



Title: Factors affecting active participation in business-to-business online business communities

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**FACTORS AFFECTING ACTIVE PARTICIPATION
IN BUSINESS-TO-BUSINESS ONLINE BUSINESS
COMMUNITIES**

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University of Bedfordshire

**FACTORS AFFECTING ACTIVE PARTICIPATION
IN BUSINESS-TO-BUSINESS ONLINE BUSINESS
COMMUNITIES**

by

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of the requirements for the degree of Doctor of Philosophy

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Abstract

The aim of this research is to investigate factors affecting active participation in Business-to-Business Online Business Communities (B2B OBCs). The primary objective of the study was to develop a framework to better understand the important factors affecting members' active participation behaviour in B2B OBCs. To achieve the main goal of this research, an integrated framework was developed underpinned by three well known theories: Uses and Gratification (U&G), Social Exchange (SET), and Information Systems Success Model (ISSM). A mixed method approach (partially mixed sequential dominant status design) was employed to answer the research question and achieve the objectives of the study. Accordingly, this study was carried out in two phases. During the first phase an exploratory study was carried out to further explore the framework. For that purpose semi-structured interviews with twelve members of B2B OBCs were conducted. The collected data was analysed using thematic analysis utilising NVIVO and this assisted in discovering another important factor 'service quality', which reflected on the moderator's role inside B2B OBCs. Subsequently, service quality was added to the model. The exploratory study is also helped to develop a new measure for active participation in the context of B2B OBCs as this study was unable to adapt the measure for the construct from prior studies due to the discrepancy in the literature. In the second phase of the study, a quantitative approach (online questionnaires) was employed to test the developed framework. Using non-probability convenience sampling technique, 521 useable online questionnaires were collected from 41 B2B OBCs on LinkedIn. The collected data was then analysed using a second generation approach (SEM) utilising AMOS.

During the data analysis, two U&G constructs (functional need and hedonic need) were found to have a positive impact on active participation. Yet, the direct association between psychological need and active participation was not significant. Nevertheless, the construct found to have a positive and indirect relationship with active participation. In addition, two of the SET constructs (reciprocity and affective commitment) were also found to have a positive association with active participation.

Trusting beliefs was found to have no direct impact on active participation. Further analysis revealed that the relationship between the two construct was indirect via affective commitment. Furthermore, three factors that were identified under ISSM, information quality, system quality, and service quality, were also found to be the antecedent of trusting beliefs but they did not have a direct impact on active participation. Information quality and service quality were also found to have an indirect and positive impact on affective commitment and active participation. The analysis also revealed that members from different industry types had different participation behaviour in B2B OBCs. The research outcomes made several contributions to the literature. These include a new measure for active participation and service quality. This provides a new validated instrument for B2B OBC researchers to adapt in the future. Further, an integrated model for factors affecting active participation in B2B OBCs was developed. This also provides a foundation for future studies in the field. The final results of this study demonstrate the appropriateness and robustness of the developed model, and further suggests that any attempt to investigate members participation behaviour in B2B OBCs will be incomplete unless all three theories (U&G, SET, and ISSM) are considered. Moreover, this study helped to extend the existing knowledge on Online Community (OC) definitions, OC taxonomies, OC commitment, and OC trust. Finally, the findings of this study propose several guidelines to assist B2B OBC providers to build and maintain successful communities.

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Thanks to the staff of Research Graduate School for their administrative support through this research project.

Declaration

I declare that this thesis is my own unaided work. It is being submitted for the degree of Doctor of Philosophy at the University of Bedfordshire.

It has not been submitted before for any degree or examination in any other University.

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List of Abbreviations

ABT	Ability Based Trust
ACM	Affective Commitment
ACP	Active Participation
ADF	Asymptotically Distribution Free
B2B	Business-to-Business
B2B OBCs	Business-to-Business Online Business Communities
B2C	Business-to-Consumer
BBT	Benevolence Based Trust
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CR	Critical Ratio
DF	Degrees of Freedom
DV	Dependent Variable
ECT	Expectation Confirmatory Theory
EFA	Exploratory Factor Analysis
EM	Expectation Maximizations
FND	Functional Needs
GFI	Goodness-of-fit
GLS	Generalised Least Squire
HND	Hedonic Need
IBT	Integrity Based Trust
IFQ	Information Quality
IS	Information Systems
ISSM	Information System Success Model
IV	Independent Variable
MAR	Missing at Random
MCAR	Missing Completely at Random
MI	Multiple Imputation
MIs	Modification Indices
MLE	Maximum Likelihood Estimation
NFI	Normed Fit Index
NMAR	Not Missing at Random
OBCs	Online Business Communities
OC	Online Communities
PLS	Partial Least Squares
PND	Psychological Need

R ²	Square Roots
RCP	Reciprocity
RMR	Root Mean Square
RMSEA	Root Mean Square Error of Approximation
SIC	Squared Interconstruct Correlations
SEM	Structural Equation Modelling
SET	Social Exchange Theory
SI	Single Imputation
SRMR	Standardised Root Mean Square
SRs	Standardised Residuals
SRQ	Service Quality
STQ	Systems Quality
TLI	Tucker Lewis Index
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
TRB	Trusting Beliefs
U&G	Uses and Gratification Theory
VIF	Variance Inflation Factor
WLS	Weighted Least Square
X ²	Chi-square
X ² /DF	Normed Chi-Square

1 Chapter One: Introduction

1.1 Introduction

This chapter gives an overview of this research programme. First it provides a short background to the study. This is followed by outlining the identified gap in the literature in relation to Business-to-Business Online Business Communities (B2B OBCs). Next, it describes the primary aim and objectives of the study. Lastly, it describes the highlights of the work undertaken and presented in the chapters in this thesis.

1.2 Research Background

Online Community (OC) is known for more than two decades and for the past several years it has been seen as a very popular topic amongst researchers. The current literature shows that there is a growing interest in the subject in various disciplines and backgrounds including education, business, health, and psychology. OC has been recognised as a very complex phenomenon and it has been described by different terms and definitions. More commonly used terminologies include virtual communities (Hagel and Armstrong, 1997), computer-mediated communities (Wang and Fesenmaier, 2004), and electronic communities (Wasko and Faraj, 2000). However, the term 'OC' is used throughout this thesis for any of these terminologies. The definition of the concept varies from one researcher's point of view to another and from one study context to another. Several researchers have defined the concept very briefly and described it as groups of people with a common purpose communicating through communication technologies (Ahuja and Galvin, 2003, Lin, 2007, Hew, 2009). Some researchers have identified OC attributes instead of giving a precise definition (Kim, 2000, Damsgaard, 2002). However, this study proffers a succinct definition for OCs by including several attributes: people, purpose, participation, technology, and policy.

Moreover, the current literature has shown that there is not a universally agreed way to classify OCs. Different researchers have proposed different classification schema for OC based on different attributes such as people, technology, and purpose (Hagel and Armstrong, 1997, DeSanctis et al., 2003, Kim 2004, Porter 2004, Erat et al., 2006, Jin et al., 2010). Following an examination of the proposed typologies in the literature, this study proposes to classify OCs based on the disciplines they originated from. Based on that proposition, in this study Online Business Community (OBC) is identified as one element of the taxonomy and further sub-communities such as Business-to-Business (B2B) and Business-to-Consumer (B2C) are identified as sub typologies for OBC. The (B2B) sub-typology is further defined as relational or as trading (e-commerce). B2B relational communities are simply referred to B2B OBCs in this study. Using the attributes associated with an OC (people, purpose, participation, technology, and policy), B2B OBCs are described as groups of business owners and managers with a shared purpose governed by policies, who have already established some level of participation through online systems. The importance of these types of community for businesses is eminent, particularly their benefits for knowledge sharing, accessing experts' advice, and forming business relationships.

