2017)	60%	47%	62.2%
Yang et al. (2017)	34.4%	37.1%	47.2%
Aharony & Bar-Ilan (2016)	None	None	25%
<b>This research</b>	53.3%	22.1%	48.4%

It can be seen from the data in Table 6.38 that this research model did not outperform existing models. As illustrated in this table, approximately, the  $R^2$  values reported in the present study are lower than the values estimated by other models. This result could be attributed to the misspecified model due to omission and/or inclusion of a variable or parameter. Accordingly, for future studies, it is recommended to include more influential predictors that can contribute to an increase in the explained variance in learners' intention to use Arabic MOOCs.

#### 6.4. Summary

This chapter provided details of the quantitative analysis using the Warp-PLS tool. The first section showed the results of the data screening tests, including the number of responses, non-response bias, respondents' profile, descriptive statistics of the constructs' items, linearity, outliers, normality, and collinearity. The second section presented the measurement and structural model analyses. Overall, the measurement items were reliable and valid. For the structural model, fourteen out of nineteen hypotheses were accepted, indicating a successful extension of the TAM model. The discussion of the quantitative results was presented afterwards. The next chapter will provide conclusion, including a summary of the research objectives and findings, implications of the research findings, research limitations and future research directions, and concluding comments.



## Chapter 7 Conclusion

The aim of this chapter is to present a summary of this research's objectives and findings, the implications of the research findings, its limitations and future research possibilities, and concluding comments.

### 7.1. Summary of Research Objectives and Findings

The main goal of the current study was to address the gaps in the literature related to information technology continuance intention by developing a theoretical model with which to predict learners' readiness to continue using Arabic MOOCs. Drawing on the Technology Acceptance Model (TAM), the developed model includes eight diverse factors:

1. Perceived usefulness
2. Perceived ease of use
3. Arabic language support
4. Free courses' advantages
5. Perceived reputation
6. Intrinsic motivations
7. Willingness to earn a certificate
8. Social influence

Table 7.1 illustrates the research questions, along with the methods which were used in order to address such questions, as well as the purpose for using those methods. The summary of the main results of this investigation is as follows:

1. Five factors were revealed to have a significant and positive influence on the continuance intention. They are sorted by their significance as follows: intrinsic motivations, perceived usefulness, Arabic language support, perceived ease of use, and perceived reputation.
2. Five factors were found to have a significant and positive influence on the perceived usefulness. They are sorted by their significance as follows: perceived reputation, intrinsic motivations, perceived ease of use, Arabic language support, and willingness to earn a certificate.

3. Three factors were found to have a significant and positive influence on the perceived ease of use. They are sorted by their significance as follows: intrinsic motivations, Arabic language support, and free courses' advantages.
4. Perceived reputation affects the willingness to earn a certificate both positively and significantly.
5. Social influence was found to have a significant, yet negative, effect (contrary to what was expected) on the continuance intention.
6. The free courses' advantages and the willingness to earn a certificate were found to have an insignificant positive effect on the continuance intention.
7. The free courses' advantages and the social influence were found to have an insignificant positive effect on perceived usefulness.

Table 7.1 The research questions along with the methods used to address such questions

Research questions	Methods	Purpose
<b>RQ1: What is the suitable technology acceptance/continuance model that can be used as a theoretical foundation to investigate the learners' continuance intention towards using Arabic MOOCs?</b>	<ul style="list-style-type: none"> <li>• Systematic literature review.</li> <li>• Semi-structured interviews with learners, instructors, and administrators of the Rwaq platform.</li> </ul>	<ul style="list-style-type: none"> <li>• To select a suitable theoretical model.</li> <li>• To explore additional influential factors and potential relationships between the factors in order to develop the model.</li> </ul>
<b>RQ2: What motivational factors affect learners' decisions to continue using Arabic MOOCs?</b>		<ul style="list-style-type: none"> <li>• To deeply understand the influence of the proposed factors and develop the instrument.</li> </ul>
<b>RQ3: What are the potential relationships between the motivational factors which affect learners' intentions to continue using Arabic MOOCs?</b>		
<b>RQ4: What factors have significant effects on MOOCs' continuance intention?</b>	Self-administered and online questionnaire.	<ul style="list-style-type: none"> <li>• Test the research hypotheses and validate the proposed model.</li> </ul>
<b>RQ5: What factors have the strongest effect on MOOCs' continuance intention?</b>		<ul style="list-style-type: none"> <li>• Identify the significant paths, as well as the antecedents which have the strongest influence</li> </ul>

Research questions	Methods	Purpose
		on the endogenous variables (continuance intention, perceived usefulness, and perceived ease of use).
	Follow-up interviews with learners who use Rwaq.	Explain the quantitative results, especially the unanticipated results.
<b>RQ6: To what extent do the motivational factors influencing participants in Arabic MOOCs differ or concur with the reported motivations in the studies that have been carried out in different cultural contexts?</b>	Compare the results of this study with previous research results.	Explore the influence which the Arabic culture of learners has on such learners' intent to continue using MOOCs as compared to other cultures.
<b>RQ7: How well does the proposed model explain the continuance intention towards using Arabic MOOCs?</b>	<ul style="list-style-type: none"> <li>Compare the explained variance (<math>R^2</math>) of the endogenous variables in the original TAM model to the explained variance (<math>R^2</math>) of the endogenous variables in the TAM when integrating new factors into the TAM.</li> </ul>	Show the increment in the $R^2$ values when integrating the additional variables into the original TAM.
	<ul style="list-style-type: none"> <li>Compare the explained variance (<math>R^2</math>) of the endogenous variables (continuance intention, perceived usefulness, and perceived ease of use) in the proposed model to the explained variance (<math>R^2</math>) of similar constructs proposed in previous studies on MOOC acceptance/continuance.</li> </ul>	Explore whether (and, if affirmative, to what extent) the proposed model outperforms the models developed in the related works.

## 7.2. Implications of Research Findings

This section provides theoretical and managerial implications based on the results obtained in this study.

### 7.2.1. Implications for Academic Researchers

Based on the extensive literature review, it was found that there is no published study which investigates the factors that drive learners' intention to continue using Arabic MOOCs. Therefore, this work contributes to the existing knowledge of MOOCs' continuance intention by providing the following main contributions:

1. Advancing theories by extending the TAM with regards to new context: the continuance intention to use Arabic MOOCs from learners' perspective.
2. Providing the validated model of MOOCs continuance intention which can be tested by researchers in different cultural contexts.
3. Integrating TAM with a varied range of factors:
  - Technology-related factors (perceived usefulness, perceived ease of use, free courses' advantages, and the willingness to earn a certificate).
  - Individual-related factors (intrinsic motivations).
  - Organisation-related factors (perceived reputation).
  - Culture-related factors (Arabic language support).
  - Society-related factors (social influence).
4. Validating the effect of new constructs that have not been examined previously in the context of MOOCs' acceptance/continuance. These new constructs include Arabic language support, the willingness to earn a certificate, and free courses' advantages.
5. Providing validated questionnaire items which can be adapted in future research on MOOCs' acceptance and continuance.



6. Providing empirical evidence of the successful extension of TAM where the majority of the research hypotheses (14 out of 19 hypotheses) were accepted (Figure 6.14).
7. Highlighting the role of learners' culture in accepting MOOCs. In this study, the significance of some paths between the variables and the predicting power of the antecedents were different from the results reported by studies validated in different cultural contexts.

Therefore, this study will serve as a base for scholars to lead further studies on MOOCs' acceptance and continuance in the future by taking into account the cultural differences of learners.

### **7.2.2. Implications for MOOCs Practitioners**

Based on the results obtained in this study, some insights and recommendations were put forward for MOOC providers and instructors to inform the instructional design and pedagogical approaches that may be adopted in future MOOCs:

1. Since the intrinsic motivations factor has appeared to be the strongest indicator of the continuance intention and perceived ease of use, MOOC developers could increase the impact on MOOC participants by designing platforms and courses in a way that promotes learners' enjoyment, curiosity, and interest. Keeping learners in a flow state, referred to as 'flow experience' (Csikszentmihalyi, 1988), is recommended. Furthermore, Ho & Kuo (2010) demonstrated that the flow experience yields better learning outcomes. To achieve this, different means could be utilised, including the following strategies:
  - Provide courses which present new, unique, diverse, and unexpected topics for the purpose of stimulating learner curiosity and interest in exploring new experiences.
  - Offer challenging subjects and activities to individuals who enjoy deep learning and who like solving problems.
  - Create an interactive learning environment by applying the gamification concept for solving problems in order to make the learning offered both stimulating and pleasurable (Antonaci et al., 2017).
  - Use of teaching styles effectively: for example, using humour when presenting lectures, giving examples from reality, or encouraging team projects in order to turn lectures into engaging and enjoyable activities.

2. The perceived usefulness of the courses is a key incentive for learners to continue using MOOCs. The finding of this research points to the need for MOOC developers and teachers to provide beneficial courses by enacting the following approaches:

- Provide courses that meet learner requirements. Seeing as learners using MOOCs have a broad range of motivations and needs, a good way to do so would be to use a survey for taking their opinions about their courses, as well as what they expected from such courses.
- Provide sufficient and up-to-date contents which can fit learners' current needs.
- Provide courses at different levels (introductory, intermediate, advanced) which can meet the requirements of learners from different backgrounds.
- Foster the means of communicating between learners (e.g. the use of social networks) in order to build an effective community for the purpose of exchanging knowledge and experiences, especially given the limited assistance supplied by MOOC instructors.
- Apply the 'media richness theory' introduced by Daft & Lengel (1986) by using rich and diverse media, such as video, audio, image, and text. Diverse media helps learners understand and master the contents of courses effectively, besides retaining that information better.
- Give recommendations — depending on data collected from learners (e.g. the history of registered courses), providers can recommend learning materials or certain courses to learners.

3. According to the results of this study, the development of a positive intention to persist in using MOOCs significantly depends on perceived ease of use. Accordingly, MOOC developers should make the method with which platforms are used simple and understandable via the following approaches:

- Design user-friendly and informative interfaces.
- Organise the contents of the platform for easy and quick access.
- Provide a users' guide and help articles with videos which explain how to use their platforms, especially for new and inexperienced users.
- Facilitate accessing the platform by means of a milieu of devices, such as laptops, tablets, and smartphones.

4. Given that perceived reputation stands out as the strongest antecedent of perceived usefulness, it is reasonable for MOOC developers to distinguish themselves by hiring qualified lecturers or experts from renowned institutions. Shedding light on the expertise of the teachers that they have hired and their achievements by means of presenting their CVs in detail would be sufficient. More importantly, developers and teachers should focus on the quality of courses by means of the following approaches:
  - Provide instructors and designers with training programmes on course quality standards.
  - Measure the efficiency, effectiveness, and learner satisfaction of the services provided by the platform.
  - Identify the gaps in the platform and the services which it provides and propose appropriate solutions to fill these gaps.
  - Assign a trained team of experts for customer service which will be able to respond to learner needs as soon as possible using different approaches, such as emails, phones, online chats, etc.
5. It was shown that Arabic language support has a significant impact on the continuance intention, perceived usefulness, and perceived ease of use of those who participated in this research. As such, MOOCs providers should concentrate on providing courses in Arabic in order to make the learning experience easy and effective. Teachers can also contextualise the content of the courses to better fit the Arabic culture of the learners, thereby helping them to understand the contents better. In addition, seeing as English is the language of the era, it is advised to combine the Arabic and English languages in the platform effectively. For example, offering video lectures in Arabic with English subtitles, as well as a translation of the course materials into English.
6. It was found that the perceived ease of use is significantly affected by providing free courses. Consequently, MOOCs providers are highly encouraged to offer tuition-free courses for all persons interested in learning, which is one of the main features of MOOCs. Usually, in most MOOCs, learners who attend free courses do not obtain a free certificate of completion, especially if it is a verified certificate. Nevertheless, it is still enough for them to learn free from prestigious educators. On the other hand, as per the results of this study,

learners may not mind paying for courses if they found the courses effective and beneficial. Thus, like Udacity and edX, it is advisable to offer paid nanodegree programmes which provide a series of courses for the purpose of providing a deep understanding of in-demand fields, as well as verified certificates. Also, if MOOCs providers plan to charge learners for attending courses in the future, it is advised to initially allow new users to try a few courses for free. After that, they should be asked to pay for additional courses. This is because learners who have tried the platform and who have realised its advantages will most likely pay for the courses vis-à-vis new users who have not yet tried the platform.

7. As expected, the willingness to earn a certificate significantly influences the perceived usefulness of MOOCs. Therefore, developers should take this into consideration and try their best to cooperate with universities and academically accredited entities to grant accredited and verified certificates to those who have completed their courses. Different approaches can be adhered to for the purpose of verifying identities, such as using a webcam, a government-issued ID, a keystroke signature, etc. Also, as Rwaq currently only offers certificates in Arabic, it is recommended to provide certificates in both Arabic and English. In addition, the developers may think of ways to link the certificates that learners have been awarded by Rwaq to their LinkedIn profile so that learners can display their accomplishments to the world. Also, it is good to use tools like Open Badges<sup>12</sup> so that organisations (e.g. universities or professional institutions) can easily issue and manage digital badges for learners who have achieved certain skills or completed certain courses. Badge holders can share their badges with potential employers or educational institutions as verifiable records of their learning. One more suggestion is that of reminding learners about the deadlines for submitting assignments in order to keep them on track and, hence, help them acquire a certificate.
8. The results of this research do not suggest that social influence motivates learners to continue using MOOCs, nor do they strengthen their beliefs about MOOCs usefulness. Developers might want to think of ways of meeting or exceeding learners' expectations, as well as convincing them and achieving their satisfaction rather than focusing on external

---

<sup>12</sup> <https://openbadges.org/>

social pressures coming from persons like supervisors or friends. For example, MOOCs providers may constantly survey users' views regarding the provided courses and their suggestions for future improvements. In this regard, it is also good to leverage tools for analysing learners' data in the platform, such as discussion forums, performance on quizzes and assignments, time spent on tasks, video watching, etc. One of the advantages of learning analytics is grouping the participants who share the same interests into a subpopulation of learners (Khalil, Taraghi & Ebner, 2016). This is valuable because learners may be influenced by the beliefs of others who hold similar interests. Also, utilising social media effectively for announcing interesting facts about the platform may better retain existing users and open the doors for MOOCs providers to attract new users. One suggestion could be inviting influential and qualified persons (such as famous persons in a particular field on social media) to deliver courses on the platform.

### **7.3. Limitations and Directions for Future Research**

Even though a comprehensive study was carried out, as with all researches, this study has its limitations. They are listed as follows:

1. The current research targeted the learners in an academic and Arabic MOOCs: Rwaq platform. There are other Arabic platforms of different types. For example, training MOOCs that offer training courses, like the Maharah platform<sup>13</sup>, and religious MOOCs which provide religious courses, such as the Zadi platform<sup>14</sup>. Users have different motivations for attending different types of platform or course (Kizilcec & Schneider, 2015; Shapiro et al., 2017). Therefore, further research should be undertaken to investigate the factors affecting the retention of users in different types of platform.
2. This research applies the self-selection (volunteer) sampling method for collecting survey responses. Therefore, self-selection bias affects the generalisability of the results presented in this study. This is often because participants are more engaged with MOOCs, thereby

---

<sup>13</sup> <https://www.maharah.net/>

<sup>14</sup> <https://zadi.net/>

making the samples subject to overestimation. Thus, it is advised that future researches apply probability sampling methods.

3. A cross-sectional survey was used for this study. Seeing as the behaviours of individuals are dynamic, though, it is recommended that future studies employ longitudinal research. Longitudinal research can shed light on the development of users' behaviours and expand the understanding of the interrelationships between the variables under investigation (Wu & Chen, 2017).
4. Although this study incorporated eight diverse factors in the proposed model, there is still abundant room for exploring the other factors which may contribute to an increase in the explained variance in the willingness to continue using MOOCs. For example, additional factors may include interactions between learners, course quality, self-directed learning, etc.
5. The concentration of the present research is on the positive factors that influence the intention to continue using MOOCs. This research did not take into consideration the negative factors which may affect the continuance intention. In future investigations, it might be possible to investigate negative factors, such as lack of interaction with instructors, the non-accreditation of certificates, lack of time, etc.
6. The final limitation of this study is that the effects of moderator variables on the relationships between the factors were not examined. It is suggested that future researches study the impact of moderators, such as age, gender, occupation, highest level of education achieved, or the field of the course (e.g. mathematics, computer science, religion, etc.) on the relationships between the variables. Including these moderators may enhance the explanatory power of theoretical models (Sun & Zhang, 2006).

#### **7.4. Concluding Comments**

It is not surprising that the intrinsic motivations factor was the strongest indicator of the learners' intention to continue using MOOCs due to the fact that the participation in platforms is usually not mandatory. Also, the intrinsic motivations factor was the strongest determinant of the perceived ease of use. Perceived reputation was found to have the strongest effect on perceived usefulness,

denoting the importance of providing high-quality courses and qualified instructors. With respect to the influence of culture, Arabic language support was a significant factor affecting learners' persistence in using Arabic MOOCs. The results presented in this study are useful for accelerating the progress of the platforms forward, particularly in the Arab region. Finally, testing the model developed in this study in different cultural contexts and settings would be useful to generalise the results obtained in this study.





## List of References

- Abbasi, M.S., Tarhini, A., Elyas, T. & Shah, F. (2015). Impact of individualism and collectivism over the individual's technology acceptance behaviour: A multi-group analysis between Pakistan and Turkey. *Journal of Enterprise Information Management*. 28(6), 747-768.
- Abdullah, F. & Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analysing commonly used external factors. *Computers in Human Behavior*. 56, 238-256.
- Adamopoulos, P. (2013). What makes a great MOOC? An interdisciplinary analysis of online course student retention. In: *Proceedings of The 34th International Conference On Information Systems, ICIS*, Milano, Italy. pp.1-21.
- Adham, R.S. & Lundqvist, K.O. (2015). MOOCs as a method of distance education in the Arab world—a review paper. *European Journal of Open, Distance and E-learning*. 18(1), 123-138.
- Admiraal, W., Huisman, B. & Pilli, O. (2015). Assessment in Massive Open Online Courses. *Electronic Journal of e-Learning*. 13(4), 207-216. Available from: <https://eric.ed.gov/?id=EJ1062116> [Accessed 23<sup>rd</sup> March 2016].
- Agarwal, R. & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research*. 9(2), 204-215.
- Aharony, N. & Bar-Ilan, J. (2016). Students' perceptions on MOOCs: An exploratory study. *Interdisciplinary Journal of e-Skills and Life Long Learning*. 12, 145-162.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In: J. Kuh & J. Beckmann, (ed.), *Action-control: From cognition to behaviour*. Heidelberg, Springer. pp.11-39.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*. 50(2), 179–211.
- Al-Abdulkareem, M. F. (2017). Email sent to Nada Hakami, 6<sup>th</sup> September.
- Alario-Hoyos, C., Estévez-Ayres, I., Pérez-Sanagustín, M., Kloos, C.D. & Fernández-Panadero, C. (2017). Understanding learners' motivation and learning strategies in MOOCs. *The International Review of Research in Open and Distributed Learning*. 18(3), 119-137.
- Al-Aulamie, A. (2013). *Enhanced Technology Acceptance Model to Explain And Predict Learners' Behavioural Intentions In Learning Management Systems*. PhD thesis. University of

- Bedfordshire. Available from:  
<http://uobrep.openrepository.com/uobrep/handle/10547/323773> [Accessed 4<sup>th</sup> September 2016].
- Albadri, F. (ed.) (2012). *Information systems applications in the Arab education sector*. IGI Global.
- Albers, S. (2010). PLS and success factor studies in marketing. In: Esposito Vinzi, V., Chin, W.W., Henseler, J. & Wang, H. (ed.), *Handbook of partial least squares*. Springer. pp.409-425.
- Alenezi, A.R. (2012). E-learning acceptance: Technological key factors for the successful students' engagement in E-learning system. In: *EEE'12 The 2012 International Conference on e-Learning, e-Business, Enterprise Information Systems, and e-Government*, USA. Available from:  
<http://worldcomp-proceedings.com/proc/p2012/EEE4759.pdf> [Accessed 21<sup>st</sup> April 2017].
- Alkharang, M.M. (2014). *Factors That Influence the Adoption Of E-Learning: An Empirical Study In Kuwait*. PhD thesis. Brunel University London. Available from:  
<http://bura.brunel.ac.uk/handle/2438/11447> [Accessed 6<sup>th</sup> September 2016].
- Almarwani, M.A. (2016). *E3-Electronic Education for English: Developing Mobile Learning And Teaching In Saudi Arabia*. PhD thesis. School of Education, University of Lincoln. Available from: <http://repository.taibahu.edu.sa/bitstream/handle/123456789/17922/E3-Electronic%20Education%20for%20English-%20Developing.pdf?sequence=1> [Accessed 10<sup>th</sup> February 2017].
- AlMohaimmeed, B.M. (2012). *Customer Behaviour Towards Internet Banking: A Study Of The Dormant Users of Saudi Arabia*. PhD thesis. University of Birmingham. Available from:  
<http://etheses.bham.ac.uk/3349/> [Accessed 17<sup>th</sup> December 2016].
- Alraimi, K.M., Zo, H. & Ciganek, A.P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*. 80, 28-38.
- Alshehri, M. (2012). *Using the UTAUT Model To Determine Factors Affecting Acceptance And Use Of E-Government Services In The Kingdom Of Saudi Arabia*. PhD thesis. Griffith University. Available from: <https://www120.secure.griffith.edu.au/rch/items/1c7cab3e-da14-452a-8379-95387756bd56/1/> [Accessed 5<sup>th</sup> October 2016].
- Alshenqeeti, H. (2014). Interviewing as a data collection method: a critical review. *English Linguistics Research*. 3(1), 39-45.
- Altman, N. & Krzywinski, M. (2016). Points of significance: analyzing outliers: influential or nuisance?. *Nature Methods*. 13(4), 281-282.

- Amoako-Gyampah, K. & Salam, A.F. (2004). An extension of the technology acceptance model in an ERP implementation environment. *Information & Management*. 41(6), 731-745.
- Anderson, J.C. & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*. 103(3), 411-423.
- Annaraud, K. & Singh, D. (2017). Perceptions of hospitality faculty and students of Massive Open Online Courses (MOOCs). *Journal of Hospitality & Tourism Education*. 29(2), 82-90.
- Anney V. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies*. 5(2), 272–281.
- Antonaci, A., Klemke, R., Stracke, C.M. & Specht, M. (2017). Gamification in MOOCs to enhance users' goal achievement. In: *Global Engineering Education Conference (EDUCON), 2017 IEEE*. IEEE. pp.1654-1662.
- Astrachan, C.B., Patel, V.K. & Wanzenried, G. (2014). A comparative study of CB-SEM and PLS-SEM for theory development in family firm research. *Journal of Family Business Strategy*. 5(1), 116-128.
- Atiaja, L. N. A. & Proenza, R. S. G. (2016). The MOOCs: origin, characterization, principal problems and challenges in Higher Education. *Journal of e-Learning and Knowledge Society*. 12(1), 65-76.
- Atkins, D.E., Brown, J.S. & Hammond, A.L. (2007). *A Review of The Open Educational Resources (OER) Movement: Achievements, Challenges, And New Opportunities*. Report to the William and Flora Hewlett Foundation. Creative common. Available from: <https://pdfs.semanticscholar.org/8d16/858268c5c15496aac6c880f9f50afd9640b2.pdf> [Accessed 23<sup>rd</sup> December 2015].
- Awang, Z., Afthanorhan, W.M.A.W. & Asri, M.A.M. (2015). Parametric and non parametric approach in structural equation modeling (SEM): The application of bootstrapping. *Modern Applied Science*. 9(9), 58-67.
- Aydin, C.H. (2017). Current status of the MOOC movement in the world and reaction of the Turkish higher education institutions. *Open Praxis*. 9(1), 59-78.
- Ayub, E., Wei, G.W. & Yue, W.S. (2017). Exploring factors affecting learners' acceptance of MOOCs based on Kirkpatrick's model. In: *Proceedings of the 8th International Conference on E-Education, E-Business, E-Management and E-Learning*. ACM. pp.34-39.

- Azeemi, I.K., Lewis, M. & Tryfonas, T. (2013). Migrating to the cloud: lessons and limitations of 'traditional' IS success models. *Procedia Computer Science*. 16, 737-746.
- Aziz, N.S. & Kamaludin, A. (2015). Using pre-test to validate the questionnaire for website usability (QWU). In: *4th International Conference on Software Engineering and Computer Systems (ICSECS)*, Kuantan, Malaysia. IEEE. pp.107-111.
- Babbie, E.R. (1990). *Survey Research Methods*. 2<sup>nd</sup> edn. Belmont, Wadsworth Publishing Company.
- Babbie, E.R. (2013). *The Basics of Social Research*. 6<sup>th</sup> edn. Cengage Learning.
- Badi, S. & Ali, M.E.A. (2016). Massive Open Online Courses (MOOC) their impact on the full quality in higher education institutions "Rwaq: Saudi educational platform for MOOC". *Journal of Library and Information Sciences*. 4(1), 73-101.
- Bagozzi, R.P. & Yi, Y. (2012). Specification, evaluation, and interpretation of structural equation models. *Journal of the Academy of Marketing Science*. 40(1), 8-34.
- Baker, C., Nafukho, F. M., McCaleb, K.; Becker, M. & Johnson, M. (2015). The tangible and intangible benefits of offering Massive Open Online Courses: faculty perspectives. *Internet Learning*. 4(2), 52-68.
- Bandyopadhyay, K. & Fraccastoro, K.A. (2007). The effect of culture on user acceptance of information technology. *Communications of the Association for Information Systems*. 19, 522-543.
- Barak, M., Watted, A. & Haick, H. (2016). Motivation to learn in massive open online courses: Examining aspects of language and social engagement. *Computers & Education*. 94, 49-60.
- Barba, P.D., Kennedy, G.E. & Ainley, M.D. (2016). The role of students' motivation and participation in predicting performance in a MOOC Motivation and participation in MOOCs. *Journal of Computer Assisted Learning*. 32(3), 218-231.
- Barnes, S.J. (2011). Understanding use continuance in virtual worlds: Empirical test of a research model. *Information & Management*. 48(8), 313-319.
- Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual Differences*. 42(5), 815-824.
- Bayeck, R.Y. (2016). Exploratory study of MOOC learners' demographics and motivation: The case of students involved in groups. *Open Praxis*. 8(3), 223-233.

- Belanger, Y. & Thornton, J. (2013). *Bioelectricity: A Quantitative Approach Duke University's First MOOC*. Duke Center for Instructional Technology. Available from: <https://dukespace.lib.duke.edu/dspace/handle/10161/6216> [Accessed 14<sup>th</sup> December 2015].
- Bertaux, D. (1981). From the life-history approach to the transformation of sociological practice. In: Daniel Bertaux (ed.), *Biography and Society: The Life History Approach in The Social Sciences*. London, Sage. pp.29-45.
- Bethlehem, J. (2010). Selection bias in web surveys. *International Statistical Review*. 78(2), 161-188.
- Bhattacharjee, A. & Lin, C.P. (2015). A unified model of IT continuance: three complementary perspectives and crossover effects. *European Journal of Information Systems*. 24(4), 364-373.
- Bhattacharjee, A. (2000). Acceptance of e-commerce services: the case of electronic brokerages. *IEEE Transactions on Systems, Man, And Cybernetics-Part A: Systems And Humans*. 30(4), 411-420.
- Bhattacharjee, A. (2001). Understanding information systems continuance: an expectation-confirmation model. *MIS Quarterly*. 25(3), 351-370.
- Bhattacharjee, A., Perols, J. & Sanford, C. (2008). Information technology continuance: A theoretic extension and empirical test. *Journal of Computer Information Systems*. 49(1), 17-26.
- Brace, I. (2013). *Questionnaire Design: How to Plan, Structure and Write Survey Material for Effective Market Research*. 2<sup>nd</sup> edn. Kogan Page Ltd.
- Brahimi, T. & Sarirete, A. (2015). Learning outside the classroom through MOOCs. *Computers in Human Behavior*. 51, 604-609.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*. 3(2), 77-101.
- Brewster, J. (2011). Studying technology adoption behaviors with linear or non-linear PLS: does it make a difference? In: *Proceedings of the First International Conference on Engaged Management Scholarship*, Cleveland, Ohio. pp.1-27.
- Brink, H.I.L. (1993). Validity and reliability in qualitative research. *Curationis*. 16(2), 35-38.
- Bruhn, M., Georgi, D. & Hadwich, K. (2008). Customer equity management as formative second-order construct. *Journal of Business Research*. 61(12), 1292-1301.

- Burns, N. & Grove, S. K. (1993). *The Practice of Nursing Research. Conduct, Critique & Utilization*. 2<sup>nd</sup> edn. Philadelphia, WB Saunders Company.
- Carlsen, B. & Glenton, C. (2011). What about N? A methodological study of sample-size reporting in focus group studies. *BMC Medical Research Methodology*. 11(1), 26.
- Cassel, C.M., Hackl, P. & Westlund, A.H. (2000). On measurement of intangible assets: a study of robustness of partial least squares. *Total Quality Management*. 11(7), 897-907.
- Cenfetelli, R.T. & Bassellier, G. (2009). Interpretation of formative measurement in information systems research. *MIS Quarterly*. 33(4), 689-707.
- Chaiyajit, A. & Jeerungsuwan, N. (2015). A study of acceptance of teaching and learning toward Massive Open Online Course (MOOC). In: *The Twelfth International Conference on eLearning for Knowledge-Based Society*, Thailand. pp.33.1-33.5.
- Chandio, F.H. (2011). *Studying Acceptance of Online Banking Information System: A Structural Equation Model*. PhD thesis. Brunel Business School, Brunel University London. Available from: <http://v-scheiner.brunel.ac.uk/handle/2438/6153> [Accessed 15<sup>th</sup> March 2017].
- Chang, I.C., Liu, C.C. & Chen, K. (2014). The effects of hedonic/utilitarian expectations and social influence on continuance intention to play online games. *Internet Research*. 24(1), 21-45.
- Chang, R.I., Hung, Y.H. & Lin, C.F. (2015). Survey of learning experiences and influence of learning style preferences on user intentions regarding MOOCs. *British Journal of Educational Technology*. 46(3), 528-541.
- Che, X., Luo, S., Wang, C. & Meinel, C. (2016). An attempt at MOOC localization for Chinese-speaking users. *International Journal of Information and Education Technology*. 6(2), 90-96.
- Chen, J. (2017). Motivations and challenges of using Massive Open Online Courses by students and instructors. *International Journal of Education & Teaching Analytics*. 1(1), 6-12.
- Chengjie, Y.U. (2015). Challenges and changes of MOOC to traditional classroom teaching mode. *Canadian Social Science*. 11(1), 135-139.
- Chilisa, B. & Preece, J. (2005). *Research Methods for Adult Educators In Africa*. Cape Town, South Africa, Pearson Education.
- Chin, W.W. (1998). The partial least squares approach to structural equation modeling. In: G.A. Marcoulides (ed.), *Modern Methods for Business Research*. Mahwah, NJ, Lawrence Erlbaum Associates. pp.295-336.

- Chin, W.W. & Newsted, P.R. (1999). Structural equation modeling analysis with small samples using partial least squares. *Statistical Strategies for Small Sample Research*. 1(1), 307-341.
- Christensen, G., Steinmetz, A., Alcorn, B., Bennett, A., Woods, D. & Emanuel, E.J. (2013). *The MOOC Phenomenon: Who Takes Massive Open Online Courses and Why?*. Working paper. University of Pennsylvania. Available from: <https://ssrn.com/abstract=2350964> [Accessed 21<sup>st</sup> April 2016].
- Chu, R., Ma, E., Feng, Y. & Lai, I.K. (2015). Understanding learners' intension toward Massive Open Online Courses. In: *International Conference on Hybrid Learning and Continuing Education*. Springer International Publishing. pp.302-312.
- Clark, K.R., Vealé, B.L. & Watts, L.K. (2017). A review of the use of Massive Open Online Courses (MOOCs) in medical imaging education. *Internet Journal of Allied Health Sciences and Practice*. 15(2), 1-6. Available from: <http://nsuworks.nova.edu/ijahsp/vol15/iss2/1/> [Accessed 8<sup>th</sup> October 2017].
- Class Central. (2017). *Languages*. Available from: <https://www.class-central.com/languages> [Accessed 6<sup>th</sup> October 2017].
- Clow, D. (2013). MOOCs and the funnel of participation. In: *Proceedings of the Third International Conference on Learning Analytics and Knowledge*. ACM. pp.185-189.
- Cohen, J. (1988). *Statistical Power Analysis for The Behavioral Sciences*. Hillsdale, NJ, Lawrence Erlbaum.
- Collins, D. (2003). Pretesting survey instruments: an overview of cognitive methods. *Quality of Life Research*. 12(3), 229-238.
- Coursera. (2014). *Verified Certificates Ensure Academic Integrity*. Available from: <https://blog.coursera.org/verified-certificates-ensure-academic-integrity/> [Accessed 14<sup>th</sup> June 2017].
- Cox, D.R. & Small, N.J.H. (1978). Testing multivariate normality. *Biometrika*. 65(2), 263-272.
- Creswell, J. (1998). *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*. Thousand Oaks, CA, Sage.
- Creswell, J.W. & Plano Clark, V.L. (2007). *Designing and Conducting Mixed Methods Research*. Thousand Oaks, CA, Sage.
- Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*. 16(3), 297-334.

