



**UNIVERSITI PUTRA MALAYSIA**

***CONTINUANCE PARTICIPATION MODEL FOR ONLINE COMMUNITIES***

**MOHANA SHANMUGAM**

**FSKTM 2018 21**



**CONTINUANCE PARTICIPATION MODEL FOR ONLINE COMMUNITIES**

By

**MOHANA SHANMUGAM**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra  
Malaysia, in Fulfillment of the Requirements for the Degree of  
Doctor of Philosophy**

**December 2017**

## COPYRIGHT

All material contained within the thesis, including without limitation text, logos, icons, photographs, and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy

## **CONTINUANCE PARTICIPATION MODEL FOR ONLINE COMMUNITIES**

By

**MOHANA SHANMUGAM**

**December 2017**

**Chairman : Associate Professor Yusmadi Yah Jusoh, PhD**  
**Faculty : Computer Science and Information Technology**

The models that predict constructs of individuals' acceptance are predominantly based on pre-adoption intention and behaviour rather than post-adoption. Although within the field of Information Systems (IS) a number of continuance models have been developed and tested for efficacy the capabilities of these models are limited because its underlying conceptualization of predicting acceptance behaviour underestimated social related influences. The lack of social related influences in continuance participation models affects the sustainability of online communities. Moreover, many online communities that spring up fail due to the limitation and lack of attention given for social needs of individuals. To overcome the mentioned limitations, a Continuance Participation Model (CPM) for online communities is presented and evaluated. The model attempted to define the relationship between the Theories of Planned Behaviour (TPB) and Social Support (SST) alongside satisfaction and perceived value constructs towards the continuance participation intention and behaviour of online communities. The constructs contributing to the model is identified based on extensive literature review and Average Congruency Percentage (ACP) verified and validated by three panels of experts. This study is established on a positivist approach in which a quantitative methodology is used to investigate the correlational paths. Using a probability sampling method, data was collected from 385 users of social networking sites (SNSs) with a minimum of two years of experience. Hypothetical relationships were examined using Structural Equation Modeling (SEM) based on the Partial Least Squares (PLS). The study findings indicate that the CPM achieved an acceptable fit with the data and specifically 9 out of 10 hypotheses were met. The empirical evidence also reveals that social support constructs measured by informational and emotional support exert significant effects on the intention and behaviour as well as exerts positive effects on perceived value and the intention to continue

participating in online communities. Subsequently, this research introduces an Implementation framework (IF) to evaluate the sustainability of online communities. The appropriateness and importance of the components in the IF are validated by four experts from the academia and industry. Based on these findings, a prototype called Online Communities Checklist Tool (OC<sup>2</sup>T) is developed and evaluated. A user acceptance test using the Perceived Usefulness and Ease of Use (PUEU) instrument conducted with fifteen developers' demonstrated overall feasibility and acceptability of the prototype. Results further reveal that the OC<sup>2</sup>T is beneficial in evaluating the sustainability of online communities. Finally, this study develops research in online communities by proposing social constructs from a social psychology theory in increasing our understanding on continuance participation models in online communities.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

## **MODEL PENYERTAAN BERTERUSAN UNTUK KOMUNITI ATAS TALIAN**

Oleh

**MOHANA SHANMUGAM**

**Disember 2017**

**Pengerusi : Profesor Madya Yusmadi Yah Jusoh, PhD**  
**Fakulti : Sains Komputer dan Teknologi Maklumat**

Model yang meramalkan faktor penerimaan individu kebanyakannya berdasarkan niat pra-penggunaan dan tingkah laku dan bukannya selepas diterima pakai. Dalam bidang Sistem Maklumat (IS), beberapa model telah dibangunkan dan diuji namun keupayaan model ini masih terhad kerana ramalan penerimaan tingkah laku tidak menitikberatkan pengaruh sosial. Dalam pada itu, kekurangan pengaruh sosial dalam rangka kerja penyertaan berterusan mengakibatkan pengekalan komuniti atas talian. Pada masa yang sama, kekurangan penyelidikan empirikal berasaskan teori untuk niat selepas penggunaan dan tingkah laku memberi kesan kepada pengekalan komuniti atas talian. Selain itu, banyak komuniti atas talian yang dibina tidak kekal kerana kurangnya perhatian diberikan kepada keperluan sosial individu. Untuk mengatasi jurang yang dinyatakan, Model Komuniti Atas Talian (CPM) untuk komuniti atas talian dibentangkan dan dinilai. Model ini bertujuan mengkaji hubungan antara faktor-faktor Teori Tingkahlaku Dirancang (TPB), Sokongan Sosial (SST), kepuasan dan nilai diterima ke arah niat penyertaan berterusan dan tingkah laku komuniti atas talian. Faktor-faktor yang menyumbang kepada model ini dikenal pasti berdasarkan kajian literatur yang menyeluruh dan Purata Keselarasan Peratus (ACP) yang disahkan oleh tiga panel pakar. Kajian ini ditubuhkan menggunakan pendekatan positivist di mana metodologi kuantitatif digunakan untuk mengkaji hubungan korelasi antara faktor. Dengan menggunakan kaedah persampelan kebarangkalian, data dikumpulkan daripada 385 pengguna laman rangkaian sosial (SNSs) yang mempunyai sekurang-kurangnya dua tahun pengalaman. Hubungan hipotesis telah diperiksa menggunakan Structural Equation Modeling (SEM) berdasarkan Partial Least Squares (PLS). Penemuan kajian menunjukkan bahawa 9 daripada 10 hipotesis yang dihipotesiskan telah dicapai oleh CPM. Bukti kajian empirikal juga mendedahkan bahawa faktor sokongan sosial yang diukur dari segi sokongan maklumat dan emosi memberikan kesan positif ke atas niat,

tingkah laku dan nilai diterima untuk individu terus mengambil bahagian dalam komuniti atas talian. Sejurus itu, kajian ini memperkenalkan Model Penyertaan Berterusan (IF) untuk mengukur tahap pengekalan komuniti atas talian. Kesesuaian dan kepentingan komponen dalam rangka kerja yang dicadangkan disahkan oleh empat pakar dari bidang akademik dan industri. Berdasarkan penemuan kajian, prototaip yang dipanggil Senarai Semak Komuniti Atas Talian (OC<sup>2</sup>T) telah dibangunkan dan dinilai. Ujian penerimaan pengguna menggunakan instrumen manfaat dan kemudahan penggunaan (PUEU) yang dijalankan dengan lima belas pembangun laman web menunjukkan prototaip yang dibina dalam tahap realistik dan memuaskan. Seterusnya dapatan kajian juga menunjukkan bahawa OC<sup>2</sup>T bermanfaat dalam mengukur pengekalan komuniti atas talian. Akhir sekali, kajian ini juga menyumbang kepada penyelidikan komuniti atas talian dengan mencadangkan faktor-faktor dari teori psikologi social dalam meningkatkan pengetahuan dan penerimaan kita terhadap komuniti atas talian dalam model penyertaan berterusan.

## ACKNOWLEDGEMENTS

My special thanks to my supervisor Associate Professor Dr.Yusmadi Yah Jusoh and co-supervisors Dr.Rozi Nor Haizan Nor and Associate Professor Dr.Marzanah A.Jabar for their valuable guidance, support and encouragement during my doctoral research endeavour. It is indeed a great blessing for me to have such exemplary supervision.

I would also like to extend my deepest gratitude to Associate Professor Dr. Nick Hajli from Swansea University, UK who not only provided me with constructive comments on my thesis but inspired me with his exceptional passion for research.

My special appreciation is also extended to many academics and industrialist for their critical feedback on different aspects of my research particularly: Dr.Noorminshah A. Iahad from Universiti Teknologi Malaysia (UTM) and Associate Professor Dr.Murni Mahmud from International Islamic University Malaysia for their consistent feedbacks and guidance on my research framework, as well as Mr.Vinodarran Suppayah from VICT Systems Sdn. Bhd. for his feedback on web development processes.

I wish to also acknowledge the Ministry of Higher Education (MOHE) for sponsoring my PhD study through their MyBrain15 programme. My warm and heartfelt thanks also go out to the management of Universiti Tenaga Nasional (UNITEN) for granting me with the study leave and taking care of my welfare as a staff. I would also like to express my gratitude to all the reviewers of publications resulting from this thesis. Their critical comments helped to improve the research and most importantly enhance my research and writing skills.

I am very thankful for my parents and am eternally grateful to my husband Kuhaneson Sanmugam for the ever-present kindness and extensive support given through the good and tough times of my PhD journey. Most importantly I thank my little sunshine Keerthana for her innocent smiles and antics that kept me going as I crafted this thesis. Last but not least, I thank God for giving me the insight where and when I needed, and giving me the chance to complete what I started successfully and timeously.



I certify that a Thesis Examination Committee has met on 28 December 2017 to conduct the final examination of Mohana Shanmugam on her thesis entitled "Continuance Participation Model for Online Communities" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

Members of the Thesis Examination Committee were as follows:

**Abdul Azim bin Abd Ghani, PhD**

Professor  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Chairman)

**Rusli bin Hj. Abdullah, PhD**

Professor  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Internal Examiner)

**Wan Nurhayati binti Wan Ab. Rahman, PhD**

Senior Lecturer  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Internal Examiner)

**Yogesh K. Dwivedi, PhD**

Professor  
Swansea University  
United Kingdom  
(External Examiner)



---

**NOR AINI AB. SHUKOR, PhD**  
Professor and Deputy Dean  
School of Graduate Studies  
Universiti Putra Malaysia

Date: 27 February 2018

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

**Yusmadi Yah Jusoh, PhD**

Associate Professor  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Chairman)

**Marzanah A. Jabar, PhD**

Associate Professor  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Member)

**Rozi Nor Haizan Nor, PhD**

Senior Lecturer  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Member)

**ROBIAH BINTI YUNUS, PhD**

Professor and Dean  
School of Graduate Studies  
Universiti Putra Malaysia

Date:

## Declaration by graduate student

I hereby confirm that:

- this thesis is my original work;
- quotations, illustrations and citations have been duly referenced;
- this thesis has not been submitted previously or concurrently for any other degree at any institutions;
- intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as according to the Universiti Putra Malaysia (Research) Rules 2012;
- written permission must be obtained from supervisor and the office of Deputy Vice-Chancellor (Research and innovation) before thesis is published (in the form of written, printed or in electronic form) including books, journals, modules, proceedings, popular writings, seminar papers, manuscripts, posters, reports, lecture notes, learning modules or any other materials as stated in the Universiti Putra Malaysia (Research) Rules 2012;
- there is no plagiarism or data falsification/fabrication in the thesis, and scholarly integrity is upheld as according to the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) and the Universiti Putra Malaysia (Research) Rules 2012. The thesis has undergone plagiarism detection software

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name and Matric No.: Mohana Shanmugam, GS36305

## Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) were adhered to.

