

THE IMPACT OF SOCIAL MEDIA USE IN COLLABORATIVE LEARNING TOWARDS
LEARNING PERFORMANCE AMONG RESEARCH STUDENTS

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This thesis dedicated to...

*My father, my mother, my wife and my children who taught me that the best kind
of knowledge to have is that, which is learned for its own sake*

My beloved brothers and sisters,

And all my loving family and friends

*My love to you will always remain and thank you so much for being
So patient and being there for me.*

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ABSTRACT

The use of social media for active collaborative learning and engagement to affect learning performance seems to be one of the examined topics in Information Systems domain compared to other technology adoption. However, social media uses distraction from studies and affects study habits, thus, using social media results in academic difficulties. Research students seldom use social media for educational purposes, also they do not use it interactively for collaborative learning and academic purposes. Previous frameworks and models of social media use have many significant negative impacts on student engagement, collaborative learning and learning performance. Thus, this research aims to determine the interactive factors for active collaborative learning and engagement as well as perceptual factors, and social media use for active collaborative learning and engagement to affect learning performance. This study proposes a theoretical model based on the theory of constructivism and theory of Technology Acceptance Model (TAM). A mixed method quantitative and qualitative was used to conduct a survey and interview of samples at five public universities in Malaysia. Data were analysed using AMOS, SPSS and Structural Equation Modelling (SEM) to investigate causal and mediating relationships between variables. Findings of the research revealed that interaction among research students, and interaction with lecturers or supervisors enhance active collaborative learning and engagement were significant at 60% and 73% respectively. It also indicates that active collaborative learning and engagement which affect the learning performance of research students achieved significant ratio of 74%. In addition, perceived ease of use and usefulness define a person's social media use for active collaborative learning and engagement that enhances satisfaction and affect the learning performance of research students were 71% and 74% respectively. It is found that perceived usefulness and satisfaction of research students are insignificant because some students use social media on social purposes not for educational purposes. Hence, it is important to raise awareness by the universities and lecturers for students to use social media as an active collaborative learning purpose as it will positively affect the learning performance of research students. Finally, the results indicate that the use of social media is significant for active collaborative learning and engagement which positively affect learning performance of research students of Malaysian Higher Education.

ABSTRAK

Penggunaan media sosial untuk pembelajaran kolaboratif aktif dan penglibatan memberi kesan kepada prestasi pembelajaran dan menjadi satu topik yang dibincangkan dalam domain Sistem Maklumat berbanding penggunaan teknologi lain. Namun, penggunaan media sosial mengganggu pembelajaran dan memberi kesan kepada tabiat belajar, maka penggunaan media sosial menyebabkan kesukaran akademik. Pelajar penyelidik jarang menggunakan media sosial untuk tujuan pendidikan, juga, mereka tidak menggunakannya secara interaktif untuk pembelajaran kolaboratif dan tujuan akademik. Kerangka kerja sebelum ini dan model penggunaan media sosial mempunyai banyak kesan negatif ke atas penglibatan pelajar, pembelajaran kolaboratif dan prestasi pembelajaran. Oleh itu, kajian ini bertujuan menentukan faktor-faktor yang interaktif untuk pembelajaran kolaboratif aktif dan penglibatannya serta faktor-faktor persepsi, dan penggunaan media sosial untuk pembelajaran kolaboratif aktif dan penglibatan yang mempengaruhi prestasi pembelajaran. Kajian ini mencadangkan satu model teori berdasarkan teori konstruktivisme dan teori Model Penerimaan Teknologi (TAM). Kaedah campuran kuantitatif dan kualitatif digunakan untuk menjalankan soal selidik dan temuduga sampel di lima universiti awam Malaysia. Data dianalisis dengan menggunakan AMOS, SPSS dan Model Persamaan Struktur (SEM) untuk menyiasat sebab-musabab dan menjadi pengantara pembolehubah. Hasil kajian menunjukkan bahawa interaksi antara pelajar penyelidikan dan interaksi dengan pensyarah atau penyelia meningkatkan pembelajaran kolaboratif aktif dan penglibatan dengan nisbah yang bermakna, masing-masing 60% dan 73%. Kajian juga mendapati bahawa pembelajaran kolaboratif aktif dan penglibatan memberi kesan kepada prestasi pembelajaran pelajar penyelidikan dengan nisbah yang bermakna iaitu 74%. Tambahan pula, tanggapan mudah guna dan kebergunaan menentukan penggunaan media sosial seseorang bagi pembelajaran kolaboratif aktif dan penglibatan meningkatkan kepuasan dan memberi kesan kepada prestasi pembelajaran pelajar penyelidikan dengan nisbah, masing-masing 71% dan 74%. Didapati bahawa tanggapan mudah guna dan kepuasan pelajar penyelidikan adalah tidak bererti kerana sesetengah pelajar menggunakan media sosial untuk tujuan sosial bukan untuk tujuan pendidikan. Oleh itu, penting untuk meningkatkan kesedaran oleh universiti-universiti dan pensyarah kepada pelajar untuk menggunakan media sosial sebagai tujuan pembelajaran kolaboratif aktif kerana ia akan memberi kesan positif kepada prestasi pembelajaran pelajar penyelidikan. Akhirnya, keputusan menunjukkan bahawa penggunaan media sosial adalah penting untuk pembelajaran kolaboratif aktif dan penglibatan memberi kesan positif kepada prestasi pembelajaran pelajar penyelidikan Kementerian Pengajian Tinggi Malaysia.

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LIST OF ABBREVIATIONS

AGFI	-	Adjusted Goodness-of-Fit Index
AMOS	-	Analysis of Moment Structures
AP	-	Academic Performance of researchers and students
APEx	-	Accelerated Program for Excellence
AVE	-	Average Variance Extracted
B	-	Beta
CA	-	Cronbach's Alpha
CFA	-	Confirmatory Factor Analysis
CFI	-	Comparative Fit Index
CL	-	Collaborative Learning
CMC	-	Computer Mediated Communication
CO	-	Compatibility
CR	-	Critical Ratio
CR	-	Composite Reliability
CR	-	Construct Reliability
CSCL	-	Computer-Supported Collaborative Learning
DF	-	Degrees of Freedom
DS	-	Discomfort
EN	-	Engagement
EU	-	Perceived Ease of Use
FL	-	Factor Loading
GFI	-	Goodness of Fit Index
GM	-	Interactive with students and researchers
GOF	-	Goodness-Of-Fit
GPA	-	Grade Point Average
GSS	-	Group Support Systems
H	-	Hypothesis

HE	-	Higher Education
IC	-	Inter-Construct Correlations
ICT	-	Information and communications technology
IFI	-	Incremental Fit Index
IN	-	Intention to Use Social media
IS	-	Information System
IT	-	Information Technology
IR	-	Internal Reliability
IRU	-	Innovative Research Colleges
LISRE	-	Linear Structural Relations
L		
LMS	-	Learning Management Systems
LOGO	-	Multi-Paradigm Language
MM	-	Measurement Model
MI	-	Modification Indices
MHE	-	Malaysian Higher Education
MKO	-	More Knowledgeable Other
ML	-	Maximum Likelihood
MAR	-	Missing at Random Type
N	-	Number
NFI	-	Normed Fit Index
NSSE	-	National Survey of Student Engagement
OSN	-	Online Social Networking
PGFI	-	Parsimonious Goodness of Fit Index
PhD	-	Doctor of Philosophy
PLS	-	Partial Least Squares
PU	-	Perceived Usefulness
QS	-	World University Rankings
R^2	-	Squared Multiply Correlation
RFI	-	Relative Fit Index
RMR	-	Root Mean Square Residual
RMSE	-	Root Mean Squared Error of Approximation
A		
RS	-	Researchers and students' satisfaction

SE	- Standard Error
SEM	- Structural Equation Modeling
SET	- Social Exchange Theory
SD	- Standard Division
SI	- System Interactivity
SICC	- Squared Inter-Construct Correlations
SM	- Structural Model
SM	- Social Media
SMCs	- Squared Multiple Correlations
SPSS	- Statistical Package for the Social Sciences
SSCL	- Social Media Support Collaborative Learning
SU	- Interactive with supervisors or lecturers
SW	- Standardized items loadings
TAM	- Technology Acceptance Model
THES	- Times Higher Education World University Rankings
TLI	- Tucker-Lewis coefficient
TPB	- Theory of Planned Behavior
TRA	- Theory of Reasoned Action
TUT	- Tampere University of Technology
UK	- United Kingdom
UKM	- National Universiti Kebangsaan
UM	- Universiti Malaya
UPM	- Universiti Putra Malaysia
USA	- United States of America
USM	- Universiti Sains Malaysia
UTAU	- Unified Theory of Acceptance and Use of Technology
T	
UTM	- Universiti Teknologi Malaysia
WTC	- Willingness To Communicate
X^2	- Chi-square
X^2/df	- Normed Chi-Square per degree of freedom ratio
ZPD	- Zone of Proximal Development

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CHAPTER 1

INTRODUCTION

1.1 Overview

Like many other countries Malaysia has been hit by the social media phenomenon. Statistics reveal that Malaysia is among the top five countries in terms of number of Facebook accounts created (Ainin *et al.*, 2015). Social media is widely considered as facilitating active collaborative learning among research students. However, there is a lack of research on this topic in Malaysian higher education. Thus, the present research attempted to minimize the literature gap by examining the use of social media for active collaborative learning and engagement to affect learning performance of research students. The research model was developed on the basis of the constructivism theory and technology acceptance model (TAM).

Based on the constructivism theory and technology acceptance model (TAM), this research provided insight about interactive and perceptual factors of social media use. The interactive factors included interactivity with group member or peers, interactivity with supervisor or lecturers, active collaborative learning and engagement. Perceptual factors included perceived ease of use, perceived usefulness, social media use and satisfaction of research students. Therefore, both interactive and perceptual factors affect learning performance of research students in Malaysian higher education.

Active collaborative learning can occur on social media, as they can be used to help individuals work together to complete a collective objective (Cheung et al., 2013). In addition to this, social media use facilitates positive relationship between the learning performance and satisfaction of research students (Cao and Hong, 2011). Furthermore, Ainin et al. (2015) reported a positive relationship between students learning performance and Facebook usage.

Alloway and Alloway (2012) expressed active collaborative learning as the continuum by students for interactive and engagement to exchange ideas and viewpoints through social media (Lariscy *et al.*, 2009) for example Facebook. Additionally, these means of communication include other paraphernalia for social exchange, for example e-mail, intranet, blogs, video conferencing, photo discussing, wikis, and virtual mobile phone industries, which are known as social media (Eyrich, 2008). The overall idea of communication is a system that allows individuals to take advantage of technology to interact, collaborate and communicate on content, opinions, encounters, experience, and technologies within a group by active collaborative learning and engagement (Ala-mutka and Punie, 2010).

Social media ease of use and usefulness helps students to become more active, create understanding and discussion among peers, supervisors, instructor and experts, the receipt of expert guidance, and problem fixing abilities (Hamid *et al.*, 2011). Perceived ease of use and perceived usefulness were statistically significant predictors for satisfaction. Statistically, satisfaction is significantly higher for users who have more friends and who interact with more students compared to those who have fewer friends and less interactivity (Sibona and Choi, 2012).

Researchers have addressed various issues and phenomena using social media network at various academic and social levels. Extant literature on social media is of opinion that various helpful methods can be applied in higher education sector. However, this research aims to develop a model on social media use for active collaborative learning and engagement by interactive and perceptual factors in turn affecting the learning performance of research students.