- Csikszentmihalyi, M. (1988). The flow experience and its significance for human psychology. In: *Optimal Experience: Psychological Studies of Flow in Consciousness*. New York, Cambridge University Press. pp.15-35.
- Cupitt, C. & Golshan, N. (2015). Participation in higher education online: Demographics, motivators, and grit. In: *STARS Conference*, Melbourne, Australia. Available from: <http://www.unistars.org/papers/STARS2015/09C.pdf> [Accessed 10<sup>th</sup> February 2016].
- CuteStat. (2017a). *Web Analysis for Edrak*. Available from: <https://edrak.org.cutestat.com> [Accessed 6<sup>th</sup> October 2017].
- CuteStat. (2017b). *Web Analysis for Rwaq*. Available from: <https://rwaq.org.cutestat.com> [Accessed 6<sup>th</sup> October 2017].
- Daft, R.L. & Lengel, R.H. (1986). Organizational information requirements, media richness and structural design. *Management Science*. 32(5), 554-571.
- Dai, H. & Palvi, P.C. (2009). Mobile commerce adoption in China and the United States: a cross-cultural study. *ACM SIGMIS Database*. 40 (4), 43-61. Available from: <https://dl.acm.org/citation.cfm?doid=1644953.1644958> [Accessed 27<sup>th</sup> May 2017].
- Davis, F.D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. PhD thesis. Massachusetts Institute of Technology. Available from: <https://dspace.mit.edu/handle/1721.1/15192?show=full> [Accessed 2<sup>nd</sup> January 2016].
- Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*. 13(3), 319-340.
- Davis, F.D., Bagozzi, R. & Warshaw, P. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*. 35(8), 982-1003.
- Davis, H., Dickens, K., Leon, M., Sánchez-Vera, M. & White, S. (2014). MOOCs for universities and learners- an analysis of motivating factors. In: *Proceedings of the 6th International Conference on Computer Supported Education*, Barcelona, Spain. pp.105-116.
- Davis, F.D. & Venkatesh, V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: three experiments. *International Journal of Human-Computer Studies*. 45(1), 19-45.
- De Langen, F. & van den Bosch, H. (2013). Massive Open Online Courses: disruptive innovations or disturbing inventions?. *Open Learning: The Journal of Open, Distance and e-Learning*. 28(3), 216-226.



- DeLone, W.H. & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*. 3(1), 60-95.
- Delone, W.H. & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of Management Information Systems*. 19(4), 9-30.
- Deng, R., Benckendorff, P. & Gannaway, D. (2017). Understanding learning and teaching in MOOCs from the perspectives of students and instructors: a review of literature from 2014 to 2016. In: *European Conference on Massive Open Online Courses*. Cham, Springer. pp.176-181.
- Diamantopoulos, A. & Siguaw, J.A. (2006). Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. *British Journal of Management*. 17(4), 263-282.
- Diamantopoulos, A., Riefler, P. & Roth, K.P. (2008). Advancing formative measurement models. *Journal of Business Research*. 61(12), 1203-1218.
- Dicicco-Bloom, B. & Crabtree, B.F. (2006). The qualitative research interview. *Medical Education*. 40(4), 314-321.
- Dietrich, H. & Ehrlenspiel, F. (2010). Cognitive interviewing: A qualitative tool for improving questionnaires in sport science. *Measurement in Physical Education and Exercise Science*. 14(1), 51-60.
- Downes, S. (2007). Models for sustainable open educational resources. *Interdisciplinary Journal of Knowledge And Learning Objects*. 3(1), 29-44.
- Doyle, L., Brady, A.M. & Byrne, G. (2009). An overview of mixed methods research. *Journal of Research in Nursing*. 14(2), 175-185.
- Dworkin, S.L. (2012). Sample size policy for qualitative studies using in-depth interviews. *Archives of Sexual Behavior*. 41(6), 1319-1320.
- Edraak. (2017). *Presentation of EDRAAK as a Best Practice on Open Education*. Available from: <https://www.slideshare.net/openmedproject/edraak-73046678> [Accessed 13<sup>th</sup> October 2017].
- Edwards, J.R. (2011). The fallacy of formative measurement. *Organizational Research Methods*. 14(2), 370-388.
- edX. (n.d.). *Verified Certificates*. Available from: <https://www.edx.org/verified-certificate> [Accessed 14<sup>th</sup> June 2017].

- Egloffstein, M. & Ifenthaler, D. (2017). Employee perspectives on MOOCs for workplace learning. *TechTrends*. 61(1), 65-70.
- Ejreaw, A. M. & Drus, S. M. (2017). The challenges of massive open online courses (MOOCs) – a preliminary review. In: Zulikha, J. & N.H. Zakaria (ed.), *Proceedings of the 6th International Conference on Computing & Informatics*, Kuala Lumpur. Sintok, School of Computing. pp.473-479.
- Eljishi, Z. & Taylor, T. (2015). A case study on undergraduate student opinion on the use of MOOCs at a private university in Saudi Arabia. In: Sultan, N. & Jamal Al-Lail, H. (ed.), *Creative Learning and MOOCs: Harnessing the Technology for A 21st Century Education*. UK, Cambridge, Scholars Publishing. pp.67-73.
- Ellis, P. (2016). *Evidence-based Practice in Nursing*. 3<sup>rd</sup> edn. London, Learning Matters.
- El-Masri, M. & Tarhini, A. (2017). Factors affecting the adoption of e-learning systems in Qatar and USA: Extending the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). *Educational Technology Research and Development*. 65(3), 743-763.
- Etikan, I. & Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*. 5(6), 00149. DOI: 10.15406/bbij.2017.05.00149.
- Etikan, I., Musa, S.A. & Alkassim, R.S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*. 5(1), 1-4.
- Faber, J. & Fonseca, L.M. (2014). How sample size influences research outcomes. *Dental Press Journal of Orthodontics*. 19(4), 27-29.
- Fan, W. & Yan, Z. (2010). Factors affecting response rates of the web survey: A systematic review. *Computers in Human Behaviour*. 26(2), 132-139.
- Fathema, N., Shannon, D. & Ross, M. (2015). Expanding the Technology Acceptance Model (TAM) to examine faculty use of learning management systems (LMSs) in higher education institutions. *MERLOT Journal of Online Learning & Teaching*. 11(2), 210-232.
- Feldman, P.M., Bahamonde, R.A. & Velasquez Bellido, I. (2014). A new approach for measuring corporate reputation. *Revista de Administração de Empresas*. 54(1), 53-66.
- Fini, A. (2009). The technological dimension of a massive open online course: The case of the CCK08 course tools. *International Review of Research in Open and Distance Learning*. 10(5), 1-26.

- Fischer, G. (2014). Beyond hype and underestimation: identifying research challenges for the future of MOOCs. *Distance Education*. 35(2), 149-158.
- Fishbein, M. & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Reading, MA, Addison-Wesley.
- Fornell, C. & Bookstein, F.L. (1982). Two structural equation models: LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing Research*. 19(4), 440-452.
- Fornell, C. & Cha, J. (1994). Partial least squares. In: Bagozzi, R.P. (ed.), *Advanced Methods of Marketing Research*. Blackwell. pp.52-78.
- Fornell, C. & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*. 18(1), 39-50.
- Foroudi, P., Melewar, T.C. & Gupta, S. (2014). Linking corporate logo, corporate image, and reputation: An examination of consumer perceptions in the financial setting. *Journal of Business Research*. 67(11), 2269-2281.
- Francis, J.J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V., Eccles, M.P. & Grimshaw, J.M., (2010). What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychology and Health*. 25(10), 1229-1245.
- Gall, M.D., Gall, J.P. & Borg, W.R. (2007). *Educational Research: An Introduction*. 8<sup>th</sup> edn. Boston Pearson/Allyn & Bacon.
- Gameel, B.G. (2017). Learner satisfaction with Massive Open Online Courses. *American Journal of Distance Education*. 31(2), 98-111.
- Gao, S. & Yang, Y. (2015). Exploring users' adoption of MOOCs from the perspective of the institutional theory. In: *The Fourteen Wuhan International Conference on E-Business Human Behavior and Social Impacts on E-Business*, Wuhan, China. pp.383-390.
- Garrido, M., Koepke, L., Anderson, S., Felipe Mena, A., Macapagal, M. & Dalvit, L. (2016). *The Advancing MOOCs for Development Initiative: An examination of MOOC usage for professional workforce development outcomes in Colombia, the Philippines, & South Africa*. Seattle, Technology & Social Change Group, University of Washington Information School. Available from: <https://digital.lib.washington.edu/researchworks/handle/1773/35647> [Accessed 20<sup>th</sup> August 2016].
- Gašević, D., Kovanović, V., Joksimović, S. & Siemens, G. (2014). Where is research on Massive Open Online Courses headed? A data analysis of the MOOC research initiative. *International Review of Research in Open and Distance Learning*. 15(5), 134-176.

- Geisser, S. (1975). The predictive sample reuse method with applications. *Journal of the American Statistical Association*. 70(350), 320-328.
- Gentles, S.J., Charles, C., Ploeg, J. & McKibbin, K.A. (2015). Sampling in qualitative research: Insights from an overview of the methods literature. *The Qualitative Report*. 20(11), 1772-1789.
- Gerbing, D.W. & Anderson, J.C. (1985). The effects of sampling error and model characteristics on parameter estimation for maximum likelihood confirmatory factor analysis. *Multivariate Behavioral Research*. 20(3), 255-271.
- Gill, P., Stewart, K., Treasure, E. & Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *British Dental Journal*. 204(6), 291-295.
- Graneheim, U.H. & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*. 24(2), 105-112.
- Green, P.F., Robb, D.A. & Rohde, F.H. (2015). A model for assessing information systems success and its application to e-logistics tracking systems. *Pacific Asia Journal of the Association for Information Systems*. 6(4), 39-68.
- Greene, J.A., Oswald, C.A. & Pomerantz, J. (2015). Predictors of retention and achievement in a massive open online course. *American Educational Research Journal*. 52(5), 925-955.
- Grimm, P. (2010). *Pretesting a Questionnaire*. Wiley International Encyclopedia of Marketing, 2. Doi: 10.1002/9781444316568.wiem02051.
- Guest, G., Bunce, A. & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*. 18(1), 59-82.
- Gujarati, D.N. (2003). *Basic Econometrics*. 4<sup>th</sup> edn. New York, McGraw-Hill.
- Gütl, C., Rizzardini, R.H., Chang, V. & Morales, M. (2014). Attrition in MOOC: lessons learned from dropout students. In: Uden, L., Sinclair, J., Tao, Y.H. & Liberona, D. (ed.), *Learning Technology for Education in Cloud. MOOC and Big Data*. Springer International Publishing. pp.37-48.
- Hair, J. F., Hult, G. T. M., Ringle, C. M. & Sarstedt, M. (2014a). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks, Sage.
- Hair, J., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). *Multivariate Data Analysis*. 7<sup>th</sup> edn. Upper saddle River, New Jersey, Pearson Education International.

- Hair, J.F., Ringle, C.M. & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*. 19(2), 139-152.
- Hair, J.F., Sarstedt, M., Hopkins, L. & Kuppelwieser, V.G. (2014b). Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research. *European Business Review*. 26(2), 106-121.
- Hakami N., White S. & Chakaveh S. (2017). Motivational factors that influence the use of MOOCs: learners' perspectives - A systematic literature review. In: *Proceedings of the 9th International Conference on Computer Supported Education*, Porto, Portugal. pp.323-331.
- Harrington, D. (2009). *Confirmatory Factor Analysis*. Oxford University Press.
- Haynes, S.N., Richard, D. & Kubany, E.S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment*. 7(3), 238-247.
- Hennink, M.M., Kaiser, B.N. & Marconi, V.C. (2016). Code saturation versus meaning saturation: how many interviews are enough?. *Qualitative Health Research*. 27(4), 591-608.
- Henseler, J., Dijkstra, T.K., Sarstedt, M., Ringle, C.M., Diamantopoulos, A., Straub, D.W., Ketchen Jr, D.J., Hair, J.F., Hult, G.T.M. & Calantone, R.J. (2014). Common beliefs and reality about PLS: Comments on Rönkkö and Evermann (2013). *Organizational Research Methods*. 17(2), 182-209.
- Henseler, J., Ringle, C.M. & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*. 43(1), 115-135.
- Henseler, J., Ringle, C.M. & Sinkovics, R.R. (2009). The use of partial least squares path modeling in international marketing. In: Rudolf R. Sinkovics & Pervez N. Ghauri (ed.), *Advances in International Marketing*, vol. 20. Bingley, Emerald Group Publishing Limited. pp.277-319.
- Hertzog, M.A. (2008). Considerations in determining sample size for pilot studies. *Research in Nursing & Health*. 31(2), 180-191.
- Hew, K.F. & Cheung, W.S. (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. *Educational Research Review*. 12, 45-58.
- Hilal, A.H. & Alabri, S.S. (2013). Using NVivo for data analysis in qualitative research. *International Interdisciplinary Journal of Education*. 2(2), 181-186.

- Hilton, C.E. (2017). The importance of pretesting questionnaires: a field research example of cognitive pretesting the Exercise referral Quality of Life Scale (ER-QLS). *International Journal of Social Research Methodology*. 20(1), 21-34.
- Hinkin, T.R., Tracey, J.B. & Enz, C.A. (1997). Scale construction: Developing reliable and valid measurement instruments. *Journal of Hospitality & Tourism Research*. 21(1), 100-120.
- Ho, C.H. (2010). Continuance intention of e-learning platform: Toward an integrated model. *International Journal of Electronic Business Management*. 8(3), 206-215.
- Ho, L.A. & Kuo, T.H. (2010). How can one amplify the effect of e-learning? An examination of high-tech employees' computer attitude and flow experience. *Computers in Human Behavior*. 26(1), 23-31.
- Hoehle, H. & Huff, S. (2012). Advancing task-technology fit theory: a formative measurement approach to determining task-channel fit for electronic banking channels. In: Hart, D.N. & Gregor, S.D. (ed.), *Information Systems Foundations: Theory Building in Information Systems*. ANU E Press, pp.133-169.
- Hofstede, G. & Hofstede, J. (2005). *Cultures and Organizations: Software of the Mind*. 2<sup>nd</sup> edn. New York, McGraw-Hill.
- Hofstede, G. (1980). *Culture's Consequences: International Differences in Work-Related Values*. Beverly Hills CA, Sage.
- Hone, K.S. & El Said, G.R. (2016). Exploring the factors affecting MOOC retention: A survey study. *Computers & Education*. 98, 157-168.
- Horton-Tognazzini, L. (2015). Re-conceptualising MOOC success. In: *ENTER2015 PhD Workshop*. pp.35-41. Available from: [https://www.researchgate.net/profile/Nagore\\_Espinosa/publication/271521921\\_Meetings\\_Industry\\_Stakeholders'\\_Cooperation\\_Relevance\\_to\\_City\\_Destinations\\_Performance/links/54cb4bb20cf2c70ce52547b8.pdf#page=35](https://www.researchgate.net/profile/Nagore_Espinosa/publication/271521921_Meetings_Industry_Stakeholders'_Cooperation_Relevance_to_City_Destinations_Performance/links/54cb4bb20cf2c70ce52547b8.pdf#page=35) [Accessed 26<sup>th</sup> April 2017].
- Howarth, J.P., D'Alessandro, S., Johnson, L. & White, L. (2016). Learner motivation for MOOC registration and the role of MOOCs as a university 'taster'. *International Journal of Lifelong Education*. 35(1), 74-85.
- Huang, B. & Hew, K.F. (2017). Factors Influencing Learning and Factors Influencing Persistence: A Mixed-method Study of MOOC Learners' Motivation. In: *Proceedings of the 2017 International Conference on Information System and Data Mining*, Charleston, SC, USA. ACM. pp.103-110.

- Huang, L., Zhang, J. & Liu, Y. (2017). Antecedents of student MOOC revisit intention: Moderation effect of course difficulty. *International Journal of Information Management*. 37(2), 84-91.
- Huanhuan, W. & Xu, L. (2015). Research on technology adoption and promotion strategy of MOOC. In: *Software Engineering and Service Science (ICSESS), 2015 6th IEEE International Conference*. IEEE. pp.907-910.
- Huber, F., Herrmann, A., Meyer, F., Vogel, J. & Vollhardt, K. (2007). *Kausalmodellierung mit Partial Least Squares: Eine anwendungsorientierte Einführung*. Wiesbaden, Gabler.
- Hussein, A. (2009). The use of triangulation in social sciences research: Can qualitative and quantitative methods be combined? *Journal of Comparative Social Work*. 1, 1-12.
- Iacono, V.L., Symonds, P. & Brown, D.H. (2016). Skype as a tool for qualitative research interviews. *Sociological Research Online*. 21(2), 12.
- ICEF Monitor. (2016). *Annual Ranking Says Europe Still Leads on English Proficiency*. Available from: <http://monitor.icef.com/2016/11/annual-ranking-says-europe-still-leads-english-proficiency/> [Accessed 2<sup>nd</sup> March 2017].
- Im, I., Hong, S. & Kang, M.S. (2011). An international comparison of technology adoption: Testing the UTAUT model. *Information & Management*. 48(1), 1-8.
- Ischinger, B. (2007). *Giving Knowledge for Free: The Emergence Of Open Educational Resources*. Paris, OECD. Available from: [http://www.oecd.org/document/41/0,3343,en\\_2649\\_201185\\_38659497\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/41/0,3343,en_2649_201185_38659497_1_1_1_1,00.html) [Accessed 7<sup>th</sup> January 2016].
- Ivankova, N.V., Creswell, J.W. & Stick, S.L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods*. 18(1), 3-20.
- Jackson, D.L. (2003). Revisiting sample size and number of parameter estimates: Some support for the N: q hypothesis. *Structural Equation Modelling*. 10(1), 128-141.
- Jacob, S.A. & Furgerson, S.P. (2012). Writing interview protocols and conducting interviews: Tips for students new to the field of qualitative research. *The Qualitative Report*. 17(42), 1-10.
- Jannoo, Z., Yap, B.W., Auchoybur, N. & Lazim, M.A. (2014). The effect of nonnormality on CB-SEM and PLS-SEM path estimates. *International Journal of Mathematical, Computational, Physical and Quantum Engineering*. 8(2), 285-291.
- Jansen, D. & Schuwer, R. (2015). *Institutional MOOC Strategies in Europe. Status Report Based on A Mapping Survey Conducted in October - December 2014*. EADTU. Available from:

- [http://www.eadtu.eu/documents/Publications/OEenM/Institutional MOOC strategies in Europe.pdf](http://www.eadtu.eu/documents/Publications/OEenM/Institutional%20MOOC%20strategies%20in%20Europe.pdf) [Accessed 4<sup>th</sup> June 2016].
- Jasnani, P. (2013). *Designing MOOCs*. A White Paper on Instructional Design for MOOCs. Tata Interactive Systems. Available from: [http://www.tatainteractive.com/pdf/Designing MOOCs-A White Paper on ID for MOOCs.pdf](http://www.tatainteractive.com/pdf/Designing_MOOCs-A_White_Paper_on_ID_for_MOOCs.pdf) [Accessed 6<sup>th</sup> August 2016].
- Jemni M. & Khribi M.K. (2017). Toward empowering open and online education in the Arab world through OER and MOOCs. In: Jemni M. & Kinshuk, Khribi M. (ed.), *Open Education: from OERs to MOOCs*. Berlin, Heidelberg, Lecture Notes in Educational Technology, Springer. pp.73-100. Available from: [https://link.springer.com/chapter/10.1007/978-3-662-52925-6\\_4](https://link.springer.com/chapter/10.1007/978-3-662-52925-6_4) [Accessed 14<sup>th</sup> August 2017].
- Jha, S. & Bhattacharyya, S.S. (2013). Learning orientation and performance orientation: Scale development and its relationship with performance. *Global Business Review*. 14(1), 43-54.
- Johanson, G.A. & Brooks, G.P. (2010). Initial scale development: sample size for pilot studies. *Educational and Psychological Measurement*. 70(3), 394-400.
- Johnson, B. & Christensen, L. (2008). *Educational Research: Quantitative, Qualitative, and Mixed Approaches*. 3<sup>rd</sup> edn. Sage.
- Johnson, R.B. & Onwuegbuzie, A.J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*. 33(7), 14-26.
- Johnson, R.B., Onwuegbuzie, A.J. & Turner, L.A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*. 1(2), 112-133.
- Jordan, K. (2014). Initial trends in enrolment and completion of massive open online courses. *The International Review of Research in Open and Distributed Learning*. 15(1), 133-160.
- Joseph, A.M. & Nath, B.A. (2013). Integration of Massive Open Online Education (MOOC) System with in-Classroom Interaction and Assessment and Accreditation: An extensive report from a pilot study. In: *Proceedings of the International Conference on e-Learning, e-Business, Enterprise Information Systems, and e-Government (EEE)*, Las Vegas, USA. The Steering Committee of The World Congress in Computer Science, Computer Engineering and Applied Computing (WorldComp). pp.105-113.
- Junjie, Z. (2017). Exploring the factors affecting learners' continuance intention of MOOCs for online collaborative learning: An extended ECM perspective. *Australasian Journal of Educational Technology*. 33(5), 123-135.



- Kaba, B. & Osei-Bryson, K.M. (2013). Examining influence of national culture on individuals' attitude and use of information and communication technology: Assessment of moderating effect of culture through cross countries study. *International Journal of Information Management*. 33(3), 441-452.
- Kazi, A.M. & Khalid, W. (2012). Questionnaire designing and validation. *Journal of the Pakistan Medical Association*. 62(5), 514-516.
- Kerr, C., Nixon, A. & Wild, D. (2010). Assessing and demonstrating data saturation in qualitative inquiry supporting patient-reported outcomes research. *Expert Review of Pharmacoeconomics & Outcomes Research*. 10(3), 269-281.
- Khalil, H. & Ebner, M. (2014). MOOCs completion rates and possible methods to improve retention-A literature review. In: *World Conference on Educational Multimedia, Hypermedia and Telecommunications*. Chesapeake, VA, Association for the Advancement of Computing in Education (AACE). pp.1236-1244.
- Khalil, M., Taraghi, B. & Ebner, M. (2016). Engaging learning analytics in MOOCs: the good, the bad, and the ugly. In: *International Conference on Education and New Developments*, Ljubljana, Slovenia. pp.3-7.
- King, W.R. & He, J. (2006). A meta-analysis of the technology acceptance model. *Information & Management*. 43(6), 740-755.
- Kitchenham, B. (2004) Procedures for performing systematic reviews. Joint Technical Report. Keele, UK, Keele University: 1-26.
- Kizilcec, R.F., & Halawa, S. (2015). Attrition and achievement gaps in online learning. In: *Proceedings of the Second ACM Conference on Learning@Scale*, Vancouver, Canada. ACM. pp.57–66.
- Kizilcec, R.F. & Schneider, E. (2015). Motivation as a lens to understand online learners: Toward data-driven design with the OLEI scale. *ACM Transactions on Computer-Human Interaction (TOCHI)*. 22(2), 6:1–6:24.
- Kizilcec, R.F., Piech, C. & Schneider, E. (2013). Deconstructing disengagement: analyzing learner subpopulations in massive open online courses. In: *Proceedings of the Third International Conference on Learning Analytics and Knowledge*, Leuven, Belgium. ACM. pp.170-179.
- Kleine-Kalmer, B. (2016). *Brand Page Attachment: An Empirical Study on Facebook Users' Attachment to Brand Pages*. Springer.

- Kline, R.B. (2011). *Principles and Practice of Structural Equation Modelling*. 3<sup>rd</sup> edn. New York, Guilford Press.
- Knafl, K., Deatrick, J., Gallo, A., Holcombe, G., Bakitas, M., Dixon, J. & Grey, M. (2007). The analysis and interpretation of cognitive interviews for instrument development. *Research in Nursing & Health*. 30(2), 224-234.
- Kock, N. & Lynn, G. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. *Journal of the Association for Information Systems (JAIS)*. 13(7), 546-580.
- Kock, N. (2014). Advanced mediating effects tests, multi-group analyses, and measurement model assessments in PLS-based SEM. *International Journal of e-Collaboration*. 10(3), 1-13.
- Kock, N. (2015a). *WarpPLS 5.0 User Manual*. Laredo, Texas, USA, ScriptWarp Systems. Available from: [http://cits.tamui.edu/WarpPLS/UserManual\\_v\\_5\\_0.pdf](http://cits.tamui.edu/WarpPLS/UserManual_v_5_0.pdf) [Accessed 13<sup>th</sup> February 2017].
- Kock, N. (2015b). One-tailed or two-tailed P values in PLS-SEM?. *International Journal of eCollaboration*. 11(2), 1-7.
- Kock, N. (2017). *WarpPLS User Manual: Version 6.0*. Laredo, Texas, USA, ScriptWarp Systems. Available from: [http://cits.tamui.edu/WarpPLS/UserManual\\_v\\_6\\_0.pdf](http://cits.tamui.edu/WarpPLS/UserManual_v_6_0.pdf) [Accessed 14<sup>th</sup> September 2017].
- Kock, N. (ed.) (2012). *Interdisciplinary Applications of Electronic Collaboration Approaches and Technologies*. Texas, USA, IGI Global.
- Kock, N. & Mayfield, M. (2015). PLS-based SEM algorithms: The good neighbor assumption, collinearity, and nonlinearity. *Information Management and Business Review*. 7(2), 113-130.
- Koller, D., Ng, A., Do, C. & Chen, Z. (2013). *Retention and Intention in Massive Open Online Courses: In Depth*. Educause Review. Available from: <https://er.educause.edu/articles/2013/6/retention-and-intention-in-massive-open-online-courses-in-depth> [Accessed 2<sup>nd</sup> April 2016].
- Kopp, M. & Ebner, M. (2017). Certification of MOOCs—Advantages, Challenges and Practical Experiences. *Revista Espanola De Pedagogia*. 75(266), 83-100.
- Kozinska, K.A. (2013). *Supporting Lifelong Learning with Open Educational Resources (OER) Among Diverse Users: Motivations for And Approaches to Learning with Different OER*. PhD thesis. The Open University. Available from: [http://oro.open.ac.uk/40290/1/3a\\_KKozinska\\_thesis\\_29nov%20%281%29.pdf](http://oro.open.ac.uk/40290/1/3a_KKozinska_thesis_29nov%20%281%29.pdf) [Accessed 5<sup>th</sup> January 2016].

- Kwahk, K.Y. & Lee, J.N. (2008). The role of readiness for change in ERP implementation: Theoretical bases and empirical validation. *Information & Management*. 45(7), 474-481.
- Lai, C., Wang, Q. & Lei, J. (2012). What factors predict undergraduate students' use of technology for learning? A case from Hong Kong. *Computers & Education*, 59 (2), 569-579.
- Lampard, R. & Pole, C. (2015). *Practical Social Investigation: Qualitative and Quantitative Methods In Social Research*. Routledge.
- Latha, A. & Malarmathi, K. (2016). Factors Influencing Successful Completion of Massive Open Online Courses: A Synthesis of Literature. *Global Journal For Research Analysis*, 5(1), 66-68.
- Lee, I., Choi, B., Kim, J. & Hong, S.J. (2007). Culture-technology fit: Effects of cultural characteristics on the post-adoption beliefs of mobile Internet users. *International Journal of Electronic Commerce*. 11(4), 11-51.
- Lee, J.S., Cho, H., Gay, G. & Davidson, B. (2003). Technology acceptance and social networking in distance learning. *Educational Technology & Society*. 6(2), 50-61.
- Lee, Y., Lee, J. & Lee, Z. (2006). Social influence on technology acceptance behavior: self-identity theory perspective. *ACM SIGMIS Database*. 37(2-3), 60-75.
- Legris, P., Ingham, J. & Colletette, P. (2003). Why do people use information technology? a critical review of the Technology Acceptance Model. *Information & Management*. 40(3), 191-204.
- Li, K. (2015). *Motivating Learners in Massive Open Online Courses: A Design-based Research Approach*. PhD thesis. The Patton College of Education of Ohio University. Available from: <https://search.proquest.com/docview/1769046180?pg-origsite=gscholar> [Accessed 17<sup>th</sup> May 2016].
- Liangxing, L.I.U. (2017). An empirical analysis of Chinese college learners' obstacles to MOOC learning in an English context. *English Language Teaching*. 10(3), 136-150.
- Liao, C., Palvia, P. & Chen, J.L. (2009). Information technology adoption behavior life cycle: Toward a Technology Continuance Theory (TCT). *International Journal of Information Management*. 29(4), 309-320.
- Lim, C.L., Tang, S.F. & Ravichandran, P. (2017). A Study on the Mediation Effects of Intention to Enroll in MOOCs on its Actual Usage. In: *Proceedings of the 8th International Conference on E-Education, E-Business, E-Management and E-Learning*, Kuala Lumpur, Malaysia. ACM. pp.30-33.

- Limayem, M., Hirt, S.G. & Cheung, C.M.K. (2003). Habit in the Context of IS Continuance: Theory Extension and Scale Development. In: *Proceedings of the Eleventh European Conference on Information Systems (ECIS 2003)*, Naples, Italy. Available from: <http://aisel.aisnet.org/ecis2003/90> [Accessed 15<sup>th</sup> March 2017].
- Lin, X., Featherman, M. & Sarker, S. (2017). Understanding factors affecting users' social networking site continuance: A gender difference perspective. *Information & Management*. 54(3), 383-395.
- Littlejohn, A., Hood, N., Milligan, C. & Mustain, P. (2016). Learning in MOOCs: Motivations and self regulated learning in MOOCs. *The Internet and Higher Education*. 29, 40-48.
- Liu, M., Kang, J. & McKelroy, E. (2015). Examining learners' perspective of taking a MOOC: reasons, excitement, and perception of usefulness. *Educational Media International*. 52(2), 129-146.
- Liyanagunawardena, T.R., Adams, A.A. & Williams, S.A. (2013). MOOCs: A systematic study of the published literature 2008-2012. *The International Review of Research in Open and Distributed Learning*. 14(3), 202-227.
- Logan, S., Medford, E. & Hughes, N. (2011). The importance of intrinsic motivation for high and low ability readers' reading comprehension performance. *Learning and Individual Differences*. 21(1), 124-128.
- Lohmöller, J.B. (1989). *Latent Variable Path Modeling With Partial Least Squares*. Heidelberg, Physica.
- Loizzo, J., Ertmer, P.A., Watson, W.R. & Watson, S.L. (2017). Adult MOOC learners as self-directed: Perceptions of motivation, success, and completion. *Online Learning*. 21(2). Available from: <https://olj.onlinelearningconsortium.org/index.php/olj/article/view/889> [Accessed 14<sup>th</sup> September 2017].
- Lopes, A.P., Soares, F. & Vieira, I. (2014). A new horizon for online teaching and learning. In: *Proceedings of EDULEARN14 Conference*, Barcelona, Spain. IATED Academy. pp.5328-5335. Available from: <http://hdl.handle.net/10400.22/4860> [Accessed 8<sup>th</sup> September 2016].
- Lowry, P.B. & Gaskin, J. (2014). Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it. *IEEE Transactions on Professional Communication*. 57(2), 123-146.
- Lu, J., Yu, C.S., Liu, C. & Wei, J. (2017). Comparison of mobile shopping continuance intention between China and USA from an espoused cultural perspective. *Computers in Human Behavior*. 75, 130-146.