Signature: \_\_\_\_\_  
Name of  
Chairman  
of Supervisory  
Committee: Associate Professor  
Dr. Yusmadi Yah Jusoh

Signature: \_\_\_\_\_  
Name of Member  
of Supervisory  
Committee: Associate Professor  
Dr. Marzanah A. Jabar

Signature: \_\_\_\_\_  
Name of Member  
of Supervisory  
Committee: Dr. Rozi Nor Haizan Nor

## TABLE OF CONTENTS

	<b>Page</b>
<b>ABSTRACT</b>	i
<b>ABSTRAK</b>	iii
<b>ACKNOWLEDGEMENTS</b>	v
<b>APPROVAL</b>	vi
<b>DECLARATION</b>	viii
<b>LIST OF TABLES</b>	xiii
<b>LIST OF FIGURES</b>	xvi
<b>LIST OF ABBREVIATIONS</b>	xix
<b>CHAPTER</b>	
<b>1 INTRODUCTION</b>	<b>1</b>
1.1 Background	1
1.2 Problem Statement	2
1.3 Research Objectives	3
1.4 Scope of Study	3
1.5 Significance of Study	3
1.5.1 Theoretical Contribution	3
1.5.2 Practical Contribution	4
1.6 Organization of Thesis	4
<b>2 LITERATURE REVIEW</b>	<b>6</b>
2.1 Introduction	6
2.2 Online Communities	6
2.2.1 Continuance Participation in Online Communities	8
2.2.2 Review on Online Communities	10
2.2.3 Online Communities Design System	13
2.3 Related Models on Information Systems Continuance Participation	15
2.3.1 Theory of Reasoned Action	16
2.3.2 Theory of Planned Behaviour	17
2.3.3 Decomposed Theory of Planned Behaviour	19
2.3.4 Technology Acceptance Model	20
2.3.5 DeLone and McLean IS Success Model	22
2.3.6 Expectation Confirmation Model	23
2.3.7 Unified Theory of Acceptance and Use of Technology	24
2.4 Gap Analysis	25
2.4.1 Related Models on Online Communities	27
2.4.2 Social Constructs in Continuance Participation Studies	31
2.4.3 Social Support Theory in Information Systems	32
2.5 Summary	33

<b>3</b>	<b>METHODOLOGY</b>	<b>34</b>
3.1	Introduction	34
3.2	Positivism Research Approach	34
3.3	Research Operational Framework	35
	3.3.1 Literature Review	35
	3.3.2 Empirical Study	40
	3.3.3 Framework Development	48
	3.3.4 Prototype Development and Evaluation	49
	3.3.5 Interpretation of Results	51
3.4	Ethical Considerations	51
3.5	Summary	51
<b>4</b>	<b>MODEL FORMULATION</b>	<b>53</b>
4.1	Introduction	53
4.2	Initial Model Development	53
4.3	Hypotheses Development	54
	4.3.1 Development of the Structural Model	55
	4.3.2 Development of the Measurement Model	60
4.4	Expert Validity	66
	4.4.1 Face Validity	66
	4.4.2 Content Validity	66
4.5	Pilot study	68
4.6	Summary	71
<b>5</b>	<b>EMPIRICAL STUDY</b>	<b>72</b>
5.1	Introduction	72
5.2	Respondents Demographic Details	72
5.3	Assessment of Measurement Model	73
	5.3.1 Internal Consistency	73
	5.3.2 Indicator Reliability	74
	5.3.3 Validity	76
	5.3.4 Summary of Results	79
5.4	Assessment of Structural Model	80
	5.4.1 Collinearity Assessment	80
	5.4.2 Coefficient of Determination ( $R^2$ )	81
	5.4.3 Hypotheses Testing	83
5.5	Blindfolding and Predictive Relevance of Model	85
	5.5.1 Assessment of Effect Size ( $f^2$ )	85
	5.5.2 Summary of Results (Path Coefficients and Effect Size)	86
	5.5.3 Assessment of Predictive ( $Q^2$ ) Relevance	87
	5.5.4 Reputation Model ( $R^2$ and $Q^2$ ) Measures	87
	5.5.5 Importance-Performance Map Analysis (IPMA)	88
5.6	Hypothesized Model	88
5.7	Summary	89

<b>6</b>	<b>IMPLEMENTATION OF THE PROPOSED MODEL</b>	<b>90</b>
6.1	Introduction	90
6.2	Implementation Framework (IF)	90
	6.2.1 Continuance Participation Model (CPM)	91
	6.2.2 Continuance Participation Analysis Process	92
6.3	Expert Review	98
6.4	Summary	98
<b>7</b>	<b>PROTOTYPE DEVELOPMENT</b>	<b>99</b>
7.1	Introduction	99
7.2	Online Community Checklist Tool	99
	7.2.1 Initial Analysis	99
	7.2.2 Functional Specifications	99
	7.2.3 Prototype Construction	100
	7.2.4 Prototype Implementation	108
7.3	Summary	108
<b>8</b>	<b>RESULTS AND DISCUSSIONS</b>	<b>109</b>
8.1	Introduction	109
8.2	Evaluation of the Implementation Framework	109
8.3	Results and Findings of Prototype	111
	8.3.1 Test Instrument and Participants	112
	8.3.2 Usability Test Survey	113
8.4	Discussions	121
8.5	Summary	122
<b>9</b>	<b>CONCLUSIONS AND FUTURE WORK</b>	<b>123</b>
9.1	Introduction	123
9.2	Research Contributions	124
9.3	Limitations	125
9.4	Future Work Directions	125
	<b>REFERENCES</b>	<b>127</b>
	<b>APPENDICES</b>	<b>149</b>
	<b>BIODATA OF STUDENT</b>	<b>188</b>
	<b>LIST OF PUBLICATIONS</b>	<b>189</b>

## LIST OF TABLES

<b>Table</b>	<b>Page</b>
2.1 Literature on Online Communities Definition	8
2.2 Theoretical Models used in Continuance Studies	15
2.3 Summary of Gap Analysis on Reviewed Theoretical Models	27
3.1 Assessment of Measurement Model	44
3.2 Assessment of Structural Model	46
4.1 Operational Definition of Constructs	54
4.2 Measures of Constructs	60
4.3 Indicators for Social Support	62
4.4 Indicators for Satisfaction	63
4.5 Indicators for Attitude	63
4.6 Indicators for Perceived Behavioural Control	64
4.7 Indicators for Subjective Norms	64
4.8 Indicators for Perceived Value	65
4.9 Indicators for Continuance Participation Intention	65
4.10 Indicators for Continuance Participation Behaviour	66
4.11 Content Validation Results	67
4.12 Pilot Study Comments and Suggestions	68
4.13 Number of Indicators for Initial Instrument	68
4.14 Factor Loadings	69
4.15 Reliability Test for Initial Instrument	70
5.1 Demographic Details of the Respondents	73
5.2 Reliability of Constructs	74



5.3	Indicator Loading Factors (original)	75
5.4	Indicator Loading Factors (after modification)	76
5.5	AVE of constructs	77
5.6	Cross Loadings	78
5.7	Square Root of AVE	79
5.8	Measurement Model Results Summary	80
5.9	Inner VIF Values	81
5.10	Model Fit Indicator	81
5.11	Path Coefficients	82
5.12	Hypothesis Testing	83
5.13	Significance Testing Results of the Structural Model Path Coefficients	83
5.14	Summary Results of Hypothesis Testing	84
5.15	Results of the Effect Size ( $f^2$ )	86
5.16	Summary of Path Coefficients and Effect Size for CPB and CPI	86
5.17	Summary of Path Coefficients and Effect Size for PV and SAT	87
5.18	Construct Crossvalidated Redundancy	87
5.19	Results of $R^2$ and $Q^2$ Values	88
5.20	IPMA Results	88
6.1	Checklist Items for Research Constructs	95
6.2	Weighted Checklist Template	97
6.3	Assessment of Results	98
7.1	Functions in OC <sup>2</sup> T	100
7.2	Table Checklist	107
7.3	Table Users	107

8.1	Demographics of Expert Reviewers	109
8.2	Demographics of Respondents	112
8.3	Coefficient of Variation of PUEU	114
8.4	Summary of Agreement Level for PUEU Acceptance Test	115



## LIST OF FIGURES

Figure	Page
2.1 The Study Model	9
2.2 A Conceptual Template for Methodology Construction	14
2.3 Theory of Reasoned Action	16
2.4 Theory of Planned Behaviour	18
2.5 Decomposed Theory of Planned Behaviour	19
2.6 Technology Acceptance Model	20
2.7 Revised Technology Acceptance Model	21
2.8 IS Success Model	22
2.9 The Expectation Confirmation Model	23
2.10 Unified Theory of Acceptance and Use of Technology	24
3.1 Research Operational Framework	36
3.2 Data Analysis Process	43
3.3 Prototype Development Processes	49
4.1 Theoretical Model	53
4.2 Structural Model for Continuance Participation in Online Communities	55
4.3 Measurement Model for Continuance Participation in Online Communities	61
5.1 PLS Algorithm Reputation Model Results	82
5.2 Structural Testing Model Results	85
5.3 Continuance Participation Model (CPM)	89
6.1 Implementation Framework	91
6.2 Continuance Participation Model (CPM)	92