Active participation can be seen as a fundamental success factor for any types of OC including B2B OBCs (Ardichvili et al., 2003, Cheung and Lee, 2009). Because an OC can only achieve its purpose and meet its members' needs if there is some level of active participation among the members (Cheung and Lee, 2009). Prior researchers have stated that many OCs have failed due to lack of active participation between the community members (Hsu and Lin, 2008). Therefore, it is believed that the success of an OC still largely depends on its members' participation and contribution (Tedjamulia et al., 2005). For that reason a large number of studies have examined the participation phenomenon in various OC settings. For example, factors affecting participation behaviour in OCs that are knowledge sharing communities have been explored by Kankanhalli et al.(2005), Chiu et al.(2006), Lee et al. (2006), Hsu and Lin (2008), Chen and Hung (2010), Lu and Yang (2011), and Chai and Kim

(2012). Factors affecting knowledge contribution in communities of practice have been discussed by Wasko and Faraj (2000) and Wasko and Faraj (2005). Factors affecting participation level in online travel communities have been discussed by Wang and Fesenmaier (2003, 2004a, and 2004b). Factors affecting active participation in Business-to-Business e-commerce communities have been explored by Zimmer et al. (2010). Factors associated with participation in Business-to-Consumer communities have been explored by Evans et al. (2001). Numerous researchers have also attempted to increase the level of participation through introducing an ecological framework (e.g. Bishop, 2007), through design guidelines (e.g. Gurzick and Lutter, 2009), and through identifying motivational factors (e.g. Yan et al., 2007). The outcomes of these prior studies are critically reviewed in Chapter 2 Section 2.6.

Based on these studies, this study also recognises active participation as a fundamental success factor for B2B OBCs. Particularly, the critical literature review in this study suggests that without active participation a B2B OBC cannot deliver benefits (e.g. knowledge sharing, providing/seeking support, and forming business relationships) to its members, and therefore these types of OBCs will not flourish without active participation. Considering the importance of active participation for B2B OBCs, very limited research has been focused in this area. For that reason, there is not enough understanding on what exactly active participation means and how it can be measured. Consequently, this research proposes a consolidating definition for active participation. Additionally, the existing studies in the area largely focused on the adoption of B2B technologies rather than the active participation element (Zahay and Handfield, 2004, Nolan et al., 2007). Accordingly, this study proposes that the factors affecting active participation in B2B OBCs is a gap in the literature, and therefore this study will attempt to address the following research question:

What are the factors affecting active participation in B2B OBCs?

1.3 Aims and Objectives

This PhD work was part of a collaborative project funded by the University of Bedfordshire and three local authorities: Bedford Borough Council, Luton Borough Council, and Central Bedfordshire Council. The project aim was to explore innovative infrastructure for business growth. Within this project, a B2B web application (agoranetwork.co.uk) was developed to enable businesses to come together online to carry out several activities: sharing knowledge and information, accessing experts' advice, seeking/providing support, forming business relationships, and finding business opportunities. During the project development process, it was found that many of these types of communities have failed due to lack of active participation of the members. The current literature also shows that active participation in B2B OBCs is a gap in the literature as very limited research was found in this area.

Accordingly, the aim of this research is to investigate factors affecting active participation in B2B OBCs. Towards this aim, this study considers relevant theories and models which can explain individuals' behaviour in OCs to understand whether they can explain active participation in B2B OBCs. The main theories are Social Exchange Theory (SET) and Uses and Gratification Theory (U&G); the main model is DeLone and Maclean's Information System Success Model (ISSM). The following objectives have being outlined to address the aim of this research:

- To better understand OCs in particular B2B OBCs through a critical literature review
- To better understand the active participation phenomenon in B2B OBCs
- To better understand theoretical concepts and theoretical debate on factors that may affect active participation in B2B OBCs
- To develop and test a framework underpinned by OC theories to address factors affecting active participation in B2B OBCs

- To contribute to the literature on B2B OBCs in particular active participation
- To provide B2B OBCs' owners and managers with some practical guidelines on how to develop and maintain a successful B2B OBCs
- To provide implications for future research

1.4 Research Methodology and Process

For the purpose of this study a mixed method approach was selected. Partially mixed sequential dominant status design by Leech and Onwuegbuzie (2009) was followed. This allowed for conducting a qualitative study to identify indicators to measure constructs as well as employing a quantitative study to answer the research question. With regards to the research paradigm, the methodology took a pragmatism approach as described by Venkatesh et al. (2013), the best paradigm for justifying use of mixed method research. This paradigm gave this study more flexibility as it provides both epistemological justification and logic for mixing the two different approaches (Johnson et al., 2007). Compatible with the chosen research method and research paradigm, this study followed the abduction (hybrid) strategy in order to answer the research question. This allowed moving back and forth between deductive and inductive during the model development and during the data collection (Brown, 1997, Venkatesh et al., 2013).

Following the selected research strategy, based on three well known theories an integrated framework was proposed in order to better understand the important factors affecting active participation in B2B OBCs. The framework was then explored through an exploratory study. This helped to further modify the model by adding a new construct 'service quality'. The exploratory study also helped to develop the measures for three constructs (active participation, functional need, and service quality) that could not be adapted directly from prior studies. The rest of the measures were adapted from prior related studies in the field of OC. A quantitative approach using a survey questionnaire was then utilised in order to collect data to test the

proposed framework. The questionnaire for the survey was designed from the measures of the constructs inside the theoretical model. The questionnaire was then piloted with experts in the field, academics, colleagues, and with members of B2B OBCs on LinkedIn. Subsequently, some of the questions in the survey were revised and improved. The final version of the questionnaire was distributed to B2B OBCs and this resulted in collecting 521 useable questionnaires. The collected data was analysed using SEM approach utilising AMOS. Figure 1-1 shows details on the research processes and illustrates different phases involved in this research programme.