1.2 Problem Background

Students seldom use social media for educational purposes (Argan, 2010). Furthermore, students use social media for socializing activities and not for interactivity to active collaborative learning, engagement and academic purpose (Helou *et al.*, 2012; Cao and Hong, 2011; Moran *et al.*, 2012). According to Cao *et al.* (2013), a research model of antecedents and consequences of social media was used but results indicated a higher perceived risk of using social media to waste time and reduce motivation to learn. Moreover, as highlighted by Wang and Chen (2011), various scholars have indicated that time allocated in using social networking was heavily affected. It is likely that most Malaysian higher education students use social media and spend many hours checking social media, and that there is an adverse aspect to research students utilization of social media.

There is a growing concern that the use of extensive social media can lead to loss of motivation. (Rouis *et al.*, 2011) described that motivation may increase the inner wish of the particular student to do well in learning performance. Accordingly, Arthurs and Templeton (2009) indicated that collaborative class activities can be accompanied by individual projects to enhance student learning. Students' have a strong desire to have active collaborative learning and learning with technology, and for that reason their novelty effects may be misleading in the belief that social media supports active collaborative learning (Mustapha, 2010).

There is a negative impact on interactions among students (Sibona and Choi, 2012). Social media does effect and provide challenges in the student's academic transition from college to university level educational experiences which might hinder learning performance of research students (Dahlstrom *et al.*, 2011). The effects of using social media based active collaborative learning were investigated and it was found that social media could increase learning achievements in active collaborative learning environments. Consequently, researchers should track and analyze the interaction pattern that occurs during active collaborative learning (Su *et al.*, 2010).

Lecturers are familiar with old technologies but they don't use social media for teaching and student interaction purposes (Roblyer *et al.*, 2010). Students are not satisfied with existing platforms for interacting used by lecturers (Wolf *et al.*, 2012). Moreover, lecturers do not have the required skills for social media use (Hamid *et al.*, 2011). According to Wolf *et al.* (2012) there is an excuse for effective active collaborative learning and understanding the communication between students and teachers concerning their training, as students are not convinced by the existing platforms for interaction used by the teachers; however the students are receptive to new social media which will facilitate learning with teachers. Lecturers are of the opinion that students rarely use social media network for educational purposes (Argan, 2010; Nemetz *et al.*, 2012).

Despite this, faculty members who use social media have reported issues pertaining to social media such as difficult to use, ineffective measurement and assessment (Moran *et al.*, 2012). Comparatively, empirical evidence suggested that students on campus needed more support in utilizing complementary social media active collaborative learning options in comparison with face-to-face conferences. Lecturers may have significant roles in supporting students when moving to the utilization of social media in assisting brief questions, solutions and coordination in showing such media for active collaborative learning and engagement (Hrastinski and Aghaee, 2011). Evaluative periods were articulated as a way of feedback process between lecturers and student (Forkosh and Hershkovitz, 2012).

Using social media resulted in academic difficulties (Junco, 2012; Junco and Cotton, 2012; Madge, *et al.*, 2009; Flad, 2010). Using social media affects Grade Point Average (GPA) and learning performance (Nemetz *et al.*, 2012; Junco *et al.*, 2011; Paul *et al.*, 2012; Kirschner and Karpinski, 2010). Research students use social media for learning which has negative effect on their concentration like time spent (Kirschner and Karpinski, 2010). Madge *et al.* (2009) found that time allotted to Facebook for social reasons was not used for academic purposes.

According to Jacobsen and Forste (2011), the students' learning performance and social media use revealed that social media are negatively associated with grades, and since students report using social media in school or while doing homework, the distractions might be dangerous to students' learning performance. Even after controlling the offline time use, there are a substantial number of negative associations between social media use and learning performance of universities research students. As the level of attention increases, the amount of time spent on social media is greater than before, implying that there is an increased level of attention which has a negative influence on their academic achievement (Paul *et al.*, 2012).

Using social media affects study habits and is a distraction from studies (Ahmed and Qazi, 2011; Flad, 2010; Nemetz *et al.*, 2012). Even though the current emphasis in education has moved substantially to active collaborative learning over individual learning (Yadin and Bach, 2010) suggested that individual learning abilities and individual accountability should also be cultivated and evaluated for significant collaborative understanding. Furthermore, students have to be more self-directed in using the growing assimilation of technology into learning (Tsai, 2011; Beres *et al.*, 2012). Concerning the use of social media for active collaborative learning group work, students not familiar with social media and even students who reported very negative experiences with the tool expressed that the idea of using a social media for active collaborative learning and engagement seemed attractive to them, but they mentioned that they would rather use media for interactivity (Rodriguez *et al.*, 2012).

Studies have also shown that multitasking with technology specifically using social media decreases both efficiency and productivity in an academic setting and that multitasking has an impact on the relationship between social media use and Grade Point Average (GPA) in United States and European universities. The results also showed that the negative relationship between social media use and GPA was moderated by multitasking and the waste of time in the US sample. This may be due to European students being less prone to multitasking (Karpinski *et al.*, 2013).

Therefore, it may be recommended that students who are constantly multitasking appear to have lower learning performance in college. The truth is that students who regularly use social media network may take more time doing their homework, and this may lead to the lack of ability of those students to handle their time effectively. However with active collaborative learning will be handled effectively (Kirschner and Karpinski, 2010). Research conducted by Ohio Condition College disclosed that university students who utilize Facebook cut back time on studying and also have lower grades than students who don't use social media (Kalpidou *et al.*, 2011). Therefore, there is a general negative impact on students' learning performance (Karpinski *et al.*, 2013). In education, Facebook, generally, negatively affects the educational performance of which scholars noted that the effect is greater for male students (Haq and Chand, 2012).

Previous models and frameworks of social media have many significant negative impacts on student engagement, active collaborative learning and learning performance (Cao and Hong, 2011; Junco, 2012; Kirschner and Karpinski, 2010; Haq and Chand, 2012; Paul *et al.*, 2012; Ahmed and Qazi, 2011; Karpinski *et al.*, 2013). In addition, few researchers in Malaysia have conducted studies on social media in higher education with different perspectives and theories. Therefore, it is recommended to investigate both interactive and perceptual factors which influence academic performance by social media (Lee *et al.*, 2012; Lin and Lu, 2011; Alloway and Alloway, 2012; Hamid *et al.*, 2011).

Based on a study by Selwyn and Grant (2009) and Madge *et al.* (2009), student centered provide good examples of active collaborative learning tools for discussing files and collaborative work and learning. Students in Malaysia are reasonably well exposed to social media network programs and are comfortable in this learning process. Answers are in line with similar participants interviewed elsewhere but varied slightly on specific social networking tools because of exposure. Malaysian students are discovered to be passive instead of actively contributing factors to an understanding of networking tools (Zakaria *et al.*, 2010).

While a wide range of study on social media aimed to explore influential factors on the usage of social media network, there is lack of comprehensive studies on social media network which integrated all essential factors of social media using network for active collaborative learning and engagement in a single study (Lin and Lu, 2011). Thus, conducting research on social media in Malaysian higher education will be able to integrate all factors related to social media which is seen as a critical step in understanding students' social media use for active collaborative learning and engagement and the effect it has on their learning performance.

Understanding the research students who are using social media requires investigation of all factors that influence the usage of social media by the individual. In particular, exploring both interactive and perceptual factors related to social media use can be a potential direction for better and comprehensive understanding of satisfaction and social media use for active collaborative learning and engagement to affect learning performance (Lee *et al.*, 2012; Lin and Lu, 2011; Alloway and Alloway, 2012; Hamid *et al.*, 2011). With reference to the researchers in Malaysia, most models have weaknesses and are unable to contribute toward higher education in this country.

The gaps in this research are that previous models have focused either on perceptual factors or interactive factors but not both in developing model (Nemetz *et al.*, 2012). Lack of models in learning performance involving the use of social media as research subject in Malaysia (Lin and Lu, 2011) and previous research had less consideration toward models of social media under educational environment (Zakaria *et al.*, 2010). Therefore the main aim of this research is to overcome the weaknesses which will be developed in a model that shows interactivity, perceptual, social media use to active collaborative learning, engagement, achieve satisfaction of research students in Malaysian higher education through constructivism theory (Vygotsky, 1978; Benson, 2001; Carlile *et al.*, 2004) and Technology Acceptance Model TAM model (Davis, 1989; Venkatesh and Bala, 2008) to evaluate learning performance.

1.3 Problem Statement

There has been a vast amount of research on social media networks. In recent years, a new stream of research in this field has started gaining attention in regard to social media usage. Research on social media has been predominantly conducted in fields such as privacy (Mohamed and Ahmad, 2012), psychology (Wang *et al.*, 2012), health (Lauckner *et al.*, 2013), marketing (Fuciu and Gorski, 2013), cultural (Al-Omouh *et al.*, 2012), social (Lee, 2013). Nevertheless, there is lack of studies (Zakaria *et al.*, 2010; Selwyn and Grant, 2009; Madge *et al.*, 2009) that have researched understanding the use of social media as tools of effective learning performance through active collaborative learning in higher education and how it can elevate the quality of learning in Malaysian higher education institutions. So far, focus has been placed in developed countries such as the USA, Australia and the UK.

However, this research will describe and discuss studies in Malaysian higher education. Additionally, the few studies which have investigated social media acceptance and adoption have neglected significant parts of inherent nature of social media which is related to both interactive and perceptual factors of social media use (Yeh *et al.*, 2011; Lee *et al.*, 2012).

This research is important and will determine characteristics and factors and the relationship between social media use for active collaborative learning and engagement that affects learning performance of research students in Malaysian higher education. In addition, while there are many social media models there is no model in evaluating learning performance and satisfaction of research students via using social media for active collaborative learning and engagement in Malaysian higher education, representing a gap in this area. Thus, the research problem in this study will be to investigate and explore the factors that affect the relationships between active collaborative learning and engagement to influence to learning performance of research students, with satisfaction of using social media in Malaysian higher education.

The problem statements of this research can be expressed in three main parts. The first part concerns the lack of reflection on social media use for active collaborative learning and engagement with consideration of relevant interactive and perceptual factors (Nemetz *et al.*, 2012; Argan, 2010). Haq and Chand (2012) stated that 61% negatively affect the studies via the usage of social media while Kirschner and Karpinski, 2010 stated that 74.3% usage of social media has negative impact on learning performance. The second part concerns the lack of practical instrument models for measuring such factors in such a context in a single study (Lin and Lu, 2011; Yeh *et al.*, 2011; Lee *et al.*, 2012) and lack of intention to use social media for collaborative learning and engagement with consideration of relevant interactive and perceptual factors (Nemetz *et al.*, 2012; Argan, 2010; Lin and Lu, 2011). The third part concerns the possibility of modeling acceptance of social media with constructivist theory through a theoretical model of constructs relevant to both interactive and perceptual factors which exist in the social media in the educational environment (Zakaria *et al.*, 2010; Selwyn and Grant, 2009; Madge *et al.*, 2009). In addition, there is a lack of models that have researched understanding using social media and how it affects learning performance in Malaysian higher education (Zakaria *et al.*, 2010; Selwyn and Grant, 2009; Madge *et al.*, 2009).

1.4 Research Questions

The main research question the researcher hopes to answer is: What are the interactive and perceptual factors that affect active collaborative learning and engagement, which in turn affect learning performance? To answer this main research question, there is a need to investigate several sub questions which have been identified as follows:

1. What are the interactive and perceptual factors and what is the basis of using social media?
2. What is the relationship between interactive and perceptual factors and learning performance?