7.1	System Architecture for OC <sup>2</sup> T	101
7.2	Flow Chart Design	102
7.3	Login Page	103
7.4	Home Page	103
7.5	Checklist Page	104
7.6	Checklist Items Page	104
7.7	Measures for Social Support Construct	105
7.8	Results Page	105
7.9	Past Results Record Page	106
7.10	Use Case Diagram	106
7.11	Content and Navigation Structure of OC <sup>2</sup> T	107
8.1	Mean Scores for PUEU	113
8.2	Standard Deviation for PUEU	114
8.3	Level of Agreement for Item PUEU1	115
8.4	Level of Agreement for Item PUEU2	116
8.5	Level of Agreement for Item PUEU3	116
8.6	Level of Agreement for Item PUEU4	117
8.7	Level of Agreement for Item PUEU5	117
8.8	Level of Agreement for Item PUEU6	118
8.9	Level of Agreement for Item PUEU7	118
8.10	Level of Agreement for Item PUEU8	119
8.11	Level of Agreement for Item PUEU9	119
8.12	Level of Agreement for Item PUEU10	120
8.13	Level of Agreement for Item PUEU11	120



## LIST OF ABBREVIATIONS

ACP	Average Congruency Percentage
ATT	Attitude
AVE	Average Variance Extracted
CA	Cronbach Alpha
CPB	Continuance Participation Behaviour
CPI	Continuance Participation Intention
CPM	Continuance Participation Model
CR	Composite Reliability
DTPB	Decomposed Theory of Planned Behaviour
ECM	Expectation Confirmation Model
F2	Effect Size
IF	Implementation Framework
IPMA	Importance-Performance Map Analysis
IS	Information Systems
OC2T	Online Community Checklist Tool
PBC	Perceived Behavioural Control
PLS	Partial Least Squares
PUEU	Perceived Usefulness and Ease of Use
PV	Perceived Value
Q2	Predictive Relevance
R2	Coefficient of Determination
SAT	Satisfaction
SC	Social Support

SEM	Structural Equation Modeling
SN	Subjective Norms
SNS	Social Networking Sites
SST	Social Support Theory
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology

# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Social commerce, a new stream in e-commerce is an emerging platform with the increased popularity of Social Networking Sites (SNSs) such as the Facebook, LinkedIn, Twitter, wikis and micro blogging (Liang *et al.*, 2011; Hajli and Khani, 2013a; Huang and Benyoucef, 2013b). With the massive involvement of the internet, Web 2.0 instances hold great potential in reshaping the way consumers interact online. Web 2.0 is described as web pages that uses a two-way stream of communication that connects users, allowing them to socialize online (Evans, 2008) and share their own user-generated content (Lefebvre, 2007). Web 2.0 technologies has enabled individuals to develop and nourish relationships in detached social communities, to create and extend networks, and to produce combined effort through a collective interaction patterns of users (Granovetter, 1983). Additionally, these social interactions are deemed significant in promoting and ensuring the successful operation of online community sites (Corrocher, 2011).

Prior research suggests that in the next generation of online businesses, online communities play a pertinent role in attracting new customers (Bagozzi and Dholakia, 2002c; Ridings and Gefen, 2004). In fact, in the recent era the emergence of social commerce and its co-create environment has changed the passive behaviour of users to become active content creators on the internet (Hajli, 2012). With more and more people connecting through online communities, there is a huge need to study on online communities from the intention and behavioral perspectives. This study is crucial and has become a key research area in the Information Systems (IS) field (Bhattacharjee, 2001b; Bhattacharjee and Premkumar, 2004) with past research reporting on sites failing to retain operation due to lack of value these sites impart to the online communities (Bettoni *et al.*, 2007).

Investigating on continuance participation is focal because the social values and potential of online communities cannot be realized without users' ongoing participation (Jina *et al.*, 2010). At the same time, the sustainability and operability of the websites are highly dependent on the continuance usage and engagement of its own users (Al-Debei *et al.*, 2013). In IS however, research studies embarking upon different information technology widely covers aspects related to pre-adoption rather than post-adoption (Karahanna *et al.*, 1999; Hsu *et al.*, 2007; Al-Debei *et al.*, 2013).



Statistically reporting, site rankings provided by Alexa.com show that three of the world's ten most heavily trafficked websites are SNSs which include Facebook and Twitter. Other forecasts predict that social media sites will earn \$14.9 billion in revenue in 2012 and \$29.1 billion in 2015 (Gartner, 2011) mostly through advertising. SNSs depend on expanding their user bases to increase revenue and profits and thus identification of constructs that influence users' intention and behaviour to adopt and continuously use a particular SNS is a critical issue.

## 1.2 Problem Statement

Literature has reported that the lack of attention given for social related constructs influence the sustainability of online communities (Nolker and Zhou, 2005; Al-Debei *et al.*, 2013; Hajli, 2014; Tsai and Bagozzi, 2014). Past research has also reported that evidence on sustained use of online communities is scarce (Jin *et al.*, 2010a; Corrocher, 2011; Akwesi and Lekhanya, 2014). Additionally, many online communities have been reported to spring up but not surviving (Akwesi and Lekhanya, 2014) with past research also reporting on failing sites due to the limitation of social values imparted to online communities (Bettoni *et al.*, 2007). Although there are a handful of IS continuance models developed and used for IS systems, there is a lack of specific continuance model emphasizing on social related constructs for online community sites (Al-Debei *et al.*, 2013; Hajli, 2014). The social related constructs, a key determinant of online communities is a limitation that needs to be addressed (Hajli *et al.*, 2015). In addition, lack of guidelines in the development of online community sites in ensuring continuance participation and the sustainability of online communities are vital issues to online community developers (Al-Debei *et al.*, 2013; Hajli, 2014) that needs to be addressed. This is evident because documents reporting on the development or the design of popular social networks are yet to be published (Akhgar, 2013). With thousands of social networks springing up it is crucial to establish a guideline for ensuring the sustainability of online communities (Al-Debei *et al.*, 2013).

Therefore, answering to the following research questions was an apparent motivation for this research to be conducted:

- i. What are the constructs that influence the intention and behaviour to continue using online communities?
- ii. How to ensure the sustainability of online communities?

### **1.3 Research Objectives**

The main objective of this research is to identify constructs influencing the intention and behaviour to continue participating in online communities. Thus it hopes to achieve the following objectives:

- i. To analyse the constructs that influence the intention and behaviour to continue participating in online communities
- ii. To propose a continuance participation model for evaluating the sustainability of online communities

### **1.4 Scope of Study**

This research was conducted on the basis of developing a theoretical model to explain online communities' continuance participation intention and behavior in SNSs. The foundations of the constructs proposed for the theoretical framework are based on the literature study, analysis on the existing SNSs as well as expert reviews.

The context of this study is based on established SNSs such as Facebook, Twitter, LinkedIn and Google+. The overwhelming responses in the adoption rate of these sites make this phenomenon worth investigating.

This study is based on empirical research and focuses on respondents with experience using the SNSs. The proposed framework is then validated by a prototype to evaluate the sustainability of online communities.

### **1.5 Significance of Study**

This study has made the following contributions:

#### **1.5.1 Theoretical Contribution**

- i. The model proposed in this study contributes to the online community literature as a theory model by grounding the intention and behavioural constructs
- ii. The addition of the social support constructs; informational and emotional, satisfaction and perceived value constructs contribute by improving the standard theory of planned behaviour constructs in driving continuance participation in online communities

### **1.5.2 Practical Contribution**

- i. The proposed model aids developers to focus on pertinent constructs required for continuance engagement of online communities
- ii. The proposed model also serves as a guideline for evaluating the sustainability of online communities

### **1.6 Organization of Thesis**

This study comprises of nine chapters. A brief description of each chapter is presented as follows:

Chapter 1 presents the overview and background of the research. Particularly, it presents the problem statement, research objectives, research scope and significance of the study.

Chapter 2 details out the literature review undertaken for the purpose of this research which comprises of online communities, related models on information systems continuance participation as well as related models on online communities and highlights the research gap in the online community research.

Chapter 3 explains the methodology and data analytical techniques carried out in this study. This chapter is established on positivism research approach, quantitative method and survey design. The methodology of this study is also discussed.

Chapter 4 discusses the development of the hypothesized model which includes the structural and measurement model. This chapter also discusses the pilot study findings.

Chapter 5 presents the in-depth analysis of the empirical evaluation of the theoretical model. Specifically, it describes the assessment of measurement and structural model, blindfolding and predictive relevance of model using the Partial Least Square (PLS) of Structural Equation Modeling (SEM) approach.

Chapter 6 discusses on the implementation of the proposed model. This includes the mapping of the hypothesized model with the measures and continuance participation analysis process.

Chapter 7 illustrates the prototype design with detailed steps involved in the development which includes the initial analysis, functional specifications, prototype construction and prototype implementation followed by the evaluation involved in the testing of the prototype using the system usability scale.

Chapter 8 presents detailed discussion on the findings of this study. This includes the significance of the relationships between proposed constructs, evaluation of proposed model and implementation framework, prototype and summary of results.

Chapter 9 presents the theoretical and practical contributions of this research. Directions for future work based on the limitations are also addressed in the present study.