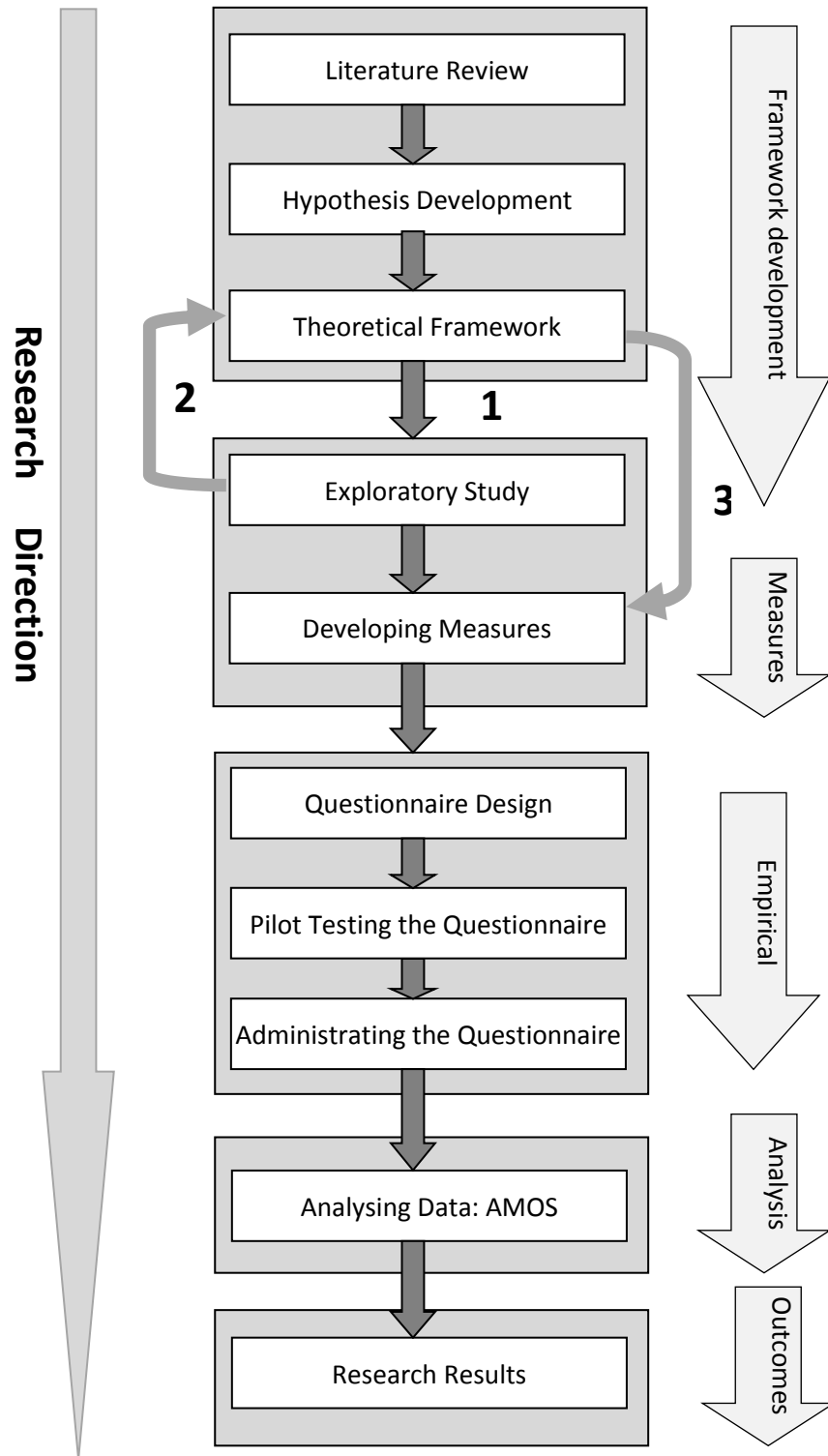


Figure 1-1: The Research Processes

1.5 Research Significance

This research is the one of the few studies attempting to examine factors affecting active participation in B2B OBCs. This study therefore makes several contributions to knowledge and practice. First, it introduces a definition of B2B OBC. Second, it introduces a measure for active participation in B2B OBCs. Third, it provides a framework depicting the factors affecting active participation in B2B OBCs. Last, it provides B2B OBC owners and managers with some practical guidelines on how to develop and maintain a successful B2B OBC.

1.6 Thesis Structure

The research conducted is presented in seven chapters:

1.6.1 Chapter One: Introduction

Chapter 1 starts with some background of the study. Significantly, the research gap is briefly discussed and further aims and objectives of the study are presented. Further it gives an overview of the research methodology and significance of the study. Finally, it presents a brief summary of the subsequent chapters.

1.6.2 Chapter Two: Literature Review

Chapter 2 critically reviews the existing literature concerning active participation in B2B OBCs. It starts by reviewing some definitions and taxonomies of OCs. Following that, it highlights a new taxonomy for OBCs and further identifies B2B OBCs as one type of OC which is the main focus of this research. Based on prior OC definitions and identified OC attributes, it provides a succinct definition for B2B OBCs and further identifies their benefits for business. Next, it reviews past studies on active participation in the field of OCs. Following this, it identifies the research gap in the literature and further provides several justifications for it.

1.6.3 Chapter Three: Theoretical Framework

Using a socio-technical approach, Chapter 3 introduces a theoretical framework for factors affecting active participation in B2B OBCs. The framework is underpinned by Social Exchange Theory, Uses and Gratification Theory, and the Information Systems Success Model.

1.6.4 Chapter Four: Research Methodology

Chapter 4 outlines the research methodology applied to examine the research problem. It first discusses the research methods and selects mixed method followed by some justifications. It then discusses the selected research paradigm followed by some justifications. Next it reviews different research strategies and then select abduction or hybrid strategy with some justification. It then outlines the chosen mixed method design, partially mixed sequential dominant status design. This is followed by highlighting the processes involved for collecting empirical data to test the proposed model. These processes include developing measures from prior studies, carrying out an exploratory study to understand appropriate B2B OBC specific measures of active participation, designing a questionnaire for a wider data collection and conducting a pilot study. For the purpose of the exploratory study semi-structured interviews with twelve members of B2B OBCs were conducted. The collected data was coded and analysed using thematic analysis utilising NVIVO.

1.6.5 Chapter Five: Data Analysis

Chapter 5 focuses on the empirical data analysis carried out in this study. First, it discusses basic data analysis such as data coding and reporting descriptive statistics. Next, it critically reviews several data analysis approaches, and describes the selection of SEM as the main data analysis technique. It then discusses several data analysis procedures that need to be carried out prior to conducting the SEM. These procedures include missing data analysis, data outlier check, data normality check,

and effective sample size. The chapter then describes the validation of the measurement model. Finally, it applies the SEM to test the proposed framework.

1.6.6 Chapter Six: Discussion

Chapter 6 focuses on the findings from the empirical data analysis in Chapter 5 and reports the SEM results in relation to the hypotheses testing. The results are then discussed in relation to the findings from prior related studies.

1.6.7 Chapter Seven: Conclusion

Chapter 7 concludes the thesis by considering the study outcomes in relation to the research question, aim and objectives, and research hypotheses. It discusses the study's contributions to knowledge and practical implications for practice followed by highlighting the study limitations and propositions for future works. Figure 1-2 shows the thesis structure and brief contents.

➔ Chapter 1	➔ Chapter 2	➔ Chapter 3	➔ Chapter 4	➔ Chapter 5	➔ Chapter 6	➔ Chapter 7
Research background Research gap Aims and Objectives Significance of the study Methodology Thesis structure Contributions	OC detentions & taxonomy B2B OBCs definition Active participation Research gap Prior related works	Theoretical framework U&G Functional need Psychological need Hedonic need SET Reciprocity Trust Commitment ISSM Information quality System Quality	Research Paradigm Research methods Research Strategy Research Design Exploratory study Developing measures Survey Questionnaire design Pilot study Sample Distributing survey	Pre data analysis Data coding Descriptive statistics Missing data Outlier Normality linearity Measurement model Reliability Validity Structural Model Hypothesis Testing	Discussion on hypothesis testing in relation to prior studies	Conclusion Research outcomes Contributions to literature Contributions to practice Limitations Future works

Figure 1-2 Thesis Structure and Contents

2 Chapter Two: Literature Review

2.1 Introduction

This chapter reviews the relevant literature on active participation in B2B OBCs. First, it attempts to give a general understanding of OCs by reviewing the OCs definitions and taxonomies. Next, it defines B2B OBCs and further introduces some of the benefits of these types of communities. This is followed by exploring the active participation phenomenon and some reviews of measures used in past studies. Finally, it critically reviews prior conducted studies in the field and identifies the research gap in the literature.

2.2 Online Community

OCs started to appear with the growth of the Internet in the mid 90s. Since then it has been seen as a very popular phenomenon among researchers, and has been studied from different disciplines and backgrounds including education, business, health, and psychology. Subsequently, the concept has been recognised as a multi-disciplinary subject, and therefore throughout the literature it has become known under different terms such as ‘online communities’ (Preece, 2000, Preece, 2001, Preece et al., 2003), ‘virtual communities’ (Hagel and Armstrong, 1997, Ridings et al., 2002), ‘virtual groups’ (Ahuja and Galvin, 2003), ‘online discussion forums’ (Lau, 2007), ‘online discussion groups’ (Welser et al., 2007), ‘virtual discussion groups’ (Oren et al., 2002), ‘web-based discussion groups/boards’ (Bernier and Bowen, 2004, Lee et al., 2006), ‘online social networks’ (Garton et al., 1997), ‘electronic communities’ (Wasko and Faraj, 2000, Wasko and Faraj, 2005), ‘computer-mediated communities’ (Wang and Fesenmaier, 2004), ‘online knowledge sharing communities’ (Ardichvili et al., 2006), ‘virtual knowledge sharing communities’ (Ardichvili et al., 2003), and so forth. A thorough examination of the definitions of all these terms revealed that they all can be described as one phenomenon and that is mostly known as ‘online communities’ (OCs”). For that reason, the term ‘online communities’ is used throughout this study for any of these phrases or any phenomena that meet OC definitions. The next section reviews various definitions for OCs.