3. How can a model of social media use through interactive and perceptual factors be developed?

1.5 Research Objectives

This research aims to develop a model of social media use for active collaborative learning and engagement by interactive and perceptual factors which in turn affect learning performance in Malaysian higher education institutions, and an investigation of the validity of the theories constructivism and Technology Acceptance Model (TAM) for interactivity and social media use for active collaborative learning and engagement to affect an learning performance of research students in Malaysian higher education. The specific objectives of the study are as follows:

1. To identify the basics of social media including the relevant interactive and perceptual factors.
2. To determine the relationship between interactive and perceptual factors and learning performance.
3. To develop a model of social media use through interactive and perceptual factors.

1.6 Research Scope

Based on the research questions and research objectives discussed above, the aim of the current research is the development of a theoretical model of social media use for active collaborative learning and engagement through relevant interactive and perceptual factors. Thereby, this research focuses on the measurement of a reliable and validated theoretical model for social media, to understand determinants of

interactive and perceptual factors that affect the learning performance of research students.

Social media is widely considered for educational or non-educational purposes among research students. Since there are a variety of social media encompassing many attributes of online technologies, thirteen tools were selected in this research to gather more information about tools that can be used in an educational environment (Yakin, 2013; Buzzetto, 2012; Liu, 2010; Solis, 2008). This research targets five research universities in Malaysia, and the targeted group includes the research students enrolled in master taught course, master mixed mode, master research and PhD in those academic institutions.

1.7 Importance and Benefits of Research

This research enriches the current literature on the use of social media for active collaborative learning and engagement which is still emerging. It also contributes in practice by exploring the factors of social media use to affect the successful learning performance of research students for harnessing learning in the higher education context. The importance of this research linking social media with research students at universities in collaborating learning and engagement among students and faculty members and to obtain more knowledge and knowledge sharing requires more exploration of factors influencing users in such educational environments. At the same time, social media are growing remarkably which highlights the need for further investigation of the use of these sites for educational purposes. Furthermore, this research contributes to the understanding of the effect of the use of social media on learning performance through exploring interactive and perceptual factors which provide insights into social and interactive research students by discussing such existing factors in the context of social media use.

The significance and contribution of this research can be categorized into two aspects, theoretical and practical contributions. In terms of theoretical contribution, the research constructivism theory used with Technology Acceptance Model (TAM) by using social media for active collaborative learning and engagement.

In addition, this research may allow researchers and practitioners to understand the relevant interactive and perceptual factors that influence and affect learning performance of research students. Moreover, this research provides a unique model that integrates constructivism with TAM in academic research context.

In terms of practical contribution, this research allows the leaders in departments, faculties, research management units in universities, and ministry of higher education to have a broad perception about social media use for active collaborative learning and engagement to affect learning performance by interactivity and technology acceptance. Thus, research students are encouraged to use social media for educational purposes. Moreover, the research leads to the development of an instrument and factors for academic institutions to analyze and measure the learning performance of research students in terms of their use of technology.

The findings of this research may also contribute to the body of ideas and knowledge on social media use which is accompanied by the development of justified constructs and verified measurement of a theoretical model of social media use. Such findings are a practical step which is critical for future research studies on social media.

Finally, these studies may have implications for Malaysia in general, since higher education is essential in Malaysia when the universities and colleges can use interactive for active collaborative learning and engagement to affect learning performance of research students in Malaysian higher education.

1.8 Justification of Research

There is limited understanding of literature on utilization of social media network for active collaborative learning to affect learning performance of research students in higher education. The intention of this research is to fill this gap by determining the standards affecting utilization of social media network which affect the learning performance of research students in Malaysian higher education.

The researcher additionally proposes to increase the wealth of social media network research by analyzing and developing theoretical model of using social media for active collaborative learning and engagement to affect learning performance of research students in higher education. The subject of this research is of maximum importance and appropriate since the use of social media by researchers and students at universities and colleges in higher education is declining and shifting to previous traditional education to make use of the social media within the universities and colleges. Finally, development of effectiveness in education such as utilization of social media between students for active collaborative learning and engagement will open new opportunities for universities and college to support the students in courses with more knowledge associated with using social media as well as for active collaborative learning and engagement to affect learning performance of researchers and students in Malaysian higher education.

1.9 Organization of Research

This research consists of eight chapters; Chapter 1 introduces the research issues, background and the research problems for this research. This is followed by research questions, objectives and justification of the research, significance, scope of the research and the organization of this research. Chapter 2 contains literature review, which focuses on previous research, presenting a review of literature and relevant research associated with use of social media network through interactive and

perceptual factors to affect learning performance of research students. Chapter 3 provides the theoretical model of research and states the hypotheses. Chapter 4 presents the research methodology and justifies the methods used in this research. This is followed by discussion of research design including population, sample, data collection and the development of the instrument. It also covers methods used for data analysis.

The analysis of quantitative data associated with the research model, the summary of the overall response rate, characteristics of respondents and data screening are some of the topics covered in Chapter 5. The determinants of reliability indices using SEM analysis and the Analysis of Moment Structures (AMOS) software are also discussed. Chapter 6 presents the analysis of qualitative data. Chapter 7 presents the results and discussion and Chapter 8 presents the research summary and achievements for each objective, research contributions, theoretical implications of research, limitations of research, recommendations, future research and concluding remarks.

1.10 Summary

This chapter carried out an introduction to the development of a theoretical model of the use of social media for active collaborative learning and engagement to affect the learning performance of research students in Malaysian higher education, provided the problem background and problem statement, then formulated the research questions and objectives, research scopes, research significance to be achieved, new contributions, and the justification of research. Finally, it concludes with an overall structure of the eight chapters of this thesis. Hopefully, by developing the next chapters, the objectives of research will be achieved.

REFERENCES

- Ainin, S., Naqshbandi, M. M., Mogavvemi, S., and Jaafar, N. I. (2015). Facebook usage, socialization and academic performance. *Computers & Education*. 83 (4): 64-73.
- Agarwal R and Karahanna E. (2000). Time Flies When You're Having Fun: Cognitive Absorption and Beliefs About Information Technology Usage. *MIS quarterly journal*. 24(4): 665-694.
- Agarwal, R., and Prasad, J. (1997). The Role of Innovation Characteristics and Perceived Voluntariness in the Acceptance of Information Technologies. *Decision Sciences*. 28(3), 557-582.
- Ahmed, I., and Qazi, T. F. (2011). A look out for academic impacts of Social networking sites (SNSs): A student based perspective. *African Journal of Business Management*. 5(12), 5022-5031.
- Ajjan, H., and Hartshorne, R. (2008). Investigating faculty decisions to adopt web 2.0 technologies: Theory and empirical tests. *The Internet and Higher Education*. 11 (2), 71–80.
- Ajzen, I. (1991). Theory of planned behavior. *Organizational Behavior and Human Decision Processes*. 50(2), 179-211.
- Ala-mutka, K., and Punie, Y. (2010). Learning 2.0 The Impact of Social Media on Learning in Europe. *Policy brief. JRC Scientific and Technical Report. EUR JRC56958 EN*. available from: <http://bit.ly/cljlpq>.
- Alexander, R, (2009). *An exploration of the relationship between student engagement and academic performance of undergraduate students in education*. The University of Alabama. <http://eric.ed.gov/?id=ED513700>.
- Alloway, T. and Alloway, R. (2012). The impact of engagement with social networking sites (SNSs) on cognitive skills. *Computers in Human Behavior*. 28(5), 1748–1754.
- Almadhoun, N. M., Dominic, P., and Woon, L. F. (2011). Social media as a

- promotional tool in higher education in Malaysia. *In National Postgraduate Conference (NPC)*, 1-7.
- Al-Mukhaini,E., Al-Qayoudhi,W., and Al-Badi, A. (2014). Adoption of Social Networking In Education: A Study Of The Use Of Social Networks By Higher Education Students In Oman. *Journal of International Education Research Second Quarter*. 10 (2), 143-154.
- Al-Majali, M., and Nik Mat, N. K. (2010). Application of Decomposed Theory of Planned Behavior on Internet Banking Adoption in Jordan. *Journal of Internet Banking and Commerce*. 15(2), 1-7.
- Al-Omoush, Khaled ,Yaseen,Saad and Atwah.(2012).The impact of Arab cultural values on online social networking the case Facebook. *Computers in Human Behavior*.28(6), 2387-2399.
- Al-Qeisi, K. (2009). *Analyzing the use of UTAUT model in explaining an online behavior: internet banking adoption*. Doctor Philosophy, Brunel University, UK.
- Al-rahmi, W. M. Othman, M.S. Yusof, L.M and Musa. M.A. (2015a). Using Social Media as a Tool for Improving Academic Performance through Collaborative Learning in Malaysian Higher Education. *Review of European Studies*. 7(3), 265-275.
- Al-rahmi, W. M., Othman, M. S., and Yusuf, L. M. (2015b). Social Media for Collaborative Learning and Engagement: Adoption Framework in Higher Education Institutions in Malaysia. *Mediterranean Journal of Social Science*. 6 (3), 246-252.
- Al-rahmi, W. M., Othman, M. S., and Yusuf, L. M. (2015c). The Effect of Social Media on Researchers' Academic Performance through Collaborative Learning in Malaysian Higher Education. *Mediterranean Journal of Social Sciences*. 6 (4), 193-203.
- Al-Rahmi ,W, Othman ,M and Musa, M. (2014). The Improvement of Students' Academic Performance by Using Social Media through Collaborative Learning in Malaysian Higher Education. *Asian Social Science*. 10(8) 210-221.
- Al-Rahmi, W. and Othman, M. (2013). The Impact of Social Media use on Academic Performance among university students: A Pilot Study. *Journal of information systems research and innovation*. 4 (12), 1-10.
- Alsereihy H., and Al Youbi,A.(2014). Towards Applying Social Networking in

- Higher Education: Case Study of Saudi Universities. *MAGNT Research Report* 2 (4), 217-231.
- Amescua. (2009). *Collaborative learning experiences using social networks. University of Madrid Leganes. Edulearn 09 Proceedings*, 4260-4270.
- Anderson, L. and Krathwohl, D. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. London: Longman.
- Anderson, J. C., and Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*. 103 (3), 411–423.
- Arnold, N. and Paulus, T. (2010). Using a social networking site for experiential learning: Appropriating, lurking, modeling and community building. *Internet and Higher Education*.13 (4), 188-196.
- Anderson, Q. (2012). *Millennia's will benefit and suffer due to their hyper connected lives*. Washington DC, Pew Research Center.
- Anderson, P., Hepworth, M., Kelly, B., and Metcalfe, R. (2007). What is Web 2 . 0 ? Ideas , technologies and implications for education. 1(1), 1- 207.
- Arcas, B L., Buil, I., Hernández-Ortega, B., and Sese, F. J. (2013). Using clickers in class. The role of interactivity, active collaborative learning and engagement in learning performance. *Computers & Education*. 62 (1), 102–110.
- Argan, M. (2010). Using Online Social Networking: Students' Purposes of Facebook Usage at the University of Turkey, *In Academic and Business Research Institute International Conference International Conference-Las Vegas*. 360-367
- Arthurs, L., and Templeton, A. (2009). Coupled collaborative in-class activities and individual follow-up homework promote interactive engagement and improve student learning outcomes in a college-level Environmental Geology course. *Journal of Geoscience Education*. 57(5), 356–371.
- Ashwin, P (2006). *Interpreting the developments: Possible futures for learning and teaching in higher education in Ashwin, P. (7thed) Changing Higher Education: The Development of Learning & Teaching*, First edition.
- Babin, B. J., Hair, J. F., and Boles, J. S. (2008). Publishing research in marketing journals using structural equation modeling. *Journal of Marketing Theory & Practice*.16(4), 279–285.
- Bagozzi, R.P. (1998).Evaluating Structural Equation Models with Unobservable