- Mack, N., Woodsong, C., MacQueen, K.M., Guest, G. & Namey, E. (2005). *Qualitative Research Methods: A Data Collectors Field Guide*. Triangle Park, North Carolina, Family Health International. Available from: <https://www.popline.org/node/263032> [Accessed 12<sup>th</sup> June 2016].
- MacKenzie, S.B., Podsakoff, P.M. & Jarvis, C.B. (2005). The problem of measurement model misspecification in behavioral and organizational research and some recommended solutions. *Journal of Applied Psychology*. 90(4), 710-730.
- Macleod, H., Haywood, J., Woodgate, A. & Alkhatnai, M. (2015). Emerging patterns in MOOCs: Learners, course designs and directions. *TechTrends*. 59(1), 56-63.
- Magen-Nagar, N. & Cohen, L. (2017). Learning strategies as a mediator for motivation and a sense of achievement among students who study in MOOCs. *Education and Information Technologies*. 22(3), 1271-1290.
- Malterud, K., Siersma, V.D. & Guassora, A.D. (2016). Sample size in qualitative interview studies: guided by information power. *Qualitative Health Research*. 26(13), 1753-1760.
- Mardia, K. V. (1985). Mardia's test of multinormality. In: S. Kotz & N.L. Johnson (ed.), *Encyclopedia of Statistical Sciences*. New York, Wiley. pp.217-221
- Marks, D.F. & Yardley, L. (ed.) (2004). *Research Methods for Clinical And Health Psychology*. Sage.
- Marsh, N. (2017). *MOOC Users Reach 58 Million Globally*. Available from: <https://thepienews.com/news/edu-tech/mooc-users-reach-58-million-globally/> [Accessed 4<sup>th</sup> June 2017].
- Marshall, M.N. (1996). Sampling for qualitative research. *Family Practice*. 13(6), 522-526.
- Martínez, S. (2014). OCW (OpenCourseWare) and MOOC (open course Where?). In: *OCWC Global Conference Open Education for a Multicultural World*, Ljubljana, Slovenia, OCWC. Available from: [http://conference.oecconsortium.org/2014/wp-content/uploads/2014/02/Paper\\_16.pdf](http://conference.oecconsortium.org/2014/wp-content/uploads/2014/02/Paper_16.pdf) [Accessed 11<sup>th</sup> January 2016].
- Maruping, L.M., Bala, H., Venkatesh, V. & Brown, S.A. (2017). Going beyond intention: Integrating behavioral expectation into the unified theory of acceptance and use of technology. *Journal of the Association for Information Science and Technology*. 68(3), 623-637.
- Mason, M. (2010). Sample size and saturation in PhD studies using qualitative interviews. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*. 11(3), Art. 8. Available from: <http://nbn-resolving.de/urn:nbn:de:0114-fqs100387> [Accessed 16<sup>th</sup> February 2016].

- Mathers, N., Fox, N. & Hunn, A. (2007). *Surveys and Questionnaires*. Sheffield, Trent: RDSU.
- McMillan, J.H. (1996). *Educational Research: Fundamentals for The Consumer*. 2<sup>nd</sup> edn. New York, HarperCollins College Publishers.
- Mihalec-Adkins, B., Hicks, N., Douglas, K.A., Diefes-Dux, H., Bermel, P. & Madhavan, K. (2016). Surveying the motivations of groups of learners in highly-technical STEM MOOCs. In: *Frontiers in Education Conference (FIE), 2016 IEEE*, Erie, PA, USA. IEEE. pp.1-6.
- Milligan, C. & Littlejohn, A. (2017). Why study on a MOOC? the motives of students and professionals. *The International Review of Research in Open and Distributed Learning*. 18(2), 92-102.
- Milligan, C., Littlejohn, A. & Margaryan, A. (2013). Patterns of engagement in connectivist MOOCs. *MERLOT Journal of Online Learning and Teaching*. 9(2), 149–159.
- Mohamadali, K.S. & Azizah, N. (2013). *Exploring New Factors and The Question Of 'Which' In User Acceptance Studies of Healthcare Software*. PhD thesis. University of Nottingham. Available from: <http://eprints.nottingham.ac.uk/13163/> [Accessed 19<sup>th</sup> September 2016].
- Mohapatra, S. & Mohanty, R. (2016). Adopting MOOCs for affordable quality education. *Education and Information Technologies*. 22(5), 2027-2053.
- Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*. 2(3), 192-222.
- Morris, M.G. & Dillon, A. (1997). How user perceptions influence software use. *IEEE Software*. 14(4), 58-65.
- Muhammad, S.H., Mustapha, A. & Haruna, K. (2016). Massive Open Online Courses: Awareness, adoption, benefits and challenges in Sub-Saharan Africa. *International Journal of Ict and Management*. 4(2), 60-68.
- Mulik, S., Yajnik, N. & Godse, M. (2016). Determinants of acceptance of Massive Open Online Courses. In: *2016 IEEE Eighth International Conference on Technology for Education (T4E)*, Mumbai, India. IEEE. pp.124-127.
- Murdoch, M., Simon, A.B., Polusny, M.A., Bangerter, A.K., Grill, J.P., Noorbaloochi, S. & Partin, M.R. (2014). Impact of different privacy conditions and incentives on survey response rate, participant representativeness, and disclosure of sensitive information: a randomized controlled trial. *BMC Medical Research Methodology*. 14(1), 90-100.

- Mutawa, A.M. (2016). It is time to MOOC and SPOC in the Gulf region. *Education and Information Technologies*. 22 (4), 1651–1671.
- Myers, M.D. & Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization*. 17(1), 2-26.
- Nabavi, A., Taghavi-Fard, M.T., Hanafizadeh, P. & Taghva, M.R. (2016). Information technology continuance intention: A systematic literature review. *International Journal of E-Business Research (IJEER)*. 12(1), 58-95.
- Nagasampige, M. & Nagasampige, K. (2017). A qualitative study on usage and effectiveness of massive open online courses (MOOCs) in Indian university education system. *European Journal of Open Education and E-learning Studies*. 2(1), 65- 79.
- Namey, E., Guest, G., McKenna, K. & Chen, M. (2016). Evaluating bang for the buck: A cost-effectiveness comparison between individual interviews and focus groups based on thematic saturation levels. *American Journal of Evaluation*. 37(3), 425-440.
- Nasser, F. & Wisenbaker, J. (2003). A Monte Carlo study investigating the impact of item parceling on measures of fit in confirmatory factor analysis. *Educational and Psychological Measurement*. 63(5), 729-757.
- Ng, C.S.P. (2013). Intention to purchase on social commerce websites across cultures: A cross-regional study. *Information & Management*. 50(8), 609-620.
- Nordin, N., Norman, H. & Embi, M.A. (2015). Technology acceptance of massive open online courses in Malaysia. *Malaysian Journal of Distance Education*. 17(2), 1-16.
- Norman, A. (2014). The who, why and what of MOOCs. In: B. Hegarty, J. McDonald, & S.K Loke, (ed.), *Rhetoric and Reality, Critical perspectives on educational technology. Proceedings Ascilite*, Dunedin, New Zealand. pp.717-721.
- Nunnally, J. C. & Bernstein, I. H. (1994). *Psychometric Theory*. 3<sup>rd</sup> edn. New York, NY, McGraw-Hill.
- O'reilly, M. & Parker, N. (2012). 'Unsatisfactory Saturation': a critical exploration of the notion of saturated sample sizes in qualitative research. *Qualitative Research*. 13(2), 190-197.
- Oliver, R.L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*. 17(4), 460-469.
- Opdenakker, R. (2006). Advantages and disadvantages of four interview techniques in qualitative research. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*. 7(4), Art. 11.

- Available from: <http://www.qualitative-research.net/index.php/fqs/article/view/175>  
[Accessed 12<sup>th</sup> November 2016].
- Osborne, J.W. & Overbay, A. (2004). The power of outliers (and why researchers should always check for them). *Practical Assessment, Research & Evaluation*. 9(6), 1-12.
- Oshlyansky, L., Cairns, P. & Thimbleby, H. (2007). Validating the Unified Theory of Acceptance and Use of Technology (UTAUT) tool cross-culturally. In: *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI... but not as we know it*, Lancaster, British Computer Society. pp.83-86.
- Othman, M.S., Tashimaimaiti, G., Yusuf, L.M. & Al-Rahmi, W.M. (2017). End-user perspectives on effectiveness of learning performance through Massive Open Online Course (MOOCs). In: *International Conference of Reliable Information and Communication Technology*. Cham, Springer. pp.699-707.
- Ouyang, Y., Tang, C., Rong, W., Zhang, L., Yin, C. & Xiong, Z. (2017). Task-technology fit aware expectation-confirmation model towards understanding of MOOCs continued usage intention. In: *Proceedings of the 50th Hawaii International Conference on System Sciences*, Hawaii. pp.174-183.
- Pang, Y., Wang, T. & Wang, N. (2014). MOOC data from providers. In: *Enterprise Systems Conference (ES)*, Shanghai, China. IEEE. pp.87-90.
- Pappano, L. (2012). The year of the MOOC. *The New York Times*. Available from: <http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html?pagewanted=1> [Accessed 20<sup>th</sup> December 2015].
- Parasuraman, A., Zeithaml, V. A. & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing*. 49(4), 41-50.
- Park, Y., Yoh, T. & Park, M. (2015). Testing a leisure constraints model in the context of Asian international students. *International Journal of Sport Management, Recreation and Tourism*. 20, 58-83.
- Pearse, N. (2011). Deciding on the scale granularity of response categories of Likert type scales: The case of a 21-point scale. *The Electronic Journal of Business Research Methods*. 9(2), 159-171.
- Pedhauzer, E.J. (1982). *Multiple regression in behavioural research: Explanation and prediction*. 2<sup>nd</sup> edn. New York: Holt, Rinehart, and Winston.



- Pentina, I., Zhang, L. & Basmanova, O. (2013). Antecedents and consequences of trust in a social media brand: A cross-cultural study of Twitter. *Computers in Human Behavior*. 29(4), 1546-1555.
- Petter, S., DeLone, W. & McLean, E. (2008). Measuring information systems success: models, dimensions, measures, and interrelationships. *European Journal of Information Systems*. 17(3), 236-263.
- Petter, S., Straub, D. & Rai, A. (2007). Specifying formative constructs in information systems research. *MIS Quarterly*. 31(4), 623-656.
- Phan, T., McNeil, S.G. & Robin, B.R. (2016). Students' patterns of engagement and course performance in a Massive Open Online Course. *Computers & Education*. 95, 36-44.
- Pilli, O. & Admiraal, W. (2017). Students' learning outcomes in Massive Open Online Courses (MOOCs): Some suggestions for course design. *Journal of Higher Education/Yükseköğretim Dergisi*. 7(1), 46-71.
- Pintrich, P. R. (1999). The role of motivation in promoting and sustaining self-regulated learning. *International Journal of Educational Research*. 31(6), 459-470.
- Pituch, K. A. & Lee, Y. K. (2006). The influence of system characteristics on E-learning use. *Computers & Education*. 47(2), 222-244.
- Plangsorn, B., Na-Songkhla, J. & Luetkehans, L.M. (2016). Undergraduate Students' opinions with regard to ubiquitous MOOC for enhancing cross-cultural competence. *World Journal on Educational Technology*. 8(3), 210-217.
- Polit, D.F. & Beck, C.T. (2013). *Essentials of Nursing Research: Appraising Evidence For Nursing Practice*. 8<sup>th</sup> edn. Lippincott Williams & Wilkins.
- Praveena, K. & Thomas, S. (2014). Continuance intention to use Facebook: A study of perceived enjoyment and TAM. *Bonfring International Journal of Industrial Engineering and Management Science*. 4(1), 24-29.
- Pundak, D., Sabag, N. & Trotskovsky, E. (2014). Accreditation of MOOCs. *European Journal of Open, Distance and E-learning*. 17(2), 117-129.
- Pursel, B.K., Zhang, L., Jablokow, K.W., Choi, G.W. & Velegol, D. (2016). Understanding MOOC students: motivations and behaviours indicative of MOOC completion. *Journal of Computer Assisted Learning*. 32(3), 202-217.

- QuranTutor. (2015). *8 Huge Benefits of Learning the Arabic Language*. Available from: <http://www.qurantutor.com/blog/huge-benefits-of-learning-the-arabic-language/> [Accessed 8<sup>th</sup> October 2017].
- Rai, L. & Chunrao, D. (2016). Influencing factors of success and failure in MOOC and general analysis of learner behavior. *International Journal of Information and Education Technology*. 6(4), 262-268.
- Rao, P.N., Komaraiah, M. & Reddy, P.N. (2015). A case for MOOCs in Indian higher education system. *Journal of Engineering Education Transformations*. 29(1), 15-25.
- Rashed, A. & Santos, H. (2013). New Technology Acceptance in Europe and Arabic Cultures: Comparative Study. In: *Proceedings of the Informing Science and Information Technology Education Conference*. Informing Science Institute. Available from: <https://www.learntechlib.org/p/114666/> [Accessed 10<sup>th</sup> June 2016].
- Reinartz, W., Haenlein, M. & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing*. 26(4), 332-344.
- Rhemtulla, M., Brosseau-Liard, P.É. & Savalei, V. (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological Methods*. 17(3), 354-373.
- Richter, N.F., Sinkovics, R.R., Ringle, C.M. & Schlägel, C. (2016). A critical look at the use of SEM in international business research. *International Marketing Review*. 33(3), 376-404.
- Ridout, S. (n.d.). *Complete List of Arabic Speaking Countries 2017*. Available from: <http://istizada.com/complete-list-of-arabic-speaking-countries-2014/> [Accessed 13<sup>th</sup> May 2017].
- Ringle, C.M. (2004). *Gütemaße Für Den Partial Least Squares-Ansatz Zur Bestimmung Von Kausalmodellen*. Working Paper 16. Universität Hamburg, Institut für Industriebetriebslehre und Organisation. Available from: [https://www.econbiz.de/archiv/hh/uhh/iindustrie/guetemasse\\_pls-ansatz\\_kausalmodelle.pdf](https://www.econbiz.de/archiv/hh/uhh/iindustrie/guetemasse_pls-ansatz_kausalmodelle.pdf) [Accessed 19<sup>th</sup> November 2016].
- Ritchie, J., Lewis, J., Nicholls, C.M. & Ormston, R. (ed.) (2013). *Qualitative Research Practice: A Guide for Social Science Students And Researchers*. 2<sup>nd</sup> edn. Sage.
- Rogers, Y., Sharp, H., & Preece, J. (2011). *Interaction design: Beyond human-computer Interaction*. 3<sup>rd</sup> edn. UK, John Wiley & Sons.

- Roldán, J. L. & Sánchez-Franco, M. J. (2012). Variance-based structural equation modeling: Guidelines for using partial least squares in information systems research. In: M. Mora, O. Gelman, A. L. Steenkamp, & M. Raisinghani (ed.), *Research Methodologies, Innovations and Philosophies In Software Systems Engineering And Information Systems*. Hershey, IGI Global. pp.193-221.
- Rosendale, J.A. (2017). Gauging the value of MOOCs: An examination of American employers' perceptions toward higher education change. *Higher Education, Skills and Work-Based Learning*. 7(2), 141-154.
- Rowley, J. (2012). Conducting research interviews. *Management Research Review*. 35(3/4), 260-271.
- Roxas, B. (2014). Effects of entrepreneurial knowledge on entrepreneurial intentions: a longitudinal study of selected South-east Asian business students. *Journal of Education and Work*. 27(4), 432-453.
- Rubio, D.M., Berg-Weger, M., Tebb, S.S., Lee, E.S. & Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. *Social Work Research*. 27(2), 94–104.
- Rwaq.org. (2017). Available from: <https://www.rwaq.org> [Accessed 14<sup>th</sup> October 2017].
- Ryan, F., Coughlan, M. & Cronin, P. (2009). Interviewing in qualitative research: The one-to-one interview. *International Journal of Therapy & Rehabilitation*. 16(6), 309-314.
- Ryan, R.M. & Deci, E.L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*. 25(1), 54-67.
- Sa, J.H., Lee, J.M., Kang, T.W., Gim, G.Y. & Kim, J.B. (2016). A study of factors affecting the intention of usage in MOOC. In: *Advanced Science and Technology Letters*. pp.160-163. Available from: <http://dx.doi.org/10.14257/astl.2016.127.32> [Accessed 11<sup>th</sup> March 2017].
- Sallam, M.H. (2017). A review of MOOCs in the Arab world. *Creative Education*. 8, 564-573.
- Salmon, G., Pechenkina, E., Chase, A.M. & Ross, B. (2016). Designing Massive Open Online Courses to take account of participant motivations and expectations. *British Journal of Educational Technology*. 1-11.
- Samaradiwakara, G.D.M.N. & Gunawardena, C.G. (2014). Comparison of existing technology acceptance theories and models to suggest a well improved theory/model. *International Technical Sciences Journal (ITSJ)*. 1(1), 21-36.

- Sanchez-Gordon, S. & Luján-Mora, S. (2014). Web accessibility requirements for Massive Open Online Courses. In: *Proceedings of 5th International Conference on Quality and Accessibility of Virtual Learning*. Guatemala, Universidad Galileo, Departamento GES. pp.530-535. Available from: <http://hdl.handle.net/10045/41443> [Accessed 7<sup>th</sup> February 2016].
- Sarstedt, M., Ringle, C.M., Smith, D., Reams, R. & Hair, J.F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of Family Business Strategy*. 5(1), 105-115.
- Saunders, M., Lewis, P. & Thornhill, A. (2009). *Research Methods for Business Students*. 5<sup>th</sup> edn. London, FT Prentice Hall.
- Schunk, D. H. & Zimmerman, B. J. (ed.) (1998). *Self-Regulated Learning: From Teaching to Self Reflective Practice*. New York, NY, Guilford Press.
- Schwaiger, M. (2004). Components and parameters of corporate reputation-an empirical study. *Schmalenbach Business Review*. 56, 46-71.
- Sekaran, U. & Bougie, R.J. (2016). *Research Methods for Business: A Skill Building Approach*. 7<sup>th</sup> edn. UK, John Wiley & Sons.
- Shah, D. (2016a). *By the Numbers: MOOCS In 2016*. Available from: <https://www.class-central.com/report/mooc-stats-2016/> [Accessed 1<sup>st</sup> May 2017].
- Shah, D. (2016b). *Udacity's 2016: A Year in Review*. Available from: <https://www.class-central.com/report/udacity-2016-review/> [Accessed 1<sup>st</sup> May 2017].
- Shah, D. (2017). *Massive List of MOOC Providers Around the World*. Available from: <https://www.class-central.com/report/mooc-providers-list/> [Accessed 18<sup>th</sup> October 2017].
- Shah, R. & Goldstein, S.M. (2006). Use of structural equation modeling in operations management research: Looking back and forward. *Journal of Operations Management*. 24(2), 148-169.
- Shapiro, H.B., Lee, C.H., Roth, N.E.W., Li, K., Çetinkaya-Rundel, M. & Canelas, D.A. (2017). Understanding the Massive Open Online Course (MOOC) student experience: An examination of attitudes, motivations, and barriers. *Computers & Education*. 110, 35-50.
- Shenton, A.K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for information*. 22(2), 63-75.
- Sheppard, B. H., Hartwick, J. & Warshaw, P. R. (1988). The theory of reasoned action: a meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*. 15(3), 325-343.

- Shrader, S., Wu, M., Owens-Nicholson, D. & Santa Ana, K. (2016). Massive open online courses (MOOCs): Participant activity, demographics, and satisfaction. *Online Learning*. 20(2), 199-216.
- Söllner, M., Hoffmann, A., Hirdes, E.M., Rudakova, L., Leimeister, S. & Leimeister, J.M. (2010). Towards a formative measurement model for trust. In: *23rd Bled eConference "eTrust: Implications for the Individual, Enterprises and Society"*, Bled, Slovenia. pp.65-79.
- Sonwalkar, J. & Maheshkar, C. (2015). MOOCs: A massive platform for collaborative learning in globalized way. *Journal of Management Research and Analysis*. 2(2), 142-149.
- Sousa, V.D. & Rojjanasrirat, W. (2011). Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice*. 17(2), 268-274.
- Sperber, A. D. (2004). Translation and validation of study instruments for cross-cultural research. *Gastroenterology*. 126, S124-S128.
- Srivastava, U.K., Shenoy, G.V. & Sharma, S.C. (1989). *Quantitative Techniques for Managerial Decisions*. 2<sup>nd</sup> edn. New Age International.
- Stefura, G. (2011). *Formative Versus Reflective Measurement: Which is Better?*. Alexandru Ioan Cuza University. Available from: <http://dx.doi.org/10.2139/ssrn.1803064> [Accessed 19<sup>th</sup> March 2016].
- Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society*. 36(2), 111-147.
- Stratton, C. & Grace, R. (2016). Exploring linguistic diversity of MOOCs: Implications for international development. *Proceedings of the Association for Information Science and Technology*. 53(1), 1-10.
- Straub, D., Keil, M. & Brenner, W. (1997). Testing the technology acceptance model across cultures: A three country study. *Information & Management*. 33(1), 1-11.
- Sun, H. & Zhang, P. (2006). The role of moderating factors in user technology acceptance. *International Journal of Human-Computer Studies*. 64(2), 53-78.
- Sun, Y., Liu, L., Peng, X., Dong, Y. & Barnes, S.J. (2014). Understanding Chinese users' continuance intention toward online social networks: an integrative theoretical model. *Electronic Markets*. 24(1), 57-66.

- Sunar, A. S., Abdullah, N. A., White, S. & Davis, H. (2015). Personalisation in MOOCs: A Critical Literature Review. In: *International Conference on Computer Supported Education*. Springer International Publishing. pp. 152-168.
- Tabachnick, B.G. & Fidell, L.S. (2007). *Using Multivariate Statistics*. 5<sup>th</sup> edn. Boston, Allyn & Bacon/Pearson Education.
- Taneja, S. & Goel, A. (2014). MOOC providers and their strategies. *International Journal of Computer Science and Mobile Computing*. 3(5), 222-228.
- Tansey, O. (2007). Process tracing and elite interviewing: a case for non-probability sampling. *PS: Political Science & Politics*. 40(4), 765-772.
- Tarhini, A. (2013). *The Effects of Cultural dimensions and other Demographic Characteristics on E-learning Acceptance in Lebanon and England*. PhD thesis. Department of Information System, Brunel University. London, UK. Available from: <https://ssrn.com/abstract=2725438> [Accessed 17<sup>th</sup> August 2016].
- Tarhini, A., Hone, K. & Liu, X. (2014). The effects of individual differences on e-learning users' behaviour in developing countries: A structural equation model. *Computers in Human Behaviour*. 41, 153-163.
- Tavakol, M. & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*. 2, 53-55.
- Taylor, S. & Todd, P. (1995). Decomposition and crossover effects in the theory of planned behaviour: A study of consumer adoption intentions. *International Journal of Research in Marketing*. 12(2), 137-155.
- Teddlie, C. & Yu, F. (2007). Mixed methods sampling a typology with examples. *Journal of Mixed Methods Research*. 1(1), 77-100.
- Teo, T.S. & Pok, S.H. (2003). Adoption of WAP-enabled mobile phones among Internet users. *Omega*. 31(6), 483-498.
- Thomas, T.D., Singh, L. & Gaffar, K. (2013). The utility of the UTAUT model in explaining mobile learning adoption in higher education in Guyana. *International Journal of Education and Development using Information and Communication Technology*. 9(3), 71-87.
- Turner III, D.W. (2010). Qualitative interview design: A practical guide for novice investigators. *The Qualitative Report*. 15(3), 754-760.

- Uchidiuno, J., Ogan, A., Yarzebinski, E. & Hammer, J. (2016). Understanding ESL students' motivations to increase MOOC accessibility. In: *Proceedings of the Third (2016) ACM Conference on Learning@ Scale*. ACM. pp.169-172.
- UNESCO. (n.d.). *World Arabic Language Day*. Available from: <http://www.unesco.org/new/en/unesco/events/prizes-and-celebrations/celebrations/international-days/world-arabic-language-day/> [Accessed 6<sup>th</sup> October 2017].
- Urbach, N. & Ahlemann, F. (2010). Structural equation modeling in information systems research using partial least squares. *JITTA: Journal of Information Technology Theory and Application*. 11(2), 5-39.
- Vaismoradi, M., Turunen, H. & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences*. 15(3), 398-405.
- Van Reijssen, J. (2014). *Knowledge Perspectives on Advancing Dynamic Capability*. PhD thesis. Utrecht University. Available from: <https://dspace.library.uu.nl/handle/1874/294910> [Accessed 10<sup>th</sup> November 2016].
- Venkatesh, V. & Davis, F.D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*. 46(2), 186-204.
- Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*. 11(4), 342-365.
- Venkatesh, V. & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*. 39(2), 273-315.
- Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *Mis Quarterly*. 27(3), 425-478.
- Venkatesh, V., Thong, J.Y. & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*. 36(1), 157-178.
- Waehama, W., McGrath, M., Korthaus, A. & Fong, M. (2014). ICT adoption and the UTAUT model. In: *Proceedings of the International Conference on Educational Technology with Information Technology*, Bangkok, Thailand. pp.24-30.

- Wang, S., Dong, P.H. & Shao, S. (2017). Research on influencing factors of employees' acceptance of MOOC training. In: *Management Information and Optoelectronic Engineering: Proceedings of the 2016 International Conference on Management, Information and Communication (ICMIC2016) and the 2016 International Conference on Optics and Electronics Engineering (ICOEE2016)*. pp.197-203.
- Wang, Y. & Baker, R. (2015). Content or platform: Why do students complete MOOCs?. *Journal of Online Learning and Teaching*. 11(1), 17-30.
- Wangpipatwong, S., Chutimaskul, W. & Papasratorn, B. (2008). Understanding citizen's continuance intention to use e-government website: A composite view of technology acceptance model and computer self-efficacy. *The Electronic Journal of E-Government*. 6(1), 55-64.
- Welsh, E. (2002). Dealing with data: Using NVivo in the qualitative data analysis process. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*. 3(2), Art. 26. Available from: [http://www.qualitative-research.net/index.php/fqs/article/view/865/1880&q=nvivo+manual&sa=x&ei=zah\\_t5pqoyubhqfe9swgbq&ved=0cc4qfjai](http://www.qualitative-research.net/index.php/fqs/article/view/865/1880&q=nvivo+manual&sa=x&ei=zah_t5pqoyubhqfe9swgbq&ved=0cc4qfjai) [Accessed 9<sup>th</sup> December 2016].
- Werts, C.E., Linn, R.L. & Jöreskog, K.G. (1974). Intraclass reliability estimates: Testing structural assumptions. *Educational and Psychological Measurement*. 34(1), 25-33.
- Weston, R. & Gore, P.A. (2006). A brief guide to structural equation modeling. *The Counseling Psychologist*. 34(5), 719-751.
- Wetzels, M., Odekerken-Schröder, G. & Van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. *MIS Quarterly*. 33(1), 177-195.
- Willis, G.B. (2004). *Cognitive Interviewing: A Tool for Improving Questionnaire Design*. Sage Publications.
- Wright, B.R.E. (1998). Behavioral intentions and opportunities among homeless individuals: an extension of the theory of reasoned action. *Social Psychological Quarterly*. 61(4), 271-286.
- Wu, B. & Chen, X. (2017). Continuance intention to use MOOCs: Integrating the technology acceptance model (TAM) and task technology fit (TTF) model. *Computers in Human Behavior*. 67, 221-232.
- Wu, I.L. & Wu, K.W. (2005). A hybrid technology acceptance approach for exploring e-CRM adoption in organizations. *Behaviour & Information Technology*. 24(4), 303-316.



- Wu, P.F. (2012). A mixed methods approach to technology acceptance research. *Journal of the Association for Information Systems*. 13(3), 172-187.
- Xiong, Y., Li, H., Kornhaber, M.L., Suen, H.K., Pursel, B. & Goins, D.D. (2015). Examining the relations among student motivation, engagement, and retention in a MOOC: A structural equation modeling approach. *Global Education Review*. 2(3), 23-33.
- Xu, F. (2015). Research of the MOOC study behavior influencing factors. In: *Proceedings of International Conference on Advanced Information And Communication Technology For Education*. Amsterdam, Netherlands, Atlantis Press. pp.18-22.
- Yáñez, C.E.F., Nigmonova, D. & Panichpathom, W. (2014). *Demoocratization of Education?: Massive Open Online Courses (MOOCs) And The Opportunities And Challenges For Developing Countries*. Graduate Institute of International and Development Studies, Geneva, Switzerland. Available from: [http://repository.graduateinstitute.ch/record/286962/files/MOOCs\\_Full\\_Final.pdf](http://repository.graduateinstitute.ch/record/286962/files/MOOCs_Full_Final.pdf) [Accessed 7<sup>th</sup> November 2016].
- Yang, M., Shao, Z., Liu, Q. & Liu, C. (2017). Understanding the quality factors that influence the continuance intention of students toward participation in MOOCs. *Educational Technology Research and Development*. 65(5), 1195-1214.
- Yeager, C., Hurley-Dasgupta, B. & Bliss, C.A. (2013). CMOOCs and global learning: An authentic alternative. *Journal of Asynchronous Learning Networks*. 17(2), 133-147.
- Yilmaz, K. (2013). Comparison of Quantitative and Qualitative Research Traditions: epistemological, theoretical, and methodological differences. *European Journal of Education*. 48(2), 311-325.
- Yoo, W., Mayberry, R., Bae, S., Singh, K., He, Q.P. & Lillard Jr, J.W. (2014). A study of effects of multicollinearity in the multivariable analysis. *International Journal of Applied Science and Technology*. 4(5), 9-19.
- Yoon, C. & Rolland, E. (2015). Understanding continuance use in social networking services. *Journal of Computer Information Systems*. 55(2), 1-8.
- Young, J. R. (2013). What professors can learn from 'hard core' MOOC students. *The Chronicle of Higher Education*. Available from: <http://www.chronicle.com/article/What-Professors-Can-Learn-From/139367> [Accessed 6<sup>th</sup> November 2016].
- Yousafzai, S.Y., Foxall, G.R. & Pallister, J.G. (2010). Explaining internet banking behavior: Theory of reasoned action, theory of planned behavior, or technology acceptance model?. *Journal of Applied Social Psychology*. 40(5), 1172-1202.

- Yousef, A.M.F., Chatti, M.A., Schroeder, U., Wosnitza, M. & Jakobs, H. (2014). A Review of the state-of-the art. In: *Proceedings of the 6th International Conference on Computer Supported Education - CSEDU2014*, Barcelona, Spain. INSTICC. pp.9-20.
- Yuan, L. & Powell, S. (2013). *Moocs And Open Education: Implications for Higher Education*. White paper. JISC Centre for Education Technology & Interoperability Standards (CETIS). Available from: [https://paginas.fe.up.pt/~sfeyo/Docs\\_SFA\\_Reitor/2013\\_MOOCs-and-Open-Education.pdf](https://paginas.fe.up.pt/~sfeyo/Docs_SFA_Reitor/2013_MOOCs-and-Open-Education.pdf) [Accessed 6<sup>th</sup> November 2016].
- Zamawe, F.C. (2015). The implication of using NVivo software in qualitative data analysis: Evidence-based reflections. *Malawi Medical Journal*. 27(1), 13-15.
- Zhang, M., Yin, S., Luo, M. & Yan, W. (2017). Learner control, user characteristics, platform difference, and their role in adoption intention for MOOC learning in China. *Australasian Journal of Educational Technology*. 33(1), 114-133.
- Zhao, L., Lu, Y., Wang, B. & Huang, W. (2011). What makes them happy and curious online? An empirical study on high school students' Internet use from a self-determination theory perspective. *Computers & Education*. 56(2), 346-356.
- Zheng, S., Rosson, M.B., Shih, P.C. & Carroll, J.M. (2015). Understanding student motivation, behaviors and perceptions in MOOCs. In: *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, Vancouver, Canada. ACM. pp.1882-1895.
- Zhong, S.H., Zhang, Q.B., Li, Z.P. & Liu, Y. (2016). Motivations and challenges in MOOCs with eastern insights. *International Journal of Information and Education Technology*. 6(12), 954-960. IACSIT Press.
- Zhou, M. (2016). Chinese university students' acceptance of MOOCs: A self-determination perspective. *Computers & Education*. 92-93, 194-203.

# Appendix A: Motivational Factors that Influence the Use of MOOCs: Learners' Perspectives

## *A Systematic Literature Review*

Nada Hakami<sup>1</sup>, Su White<sup>1</sup> and Sepi Chakaveh<sup>1</sup>

<sup>1</sup>*Electronics and Computer Science, University of Southampton, University Road, Southampton, UK*  
*nah1g15@soton.ac.uk, {saw, sc2}@ecs.soton.ac.uk*

**Keywords:** Learner's Motivations, MOOC Acceptance, MOOC Adoption, MOOC Retention, MOOC Completion, Learner's Engagement, Literature Synthesis, MOOCs

**Abstract:** Massive Open Online Courses (MOOCs) have become an important environment for technology-enhanced learning (TEL) where massive numbers of users from around the world access free, online-based, open content generated by the world-class institutions. Understanding learner's motivations for using MOOCs is essential for providing successful MOOC environments. This paper presents a comprehensive picture of the literature published between 2011-2016 and pertaining to the motivations that drive individuals to use MOOCs as learners. We examined the classifications of papers, theories used, data collection methods, motivational factors proposed and geographic distribution of participants. Findings demonstrate that the related literature is limited. Several papers adopted technology acceptance theories. Quantitative survey was the favoured method for researchers. Key motivational factors were learner-related (which are divided into personal, social and educational / professional development), institution and instructor-related, platform and course-related and perception of external control/facilitating conditions-related. The identified studies focused only on few geographic regions. Such findings are important for uncovering the directions in the literature and determining the current gaps that can be addressed in the future.