## REFERENCES

- Aaron, W. 2017. Harnessing the social web to enhance insights into people's opinions in business, government and public administration. *Information Systems Frontiers*, 19, 231-251.
- Abdullah, M., Feras, A. & Mutaz 2011. On-Line Mobile Staff Directory Service: Implementation for the Irbid University College (IUC). *Ubiquitous Computing and Communication Journal*, 6, 25-33.
- Agarwal, R., Gupta, A. & Kraut, R. 2008. Editorial Overview - The Interplay Between Digital and Social Networks. *Information Systems Research*, 19, 243-252.
- Ajzen, I. 1985. *From intentions to actions: A theory of planned behavior*. In J. Kuhl & J. Beckmann (Eds.), *Action-Control: From Cognition to Behaviour*. Springer-Verlag, Heidelberg.
- Ajzen, I. 1987. *Attitudes, traits, and actions: A theory of planned behavior*. In L. Berkowitz (Ed.), *Advances in experimental social psychology*: . New York: Academic Press.
- Ajzen, I. 1991. The theory of planned behavior. *Organization Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. 2001. Nature and Operation of Attitudes. *Annual Reviews Psychology*, 52, 27-58.
- Ajzen, I. 2002. Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior. *Journal of Applied Social Psychology*, 32, 665-683.
- Ajzen, I. & Fishbein, M. 1980. *Understanding Attitudes and Predicting Social Behavior*. Prentice-Hall, Englewood Cliffs, NJ.
- Akhgar, B. & Yates, S. 2011. *Intelligence Management: Knowledge Driven Frameworks for Combating Terrorism and Organized Crime*, Springer, London. 149.
- Akhgar, M. S. B. 2013. Designing a scientific social network site based on a conceptual methodology. *Journal of Systems and Information Technology*, 15, 292-303.
- Akter, S., Ray, P. & D'Ambra, J. 2013. Continuance of mHealth services at the bottom of the pyramid: the roles of service quality and trust. *Electronic Markets*, 23, 29-47.
- Akwesi & Lekhanya 2014. A Theoretic Extension and Empirical investigation of conducting Business Online Social Network: The Continuance Intention Phenomenon. *Journal of Economics and Behavioral Studies*, Vol. 6, 373-385.

- Al-Debei, Al-Lozi & Papazafeiropoulou 2013. Why people keep coming back to Facebook: Explaining and predicting continuance participation from an extended theory of planned behaviour perspective. *Decision Support Systems*, 55, 43-54. Available: DOI <http://dx.doi.org/10.1016/j.dss.2012.12.032>.
- Anonymous. 2015. *Global Web Index*. Available: <https://www.globalwebindex.net> [Accessed 2nd June 2015].
- Armitage, C. & Conner, M. 2001. Efficacy of the theory of planned behaviour: a meta-analytic review. *British Journal of Social Psychology*, 40, 471-499.
- Bagozzi, R. 1980. Causal models in marketing. *Journal of Marketing Management*, 44, 126-128.
- Bagozzi, R. 1981. An Examination of the Validity of Two Models of Attitude. *Multivariate Behavioral Research*, 16, 323-359.
- Bagozzi, R. 2007. The Legacy of the Technology Acceptance Model and a Proposal for a Paradigm Shift. *Journal of the Association for Information Systems*, 8, 244-254.
- Bagozzi, R. & Dholakia, U. 2002a. Intentional social action in virtual communities. *Journal of Interactive Marketing*, 16, 2-21.
- Bagozzi, R. & Dholakia, U. 2002b. International social action in virtual communities. *Journal of Interactive Marketing*, 16, 2-21.
- Bagozzi, R. & Dholakia, U. 2006. Open Source Software User Communities: A Study of Participation in Linux User Groups. *Management Science*, 52, 1099-1115.
- Bagozzi, R. & Gopinath, M. 1999. The role of emotions in marketing. *Journal of the Academy of Marketing Science*, 27, 184-206.
- Bagozzi, R., Yi, Y. & Phillips 1991. Assessing Construct Validity in Organizational Research. *Administrative Science Quarterly*, 36, 421-458.
- Bagozzi, R. P. 2000. On the Concept of Intentional Social Action in Consumer Behavior. *Journal of Consumer Research*, 27, 388-396.
- Bagozzi, R. P. 2005. Socializing Marketing. *Marketing Journal of Research and Management*, 1, 101-111.
- Bagozzi, R. P. & Dholakia, U. M. 2002c. Intentional social action in virtual communities. *Journal of Interactive Marketing*, 16, 2-21.
- Baker, R. & White, K. 2010. Predicting adolescents' use of social networking sites from an extended theory of planned behaviour perspective. *Computers in Human Behavior*, 26, 1591-1597.

- Bambina, A. 2007. *Online Social Support: The Interplay of Social Networks and Computer-Mediated Communication*. Cambria Press, Youngstown, New York.
- Barrera, M. 1986. Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology*, 14, 413–445.
- Beck & Gable 2001. Further validation of the Postpartum Depression Screening Scale. *Nursing Research*, 50, 155-164.
- Bettoni, M. C., Andenmatten, S. & Mathieu, R. 2007. Knowledge cooperation in online communities: a duality of participation and cultivation. *Electronic Journal of Knowledge Management*, 5, 1-6.
- Bharati, P. & Chaudhury, A. 2004. An empirical investigation of decision-making satisfaction in web-based decision support systems. *Decision Support Systems*, 37, 187-197.
- Bhattacharjee, A. 2001a. An empirical analysis of the antecedents of electronic commerce service continuance. *Decision Support Systems*, 32, 201-214.
- Bhattacharjee, A. 2001b. Understanding information systems continuance: an expectation confirmation model. *MIS Quarterly*, 25, 351-370.
- Bhattacharjee, A. 2001c. Understanding Information Systems Continuance: An Expectation Confirmation Model. *MIS Quarterly*, 25, 351-370.
- Bhattacharjee, A. & Premkumar, G. 2004. Understanding changes in belief and attitude toward information technology usage: a theoretical model and longitudinal test. *MIS quarterly*, 28, 229-254.
- Bobbitt, L. & Dabholkar, P. 2001. Integrating attitudinal theories to understand and predict use of technology-based self service: the internet as an illustration. *International Journal of Service Industry Management*, 12, 423-450.
- Boyd, D. & Ellison, N. 2008. Social network sites: definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13, 210-230.
- Breiman, L. & Friedman, J. 1985. Estimating Optimal Transformations for Multiple Regression and Correlation. *Journal of the American Statistical Association*, 80, 580–598.
- Brien, O. 2002. Introduction to Information Systems. *Essentials for the Internetworked E-Business Enterprise*. Eleventh Edition ed.: McGraw-Hill Companies, Inc.

- Brown & Venkatesh, V. 2005. Model of Adoption of Technology in Households: A Baseline Model Test and Extension Incorporating Household Life Cycle. *MIS Quarterly*, 29, 399-426.
- Canniere, D., Pelsmacker, D. & Geuens 2009. Relationship Quality and the Theory of Planned Behavior models of behavioral intentions and purchase behavior. *Journal of Business Research*, 62, 82-92. Available: DOI <http://dx.doi.org/10.1016/j.jbusres.2008.01.001>.
- Cenfetelli, Benbasat, I. & Al-Natour, S. 2008. Addressing the what and how of online services: Positioning supporting-services functionality and service quality for business-to-consumer success. *Information Systems Research*, 19, 161-181.
- Chau, P. & Hu, P. 2001. Information technology acceptance by individual professionals: A model comparison approach. *Decision Sciences*, 32, 699-719.
- Chen, Yen & Hwang 2012a. Factors influencing the continuance intention to the usage of Web 2.0: An empirical study. *Computers in Human Behavior*, 28, 933-941.
- Chen, J., Xu, H. & Whinston, A. 2011. Moderated Online Communities and Quality of User-Generated Content. *Journal of Management Information Systems*, 28, 237-268.
- Chen, S. C., Yen, D. C. & Hwang, M. I. 2012b. Factors influencing the continuance intention to the usage of Web 2.0: An empirical study. *Computers in Human Behavior*, 28, 933-941.
- Chen, W. & Hirschheim, R. 2004. A paradigmatic and methodological examination of information systems research from 1991 to 2001. *Information Systems Journal*, 14, 197-235.
- Chen, Y. 2007. The factors influencing members' continuance intentions in professional virtual communities – a longitudinal study. *Journal of Information Science*, 33, 1-17.
- Cheung, C. & Lee, M. 2007. What drives members to continue sharing knowledge in a virtual professional community? The role of knowledge self-efficacy and satisfaction. In: *Lecture Notes in Computer Science*. Berlin/Heidelberg: Springer. 472-484.
- Chiang 2013. Continuous usage of social networking sites. *Online Information Review*, 37, 851-871.
- Chin 1998. The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295, 295-336.
- Chin 2010. *Handbook of Partial Least Squares, chapter 28, Springer-Verlag*.