- Variables and Measurement Error: A Comment. *Journal of Marketing Research*. 18 (3), 375-381.
- Bagozzi, R., and Yi, Y. (1989). The Degree of Intention Formation as a Moderator of the Attitude-Behaviour Relationship. *Social Psychology Quarterly*. 52(4), 266-279.
- Bajaj, A., and Nidumolu S.R. (1998). A Feedback Model to Understand Information System Usage. *Information and Management*. 33(4), 213-224.
- Baird, D.E., Fisher, M. (2006). Neomillennial user experience design strategies: utilizing social networking media to support always on learning styles. *Journal. Educ. Technol. Syst.* 34(1), 5-32.
- Baines, P., and Chansarkar, B. (2002). *Introducing Marketing Research*. England: John Wiley and Sons, Ltd.
- Banks. (2006). Reflections on the use of ARS with small groups. *Audience response systems in higher education*. 12 (3), 373–386.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Prentice Hall, Englewood Cliffs, NJ.
- Baran, B. (2010). Facebook as a formal instructional environment. *British Journal of Educational Technology*. 41(6), 146-149.
- Barkley, E., Cross, K. P., and Mayor, C. H. (2005). *Collaborative learning techniques*. San Francisco: Jossey-Bass Publishers.
- Bercovici, J. (2010). Who coined social media? Web pioneers compete for credit. Retrieved from <http://blogs.forbes.com/jeffbercovici/2010/12/09/who-coined-social-media-web-pioneers-compete-for-credit/>.
- Beres, I., Magyar, T., and Turcsányi-szabó, M. (2012). Towards a Personalised, Learning Style Based Collaborative Blended Learning Model with Individual Assessment. *Informatics in Education-An International Journal*. 11(1), 1–28.
- Bernama. 2008. *USM Is Malaysia's Apex University*, 3 September available at www.bernama.com/bernama/v3/news_lite.php?id=356958 accessed on 8/2010.
- Benson, P. (2013). *Teaching and Researching Autonomy in Language Learning*. Edinburgh: Longman Pearson Education Limited.
- Binz, C., Hair, J. F., Pieper, T., and Baldauf, A. (2013). Exploring the effect of distinct family firm reputation on consumers' preferences. *Journal of Family Business Strategy*. 4(1), 3–11.
- Bhattacharjee, A. (2001). Understanding information systems continuance: an

- expectation-confirmation model. *MIS Quarterly Journal*. 25(3), 351–370.
- Black, N.J., Lockett, A., Ennew, C., Winklhofer, H., and McKechnie, S. (2002). Modelling customer choice of distribution channels: An illustration from financial services. *International Journal of Bank Marketing*. 20(4),161-173.
- Blaschke.,L(2014). Using social media to engage and develop the online learner in self-determined learning. *Research in Learning Technology*. 22(1), 1-20.
- Blaikie, N. (2007). *Approaches to Social Enquiry*, 2nd edn, Polity Press, U.K.
- Bollen, K. A. (1989). *Structural Equations with Latent Variables*. New York: Wiley
- Borstnar, M. K. (2012). Towards Understanding Collaborative Learning in the Social Media Environment, *Organizacija*. 45(3), 100–107.
- Bosch, T. E., Preez, A., and Michell, L. (2009). Using online social networking for teaching and learning: Facebook use at the University of Cape Town. *South African Journal for Communication Theory and Research*. 35(2), 185-200.
- Boulos, K., Maramba, I., and Wheeler, S. (2006). Wikis, blogs and podcasts: a new generation of Web-based tools for virtual collaborative clinical practice and education. *BMC medical education*, 6 (1), 20- 41.
- Brady,P., Holcomb, B., and Smith,V. (2010). The Use of Alternative Social Networking Sites in Higher Educational Settings: A Case Study of the E-Learning Benefits of Ning in Education. *Journal of Interactive Online Learning*. 9(2), 151–170.
- Brooks, J.G. and M.G. Brooks. (1993). *In search of understanding: the case for constructivist classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Bryman, A. and Cramer, D. (2005). *Quantitative Data Analysis with SPSS 12 and 13: A guide for social scientists*. Psychology Press East Sussex: Routledge.
- Bryman, A. and Bell, E. (2007) *Business Research Methods*. Oxford University Press, Oxford, UK.
- Brynard, P.A. and Hanekom, S.X. (2006). *Introduction to research in management related fields*. 2nd Ed. Pretoria: Van Schaik.
- Bull, G., Thompson, A., Searson, M., Park, J., Young, C., and Lee, J. (2008). Connecting Informal and Formal Learning Experiences in the Age of Participatory Media. *Contemporary Issues in Technology and Teacher Education*. 8 (2), 100–107.
- Buzzetto-More, N. A. (2012). Social networking in undergraduate

- education. *Interdisciplinary Journal of Information, Knowledge, and Management*. 7(1), 63-90.
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). New York: Routledge.
- Camilla B.(2010). Engagement with Social Media and Outcomes for Brands: A Conceptual Framework. *ANZMAC Annual Conference*.
- Canales, Wilbanks and Yeoman (2009). *Facebook Usage in Relation to Personality and Academic Performance*. Modern Psychological Studies, Spring.
- Carnaghan and Webb (2007). Investigating the effects of group response systems in student satisfaction, learning, and engagement in accounting education. *Issues in Accounting Education*. 22(3), 391–409.
- Carlile, O., Jordan, A., and Stack, A. (2004). *Learning by Design: Learning Theory for the Designer of Multimedia Educational Materials*. Waterford: WIT/BBC.
- Cao, Y., Ajjan, H., and Hong, P. (2013). Using social media applications for educational outcomes in college teaching: A structural equation analysis. *British Journal of Educational Technology*.44 (4), 581–593.
- Cao, Y., and Hong, P. (2011). Antecedents and consequences of social media utilization in college teaching: a proposed model with mixed-methods investigation. *On the Horizon*. 19(4), 297–306.
- Chang, C. Y. and Tsai, C. C. (2005). The interplay between different forms of CAI and students' preferences of learning environment in the secondary science class. *Science Education*. 89(5), 707–724.
- Chang , H. H. and Wang, I. C. (2008).An investigation of user communication behavior in computer mediated environment. *Computers in Human Behavior*, 24 (5), 2336-2356.
- Chau, P.Y.K., and Hu, P.J. (2002).Investigating Healthcare Professionals' Decisions to Accept Telemedicine Technology: An Empirical Test of Competing Theories. *Information and Management*.39 (4), 297-311.
- Chau,P.(1996). An empirical investigation on factors affecting the acceptance of CASE by systems developers, *Information and Management*. 30 (6), 269–280.
- Chen, R. (2013). Member use of social networking sites an empirical examination. *Decision Support Systems*. 54(3), 1219–1227.
- Chen, B., and Bryer, T. (2012). Investigating instructional strategies for using social media in formal and informal learning. *The International Review of Research in*

Open and Distance Learning. 13 (1), 87–104.

- Cheng, J M., Sheen, G., and Lou, G. (2006). Consumer acceptance of the internet as a channel of distribution in Taiwan a channel function perspective. *Technovation*. 26(7), 856-864.
- Cheung ,R and Voge, D.(2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Computers & Education*. 63(1), 160–175.
- Chi-Un Lei, Tomas Krilavičius, Nan Zhang, Kaiyu Wan and Ka Lok Man (2012). Using Web 2.0 Tools to Enhance Learning in Higher Education: A Case Study in Technological Education. *Lecture Notes in Engineering and Computer Science*. 2 (1), 1153-1156.
- Chin, W. W., Peterson, R. A., and Brown, S. P. (2008). Structural equation modeling in marketing: Some practical reminders. *Journal of Marketing Theory & Practice*. 16(4), 287–289.
- Chou, C. (2013). Interactivity and interactive functions in web-based learning systems: a technical framework for designers. *British Journal of Educational Technology*. 34(3), 265–279.
- Churchill, D. (2009). Educational applications of Web 2.0: using blogs to support teaching and learning. *British Journal of Educational Technology*. 40 (1), 179-183.
- Churchill G. A., and Iacobucci, D. (2002). *Marketing Research: Methodological Foundations*. (8th). U.S.A.: South-Western Thomson Learning.
- Chou, C.-P., and Bentler, P. M. (1995). *Estimates and tests in structural equation modeling*. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts* Thousand Oaks, CA: Sage
- Collis, J. and Hussey, R. (2009). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*. Palgrave Macmillan, New York, USA.
- Cooper, Donald R., and Pamela S. Schindler. (2006). *Marketing Research*. New York: McGraw– Hill. 36-44.
- Cotner, H., Fall, B., Wick, M., Walker, D., and Baepler, M. (2008). Rapid Feedback Assessment Methods: Can We Improve Engagement and Preparation for Exams in Large-enrollment Courses?. *Journal of Science Education and Technology*, 17(5), 437–443.

- Creswell, J.(2003). *Research Design. Qualitative, Quantitative and Mixed Methods Approaches*. Second Edition. California.
- Creswell, J. and Plano Clark, V. (2007). *Designing and Conducting mixed Methods Research*. Thousand Oaks, CA.
- Creswell, J. Plano and Clark, V. (2011). *Designing and Conducting Mixed Methods Research*. (2nd ed.). Los Angeles.
- Creswell, J. and Plano Clark, V. (2013). *Designing and Conducting Mixed Methods Research*. (3rd ed.). Los Angeles.
- Curtis, D. D. and Lawson, M. J. (2001). Exploring collaborative online learning. *Journal of Asynchronous learning networks*. 5(1), 21–34.
- Dabbagh, N. (2011). *Learning to Learn with Integrative Learning Technologies (ILT)*. A Practical Guide for Academic Success.
- Dabbagh, N., and Kitsantas, A. (2011). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *Internet and Higher Education*. 15 (1), 3–8.
- Dabner, N. (2004). Design to Support Distance Teacher Education Communities : A Case Study of a Student-Student e-Mentoring Initiative. *Society for Information Technology & Teacher Education International Conference*. 2(1), 218–223.
- Dabner, N. (2012). Breaking Ground” in the use of social media: a case study of a university earthquake response to inform educational design with Facebook. *Internet and Higher Education*. 15(1), 69–78.
- Dahlstrom, E. (2012). Educes center for applied research ear Study of Undergraduate Students and Information Technology. *Computers & Education*. 59(2), 505-514.
- Dahlstrom, E., Grunwald, P., Boor, De, and Vockley, M. (2011). *ecar national study of students and information technology in higher education*. Study Overview.
- Davis, F.D., (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly Journal*. 13(1), 319–340.
- Davis, F.D., (1993). User acceptance of information technology: system characteristics, user perceptions, and behavioral impacts. *International Journal of Man Machine Studies*. 38 (1), 475–487.
- Davis, F.D., and Warshaw, P.R. (1992).Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*. 22 (14), 1111-1132.
- Deil-amen, R. (2011). Socio-Academic Integrative Moments: Rethinking Academic

- and Social Integration among Two-Year College Students in Career-Related Programs. *The Journal of Higher Education*. 82(1), 54-91
- Dewiyanti, S., Brand-Gruwel, S., Jochems, W., and Broers, N. J. (2007). Students' experiences with collaborative learning in asynchronous computer-supported collaborative learning environments. *Computers in Human Behavior*. 23(1), 496–514.
- Dillenbourg, P., Baker, M., Blaye, A., and O'Malley, C. (1995). *The evolution of research on collaborative learning*. In E.S.P.R. (Ed.), *Learning in humans and machine: Towards an interdisciplinary learning science*. 189–211.
- Dillon, A., M. Sweeney, and Maguire, M.. (1993). *A Survey of Usability Engineering Within the European IT Industry Current Practice and Needs*. In: J.Alty et al (Eds.) *People and Computers VII, Proceedings of HCI Cambridge: Cambridge University Press*.
- Dunn, L. (2012). *Teaching In Higher Education: Can Social Media Enhance The Learning Experience?*. Interdisciplinary Science Education, Technologies and Learning - The University of Glasgow.
- Egea, J. M., and González, M. V. R. (2011). Explaining physicians' acceptance of EHCR systems: An extension of TAM with trust and risk factors. *Computers in Human Behavior*. 27(1), 319-332.
- Elkaseh,A., Wong,K., and Fung,C.(2016). Perceived Ease of Use and Perceived Usefulness of Social Media for e-Learning in Libyan Higher Education: A Structural Equation Modeling Analysis. *International Journal of Information and Education Technology*. 6 (3), 192-206.
- El-gayar, O., Moran, M., and Hawkes, M. (2011). Students' acceptance of tablet PCs and implications for educational institutions. *Educational Technology & Society*. 14(2), 58–70.
- Englander, Terregrossa and Wang (2010). *Educational Review, journal of education*. 62(1), 85 -96.
- Ertmer, P, Newby, J., Liu, W., Tomory, A., Yu, J. H., and Lee, Y. M. (2011). Students' confidence and perceived value for participating in cross-cultural wiki-based collaborations. *Educational Technology Research and Development*. 59(2), 213–228.
- Eyrich, N., Padman, L., and Sweetser, D. (2008). PR practitioners' use of social media tools and communication technology. *Public Relations Review*. 34(4),

412–414.