### 1 Introduction

Massive Open Online Courses (MOOCs) offer people worldwide the chance to improve their education free of charge with no commitment or prior requirements. MOOCs are gaining wide-spread attention and are rapidly changing the attitude towards TEL. Since 2008, the number of higher education institutions that provide MOOCs has increased rapidly. It is reported that in 2015 there were around 4,200 courses offered by 500 institutions while the total number of learners who registered in MOOCs reached 35 million (Shah, 2015).

Barak et al. (2016, p.50) defined motivation as "a reason or a goal a person has for behaving in a given manner in a given situation". In MOOCs, there is a diversity in motivations among learners to use MOOCs as a result of the open nature of MOOCs, which allows anyone to participate (Kizilcec et al., 2013; Bayeck, 2016). Investigating such motivations offers insights for MOOCs providers into the possible solutions for improving their services in order to increase learners' engagement, satisfaction, completion rate, as well as meet their needs and requirements.

There is a lack of systematic synthesis of literature pertaining to factors motivating learners to use MOOCs. The purpose of this paper is to present a comprehensive

and systematic review of the literature related to this topic so as to highlight the current research directions and gaps that can be addressed in the future. To address the gaps in the literature, we pose the following research questions (RQ):

**RQ1:** What are related papers? How can the papers be classified?

**RQ2:** What theoretical frameworks and reference theories have been applied to study the topic?

**RQ3:** What data collection methods have been used by related papers?

**RQ4:** What key motivational factors were proposed in existing studies?

**RQ5:** What is the participants' geographic distribution in the related studies?

The reminder of this paper is structured as follows: Section two highlights the related work. Section three outlines the research method. Section four describes the findings while section five illustrates the discussion. Finally, conclusion is presented in section six.

## 2 Related Work

This section summarizes prior literature synthesis that were focused on identifying the motivational factors affecting learner's intention to use MOOCs. Only two literature synthesis pertaining to the topic were found. Hew and Cheung (2014) aimed to identify the learners' and instructors' motivations and challenges of using MOOCs. They also suggested future issues that need to be resolved. This work is similar to our study. However, their study was published in 2014 and many related studies have emerged after this year. The goal of a study led by Latha and Malarmathi (2016) is examining the factors influencing the learners to complete MOOCs. This study differs from ours in terms of that its focus is only on MOOCs completion and not motivations for using MOOCs.

We examined the literature based on different research questions that are not addressed before. To the best of our knowledge, this paper represents the first effort to review the literature on motivations for using MOOCs from learners' viewpoints for a particular time period (2011 to 2016) to make better sense of various research trends and provide proposal for further research.

## 3 METHODS

To accomplish our objective, we used the systematic literature review strategy suggested by Kitchenham (2004). The approach consists of five activities which are: (A) Define research question, (B) Define search keywords, (C) Select electronic resources, (D) Search process, (E) Match inclusion and exclusion criteria.

The search keywords used were "MOOCs Learner Motivations", "MOOCs Completion OR MOOCs Retention", and "MOOCs Learner Engagement". The papers were identified through searching six educational technology journals and six academic databases namely, British Journal of Educational Technology, American Journal of Distance Education, Distance Education, Open Learning: The Journal of Open, Distance and e-Learning, European Journal of Open, Distance and E-Learning, Computer Assisted Learning, Google Scholar, IEEE Xplore, Elsevier's ScienceDirect, Wiley Online Library, SpringerLink and Scopus. Tables 1,2 and 3 illustrate the ratio of search results to relevant papers using the identified search keywords. A number of search results from journal/database are similar to other journal/database results.

In order to be included in the corpus, each identified paper ought to focus on the motivations for using MOOCs from learner's perspective. This criterion was given the highest priority. However, due to the limited number of related papers, further criteria, with lower priority than the previous criterion, were specified to choose appropriate papers for inclusion in the review which are as follows: the paper ought to focus either on (A) the factors that influence the acceptance of MOOCs (why people accept or reject the use of MOOCs) , or (B) the learner's motivations for MOOCs completion / retention, or (C) the factors influencing the success of MOOCs, or (D) addressing the learners' motivations for using MOOCs as a part of other different objectives. We expect that these additional papers might present factors that are applicable to the motivations of using MOOCs. Moreover, papers ought to be published between January 2011 and October 2016 and written in English. The reason of selecting year 2011 is that it was the date when MOOCs have been used extensively in online learning (Sunar et al., 2015).

**Table 1: The results of the search by the keyword "MOOCs Learner Motivations".**

Journal /Data Base	*SR:RP
British Journal of Educational Technology	39:2

American Journal of Distance Education	7:0
Distance Education	28:0
Open Learning: The Journal of Open, Distance and e-Learning	23:0
European Journal of Open, Distance and E-Learning	0:0
Computer Assisted Learning	9:0
Google Scholar	6,880:27
IEEE Xplore	247:0
Elsevier's ScienceDirect	178:4
Wiley Online Library	125:3
SpringerLink	434:4
Scopus	259:14

\*SR:RP Ratio of search results to relevant papers

**Table 2: The results of the search by the keyword "MOOCs Completion OR MOOCs Retention".**

Journal /Data Base	*SR:RP
British Journal of Educational Technology	18:1
American Journal of Distance Education	4:0
Distance Education	15:0
Open Learning: The Journal of Open, Distance and e-Learning	16:0
European Journal of Open, Distance and E-Learning	0:0
Computer Assisted Learning	7:0
Google Scholar	4,240:21
IEEE Xplore	304:0
Elsevier's ScienceDirect	242:5
Wiley Online Library	183:2
SpringerLink	197:1
Scopus	35:5

\*SR:RP Ratio of search results to relevant papers

**Table 3: The results of the search by the keyword "MOOCs Learner Engagement".**

Journal /Data Base	*SR:RP
British Journal of Educational Technology	29:1
American Journal of Distance Education	9:0
Distance Education	37:0
Open Learning: The Journal of Open, Distance and e-Learning	32:0
European Journal of Open, Distance and E-Learning	0:0
Computer Assisted Learning	8:0
Google Scholar	9,800: 23
IEEE Xplore	199:0
Elsevier's ScienceDirect	168:7
Wiley Online Library	143:3

SpringerLink	489:3
Scopus	32:1

\*SR:RP Ratio of search results to relevant papers

In the data analysis phase, we used the constant-comparative method suggested by Glaser (1965) to classify the identified papers.

## 4 Findings

This section presents the findings from the analysis of the related studies as well as provides the answers to our research questions.

### 4.1 What Are Related Papers? How Can the Papers Be Classified?

The results of our analysis revealed that a total of forty-two papers were related to the topic. It can be observed that certain papers intended to develop a model based on identifying explanatory variables that are used to predict the use of MOOCs. In contrast, other papers applied empirical methods such as quantitative and qualitative data collection methods in order to explore the learners' motivations behind enrolling on MOOCs without modelling the motivational factors. Consequently, we clustered the relevant papers into two main categories:

1. Modelling the motivational factors that influence the use of MOOCs
2. Not modelling the motivational factors that influence the use of MOOCs

The classification of the identified papers is shown in Table 4. In this Table, all eleven identified papers in the first category focused on modelling the factors influencing learners' intention to use MOOCs while all seventeen identified papers of the second category sought primarily to identify learners' motivations for taking MOOCs.

**Table 4: Classification of the identified papers.**

Category	Author(s) (year)
1	Xiong et al. (2014); Xu (2015); Chu et al. (2015); Huanhuan and Xu (2015); Gao and Yang (2015); Chaibajit and Jeerungsuwan (2015); Nordin et al. (2015); Aharony and Bar-Ilan (2016);

	Zhou (2016); Sa et al. (2016); Alraimi et al. (2015)
2	Belanger and Thornton (2013); Christensen et al (2013); Norman (2014); Hew and Cheung (2014); Davis et al. (2014); Gütl et al. (2014); Kizilcec and Schneider (2015); Zheng et al. (2015); Liu et al. (2015); Cupitt and Golshan (2015); Li (2015); Salmon et al. (2016); Bayeck (2016); Howarth et al. (2016); Uchidiuno et al. (2016); Zhong et al. (2016); Garrido et al. (2016)

We assigned additional three papers to the first category. However, they established different objectives from those of the previous papers in the first category. Hone and El-Said (2016), Xiong et al. (2015) and Adamopoulos (2013) aimed to develop a model of the factors contributing to the MOOCs completion and retention. The factors identified in these papers can be tested in the context of the intention to use MOOCs.

Further eleven papers, which have been assigned to the second category, indirectly addressed the motivations of learners for using MOOCs or investigated the factors influencing learners' retention or the success of MOOCs. Such papers are as follows: Shrader et al. (2016), Chang et al. (2015), Littlejohn et al. (2016), Rai and Chunrao (2016), Gamage et al. (2015), Wang and Baker (2015), Latha and Malarmathi (2016), Bakki et al. (2015), Khalil and Ebner (2014), Greene et al. (2015) and Barak et al. (2016).

#### 4.2 What Theoretical Frameworks and Reference Theories Have Been Applied to Study the Topic?

Technology acceptance theories are the dominant in the related publications in the first category. The goal of these theories is to "specify a pathway of technology acceptance from external variables to beliefs, intentions, adoption and actual usage" (Van Biljon and Kotzé, 2007, p.152). According to Louho et al. (2006, p.15), "technology acceptance is mostly about how people accept and adopt some technology to use". It was found that most of the studies included into the first category group (11 papers) used technology acceptance theories.

Technology Acceptance Model (TAM) has emerged as the most popular theory with 6 publications employing it. Other used theories included the Unified Theory of

Acceptance and Use of Technology (UTAUT) (2 papers), TAM3(1 paper), Theory of Planned Behaviour (TPB) plus Self-Determination Theory (SDT) which is one of the leading motivation theories (1 paper) and Information Systems Continuance Expectation Confirmation (1 paper).

#### 4.3 What Data Collection Methods Have Been Used by Related Papers?

Orlikowski and Baroudi (1991) classified research into conceptual and empirical. Conceptual research refers to studies that are based on formulating concepts and models without using empirically collected data. Literature review is an example of this type of research. On the other hand, empirical research refers to studies that are based on data collection methods to generate and test hypotheses, such as surveys, interviews, multi-method research, case studies and experiments.

All previous studies falling under the first category are empirical research. Survey quantitative method has been used by all the related research except for one research which is based on observation, interview and analysing students' textual reviews.

Researches falling under the second category are classified into conceptual and empirical research. Four publications are conceptual research using literature review. With regards to empirical quantitative studies, there is a large volume of published studies using the survey method (13 papers) with one publication that applied survey and activity data analysis methods. Empirical qualitative studies utilized the interview (1 paper), literature review and observation (1 paper), and observation and interview (1 paper). Studies based on mixed-methods approach used survey and interview (3 papers); survey, clickstream and event data analysis (1 paper); survey and forum posts and email messages analysis (1 paper). The data collection method used in the study by Rai and Chunrao (2016) was based on general opinions that were derived from the perspectives of MOOCs learners but was not clearly identified in the paper. Overall, it turned out that the quantitative approach based on a survey method was the most frequently applied research strategy in both categories, with 26 papers (61.90%).

#### 4.4 What Key Motivational Factors Were Proposed in Existing Studies?

We identified forty-three motivational factors reported in the related publications. Having identified the proposed motivational factors that drive individuals to the use of MOOCs, we classified those factors into four main dimensions: learner-related factors, institution and instructor-related factors, platform and course-related factors, and perception of external control/ facilitating conditions-related factors. The factors identified under each main dimension can be listed as follows:

#### 1. Learner-related factors

This dimension includes the factors related to the learners themselves. The factors are divided as following:

**1.1. Personal factors:** including curiosity, perceived enjoyment, learner's attitude, computer playfulness, computer anxiety, satisfaction, extrinsic motivation, intrinsic motivation, challenge, human capital (being able to behave in new ways) and awareness.

**1.2. Social factors:** including subjective norm (social influence), interaction with learners, image (social status) and mimetic pressure.

**1.3. Educational/Professional development factors:** including job/academic relevance, extend knowledge and skills, earn a certificate, get learning opportunities not otherwise available, prepare for future, improve English ability and special project requirements.

#### 2. Institution and instructor-related factors

This dimension consists of two factors related to the characteristics of institutions and instructors namely, perceived reputation and interaction with instructor.

#### 3. Platform and course-related factors

This dimension includes the factors that describe the characteristics of the platforms and courses. Such factors include: perceived usefulness, perceived ease of use, perceived openness (open access to MOOCs without restrictions), course's content quality, course characteristics (such as the course's discipline and the duration of a course), ubiquity (flexibility or convenience), perceived utilitarian value (tradeoff between received and given things), objective usability, output quality, trust, perceived effectiveness, MOOC popularity, information

richness (the amount of details used to convey the information), personalization and gamification.

#### 4. Perception of external control/Facilitating conditions

The perception of external control/facilitating conditions is defined as "the degree to which an individual believes that organizational and technical resources exist to support the use of the system" (Venkatesh and Bala, 2008, p.279). This dimension encompasses learner's skills and technology-related factors.

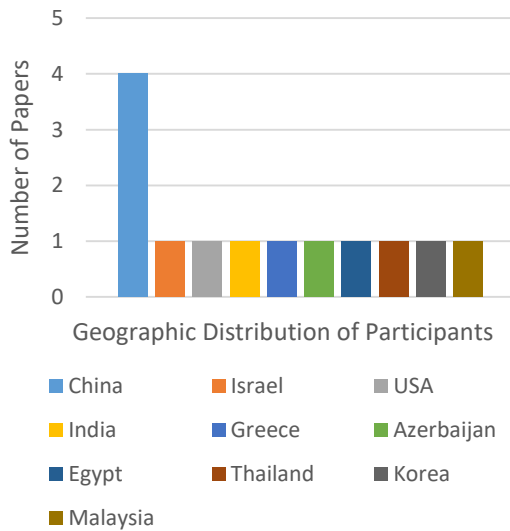
**4.1. Learner's skill-related factors:** including computer self-efficacy, experience in MOOCs and self-determination (self-regulated learning).

**4.2. Technology-related factors:** including technology compatibility.

One obvious finding to emerge from the analysis is that the most frequently proposed factors in the studies in the first category were: perceived usefulness (10 papers), perceived ease of use (10 papers), and perception of external control/ facilitating conditions (4 papers). In the studies assigned to the second category, the most frequently suggested factors were: extend knowledge and skills (25 papers), curiosity and earn a certificate (16 papers) and interaction with learners (14 papers).

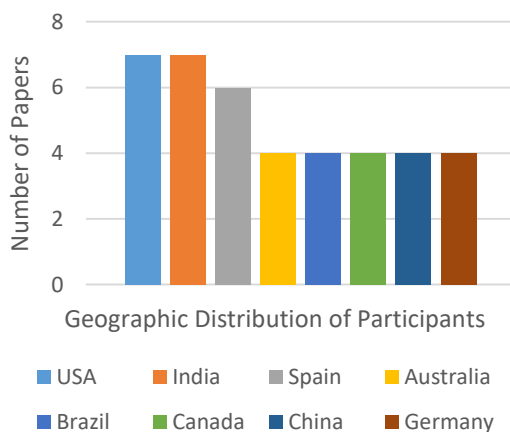
#### 4.5 What Is the Participants' Geographic Distribution in the Related Studies?

Participants in the related studies are the users who have been selected during the data collection stage for reporting their motivations for using MOOCs. The results obtained from the analysis shows that 10 papers in the first category reported the participants' geographic distribution. All these studies examined the perspectives of users from specific countries except for one study by Alraimi et al. (2015) which employed users from different countries. As can be seen from Figure 1, most of these studies focused on exploring the factors driving users from China to use MOOCs (4 papers). Other reported countries were: Israel, USA, India, Greece, Azerbaijan, Egypt, Thailand, Korea and Malaysia.



**Figure 1: Geographic distribution of participants in the studies in the first category.**

On the other hand, 13 papers assigned to the second category stated the geographic distribution of the participants. Conversely, these publications did not focus on the perspectives of users from a specific country or culture. Each of these studies employed participants originating from different countries. As Figure 2 shows, the most frequently mentioned countries were the USA (7 papers), India (7 papers), Spain (6 papers), and then four papers for each of the following countries: Australia, Brazil, Canada, China, and Germany.



**Figure 2: Geographic distribution of participants in the studies in the second category.**

## 5. Discussion

Our analysis of forty-two related papers revealed important findings. One interesting finding is that the amount of research on MOOCs acceptance and the factors influencing their use is limited. Moreover, only few papers adopt the technology acceptance theories.

Another important finding was that 61.90% of papers used solely a survey as a method for data collection. The finding of this study also shows that the main factors driving learners to MOOCs enrolment were learner-related (divided into personal, social and educational / professional development), institution and instructor-related, platform and course-related and perception of external control/facilitating conditions-related.

Unlike the studies assigned to the first category, most of the studies from the second category did not examine the motivations of users from specific countries or cultures. With regards to the geographic distribution of participants in related studies falling under the first category, the most frequently mentioned country was China whereas in the studies in the second category the main focus was on the USA, India, Spain, Australia, Brazil, Canada, China, and Germany.

These findings help us to understand current research directions in the motivations for using MOOCs from learners' perceptions, identify research gaps and provide suggestions for further research. Based on our findings, it can be concluded that substantial efforts are needed to investigate the topic from different perspectives and angles. There are numerous motivation and technology acceptance theories which have been tested in various contexts. Testing the applicability of these theories within the context of MOOCs is a rich area for future research. Because technology acceptance model (TAM) was built from a quantitative survey study, it is not surprising that survey quantitative methodology is the only method used by the papers that adopted technology acceptance theories. Likewise, most papers of the second category also used the survey method. One recommended method for future research is applying mixed-methods. The reason for mixing both quantitative and qualitative data within one study is that neither quantitative nor qualitative methods are adequate to understand the problem and the details of a situation, hence integrating both methods can complement each other (Ivankova et al., 2006).

Related studies addressed many motivational factors leading to the usage of MOOCs. Nevertheless, there is



abundant room for further progress in determining other influential factors affecting MOOCs use. For example, further study may be undertaken to investigate the influence of intercultural exchange within MOOCs on the MOOC acceptance. In addition, a further study with more focus on understanding the influence of self-regulated learning capabilities on the learner's intention to use MOOCs is also suggested. Investigating the influence of earning certificate of course completion on MOOC acceptance is also useful research.

The related literature concentrated on the perspectives of users from few geographic regions. Christensen et al. (2013) reported that the reasons for enrolling in MOOC courses varied by country. Similarly, Davis et al. (2014) found that learners' motivations to participate in MOOCs can vary significantly across cultures. No published studies have been conducted so far to determine the motivations of Arabic individuals to accept MOOCs except for two papers by Davis et al. (2014) and Hone and El-Said (2016) which examined the viewpoints of Syrian and Egyptian individuals respectively. In light of these findings, in future investigations, it might be useful to identify the motivational factors influencing users from different countries and cultures such as Arabic or developing countries. In general, in order to develop a full picture of MOOCs acceptance, additional studies will be needed.

## 6. Conclusions

Prior literature that focused on the learners' motivations to use MOOCs have been examined. We reported the classifications of papers, theories used, data collection methods, motivational factors proposed and geographic distribution of participants. This systematic analysis enables researchers to understand the related literature on motivations for using MOOCs from learners' viewpoints and its directions and limitations.

Based on our findings, there are many suggestions for future research. First, it would be interesting to investigate the motivations of learners from Arabic countries to accept MOOCs and compare the findings with motivations of learners from other countries. Second, it is suggested that the correlation between learners' motivations and course completion is investigated in future studies. Third, a further study could validate the technology acceptance and motivation theories within the context of MOOCs. Finally, further investigation into influence of self-regulated learning capabilities on the learners' intention to accept MOOCs

is recommended. We expect that this research will serve as a base for future studies.

## REFERENCES

- Adamopoulos, P., 2013. What makes a great MOOC? An interdisciplinary analysis of online course student retention. In *Proceedings of the 34th international conference on information systems, ICIS*, Milan.
- Aharony, N. and Bar-Ilan, J., 2016. Students' perceptions on MOOCs: An exploratory study. *Interdisciplinary Journal of e-Skills and Life Long Learning*, 12, pp.145-162.
- Alraimi, K.M., Zo, H. and Ciganeck, A.P., 2015. Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*, 80, pp. 28-38.
- Bakki, A., Oubahssi, L., Cherkaoui, C. and George, S., 2015. Motivation and Engagement in MOOCs: How to Increase Learning Motivation by Adapting Pedagogical Scenarios?. In *Design for Teaching and Learning in a Networked World*, pp. 556-559. Springer International Publishing.
- Barak, M., Watted, A. and Haick, H., 2016. Motivation to learn in massive open online courses: Examining aspects of language and social engagement. *Computers & Education*, 94, pp. 49-60.
- Bayeck, R.Y., 2016. Exploratory study of MOOC learners' demographics and motivation: The case of students involved in groups. *Open Praxis*, 8(3), pp. 223-233.
- Belanger, Y. and Thornton, J., 2013. Bioelectricity: A quantitative approach Duke University's first MOOC.
- Chaiyakit, A. and Jeerungsuwan, N., 2015. A Study of Acceptance of Teaching and Learning toward Massive Open Online Course (MOOC). In *The Twelfth International Conference on eLearning for Knowledge-Based Society*.
- Chang, R.I., Hung, Y.H. and Lin, C.F., 2015. Survey of learning experiences and influence of learning style preferences on user intentions regarding MOOCs. *British Journal of Educational Technology*, 46(3), pp. 528-541.
- Christensen, G. et al., 2013. The MOOC Phenomenon: Who Takes Massive Open Online Courses and Why? *University of Pennsylvania, nd Web*, 6, pp. 1-14.
- Chu, R., Ma, E., Feng, Y. and Lai, I.K., 2015, July. Understanding Learners' Intension Toward Massive Open Online Courses. In *International Conference on Hybrid Learning and Continuing Education*, pp. 302-312. Springer International Publishing.
- Cupitt, C. and Golshan, N., 2015. Participation in higher education online: Demographics, motivators, and grit.
- Davis H., Dickens K., Leon M., Sánchez-Vera M. and White S., 2014. MOOCs for Universities and Learners- An Analysis of Motivating Factors. In

- Proceedings of the 6th International Conference on Computer Supported Education*, pp. 105-116.
- Gamage, D., Fernando, S. and Perera, I., 2015, August. Factors leading to an effective MOOC from participants perspective. In *Ubi-Media Computing (UMEDIA), 2015 8th International Conference*, pp. 230-235. IEEE.
- Gao, S. and Yang, Y., 2015. Exploring Users' Adoption of MOOCs from the Perspective of the Institutional theory. In *the Fourteen Wuhan International Conference on E-Business Human Behavior and Social Impacts on E-Business*, pp. 383-390.
- Garrido, M., Koepke, L., Anderson, S., Felipe Mena, A., Macapagal, M. and Dalvit, L., 2016. The Advancing MOOCs for Development Initiative: An examination of MOOC usage for professional workforce development outcomes in Colombia, the Philippines, & South Africa. *Technology & Social Change Group*.
- Glaser, B.G., 1965. The constant comparative method of qualitative analysis. *Social problems*, 12(4), pp. 436-445.
- Greene, J.A., Oswald, C.A. and Pomerantz, J., 2015. Predictors of retention and achievement in a massive open online course. *American Educational Research Journal*, 52(5), pp. 925-955.
- Gütl, C., Rizzardini, R.H., Chang, V. and Morales, M., 2014. Attrition in MOOC: Lessons learned from drop-out students. In *Learning Technology for Education in Cloud. MOOC and Big Data*, pp. 37-48. Springer International Publishing.
- Hew, K.F. and Cheung, W.S., 2014. Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. *Educational Research Review*, 12, pp. 45-58.
- Hone, K.S. and El Said, G.R., 2016. Exploring the factors affecting MOOC retention: A survey study. *Computers & Education*, 98, pp. 157-168.
- Howarth, J.P., D'Alessandro, S., Johnson, L. and White, L., 2016. Learner motivation for MOOC registration and the role of MOOCs as a university 'taster'. *International Journal of Lifelong Education*, pp. 1-12.
- Huanhuan, W. and Xu, L., 2015, September. Research on technology adoption and promotion strategy of MOOC. In *Software Engineering and Service Science (ICSESS), 2015 6th IEEE International Conference*, pp. 907-910. IEEE.
- Ivankova, n. V., cresswell, j. W., and stick, s. L. (2006). Using mixed-methods sequential explanatory design: from theory to practice. *Field methods*, 18(1), pp. 3-20.
- Khalil, H. and Ebner, M., 2014, February. MOOCs completion rates and possible methods to improve retention-A literature review. In *World Conference on Educational Multimedia, Hypermedia and Telecommunications*, 1, pp. 1305-1313.
- Kitchenham, B., 2004. Procedures for performing systematic reviews. Keele, UK, *Keele University*, 33(2004), pp. 1-26.
- Kizilcec, R.F., Piech, C. and Schneider, E., 2013, April. Deconstructing disengagement: analyzing learner subpopulations in massive open online courses. In *Proceedings of the third international conference on learning analytics and knowledge*, pp. 170-179. ACM.
- Kizilcec, R.F. and Schneider, E., 2015. Motivation as a lens to understand online learners: Toward data-driven design with the OLEI scale. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 22(2), p.6.
- Latha, A. and Malarmathi, K., 2016. Factors Influencing Successful Completion of Massive Open Online Courses: A Synthesis of Literature. *Global Journal For Research Analysis*, 5(1), pp. 66-68.
- Li, K., 2015. Motivating Learners in Massive Open Online Courses: A Design-based Research Approach (*Doctoral dissertation*, Ohio University).
- Littlejohn, A., Hood, N., Milligan, C. and Mustain, P., 2016. Learning in MOOCs: Motivations and self-regulated learning in MOOCs. *The Internet and Higher Education*, 29, pp. 40-48.
- Liu, M., Kang, J. and McKelroy, E., 2015. Examining learners' perspective of taking a MOOC: reasons, excitement, and perception of usefulness. *Educational Media International*, 52(2), pp. 129-146.
- Louho, R., Kallioja, M. and Oittinen, P., 2006. Factors affecting the use of hybrid media applications. *Graphic arts in Finland*, 35(3), pp. 11-21.
- Nordin, N., Norman, H. and Embi, M.A., 2015. Technology Acceptance of Massive Open Online Courses in Malaysia. *Malaysian Journal of Distance Education*, 17(2), pp. 1-16.
- Norman, A., 2014. The who, why and what of MOOCs. In *Proceedings ascilite Dunedin*, pp. 717-721.
- Orlikowski, W.J. and Baroudi, J.J., 1991. Studying information technology in organizations: Research approaches and assumptions. *Information systems research*, 2(1), pp. 1-28.
- Rai, L. and Chunrao, D., 2016. Influencing factors of success and failure in MOOC and general analysis of learner behavior. *International Journal of Information and Education Technology*, 6(4), pp. 262-268.
- Sa, J.H., Lee, J.M., Kang, T.W., Gim, G.Y. and Kim, J.B., 2016. A Study of Factors Affecting the Intention of Usage in MOOC. In *Advanced Science and Technology Letters*, pp. 160-163.
- Salmon, G., Pechenkina, E., Chase, A.M. and Ross, B., 2016. Designing Massive Open Online Courses to take account of participant motivations and expectations. *British Journal of Educational Technology*.
- Shah, D., 2015. By the numbers: MOOCs in 2015 - class central's MOOC report. Available at: <https://www.class-central.com/report/moocs-2015-stats/> (Accessed: 16 June 2016).

- Shrader, S., Wu, M., Owens-Nicholson, D. and Santa Ana, K., 2016. Massive open online courses (MOOCs): Participant activity, demographics, and satisfaction. *Online Learning*, 20(2).
- Sunar, A.S., Abdullah, N.A., White, S. and Davis, H., 2015, May. Personalisation in MOOCs: A Critical Literature Review. In *International Conference on Computer Supported Education*, pp. 152-168. Springer International Publishing.
- Uchidiuno, J., Ogan, A., Yarzebinski, E. and Hammer, J., 2016, April. Understanding ESL Students' Motivations to Increase MOOC Accessibility. In *Proceedings of the Third (2016) ACM Conference on Learning@ Scale*, pp. 169-172. ACM.
- Van Biljon, J. and Kotzé, P., 2007, October. Modelling the factors that influence mobile phone adoption. In *Proceedings of the 2007 annual research conference of the South African institute of computer scientists and information technologists on IT research in developing countries*, pp. 152-161. ACM.
- Venkatesh, V. and Bala, H., 2008. Technology acceptance model 3 and a research agenda on interventions. *Decision sciences*, 39(2), pp. 273-315.
- Wang, Y. and Baker, R., 2015. Content or platform: Why do students complete MOOCs?. *Journal of Online Learning and Teaching*, 11(1), pp.17-30.
- Xiong, J., Tripathi, A., Nguyen, C. and Najjar, L., 2014. Information and Communication Technology for Development: Evidence from MOOCs Adoption. In *Proceedings of the Ninth Midwest Association for Information Systems Conference*.
- Xiong, Y., Li, H., Kornhaber, M.L., Suen, H.K., Pursel, B. and Goins, D.D., 2015. Examining the Relations among Student Motivation, Engagement, and Retention in a MOOC: A Structural Equation Modeling Approach. *Global Education Review*, 2(3).
- Xu, F., 2015. Research of the MOOC study behavior influencing factors. In *Proceedings of international conference on advanced information and communication technology for education*, Atlantis Press, Amsterdam, Netherlands, pp. 18-22.
- Zheng, S., Rosson, M.B., Shih, P.C. and Carroll, J.M., 2015, February. Understanding student motivation, behaviors and perceptions in MOOCs. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, pp. 1882-1895. ACM.
- Zhong, S.H., Zhang, Q.B., Li, Z.P. and Liu, Y., 2016. Motivations and Challenges in MOOCs with Eastern Insights. *International Journal of Information and Education Technology*, 6(12), p.954.
- Zhou, M., 2016. Chinese university students' acceptance of MOOCs: A self-determination perspective. *Computers & Education*, 92, pp.194-203.

## Appendix B: Definitions of the Constructs Proposed in the Previous Studies on MOOCs Acceptance/Continuance

Construct	Definition
Perceived usefulness	<i>"The degree to which a person believes that using a particular system would enhance his/her job performance"</i> (Davis, 1989, p.320).
Perceived ease of use	<i>"The degree to which a person believes that using a particular system would be free of efforts"</i> (Davis, 1989, p.320).
Subjective norm	<i>"The degree to which an individual perceives that important others believe he or she should use the new system"</i> (Venkatesh et al., 2003, p.451).
Perceived reputation	<i>"a subjective reflection of the institution' quality, influence, and trustworthiness"</i> (Alraimi, Zo & Ciganek, 2015, p.30)
Mimetic pressure	<i>"Mimetic pressures force social actors to seek examples of established behaviors and practices to follow through voluntarily and consciously copying the same behaviors and practices of other high-status and successful actors, due to the belief that actions taken by successful actors will be more likely to get positive outcomes"</i> (Gao & Yang, 2015, p.385)
Task technology fit	<i>"A matter of how the capabilities of the IS match the tasks that the user must perform"</i> (Wu & Chen, 2017, p.224).
Social recognition	The degree to which others give recognition to learning via MOOCs or to MOOC certificates (Wu & Chen, 2017).
Vividness of course content	Good preparation of the course contents (Huang, Zhang & Liu, 2017)
Objective usability	<i>"Allows a comparison of systems based on the actual level (rather than perceptions) of effort required to complete specific tasks"</i> (Venkatesh, 2000, p.351).
Computer anxiety	<i>"An individual's apprehension, or even fear, when she/he is faced with the possibility of using computers"</i> (Venkatesh, 2000, p.349).
Satisfaction	<i>"Users' affect with (feelings about) prior technology use"</i> Bhattacharjee (2001, p.359).
Interactivity	Learner-content interaction, learner-learner interaction, and learner-instructor interaction.
Ubiquity	The ability to access MOOC platforms from anywhere.
Information richness	<i>"The ability of information to change understanding within a time interval"</i> (Daft & Lengel, 1986, p.560)
Individual technology fit	<i>"Whether teaching method match learning styles, whether learning styles match the contents of MOOCs, and whether content matches learning targets"</i> (Wu & Chen, 2017, p.224).
Computer self-efficacy	The ability of a user to perform a given task using the computer.
Perceived behavioral control	<i>"The perceived ease or difficulty of performing the behaviour"</i> (Ajzen, 1991).
Intrinsic motivations	<i>"Doing something because it is inherently interesting or enjoyable"</i> (Ryan & Deci, 2000, p.55).