- Chirinos, L., Losavio, F. & Boegh, J. 2005. Characterizing a data model for software measurement. *Journal of System and Software*, 74, 207-226.
- Choudrie, J. & Dwivedi, Y. 2005. Investigating the Research Approaches for Examining Technology Adoption Issues. *Journal of Research Practice*, 1.
- Christian, J., Mainelli, F. M. & Pay, R. 2014. Measuring the value of online communities. *Journal of Business Strategy*, 35, 29-42.
- Churchill, G. 1979. A paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research*, 16, 64-73.
- Cohen 1988. *Statistical Power Analysis for the Behavioral Sciences*, 2nd edn, L. Erlbaum Associates, Hillsdale, NJ.
- Conner, M. & Christopher, J. 1998. Extending the Theory of Planned Behavior: A Review and Avenues for Further Research. *Journal of Applied Social Psychology*, 28, 1429-1464.
- Conner, M., Povey, R., Sparks, P., James, R. & Shepherd, R. 2003. Moderating role of attitudinal ambivalence within the theory of planned behaviour. *British Journal of Social Psychology*, 42, 75-94.
- Conner, M. & Sparks, P. 1996. The theory of planned behaviour and health behaviours in predicting health behaviour. ed. M. Conner & P. Norman, *Buckingham: Open University Press*, 121-162.
- Cooper & Schindler 2008. *Business Research Methods*. McGraw-Hill, 2008.
- Corrocher 2011. The adoption of Web 2.0 services: An empirical investigation. *Technological Forecasting and Social Change*, 78, 547-558. Available: DOI <http://dx.doi.org/10.1016/j.techfore.2010.10.006>.
- Coulson 2005. Receiving social support online: An analysis of a computer-mediated support group for individuals living with irritable bowel syndrome. *Cyberpsychology & Behavior*, 8, 580-584.
- Courneya & McAuly, E. 1995. Cognitive Mediators of Social Influence-Exercise Adherence Relationship: A test of Planned Behavior. *Journal of Behavioural Medicine*, 18, 499-515.
- Creswell 2003. *Research design: Qualitative, quantitative, and mixed methods approaches* 2nd edn, Thousand Oaks, CA: Sage.
- Cronbach 1951. Coefficient Alpha and the Internal Structure of Tests. *Psychometrika*, 16.
- Evans & Cowles, D. 1990. Relationship quality in services selling: An interpersonal influence perspective. *Journal of Marketing*, 54, 68-81.

- Davidson, A. & Morrison, D. 1983. Predicting contraceptive behavior from attitudes: A comparison of within-versus between-subjects procedures. *Journal of Personality and Social Psychology*, 45, 997-1009.
- Davies, R. 2009. Weighted checklists as an evaluation tool
- Davis 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.
- Davis 1992. Instrument review: Getting the most from your panel of experts. *Applied Nursing Research*, 5, 194-197.
- Davison, L., McNeill, L. & Ferguson, S. 2007. Magazine communities: brand community formation in magazine consumption. *International Journal of Sociology and Social Policy*, 27, 208-220.
- DeLone & McLean 1992. Information Systems Success: The Quest for the Dependent Variable. *Information Systems Research*, 3, 60-95.
- DeLone, W. M., E. 2003. The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems*, 19, 9-30.
- Deng, X., William, J., Said, S., Tor, J., Pearson, J. M. & Raghunathan, S. 2008. A cross-cultural analysis of the end-user computing satisfaction instrument: A multi-group invariance analysis. *Information & Management*, 45, 211-220.
- DeVon, Block, Moyle-Wright, P., Ernst, Hayden & Lazzara 2007. A psychometric Toolbox for testing Validity and Reliability. *Journal of Nursing scholarship*, 39, 155-164.
- Dholakia, Bagozzi, R. & Pearo 2004. A social influence model of consumer participation in network-and small-group-based virtual communities. *International journal of research in marketing*, 21, 241-263.
- Dianne, M. & Carolyn, J. 2008. Privacy and Social Networking Sites. *Using Emerging Technologies to Enhance Student Engagement*. Wiley InterScience.
- Dobratz 2004. The Life Closure Scale: Additional psychometric testing of a tool to measure psychological adaptation in death and dying. *Research in Nursing & Health*, 27, 52-62.
- Doll, W. & Torkzadeh, G. 1988. The measurement of end-user computing satisfaction. *MIS Quarterly*, 12, 259-227.
- Donald, P. 1977. Considerations in the Choice of Interobserver Reliability Estimates *Journal of Applied Behaviour Analysis*, 10, 103-116.
- Eagly, A. & Chaiken, S. 1993. *The Psychology of Attitudes*, Fort Worth, TX: Harcourt Brace Jovanovich.

- Eastin, M. & LaRose, R. 2005. Alt.support: Modeling social support online. *Computers in Human Behavior*, 21, 977-992.
- Efron, B. 1979. Bootstrap methods: Another look at the jackknife. *Annals of Statistics*, 7, 1-26.
- Efron, B. & Tibshirani, R. 1993. *An Introduction to the Bootstrap*, New York: Chapman Hall.
- Etezadi Amoli, J. & Farhoomand, A. 1996. A structural model of end user computing satisfaction and user performance. *Information & Management*, 30, 65-73.
- Evans 2008. *Social Media Marketing: An Hour a Day*. Indianapolis, IN, Wiley.
- Faraj, S. & Johnson, S. L. 2011. Network Exchange Patterns in Online Communities. *Organization Science*, 22, 1464-1480.
- Farkas, M. 2007. *Social Software in Libraries: Building Collaboration, Communication, and Community Online*. Information Today, Medford, NJ.
- Faulkner, L. 2003. Beyond the Five-User Assumption: Benefits of Increased Sample Sizes in Usability Testing. *Behaviour Research Methods, Instruments and Computers*, 35.
- Finstad, K. 2010. The usability metric for user experience. *Interact Comput*, 22, 323-327.
- Fishbein, M. & Ajzen, I. 1975. *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Addison-Wesley, Reading, MA.
- Flavian, C. & Guinaliu, M. 2005. The influence of virtual communities on distribution strategies in the internet. *International Journal of Retail & Distribution Management Science*, 33, 405-425.
- Fornell & Larcker 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 48, 39-50.
- Fournier, S. & Mick 1999. Rediscovering satisfaction. *Journal of Marketing*, 63, 5-23.
- Foxall, G. 1997. *Marketing Psychology: The Paradigm in the wings*, Macmillan, London.
- Garrity & Sanders 1998. Dimensions of information systems success. *Information systems success measurement*, 13-45.
- Gartner, I. 2011. "Gartner says worldwide social media revenue is on pace to total \$10.3 billion in 2011 and grow to \$14.9 billion in 2012" available at: [www.gartner.com/it/page](http://www.gartner.com/it/page).

- Gefen, D., Straub, D. & Boudreau 2000. Structural Equation Modeling and Regression: Guideline for Research Practice. *Communications of the Association for Information Systems*, 4, 1-70.
- Geisser, S. 1975. The redictive sample reuse method with applications. *Journal of the American Statistical Association*, 70, 320-328.
- Gelderman, M. 1998. The relation between user satisfaction, usage of information systems, and performance. *Information & Management*, 34, 11-18.
- George 2004a. The theory of planned behavior and Internet purchasing. *Internet Research*, 14, 198–212.
- George 2004b. The theory of planned behavior and Internet purchasing. *Internet Research*, 14, 198-212.
- George, A. & Gordon, P. 2010. Initial Scale Development: Sample Size for Pilot Studies. *Educational and Psychological Measurement*, 70, 394–400.
- George, A., Marcoulides, Wynne & Saunders, C. 2009. A critical look at partial least squares modeling. *MIS Quarterly*, 33.
- Gonner, M. & Armitage, G. I. 1998. Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Social Psychology*, 28, 1429-1464.
- Goodhue, D. & Thompson, R. 1995. Task-technology fit and individual performance. *MIS Quarterly*, 19, 213–233.
- Gottlieb & Bergen 2010. Social support concepts and measures. *Journal of Psychosomatic Research*, 69, 511-520.
- Gotz, O., Liehr Gobbers, K. & Krafft, M. 2010. Evaluation of structural equation models using the partial least squares (PLS) approach in Handbook of Partial Least Squares: Concepts, Methods and Applications, springer handbooks comp.statistics, Heidelberg. 691-711.
- Granovetter, M. 1983. The strength of weak ties - a network theory revisited. *Sociological Theory*, 1, 201-233.
- Gruzd, A., Wellman, B. & Takhteyev, Y. 2011. Imagining Twitter as an imagined community. *American Behavioral Scientist*, 55, 1294-1318.
- Gu, B., Konana, P., Rajagopalan, B. & Chen, H. W. M. 2007. Competition Among Virtual Communities and User Valuation: The Case of Investing-Related Communities. *Information Systems Research*, 18, 68-85.
- Guimaraes, T. & Igbaria 1997. M. Client/server system success: Exploring the human side. *Decision Sciences*, 28, 851–875.

- Gundotra & Gundotra, V. 2011. Introducing the Google+ project: Real-life sharing, rethought for the web. *Google Official Blog*. Available from: <https://googleblog.blogspot.my> Retrieved 8th August, 2017].
- Gustafsson, A., Johnson & Roos, I. 2005. The effects of customer satisfaction, relationship commitment dimensions, and triggers on customer retention. *Journal of Marketing*, 69, 210-218.
- Haakma, R. & Bouwhuis, D. 2009. Theoretical foundation and validity of a component based usability questionnaire. *Behaviour and Information Technology*, 2, 121-137.
- Hadi, R., Daud, W. M. F. W. & Ibrahim, N. H. 2011. The development of history educational game as a revision tool for Malaysia school education. *IVIC'11 Proceedings of the Second international conference on Visual informatics: sustaining research and innovations*, 2, 39-49.
- Hagel, J. & Armstrong, A. Net gain: Expanding Markets through Virtual Communities, Harvard Business School Press, Boston, MA, 1997.
- Hair, Black, Babin & Anderson 2010. *Multivariate Data Analysis*. Pearson.
- Hair, J., Hult, M., Ringle, C. & Sarstedt, M. 2014. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* SAGE Publications, Inc
- Hair, J., Ringle, C. & Sarstedt, M. 2011. PLS-SEM: Indeed a Silver Bullet. *Journal of Marketing Theory and Practice*, 19, 139-151.
- Hair, J., Sarstedt, M., Ringle, C. & Gudergan, S. 2018. *Advanced Issues in Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks, CA: Sage.
- Hajli, M. 2012. An integrated model for e-commerce adoption at the customer level with the impact of social commerce. *International Journal of Information Science and Management*, 16, 77-97.
- Hajli, M. & Khani, F. 2013. Establishing Trust in Social Commerce through Social Word of Mouth. *International Journal of Information Science and Management*, 39-54.
- Hajli, N. 2013a. Establishing Trust in Social Commerce through Social Word of Mouth. *International Journal of Information Science and Management*, 39-54.
- Hajli, N. 2013b. A research framework for social commerce adoption. *Information Management and Computer Security*, 21, 144-154.
- Hajli, N. 2014. The role of social support on relationship quality and social commerce. *Technological Forecasting and Social Change*, 87, 17-27.