2.2.1 Online Community Definitions

As with the earlier diverse terms, OC has also been described with different definitions throughout the literature (Rheingold, 1993, Stockdale and Borovicka, 2006). It could mean different things to different people. According to Rheingold (1993), an OC is a group of people who exchange ideas and words through computer mediated tools such as bulletin and discussion boards. Ahuja and Galvin (2003) described OCs as virtual groups of people with common purpose using electronic communication. Likewise, Lin (2007) briefly described OCs as groups of people with common interests/practices communicating over the Internet for some duration. Hew (2009) defines the term as virtual social spaces that enable individuals to come together to give/receive information or provide/seek support or to form relationship. Knowledge management scholars have also proposed a very short definition for the concept, describing it as a group of people who use a computer network to interact with each other (Cothrel and Williams, 1999).

Reflecting on the above definitions, one could argue that they are very limited and not satisfactory as they mainly illustrate OCs as a communication tool. However, OC scholars have identified various OC elements, which can be included in the OC definition to provide much richer meaning to the phenomenon. For example, Jones (1997) identifies interactivity, communicators, sustained membership, and virtual space, as four main criteria for OC. Similarly, Information Systems (IS) research has identified social structure, interaction, and ongoing interactivity as important elements of OCs (Butler, 2001). In addition, 'geographical' and 'time zone' have also been identified as OC characteristics, and therefore they have been included in OC definitions. Bishop (2001) describes OCs as groups of people collaborating through networked technologies (e.g. the Internet) regardless of time and geographical barriers. Consistent with Bishop's definitions, past researchers have also defined the concept as geographically dispersed groups communicating through mediated communications (Ahuja and Carley, 1998, Ahuja and Carley, 1999). In a cross-sectional study Kardaras et al. (2003) defined OCs as groups of individuals sharing the same interest communicating with each other using the Internet without the need to be in the

same place, have physical interaction, or belong to the same ethnic group. Similarly, Barnatt (1998) describes an OC as a representation of a group of people with a common bond, but not necessarily with a common geographic location. Thus, based on these definitions, communicating regardless of time and geographical differences are two main characteristics that separate OCs from conventional (face-to-face) communities. In addition, invisible communication and low cost interaction have also been seen as separating factors between OCs and traditional communities (Lin, 2007).

Moreover, several OC scholars have attempted to provide much richer definitions for OCs by including more OC aspects. For example, Riding et al. (2002) posit that OCs are “groups of people with common interests and practices that communicate regularly and for some duration in an organised way over the Internet through a common location or a mechanism”. According to Porter (2004) an OC is “an aggregation of individuals or business partners who interact around a shared interest, where the interaction is at least partially supported and/or mediated by technology and guided by some protocols or norms”. In their study DeSanctis et al. (2003) have been more specific about the OC technologies, since they expressed it as internet based forums where people join to discuss topics of mutual interests. Subsequently, any chat systems, bulletin boards, and discussion boards are also regarded as OCs. Koh and Kim (2004) viewed an OC as “a group of people with common interests or goals, interacting for knowledge (or information), sharing predominantly in cyberspace”. A similar view is articulated by Lin (2008) who described an OC as a cyberspace having various internet-based communication tools such as chatting and messaging boards to facilitate social interaction among their members, who share interests, establish relationships, make fantasies, and make transactions. Following these definitions, it could be seen that OC also covers social networking sites that enable people with similar interests to communicate regularly over a communication medium. In further supporting this, Chiu et al. (2006) posit that, “Virtual communities are online social networks in which people with common interests, goals, or practices interact to share information and knowledge, and engage in social interactions”.

Similarly, Lu and Yang (2011) have described the concept as online social networks enabling individuals to engage in knowledge and information sharing and social interaction.

Although most OC types only enable interaction between people online, some OCs enable their members to interact online and offline. Most of the interaction within an OC takes place in discussion forums where members post questions, information and knowledge whilst viewing other members' contributions (Koh et al., 2007). These activities can also take place in physical events of OCs. Hence, the physical environment can also be seen as another element of OCs. For example, experts (e.g. Preece 2000) who attempted to identify attributes of OCs at first did not recognise physical aspect of OCs, yet this was identified as an attribute in a later study by the same author (Preece et al., 2003). Preece (2000) argued that four elements constitute an OC namely: 1) people who interact socially to achieve their desire, 2) a shared purpose such as need, interest or information, 3) policies such as rules, protocols, or law to guide the people, 4) and communication technologies such as discussion boards to support the interaction of the members. In a later study the same authors have reported more attributes in an attempt to provide a succinct definition for the concept (Preece et al., 2003). They referred to 'OC' as to having different attributes such as physical as well as virtual environment, a common purpose, a software environment, members, duration and life cycle, culture of members, and governance. Similar attributes such as people with similar interests, social interaction, space and location, common obligation and responsibilities and computer technology, have also been identified by several other researchers (Maloney-Krichmar and Preece, 2002, de Souza and Preece, 2004, Stockdale and Borovicka, 2006, Yu-Wei et al., 2006). Similarly to these prior researchers, Damsgaard (2002) identified six attributes for OCs: shared goals, interaction and strong ties between the members, shared activities, support between members, shared convention, language or protocol. Similarly, Kim (2000) reports five attributes: place, community members, community leaders, and online/offline events. Balasubramanian and Mahajan (2001) reported four main OC attributes namely: people, electronic medium,

interaction, and interest. From a business perspective, Lin and Lee (2006) have recognized two main attributes of OCs namely: people (e.g. buyer and sellers) and technology (e.g. chatroom, discussion board or website). Further to these attributes Porter, (2004) identified a profit model as another attribute of OCs.

To sum up, reviewing the current stream of literature on OC definition, helped to reach a conclusion that OC is a complex phenomenon and therefore its definition and classification can vary and change from one study context to another or from one researcher's view to another's. Researchers have reported several attributes of OCs, and these can also vary from one community type to another. Hence, as most scholars state, it would be difficult to make a standard definition for OCs (Stockdale and Borovicka, 2006). Table 2-1 and Table 2-2 summarise the currently discussed OC definitions and attributes. Based on an evaluation of the reported definitions along with the identified OC attributes, one might suggest that several elements such as people, purpose, technology, participation, and policies are the key aspects of OCs and they need to be included when defining an OC. Accordingly, this study define an OC as:

“a virtual place consisting of a group of people from different physical locations with a shared purpose or interest governed by policies, who have already established some level of participation regardless of time through a communication technology”

Table 2-1: A Summary of OC Definitions

Authors	Definition	Authors	Definition
<i>Rheingold, 1993, Riding et al., 2002, Ahuja and Galvin, 2003, Lin, 2007</i>	A groups of people with common purpose who exchange ideas and words through computer mediated tools such as bulletin/ discussion boards for some duration	<i>Hew, 2009</i>	Virtual social spaces enabling individuals to come together to give/receive information or provide seek support or to form relationship.
<i>Porter, 2004</i>	“an aggregation of individuals or business partners who interact around a shared interest, where the interaction is at least partially supported and/or mediated by technology and guided by some protocols or norms”	<i>Lin, 2008, Koh and Kim, 2004</i>	A cyberspace having various Internet-based communication tools such as chatting and messaging boards that facilitate social interaction among their members, who share interests, establish relationships, make fantasies, and transactions.
<i>Barnatt, 1998, Cothrel and Williams, 1999, Bishop, 2001, DeSanctis et al., 2003, Kardaras et al., 2003</i>	A group of people/ individuals who use a computer network/ Internet based forums/ internet to interact with each other without the need to be in the same place, or have physical interaction, or belong to the same ethnic group.	<i>Ahuja and Carley, 1998, Ahuja and Carley, 1999, Koh et al., 2007</i>	Geographically dispersed groups communicating through mediated communication, where members post questions, information and knowledge whilst viewing other members’ contributions.
<i>Chiu et al., 2006, Urista et al., 2008, Raacke and Bonds-Raacke, 2008</i>	Social networking sites in which people with common interests, goals, or practices interact to share information and knowledge, and engage in social interactions	<i>Lu and Yang, 2011</i>	Online social networks enabling individuals to engage in knowledge and information sharing and social interaction.
<i>This study</i>	“a virtual place consisting of a group of people from different physical locations with a shared purpose or interest governed by policies, who have already established some level of participation regardless of time through a communication technology”		