- Falconer, D. and Mackay, D. (1999). *The Key to the Mixed Method Dilemma*. In Proceedings of the 10th Australasian Conference on Information Systems.
- Farwell, M., and Waters, D. (2010). Exploring the Use of Social Bookmarking Technology in Education: An Analysis of Students' Experiences using a Course-specific Delicious. *Com Account*. 6(1), 1–12.
- Featherman, M.S. and Pavlou, P.A. (2003). Predicting e-services adoption: A perceived risk facets perspective. *International Journal of Human-Computer Studies*. 59 (4), 451-474.
- Fishbein, M., and Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Addison-Wesley, Reading.
- Flad, K. (2010). *The Influence of Social Networking Participation on Student Academic Performance across Gender Lines*. The College at Brockport.
- Forkosh-Baruch, A., and Hershkovitz, A. (2012). A case study of Israeli higher-education institutes sharing scholarly information with the community via social networks. *The Internet and Higher Education*. 15(1), 58–68.
- Foroughi, A. (2011). A research framework for evaluating the effectiveness of implementations of social media in higher education. *Online Journal for Workforce Education and Development*. 5 (1), 5-11.
- Fornell, C., and Larcker, D. F. (1998). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*. 18(1), 39–50.
- Fusch, D. (2011). Social Media and Student Learning: Moving the needle on engagement in Academic Impressions <http://www.academicimpressions.com/news/social-media-and-student-learning-moving-needle-engagement>.
- Fuciu, M. and Gorski, H. (2013). Marketing research regarding the usage of online social network sites by high school students. *Procardia economics finance*. 6 (1), 482-490.
- Gallini, S. M., and Moely, B. E. (2003). Service-learning and engagement, academic challenge and retention. *Michigan Journal of Community Service Learning*. 8(1), 5-14.
- Gauy, R. and Airasian, P. (1996). *Educational Research: Competencies for Analysis and Application*, 6th Edition. Upper Saddle River, NJ: Merrill.

- Gefen, D and Keil, M. (1998). The impact of developer responsiveness on perceptions of usefulness and ease of use: an extension of the technology acceptance model. *The DATA BASE for Advances in Information Systems*. 29 (2), 35–49.
- Gefen, D., Straub, W. and Boudreau, M. (2000). Structural Equation Modeling Techniques and Regression: Guidelines for Research Practice. *Communications of Association for Information systems (AIS)*. 4(7), 1-79.
- Gefen, D., and Straub, D.W. (1997). Gender differences in the perception and use of e-mail: An Extension to the Technology Acceptance Model. *MIS Quarterly Journal*, 21(4), 389-400.
- Ghorishi, M. (2009). *E-commerce Adoption Model in Iranian SMEs*. Master thesis. Lulea University of technology.
- Ghozali, H. I. Fuad, J., and Seti, M. (2005). *Structural equation modeling theory*. Semarang, Indonesia: Badan Penerbit University Diponegoro.
- Glaserfeld, E. von (1995). *Radical constructivism: A way of knowing and learning*. Falmer Press: London.
- Goode, M.H., and Harris, L.C. (2007). Online behavioural intentions: an empirical investigation of antecedents and moderators, *European Journal of Marketing*, 41 (6), 512-536.
- Greenhow, C and Gleason B. (2012). Twitteracy: Tweeting as a New Literacy Practice. *The Educational Forum*. 76(1), 463- 477.
- Greenhow, C., Robelia, B., and Hughes, E. (2009). Learning, teaching, and scholarship in a digital age: web 2.0 and classroom research: what path should we take now?. *Educational Researcher*. 38(4), 246–259.
- Gu, J., Lee, S., and Suh, Y. (2009). Determinants of Behavioral Intention to Mobile Banking. *Expert Systems with Applications*. 36(9), 11605-11616.
- Gunawardena, N., Nolla, C., Wilson, L., and Megchun, M. (2011). A cross-cultural study of group process and development in online conferences. *Distance Education*. 22 (1), 85–121.
- Guthrie, and Carlin (2004). *Waking the dead: using interactive technology to engage passive listeners in the classroom*. In Proceedings of the AMCIS, paper 358. New York: August.
- Haase, and Young, (2010). Uses and Gratifications of Social Media: A Comparison of Facebook and Instant Messaging. *Bulletin Science, Technology and Society*. 30(5), 350-361.

- Hair, J. F., Black, W. C., Basin, B. J., and Anderson, R. E. (2010). *Multivariate data Analysis*. (7th ed.). New Jersey: Upper Saddle River, Pearson Prentice Hall.
- Hair, J., Black, W., Babin, B., Anderson, R., and Tatham, R. (2006). *Multivariate data analysis* (6th ed.). Uppersaddle River, N.J.: Pearson Prentice Hall.
- Hair, J. F., Celsi, M., Money, A., Samouel, P., and Page, M. (2011). *Essentials of business research methods* (2nd ed.). Armonk, NY: ME Sharpe.
- Hair, J. F., Sarstedt, M., Ringle, C. M., and Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*. 40(3), 414- 433.
- Hamid, S., Chang, S., and Kurnia, S. (2009). Investigation of the Use and Benefits of Online Social etworking (OS) in Higher Education. *Proceedings ascilite Hobart*. 6 (1), 419 - 422.
- Hamid, S., Waycott, J., and Kurnia, S. (2011). Appropriating Online Social Networking (OSN) Activities for Higher Education : Two Malaysian Cases. *Proceedings ascilite Hobart*. 7 (4), 526–538.
- Haq, A., and Chand, S. (2012). Pattern of Facebook usage and its Impact on Academic Performance of University Students : A Gender Based Comparison. *Bulletin of Education & Research*. 34(2), 19–28.
- Hayes, N. (2000). *Doing Psychological Research: Gathering and Analysing Data*, Open University Press. Buckingham, Philadelphia.
- Harel, I. and Papert S. 1991. *Constructionism*. Norwood, New Jersey: Ablex. Publishing Corporation.
- Haseman, D. (2002). The Influences of the Degree of Interactivity on User Outcomes in a Multimedia Environment : An Empirical Investigation. *Advanced Topics in Information Resources Management*. 2(1), 258–260.
- Hartwick, J., and Barki, H. (1994). Explaining the Role of User Participation in Information System Use. *Management Science*. 40 (4), 440-465.
- Heiberger, G., and Harper, R. (2008). Have You Facebooked Astin Lately? Using Technology to Increase Student Involvement. *Cyber law harvard.education*. 12 (4), 1-194.
- Helou, M. (2012). The influence of social networking sites on students' academic performance in Malaysia. *International Journal of Electronic Commerce Studies*. 5 (2), 247-254.
- Helps, C. (2006). Instructional design theory provides insight into evolving

- technology curricula. Working paper. *Brigham Young University*. 6 (4), 129-134.
- Hevner ,Alan,Salvator, Park and Sudha.(2004). Design science in information system research. *MIS Quarterly Journal*. 28(1), 75-105.
- Hew, F. (2011). Students' and teachers' use of Facebook. *Computers in Human Behavior*. 27(2), 662–676.
- Hewett, B. L. (2009). *Generating new theory for online writing instruction (OWI)*. Retrieved, from <http://english.ttu.edu/kairos/6.2/features/hewett/>.
- Hoffman, E. (2009). Evaluating social networking tools for distance learning. *Presented at TCC 2009 Proceedings. University of Hawai'i at Manoa*.
- Hrastinski, S., and Aghaee, M. (2011). How are campus students using social media to support their studies? An explorative interview study. *Education and Information Technologies*. 17(4), 451–464.
- Hu, P. J., Chau, P. Y. K., Sheng, O. R. L., and Tam, K. Y. (1999).Examining the Technology Acceptance Model Using Physician Acceptance of Telemedicine Technology. *Journal of Management Information Systems*.16 (2), 91-112.
- Hung, T., and Yuen, Y. (2010). Educational use of social networking technology in higher education. *Teaching in Higher Education*. 15(6), 703–714.
- Hwang, M., and Brummans, M. (2011). learning about media effects by building a wiki community : students' experiences. *Cutting-Edge Technologies in Higher Education*. 3 (1), 60-74.
- Irwin, C., Ball, L., Desbrow, B., and Leveritt, M. (2012). Students' perceptions of using Facebook as an interactive learning resource at university. *Australasian Journal of Educational Technology*.28 (7), 1221–1232.
- Jacobsen, C., and Forste, R. (2011). The Wired Generation : Academic and Social Outcomes of Electronic Media Use Among University Students. 14 (5), 275-280.
- Jackson, C.M., Chow, S., and Leitch, R.A. (1997). Toward an Understanding of the Behavioral Intention to Use an Information System. *Decision Sciences*. 28(2), 357-389.
- Jalal, A., and Zaidieh, Y. (2012). The Use of Social Networking in Education : Challenges and Opportunities. *World of Computer Science and Information Technology Journal (WCSIT)*. 2(1), 18-21
- Janssen, J., Kirschner, F., Erkens, G., Kirschner, P. A., and Paas, F. (2010). Making

- the black box of collaborative learning transparent: Combining process-oriented and cognitive load approaches. *Educational Psychology Review*. 22 (1), 139-154.
- Java, A., T. Finin, X. Song, and B. Tseng. (2007). *Why we Twitter: Understanding Microblogging Usage And Communities*. Proceedings of the 9th WebKDD and 1st SNA-KDD, workshop.
- Jenkins, E. W. (2000). Constructivism in school science education: Powerful model or the most dangerous intellectual tendency?. *Science & Education*. 9 (1),599-610.
- Joinson, A. N. (2008). Looking at, looking up or keeping up with people?: motives and use of Facebook. *In twenty-sixth annual SIGCHI conference on Human factors in computing systems*.
- Johnson, D. W., Johnson, R. T., and Holubec, E. J. (2008). *Cooperation in the classroom*. (Eighth edition ed.). Edina, MN: Interaction Book.
- Johnson and Christensen (2010). *Educational research: quantitative, qualitative, and mixed approaches*. University of south Alabama, SAGE Publications.
- Johnson, B. and Onwuegbuzie, A.(2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*. 33(7), 14-26.
- Jonassen,D.(1997). Instructional design models of well structure and Ill-structure problem solving learning outcomes. *Educational Technology research and development*. 45(1), 65-94.
- Johnson, L., Adams, S., and Cummins, M., (2012). *NMC horizon report: 2012 higher education edition*. Technical report. The New Media Consortium, Austin, Texas.
- Jonassen, H., Howland, L., Moore, L., and Marra, M. (2003). *Learning to solve problems with technology: A constructivist perspective*. Upper Saddle River, NJ: Merrill Prentice Hall.
- Joreskog, K. G., and Sorbom, D. (1988). *A Guide to the Program and Applications*. Chicago: SPSS, Inc.
- Junco, R. (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Computers & Education*. 58(1), 162–171.
- Junco, R. (2012). Too much face and not enough books: The relationship between multiple indices of Facebook use and academic performance. *Computers in*