- Hajli, N. 2015. Social commerce constructs and consumer's intention to buy. *International Journal of Information Management*, 35, 183-191. Available: DOI <http://dx.doi.org/10.1016/j.ijinfomgt.2014.12.005>.
- Hajli, N. & Khani, F. Establishing Trust in Social Commerce through Social Word of Mouth. e-Commerce in Developing Countries: With Focus on e-Security (ECDC), 7th International Conference on e-Commerce, 2013b. 1-22.
- Hajli, N., Lin, X., Featherman, M. & Wang, Y. 2014. Social word of mouth: How trust develops in the market. *International Journal of Market Research*, 56.
- Hajli, N., Mohana, S., Powell, P. & Love, P. 2015. Continuance Participation in On-line Communities: a Social Commerce Perspective. *Technological Forecasting and Social Change Journal*, 96, 232-241.
- Haladyna, T. 1999. Developing and Validating multiple-choice test items. New Jersey: Lawrence Erlbaum.
- Hamid, R., Russell, B., Nicholas, D. & Watkinson, A. 2014. Do online communities support research collaboration. *Aslib Journal of Information Management*, 66, 603-622.
- Hampton, K., Goulet, Rainie, L. & Purcell, K. 2011. Social networking sites and our lives *Washington, DC: Pew Research Center's Internet & American Life Project*, 2012.
- Harris, I., Mainelli, M. & O'Callaghan, M. 2002. Evidence of worth in not-for-profit sector organizations. *Strategic Change*, 11, 399-410.
- Hartwick, J. & Barki, H. 1994. Explaining the role of user participation in information system use. *Management Science*, 40, 440-465.
- Hassanein, K. & Head, M. 2007. Manipulating perceived social presence through the web interface and its impact on attitude towards online shopping. *International Journal of Human-Computer Studies* 65, 689-708.
- Hatcher, L. 1994. A Step-by-Step Approach to Using the SAS® System for Factor Analysis and Structural Equation Modeling. Cary, NC: SAS Institute, Inc.
- Henseler, J., Ringle, C. & Sinkovics, R. 2009. The use of partial least squares path modeling in international marketing. *New Challenges to International Marketing Advances in International Marketing Emerald Group Publishing Limited*, 277-319.
- Hill, K. & Hughes, J. 1998. Cyberpolitics: Citizen Activism in the Age of the Internet. *Lanham, MD: Rowman & Littlefield Publishers, Inc.*

- Hirschheim, R. & Klein 1992. Paradigmatic influences on information systems development methodologies: Evolution and conceptual advances. *Advances in Computers*, 34, 293-392.
- House 1981. *Work Stress and Social Support*. Reading, MA: Addison-Wesley.
- Hsiao, K., Lin, J., Wang, X., Lu, H. & Yu, H. 2010. Antecedents and consequences of trust in online product recommendations: an empirical study in social shopping. *Online Information Review*, 34, 935-53.
- Hsu 2013. The Management of Sports Tourism: A Causal Modeling Test of the Theory of Planned Behaviour. *International Journal of Management*, 30, 474-491.
- Hsu & Chiu 2004. Predicting electronic service continuance with a decomposed theory of planned behaviour. *Behaviour & Information Technology*, 23, 359-373.
- Hsu, C. & Lin, J. 2008. Acceptance of blog usage: the roles of technology acceptance, social influence and knowledge sharing motivation. *Information & Management*, 45, 65-74.
- Hsu, M., Ju, T., Yen, C. & Chang, C. 2007. Knowledge sharing behaviour in virtual communities: the relationship between trust, self-efficacy, and outcome expectations. *International Journal of Human Computer Studies*, 65, 153-169.
- Huang & Benyoucef 2013a. From e-commerce to social commerce: A close look at design features. *Electronic Commerce Research and Applications*. Available: DOI <http://dx.doi.org/10.1016/j.elerap.2012.12.003>.
- Huang & Benyoucef 2013b. From e-commerce to social commerce: A close look at design features. *Electronic Commerce Research and Applications*. Available: DOI <http://dx.doi.org/10.1016/j.elerap.2012.12.003>.
- Huang, Nambisan, P. & Uzuner, O. Informational support or emotional support: Preliminary study of an automated approach to analyze online support community contents. International Conference on Information Systems (ICIS 2010), 2010 St. Louis, MO.
- Hulland, J. 1999. Use of partial least squares (PLS) in strategic management research: a review of four recent studies. *Strategic Management Journal*, 20, 195-204.
- Hwang, K., Ottenbacher, A., Green, A., Cannon-Diehl, M., Richardson, O. & Bernstam, E. 2010. Social support in an Internet weight loss community. *International Journal of Medical Informatics*, 79, 5-13.

- Igbaria, M. & Tan, M. 1997. The consequences of the information technology acceptance on subsequent individual performance. *Information & Management*, 32, 113-121.
- Jang, H., Olfman, L., Ko, I., Koh, J. & Kim, K. 2008. The influence of on-line brand community characteristics on community commitment and brand loyalty. *International Journal of Electronic Commerce*, 12, 57-80.
- Jary, D. 2006. Hypothetico-deductive model. *The Sage Dictionary of Social Research Methods*.
- Jayaratra, N. 1994. Understanding and Evaluating Methodologies: NIMSAD, a Systematic Framework McGraw-Hill, Inc. New York, NY, USA.
- Jin, Matthew & Christy 2010a. Predicting continuance in online communities: model development and empirical test. *Behaviour & Information Technology*, 29, 383–394.
- Jin, X., Lee, M. & Cheung, C. 2009. How to keep members using the information in a computer supported social network. *Computers in Human Behavior*, 25, 1172-1181.
- Jin, X. L., Lee, M. K. O. & Cheung, C. M. K. 2010b. Predicting continuance in online communities: model development and empirical test. *Behaviour & Information Technology*, 29, 383–394.
- Jina, X.-L., Lee, M. K. O. & Cheung, C. M. K. 2010. Predicting continuance in online communities: model development and empirical test. *Behaviour & Information Technology*, 29, 383–394.
- Johnson, S. L., Faraj, S. & Kudaravalli, S. 2014. Emergence of Power Laws in Online Communities: The Role of Social Mechanisms and Preferential Attachment. *MIS Quarterly*, 38, 795-808.
- Joseph, William, Barry, Rolph, E. & Ronald, L. 2006. Multivariate Data Analysis, 6th edn, *Pearson Prentice Hall, Pearson Education, Inc.*, Upper Saddle River, New Jersey 07458.
- Jung 2008. Amos with research method. *Taipei: Wunan*.
- Jung, H., Ozkaya, E. & LaRose, R. 2014. How does online social networking enhance life satisfaction? The relationships among online supportive interaction, affect, perceived social support, sense of community, and life satisfaction. *Computers in Human Behavior*, 30, 69-78.
- Jurison, J. 1996. The temporal nature of IS benefits: A longitudinal study. *Information & Management*, 30, 75-79.
- Kalafatis, Pollard, M., East, R. & Tsogas 1999. Green marketing and Ajzen's theory of planned behaviour: a cross-market examination. *Journal of Consumer Marketing*, 16, 441-460.



- Kannan, P. K., Chang, A. & Whinston, A. B. 2000. Electronic communities in e-business: Their role and issues. *Information Systems Frontiers*, 1, 415-426.
- Karahanna, E., Straub, D. & Chervany, N. 1999. Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, 23, 183-213.
- Kelly 1999. *Measurement Made Accessible: A Research Approach Using Qualitative, Quantitative & Quality Improvement Methods*. Sage. Thousand Oaks, CA.
- Khechine, H., Lakhal, S., Pascot, D. & Bytha, A. 2014. UTAUT model for blended learning: the role of gender and age in the intention to use webinars. *Interdisciplinary Journal of E-Learning and Learning Objects*, 10, 33-52.
- Kiesler, S. & Kraut, R. 1999. Internet use and ties that bind. *American Psychologist*, 54, 783–784.
- Kim, Chan & Gupta 2007. Value-based adoption of mobile internet: an empirical investigation. *Decision Support Systems*, 43, 111-126.
- Kim, Park, J. Y. & Jin, B. 2008. Dimensions of online community attributes: Examination of online communities hosted by companies in Korea. *International Journal of Retail & Distribution Management* 36, 812-830.
- Kim, A. J. 2000. *Community Building on the Web: Secret Strategies for Successful Online Communities*. Berkeley, CA: Peachpit Press.
- Kim, B. 2010. An empirical investigation of mobile data service continuance: Incorporating the theory of planned behavior into the expectation – confirmation model. *Expert Systems with Applications*, 37, 7033-7039.
- Kim, S. & Park, H. 2013. Effects of various characteristics of social commerce (s-commerce) on consumers' trust and trust performance. *International Journal of Information Management*, 33, 318-332.
- Klasnja, P. & Pratt, W. 2012. Mobile-phone health interventions. *Journal of Biomedical Informatics*, 45, 184-198.
- Koh, J. & Kim, Y. 2004. Knowledge sharing in virtual communities: an e-business perspective. *Expert System with Applications*, 26, 155-166.
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyan, T. & Scherlis, W. 1998. Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53, 1017–1031.
- Krejcie & Morgan 1970. Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 30, 607-610.