Table 2-2 : A Summary of OC Attributes

Attributes	Articles
Community purpose/ Interest/ Shared goals	<i>Kim, 2000, Balasubramanian and Mahajan,2001, Damsgaard, 2002, Ridings et al., 2002, DeSanctis et al., 2003, Preece et al., 2003, Koh and Kim, 2004, Porter, 2004, Lee, 2006, Lin, 2008</i>
Technology/ Virtual space/ Electronic medium/ Space and Location	<i>Jones, 1997, Kim, 2000, Preece, 2000, Balasubramanian and Mahajan,2000, Maloney-Krichmar and Preece, 2002, Ridings et al., 2002, DeSanctis et al., 2003, de Souza, 2004, Preece et al., 2003, de Souza, 2004, Koh and Kim, 2004, Porter, 2004, Lee, 2006, Stockdale and Borovicka, 2006, Yu-Wei et al., 2006, Lin, 2008</i>
People/ Communicators	<i>Jones, 1997, Kim, 2000, Preece, 2000, Balasubramanian and Mahajan,2000, Maloney-Krichmar and Preece, 2002, Ridings et al., 2002, DeSanctis et al., 2003, Preece et al., 2003, de Souza, 2004, Koh and Kim, 2004, Porter, 2004, Lee, 2006, Stockdale and Borovicka, 2006, Yu-Wei et al., 2006, Lin, 2008</i>
Interactivity/ Interaction / Participation	<i>Jones, 1997, Preece, 2000, Balasubramanian and Mahajan,2000, Damsgaard, 2002, Maloney-Krichmar and Preece, 2002, Ridings et al., 2002, DeSanctis et al., 2003, Preece et al., 2003, de Souza, 2004, Koh and Kim, 2004, Porter, 2004, Lee, 2006, Stockdale and Borovicka, 2006, Yu-Wei et al., 2006, Lin, 2008</i>
Community norms /policies/ Governance/ Culture of members/ Shared language or protocol/ Common obligation	<i>Preece, 2000, Maloney-Krichmar and Preece, 2002, Ridings et al., 2002, Damsgaard, 2002, DeSanctis et al., 2003, Preece et al., 2003, de Souza, 2004, Koh and Kim, 2004, Porter, 2004, Stockdale and Borovicka, 2006, Wei et al., 2006, Lin, 2008</i>
Invisibility/ Low cost interaction/ Sustained membership	<i>Jones, 1997, Lin, 2007</i>
Physical and virtual/ Online/offline events	<i>Kim, 2000, Preece et al., 2003</i>
Duration life cycle/ Community leaders	<i>Preece et al., 2003</i>

2.2.2 Online Community Classification

Numerous classification schemas are found with regards to OCs. The current literature shows that there is lack of a standard typology or classification for OCs. The present taxonomies proposed are based on different attributes of OCs: community purpose or members' needs, types of people involved in the community, and technologies (Hagel and Armstrong, 1997, Lazar & Preece, 1998, Stanoevska-Slabeva and Schmid, 2001, Plant, 2004). According to Lazar and Preece (1998) OCs can be classified based on four characteristics: purpose (e.g. goals and activities), supporting software (e.g. technology), relationship to physical communities, and boundedness (e.g. people, location, and social relationship). Based on OC purpose, Hagel and Armstrong (1997) classified OCs into four types namely communities of: interest, transaction, fantasy, and relation. This has been seen as the most cited classification in the existing literature (Wang and Fesenmaier, 2003, Wang and Fesenmaier, 2004, Porter, 2004). Communities of interest are created by people with shared interest, passion, and expertise in various areas. In these types of community people come together online to exchange information on a topic of common interest. Communities of transaction are formed between business partners, companies and end customers. In these types of OCs members exchange information to facilitate economic exchanges. Communities of fantasy are created by people with common hobbies or fantasies. Finally, Communities of relations are formed by groups of people with common stories or life experiences. In these types of OCs people exchange information on their stories and try to learn from other people with similar experiences.

In their study Stanoevska-Slabeva and Schmid (2001) have also identified four OC typologies namely: discussion communities, tasks and goals oriented communities, virtual world, and hybrid communities. Discussion community focuses on exchange of information on a defined topic. These types of OC also cover community of relations defined by Hagel and Armstrong (1997). Topic-oriented OCs are based on certain defined topics such as sports or a specific product. It also covers communities of practice which are formed in organisations

around certain topics. With tasks and goal-oriented communities members tend to participate in the community towards achieving a common goal. These types of OC can cover communities of transaction, online learning communities, and design communities such as open source communities. A community of virtual worlds is formed around virtual worlds and games. These types of OCs also include communities of fantasy defined by Hagel and Armstrong (1997). Hybrid communities include several interrelated communities. For example a discussion community and a task and goal-oriented community could coexist in one OC platform.

More classification schema are reported in the literature. For example, in their study DeSanctis et al. (2003) compared 40 OCs, and summarised them into three types namely: community of information kiosks where these types of community are relatively small and discussions are not moderated or organised by a leader; community of association where in most cases the participants know one another; and finally community of practice, commensurate with a description given by Wenger (1998, 2000). According to Wenger (1998) a community of practice is a group of people with common concerns, problems or interests who come together online to fulfil both individuals and group goals. Erat et al. (2006) divide this type of OC into two sub-categories: 'internal communities' which include only members of a firm or an organisation, and 'external communities' which include any types of external stakeholders. In addition, Erat et al. (2006) further divide external communities into three types: customer cross-border communities that consist of a group of employees and customers, private customer communities which consist of a group of customers only, and business customer communities.

Based on geographic location and the relationship between the OC members, Koh and Kim (2004) also classify OCs into 'geographic community' and 'relational community'. Most of the OCs fall under 'relational community', since OC members are not physically bounded together. In a different way and based on the content of OCs, Jin et al. (2010) identify two types of OC namely: member initiated communities that are managed by their members, and organisation

sponsored communities that are sponsored by either commercial or non-commercial firms.

To sum up, the above classification schemas for OC provides evidence supporting that there is no universally agreed way to classify OCs, and therefore there is not a standard typology for OCs. Following this, one might suggest that OCs can also be classified based on the disciplines they originated from. For example, Online Business Community (OBC) can be seen as one typology for OCs belonging to the business discipline. Marketing literature reports that OBCs can be classified into two types: Business-to-Consumer (B2C) and Business-to-Business (B2B) (Hagel and Armstrong, 1997, Rohm and Swaminathanl, 2004). B2B communities can also be divided into two sub-categories. The first type is known as B2B e-commerce, which bring buyers and sellers together for transaction purposes (Schubert and Ginsburg, 2000, Perry et al., 2002, Boeck et al., 2009). Hence, the main activities of these types of OBCs involve buying and selling products and services (Deeter-Schmelz and Kennedy, 2004, Rohm et al., 2004). The second type can be called B2B relations, which referred to B2B OBCs in this study. They enable businesses to share knowledge and information with each other, to give/receive support, and to form relationships. In Section 2.2.1, it was shown that some OCs also have offline communities. Accordingly, B2B OBCs can also be divided into two types, online only, and online and offline. First online only B2B OBCs are concerned with communities that operate entirely online. An example of this type of community includes the UK Business Forum (www.ukbusinessforum.co.uk). On the other hand online and offline B2B OBCs are concerned with communities that are virtual and conventional. In this category B2B OBCs are developed based on an offline community. An example of this type of community includes the Cambridge Network (www.cambridgenetwork.co.uk). The new typology proposed in this section was validated in a preliminary study that involves reviewing almost seventy B2B OBCs (see Appendix A). Table 2-3 shows a summary of the revised OC typologies.