- Human Behavior*. 28 (1), 187–198.
- Junco, R., Heiberger, G., and Loken, E. (2011). The effect of Twitter on college student engagement and grades. *Journal of Computer Assisted Learning*. 27(2), 119–132.
- Junco, Reynol, and Cotten, R. (2012). No A 4 U: The relationship between multitasking and academic performance. *Computers & Education*. 59 (2), 505–514.
- Kabilan, M. K., Ahmad, N., and Abidin, M. J. Z. (2010). Facebook: An online environment for learning of English in institutions of higher education? *The Internet and Higher Education*. 13(4), 179–187.
- Kalpidou, M., Costin, D., and Morris, J. (2011). The relationship between Facebook and the well-being of undergraduate college students. *Cyberpsychology, behavior and social networking*, 14(4), 183–190.
- Kaplan, M., and Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*. 53(1), 59–68.
- Karaali, D., Gumussoy, C. A., and Calisir, F. (2011). Factors affecting the intention to use a web-based learning system among blue-collar workers in the automotive industry. *Computers in Human Behavior*. 27(1), 343-354.
- Karpinski, C., Kirschner, P., Ozer, I., Mellott, J., and Ochwo, P. (2013). An exploration of social networking site use, multitasking, and academic performance among United States and European university students. *Computers in Human Behavior*. 29(3), 1182–1192.
- Karpinski A (2009). A description of Facebook use and academic performance among undergraduate and graduate students. *Computers in Human Behavior*. 26(6), 1237-1245.
- Karpinski, C., Kirschner, P., Ozer, I., Mellott, J., and Ochwo, P. (2013). An exploration of social networking site use, multitasking, and academic performance among United States and European university students. *Computers in Human Behavior*. 29(3), 1182–1192.
- Karahanna, E., Straub, D. W., and Chervany, N. L. (1999). Information Technology Adoption across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs. *MIS Quarterly Journal*. 23(2), 183-213.
- Kasim, R. S. R. (2011). Malaysian higher education institutions: Shaping an entrepreneurial agenda. *International Journal of Information and Education*

- Technology*. 1(2), 163-170.
- Kashmiri, S., and Mahajan, V. (2010). What's in a name? An analysis of the strategic behavior of family firms. *International Journal of Research in Marketing*. 27(3), 271– 280.
- Khalid.A and Azeem.M,(2012). Constructivist Vs. Traditional: Effective Instructional Approach in Teacher Education. *International Journal of Humanities and Social Science*. 2 (5), 170-177.
- Khalifa, M., and Lam, R. (2002). Web-based learning: effects on learning process and outcome. *IEEE Transactions on Education*. 45(4), 350–356.
- Kim, B. (2011). Understanding antecedents of continuance intention in social-networking services. *Cyberpsychology, behavior and social networking*, 14(4), 199-205.
- Kim, C., Jahng, J., and Lee, J. (2007). An empirical investigation into the utilization-based information technology success model: Integrating task-performance and social influence perspective. *Journal of Information Technology*. 22(2) , 152–160.
- Kim, H., Kim, T., and Shin, S. W. (2009). Modeling roles of subjective norms and eTrust in customers' acceptance of airline B2C ecommerce websites. *Tourism Management*. 30(2), 266-277.
- King, W. R., and He, J. (2006).A meta-analysis of the technology acceptance model. *Information & Management*, 43(6), 740-755.
- Kirschner, F., Paas, F., Kirschner, P. and Janssen, J. (2011). Differential effects of problem-solving demands on individual and collaborative learning outcomes. *Learning and Instruction*. 21(4), 587–599.
- Kirschner, A., and Karpinski, C. (2010). Facebook and academic performance. *Computers in Human Behavior*. 26(6), 1237–1245.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford Press.
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: The Guilford Press.
- Korobova, N.(2012). A comparative study of student engagement, satisfaction, and academic success among international and American students. *Graduate Theses and Dissertations*. 12 (1), 30- 67.
- Kraut. R.E, and Resnick,P.(2012). *Building successful online communities:*

Evidence-based social design. Mit Press.

- Krejcie, R.V., and Morgan, D.W., (1970). *Determining Sample Size for Research Activities*. Educational and Psychological Measurement.
- Kuh, D., Kinzie, J., Cruce, T., Shoup, R., and Gonyea, R. M. (2009). *Connecting the dots: Multi-faceted analyses of the relationship between student engagement results from the NSSE, and the institutional practices and conditions that foster student success*. Indiana University, Center for Postsecondary Research.
- Kuh, G. D. (2002). *The National Survey of Student Engagement: Conceptual framework and overview of psychometric properties*. Bloomington: Indiana University, Center for Postsecondary Research.
- Kumar, S., Strandlund, E., and Thomas, D. (2008). Improved service system design using Six Sigma DMAIC for a major US consumer electronics and appliance retailer. *International Journal of Retail and Distribution Management*. 36(12), 970-94.
- Kolb D. (2000). Facilitator's guide to learning,' Boston: Hay/McBer. *Journal of College Student Development* . 47 (2), 173-184.
- Lampe, C., Wohn, Y., Vitak, J., Ellison, B., and Wash, R. (2011). Student use of Facebook for organizing collaborative classroom activities. *International Journal of Computer-Supported Collaborative Learning*. 6(3), 329–347.
- Lariscy, W., Avery, J., Sweetser. D., and Howes, P. (2009). An examination of the role of online social media in journalists' source mix. *Public Relations Review*, 35(3), 314–316.
- Larusson, J. and Alterman, R. (2009). Wikis to support the collaborative part of collaborative learning. *International Journal of Computer-Supported Collaborative Learning*. 4(4), 371-402.
- Lauckner, Carolyn, Jan, Ryan and Kang. (2013). Facebook for health ,an examination into the solicitation and effects of health related social support on social network sites. *Computers in Human Behavior*. 29(5), 2072-2080.
- Lee, W. (2013). Exploring the behavioral aspects of adopting technology: Meeting planners' use of social network media and the impact of perceived critical mass. *Journal of Hospitality and Tourism Technology*. 4(1), 6–22.
- Leedy.D. and Ormrod, J.E. (2010). *Practical research: Planning and design* (9thed.). New Jersey: Pearson Education, Inc.
- Lee, M. (2010). Explaining and predicting users' continuance intention toward e-

- learning: An extension of the expectation confirmation model. *Computers & Education*. 54(2), 506–516.
- Lee, Y., Hsieh, Y., and Ma C. (2010). A model of organizational employees' e-learning systems acceptance. *Knowledge-Based Systems*. 24(3), 355-366.
- Lee, C., Krilavi, T., Zhang, N., Wan, K., and Man, L. (2012). Using Web 2. 0 Tools to Enhance Learning in Higher Education : A Case Study in Technological Education. *Lecture Notes in Engineering and Computer Science*. 2 (1), 1153-1156.
- Li, X. (2012). Weaving Social Media Into a Business Proposal Project. *Business Communication Quarterly*, 75(1), 68–75.
- Liaw, S.S., and Huang, H.M. (2003). An investigation of user attitudes toward search engines as an information retrieval tool, *Computers in Human Behavior*. 19 (6), 751-765.
- Liaw, S., Huang, H., and Chen, G. (2007). Surveying instructor and learner attitudes. *Computers & Education*. 49(1), 1066–1080.
- Lin.C.,Yang.S., and Sung.Y. (2014). Gender differences in intention and relationship among factors of using facebook for collaboration. *African Journal of Business Management*. 8(18), 801-809.
- Lin, Y., and Lu, P. (2011). Why people use social networking sites: An empirical study integrating network externalities and motivation theory. *Computers in Human Behavior*. 27(3), 1152-1161.
- Liu, Y. (2003).Developing a scale to measure the interactivity of websites. *Journal of Advertising Research*. 43(3), 207–216.
- Liu, Y. (2010). Social media tools as a learning resource. *Journal of Educational Technology Development and Exchange*. 3(1), 101-114.
- Litwin, M. S. (1995). *How to Measure Survey Reliability and Validity*. London: Sage.
- Lockyer, L., and Patterson, J. (2008). Integrating social networking technologies in education: a case study of a formal learning environment. *In Proceedings of the 8th IEEE international conference on advanced learning technologies* 529–533.
- Lucas, H.C.J. and Spitler, V.K. (1999). Technology Use and Performance: A field Study of Broker Workstations. *Decision Sciences*. 30 (2), 291-311.
- Lund, A. (2008). Wikis: a collective approach to language production. *ReCall*. 20(1), 35–54.

- Lu, J., Chou, H., and Ling, P. (2009). Investigating passengers' intentions to use technology-based self-check services. *Transportation Research*. 45 (1), 2345-356.
- Mack, D., and Head, A. (2007). Electronic Journal of Academic and Special Librarianship Reaching Students with Facebook: Data and Best Practices. *Electronic journal of academic and special librarianship*. 2(2), 1–8.
- MacGeorge, E. L., Homan, S. R., Dunning, J. B., Jr., Elmore, D., Bodie, G. D., and Evans, E. (2008). The influence of learning characteristics on evaluation of audience response technology. *Journal of Computing in Higher Education*, 19 (1), 25–46.
- Madge, C., Meek, J., Wellens, J., and Hooley, T. (2009). Facebook , social integration and informal learning at university: It is more for socializing and talking to friends about work than for actually doing work Learning. *Media and Technology*. 34(2), 141–155.
- Mahadi, N., & Ubaidullah, N. H. (2010). Social networking sites: Opportunities for language teachers. *The International Journal of Learning*. 17(6), 313-323.
- Malika, Nordinb , Zakariac and Sirun.(2012). An Exploratory Study on the Relationship between Life Satisfaction and Academic Performance among Undergraduate Students of UiTM, Shah Alam. *Procedia Social and Behavioral Sciences* . 90 (1), 334 – 339.
- Malhotra, N. K. and Birks, D. F. (2000). *Marketing Research: An Applied Approach*. (European Edition). England: Pearson Education Ltd.
- Mason, R. and Rennie, F. (2008). *E-learning and social networking handbook*. London, UK: Routledge.
- Mathews, M. (1998). *Constructivism in science education*. Dordrecht, the Netherlands: Kluwer.
- Mathieson, K. (1991). Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behavior. *Information Systems Research*. 2(3), 173-191.
- Maylor, H. and Blackmon, K. (2005). *Researching Business and Management*. Palgrave Macmillan edn, New York, N.Y. USA.
- Mazman, G. (2009). Adoption process of social network and their usage in educational context. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*. 3 (1), 26-30.