<b>Course difficulty</b>	<i>"The degree of complexity that is perceived by students through considering the course nature"</i> (Huang, Zhang & Liu, 2017, p.86).
<b>Perceived openness/ Perceived cost</b>	The degree to which accessing the resources in MOOCs is open (i.e. free of charge).
<b>Trust towards MOOCs</b>	<i>"The expectation that a service will be provided or a commitment will be fulfilled"</i> (Chu et al., 2015, p.304).
<b>Confirmation</b>	<i>"Users' perception of the congruence between expectation of technology use and its actual performance"</i> (Bhattacharjee, 2001, p. 359).
<b>Popularity</b>	The degree to which using the MOOCs is prevalent.
<b>Image</b>	<i>"The degree to which use of an innovation is perceived to enhance one's image or status in one's social system"</i> (Moore & Benbasat, 1991, p.195).
<b>Study/work relevance</b>	<i>"An individual's perception regarding the degree to which the target system is applicable to his or her job"</i> (Venkatesh & Davis, 2000, p.191)
<b>Output quality</b>	How well the system performs a given task (Venkatesh & Davis, 2000).
<b>Normative pressure</b>	<i>"Normative pressure occurs when social actors voluntarily, but unconsciously, replicate other actors' same beliefs, attitudes, behaviors and practices"</i> (Gao & Yang, 2015, p.385).
<b>Attitude</b>	<i>"The degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question"</i> (Ajzen, 1991, p.188).
<b>Teacher's subject knowledge</b>	<i>"The degree to which a teacher is perceived by students to have mastered a subject"</i> (Huang, Zhang & Liu, 2017, p.86).
<b>Result demonstrability</b>	<i>"The tangibility of the results of using the innovation, including their observability and communicability"</i> (Moore & Benbasat, 1991, p.203).
<b>Extrinsic motivations</b>	<i>"Doing something because it leads to a separable outcome"</i> (Ryan & Deci, 2000, p.55).
<b>Engagement in MOOCs</b>	<i>"Participation in the course activities"</i> (Xiong et al., 2015, p.27). Examples are: video hits, quiz attempts, registration date, class activities, etc.
<b>High level of challenge</b>	<i>"A challenge appraisal indicates that the demands of the stressful situation can be overcome, and that the individual assumes that there is a potential for gain or benefit"</i> (Aharony & Bar-Ilan, 2016, p.149).
<b>High level of threat</b>	<i>"Threat occurs when the individual estimates that resources do not meet situational demands. Further threat is accompanied by potential danger to the person's self-esteem and self-being"</i> (Aharony & Bar-Ilan, 2016, p.149).
<b>Learning strategies</b>	Strategies used by the learner to attain his/her educational goals, namely deep and surface learning strategies (Aharony & Bar-Ilan, 2016).
<b>Available Tools</b>	Tools offered by the MOOC platforms such as open forums, video sessions, etc.
<b>Affordability</b>	The degree to which cost of attending MOOCs is within the learner's financial means.
<b>Course quality</b>	<i>"Knowledgeability, authority of course content, and lecturers' teaching attitudes"</i> (Yang et al., 2017).
<b>Service quality</b>	<i>"A global judgment or attitude relating to the superiority of a service"</i> (Parasuraman, Zeithaml & Berry, 1985).
<b>Learner's experience with MOOCs</b>	The learner's experience of using MOOCs.

<b>Personal innovativeness in information technology</b>	<i>"The willingness of an individual to try out any new information technology"</i> (Agarwal & Prasad, 1998).
<b>Facilitating conditions</b>	<i>"The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system"</i> (Venkatesh et al., 2003, p.453).
<b>Habit</b>	<i>"The extent to which people tend to perform behaviours automatically because of learning"</i> (Venkatesh et al., 2012, p.161).
<b>Course flexibility</b>	The flexibility of accessing the courses at any time and from anywhere.
<b>Readiness</b>	<i>"The extent of preparedness of an organization to embrace new things"</i> (Othman et al., 2017, p.701).
<b>Learner's expectations and plans</b>	The learner's expectations and plans for a given MOOC.
<b>Course characteristics</b>	Characteristics of a course such as assignments, course materials, peer assessment, etc.
<b>Organisational support</b>	<i>"Employees' feeling of recognition of their contribution and whether their company cares about their interests and happiness or not"</i> (Wang, Dong & Shao, 2017, p.200).

## **Appendix C: Further Reading**

### **Studies on Usefulness of MOOCs in Learning**

Davis et al. (2014); Gütl et al. (2014); Hew & Cheung (2014); Khalil & Ebner (2014); Norman (2014); Greene, Oswald & Pomerantz (2015); Liu, Kang & McKelroy (2015); Zheng et al. (2015); Barak, Watted & Haick (2016); Garrido et al. (2016); Rai & Chunrao (2016); Uchidiuno et al. (2016); Zhong et al. (2016); Alario-Hoyos et al. (2017); Milligan & Littlejohn (2017); Nagasampige & Nagasampige (2017); Shapiro et al. (2017).

## Appendix D: Invitation to Experts Familiar with the Rwaq Platform

The following email was sent to all potential experts to invite them to participate in the interview.

Dear.....,

I hope all is well with you. My name is Nada Hakami, and I am a Computer Science PhD student at the University of Southampton, under the supervision of Dr Su White and Dr Sepi Chakaveh. I would like to conduct interviews with Rwaq users as a part of my research on understanding the factors affecting learners' intentions to continue using Arabic MOOCs exemplified by the Rwaq platform. Your experience as an (administrator/instructor/learner) in Rwaq will be very useful to me in gaining a deeper understanding of the factors that influence learners' decision to continue to use Arabic MOOCs. The interview is informal and will take around 40 minutes. Your identity will remain anonymous and your information will be kept confidential. The finding of this study will be of practical value to Arabic MOOC designers and providers who wish to improve learner satisfaction and engagement. If you would like to participate in the interview, please let me know at your earliest convenience so that we can arrange a suitable date, time and means of communication (phone/face-to-face). I have attached a copy of the participant information sheet, the consent form and the interview guide for you to look at. If you have any questions, please do not hesitate to get in touch.

Thank you very much for your time.

Best regards,  
Nada

الفاضل.....,

أمل أن كل شيء على ما يرام معك. أنا ندى حكيمي، طالبة دكتوراه حاسب آلي في جامعة ساوثهامبتون تحت إشراف الدكتورة سو وايت والدكتورة سيبلي شاكافه. أود إجراء مقابلات مع مستخدمي رواق كجزء من بحثي حول فهم العوامل التي تؤثر على نية المتعلمين لمواصلة استخدام المنصات العربية التي تمثلها منصة رواق. وستكون خبرتك كمسؤول / مدرب / متعلم في رواق مفيدة جداً لي في اكتساب فهم أعمق للعوامل التي تؤثر على قرار المتعلمين بمواصلة استخدام المنصات العربية. المقابلة ليست رسمية وقد تستغرق حوالي 40 دقيقة. ستبقى هويتك مجهولة وستبقى معلوماتك سرية. وستكون نتائج هذه الدراسة ذات قيمة عملية لمصممي ومزودي المنصات العربية الذين يرغبون في تحسين مستوى رضا المتعلم ومشاركته. إذا كنت ترغب في المشاركة في المقابلة، الرجاء إبلاغي في أقرب وقت ممكن حتى نتمكن من ترتيب موعد ووقت مناسب ووسيلة الاتصال (الهاتف / وجهاً لوجه). لقد أرفقت نسخة من ورقة معلومات المشارك، استمارة الموافقة ودليل المقابلة إذا كنت ترغب في إلقاء نظرة. إذا كان لديك أي أسئلة، من فضلك لا تتردد في السؤال.

شكراً جزيلاً على وقتك.

تحياتي،  
ندى



## Appendix E: Interview Guide

### Part 1- Demographic and General information:

#### الجزء 1- معلومات عامة

1. What is your gender?

- Male
- Female

ما هو جنسك؟

- ذكر

- أنثى

2. How old are you?

كم عمرك؟

3. Are you currently...

- Student
- Employee
- Other (.....)

هل أنت حالياً...

- طالب

- موظف

- آخر (.....)

4. What is your academic major and degree?

ما هو تخصصك الأكاديمي والدرجة الأكاديمية؟

5. Have you ever enrolled in any Arabic MOOCs as a learner, other than Rwaq? If yes, please give details?

هل سبق لك أن التحقت في أي منصة عربية كمتعلم، بخلاف منصة رواق؟ إذا نعم، الرجاء تقديم التفاصيل؟

6. Have you ever enrolled in any international MOOCs as a learner? If yes, please give details?

هل سبق لك أن التحقت في أي منصة عالمية كمتعلم؟ إذا نعم، الرجاء تقديم التفاصيل؟

7. How many MOOC courses have you enrolled in as a learner?

كم عدد المقررات في منصة رواق التي سجلت بها سابقاً كمتعلم؟

## 8. How many MOOC certificates have you obtained from Rwaq?

كم عدد الشهادات التي حصلت عليها من منصة رواق ؟

## 9. How many courses have you taught in Rwaq? Can you name them? (This question is for instructors only)

كم عدد المقررات في منصة رواق التي قمت بتدريسها سابقاً؟ (هذا السؤال لمدرسين رواق فقط)

## Part 2- Factors Influencing Continuance Use of Rwaq:

## الجزء 2- العوامل المؤثرة على إستمرار استخدام منصة رواق

## 1. From your perspective, what is the usefulness of Rwaq and how does this affect the learner's decision to continue using it?

من وجهة نظرك، ماهي فوائد رواق وكيف ترى تأثيرها على قرار المتعلم للإستمرار في إستخدام هذه المنصة ؟

## 2. From your perspective, how would you rate the ease of use of Rwaq? How does the ease of use affect the learner's decision to continue using Rwaq?

من وجهة نظرك، كيف تقيم سهولة استخدام رواق؟ كيف تؤثر سهولة استخدام المنصة على قرار المتعلم للإستمرار في إستخدام هذه المنصة ؟

## 3. From your perspective, what are the intrinsic motivations that drive learners to continue to use Rwaq and how does it affect the learner's decision to continue using Rwaq?

من وجهة نظرك، ماهي الدوافع الداخلية التي تدفع المتعلم لمواصلة استخدام رواق وكيف ترى تأثيرها على قرار المتعلم للإستمرار في إستخدام هذه المنصة ؟

## 4. From your perspective, what is the usefulness of the 'open' nature of Rwaq in terms of providing free courses, and how does this affect the learner's decision to continue using it?

من وجهة نظرك، ماهي فوائد إنفتاح منصة رواق من حيث تقديم مقررات مجانية وكيف ترى تأثيرها على قرار المتعلم للإستمرار في إستخدام هذه المنصة ؟

## 5. From your perspective, what is the usefulness of earning course certificates from Rwaq, and how does this affect the learner's decision to continue using the Rwaq platform?

من وجهة نظرك، ماهي فوائد إكتساب شهادات إكمال المقرر من منصة رواق وكيف ترى تأثيرها على قرار المتعلم للإستمرار في إستخدام هذه المنصة ؟

6. From your perspective, what is the usefulness of Arabic language support in Rwaq and how does this affect the learner's decision to continue using Rwaq?

من وجهة نظرك، ماهي فوائد دعم اللغة العربية في منصة رواق وكيف ترى تأثيرها على قرار المتعلم للإستمرار في إستخدام هذه المنصة؟

7. From your perspective, how does Rwaq's reputation affect the learner's decision to continue using it?

من وجهة نظرك، كيف تؤثر سمعة منصة رواق على قرار المتعلم للإستمرار في إستخدام هذه المنصة؟

8. Can you suggest other factors affecting the learner's decision to continue using Arabic platforms?

هل يمكنك اقتراح عوامل أخرى تؤثر على قرار المتعلم لمواصلة استخدام المنصات العربية؟

9. Thank you for your valuable information. Is there anything else you would like to add?

شكراً لك على معلوماتك القيمة. هل هناك أي شيء آخر تود أن تضيفه؟

## Appendix F: Participant Information Sheet for Interviews



Participant Information Sheet (Version 1.1, 10/01/2017)

ورقة معلومات المشاركين ( النسخة 1.1 - 10\01\2017 )

**Study Title:** Identifying the Factors Influencing Learners' Intentions to Continue Using Arabic MOOCs: Exploratory study

**عنوان الدراسة:** تحديد العوامل المؤثرة على نية المتعلمين لمواصلة استخدام المنصات العربية: دراسة استكشافية.

**Researcher:** Nada Hakami

**Ethics number:** 24828

الباحث: ندى حكيمي

رقم الأخلاقيات: 24828

**Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.**

يرجى قراءة هذه المعلومات بعناية قبل اتخاذ القرار بالمشاركة في هذا البحث. إذا كنت سعيداً للمشاركة سوف يطلب منك التوقيع على استمارة الموافقة.

**What is the research about?**

This research aims to explore the factors influencing Learners' intentions to continue using Arabic MOOCs exemplified by the Rwaq Platform. Identifying such factors helps Rwaq providers to improve their services in order to increase learner satisfaction and engagement. This research is under the direction of the School of Electronics and Computer Science at the University of Southampton, UK, and is fully funded by the Saudi Arabian Cultural Bureau.

**ماذا عن هذا البحث؟**

يهدف هذا البحث إلى استكشاف العوامل التي تؤثر على نية المتعلمين في مواصلة استخدام المنصات العربية التي تمثلها منصة رواق. تحديد هذه العوامل تساعد مقدمي المنصات على تعزيز خدماتهم لزيادة رضا المتعلم ومشاركته. هذا البحث تحت إشراف كلية علوم الحاسوب بجامعة ساوثهامبتون، المملكة المتحدة، ويتم تمويله بالكامل من قبل الملحقة الثقافية السعودية.

**Why have I been chosen?**

The researcher is inviting individuals with experience in teaching courses on Rwaq platform, as well as Rwaq administrators to take part in an interview. Also, the researcher is inviting individuals, who are 18 years or older, who are previous Rwaq learners and have joined at least three courses in Rwaq to participate in an interview. The data collected will help the researcher

to gain a better understanding of the factors affecting the decision to continue to learn using MOOCs.

#### لماذا تم إختياري؟

الباحثه تدعو الأفراد الذين لديهم خبرة في تدريس المقررات في منصة رواق للتعليم المفتوح والإداريين في منصة رواق للمشاركة في المقابلة. أيضاً، الباحثه تدعو الأفراد الذين أعمارهم ١٨ سنة أو أكثر و انضموا لثلاث مواد على الأقل في السابق في منصة رواق للمشاركة في المقابلة. سوف تساعد البيانات التي سيتم جمعها الباحثه على الحصول على فهم أفضل للعوامل التي تؤثر على قرار مواصلة التعلم باستخدام منصات التعليم الإلكتروني المفتوحة هائلة الالتحاق.

#### What will happen to me if I take part?

You will be asked to read the participant information sheet carefully, and If you agree to take part, we will ask you to sign a consent form. Face to face or phone interview will then be arranged, which will last around 40 minutes. The interviewer will ask for your perspectives on certain factors which are thought to influence learners to continue to use Arabic MOOCs, and a small amount of demographic and general information will be collected also. If you give your permission via the consent form, the interview will be recorded using an audio recorder. This allows the researcher to capture as much information as possible in order to analyse it at a later date. Anything you say will be kept strictly confidential (see details below).

#### ماذا سيحدث لي إذا شاركت؟

سيطلب منك قراءة ورقة معلومات المشارك بعناية. إذا وافقت على المشاركة، سنطلب منك التوقيع على استمارة الموافقة. بعد ذلك سيتم مقابلتك إما وجهاً لوجه أو عن طريق الهاتف لحوالي 40 دقيقة. سوف يسأل القائم بالمقابلة عن وجهات نظرك بشأن بعض العوامل التي يُعتقد أنها تؤثر على المتعلمين لمواصلة استخدام المنصات العربية. أيضاً سيتم جمع كمية صغيرة من المعلومات الديموغرافية و العامة. سيتم تسجيل المحادثة باستخدام مسجل الصوت بعد الحصول على إذن منك لفعل ذلك كما هو مبين في نموذج الموافقة. الغرض من هذا التسجيل هو للسماح للباحثه بتسجيل جميع المعلومات التي تمت مناقشتها خلال المقابلة، وهو أمر مهم بالنسبة للباحثه للتحليل في وقت لاحق. سيتم الاحتفاظ بالمعلومات الخاصة بك بشكل سري (انظر التفاصيل أدناه).

#### Are there any benefits in my taking part?

We cannot promise that the study will be of direct benefit to you, although you may find the questions interesting. The findings of this study will help us to understand the factors influencing learners to continue using Arabic MOOCs. In addition, the findings will help MOOCs providers to improve learner satisfaction and increase the intention to continue using platforms.

#### هل هناك أي فوائد عند مشاركتي؟

لا نستطيع أن نعد أن هذه الدراسة ستساعدك، على الرغم من أنك قد تجد الأسئلة مثيرة للاهتمام. نتائج هذه الدراسة ستساعدنا على فهم العوامل التي تؤثر على المتعلمين لمواصلة استخدام منصات التعليم العربي. وبالإضافة إلى ذلك، فإن النتائج ستساعد مقدمي المنصات على تحسين رضا المتعلم وزيادة النية لمواصلة استخدام المنصات.

#### Are there any risks involved?

No.

#### هل هناك أي مخاطر؟

لا.

#### Will my participation be confidential?

Yes. Any information you provide to the research team will be kept strictly confidential and anonymous. Your information will be stored on secure systems and will be used for the purpose of this study only. Your responses will not be linked to your identity in any way. Access to the data will be restricted to the researcher and her academic supervisors only.

#### هل ستكون مشاركتي سرية؟

نعم. سيتم الاحتفاظ بالمعلومات التي تقدمها لفريق البحث في سرية تامة ومجهولة. سيتم تخزين المعلومات الخاصة بك على أنظمة آمنة وسوف تستخدم لأغراض هذه الدراسة فقط. لن يتم ربط إجاباتك بالهوية الخاصة بك بأي شكل من الأشكال. الوصول إلى البيانات يقتصر فقط على الباحثة والمشرفين الأكاديميين على بحثها.

#### What happens if I change my mind?

Participation in this study is voluntary. You have the right to withdraw at any stage without giving any reason and without any penalty. As such, any information you have provided will be discarded. To withdraw, please email the researcher directly at the email address given below.

#### ماذا يحدث إذا قمت بتغيير رأيي؟

المشاركة في هذه الدراسة طوعية. لديك الحق في الانسحاب في أي مرحلة دون الحاجة إلى إعطاء أسباب و بدون أي عقوبة. في هذه الحالة، سيتم تجاهل المعلومات التي قدمتها. للإسحاب، يرجى مراسلة الباحثة مباشرة على البريد الإلكتروني الموضح أدناه.

#### What happens if something goes wrong?

In the unlikely case of concern or complaint, please contact Research Governance Manager (02380 595058, rgoinfo@soton.ac.uk).

#### ماذا يحدث إذا حدث خطأ ما؟

في حالة القلق أو الشكوى الغير مرجحة ، يرجى الاتصال بمدير إدارة البحوث:  
(Tel: 00442380 595058, Email: rgoinfo@soton.ac.uk)

#### Where can I get more information?

For further details, please contact either the researcher or her academic supervisors, Dr Su White and Dr Sepi Chakaveh.

Researcher (nah1g15@soton.ac.uk )  
Dr Su White (saw@ecs.soton.ac.uk)  
Dr Sepi Chakaveh (sc2@ecs.soton.ac.uk)

#### أين يمكنني الحصول على مزيد من المعلومات؟

لمزيد من التفاصيل، يرجى الاتصال إما بالباحثة أو بالمشرفين الأكاديميين على بحثها:

Researcher (nah1g15@soton.ac.uk )  
Dr Su White ([saw@ecs.soton.ac.uk](mailto:saw@ecs.soton.ac.uk))  
Dr Sepi Chakaveh (sc2@ecs.soton.ac.uk)

## Appendix G: Consent Form for Interviews



### CONSENT FORM FOR INTERVIEW

نموذج الموافقة

**Study title:** Identifying the Factors Influencing Learners' intentions to Continue Using Arabic MOOCs: Exploratory Study.

**عنوان الدراسة:** تحديد العوامل المؤثرة على نية المتعلمين لمواصلة استخدام المنصات العربية: دراسة استكشافية.

**Researcher name:** Nada Hakami

اسم الباحث: ندى حكي

**Supervisors:** Dr Su White and Dr Sepi Chakaveh

**Ethics reference:** 24828

رقم الأخلاقيات: 24828

**Please initial the box(es) below if you agree with the statement(s):**

يرجى التأشير في المربع(ات) أدناه إذا أنت موافق على العبارة:

I have read and understood the information sheet (Version number 1.1, Date: January 10, 2017) and have had the opportunity to ask questions about the study.

☐

لقد قرأت وفهمت ورقة المعلومات (النسخة رقم 1.1، تاريخ: 10 يناير 2017)، وأتيحت لي الفرصة لطرح الأسئلة حول الدراسة.

I agree to take part in this research project and agree for my data to be used for the purpose of this study .

☐

أنا أوافق على المشاركة في هذا المشروع البحثي وأوافق على استخدام البيانات الخاصة بي للغرض من هذه الدراسة.

I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected.

☐

أنا أفهم أن مشاركتي طوعية وقد انسحب في أي وقت دون أن تتأثر حقوقي القانونية.

I agree to the interview being audio recorded.

☐

أوافق على تسجيل المقابلة صوتياً.

I agree to the use of anonymised quotes in publications.

☐

أوافق على استخدام اقتباسات مجهولة المصدر في المنشورات.

**Data Protection**

I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

**حماية البيانات**

أنا أفهم أن المعلومات التي تم جمعها عني خلال مشاركتي في هذه الدراسة سيتم تخزينها على جهاز كمبيوتر محمي بكلمة مرور وأنه سيتم استخدام هذه المعلومات فقط لغرض هذه الدراسة. جميع الملفات التي تحتوي على أية بيانات شخصية ستتاح بشكل مجهول.

**Participant name**

.....إسم المشارك

**Participant signature**

.....توقيع المشارك

**Date**

.....التاريخ



## Appendix H: The Online Questionnaire

### Welcome Page of the Online Questionnaire

Peace be upon you and God's mercy and blessings be upon you.

The researcher is conducting a study entitled "*Identifying the factors influencing learners' intentions to continue using Arabic MOOCs: Rwaq platform*", which will be submitted as a PhD thesis to the College of Computer Sciences and Engineering at the University of Southampton. The study aims to develop and test a model of the factors affecting learners' intentions to continue to use Arabic MOOCs exemplified by the Rwaq platform, which will help Rwaq providers to strengthen their services and increase learner satisfaction and engagement.

We are calling for individuals aged 18 years or over who either have an account with Rwaq, or who have previously enrolled in at least one course in Rwaq, to participate in the study by answering a questionnaire. The data collected will be used to identify the influential factors and develop the model. The questionnaire will take approximately 10-15 minutes to complete. Participation is entirely voluntary, and all data will be handled with the strictest confidence and used for research purposes only. If you have any questions, please contact the researcher (Nada Hakami) on the following email: nah1g15@soton.ac.uk

### **Research supervisors:**

Dr Su White (saw@ecs.soton.ac.uk )

Dr Sepi Chakaveh (sc2@ecs.soton.ac.uk )

**For more information about this study, please view the Participant information sheet which is available on this link:** <https://goo.gl/uLpvw5>

Please tick the box below to start filling out the questionnaire if the following is true for you:

- I agree to participate in filling out this questionnaire and agree to use my data for the purpose of this study.
- I understand that my participation is voluntary and I can withdraw at any time without being affected by my legal rights.

☐ Start answering the questionnaire

### صفحة الترحيب

مرحباً

السلام عليكم ورحمة الله وبركاته وبعد،،،

تقوم الباحثة بإجراء دراسة بعنوان: "تحديد العوامل المؤثرة على نية المتعلمين في منصة رواق العربية للتعليم المفتوح نحو الإستمرار في إستخدام هذه المنصة" وذلك استكمالاً لمتطلبات الحصول على درجة الدكتوراه في علوم الحاسب من كلية علوم الحاسب والهندسة - جامعة ساوثهامتون - بريطانيا. حيث تهدف الدراسة إلى تطوير وإختبار نموذج مكون من العوامل المؤثرة

على المتعلمين في منصة رواق نحو الاستمرار في استخدام منصة رواق والذي يفيد مقدمي منصة رواق في تعزيز خدماتهم لزيادة رضا المتعلم ومشاركته.

نحن ندعو الأفراد الذين لديهم حساب في منصة رواق-المنصة العربية للتعليم المفتوح- أو الذين التحقوا على الأقل بمادة واحدة في رواق كمتعلمين سابقاً وأعمارهم ١٨ سنة أو أكثر للمشاركة في تعبئة الاستبيان. مشاركتكم بأرائكم القيمة في تعبئة الاستبيان ستكون بإذن الله الأساس الذي سنستند عليه لتحديد العوامل المؤثرة وتطوير النموذج. تعبئة الاستبيان يستغرق حوالي ١٠-١٥ دقيقة. مشاركتكم في تعبئة الاستبيان لهذا المشروع البحثي هي مشاركة تطوعية وسيتم التعامل مع جميع الإجابات بسرية تامة بحيث لا نشير مطلقاً إلى هوية المشارك وسنستخدم هذه البيانات لغرض البحث فقط. إذا كان لديكم أي استفسار يرجى مراسلة الباحثة (ندى حكيم) على الايميل التالي:

nah1g15@soton.ac.uk

مشفرو البحث:

Dr Su White: saw@ecs.soton.ac.uk

Dr Sepi Chakaveh: sc2@ecs.soton.ac.uk

لمعرفة معلومات أكثر عن البحث، يرجى الإطلاع على ورقة معلومات للمشاركين متاحة على هذا الرابط:

<https://goo.gl/uLpvw5>

يرجى وضع علامة (صح) في المربع أدناه لبدء المشاركة في تعبئة الاستبيان إذا تحقق مايلي بالنسبة لك:  
- أنا أوافق على المشاركة في تعبئة هذا الاستبيان وأوافق على استخدام البيانات الخاصة بي للغرض من هذه الدراسة.  
- أفهم أن مشاركتي طوعية وقد أنسحب في أي وقت دون أن تتأثر حقوقي القانونية.  
بدء المشاركة في تعبئة الاستبيان ☐

## **Part-1 Information About Using Rwaq**

### **الجزء 1- معلومات عن استخدام رواق**

#### **1. Please select one of the following options that applies to you:**

- I have an account on the Rwaq platform but I have never joined any course in Rwaq.
- I have already joined at least one course in the Rwaq platform as a learner.
- I do not have an account on the Rwaq platform.

**الرجاء إختيار إحدى الخيارات التالية التي تنطبق عليك:**

- لدي حساب في منصة رواق ولكن لم يسبق لي الالتحاق بأي مادة من مواد رواق.
- لقد التحقت سابقاً على الأقل بمادة واحدة في منصة رواق كمتعلم.
- ليس لدي حساب في منصة رواق.

#### **2. How old are you?**

- Under 18 years
- 18-24 years
- 25-30 years
- 31-35 years
- 36-40 years
- 41-45 years
- 46-50 years
- 51-55 years
- 56-60 years

- Above 60 years

كم عمرك؟

- أقل من ١٨ عام
- بين ١٨-٢٤ عام
- بين ٢٥-٣٠ عام
- بين ٣١-٣٥ عام
- بين ٣٦-٤٠ عام
- بين ٤١-٤٥ عام
- بين ٤٦-٥٠ عام
- بين ٥١-٥٥ عام
- بين ٥٦-٦٠ عام
- أكبر من ٦٠ عام

## Part 2- The Factors Influencing the Intention to Continue Using Rwaq

جزء 2- العوامل المؤثرة على استمرار استخدام رواق

Based on your experience in the Rwaq platform, please indicate your level of disagreement / agreement on the following statements that correspond to your personal opinion. Please answer each statement by selecting only one answer per phrase.

بناءً على خبرتك في منصة رواق، يُرجى الإشارة إلى درجتك في عدم الاتفاق / الاتفاق على العبارات التالية التي تتوافق مع قناعتك ورأيك الشخصي. برجاء الإجابة على كل عبارة عن طريق اختيار إجابة واحدة فقط لكل عبارة.

**ملاحظة:** كلمة "مواد" في جميع عبارات الاستبيان تعني المواد أو المقررات الأكاديمية التي تقدّمها منصة رواق.

### Perceived Ease of Use

- Learning how to use the Rwaq platform was easy for me.
- It is easy for me to become skilful in using Rwaq (e.g. accessing the desired information on the platform quickly and easily).
- Using Rwaq and the interaction with it is clear and understandable.
- The use of Rwaq does not require a lot of mental effort.
- In general, I find Rwaq easy to use.

### سهولة استخدام رواق

- التّعلّم على طريقة استخدام منصة رواق كان سهلاً بالنسبة لي.

- من السهل بالنسبة لي أن أصبح ماهراً في استخدام رواق (مثال: الوصول للمعلومات المرغوبة على منصة رواق بسرعة وسهولة).

- طريقة استخدام رواق والتفاعل معها واضحة ومفهومة بالنسبة لي.

-طريقة إستخدام رواق لا تتطلب الكثير من الجهد الذهني.

-بشكل عام، أجد أن رواق سهلة الاستخدام.

### **Usefulness of Rwaq in Learning**

- Using Rwaq assists me in learning.
- Using Rwaq helps me to develop my knowledge or skills.
- Joining a course in Rwaq increases my understanding of the subject of that course.
- Rwaq makes learning more effective (e.g. boosts the ability to learn through online learning, flexibility in accessing resources from anywhere and at any time, increases participants' independent learning skills, etc.).
- Using Rwaq helps in increasing the amount of knowledge or skills obtained.
- Using Rwaq assists me in developing my knowledge or skills in the field of academic study or career.
- In general, the use of Rwaq contributes to the achievement of my educational objectives (e.g. developing a specific skill for a particular purpose).

### **فائدة رواق في التعليم**

-إستخدام رواق يساعدني في التعلم.

-إستخدام رواق يساعدني في تطوير معرفتي أو مهاراتي.

-الإلتحاق بمادة في رواق يزيد من فهمي في موضوع المادة التي التحقت بها.

-إستخدام رواق يجعل التعلم أكثر فعالية (أمثله: تنمية القدرة على التعلم عن طريق التعليم الإلكتروني، توفير مرونة للوصول

للمنصة التعليمية في أي وقت ومن أي مكان، جعل المتعلم أكثر اعتماداً على نفسه، إلخ).

-إستخدام رواق يساعد في زيادة كمية المعارف أو المهارات المكتسبة.

-إستخدام رواق يساعدني في تنمية معرفتي أو مهاراتي في مجال الدراسة الجامعية أو في مجال الوظيفة.

-بشكل عام، إستخدام رواق يساهم في تحقيق أهدافي التعليمية (مثال: أي مهارة محددة يُراد تنميتها لغرض معين).

### **Arabic Language Support**

- Compared to the English language supported by the foreign educational platforms, Rwaq courses provided in the Arabic language are easier to understand and learn.
- Compared to the English language supported by the foreign educational platforms, Rwaq courses provided in the Arabic language make me achieve a better and deeper understanding of the contents of the course.

- Compared to the English language supported by the foreign educational platforms, communicating with teachers and learners in Rwaq using the Arabic language is better for me.
- I will face language problems when using an educational platform that does not support my Arabic language.
- Compared to the educational platforms providing courses in English, platforms such as Rwaq, that support the Arabic language are better for learning Islamic and Arabic subjects.
- The Arabic platforms such as Rwaq are an opportunity to enrich and enhance the Arabic content on the Internet (e.g. Rwaq helps to increase the number of the Internet sources of information in Arabic).
- In general, I find the platforms provided in the Arabic language like Rwaq to be an advantage for those interested in learning.

#### دعم اللغة العربية

- مقارنة باللغة الإنجليزية التي تُقدّم بها المنصات التعليمية الأجنبية، مواد رواق المقدمة باللغة العربية هي أسهل للفهم والتعلم.
- مقارنة باللغة الإنجليزية التي تُقدّم بها المنصات التعليمية الأجنبية، مواد رواق التي تُقدّم باللغة العربية تجعلني أفهم محتوى المادة بشكل أفضل وأعمق.
- مقارنة باللغة الإنجليزية التي تُقدّم بها المنصات التعليمية الأجنبية، التواصل مع المعلمين والمتعلمين في رواق باستخدام اللغة العربية هو أفضل بالنسبة لي.
- سوف أواجه مشاكل في اللغة عند استخدام منصة تعليمية لا تدعم لغتي العربية.
- مقارنة بالمنصات التعليمية المقدمة باللغة الإنجليزية، المنصات التي تدعم اللغة العربية مثل رواق هي أفضل لتعلم المواد الإسلامية واللغة العربية.
- المنصات العربية مثل رواق هي فرصة لإثراء وتعزيز المحتوى العربي على الإنترنت (بمعنى أن رواق تساعد في زيادة مصادر المعلومات باللغة العربية على الإنترنت).
- بشكل عام، أجد أن المنصات المُقدّمة باللغة العربية مثل رواق ميزة للراغبين بالتعلم.