Table 2-3: A Summary of OC Typologies

Typology	Article	Typology	Article
<ul style="list-style-type: none"> ➤ Communities of interest ➤ Communities of transaction ➤ Communities of fantasy ➤ Communities of relation 	<p><i>Hagel and Armstrong, 1997</i></p>	<ul style="list-style-type: none"> ➤ Discussion communities ➤ Tasks and goals oriented communities ➤ Virtual world ➤ Hybrid communities 	<p><i>Stanoevska-Slabeva and Schmid, 2001</i></p>
<ul style="list-style-type: none"> ➤ Communities of information kiosks ➤ Communities of association ➤ Communities of practice 	<p><i>DeSanctis et al., 2003</i></p>	<ul style="list-style-type: none"> ➤ Internal communities ➤ External communities <ul style="list-style-type: none"> ❖ Customer cross border communities. ❖ Private customer communities ❖ Business customer communities 	<p><i>Erat et al., 2006</i></p>
<ul style="list-style-type: none"> ➤ Geographic communities ➤ Relational communities 	<p><i>Koh and Kim, 2004</i></p>	<ul style="list-style-type: none"> ➤ Member initiated communities ➤ Organisation sponsored communities 	<p><i>Jin et al., 2010</i></p>
<ul style="list-style-type: none"> ✚ Online business communities <ul style="list-style-type: none"> ➤ Business-to-Consumer communities ➤ Business-to-Business communities <ul style="list-style-type: none"> ❖ Business-to-Business e-commerce ❖ Business-to-Business relations <ul style="list-style-type: none"> ▪ Online only ▪ Online and offline 			<p><i>Hagel and Armstrong, 1997, Rohm and Swaminathanl, 2004</i></p> <p><i>This study</i></p>

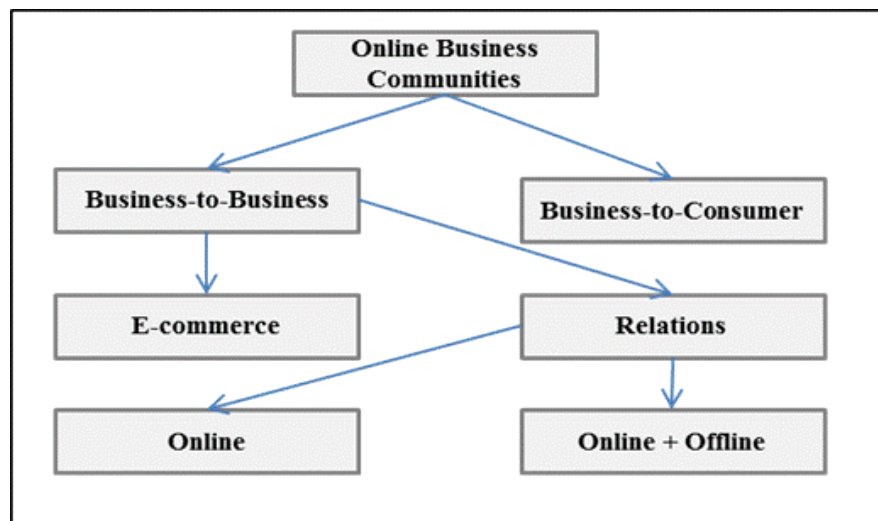


Figure 2-1: A Typology for Online Business Communities (OBCs)

2.3 B2B OBCs

The preceding sections revealed that there is not a standard definition or typology for OCs. In fact it was discovered that OC means different things to different people, and therefore it has been used with different definitions. However, evaluating the current definitions in the literature revealed that five OC attributes need to be considered when defining an OC type. Following this, a typology was proposed for OBCs. Based on identified attributes along with the introduced OBC typology proposed in the earlier section, this thesis defines a B2B OBC as:

“a virtual place consisting of a group of people (business owners and managers) from different physical locations with a shared purpose or interest (provide/seek support and expertise, share information and knowledge, discuss business related issues, and forming business relationships) governed by policies (community rules and regulations), who have already established some level of participation (posted questions, replied to others’ questions, and established contacts) regardless of time through a communication technology (discussion boards, chatting system, or website)”

The main difference between B2B OBC and any other types of OCs is that the majority of B2B OBCs participants are business owners and managers who join such a community for their business benefit rather than their individual interests and benefits. An example of this type of OC include UK Business Forum where members come together to discuss business-related topics. B2B OBCs also include B2B groups on LinkedIn (e.g. Small Business Group) where businesses come together to share information, to form business relationships, and to discuss business-related matters. Appendix A shows almost seventy examples of B2B OBCs.

2.4 Importance of B2B OBCs

The importance of OCs has been emphasised in various environments including education (DeSanctis et al., 2003), health (Maloney-Krichmar and Preece, 2002), and business (Arndt et al., 2000, Koh and Kim, 2004, Kim et al., 2008). Particularly, information and knowledge sharing has been identified as one of the main reasons for existing OCs (Constant et al., 1994, Koh and Kim, 2004, Kollok and Smith, 1999, Chiu et al., 2006, Liao, 2008, Mason et al., 2008). Thus, they can be used as an important source to foster knowledge exchange between professionals (Bieber et al., 2002, Erat et al., 2006). According to Lin (2008) in the context of B2C, an OC is an effective tool for knowledge sharing, and this can provide greater opportunities for businesses to expand their markets and to improve access to information at low cost (Hagel and Armstrong, 1997). OCs can be used as a business model for businesses (Lamersdorf et al., 2004), thereby it can help businesses to boost their customers, their revenue and create a distinctive market advantage (Kim et al., 2008). For example, OCs can facilitate interaction between businesses and people, this will create business opportunities and enable businesses to reach wider customers and maintain relationship with their existing ones (Han et al., 2007). Therefore, businesses can also use them to enhance their customer relationship management (Wang and Fesenmaier, 2004b); in so doing businesses can attract more customers, convert browsers to buyers, improve their customer services, reduce support costs, increase revenue, and gain additional insight into their business.

However, in the context of B2B OBC the primary benefits include sharing knowledge, providing/seeking expertise and forming business relationships. The power of Information and Communication Technology (ICT) like B2B OBCs for supporting businesses has been well recognised and documented in the literature. Prior researchers suggested that SMEs can benefit from B2B OBCs to facilitate online knowledge sharing (Mason et al., 2008a, Carr et al., 2010). Hence, one of the important benefits of B2B OBC is facilitating knowledge sharing between businesses (Hagel and Armstrong, 1997, Van-Laere and Heene, 2003, Mason et al., 2008a, Hughes et al., 2009, Carr et al., 2010). Mason et al. (2008) asserted that knowledge sharing is a strategic asset that is important for SMEs survival. Businesses see knowledge as a potential foundation for obtaining competitive advantage (Chen et al., 2006, Liang et al., 2008). It is believed that, knowledge sharing enables businesses to gain a competitive advantage that will help them to grow faster (Wu et al., 2006). A study reports that knowledge sharing can prompt the performance of SMEs and help them to overcome some of their business obstacles (Watson, 2007). In addition, B2B OBC can also enable businesses to access to specific knowledge and advice (Miller et al., 2007, Hughes et al., 2009, Carr et al., 2010), and business intelligence and innovation opportunities (Fuller-Love and Thomas, 2004). Accordingly, these types of community can help businesses to overcome some of their business barriers. A prior study suggests that some B2B OBC members also have face-to-face interaction (Mason et al., 2008b), thereby businesses can also obtain some of their internal information and knowledge through face-to-face interaction with other businesses in local business networks (Van-Laere and Heene, 2003, Chen et al., 2006).