- Mazman, S. G., and Usluel, Y. K. (2010). Modeling educational use of Facebook. *Computers & Education*. 55(2), 444–453.
- Medlin, B., and Green, K. W., Jr. (2009). Enhancing performance through goal setting, engagement, and optimism. *Industrial Management & Data Systems*. 109(7), 943–956.
- McCarthy, J. (2010). Blended learning environments: Using social networking sites to enhance the first year experience. *Australasian Journal of Educational Technology*. 26(6), 729–740.
- McConnell, D. (2006). *E-learning groups and communities*. Berkshire: Open University Press.
- McMillan, J., and Hwang, S. (2002). Measures of Perceived Interactivity: An Exploration of the Role of Direction of Communication, User Control, and Time in Shaping Perceptions of Interactivity. *Journal of Advertising*. 31(3), 29–42.
- Medios, L., Social, C., and Rutherford, C. (2010). Using Online Social Media to Support Preserves Student Engagement. *MERLOT Journal of Online Learning and Teaching*. 6(4), 703-711.
- Md Nor, K. (2005). *An empirical study of Internet banking acceptance Malaysia: an extended decomposed theory of planned behavior*. Doctor Philosophy, Southern Illinois University Carbondale.
- Memili, E., Eddleston, K. A., Kellermanns, F. W., Zellweger, T. M., and Barnett, T. (2010). The critical path to family firm success through entrepreneurial risk taking and image. *Journal of Family Business Strategy*. 1(4), 200–209.
- Mohamed, N and Ahmad, H. (2012). Information privacy concerns, antecedents and privacy measure use in social network sites. *Computer in Human Behavior*. 28(6), 2366-2375.
- Moon, J and Kim Y. (2001). Extending the TAM for a world-wide-web context. *Information Management*. 38(1), 217–230.
- Moore, J. (2009). A synthesis of Sloan-C effective practices: December 2009. *Journal of Asynchronous Learning Networks*. 13(4), 84-94.
- Moore, G. C., and Benbasat, I. (1991). Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research*. 2(3), 192-222.
- Moran, M., Seaman, J. and Tinti-Kane, H. (2012). *Blogs, wikis, podcasts and*

- Facebook: how today's higher education faculty use social media.* Babson Survey Research Group. Boston, MA: Pearson Learning Solutions.
- Muniasamy, V., Ejalani, M., Anandhavalli, and Gauthaman, K. (2015). Study on Evaluating the Utilization of Social Media Tools (SMT) in Collaborative Learning Case Study: Faculty of Medicine, King Khalid University. *World Academy of Science, Engineering and Technology International Journal of Computer, Control, Quantum and Information Engineering* . 9(1), 317-322.
- Munguatosha, M., Muyinda, B., and Lubega, T. (2011). A social networked learning adoption model for higher education institutions in developing countries. *On the Horizon*. 19(4), 307–320.
- Murphy, J., and Lebars, R. (2008). Unexpected outcomes: Web 2.0 in the secondary school classroom. *International Journal of Technology in Teaching and Learning*. 4(2), 134–147.
- Mustapha, R. (2010). Collaborative Strategic Reading with University EFL Learners. *Journal of College Reading and Learning*. 41(1), 67-94.
- Naidu, S. (2005). *Learning and teaching with technology: Principles and practices.* Oxon, UK: Routledge Falmer.
- Naeve, A., Yli-Luoma, P., Kravcik, M., & Lytras, M. D. (2008). A modelling approach to study learning processes with a focus on knowledge creation. *International Journal of Technology Enhanced Learning*. 1 (1), 1–34.
- Naylor, S., and Keogh, B. (1999). Constructivism in classroom: Theory into practice. *Journal of Science Teacher Education*. 10 (1), 93-106.
- Nemetz, P., Aiken, D., Cooney, V., and Pascal, V. (2012). Should Faculty Use Social Networks to Engage. *Journal for Advancement of Marketing Education*. 20(1), 19–28.
- Neuman, L. (2003). *Social Research Methods: Qualitative and Quantitative Approaches.* 5th edition, Allyn and Bacon, Boston, Massachusetts.
- Noar, S.M. and Zimmerman, R.S. (2005). Health behavior theory and cumulative knowledge regarding health behavior ,are we moving in the right direction?. *Health Education Research*. 20(3), 275-290.
- Nola, R. (1998). *Constructivism in science and science education: A philosophical critique.* In M. Mathews (Ed) *Constructivism in science education* (31-59). Dordrecht, The Netherlands: Kluwer.
- Nordin, K (2011). *Higher Education in the New Economy: Roadmap of Prospects*

and Challenges. 15th Malaysian education summit Sunway resort hotel and spa, minister of higher education Malaysia.

- Norliza M, Fauziah .S, Rohaizat. B, Kamariah .I, Lim . Y, Tan . N and Nik. Z. (2006). *Women participation in business: a focus on franchising venture.*, Universiti Teknologi Malaysia, Skudai.
- Nov, O. Arazy, O. Lopez, C and Brusilovsky, p. (2013). Exploring personality targeted UI design in online social participation system. *In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (361-370)*. ACM.
- Novak, E., Razzouk, R., and Johnson, E. (2012). The educational use of social annotation tools in higher education: A literature review. *The Internet and Higher Education*. 15(1), 39–49.
- Nunnally, J.C. (1970). *Introduction to psychological measurement*. New York: McGraw-Hill.
- O'Connor (2012). Innovative Research Universities (IRU). IRU delegation to Malaysia. <http://www.iru.edu.au/>.
- Ophus, D., and Abbitt, T. (2009). Exploring the Potential Perceptions of Social Networking Systems in University Courses. *Journal of Online Learning and Teaching*. 5(4), 639-648.
- Onwuegbuzie, J. and Leech, L. (2005). Taking the Q Out of Research: Teaching Research Methodology Courses Without the Divide Between Quantitative and Qualitative Paradigms. *Quality & Quantity*. 39(3), 267-296.
- Oradini, F., and Saunders, G. (2008). The Use of Social Networking by Students and Staff In Higher Education. *Paper presented at the learning Forum, Paris*. 6 (1), 1-5.
- Palen, L., Vieweg, S., Liu, B., and Hughes, L. (2009). Crisis in a Networked World: Features of Computer - Mediated Communication in the Virginia Tech Event. *Social Science Computer Review*. 27(4), 467–480.
- Palen, L. (2008). Online Social media in crisis events. *Educes Quarterly*. *Educause Quarterly*, 31(3), 76-78.
- Pan, S., and Jordan-Marsh, M. (2010). Internet use intention and adoption among Chinese older adults: From the expanded technology acceptance model perspective. *Computers in Human Behavior*. 26(5), 1111–1119.
- Parra-Lopez, E., J. Bulchand-Gidumal, D. Gutierrez-Tano, and R. Diaz-Armas. (2011). Intentions to use social media in organizing and taking vacation trips.

- Computers in Human Behavior*. 27(2), 640–654.
- Paul, A., Baker, M., and Cochran, D. (2012). Effect of online social networking on student academic performance. *Computers in Human Behavior*. 28(6), 2117–2127.
- Paul Grayson .(2004).The Relationship Between Grades and Academic Program Satisfaction Over Four Years of Study. *The Canadian Journal of Higher Education*. 5(2), 1-34.
- Pasek, J., and Hargittai, E. (2009). Facebook and academic performance: reconciling a media sensation with data. *First Monday*, 14(5), 1-8.
- Pelling E and White K . (2009). the theory of planned behavior applied to young people’s use of social networking web sites. *CyberPsychology & Behavior*. 12(6), 755-759.
- Pellissier, R. (2007). *Number Crunching for Business People*. Cape Town: Juta and Company Ltd.
- Perez, T., Araiza,M., and Doerfer,C.(2013). Using Facebook for Learning: A Case Study on the Perception of Students in Higher Education. *Procedia Social and Behavioral Sciences*. 10 (6), 3259–3267.
- Piaget, J. (1967). *Biologie et connaissance (Biology and knowledge)*. Paris, Gallimard.
- Pinho, J. and Soares, M. (2011). Examining the technology acceptance model in the adoption of social networks. *Journal of Research in Interactive Marketing*. 5(2), 116–129.
- Plouffe, C. R., Hulland, J. S., and Vandenbosch, M. (2001).Research Report: Richness Versus Parsimony in Modeling Technology Adoption Decisions - Understanding Merchant Adoption of a Smart Card-Based Payment System. *Information Systems Research*. 12(2), 208-222.
- Poellhuber, B., Anderson, T., and Roy, N. (2011). Distance students’ readiness for social media and collaboration. *The International Review of Research in Open and Distance Learning*.12(6), 102-125.
- Polancic, G., Hericko, M., and Rozman, I. (2010). An empirical examination of application frameworks success based on technology acceptance model. *Journal of Systems and Software*. 83(4), 574-584.
- Powell, A., Farrar, E., and Cohen, D. (1985). *The shopping mall high school: Winners and losers in the educational marketplace*. Boston, MA: Houghton

Mifflin.

- Prince, M. (2004). Does Active Learning Work? A Review of the Research. *Journal of Engineering Education*. 93(3), 223-231.
- Ractham, P., and Firpo, D. (2011). Using Social Networking Technology to Enhance Learning in Higher Education: A Case Study Using Facebook. *201144th Hawaii International Conference on System Sciences*, 1–10.
- Ratneswary, R and Rasiah ,V (2013). Transformative Higher Education Teaching and Learning: Using. Social Media in a Team-Based Learning Environment. *Procedia - Social and Behavioral Sciences*. 12(3), 369 – 379.
- Raphael, D. (1990). *Problems of political philosophy*. London: Macmillan.
- Remenyi, D., Williams, B., Money, A. and Swartz, E. (1998). *Doing Research in Business and Management: An Introduction to Process and Method*. Sage Publications LTD, London, UK.
- Rienties, B., Hernandez Nanclares, N., Jindal-Snape, D., & Alcott, P. (2013). The role of cultural background and team divisions in developing social learning relations in the classroom. *Journal of Studies in International Education*. 17(4), 322-353.
- Ringle, C., Sarstedt, M., Hair, J. F., and Pieper, T. (2012). The use of partial least squares structural equation modeling in strategic management research: A review of past practices and recommendations for future applications. *Journal of Long Range Planning*. 45(6), 320–340.
- Roblyer, D., McDaniel, M., Webb, M., Herman, J., and Witty, V. (2010). Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *The Internet and Higher Education*. 13(3), 134–140.
- Roca, J. C., García, J. J., and Vega, J. J. (2009). The importance of perceived trust, security and privacy in online trading systems. *Information Management & Computer Security*. 17 (2), 96-113.
- Rodriguez-Tejedo, I., Lara, S., Zarraga-Rodríguez, M., and Rodriguez V. (2012). An Assessment of the Impact of Social Networks on Collaborative Learning at College Level. *Procedia Social and Behavioral Sciences*. 47(1), 1616–1621.
- Rohrbeck, C. A., Ginsburg-Block, M. D., Fantuzzo, J. W., & Miller, T. R. (2003). Peer-assisted learning interventions with elementary school students: a meta-analytic review. *Journal of Educational Psychology*. 95(2), 240–257.