#### Free Courses' Advantages

- Joining the free courses provided by Rwaq helps me to save money.
- When I want to develop my knowledge, I look for free courses to join.
- The free courses offered by Rwaq encourage me to join the Rwaq platform.
- I can join as many courses as I need in Rwaq because the courses are free.
- Free Rwaq courses help those with poor financial status to develop their knowledge.

- Free Rwaq courses are useful to me if I am not sure of my commitment to complete the courses.
- In general, I think that the free courses in Rwaq are useful to me.

#### ميزة مواد رواق المجانية

- الإلتحاق بالمواد المجانية التي تقدمها رواق تساعدني في توفير المال.
- عندما أريد تطوير معرفتي، أبحث عن المواد المجانية للإلتحاق بها.
- مَجَّانية المواد التي تُقدَّم في رواق تشجعني على الإلتحاق بمنصة رواق.
- أستطيع الإلتحاق بأكبر عدد أحتاجه من المواد في رواق لأن المواد مجانية.
- مَجَّانية المواد في رواق تساعد ذوي الوضع المادي الضعيف على تطوير معرفتهم.
- مواد رواق المَجَّانية مفيدة بالنسبة لي إذا كنت لست متأكداً من إلزامي بإكمال المادة.
- بشكل عام، أعتقد أن مَجَّانية المواد في رواق مفيدة بالنسبة لي.

#### Perceived Reputation

- I trust that the instructors who teach courses in Rwaq have a scientific efficiency and extensive experience.
- I think that Rwaq is a unique educational platform in the Arab world.
- I think that the Rwaq platform provides courses with reliable scientific information.
- I think that the Rwaq platform offers courses of excellent quality.
- I trust the Rwaq platform and the services it provides.
- I have a positive feeling about the Rwaq platform (e.g. respect or admiration).
- In my opinion, Rwaq is interested in communicating with the users regarding their problems or needs.
- In general, I think that the Rwaq platform has a good reputation.

#### سُمعة منصة رواق

- أثق بأن المعلمين الذين يُدرِّسون المواد في رواق لديهم كفاءة علمية وخبرة عالية.
- أعتقد أن رواق منصة تعليمية متميزة في العالم العربي.
- أعتقد أن منصة رواق تُقدِّم مواد ذات معلومات علمية موثوقة.
- أعتقد أن منصة رواق تُقدِّم مواد ذات جودة ممتازة.
- أثق بمنصة رواق والخدمات التي تقدمها.
- لدي شعور إيجابي عن منصة رواق (مثال: إحترام أو إعجاب).

-برأيي، رواق تهتم بالتواصل مع المستخدمين فيما يتعلق بمشاكلهم أو إحتياجاتهم في رواق.  
-بشكل عام، أعتقد أن منصة رواق تحظى بسمعة جيدة.

### **Intrinsic Motivations**

- I enjoy learning new topics in Rwaq.
- I enjoy viewing diverse topics in Rwaq.
- I find it fun to learn in Rwaq.
- I get intrinsically motivated to constantly expand my knowledge using Rwaq.
- Using Rwaq satisfies my curiosity to explore interesting topics.
- In Rwaq, I have the curiosity to explore topics in disciplines that have nothing to do with my academic specialization.
- I think that using Rwaq is interesting for me.

### **دافع داخلي للتعلم في رواق**

- أنا أستمتع بتعلم مواضيع جديدة في رواق.
- أنا أستمتع بالإطلاع على مواضيع متنوعة في رواق.
- أجد متعة في التعلم في رواق.
- لدي دوافع نابعة من داخلي لتوسيع معرفتي باستمرار باستخدام رواق.
- استخدام رواق يُشبع فضولي لإستكشاف مواضيع مثيرة للإهتمام بالنسبة لي.
- في رواق، لدي فضول لإستكشاف مواضيع في تخصصات ليس لها علاقة بتخصصي الأكاديمي.
- أعتقد أن استخدام رواق أمر مثير للإهتمام بالنسبة لي.

### **Willingness to Earn a Certificate**

- In Rwaq, the courses that offer a certificate of course completion upon meeting the requirements encourages me to join that course.
- Obtaining a certificate of course completion from Rwaq enhances and supports my resume.
- Obtaining a certificate of course completion from Rwaq may help me in order to differentiate myself in the workplace, apply for a job, compete in a competition, etc.
- Obtaining a certificate of course completion from Rwaq is a proof to others that I have knowledge in a given subject (e.g. proof to my employer, university teachers, etc.).

- Obtaining a certificate of course completion from Rwaq motivates me to commit to complete the course.
- Obtaining a certificate of course completion from Rwaq gives me a positive feeling (e.g. a sense of accomplishment, a sense of appreciation for my efforts in the course, etc.).
- Obtaining a certificate of course completion from Rwaq gives others an impression that I am an educated person and a seeker of knowledge.
- In general, obtaining a certificate of course completion from Rwaq helps me to achieve my goals.

#### الرغبة في الحصول على شهادة إكمال مادة في رواق

- في رواق، المادة التي تقم شهادة إكمال عند اجتياز المتطلبات تشجعي أكثر على الإلتحاق بها.
- الحصول على شهادة إكمال مادة في رواق يعزز ويدعم سيرتي الذاتية.
- الحصول على شهادة إكمال مادة في رواق قد يفيدني في المفاضلة مع أشخاص آخرين في العمل، في التقديم على وظيفة، في مسابقة ما، إلخ.
- الحصول على شهادة إكمال مادة في رواق هو إثبات للآخرين بأن لدي المعرفة في تلك المادة (مثال: إثبات لرئيسي في العمل، لجهة توظيف، لمدرس في الجامعة، إلخ).
- وجود شهادة إكمال مادة في رواق يحفزني للإلتزام بإكمال المادة.
- الحصول على شهادة إكمال مادة في رواق يعطيني شعوراً إيجابياً (مثال: شعور بالإنجاز، شعور بتقدير لمجهودي في المادة، إلخ).
- الحصول على شهادة إكمال مادة في رواق يعطي الآخرين إنطباع بأنني شخص مثقف وباحث عن المعرفة.
- بشكل عام، الحصول على شهادة إكمال مادة في رواق يساعدني في تحقيق أهدافي.

#### Social Influence

- People who influence my behaviour encourage me to use Rwaq (e.g. friends, co-workers, teachers, relatives, my employer, etc.).
- People who are important to me advise me to use Rwaq (e.g. friends, co-workers, teachers, relatives, my employer, etc.).
- People whose opinions I respect and value think that it is better for me to use Rwaq (e.g. friends, co-workers, teachers, relatives, my employer, etc.).
- In the social networking accounts of Rwaq, such as Twitter and Facebook, the views of people who have used Rwaq for learning and who have held a positive stance about the platform have encouraged me to utilise it.

#### التأثير الاجتماعي



- الأشخاص الذين لهم تأثير علي يشجعونني على إستخدام رواق (مثال: أصدقاء، زملاء عمل، مُدرسين، أقارب، رئيسي في العمل، إلخ).
- الأشخاص الذين أعتبرهم مُهمين بالنسبة لي ينصحونني بإستخدام رواق (مثال: أصدقاء، زملاء عمل، مُدرسين، أقارب، رئيسي في العمل، إلخ).
- الأشخاص الذين أحترم وأقدر آرائهم يعتقدون أنه من الأفضل لي أن أستخدام رواق (مثال: أصدقاء، زملاء عمل، مُدرسين، أقارب، رئيسي في العمل، إلخ).
- في حسابات رواق في وسائل التواصل الإجتماعية مثل تويتر أو فيسبوك، آراء الأشخاص الذين إستخدموا رواق في التعلم والتي تبين فوائد منصة رواق تشجعني على إستخدام رواق.

#### **Continuance Intention to Use Rwaq**

- I intend to continue to use Rwaq in the future.
- I predict I would continue to use Rwaq in the future.
- I plan to continue to use Rwaq in the future.

#### **نية الإستمرار في إستخدام رواق**

- أنوي الاستمرار في استخدام رواق في المستقبل.
- أتوقع أنني سوف أستمر في استخدام رواق في المستقبل.
- أخطط للاستمرار في استخدام رواق في المستقبل.

#### **Part 3-Demographic and Background Information**

##### **الجزء 3- معلومات عامة**

##### **1. What is your gender?**

- Male
- Female

ما هو جنسك ؟

-ذكر

-أنثى

##### **2. Where are you from?**

- List of countries

من أين أنت؟

-قائمة البلدان

##### **3. What is your current occupation?**

- Student

- Government employee
- Employee in Private sector
- Businessperson
- Retired
- Unemployed

ماهي مهنتك الحالية؟

-طالب

-موظف حكومي

-موظف في القطاع الخاص

-رجل\سيدة أعمال

-متقاعد

-غير موظف

#### 4. What academic college do you belong to?

- List of colleges

ماهي الكلية التي تنتمي إليها؟

-قائمة بالكليات

#### 5. What is your highest level of education achieved?

- Lower than high school
- High school
- Diploma
- Bachelor
- Master
- PhD
- Other (.....)

ما هو آخر مستوى تعليمي لك؟

-أقل من تعليم الثانوية

-تعليم ثانوية

-دبلوم

-بكالوريوس

-ماجستير

-دكتوراه

-أخرى (يرجى التحديد)

#### 6. How many courses did you take in Rwaq as a learner?

- I did not join any course previously

- Between one and three courses
- Between four and six courses
- Between seven and nine courses
- Between ten and twelve courses
- More than twelve courses

كم عدد المواد التي التحقت بها في منصة رواق سابقاً كمتعلم؟

-لم أنضم إلى أي مادة سابقاً

-بين واحد إلى ثلاثة مواد

-بين أربعة إلى ستة مواد

-بين سبعة إلى تسعة مواد

-بين عشرة إلى إثني عشرة مادة

-أكثر من إثني عشر مادة

#### 7. How many certificates of course completion did you obtain from Rwaq?

- I did not obtain any certificate previously
- Between one and three certificates
- Between four and six certificates
- Between seven and nine certificates
- Between ten and twelve certificates
- More than twelve certificates

كم عدد شهادات اكمال المادة التي حصلت عليها من منصة رواق؟

-لم أحصل على أي شهادة سابقاً

-بين واحد إلى ثلاثة شهادات

-بين أربعة إلى ستة شهادات

-بين سبعة إلى تسعة شهادات

-بين عشرة إلى إثني عشرة شهادة

-أكثر من إثني عشر شهادة

#### 8. In general, how do you evaluate your level in English Language:

- I do not know English at all
- Novice
- Intermediate
- Advanced
- Skilled

بشكل عام، كيف تقيم مستواك في اللغة الإنجليزية :

-لا أجيد اللغة الانجليزية مطلقاً

- مستوى مبتدئ

- مستوى متوسط

- مستوى متقدم

-بارع في اللغة الانجليزية

9. Please leave your email address below if you are interested in this topic and will likely be involved in an interview later for this search.

يُرجى ترك عنوان بريدك الالكتروني أدناه إذا كنت مهتماً في هذا الموضوع ومن المحتمل أن تشارك في مقابلة في وقت لاحق من أجل البحث.

## Appendix I: Participant Information Sheet for Questionnaire



### Participant Information Sheet (version 1, 31/01/2017)

ورقة معلومات المشاركين (النسخة 1 - 31\01\2017)

**Study Title:** Identifying the Factors Influencing Learners' Intentions to Continue Using Arabic MOOCs

عنوان الدراسة: تحديد العوامل المؤثرة على نية المتعلمين لمواصلة استخدام المنصات العربية

**Researcher:** Nada Hakami

**Ethics number:** 25284

الباحث: ندى حكيمي  
رقم الأخلاقيات: 25284

**Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.**

يرجى قراءة هذه المعلومات بعناية قبل اتخاذ القرار بالمشاركة في هذا البحث. إذا كنت سعيدًا للمشاركة سوف يطلب منك التوقيع على استمارة الموافقة.

### What is the research about?

This research aims to explore the factors influencing Learners' intentions to continue using Arabic MOOCs exemplified by the Rwaq Platform. Identifying such factors helps Rwaq providers to improve their services in order to increase learner satisfaction and engagement. This research is under the direction of the School of Electronics and Computer Science at the University of Southampton, UK, and is fully funded by the Saudi Arabian Cultural Bureau.

### ماذا عن هذا البحث؟

يهدف هذا البحث إلى استكشاف العوامل التي تؤثر على نية المتعلمين في مواصلة استخدام المنصات العربية التي تمثلها منصة رواق. تحديد هذه العوامل تساعد مقدمي المنصات على تعزيز خدماتهم لزيادة رضا المتعلم ومشاركته. هذا البحث تحت إشراف كلية علوم الحاسوب بجامعة ساوثهامبتون، المملكة المتحدة، ويتم تمويله بالكامل من قبل الملحقة الثقافية السعودية.

### Why have I been chosen?

The researcher is inviting individuals, who are 18 years or older, who have an account on Rwaq, or who are previous Rwaq learners (have joined at least one course previously), to fill in a questionnaire about their experiences of learning in this way. The data

collected will help the researcher to gain a better understanding of the factors affecting the decision to continue to learn using MOOCs.

#### لماذا تم إختباري؟

تدعو الباحثة الأفراد الذين يبلغون من العمر 18 عاماً أو أكثر، الذين لديهم حساب في رواق أو الذين انضموا إلى دورة واحدة على الأقل سابقاً في رواق، لملء إستبيان حول تجاربهم في التعلم بهذه الطريقة. سوف تساعد البيانات التي سيتم جمعها بالباحثة على الحصول على فهم أفضل للعوامل التي تؤثر على قرار مواصلة التعلم باستخدام منصات التعليم الإلكترونية المفتوحة هائلة الالتحاق.

#### What will happen to me if I take part?

You will be asked to read the participant information sheet carefully, and if you agree to participate in the questionnaire, you will be asked to tick the box at the bottom of the page and begin to answer the questions, which takes around 10-15 minutes. A small amount of demographic and general information will also be collected, as well as the email addresses of participants who wish to participate in an interview at a later date.

#### ماذا سيحدث لي إذا شاركت؟

سوف يُطلب منك قراءة ورقة معلومات المشاركين بعناية، وإذا وافقت على المشاركة في الاستبيان، سيُطلب منك وضع علامة في المربع أسفل الصفحة والبدء في الإجابة على الأسئلة، والتي تستغرق حوالي 10-15 دقيقة. كما سيتم جمع كمية صغيرة من المعلومات الديموغرافية والعامة، وكذلك عناوين البريد الإلكتروني للمشاركين الذين يرغبون في المشاركة في مقابلة في وقت لاحق.

#### Are there any benefits in my taking part?

We cannot promise that the study will be of direct benefit to you, although you may find the questions interesting. The findings of this study will help us to understand the factors influencing learners to continue using Arabic MOOCs. In addition, the findings will help MOOCs providers to improve learner satisfaction and increase the intention to continue using platforms.

#### هل هناك أي فوائد عند مشاركتي؟

لا نستطيع أن نعد أن هذه الدراسة ستساعدك، على الرغم من أنك قد تجد الأسئلة مثيرة للاهتمام. نتائج هذه الدراسة ستساعدنا على فهم العوامل التي تؤثر على المتعلمين لمواصلة استخدام منصات التعليم العربية. وبالإضافة إلى ذلك، فإن النتائج ستساعد مقدمي المنصات على تحسين رضا المتعلم وزيادة النية لمواصلة استخدام المنصات.

#### Are there any risks involved?

No.

#### هل هناك أي مخاطر؟

لا.

#### Will my participation be confidential?

Yes. Any information you provide to the research team will be kept strictly confidential and anonymous. Your information will be stored on secure systems and will be used for the purpose of this study only. Your responses will not be linked to your identity in any way. Access to the data will be restricted to the researcher and her academic supervisors only.

#### هل ستكون مشاركتي سرية؟

نعم. سيتم الاحتفاظ بالمعلومات التي تقدمها لفريق البحث في سرية تامة ومجهولة. سيتم تخزين المعلومات الخاصة بك على أنظمة آمنة وسوف تستخدم لأغراض هذه الدراسة فقط. لن يتم ربط إجاباتك بالهوية الخاصة بك بأي شكل من الأشكال. الوصول إلى البيانات يقتصر فقط على الباحثين والمشرفين الأكاديميين على بحثها.

#### **What happens if I change my mind?**

Participation in this study is voluntary. You have the right to withdraw at any stage without giving any reason and without any penalty. As such, any information you have provided will be discarded. To withdraw, please email the researcher directly at the email address given below.

#### **ماذا يحدث إذا قمت بتغيير رأيي؟**

المشاركة في هذه الدراسة طوعية. لديك الحق في الانسحاب في أي مرحلة دون الحاجة إلى إعطاء أسباب و بدون أي عقوبة. في هذه الحالة، سيتم تجاهل المعلومات التي قدمتها. للانسحاب، يرجى مراسلة الباحث مباشرة على البريد الإلكتروني الموضح أدناه.

#### **What happens if something goes wrong?**

In the unlikely case of concern or complaint, please contact Research Governance Manager (02380 595058, rgoinfo@soton.ac.uk).

#### **ماذا يحدث إذا حدث خطأ ما؟**

في حالة القلق أو الشكوى الغير مرجحة ، يرجى الاتصال بمدير إدارة البحوث:  
(Tel: 00442380 595058, Email: rgoinfo@soton.ac.uk)

#### **Where can I get more information?**

For further details, please contact either me or my study supervisors, Dr Su White and Dr Sepi Chakaveh.

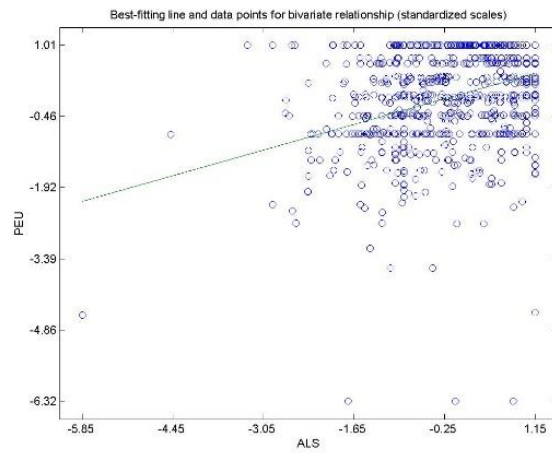
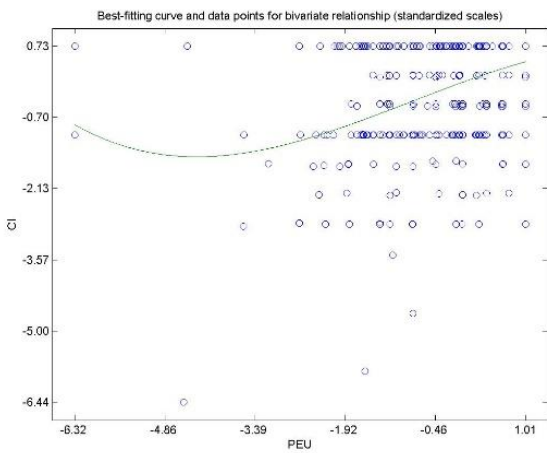
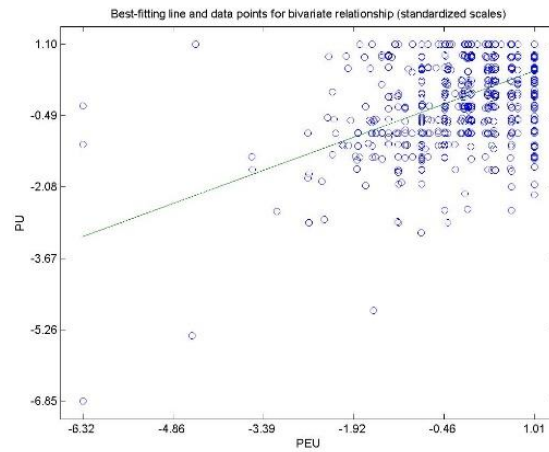
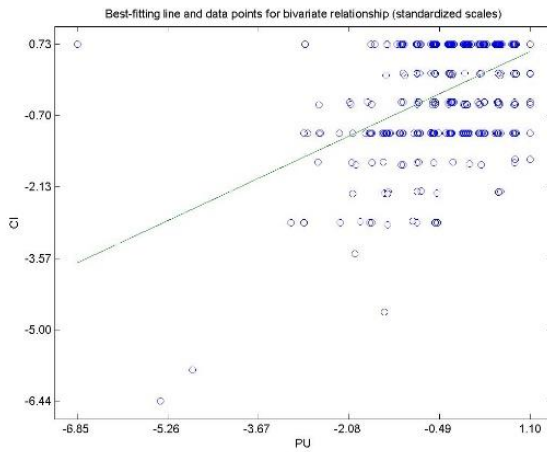
Researcher (nah1g15@soton.ac.uk )  
Dr Su White (saw@ecs.soton.ac.uk)  
Dr Sepi Chakaveh (sc2@ecs.soton.ac.uk)

#### **أين يمكنني الحصول على مزيد من المعلومات؟**

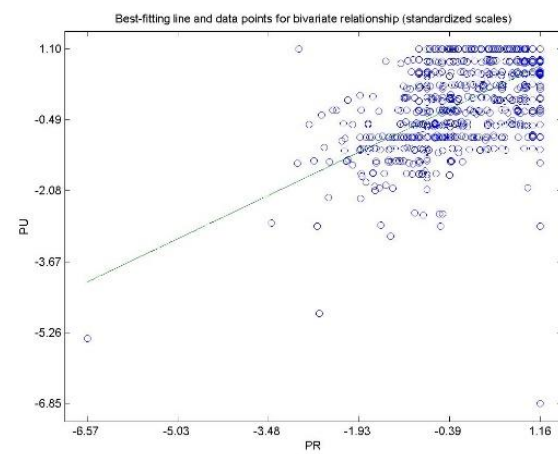
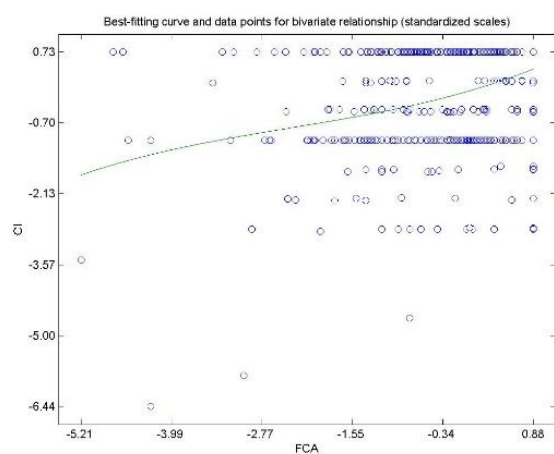
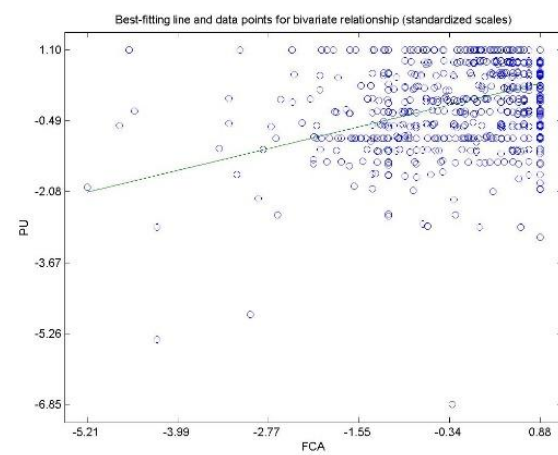
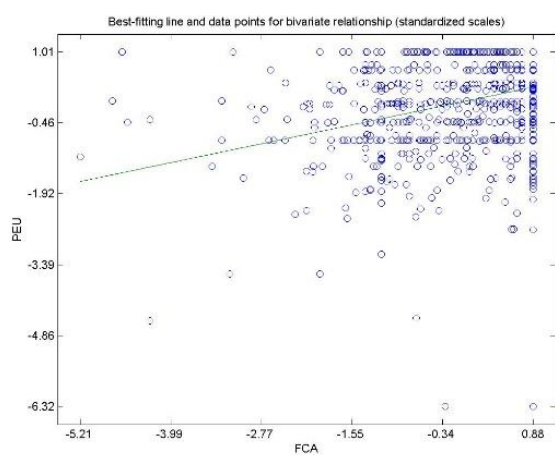
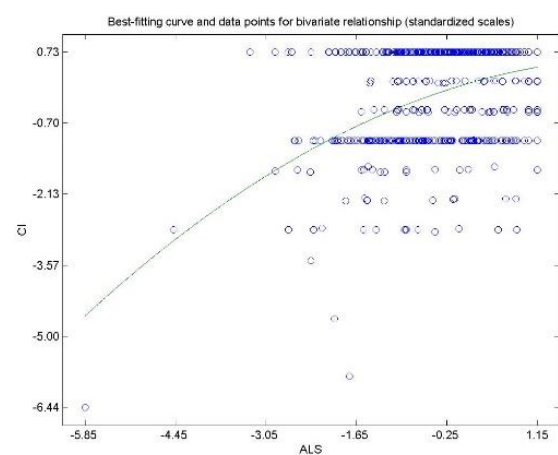
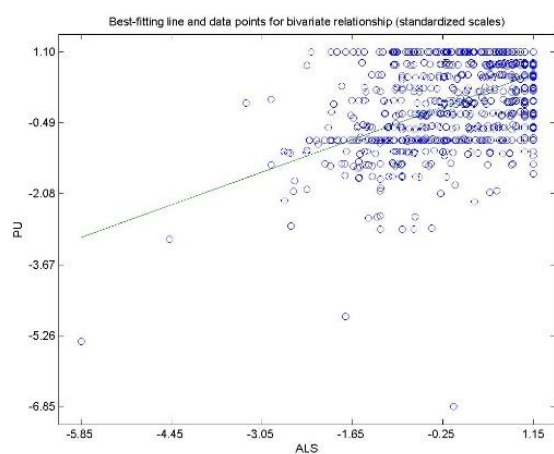
لمزيد من التفاصيل، يرجى الاتصال إما بي أو بالمشرفين على دراستي:

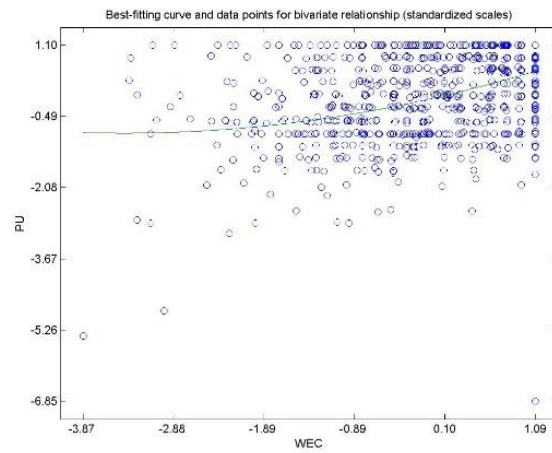
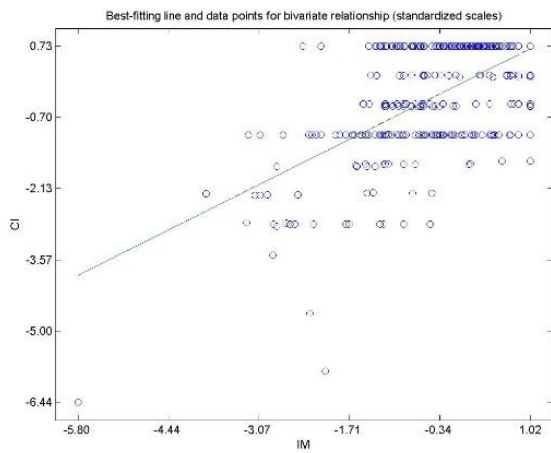
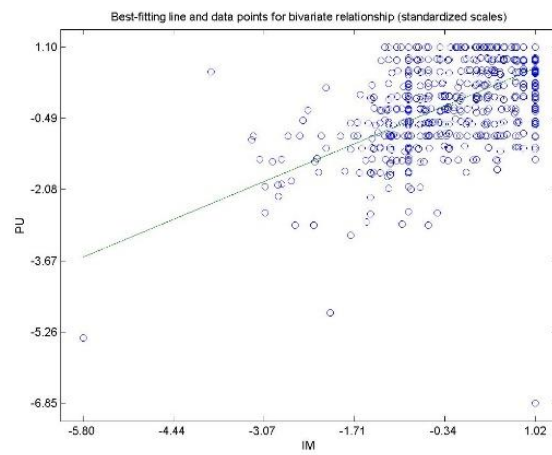
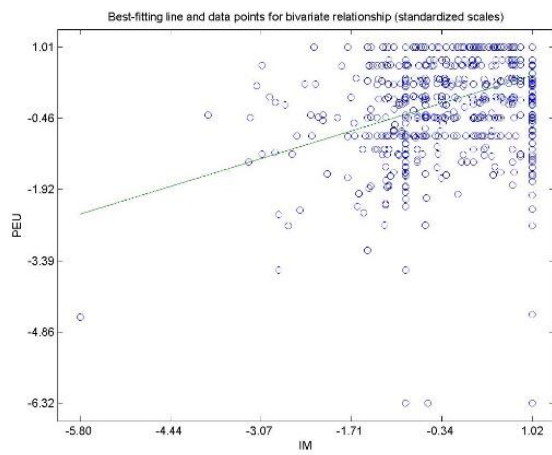
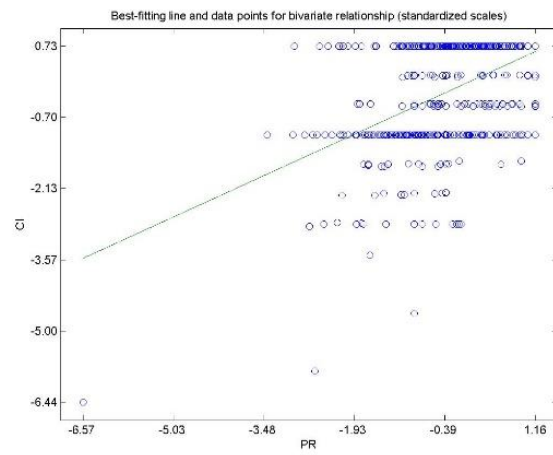
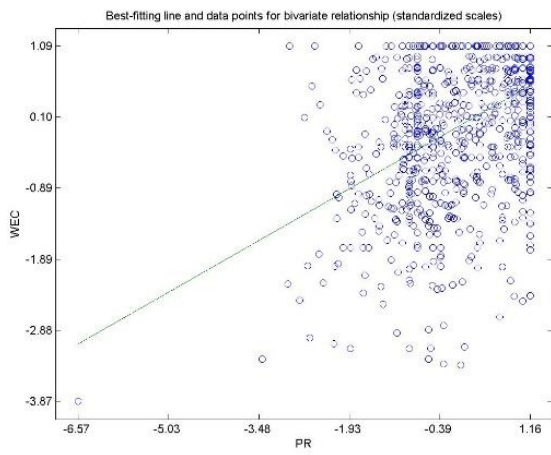
Researcher (nah1g15@soton.ac.uk )  
Dr Su White (saw@ecs.soton.ac.uk )  
Dr Sepi Chakaveh (sc2@ecs.soton.ac.uk)

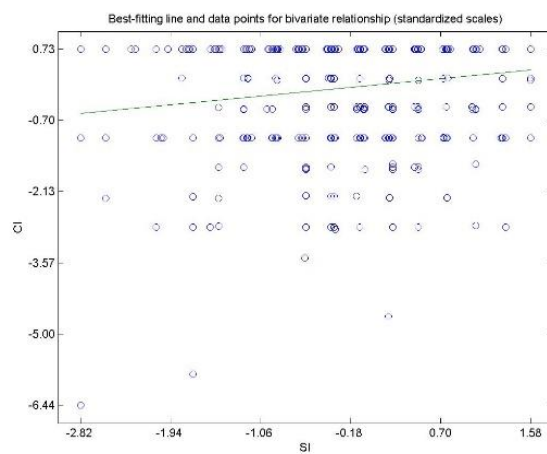
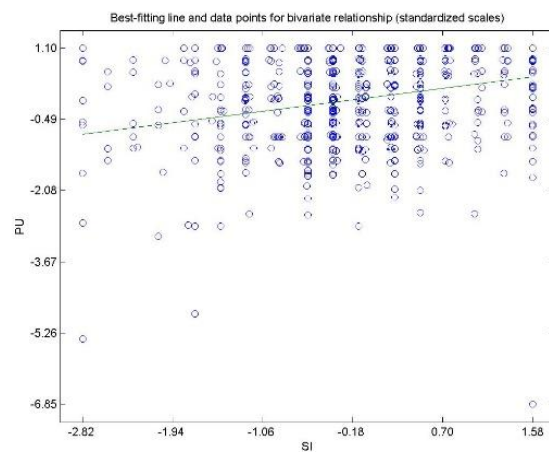
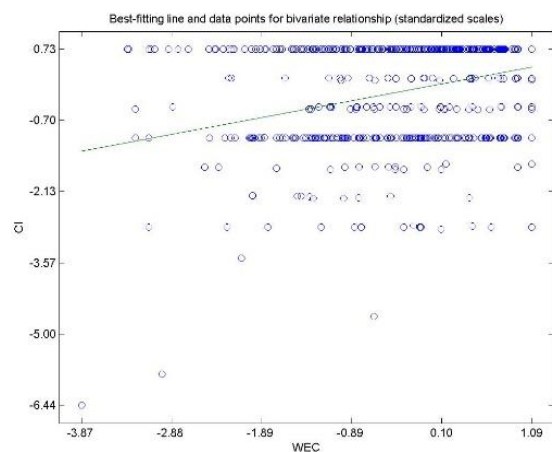
## Appendix J: The Relationships Between the Latent Variables in this Study











## Appendix K: Follow-Up Interview Guide

1. The fact that Rwaq courses are free does not significantly affect learners' intention to continue to use Arabic MOOCs. What do you think is the reason for this?