2.5 Active Participation

Active participation has been seen as a fundamental success factor for any types of OC (Ardichvili et al., 2003). Cheung and Lee (2009) stated that, “The value of virtual communities can only be achieved when there are significant numbers of members who are willing to stay and exchange information with each other”. According to several authors, having a large number of community members and having a large balanced proportion of active members are the two

main factors for determining the success of OCs (Wang and Fesenmaier, 2004b, Cothrel and Williams, 1999, Cothrel, 2000). Despite the importance of active participation for OCs, it is not clear what exactly active participation means and how it should be measured? Particularly, the review of current literature shows that there is not a standard definition and an agreed way to measure active participation. The concept can be defined in different ways such as: taking part in or contributing to some activities in OCs, spending time reading, posting messages, asking questions, replying to posted questions, providing information and expertise, sharing ideas, interacting and communicating actively with other members (Wang and Fesenmaier, 2004b, Mathwick, 2002, Shang et al., 2006, Jin et al., 2010).

2.5.1 Active Participation Measure

Following an extensive literature review, it was found that active participation can be measured differently as OC scholars have used different approaches to measure the concept. Since most activities inside OCs takes place in the form of posting or viewing messages (Joyce and Kraut, 2006), several research indicate that the phenomenon of ‘lurking’ can be used as an indicator for participation behaviour (Nonnecke and Preece, 2000, Shang et al., 2006). Lurkers are defined as those community members who do not participate and do not contribute to their communities (Nonnecke and Preece, 2000, Zhang and Storck, 2001, Nonnecke et al., 2004, Preece et al., 2004, Bishop, 2007). While lurking might be a form of participation it is hardly ‘active’. Active participation in OCs can better be defined by members’ posting behaviours. However, defining active participation through posting behaviours varies from one researcher’s point of view to another’s or from one study context to another. For example, some researchers have identified the participation behaviour in OCs by the total posted messages per week, month, quarterly, yearly, and per membership life time, or average posted messages per week, or total posted messages compared to average posted messages per community members (Nonnecke and Preece, 2000, Chen, 2004, Preece et al., 2004, Nonnecke et al., 2006). Following these observations, OC active participants can be described as those community members who posts at least one

message inside their community (Preece et al., 2004, Nonnecke et al., 2006, Soroka and Rafaeli, 2006). Based on these studies, in OCs inactive participants or lurkers are those community members who have never posted to their communities. Contrary, lurkers are also defined as OC members who are posting below average (Chen et al., 2004) or who have not been posting during the last one month or three months of their membership (Nonnecke and Preece, 2000) or who hardly posted and did not make a contribution to their communities (Preece et al., 2004, Han et al., 2007). Alternatively, a lurker could also be someone who posts few messages within the community to which he or she belongs (Takahashi et al., 2002).

In their study Chen and Hung (2010), used frequency of posted messages per month to measure active participation (e.g. knowledge contribution). Time spent in the community and messages that received replies are also seen as another two elements that can be used to determine active participation behaviour. Past research indicates that active participation behaviour can be determined by posting messages that receive at least one reply (Arguello et al., 2006). In another word, this would mean that members, who post several messages but do not get replies, are still considered as inactive participants. In an OC, research suggests that active participants can also be identified as those members who have been reading for some period of time and just posted for the first time (Rafaeli et al., 2004). Based on Rafaeli et al.'s study, one could argue that members who post messages and never spent time reading in their OCs, are not considered as active participants. Further, a study by Shang et al. (2006) measured active participation in online business consumer communities by both lurking and posting behaviours. According to that study, inactive participants are those community members who spent time reading messages, and active participants are those who spent time reading as well as making contribution through posting. Contrary to studies by Rafaeli et al. (2004) and Shang et al. (2006), several research show that OC participation can be measured only by average time spent in the community (Wang and Fesenmaier, 2004a, 2004b). Similarly, a research by Dholakia et al.

(2004) shows that members who only spent time reading posted messages can also be defined as active participants.

2.5.2 Critiques on Active Participation Measures

Based on the discussions in the previous section, this study argues that active participation measure in OCs, particularly in B2B OBCs, is a gap in the literature for the following reasons:

Firstly, the current literature shows that there is not a standard measure for active participation that can be adapted by this study. Particularly, several studies suggest that active participation in OC environments can be measured in different ways: by number of posted questions (e.g. Nonnecke et al., 2006), by posted messages that receive replies (e.g. Arguello et al., 2006), by time spent reading (e.g. Wang and Fesenmaier, 2004a), or by both times spent reading and posting (e.g. Shang et al., 2006).

Secondly, the review of the literature shows that the definition and measure of the construct can vary from one study context to another. For example in an OC like a discussion forum with the focus of information sharing, active participation can be determined through quantity of postings (Preece et al., 2004, Nonnecke et al., 2006). Whereas in an OC like B2C online business communities with the focus of raising customer brand awareness, active participation can be determined by the time spent reading inside the community (Dholakia et al., 2004). On the other hand, one could argue that in an OC like a social networking site (e.g. Facebook) active participation can be measured by the number of connected people (e.g. number of friends) and the number of shared files (Nathan et al., 2011).

Thirdly, it was found that quantity of posts is extensively used to measure participation level in various OC types. Yet the literature is conflicting on the number of posts a participant should make in order to be recognised as an active participant. For example, from several studies 'active participants' can be defined as those members who post at least one message inside their communities

regardless of their membership duration (Preece et al., 2004, Nonnecke et al., 2006), while other studies suggested that active members should make at least one post during the last three months of their membership (Nonnecke and Preece, 2000). Differently, active participation is also measured by average posted messages per months (Chen and Hung, 2010).

Lastly, utilising quantity of posts as an indicator for active participation provides more limitations. This is because prior researchers lack agreement on what quantity of posts a member should make inside his/her community in order to be recognised as active. Besides, even where there is agreement on quantity of posts, this approach still has some drawbacks as a prior research has shown that some OC members might provide high quantity but low quality posts and this was seen as a problem that deters contributors (Preece et al., 2004). Several researchers have also acknowledged this limitation and therefore called for a better measure for OC participation (Lee et al., 2006, Chen and Chang, 2011). Following this discussion, one might suggest that other factors (e.g. quality of information) should also be included in the measure of active participation. Thus, a limitation in the measurement of active participation is a gap identified in the literature.

2.6 Related Works on Active Participation

There are various types of OC serving different purposes, and there is a growing interest in studying the role of OCs in a variety of disciplines such as education, health, business, and psychology. However, the success of an OC still largely depends on its members' participation and contribution (Tedjamulia et al., 2005). Thus, active participation has always been a major concern for OC owners and managers and has been a difficult task to achieve (Wang and Fesenmaier, 2003, Bishop, 2007). Researchers have attempted to examine the participation issue in various OC types. Knowledge sharing has being recognised as one of the main purposes of OCs and this has been seen as primary reason for people to participate in them (Constant et al., 1994, Kollock and Smith, 1999, Koh and Kim, 2004, Chiu et al., 2006, Liao, 2008, Mason et al., 2008). It is believed that

for an OC to deliver its purpose it requires active participation from its members and this has been seen as a major obstacle for OCs (Hsu and Lin, 2008). Subsequently, well established knowledge management literature have focused on factors affecting knowledge sharing behaviour in OCs (Kankanhalli et al., 2005, Chiu et al., 2006, Lee et al., 2006, Hsu and Lin, 2008, Chen and Hung, 2010, Lu and Yang, 2011, Chai and Kim, 2012). Chiu et al. (2006) proposed a model based on three theories (structural capital, relational capital, and cognitive capital) in order to investigate the motivations behind people's knowledge sharing in OCs. They further empirically tested their framework using online questionnaires with 310 members of an OC for professionals. The results of their data analysis revealed that quantity of information shared in OCs is significantly affected by social interaction ties, reciprocity and identification. While, quality of information shared was affected by trust, shared language, and shared vision. Similarly, Lu and Yang (2011) discovered similar factors for participation behaviour within the similar context. They conducted a study to examine the mechanism by which social capital contributes to information exchange in OCs. They utilised Partial Least Square to analyse 513 collected questionnaires from an OC. Following their data analysis it was found that relational capital (i.e. trust and reciprocity) and cognitive capital (i.e. shared vision and language) positively associate with quality of information shared in OCs but not with quantity of information. On the other hand, they also discovered that structural capital (i.e. social interaction ties) positively relates to quantity of information shared but not quality of information. Kankanhalli et al. (2005) proposed a model underpinned by Social Exchange Theory to explain the influential factors for knowledge contribution to OCs like Electronic Knowledge Repositories. They discovered that reward, identification, self-efficacy, and enjoying helping others positively relate to knowledge contribution. Surprisingly, they found a negative association between trust and reciprocity, and knowledge contribution. Furthermore, a study by Chen and Hung (2010) investigated factors influencing members' knowledge sharing contribution behaviour in OCs for professionals. The results of their study suggest that trust, self-efficacy, perceived relative advantage positively relate to OCs members' participation behaviour (e.g. knowledge contribution).