- Rouis, S., Limayem, M., and Salehi-sangari, E. (2011). Impact of Facebook Usage on Students' Academic Achievement: Roles of Self-Regulation and Trust. *Electronic journal of research in educational psychology*. 9(25), 961–994.
- Sanchez , Cortijo and Javed (2014). Students' perceptions of Facebook for academic purposes. *Computers & Education*. 70 (1), 138-149.
- Santhanam, R., Sasidharan, S., and Webster, J. (2008). Using self-regulatory learning to enhance e-learning-based information technology training. *Information Systems Research*. 19(1), 26–47.
- Sarstedt, M., Ringle, C., Smith, D., Reams, R., and Hair, J. (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.
- Sekaran, U. (2003). *Research methods for Business: A Skill Building Approach*. 4 ed.,The US: John Wiley&Sons, Inc
- Schroeder, A. Minocha, S. and Schneider, C. (2010).The strengths, weaknesses, opportunities and threats of using social software in higher and further education teaching and learning. *Journal of Computed Assisted Learning*. 26 (3), 159-174.
- Schuwirth, L., and Van Der C. (2006). A plea for new psychometric models in educational assessment. *Medical Education*, 40 (1), 296-300.
- Selwyn, Neil, and Grant, L. (2009). Researching the realities of social software use an introduction. *Learning, Media and Technology*. 34 (2), 79–86.
- Selwyn, N. (2009). Faceworking: exploring students' education-related use of Facebook. *Learning, Media and Technology*, 34(2), 157–174.
- Sibona.C., and Choi,J.(2012). Factors Affecting End-User Satisfaction on Facebook. *Proceedings of the Sixth International AAAI Conference on Weblogs and Social Media*.2012.
- Silius, K. (2010). Students' Motivations for Social Media Enhanced Studying and Learning. *Knowledge Management & E-Learning: An International Journal (KM&EL)*. 2(1), 51-67.
- Shankar, V., Smith, A., and Rangaswamy, A.(2003). Customer satisfaction and loyalty in online and offline environments. *International Journal of Research in Marketing*. 20(2), 153-175.
- Sharma, P. N., and Kim, K. H. (2005). *A comparison of PLS and ML bootstrapping*

- techniques in SEM*. In *New perspectives in partial least squares and related methods*. Heidelberg: Springer Verlag.
- Sharma, S., Mukherjee, S., Kumar, A., and Dillon, W.R. (2005). A simulation study to investigate the use of cutoff values for assessing model fit in covariance structure models. *Journal of Business Research*. 58 (1), 935-43.
- Shih, H. (2004). An empirical study on predicting user acceptance of e-shopping on the Web. *Information & Management*. 41(3), 351-368.
- Shirky, C. (2011). *Cognitive surplus: How technology makes consumers into collaborators*. New York, NY: Penguin Press.
- Shook, C. L., Ketchen, D. J., Cycyota, C. S., and Crockett, D. (2003). Data analytic trends in strategic management research. *Strategic Management Journal*. 24(12), 1231–1237.
- Smith, P. J., Coldwell, J., Smith, S. N., and Murphy, K. L. (2005). Learning through computer-mediated communication: A comparison of Australian and Chinese heritage students. *Innovation in Education and training International*. 42(2), 123–134.
- So, J., and Brush, T. (2008). Student perceptions of collaborative learning, social presence and satisfaction in a blended learning environment: Relationships and critical factors. *Computers & Education*. 51(1), 318–336.
- Softic, S. (2012). Towards Identifying Collaborative Learning Groups Using Social Media. *International Journal of Emerging Technologies in Learning (iJET)*. 7(2), 15–21.
- Solis, B. (2008). *Customer Service: The Art of Listening and Engagement through Social Media*. An eBook by Brian Solis of PR 2.0. 1-32.
- Stanton, S. C. and Malhotra, V., (2004). *Model Checking an Object-Oriented Design*. Sixth International Conf. on Enterprise Information Systems, Porto, Portugal.
- Su, A., Yang, S., Hwang, W., and Zhang, J. (2010). A Web 2.0-based collaborative annotation system for enhancing knowledge sharing in collaborative learning environments. *Computers & Education*. 55(2), 752–766.
- Sumak, B., Hericko, M., Pusnik, M., and Polancic, G. (2011). Factors affecting acceptance and use of moodle: An empirical study based on TAM, *Informatics*. 35(1), 91-100.
- Sweeney, J. and Ingram, D. (2001). A comparison of traditional and web--based tutorials in marketing education: An exploratory study. *Journal of Marketing*

- Education*. 23(1), 55-62.
- Szajna, B. (1996). Empirical Evaluation of the Revised Technology Acceptance Model. *Management Science*. 42(1), 85-92.
- Tabachnick, G. and Fidell, S. (2001). *Using Multivariate Statistics*. 6th edn, Pearson Education, Inc, New Jersey.
- Taylor, S., and Todd, P. (1995). Understanding information technology usage: a test of competing models. *Information Systems Research*. 6 (2), 144–176.
- Teijlingen van, E., Rennie, A.M., Hundley, V., and Graham, W. (2001). The importance of conducting and reporting pilot studies: the example of the Scottish Births Survey. *Journal of Advanced Nursing*. 34(1), 289-295.
- Tess, P. A. (2013). The role of social media in higher education classes (real and virtual) – A literature review. *Computers in Human Behavior*. 29(1), 60–68.
- Thompson, R. L., Higgins, C. A., and Howell, J. M. (1991). Personal Computing: Toward a Conceptual Model of Utilization. *MIS Quarterly Journal*. 15(1), 125-143.
- Thongmak, M. (2014). Factors determining learners' acceptance of Facebook in a higher education classroom. *Knowledge Management & ELearning*. 6(3), 316–331.
- Trochim, K. (2006). *Research Methods Knowledge Base*. Available at: <http://www.anatomyfacts.com/research/researchmethodsknowledgebase.pdf>
- Tsai, W. (2011). Achieving effective learning effects in the blended course: a combined approach of online self-regulated learning and collaborative learning with initiation. *Cyberpsychology, behavior and social networking*. 14(9), 505–10.
- Tulaboev, A., and Oxley, A. (2012). A case study on using Web 2.0 social networking tools in higher education. *In Computer & Information Science (ICCIS), 2012 International Conference on (84-88). IEEE*.
- Van Aken, J. (2008). Management research as a design science. *British Journal of Management*. 16 (1), 19-36.
- Veer, R. and Valsiner, J. (1993). *Understanding Vygotsky*. Oxford, UK: Blackwell.
- Venkatesh, V. and Bala, H. (2008). Technology Acceptance Model 3 and a research agenda on interventions. *Journal of Decision Sciences*. 39(2), 273-315.
- Venkatesh, V., and Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*.

46(2), 186-204.

- Venkatesh, V., Morris, G., Davis, B., and Davis, D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*. 27(3), 425-478.
- Venkatesh, V. (2000). Determinants of Perceived Ease of Use: Integrating Perceived Behavioral Control, Computer Anxiety and Enjoyment into the Technology Acceptance Model. *Information Systems Research*. 11 (4), 342-365.
- Venkatesh, V., and 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(1), 115-139.
- Venkatesh, V., and Davis, F.D. (1996). A model of the antecedents of perceived ease of use: development and test. *Decision Sciences*. 27 (3), 451–481.
- Voigt, C., Barker, S., King, S., Macfarlane, K., Sawyer, T., and Scutter, S. (2010). *Conceptualising social networking capabilities: Connections, objects, power and affect*. CH Steel, MJ Keppell, P. Gerbic & Housego (Eds.), Curriculum, technology & transformation for an unknown future. Proceedings Ascillite Sydney, 1020-1030.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wan, C., Sirat, M., and Razak, D. A. (2015). The Idea of a University: Rethinking the Malaysian Context. *Humanities*. 4(3), 266-282.
- Wang, Q., and Chen, W. (2011). *The Effects of Social Media on College Students*. Johnson & Wales University.
- Wang, Y., Wang, Y., Lin H., and Tang, T. (2003). Determinants of user acceptance of Internet banking: an empirical study. *International Journal of Service Industry Management*. 14(5), 501-519.
- Wang, Q., Woo, H. L., Quek, C. L., Yang, Y., and Liu, M. (2012). Using the Facebook group as a learning management system: An exploratory study. *British Journal of Educational Technology*. 43 (3), 428–438.
- Wankel, C. (2011). New dimensions of communicating with students : introduction to teaching arts and science. *Cutting-Edge Technologies in Higher Education*. 3(1), 3-14.
- Wertsch, J. and Sohmer, R. (1995). Vygotsky on learning and development. *Human Development*. 38(1), 332–337.
- Weston, R. (2006). A Brief Guide to Structural Equation Modeling. *The Counseling*

- Psychologist*. 34(5), 719-751.
- Will W.K. Ma a and Allan H.K. Yuen.(2011).Understanding online knowledge sharing: An interpersonal relationship perspective .*Computers & Education*. 56 (1), 210–219.
- Wise, L. Z., Skues, J., and Williams, B. (2011). *Facebook in higher education promotes social but not academic engagement*. Changing Demands, Changing Directions. Proceedings escalate Hobart.
- Wixom, H., and Todd,A. (2005). A theoretical integration of user satisfaction and technology acceptance. *Information Systems Research*.16(1), 85-102.
- Woojin, Lee, Timothy Tyrrell and Mehmet Erdem, (2013). Exploring the behavioral aspects of adopting technology. *Journal of Hospitality and Tourism Technology*. 4(1), 6-22.
- Wolf, K. (2012). Using Social Media for Collaboration about Industry News in Higher Education. *Selected paper prepared for presentation at the American Association of Wine Economists 2012 AAWE Conference, Princeton, New Jersey, June 8, 2012*.
- Wu, J-H., Tennyson, R.D., and Hsia, T-L. (2010). A study of student satisfaction in a blended e-learning system environment. *Computers & Education*. 55(1), 155–164.
- Yadin, A., and Or-bach, R. (2010). The Importance of Emphasizing Individual Learning in the Collaborative Learning Era. *Journal of Information Systems Education*. 21(2), 185–195.
- Yakin, I., and Gencil, I. E. (2013). The utilization of social media tools for informal learning activities: A survey study. *Mevlana International Journal of Education*. 3(4), 108-117.
- Yamane, Taro. (1967). *Statistics: An Introductory Analysis*. 2nd Ed., And New York: Harper and Row.
- Yampinij, S., Sangsuwan, M., and Chuathong, S. (2012). A conceptual framework for social network to support collaborative learning (SSCL) for enhancing knowledge construction of grade 3 students. *Procedia-Social and Behavioral Sciences*. 46 (1), 3747-3751.
- Yang, Y., Wang, Q., Woo, H. L., and Quek, C. L. (2011). Using Facebook for teaching and learning: a review of the literature. *International Journal of Continuing Engineering Education and Life Long Learning*. 21(1), 72-86.

- Yanli, J., Yi, Z., and Yuli, L. (2010). Effects of System Characteristics on Users' Self-Disclosure in Social Networking Sites. *Information Technology: New Generations (ITNG), 2010 Seventh International Conference*, 12-14, 529-533.
- Yeh, N., Lin C. and Lu, P. (2011). The moderating effect of social roles on user behavior in virtual worlds. *Online Information Review*. 35(5), 747-769.
- Yin, R. (2008). *Case Study Research: Design and Methods*. 4th edition. Thousand Oaks: SAGE Publications.
- Yu, Y., Tian, W., Vogel, D., and Chi-Wai Kwok, R. (2010). Can learning be virtually boosted? An investigation of online social networking impacts. *Computers and Education*. 55(4), 1494-1503.
- Yueh ,P ., Huang and Chang,C. (2015). Exploring factors affecting students' continued Wiki use for individual and collaborative learning: An extended UTAUT perspective. *Australasian Journal of Educational Technology*. 31(1), 16-31.
- Zakaria, H., Watson, J., and Edwards, L. (2010). Investigating the use of Web 2.0 technology by Malaysian students. *Multicultural Education & Technology Journal*. 4(1), 17-29.
- Zanamwe, N., Rupere, T., and Kufandirimbwa, O. (2013). Use of Social Networking Technologies in Higher Education in Zimbabwe: A learners' perspective. *International Journal of Computer and Information Technology*, 2(1), 2279-0764.
- Zikmund, W. G. (2003). *Business research methods*. (7th Ed.). Ohio: Thomson Learning South-Western.
- Zhu, C. (2012). Student satisfaction, performance, and knowledge construction in online collaborative learning. *Journal of Educational Technology & Society*. 15(1), 127-136.
- Zoghi, M., Mustapha, R. and Maasum, R. (2010). Collaborative Strategic Reading with University EFL Learners. *Journal of College Reading and Learning*. 41 (1) 67-94.