- Lefebvre 2007. The new technology: the consumer as participant rather than target audience. *Social Marketing Quarterly*, 13, 31-42.
- Lemann, N. Reid Hoffman's Big Dreams for LinkedIn - The New Yorker, October 12, 2015. *The New Yorker*.
- Leone, L., Perugini, M. & Ercolani, A. 2004. Studying, Practicing, and Mastering: A Test of the Model of Goal-Directed Behavior (MGB) in the Software Learning Domain. *Journal of Applied Social Psychology*, 34, 1945-1973.
- Lewis, W., Agarwal, R. & Sambamurthy, V. 2003. Sources of influence on beliefs about information technology use: an empirical study of knowledge workers. *MIS Quarterly*, 27, 657-678.
- Li, H. Virtual Community Studies: A Literature Review, Synthesis and Research Agenda. Proceedings of the Americas Conference on Information Systems, 2004 New York. 2708-2715.
- Liang, Ho, Li & Turban, E. 2011. What Drives Social Commerce: The Role of Social Support and Relationship Quality. *International Journal of Electronic Commerce*, 16, 69-90.
- Liang & Turban, E. 2011. Introduction to the Special Issue Social Commerce: A Research Framework for Social Commerce. *International Journal of Electronic Commerce*, 16, 5-13.
- Light, B. & McGrath, K. 2010. Ethics and social networking sites: a disclosive analysis of Facebook. *Information Technology & People*, 23, 290 - 311.
- Lin 2007. The role of online and offline features in sustaining virtual communities: an empirical study. *Internet Research*, 17, 119-138.
- Lin, T., Wu, S., Hsu, J. & Chou, Y. 2012. The integration of value-based adoption and expectation-confirmation models: an example of IPTV continuance intention. *Decision Support Systems*, 54, 63-75.
- Liu, B. & Kang, J. 2017. Publicness and directedness: Effects of social media affordances on attributions and social perceptions. *Computers in Human Behavior*, 75, 70-80.
- Lu & Cheng 2008. A Study on Spectators' Viewing Behavioral Intention Model in the Chinese Professional Baseball League. *Journal of Physical Education in Higher Education*, 10, 57-71.
- Lu, B., Fan, W. & Zhou, M. 2016. Social presence, trust, and social commerce purchase intention: An empirical research. *Computers in Human Behavior*, 56.
- Lu, H. & Lin, J. 2003. Predicting customer behavior in the market-space: a study of Rayport and Sviokla's framework. *Information & Management*, 40, 1-10.

- Lu, Y., Zhao, L. & Wang, B. 2010. From virtual community members to C2C e-commerce buyers: trust in virtual communities and its effect on consumers' purchase intention. *Electronic Commerce Research & Applications*, 9, 346-360.
- Lua, James & Yua 2005. Personal innovativeness, social influences and adoption of wireless Internet services via mobile technology. *Journal of Strategic Information Systems*, 14, 245-268.
- Lynn 1986. Determination and quantification of content validity. *Nursing Research*, 35, 382-395.
- Madden, T., Ellen, P. & Ajzen, I. 1992. A comparison of the Theory of Planned Behavior and the Theory of Reasoned Action. *Personality and Social Psychology Bulletin*, 18, 3-9.
- Madjar, N. 2008. Emotional and informational support from different sources and employee creativity. *Journal of Occupational and Organizational Psychology*, 81, 83-100.
- Mainelli, M. 2012. Risk, equity and opportunity: the roles for government finance, Gresham College, 4 December, available at: [www.gresham.ac.uk/lectures-and-events/risk-equality-and-opportunity-the-roles-for-government-finance](http://www.gresham.ac.uk/lectures-and-events/risk-equality-and-opportunity-the-roles-for-government-finance).
- Maloney-Krichmar, D. & Preece, J. 2005. A Multilevel Analysis of Sociability, Usability, and Community Dynamics in an Online Health Community. *ACM Transactions on Computer - Human Interaction*, 12, 201-232.
- Maslow, A. 1954. *Motivation and Personality*. New York: Harper and Brothers.
- Mathieson 1991. Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behavior. *Information Systems Research*, 2, 173-191. Available: <http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=4431053&site=ehost-live>.
- McGraw, K. & Wong, S. 1992. A common language effect-size statistic. *Psychological Bulletin*, 361-365.
- McKenzie, Wood & Kotecki 1999. Establishing content validity: using qualitative and quantitative steps. *Am J Health Behav*, 23, 311-8.
- McLellan, Muddimer & Peres 2012. The effect of experience on system usability scale ratings. *Journal of Usability Studies*, 7, 56-67.
- Mikroyannidis, Alexander & Connolly, T. 2015. Case Study 3: Exploring open educational resources for informal learning. *Responsive Open Learning Environments: Outcomes of Research from the ROLE Project*. Springer International Publishing.
- Miller, R. 1974. The jackknife: A review. *Biometrika*, 61, 1-15.

- Milstein, S. 2009. Twitter for libraries and librarians. *Computers in Libraries*, 29.
- Moore, G. & Benbasat, I. 1991. Development of an Instrument to Measure the Perceptions of Adopting and Information Technology Innovation. *Information Systems Research*, 2, 192-222.
- Neuman 2004. Basics of social research: Qualitative and Quantitative Approaches. Boston: Pearson Education.
- Nguyen, M., Potvin, L. & Otis, J. 1997. Regular Exercise In 30- To 60-Year-Old Men: Combining The Stages-Of-Change Model And The Theory Of Planned Behavior To Identify Determinants For Targeting Heart Health Interventions. *Journal Of Community Health*, 22, 233-246.
- Nie 2001. Stability, interpersonal relationships and the Internet: Reconciling conflicting findings. *American Behavioral Scientist*, 45, 420–435.
- Nolker, R. & Zhou, L. 2005. Social computing and weighting to identify member roles in online communities. *Proceedings of the IEEE/WIC/ACM International Conference on Web Intelligence*.
- Nunnally & Bernstein 1994. *Psychometric Theory*, 3rd edn, McGraw-Hill, New York.
- Obst, P. & Stafurik, J. 2010. Online We are All Able Bodied: Online Psychological Sense of Community and Social Support Found Through Membership of Disability-specific Websites Promotes Well-being for People Living with a Physical Disability. *Journal of Community & Applied Social Psychology*, 20, 525–531.
- Offer, S. 2012. Barriers to social support among low-income mothers. *International Journal of Sociology and Social Policy*, 32, 120-133.
- Orbell, S., Hodgkins, S. & Sheeran, P. 1997. Implementation intentions and the theory of planned behavior. *Personality and Social Psychology Bulletin*, 23, 945-954.
- Orlikowski & Baroudi 1991. Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research*, 2, 1-28.
- Panagiotopoulos, P., Barnett, J., Bigdeli, A. Z. & Sams, S. 2016. Social media in emergency management: Twitter as a tool for communicating risks to the public. *Technological Forecasting & Social Change*, 111, 86-96.
- Park, N., Kee & Valenzuela, S. 2009. Being immersed in social networking environment: Facebook groups, uses and gratifications, and social outcomes. *CyberPsychology & Behavior*, 12, 729-733.

- Pavlou & Chai, L. 2002. What Drives Electronic Commerce Across Cultures? A Cross-Cultural Empirical Investigation of the Theory of Planned Behavior. *Journal of Electronic Commerce Research*, 3, 240-253.
- Pedro, A., Medina, I. G., Fabiola, Z. & Ruth, S. 2014. The importance of Facebook as an online social networking tool for companies. *International Journal of Accounting & Information Management*, 22, 295-320.
- Perugini, M. & Bagozzi, R. 2001. The role of desires and anticipated emotions in goal directed behaviours: Broadening and deepening the theory of planned behaviour. *British Journal of Social Psychology*, 40, 79-98.
- Peterson 2012. The Colbert Bump and The Facebook Follow-Through for Generation Snark: A Test and Extension of The Ajzen's Theory of Planned Behavior for 2012. *Journal of Management Research*, 4.
- Petrick 2002. Experience use history as a segmentation tool to examine golf travellers' satisfaction, perceived value and repurchase intentions. *Journal of Vacation Marketing*, 8, 332-42.
- Petrick & Backman 2002. An examination of the construct of perceived value for the prediction of golf travelers' intentions to revisit. *Journal of Travel Research*, 41, 38-45.
- Polit & Beck 2006. The content validity index: Are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health*, 29, 489-497.
- Porter, C. E. 2004. A typology of virtual communities: A multi-disciplinary foundation for future research. *Journal of Computer-Mediated Communication*, 10.
- Preece, J. 2000. Online Communities: Designing Usability, Supporting Sociability. *England: Wiley*.
- Premkumar, G. & Bhattacharjee, A. 2008. Explaining information technology usage: A test of competing models. *Omega The International Journal of Management Science*, 36, 64-75.
- Qian, Z. & Bock 2005. An Empirical Study on Measuring the Success of Knowledge Repository Systems. *HICSS*, 291.
- Rai, A., Lang, S. & Welker, R. 2002. Assessing the validity of IS success models: An empirical test and theoretical analysis. *Information Systems Research*, 13, 50-69.
- Ramayah, T., Rouibah, K., Gopi, M. & Rangel, G. 2009. A decomposed theory of reasoned action to explain intention to use internet stock trading among Malaysian investors. *Computers in Human Behavior*, 25, 1222-1230.