مجانبة منصة رواق ليس عاملاً هاماً يؤثر على نية المتعلمين لمواصلة استخدام المنصة. برأيك ماذا تتوقع أن يكون السبب؟

2. The fact that Rwaq courses are free does not significantly affect perceived usefulness. What do you think is the reason for this?

مجانبة منصة رواق ليس عاملاً هاماً يؤثر على الفائدة المتصورة. برأيك ماذا تتوقع أن يكون السبب؟

3. The willingness to earn a certificate does not significantly affect learners' intention to continue to use Arabic MOOCs. What do you think is the reason for this?

الرغبة في الحصول على شهادة ليس عاملاً هاماً يؤثر على نية المتعلمين لمواصلة استخدام المنصة. برأيك ماذا تتوقع أن يكون السبب؟

4. Social influence does not positively affect learners' intention to continue to use Arabic MOOCs. What do you think is the reason for this?

التأثير الاجتماعي ليس عاملاً هاماً يؤثر على نية المتعلمين لمواصلة استخدام المنصة بشكل إيجابي. برأيك ماذا تتوقع أن يكون السبب؟

5. Social influence does not significantly affect perceived usefulness. What do you think is the reason for this?

التأثير الاجتماعي ليس عاملاً هاماً يؤثر على الفائدة المتصورة. برأيك ماذا تتوقع أن يكون السبب؟

6. Thank you for your valuable information. Is there anything else you would like to add?

شكراً لك على معلوماتك القيمة. هل هناك أي شيء آخر تود أن تضيفه؟

# Appendix L: Screenshots of Thematic Analysis Using NVivo Software

## L.1. Example of References Gathered in One Node

The screenshot displays the NVivo Pro interface for a project titled "Motivational Factors Influencing Learners' Intention to Continue to Use Arabic MOOCs.nvp". The software is in the "VIEW" tab, showing a list of nodes on the left and a detailed view of a selected node on the right.

**Nodes List:**

Name	Sources	Referen
Employers focus	1	2
Encourage learne	1	1
Give a sense of o	1	1
Give learners a se	1	2
Give others good	1	2
Importance of cer	1	8
Interest in earnin	1	2
Interest in obtaini	1	3
Lack of interest in	1	1
Learners focus on	1	1
Linking success of	1	1
Obsession about	1	1
Obtain certificate	1	3
Support experien	1	2
The main end go	1	4
<b>The main purpos</b>	<b>1</b>	<b>3</b>
The value of certif	1	1
Willingness to ear	1	2

**Node View: "The main purposes of obtaining"**

References coded: 3 references coded [1.00% Coverage]

**Reference 1 - 0.16% Coverage**

2-*"For sure, certificates are important for getting job or for receiving career promotions. Individuals need proof — in other words, a recognised certificate."*

**Reference 2 - 0.39% Coverage**

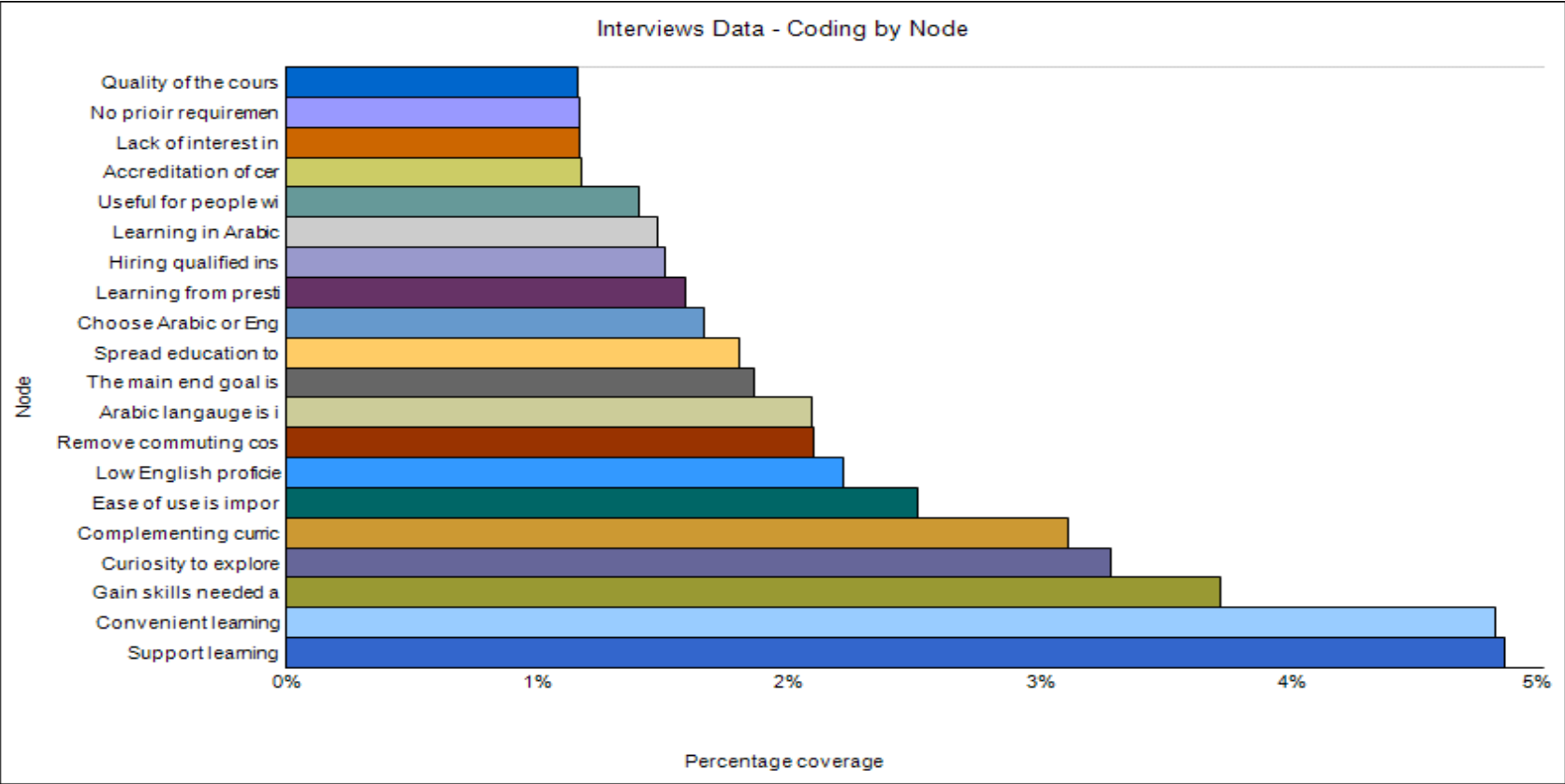
3-*"Such simple certificates can be useful for differentials, receiving awards, or getting career promotions or bonuses. The usefulness of these certificates differs according to the estimation of them by the employers or the educational institutions. For instance, such certificates may only be added to CVs without any academic benefit, while they may be valued by some universities."*

**Reference 3 - 0.46% Coverage**

1-*"Some employees try to prove to their bosses that they are knowledge seekers by obtaining certificates from these platforms. Sometimes, it is necessary to obtain a certificate in order to gain a promotion. It is a different issue, though, in my field. For instance, if the head of department wants to nominate a few lecturers to present on a certain subject, those who hold certificates in this subject will have a greater chance to be chosen by the head."*



L.3. A Chart Showing the Nodes that Were Most Used to Code the Source (Interviews Data)



## L.4. A Summary Showing the Nodes that Were Most Used to Code the Source (Interviews Data)

Motivational Factors Influencing Learners' Intention to Continue to Use Arabic MOOCs.nvp - NVivo Pro

FILE HOME CREATE DATA ANALYZE QUERY EXPLORE LAYOUT VIEW

Go Refresh Open Properties Edit Paste Copy Merge Cut Format Paragraph Styles Select PDF Selection Text Region Find Replace Delete Spelling Proofing

**Nodes** Look for Search In Nodes Find Now Clear Advanced Find X

Nodes Cases Relationships Node Matrices

Sources Nodes Classifications Collections Queries Reports Maps Folders

**Nodes**

Name	Sources	Referen
ALS	0	0
FCA	0	0
IM	0	0
Other Factors Suggeste	0	0
PEU	0	0
PR	0	0
PU	0	0
WEC	0	0

Interviews Data - Coding by No

Node	Percentage coverage
Nodes\ALS\Arabic language is important factor	2.09%
Nodes\ALS\Choose Arabic or English MOOCs	1.66%
Nodes\ALS\Learning in Arabic is easier	1.48%
Nodes\ALS\Low English proficiency	2.21%
Nodes\FCA\No prior requirements	1.17%
Nodes\FCA\Spread education to people of different classes	1.81%
Nodes\IM\Curiosity to explore new subjects	3.28%
Nodes\IM\Lack of interest in certificates	1.17%
Nodes\Other Factors Suggested by the Participants\Accreditation	1.18%
Nodes\PEU\Ease of use is important factor	2.51%
Nodes\PR\Learning from prestigious universities is an opportunity	1.59%
Nodes\PR\Quality of the course	1.16%
Nodes\PR\Rwaq only hires qualified teachers\Hiring qualified instr	1.51%
Nodes\PU\Complementing curricula	3.11%
Nodes\PU\Convenient learning	4.81%
Nodes\PU\Convenient learning\Remove commuting costs	2.10%
Nodes\PU\Convenient learning\Useful for people with tricky sched	1.40%
Nodes\PU\Gain skills needed at work	3.71%
Nodes\PU\Support learning	4.84%
Nodes\WEC\The main end goal is earning the certificate	1.86%



## Appendix M: Non-Response Bias Test

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
Type of Use	Between Groups	.015	1	.015	.216	.643
	Within Groups	41.610	598	.070		
	Total	41.625	599			
Age	Between Groups	54.000	1	54.000	21.473	.000
	Within Groups	1503.833	598	2.515		
	Total	1557.833	599			
Gender	Between Groups	.482	1	.482	1.927	.166
	Within Groups	149.437	598	.250		
	Total	149.918	599			
Nationality	Between Groups	586.082	1	586.082	25.368	.000
	Within Groups	13815.917	598	23.104		
	Total	14401.998	599			
Occupation	Between Groups	.167	1	.167	.055	.815
	Within Groups	1813.273	598	3.032		
	Total	1813.440	599			
College	Between Groups	6.000	1	6.000	.267	.605
	Within Groups	13426.473	598	22.452		
	Total	13432.473	599			
LevelOfEducation	Between Groups	.375	1	.375	.374	.541
	Within Groups	599.583	598	1.003		
	Total	599.958	599			
NoCoursesTaken	Between Groups	10.667	1	10.667	5.383	.021
	Within Groups	1184.907	598	1.981		
	Total	1195.573	599			
NoCertificates Earned	Between Groups	18.727	1	18.727	11.376	.001
	Within Groups	984.367	598	1.646		
	Total	1003.093	599			
EnglishLevel	Between Groups	11.482	1	11.482	14.279	.000
	Within Groups	480.837	598	.804		
	Total	492.318	599			

## Appendix N: SEM Analysis Results of the Final Revised Model Using Warp-PLS 5.0

\*\*\*\*\*

\* General SEM analysis results \*

\*\*\*\*\*

### Model fit and quality indices

-----

Average path coefficient (APC)=0.201,  $P < 0.001$

Average R-squared (ARS)=0.364,  $P < 0.001$

Average adjusted R-squared (AARS)=0.362,  $P < 0.001$

Average block VIF (AVIF)=1.719, acceptable if  $\leq 5$ , ideally  $\leq 3.3$

Average full collinearity VIF (AFVIF)=1.884, acceptable if  $\leq 5$ , ideally  $\leq 3.3$

Tenenhous GoF (GoF)=0.481, small  $\geq 0.1$ , medium  $\geq 0.25$ , large  $\geq 0.36$

Sympson's paradox ratio (SPR)=1.000, acceptable if  $\geq 0.7$ , ideally = 1

R-squared contribution ratio (RSCR)=1.000, acceptable if  $\geq 0.9$ , ideally = 1

Statistical suppression ratio (SSR)=1.000, acceptable if  $\geq 0.7$

Nonlinear bivariate causality direction ratio (NLBCDR)=1.000, acceptable if  $\geq 0.7$

### General model elements

-----

Missing data imputation algorithm: Arithmetic Mean Imputation

Outer model analysis algorithm: PLS Regression

Default inner model analysis algorithm: Linear

Multiple inner model analysis algorithms used? Yes

Resampling method used in the analysis: Stable3

Number of data resamples used: 999

Number of cases (rows) in model data: 884

Number of latent variables in model: 8

Number of indicators used in model: 52

Number of iterations to obtain estimates: 6

Range restriction variable type: None

Range restriction variable: None

Range restriction variable min value: 0.000

Range restriction variable max value: 0.000

Only ranked data used in analysis? No

\*\*\*\*\*

\* Path coefficients and P values \*

\*\*\*\*\*

Path coefficients

-----

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.190	0.115		0.270	
PU	0.230			0.141		0.245	0.243	0.094
CI	0.078	0.119		0.078		0.063	0.479	
WEC						0.467		

P values

-----

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				<0.001	<0.001		<0.001	
PU	<0.001			<0.001		<0.001	<0.001	0.003
CI	0.010	<0.001		0.010		0.030	<0.001	
WEC						<0.001		

\*\*\*\*\*

\* Standard errors for path coefficients \*

\*\*\*\*\*

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.033	0.033		0.033	
PU	0.033			0.033		0.033	0.033	0.033
CI	0.033	0.033		0.033		0.033	0.032	
WEC						0.032		

\*\*\*\*\*

\* Effect sizes for path coefficients \*

\*\*\*\*\*

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.072	0.037		0.113	
PU	0.116			0.074		0.154	0.150	0.039
CI	0.032	0.063		0.035		0.034	0.320	
WEC						0.218		

\*\*\*\*\*

\* Combined loadings and cross-loadings \*

\*\*\*\*\*

	PEU	PU	CI	ALS	FCA	PR	IM	WEC	Type (a	SE	P
value											
PEU1	0.763	-0.004	-0.025	-0.019	-0.013	-0.006	0.026	0.018	Reflect	0.031	
	<0.001										
PEU2	0.805	0.009	-0.039	0.002	-0.062	-0.010	0.017	0.054	Reflect	0.031	
	<0.001										
PEU3	0.829	0.071	0.039	-0.006	-0.015	0.017	0.029	-0.033	Reflect	0.031	
	<0.001										
PEU4	0.722	-0.084	0.007	0.049	0.064	-0.051	-0.048	-0.039	Reflect	0.031	
	<0.001										
PEU5	0.847	-0.004	0.016	-0.020	0.031	0.042	-0.026	-0.002	Reflect	0.031	
	<0.001										
PU1	0.039	0.799	-0.005	0.064	-0.055	-0.001	0.006	-0.014	Reflect	0.031	
	<0.001										
PU2	-0.052	0.844	0.039	0.031	-0.065	0.001	0.025	-0.083	Reflect	0.031	
	<0.001										
PU3	0.033	0.798	-0.046	0.042	-0.052	-0.009	0.002	0.021	Reflect	0.031	
	<0.001										
PU4	0.035	0.755	-0.007	-0.001	0.121	-0.058	0.071	-0.048	Reflect	0.031	
	<0.001										
PU5	-0.025	0.806	0.019	-0.069	0.039	-0.078	0.066	-0.053	Reflect	0.031	
	<0.001										
PU6	-0.031	0.805	-0.002	-0.017	-0.008	0.064	-0.138	0.091	Reflect	0.031	
	<0.001										
PU7	0.007	0.801	-0.001	-0.050	0.028	0.077	-0.029	0.089	Reflect	0.031	
	<0.001										
CI1	0.005	0.003	0.949	0.016	0.023	-0.005	0.019	-0.014	Reflect	0.031	
	<0.001										
CI2	0.014	-0.020	0.935	0.004	-0.027	-0.020	-0.043	0.045	Reflect	0.031	
	<0.001										
CI3	-0.019	0.017	0.941	-0.020	0.004	0.025	0.023	-0.031	Reflect	0.031	
	<0.001										
ALS1	0.070	-0.084	0.003	0.777	-0.113	-0.023	-0.051	0.050	Formati	0.031	
	<0.001										
ALS2	-0.024	0.026	-0.070	0.789	-0.121	-0.038	-0.016	0.074	Formati	0.031	
	<0.001										
ALS3	0.001	-0.052	-0.007	0.784	-0.067	-0.130	0.087	0.054	Formati	0.031	
	<0.001										
ALS4	-0.220	-0.091	-0.011	0.477	-0.041	-0.191	0.079	0.079	Formati	0.032	
	<0.001										

ALS5	0.003 <0.001	0.004	-0.027	0.546	0.012	0.102	-0.022	-0.003	Formati	0.032
ALS6	0.120 <0.001	0.112	0.077	0.596	0.166	0.181	-0.082	-0.143	Formati	0.032
ALS7	-0.008 <0.001	0.094	0.051	0.643	0.233	0.119	0.012	-0.140	Formati	0.032
FCA1	0.078 <0.001	0.087	-0.046	-0.019	0.691	0.019	-0.020	-0.034	Formati	0.032
FCA2	-0.098 <0.001	-0.014	-0.026	-0.038	0.704	0.049	-0.074	0.005	Formati	0.032
FCA3	-0.029 <0.001	-0.042	-0.035	0.041	0.853	-0.026	0.086	-0.002	Formati	0.031
FCA4	-0.016 <0.001	-0.098	0.022	-0.045	0.782	-0.030	0.080	0.061	Formati	0.031
FCA5	0.055 <0.001	-0.016	0.083	0.024	0.745	0.012	0.029	-0.030	Formati	0.031
FCA6	-0.031 <0.001	0.041	-0.025	0.001	0.534	-0.052	-0.133	0.013	Formati	0.032
FCA7	0.035 <0.001	0.064	0.018	0.027	0.820	0.020	-0.025	-0.014	Formati	0.031
PR1	-0.003 <0.001	0.041	-0.089	-0.054	-0.102	0.778	-0.025	0.078	Formati	0.031
PR2	-0.008 <0.001	-0.042	-0.059	0.072	0.072	0.806	0.065	-0.137	Formati	0.031
PR3	-0.006 <0.001	-0.018	-0.042	0.055	-0.022	0.860	-0.101	-0.002	Formati	0.031
PR4	-0.014 <0.001	0.056	-0.076	0.016	-0.041	0.853	-0.017	0.062	Formati	0.031
PR5	-0.022 <0.001	0.014	0.030	0.023	-0.029	0.868	-0.014	0.036	Formati	0.031
PR6	0.043 <0.001	-0.011	0.203	-0.009	0.103	0.751	0.005	-0.135	Formati	0.031
PR7	0.001 <0.001	0.006	0.001	-0.152	-0.016	0.596	0.058	0.108	Formati	0.032
PR8	0.016 <0.001	-0.050	0.052	-0.000	0.044	0.762	0.056	0.006	Formati	0.031
IM1	0.021 <0.001	-0.006	0.078	-0.004	0.022	0.034	0.854	-0.058	Formati	0.031
IM2	0.015 <0.001	-0.051	-0.029	-0.020	0.018	-0.040	0.838	-0.021	Formati	0.031
IM3	0.041 <0.001	0.077	-0.016	0.006	-0.030	0.108	0.835	0.018	Formati	0.031
IM4	-0.011 <0.001	0.023	0.131	0.058	-0.033	-0.035	0.849	-0.013	Formati	0.031

IM5	-0.055	0.060	-0.047	0.016	-0.008	-0.064	0.826	0.027	Formati0.031
	<0.001								
IM6	-0.005	-0.136	-0.167	-0.062	0.026	-0.102	0.638	0.019	Formati0.032
	<0.001								
IM7	-0.008	0.002	0.006	-0.009	0.012	0.078	0.810	0.035	Formati0.031
	<0.001								
WEC1	0.028	-0.091	0.010	0.076	-0.027	-0.104	0.124	0.782	Formati0.031
	<0.001								
WEC2	-0.028	0.061	0.042	-0.016	0.024	0.061	-0.150	0.833	Formati0.031
	<0.001								
WEC3	-0.117	0.088	-0.047	-0.035	0.009	0.071	-0.044	0.796	Formati0.031
	<0.001								
WEC4	-0.024	0.039	-0.020	-0.017	-0.013	0.060	-0.047	0.822	Formati0.031
	<0.001								
WEC5	0.062	-0.086	-0.016	0.050	-0.012	-0.086	0.015	0.852	Formati0.031
	<0.001								
WEC6	0.098	-0.101	0.092	0.028	-0.040	-0.060	0.130	0.748	Formati0.031
	<0.001								
WEC7	0.010	0.030	-0.057	-0.047	0.049	0.039	-0.037	0.770	Formati0.031
	<0.001								
WEC8	-0.023	0.053	-0.000	-0.037	0.009	0.016	0.024	0.838	Formati0.031
	<0.001								

Notes: Loadings are unrotated and cross-loadings are oblique-rotated. SEs and P values are for loadings. P values < 0.05 are desirable for reflective indicators.

\*\*\*\*\*

\* Normalized combined loadings and cross-loadings \*

\*\*\*\*\*

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU1	0.710	-0.005	-0.032	-0.025	-0.016	-0.008	0.033	0.024
PEU2	0.712	0.011	-0.047	0.003	-0.075	-0.012	0.020	0.065
PEU3	0.655	0.092	0.050	-0.008	-0.020	0.021	0.037	-0.043
PEU4	0.762	-0.106	0.008	0.062	0.082	-0.064	-0.061	-0.050
PEU5	0.687	-0.004	0.019	-0.024	0.037	0.050	-0.031	-0.002
PU1	0.051	0.580	-0.006	0.083	-0.070	-0.001	0.007	-0.018
PU2	-0.059	0.600	0.044	0.034	-0.073	0.002	0.028	-0.094
PU3	0.041	0.591	-0.057	0.052	-0.064	-0.011	0.003	0.026
PU4	0.049	0.562	-0.010	-0.001	0.169	-0.081	0.099	-0.067
PU5	-0.028	0.602	0.021	-0.079	0.044	-0.089	0.076	-0.061
PU6	-0.036	0.596	-0.002	-0.020	-0.009	0.074	-0.160	0.105
PU7	0.009	0.563	-0.001	-0.066	0.037	0.103	-0.038	0.117
CI1	0.006	0.003	0.999	0.017	0.025	-0.006	0.021	-0.015

CI2	0.014	-0.021	0.629	0.005	-0.028	-0.021	-0.044	0.046
CI3	-0.020	0.018	0.613	-0.022	0.005	0.027	0.025	-0.033
ALS1	0.078	-0.094	0.004	0.672	-0.125	-0.025	-0.057	0.055
ALS2	-0.026	0.029	-0.078	0.670	-0.134	-0.042	-0.018	0.082
ALS3	0.001	-0.059	-0.008	0.658	-0.076	-0.147	0.099	0.061
ALS4	-0.285	-0.117	-0.015	0.795	-0.053	-0.247	0.102	0.102
ALS5	0.007	0.009	-0.055	0.611	0.024	0.204	-0.045	-0.006
ALS6	0.246	0.230	0.158	0.503	0.342	0.372	-0.169	-0.294
ALS7	-0.015	0.179	0.098	0.521	0.443	0.227	0.023	-0.266
FCA1	0.114	0.127	-0.068	-0.028	0.654	0.027	-0.029	-0.049
FCA2	-0.123	-0.017	-0.033	-0.048	0.776	0.062	-0.093	0.006
FCA3	-0.034	-0.050	-0.041	0.048	0.691	-0.031	0.101	-0.003
FCA4	-0.020	-0.122	0.027	-0.056	0.705	-0.037	0.099	0.076
FCA5	0.080	-0.024	0.121	0.035	0.625	0.018	0.042	-0.043
FCA6	-0.048	0.063	-0.038	0.001	0.811	-0.080	-0.203	0.020
FCA7	0.045	0.083	0.024	0.035	0.638	0.026	-0.033	-0.018
PR1	-0.003	0.046	-0.101	-0.062	-0.116	0.604	-0.028	0.089
PR2	-0.010	-0.050	-0.070	0.086	0.085	0.575	0.077	-0.163
PR3	-0.006	-0.018	-0.044	0.057	-0.023	0.597	-0.105	-0.002
PR4	-0.017	0.065	-0.088	0.018	-0.048	0.577	-0.020	0.072
PR5	-0.027	0.016	0.035	0.027	-0.034	0.568	-0.017	0.042
PR6	0.062	-0.015	0.291	-0.012	0.148	0.528	0.008	-0.194
PR7	0.002	0.010	0.002	-0.244	-0.026	0.574	0.093	0.173
PR8	0.022	-0.071	0.074	-0.001	0.062	0.552	0.080	0.008
IM1	0.027	-0.008	0.098	-0.005	0.028	0.043	0.556	-0.073
IM2	0.016	-0.055	-0.031	-0.022	0.020	-0.044	0.589	-0.022
IM3	0.057	0.108	-0.022	0.009	-0.042	0.151	0.535	0.025
IM4	-0.015	0.029	0.169	0.074	-0.043	-0.046	0.553	-0.017
IM5	-0.062	0.069	-0.054	0.018	-0.009	-0.073	0.576	0.031
IM6	-0.005	-0.140	-0.171	-0.064	0.026	-0.105	0.649	0.020
IM7	-0.011	0.002	0.008	-0.012	0.016	0.105	0.549	0.047
WEC1	0.034	-0.112	0.013	0.093	-0.033	-0.128	0.153	0.703
WEC2	-0.033	0.071	0.049	-0.018	0.028	0.072	-0.176	0.716
WEC3	-0.143	0.107	-0.058	-0.043	0.011	0.087	-0.054	0.736
WEC4	-0.029	0.047	-0.024	-0.021	-0.016	0.073	-0.057	0.718
WEC5	0.068	-0.095	-0.018	0.054	-0.013	-0.094	0.016	0.756
WEC6	0.132	-0.137	0.124	0.038	-0.054	-0.081	0.176	0.645
WEC7	0.013	0.038	-0.072	-0.060	0.062	0.049	-0.047	0.720
WEC8	-0.028	0.065	-0.000	-0.045	0.011	0.019	0.029	0.689

Note: Loadings are unrotated and cross-loadings are oblique-rotated, both after separate Kaiser normalizations.

\*\*\*\*\*

\* Pattern loadings and cross-loadings \*

\*\*\*\*\*

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU1	0.777	-0.004	-0.025	-0.019	-0.013	-0.006	0.026	0.018
PEU2	0.824	0.009	-0.039	0.002	-0.062	-0.010	0.017	0.054
PEU3	0.767	0.071	0.039	-0.006	-0.015	0.017	0.029	-0.033
PEU4	0.773	-0.084	0.007	0.049	0.064	-0.051	-0.048	-0.039
PEU5	0.833	-0.004	0.016	-0.020	0.031	0.042	-0.026	-0.002
PU1	0.039	0.772	-0.005	0.064	-0.055	-0.001	0.006	-0.014
PU2	-0.052	0.879	0.039	0.031	-0.065	0.001	0.025	-0.083
PU3	0.033	0.801	-0.046	0.042	-0.052	-0.009	0.002	0.021
PU4	0.035	0.700	-0.007	-0.001	0.121	-0.058	0.071	-0.048
PU5	-0.025	0.862	0.019	-0.069	0.039	-0.078	0.066	-0.053
PU6	-0.031	0.846	-0.002	-0.017	-0.008	0.064	-0.138	0.091
PU7	0.007	0.742	-0.001	-0.050	0.028	0.077	-0.029	0.089
CI1	0.005	0.003	0.923	0.016	0.023	-0.005	0.019	-0.014
CI2	0.014	-0.020	0.974	0.004	-0.027	-0.020	-0.043	0.045
CI3	-0.019	0.017	0.927	-0.020	0.004	0.025	0.023	-0.031
ALS1	0.070	-0.084	0.003	0.882	-0.113	-0.023	-0.051	0.050
ALS2	-0.024	0.026	-0.070	0.889	-0.121	-0.038	-0.016	0.074
ALS3	0.001	-0.052	-0.007	0.862	-0.067	-0.130	0.087	0.054
ALS4	-0.220	-0.091	-0.011	0.701	-0.041	-0.191	0.079	0.079
ALS5	0.003	0.004	-0.027	0.489	0.012	0.102	-0.022	-0.003
ALS6	0.120	0.112	0.077	0.341	0.166	0.181	-0.082	-0.143
ALS7	-0.008	0.094	0.051	0.420	0.233	0.119	0.012	-0.140
FCA1	0.078	0.087	-0.046	-0.019	0.668	0.019	-0.020	-0.034
FCA2	-0.098	-0.014	-0.026	-0.038	0.785	0.049	-0.074	0.005
FCA3	-0.029	-0.042	-0.035	0.041	0.847	-0.026	0.086	-0.002
FCA4	-0.016	-0.098	0.022	-0.045	0.791	-0.030	0.080	0.061
FCA5	0.055	-0.016	0.083	0.024	0.673	0.012	0.029	-0.030
FCA6	-0.031	0.041	-0.025	0.001	0.634	-0.052	-0.133	0.013
FCA7	0.035	0.064	0.018	0.027	0.768	0.020	-0.025	-0.014
PR1	-0.003	0.041	-0.089	-0.054	-0.102	0.861	-0.025	0.078
PR2	-0.008	-0.042	-0.059	0.072	0.072	0.817	0.065	-0.137
PR3	-0.006	-0.018	-0.042	0.055	-0.022	0.952	-0.101	-0.002
PR4	-0.014	0.056	-0.076	0.016	-0.041	0.858	-0.017	0.062
PR5	-0.022	0.014	0.030	0.023	-0.029	0.844	-0.014	0.036
PR6	0.043	-0.011	0.203	-0.009	0.103	0.643	0.005	-0.135
PR7	0.001	0.006	0.001	-0.152	-0.016	0.591	0.058	0.108
PR8	0.016	-0.050	0.052	-0.000	0.044	0.695	0.056	0.006
IM1	0.021	-0.006	0.078	-0.004	0.022	0.034	0.789	-0.058
IM2	0.015	-0.051	-0.029	-0.020	0.018	-0.040	0.925	-0.021
IM3	0.041	0.077	-0.016	0.006	-0.030	0.108	0.700	0.018
IM4	-0.011	0.023	0.131	0.058	-0.033	-0.035	0.762	-0.013



IM5	-0.055	0.060	-0.047	0.016	-0.008	-0.064	0.871	0.027
IM6	-0.005	-0.136	-0.167	-0.062	0.026	-0.102	0.939	0.019
IM7	-0.008	0.002	0.006	-0.009	0.012	0.078	0.735	0.035
WEC1	0.028	-0.091	0.010	0.076	-0.027	-0.104	0.124	0.786
WEC2	-0.028	0.061	0.042	-0.016	0.024	0.061	-0.150	0.836
WEC3	-0.117	0.088	-0.047	-0.035	0.009	0.071	-0.044	0.796
WEC4	-0.024	0.039	-0.020	-0.017	-0.013	0.060	-0.047	0.820
WEC5	0.062	-0.086	-0.016	0.050	-0.012	-0.086	0.015	0.900
WEC6	0.098	-0.101	0.092	0.028	-0.040	-0.060	0.130	0.705
WEC7	0.010	0.030	-0.057	-0.047	0.049	0.039	-0.037	0.777
WEC8	-0.023	0.053	-0.000	-0.037	0.009	0.016	0.024	0.813

Note: Loadings and cross-loadings are oblique-rotated.