- Ren, Y., Kraut, R. & Kiesler, S. 2007. Applying Common Identity and Bond Theory to Design of Online Communities. *Organization Studies*, 28, 377-408.
- Rheingold, H. 1993. *The Virtual Community: Homesteading on the Electronic Frontier* MIT Press.
- Ridings, C. M. & Gefen, D. 2004. Virtual community attraction: why people hang out online. *Journal of Computer-Mediated Communication*, 10.
- Riemenschneider, Harrison & Jr, M. 2003. Understanding it adoption decisions in small business: integrating current theories. *Information & Management*, 40, 269. Available: DOI 10.1016/s0378-7206(02)00010-1.
- Roscoe 1975. *Fundamental Research Statistics for the Behavioral Sciences*, 2nd edn, Holt, Rinehart and Winston, Inc., New York, NY.
- Rosen, L., Lim, A., Carrier, L. & Cheever, N. 2011. An examination of the educational impact of text message-induced task switching in the classroom: Educational implications and strategies to enhance learning. *Spanish Journal of Educational Psychology*, 17, 163-177.
- Sanders, Field, Diego, M. & Kalplan, M. 2000. The relationship of Internet use to depression and social isolation among adolescents. *Adolescence*, 35, 237-242.
- Seddon, P. 1997. A respecification and extension of the DeLone and McLean model of IS success. *Information Systems Research*, 8, 240-253.
- Seddon, P. & Kiew, M. 1994. A partial test and development of the DeLone and McLean model of IS success. *Proceedings of the International Conference on Information Systems*. Atlanta, GA: Association for Information Systems, 99-110.
- Sekaran, U. & Bougie, R. 2010. *Research Methods for Business: A Skill Building Approach, 5th Edition*, Chichester: Wiley.
- Sentosa, I. & Mat, N. K. N. 2012. Examining a Theory of Planned Behaviour (TPB) and Technology Acceptance Model (TAM) in Internet Purchasing Using Structural Equation Modeling. *Journal of Arts, Science & Commerce*, 2, 62-77.
- Sergio, L., Rocio, M., Barrero, F. & Cortes, F. 2009. An empirical study of the driving forces behind online communities. *Internet Research*, 19, 378-392.
- Shaw, L. & Gant, L. 2002. In defense of the Internet: The relationship between Internet communication and depression, loneliness, self-esteem, and perceived social support *Cyberpsychology & Behavior*, 5, 157-171.

- Somers, Nelson, K. & Karimi, J. 2003. Confirmatory factor analysis of the end-user computing satisfaction instrument. *Decision Sciences*, 34, 595-621.
- Sommerville, I. 2010. Software Engineering (9th ed.). Essex Pearson Education Limited.
- Sparks, P. 2000. Subjective Expected Utility-Based Attitude-Behavior Models: The Utility of Self-Identity" in Attitudes, Behavior, and Social Context: The Role of Norms and Group Membership. *Applied Social Research*, 31-46.
- Spreng, MacKenzie & Ishavsky 1996. A Reexamination of the Determinants of Consumer Satisfaction. *Journal of Marketing*, 60, 15-32.
- Steenkamp & Baumgartner, H. 2000. On the use of structural equation models for marketing modeling. *International Journal of Research in Marketing*, 17, 195-202.
- Steiner, H. 2009. Reference utility of social networking sites: options and functionality. *Library Hi Tech News*, 26, 4-6.
- Steven, E. 2004. A Comparison of Consensus, Consistency and Measurement Approaches to Estimating Interrater Reliability. *Practical Assessment, Research and Evaluation*, 9.
- Stevens, J. 1996. Applied multivariate statistics for the social sciences, Lawrence Erlbaum Publishers, Mahwah, NJ.
- Stone, M. 1974. Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society*, 36, 111-133.
- Straub, D. 1989. Validating instruments in MIS research. *MIS Quarterly*, 13, 147-169.
- Straub, D., Boudreau, Claude, M. & Gefen, D. 2004. Validation Guidelines for IS Positivist Research. *Communications of the Association for Information Systems*, 13.
- Su, C. C. & Chan, N. K. 2017. Predicting social capital on Facebook: The implications of use intensity, perceived content desirability, and Facebook-enabled communication practices. *Computers in Human Behavior*, 72.
- Sumeet, G., Kim, H. & Zheng, R. 2006. Converting virtual community members into online purchase customers. *The 10th Pacific Asia Conference on Information System (PACIS)*.
- Susanto, A., Chang, Y. & Ha, Y. 2016. Determinants of continuance intention to use the smartphone banking services: an extension to the expectation-confirmation model. *Industrial Management & Data Systems*, 116.

- Sutton, S. 1998. Predicting and explaining intentions and behavior: How well are we doing? *Journal of Applied Social Psychology*, 28, 1317-1338.
- Sweeney, Soutar & Johnson 1997. Retail service quality and perceived value. *Journal of Retailing and Consumer Services*, 4.
- Tabachnick & Fidell 2007. *Using Multivariate Statistics, 5th edn*, Allyn and Bacon, Boston.
- Tan, P. 2013. Applying the UTAUT to understand factors affecting the use of English e-learning websites in Taiwan. *Sage Open*, 3, 2158244013503837.
- Tardy 1985. Social support measurement. *American Journal of Community Psychology*, 13, 187-202.
- Taylor, N. 2007. Public grid computing participation: an exploratory study of determinants. *Information & Management*, 44, 12-21.
- Taylor, S. & Todd, P. 1995. Understanding information technology usage: a test of competing models. *Information Systems Research*, 6, 144-176.
- Tenenhaus, M., Vinzi, V., Chatelin, Y. & Lauro, C. 2005. PLS path modeling. *Computational Statistics & Data Analysis*, 48, 159-205.
- Teo, T. & Wong, P. 1998. An empirical study of the performance impact of computerization in the retail industry. *Omega - The International Journal of Management Science*, 26, 611-621.
- Tolavanan, J. 1998. *Incremental Method Engineering with Modeling Tools, Theoretical Principles and Empirical Evidence*.
- Torkzadeh, G. & Doll, W. 1999. The development of a tool for measuring the perceived impact of information technology on work. *Omega - The International Journal of Management Science*, 27, 327-339.
- Tsai & Bagozzi, R. 2014. Contribution Behaviour in Virtual Communities: Cognitive, Emotional and Social Influences. *MIS Quarterly* 38, 143-163.
- Turner, C., James, R. & Nielsen, J. 2006. Determining Usability Test Sample Size. *International Encyclopedia of Ergonomics and Human Factors*, 3.
- Urbach, N. & Ahlemann, F. 2010. Structural Equation Modeling in Information Systems Research Using Partial Least Squares. *Journal of Information Technology Theory and Application*, 11, 5-40.
- Utz, S. 2015. The function of self-disclosure on social network sites: Not only intimate, but also positive and entertaining self-disclosures increase the feeling of connection. *Computers in Human Behavior*, 45.



- Van Den, I., Stevens, M., Spriensma, A. & Horn, V. 2004. Groningen orthopaedic social support scale: Validity and reliability. *Journal of Advanced Nursing*, 47, 57-63.
- Van Raaij, E. & Schepers, J. 2008. The acceptance and use of a virtual learning environment in China. *Computers & Education*, 50, 838-852.
- Vassilios, P. & Prodromos, D. 2012. Hospital information systems: Measuring end user computing satisfaction (EUCS). *Journal of Biomedical Informatics*, 45, 566-579.
- Venkatesh, V. & Bala, H. 2008. Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences*, 39, 273-312.
- Venkatesh, V. & Brown, S. 2001. A longitudinal investigation of personal computers in homes: adoption determinants and emerging challenges *MIS Quarterly*, 25, 71-102.
- Venkatesh, V. & Davis 2000a. A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*, 46, 186-204.
- Venkatesh, V. & Davis, F. D. 2000b. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies.
- Venkatesh, V. & Morris, M. G. 2000. Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 24, 115-139.
- Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F. D. 2003. User acceptance of information technology: toward a unified view. *MIS Quarterly*, 27, 425-478.
- Venkatesh, V., Thong, Y. & Xu, X. 2012. Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, 36, 157-178.
- Verhoeven, J., Heerwegh, D. & De Wit, K. 2010. Information and communication technologies in the life of university freshmen: An analysis of change. *Computers & Education*, 55, 53-66.
- Waltz, Strickland & Lenz 2005. Measurement in nursing and health research (3rd ed.). New York: Springer.
- Weill, P. & Vitale, M. 1999. Assessing the health of an information system portfolio: An example from process engineering. *MIS Quarterly*, 23, 601-624.
- Wiertz, C. & de Ruyter, K. 2007. Beyond the Call of Duty: Why Customers Contribute to Firm-Hosted Commercial Online Communities. *Organization Studies* (28:3), 28, 347-376.

- Wilkins, L., Swatman, P. & Holt, D. 2009. Adding value to enterprisewide system integration: A new theoretical framework for assessing technology adoption outcome. 53.
- Wixom, B. & Watson, H. 2001. An empirical investigation of the factors affecting data warehousing success. *MIS Quarterly*, 25, 17-41.
- Woodruff 1997. Customer value: the next source of competitive advantage. *Journal of the Academy of Marketing Science*, 25, 139-53.
- Wynd, Schmidt, B. & Schaefer 2003. Two quantitative approaches for estimating content validity. *Western Journal of Nursing Research*, 25, 508-518.
- Xie, B. 2008. Multimodal computer-mediated communication and social support among older chinese Internet users. *Journal of Computer-Mediated Communication*, 13, 728-750.
- Yoon, C. 2011. Theory of Planned Behavior and Ethics Theory in Digital Piracy: An Integrated Model. *Journal of Business Ethics*, 100, 405-417.
- Yu, Li & Wu 2005a. An empirical research of Kinmen tourists' behavioral tendencies model- a case-validation in causal modeling. *Journal of tourist studies*, 11, 355-384.
- Yu, Li & Wu 2005b. An empirical research of Kinmen tourists' behavioral tendencies model- a case-validation in causal modeling. *Journal of tourist studies*, 11, 355-384.
- Zaman, H. B., Robinson, P., Petrou, M., Olivier, P., Timothy, K. & Velastin, S. 2011. Visual Informatics: Sustaining Research and Innovations. In: Media, S. S. B. (ed.).
- Zeithaml 1988. Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing Management*, 52, 2-22.
- Zhang, H., Lu, Y., Gupta, S. & Gao, P. 2015. Understanding group-buying websites continuance. *Internet Research*, 25, 767-793.
- Zhou, T. 2013. An empirical examination of continuance intention of mobile payment services. *Decision Support Systems*, 54, 1085-1091.
- Zhu, Yu & Riezebos, P. 2016. *A research framework of smart education*.
- Zikmund 2003. *Business Research Methods*, 7th edn, South-Western, Ohio.