\*\*\*\*\*

\* Normalized pattern loadings and cross-loadings \*

\*\*\*\*\*

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU1	0.998	-0.005	-0.032	-0.025	-0.016	-0.008	0.033	0.024
PEU2	0.994	0.011	-0.047	0.003	-0.075	-0.012	0.020	0.065
PEU3	0.992	0.092	0.050	-0.008	-0.020	0.021	0.037	-0.043
PEU4	0.984	-0.106	0.008	0.062	0.082	-0.064	-0.061	-0.050
PEU5	0.997	-0.004	0.019	-0.024	0.037	0.050	-0.031	-0.002
PU1	0.051	0.993	-0.006	0.083	-0.070	-0.001	0.007	-0.018
PU2	-0.059	0.989	0.044	0.034	-0.073	0.002	0.028	-0.094
PU3	0.041	0.994	-0.057	0.052	-0.064	-0.011	0.003	0.026
PU4	0.049	0.974	-0.010	-0.001	0.169	-0.081	0.099	-0.067
PU5	-0.028	0.986	0.021	-0.079	0.044	-0.089	0.076	-0.061
PU6	-0.036	0.978	-0.002	-0.020	-0.009	0.074	-0.160	0.105
PU7	0.009	0.984	-0.001	-0.066	0.037	0.103	-0.038	0.117
CI1	0.006	0.003	0.999	0.017	0.025	-0.006	0.021	-0.015
CI2	0.014	-0.021	0.997	0.005	-0.028	-0.021	-0.044	0.046
CI3	-0.020	0.018	0.998	-0.022	0.005	0.027	0.025	-0.033
ALS1	0.078	-0.094	0.004	0.981	-0.125	-0.025	-0.057	0.055
ALS2	-0.026	0.029	-0.078	0.983	-0.134	-0.042	-0.018	0.082
ALS3	0.001	-0.059	-0.008	0.977	-0.076	-0.147	0.099	0.061
ALS4	-0.285	-0.117	-0.015	0.906	-0.053	-0.247	0.102	0.102
ALS5	0.007	0.009	-0.055	0.976	0.024	0.204	-0.045	-0.006
ALS6	0.246	0.230	0.158	0.701	0.342	0.372	-0.169	-0.294
ALS7	-0.015	0.179	0.098	0.800	0.443	0.227	0.023	-0.266
FCA1	0.114	0.127	-0.068	-0.028	0.980	0.027	-0.029	-0.049
FCA2	-0.123	-0.017	-0.033	-0.048	0.984	0.062	-0.093	0.006
FCA3	-0.034	-0.050	-0.041	0.048	0.991	-0.031	0.101	-0.003

FCA4	-0.020	-0.122	0.027	-0.056	0.982	-0.037	0.099	0.076
FCA5	0.080	-0.024	0.121	0.035	0.986	0.018	0.042	-0.043
FCA6	-0.048	0.063	-0.038	0.001	0.972	-0.080	-0.203	0.020
FCA7	0.045	0.083	0.024	0.035	0.994	0.026	-0.033	-0.018
PR1	-0.003	0.046	-0.101	-0.062	-0.116	0.981	-0.028	0.089
PR2	-0.010	-0.050	-0.070	0.086	0.085	0.972	0.077	-0.163
PR3	-0.006	-0.018	-0.044	0.057	-0.023	0.991	-0.105	-0.002
PR4	-0.017	0.065	-0.088	0.018	-0.048	0.990	-0.020	0.072
PR5	-0.027	0.016	0.035	0.027	-0.034	0.997	-0.017	0.042
PR6	0.062	-0.015	0.291	-0.012	0.148	0.923	0.008	-0.194
PR7	0.002	0.010	0.002	-0.244	-0.026	0.949	0.093	0.173
PR8	0.022	-0.071	0.074	-0.001	0.062	0.989	0.080	0.008
IM1	0.027	-0.008	0.098	-0.005	0.028	0.043	0.991	-0.073
IM2	0.016	-0.055	-0.031	-0.022	0.020	-0.044	0.996	-0.022
IM3	0.057	0.108	-0.022	0.009	-0.042	0.151	0.979	0.025
IM4	-0.015	0.029	0.169	0.074	-0.043	-0.046	0.980	-0.017
IM5	-0.062	0.069	-0.054	0.018	-0.009	-0.073	0.991	0.031
IM6	-0.005	-0.140	-0.171	-0.064	0.026	-0.105	0.967	0.020
IM7	-0.011	0.002	0.008	-0.012	0.016	0.105	0.993	0.047
WEC1	0.034	-0.112	0.013	0.093	-0.033	-0.128	0.153	0.968
WEC2	-0.033	0.071	0.049	-0.018	0.028	0.072	-0.176	0.977
WEC3	-0.143	0.107	-0.058	-0.043	0.011	0.087	-0.054	0.976
WEC4	-0.029	0.047	-0.024	-0.021	-0.016	0.073	-0.057	0.994
WEC5	0.068	-0.095	-0.018	0.054	-0.013	-0.094	0.016	0.987
WEC6	0.132	-0.137	0.124	0.038	-0.054	-0.081	0.176	0.952
WEC7	0.013	0.038	-0.072	-0.060	0.062	0.049	-0.047	0.990
WEC8	-0.028	0.065	-0.000	-0.045	0.011	0.019	0.029	0.996

Note: Loadings and cross-loadings shown are after oblique rotation and Kaiser normalization.

\*\*\*\*\*

\* Structure loadings and cross-loadings \*

\*\*\*\*\*

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU1	0.763	0.378	0.286	0.276	0.232	0.314	0.318	0.137
PEU2	0.805	0.405	0.295	0.297	0.221	0.332	0.328	0.163
PEU3	0.829	0.477	0.379	0.343	0.284	0.396	0.404	0.155
PEU4	0.722	0.292	0.237	0.252	0.237	0.237	0.236	0.059
PEU5	0.847	0.437	0.345	0.324	0.295	0.381	0.364	0.155
PU1	0.432	0.799	0.429	0.443	0.301	0.505	0.498	0.317
PU2	0.396	0.844	0.460	0.435	0.292	0.517	0.522	0.289
PU3	0.413	0.798	0.403	0.428	0.293	0.494	0.482	0.334
PU4	0.414	0.755	0.425	0.414	0.388	0.479	0.502	0.286

PU5	0.391	0.806	0.434	0.376	0.325	0.467	0.506	0.281
PU6	0.373	0.805	0.403	0.416	0.306	0.513	0.451	0.381
PU7	0.410	0.801	0.440	0.424	0.352	0.549	0.512	0.394
CI1	0.383	0.519	0.949	0.444	0.388	0.522	0.649	0.323
CI2	0.356	0.477	0.935	0.409	0.333	0.479	0.598	0.334
CI3	0.363	0.512	0.941	0.414	0.365	0.519	0.641	0.306
ALS1	0.299	0.350	0.315	0.777	0.267	0.384	0.338	0.299
ALS2	0.251	0.392	0.294	0.789	0.266	0.396	0.350	0.334
ALS3	0.270	0.371	0.337	0.784	0.295	0.375	0.387	0.319
ALS4	-0.011	0.120	0.135	0.477	0.136	0.133	0.157	0.198
ALS5	0.213	0.298	0.241	0.546	0.244	0.336	0.285	0.231
ALS6	0.380	0.443	0.372	0.596	0.393	0.460	0.400	0.209
ALS7	0.316	0.442	0.387	0.643	0.449	0.467	0.436	0.237
FCA1	0.289	0.335	0.270	0.320	0.691	0.341	0.328	0.206
FCA2	0.129	0.209	0.202	0.246	0.704	0.268	0.239	0.193
FCA3	0.252	0.324	0.318	0.385	0.853	0.379	0.404	0.270
FCA4	0.220	0.266	0.308	0.301	0.782	0.336	0.362	0.267
FCA5	0.303	0.351	0.367	0.376	0.745	0.392	0.405	0.245
FCA6	0.114	0.154	0.123	0.188	0.534	0.158	0.137	0.132
FCA7	0.319	0.399	0.357	0.406	0.820	0.422	0.413	0.276
PR1	0.303	0.480	0.360	0.374	0.274	0.778	0.484	0.394
PR2	0.346	0.489	0.417	0.472	0.409	0.806	0.554	0.297
PR3	0.342	0.511	0.413	0.482	0.363	0.860	0.524	0.392
PR4	0.343	0.551	0.422	0.472	0.365	0.853	0.560	0.435
PR5	0.352	0.554	0.481	0.487	0.380	0.868	0.592	0.434
PR6	0.387	0.506	0.521	0.444	0.421	0.751	0.567	0.285
PR7	0.237	0.372	0.328	0.266	0.253	0.596	0.423	0.330
PR8	0.335	0.480	0.449	0.439	0.379	0.762	0.553	0.372
IM1	0.382	0.538	0.604	0.442	0.407	0.594	0.854	0.341
IM2	0.339	0.478	0.536	0.396	0.376	0.532	0.838	0.333
IM3	0.404	0.583	0.565	0.458	0.389	0.631	0.835	0.396
IM4	0.363	0.545	0.623	0.463	0.377	0.572	0.849	0.367
IM5	0.309	0.516	0.530	0.420	0.363	0.532	0.826	0.375
IM6	0.208	0.291	0.349	0.238	0.264	0.351	0.638	0.243
IM7	0.343	0.520	0.551	0.429	0.383	0.588	0.810	0.392
WEC1	0.145	0.300	0.288	0.337	0.242	0.347	0.375	0.782
WEC2	0.134	0.349	0.283	0.325	0.270	0.397	0.322	0.833
WEC3	0.063	0.321	0.231	0.288	0.233	0.370	0.317	0.796
WEC4	0.132	0.336	0.267	0.322	0.240	0.391	0.344	0.822
WEC5	0.139	0.286	0.247	0.327	0.240	0.336	0.324	0.852
WEC6	0.212	0.336	0.351	0.341	0.253	0.390	0.417	0.748
WEC7	0.133	0.315	0.229	0.283	0.262	0.365	0.311	0.770
WEC8	0.148	0.378	0.307	0.332	0.278	0.418	0.395	0.838

Note: Loadings and cross-loadings are unrotated.

\*\*\*\*\*

\* Normalized structure loadings and cross-loadings \*

\*\*\*\*\*

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU1	0.710	0.352	0.266	0.256	0.216	0.292	0.296	0.128
PEU2	0.712	0.358	0.260	0.262	0.195	0.293	0.290	0.144
PEU3	0.655	0.377	0.299	0.271	0.225	0.313	0.320	0.123
PEU4	0.762	0.308	0.250	0.266	0.250	0.250	0.249	0.062
PEU5	0.687	0.354	0.280	0.263	0.239	0.309	0.295	0.126
PU1	0.313	0.580	0.311	0.321	0.219	0.367	0.362	0.230
PU2	0.281	0.600	0.327	0.309	0.207	0.368	0.371	0.206
PU3	0.306	0.591	0.298	0.317	0.217	0.365	0.357	0.247
PU4	0.308	0.562	0.316	0.308	0.289	0.356	0.373	0.213
PU5	0.292	0.602	0.324	0.281	0.243	0.349	0.378	0.210
PU6	0.276	0.596	0.298	0.308	0.226	0.379	0.333	0.282
PU7	0.288	0.563	0.309	0.298	0.247	0.386	0.360	0.277
CI1	0.244	0.331	0.605	0.283	0.248	0.332	0.413	0.206
CI2	0.240	0.321	0.629	0.275	0.224	0.323	0.403	0.225
CI3	0.237	0.333	0.613	0.269	0.238	0.338	0.418	0.199
ALS1	0.259	0.303	0.272	0.672	0.231	0.332	0.292	0.258
ALS2	0.213	0.333	0.250	0.670	0.226	0.336	0.297	0.283
ALS3	0.227	0.312	0.283	0.658	0.247	0.315	0.325	0.268
ALS4	-0.019	0.200	0.225	0.795	0.227	0.222	0.262	0.329
ALS5	0.238	0.334	0.270	0.611	0.273	0.376	0.319	0.258
ALS6	0.321	0.374	0.314	0.503	0.332	0.388	0.337	0.176
ALS7	0.256	0.358	0.313	0.521	0.364	0.378	0.353	0.192
FCA1	0.274	0.317	0.256	0.303	0.654	0.323	0.311	0.196
FCA2	0.142	0.231	0.223	0.271	0.776	0.296	0.263	0.212
FCA3	0.204	0.262	0.257	0.312	0.691	0.307	0.327	0.219
FCA4	0.199	0.240	0.277	0.271	0.705	0.302	0.326	0.241
FCA5	0.254	0.294	0.308	0.315	0.625	0.328	0.340	0.205
FCA6	0.174	0.234	0.187	0.286	0.811	0.239	0.208	0.200
FCA7	0.249	0.310	0.278	0.316	0.638	0.328	0.322	0.215
PR1	0.235	0.372	0.279	0.290	0.213	0.604	0.375	0.306
PR2	0.247	0.349	0.297	0.337	0.292	0.575	0.395	0.212
PR3	0.237	0.354	0.287	0.334	0.252	0.597	0.363	0.272
PR4	0.232	0.372	0.285	0.319	0.247	0.577	0.379	0.294
PR5	0.231	0.362	0.315	0.319	0.249	0.568	0.387	0.284
PR6	0.272	0.356	0.367	0.312	0.297	0.528	0.399	0.201
PR7	0.228	0.358	0.316	0.256	0.244	0.574	0.407	0.317
PR8	0.242	0.348	0.325	0.318	0.275	0.552	0.401	0.269
IM1	0.249	0.350	0.393	0.288	0.265	0.387	0.556	0.222

IM2	0.238	0.336	0.377	0.278	0.264	0.374	0.589	0.234		
IM3	0.259	0.374	0.362	0.293	0.249	0.405	0.535	0.254		
IM4	0.236	0.355	0.406	0.302	0.245	0.373	0.553	0.239		
IM5	0.215	0.360	0.370	0.293	0.253	0.371	0.576	0.261		
IM6	0.212	0.296	0.355	0.242	0.268	0.357	0.649	0.248		
IM7	0.233	0.352	0.373	0.291	0.260	0.398	0.549	0.266		
WEC1	0.130	0.269	0.258	0.303	0.217	0.312	0.337	0.703		
WEC2	0.115	0.300	0.243	0.280	0.232	0.341	0.277	0.716		
WEC3	0.058	0.297	0.214	0.267	0.215	0.342	0.293	0.736		
WEC4	0.115	0.294	0.233	0.281	0.210	0.341	0.300	0.718		
WEC5	0.123	0.254	0.219	0.290	0.213	0.298	0.287	0.756		
WEC6	0.183	0.289	0.303	0.294	0.218	0.336	0.359	0.645		
WEC7	0.125	0.295	0.215	0.265	0.246	0.341	0.292	0.720		
WEC8	0.122	0.311	0.253	0.273	0.229	0.343	0.325	0.689		
Note: Loadings and cross-loadings shown are unrotated and after Kaiser normalization.										
*****										
* Indicator weights *										
*****										
	PEU	PU	CI	ALS	FCA	PR	IM	WEC	Type (a SE	P
value	VIF	WLS	ES							
PEU1	0.242	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	1.676	1	0.184						
PEU2	0.255	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	1.913	1	0.206						
PEU3	0.263	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	2.048	1	0.218						
PEU4	0.229	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	1.560	1	0.165						
PEU5	0.268	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	2.198	1	0.227						
PU1	0.000	0.178	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	2.295	1	0.142						
PU2	0.000	0.188	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	2.735	1	0.158						
PU3	0.000	0.177	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	2.170	1	0.142						
PU4	0.000	0.168	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	1.869	1	0.127						
PU5	0.000	0.179	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	2.225	1	0.145						

PU6	0.000	0.179	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	2.255	1	0.144							
PU7	0.000	0.178	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	2.243	1	0.143							
CI1	0.000	0.000	0.357	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	4.509	1	0.338							
CI2	0.000	0.000	0.352	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	3.704	1	0.329							
CI3	0.000	0.000	0.354	0.000	0.000	0.000	0.000	0.000	0.000	Reflect	0.033
	<0.001	4.064	1	0.333							
ALS1	0.000	0.000	0.000	0.247	0.000	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	2.198	1	0.192							
ALS2	0.000	0.000	0.000	0.251	0.000	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	2.363	1	0.198							
ALS3	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.872	1	0.196							
ALS4	0.000	0.000	0.000	0.152	0.000	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.186	1	0.072							
ALS5	0.000	0.000	0.000	0.174	0.000	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.243	1	0.095							
ALS6	0.000	0.000	0.000	0.191	0.000	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.647	1	0.114							
ALS7	0.000	0.000	0.000	0.206	0.000	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.649	1	0.132							
FCA1	0.000	0.000	0.000	0.000	0.181	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.560	1	0.125							
FCA2	0.000	0.000	0.000	0.000	0.184	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.635	1	0.129							
FCA3	0.000	0.000	0.000	0.000	0.223	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	2.633	1	0.190							
FCA4	0.000	0.000	0.000	0.000	0.204	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.984	1	0.160							
FCA5	0.000	0.000	0.000	0.000	0.195	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.767	1	0.145							
FCA6	0.000	0.000	0.000	0.000	0.140	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	1.238	1	0.075							
FCA7	0.000	0.000	0.000	0.000	0.214	0.000	0.000	0.000	0.000	Formati	0.033
	<0.001	2.177	1	0.176							
PR1	0.000	0.000	0.000	0.000	0.000	0.156	0.000	0.000	0.000	Formati	0.033
	<0.001	2.158	1	0.122							
PR2	0.000	0.000	0.000	0.000	0.000	0.162	0.000	0.000	0.000	Formati	0.033
	<0.001	2.362	1	0.131							
PR3	0.000	0.000	0.000	0.000	0.000	0.173	0.000	0.000	0.000	Formati	0.033
	<0.001	3.042	1	0.149							

PR4	0.000	0.000	0.000	0.000	0.000	0.171	0.000	0.000	Formati	0.033
	<0.001	3.154	1	0.146						
PR5	0.000	0.000	0.000	0.000	0.000	0.174	0.000	0.000	Formati	0.033
	<0.001	3.383	1	0.151						
PR6	0.000	0.000	0.000	0.000	0.000	0.151	0.000	0.000	Formati	0.033
	<0.001	1.954	1	0.113						
PR7	0.000	0.000	0.000	0.000	0.000	0.120	0.000	0.000	Formati	0.033
	<0.001	1.476	1	0.071						
PR8	0.000	0.000	0.000	0.000	0.000	0.153	0.000	0.000	Formati	0.033
	<0.001	2.051	1	0.117						
IM1	0.000	0.000	0.000	0.000	0.000	0.000	0.186	0.000	Formati	0.033
	<0.001	3.319	1	0.159						
IM2	0.000	0.000	0.000	0.000	0.000	0.000	0.182	0.000	Formati	0.033
	<0.001	3.054	1	0.153						
IM3	0.000	0.000	0.000	0.000	0.000	0.000	0.182	0.000	Formati	0.033
	<0.001	2.586	1	0.152						
IM4	0.000	0.000	0.000	0.000	0.000	0.000	0.185	0.000	Formati	0.033
	<0.001	2.775	1	0.157						
IM5	0.000	0.000	0.000	0.000	0.000	0.000	0.180	0.000	Formati	0.033
	<0.001	2.423	1	0.148						
IM6	0.000	0.000	0.000	0.000	0.000	0.000	0.139	0.000	Formati	0.033
	<0.001	1.537	1	0.089						
IM7	0.000	0.000	0.000	0.000	0.000	0.000	0.176	0.000	Formati	0.033
	<0.001	2.290	1	0.143						
WEC1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.151	Formati	0.033
	<0.001	2.359	1	0.118						
WEC2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.160	Formati	0.033
	<0.001	2.869	1	0.134						
WEC3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.153	Formati	0.033
	<0.001	3.197	1	0.122						
WEC4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	Formati	0.033
	<0.001	3.276	1	0.130						
WEC5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.164	Formati	0.033
	<0.001	3.180	1	0.140						
WEC6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.144	Formati	0.033
	<0.001	2.214	1	0.108						
WEC7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.148	Formati	0.033
	<0.001	2.047	1	0.114						
WEC8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.161	Formati	0.033
	<0.001	2.591	1	0.135						
<p>Notes: P values &lt; 0.05 and VIFs &lt; 2.5 are desirable for formative indicators; VIF = indicator variance inflation factor;  WLS = indicator weight-loading sign (-1 = Simpson's paradox in l.v.); ES = indicator effect size.</p>										

\*\*\*\*\*

\* Latent variable coefficients \*

\*\*\*\*\*

#### R-squared coefficients

-----

PEU	PU	CI	ALS	FCA	PR	IM	WEC
0.221	0.533	0.484					0.218

#### Adjusted R-squared coefficients

-----

PEU	PU	CI	ALS	FCA	PR	IM	WEC
0.219	0.530	0.481					0.217

#### Composite reliability coefficients

-----

PEU	PU	CI	ALS	FCA	PR	IM	WEC
0.895	0.926	0.959	0.846	0.892	0.929	0.930	0.937

#### Cronbach's alpha coefficients

-----

PEU	PU	CI	ALS	FCA	PR	IM	WEC
0.853	0.907	0.936	0.786	0.857	0.911	0.911	0.922

#### Average variances extracted

-----

PEU	PU	CI	ALS	FCA	PR	IM	WEC
0.631	0.642	0.886	0.448	0.546	0.622	0.656	0.649

#### Full collinearity VIFs

-----

PEU	PU	CI	ALS	FCA	PR	IM	WEC
1.442	2.164	1.942	1.695	1.411	2.374	2.648	1.392

#### Q-squared coefficients

-----

PEU	PU	CI	ALS	FCA	PR	IM	WEC
-----	----	----	-----	-----	----	----	-----



0.222	0.534	0.484					0.219
Minimum and maximum values							
-----							
PEU	PU	CI	ALS	FCA	PR	IM	WEC
-6.324	-6.854	-6.436	-5.850	-5.208	-6.572	-5.803	-3.872
1.011	1.103	0.734	1.151	0.883	1.162	1.022	1.091
Medians (top) and modes (bottom)							
-----							
PEU	PU	CI	ALS	FCA	PR	IM	WEC
0.213	0.014	0.734	0.154	0.401	0.018	0.196	0.108
1.011	1.103	0.734	1.151	0.883	1.162	1.022	1.091
Skewness (top) and exc. kurtosis (bottom) coefficients							
-----							
PEU	PU	CI	ALS	FCA	PR	IM	WEC
-1.505	-0.980	-1.374	-0.817	-1.408	-0.711	-0.802	-0.871
5.309	2.885	2.966	0.929	2.542	1.259	0.844	0.390
Tests of unimodality: Rohatgi-Székely (top) and Klaassen-Mokveld-van Es (bottom)							
-----							
PEU	PU	CI	ALS	FCA	PR	IM	WEC
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tests of normality: Jarque–Bera (top) and robust Jarque–Bera (bottom)							
-----							
PEU	PU	CI	ALS	FCA	PR	IM	WEC
No	No	No	No	No	No	No	No
No	No	No	No	No	No	No	No
*****							
* Correlations among latent variables and errors *							
*****							
Correlations among l.vs. with sq. rts. of AVEs							
-----							

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU	0.795	0.504	0.391	0.377	0.321	0.421	0.418	0.171
PU	0.504	0.801	0.534	0.523	0.401	0.628	0.619	0.407
CI	0.391	0.534	0.941	0.449	0.385	0.538	0.669	0.341
ALS	0.377	0.523	0.449	0.669	0.437	0.550	0.507	0.396
FCA	0.321	0.401	0.385	0.437	0.739	0.453	0.454	0.313
PR	0.421	0.628	0.538	0.550	0.453	0.789	0.676	0.467
IM	0.418	0.619	0.669	0.507	0.454	0.676	0.810	0.434
WEC	0.171	0.407	0.341	0.396	0.313	0.467	0.434	0.806

Note: Square roots of average variances extracted (AVEs) shown on diagonal.

P values for correlations

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU	1.000	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PU	<0.001	1.000	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CI	<0.001	<0.001	1.000	<0.001	<0.001	<0.001	<0.001	<0.001
ALS	<0.001	<0.001	<0.001	1.000	<0.001	<0.001	<0.001	<0.001
FCA	<0.001	<0.001	<0.001	<0.001	1.000	<0.001	<0.001	<0.001
PR	<0.001	<0.001	<0.001	<0.001	<0.001	1.000	<0.001	<0.001
IM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.000	<0.001
WEC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.000

Correlations among l.v. error terms with VIFs

	(e)PEU	(e)PU	(e)CI	(e)WEC
(e)PEU	1.015	-0.002	-0.007	-0.123
(e)PU	-0.002	1.000	-0.001	0.000
(e)CI	-0.007	-0.001	1.000	0.015
(e)WEC	-0.123	0.000	0.015	1.016

Notes: Variance inflation factors (VIFs) shown on diagonal. Error terms included (a.k.a. residuals) are for endogenous l.vs.

P values for correlations

	(e)PEU	(e)PU	(e)CI	(e)WEC
(e)PEU	1.000	0.942	0.839	<0.001
(e)PU	0.942	1.000	0.967	1.000

(e)CI 0.839 0.967 1.000 0.655  
(e)WEC <0.001 1.000 0.655 1.000

\*\*\*\*\*

\* Block variance inflation factors \*

\*\*\*\*\*

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				1.452	1.358		1.480	
PU	1.311			1.588		2.206	2.062	1.391
CI	1.408	2.069		1.603		2.266	2.148	

Note: These VIFs are for the latent variables on each column (predictors), with reference to the latent variables on each row (criteria).

\*\*\*\*\*

\* Indirect and total effects \*

\*\*\*\*\*

Indirect effects for paths with 2 segments

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PU				0.044	0.026	0.044	0.062	
CI	0.027			0.032	0.009	0.029	0.050	0.011

Number of paths with 2 segments

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PU				1	1	1	1	
CI	1			2	1	1	2	1

P values of indirect effects for paths with 2 segments

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PU				0.033	0.133	0.032	0.004	
CI	0.125			0.173	0.353	0.110	0.068	0.320

Standard errors of indirect effects for paths with 2 segments

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PU				0.024	0.024	0.024	0.024	
CI	0.024			0.034	0.024	0.024	0.033	0.024

Effect sizes of indirect effects for paths with 2 segments

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PU				0.023	0.011	0.028	0.038	
CI	0.011			0.014	0.003	0.016	0.033	0.004

Indirect effects for paths with 3 segments

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
CI				0.005	0.003	0.005	0.007	

Number of paths with 3 segments

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
CI				1	1	1	1	

P values of indirect effects for paths with 3 segments

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
CI				0.395	0.436	0.394	0.352	

Standard errors of indirect effects for paths with 3 segments

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
--	-----	----	----	-----	-----	----	----	-----

CI				0.019	0.019	0.019	0.019	
Effect sizes of indirect effects for paths with 3 segments								
	PEU	PU	CI	ALS	FCA	PR	IM	WEC
CI				0.002	0.001	0.003	0.005	
Sums of indirect effects								
	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PU				0.044	0.026	0.044	0.062	
CI	0.027			0.037	0.012	0.034	0.057	0.011
Number of paths for indirect effects								
	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PU				1	1	1	1	
CI	1			3	2	2	3	1
P values for sums of indirect effects								
	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PU				0.033	0.133	0.032	0.004	
CI	0.125			0.137	0.305	0.074	0.044	0.320
Standard errors for sums of indirect effects								
	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PU				0.024	0.024	0.024	0.024	
CI	0.024			0.034	0.024	0.024	0.033	0.024
Effect sizes for sums of indirect effects								
	PEU	PU	CI	ALS	FCA	PR	IM	WEC

PU				0.023	0.011	0.028	0.038	
CI	0.011			0.016	0.005	0.019	0.038	0.004

#### Total effects

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.190	0.115		0.270	
PU	0.230			0.184	0.026	0.289	0.305	0.094
CI	0.105	0.119		0.115	0.012	0.097	0.536	0.011
WEC						0.467		

#### Number of paths for total effects

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				1	1		1	
PU	1			2	1	2	2	1
CI	2	1		4	2	3	4	1
WEC						1		

#### P values for total effects

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				<0.001	<0.001		<0.001	
PU	<0.001			<0.001	0.133	<0.001	<0.001	0.003
CI	<0.001	<0.001		<0.001	0.305	0.002	<0.001	0.320
WEC						<0.001		

#### Standard errors for total effects

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.033	0.033		0.033	
PU	0.033			0.033	0.024	0.033	0.033	0.033
CI	0.033	0.033		0.033	0.024	0.033	0.032	0.024
WEC						0.032		

#### Effect sizes for total effects

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.072	0.037		0.113	

PU	0.116		0.096	0.011	0.182	0.188	0.039
CI	0.043	0.063	0.052	0.005	0.052	0.358	0.004
WEC					0.218		

\*\*\*\*\*  
 \* Causality assessment coefficients \*  
 \*\*\*\*\*

#### Path-correlation signs

-----

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				1	1		1	
PU	1			1		1	1	1
CI	1	1		1		1	1	
WEC						1		

Notes: path-correlation signs; negative sign (i.e., -1) = Simpson's paradox.

#### R-squared contributions

-----

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.072	0.037		0.113	
PU	0.116			0.074		0.154	0.150	0.039
CI	0.032	0.063		0.035		0.034	0.320	
WEC						0.218		

Notes: R-squared contributions of predictor lat. vars.; columns = predictor lat. vars.; rows = criteria lat. vars.; negative sign = reduction in R-squared.

#### Path-correlation ratios

-----

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.504	0.359		0.645	
PU	0.456			0.269		0.391	0.392	0.225
CI	0.193	0.223		0.174		0.117	0.716	
WEC						1.000		

Notes: absolute path-correlation ratios; ratio > 1 indicates statistical suppression; 1 < ratio <= 1.3: weak suppression; 1.3 < ratio <= 1.7: medium; 1.7 < ratio: strong.

Path-correlation differences

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.187	0.206		0.149	
PU	0.274			0.382		0.383	0.376	0.322
CI	0.327	0.415		0.370		0.475	0.190	
WEC						0.000		

Note: absolute path-correlation differences.

P values for path-correlation differences

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				<0.001	<0.001		<0.001	
PU	<0.001			<0.001		<0.001	<0.001	<0.001
CI	<0.001	<0.001		<0.001		<0.001	<0.001	
WEC						1.000		

Note: P values for absolute path-correlation differences.

Warp2 bivariate causal direction ratios

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				1.051	1.071		1.067	
PU	1.011			1.000		1.017	1.015	0.991
CI	0.976	1.005		0.982		0.990	0.986	
WEC						1.013		

Notes: Warp2 bivariate causal direction ratios; ratio > 1 supports reversed link; 1 < ratio ≤ 1.3: weak support; 1.3 < ratio ≤ 1.7: medium; 1.7 < ratio: strong.

Warp2 bivariate causal direction differences

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.019	0.023		0.028	
PU	0.006			0.000		0.011	0.009	0.004
CI	0.010	0.003		0.008		0.005	0.010	
WEC						0.006		

Note: absolute Warp2 bivariate causal direction differences.



#### P values for Warp2 bivariate causal direction differences

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.282	0.246		0.202	
PU	0.435			0.497		0.374	0.390	0.456
CI	0.388	0.469		0.402		0.438	0.386	
WEC						0.426		

Note: P values for absolute Warp2 bivariate causal direction differences.

#### Warp3 bivariate causal direction ratios

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				1.030	1.069		1.055	
PU	1.019			1.009		1.021	1.022	0.965
CI	0.971	0.988		0.978		1.000	0.985	
WEC						1.050		

Notes: Warp3 bivariate causal direction ratios; ratio > 1 supports reversed link; 1 < ratio ≤ 1.3: weak support; 1.3 < ratio ≤ 1.7: medium; 1.7 < ratio: strong.

#### Warp3 bivariate causal direction differences

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.011	0.023		0.023	
PU	0.010			0.005		0.013	0.014	0.015
CI	0.012	0.007		0.010		0.000	0.010	
WEC						0.024		

Note: absolute Warp3 bivariate causal direction differences.

#### P values for Warp3 bivariate causal direction differences

	PEU	PU	CI	ALS	FCA	PR	IM	WEC
PEU				0.367	0.251		0.245	
PU	0.388			0.447		0.348	0.344	0.330
CI	0.365	0.422		0.383		0.498	0.385	
WEC						0.241		

Note: P values for absolute Warp3 bivariate causal direction differences.