However, reflecting on the above prior studies, one could argue that they provide very limited insight into the factors affecting participation behaviour in OCs, because these studies mainly focused on social and cognitive factors. OCs are recognised as socio-technical systems (Chai and Kim, 2012), and therefore other factors related to OC systems such as technological factors could also be important as to the social and cognitive related factors. Particularly, researchers have argued that technical-related factors have significant influence on participation behaviour in OCs (Lee et al., 2006, Hsu and Lin, 2008, Chai and Kim, 2012). Chai and Kim (2012) utilised a socio-technical approach to carry out an investigation into social and technical factors which influence knowledge contribution behaviour in OCs like social networking sites. They found that ethical culture, social ties, and sense of belonging positively relate to knowledge contribution behaviour. Surprisingly, they did not find a positive relationship between technological factors and knowledge contribution behaviour. However, one could argue that the underlying reason behind the unexpected finding in Chai and Kim's study was due to construct misidentification. For example they only used structural assurance (regulation and safeguard) to measure technological related factors. Yet, prior studies suggest that the construct should include other dimensions such as ease of use, usability, and navigation (Lee et al., 2006, Hsu and Lin, 2008). Contrary to Chai and Kim's (2012) study, research by Hsu and Lin (2008) discovered that technological-related factors (e.g. ease of use) positively relate to attitude towards knowledge sharing in web blogs. They also found that other factors such as enjoying helping others, altruism, and reputation have similar impact on online knowledge sharing. Further, Lee et al. (2006) carried out an exploratory study in order to identify the factors that drive knowledge sharing in OCs like web based discussion forums. They collected data from 104 people who were involved in knowledge sharing activities in OCs. Following their semi-structured interview process, they found that knowledge self-efficacy, reward, enjoyment, reciprocity, sense of community, perceived usefulness and ease of use were among the most important factors influencing individuals' knowledge sharing behaviour.

Moreover, several researchers have attempted to examine factors affecting participation behaviour in OCs like communities of practice (Wang and Fesenmaier, 2003, 2004a, 2004b). These researchers have mainly attempted to investigate the phenomenon through applying motivational theories (e.g. Uses and Gratification). For example, Wang and Fesenmaier (2003) examined the reasons behind members' willingness to make active contribution to OCs. They have identified several motivational factors for participation level in OCs like online travel communities. These factors include technological (quality assurance), instrumental (seeking/providing emotional support, finding friends/peers, relationship building, group attachment, identity expression, increasing respect), efficacy (satisfying others' need, helping others, seeking/providing advice, sharing enjoyment), and expectancy (future reciprocity). In a later study and within a similar context the same authors have proposed a model based on Uses and Gratification theory to better understanding the factors affecting level of participation in OCs (Wang and Fesenmaier, 2004a). Their framework included four main constructs namely: functional (information, efficiency, and convenience), psychological (affiliation, belonging, and identification), hedonic (entertainment, enjoyment, amusement, and fun), and social (communication, relationship, involvement, trust). They further empirically tested their model with 322 members of an online travel community. They found that social and hedonic reasons had a positive and significant effect on level of participation while functional reasons had a negative association and psychological factors did not have any effect on level of participation. In a later study the same authors combined and validated their two earlier models with the aim to better understand members' general participation and active contribution in online travel communities (Wang and Fesenmaier, 2004b). The result of this study was almost exactly same as the two prior studies.

However, the findings from several prior studies have provided contradictory results with Wang and Fesenmaier's studies. For example, Chung and Buhalis (2008) have found that both functional and psychological factors have equal positive impact as to social and hedonic factors on level of participation in online

travel communities. In line with this study finding, Sangwan (2005) has also found that functional need is the major motivation for members' participation in online knowledge sharing communities. Further examination of these studies revealed that the inconsistent results could be for two possible reasons. Firstly, these studies used slightly different indicators to measure constructs, particularly functional, psychological, and level of participation. For example, in a study by Sangwan's (2005) functional need was measured by six indicators (objective information, information of high value, information for exact need, expect information, information from opinion leaders, and trust information for investment), whereas in Wang and Fesenmaier's (2004a) study the same construct was measured by three indicators (information, efficiency, and convenience). Thus, based on this observation, one could argue that the definition and aspect around functional need can vary from one OC to another depending on the community purpose and type. Secondly, the differing findings could be due to construct misidentification. The Cronbach's alpha for the functional need factor in Wang and Fesenmaier's (2004a) study was below the accepted threshold (0.7). This means the measure for functional need in Wang and Fesenmaier's study had a reliability issue, and therefore one might argue that they incorrectly identified the construct.

Furthermore, several more researchers have attempted to examine participation phenomenon in OCs. Bishop (2007) introduced an ecological framework to understand why members of OCs either participate or do not participate. According to Bishop's framework members are motivated to participate actively in an OC by their interests, desires, goals, values, and beliefs. Although the framework aimed to increase the level of participation in OCs using an ecological methodology, yet it was theoretically based and its application has not been implemented on a specific type of OC. In addition, an empirical study by Preece et al. (2004) has identified five main reasons for lurking such as members do not need to post, need to find out more about the community, are being helpful by not posting, cannot make the software work, and do not like the group. While Preece et al.'s study was more practically based; it was not specifically on B2B OBCs,

since they collected data from different types of online discussion group on MSN. It could therefore be argued that the outcomes of this study might be different when applied to B2B OBCs.

A study by Yang et al. (2007) proposed a conceptual model for participation in online discussion forums. This involved introducing seven motivational factors: social outcome expectancy, hedonic outcome expectancy, utilitarian outcome expectancy, perceived importance of learning, peer pressure, superior pressure, and conformity motivation. Yet, Yang et al.'s study has only explored the motivational factors of students' intention to join online discussion forums, rather than their actual participation behaviours which is the main focus of this research. Therefore, it could be then argued that, these motivational factors may not be the same factors for encouraging members to make active contributions to their community. Particularly, a study has shown that members may continue to participate in their OC for reasons different to those reasons that triggered them to join the community in the first place (Lampe et al., 2010). As yet, only a few researchers have further attempted to address the participation problem in various OCs through designing guidelines. In particular, Gurzick and Lutter (2009) attempted to improve the level of participation amongst the members of OCs through introducing eight design guidelines: 1) community purpose needs to be flexible; 2) OCs needs to be at least partially constructed by its members; 3) OCs must facilitate members' interaction; 4) provide an environment to motivate member's involvement; 5) protect members' identity; 6) create a common ground between members; 7) manage issues of credibility and finally; 8) community software needs to be consistent, predictable and controllable. Although, these guidelines focused on social and technical related factors, yet they were only applied to an OC for adolescent. Considering the target sample for this study, one could argue that these guidelines might have different effects on level of participation when applying them to other types of OCs like B2B OBCs. Moreover, very limited studies were found with regards to active participation in OBCs, particularly B2C OBCs. Largely studies have focused on B2C OBCs (Evans et al., 2001, Shang et al., 2006, Utz's, 2009, Yen et al., 2011). Few studies

have focused on B2B e-commerce (Zimmer et al., 2010). Although, very limited research was discovered with regards to B2B OBCs (Zahay and Handfield, 2004, Nolan et al., 2007), it did not focus on active participation. Evans et al. (2001) carried out a qualitative study towards consumer interaction in OCs. Drawing upon the findings from their study, it could be concluded that several factors such as social (e.g. interaction with friends, colleagues and people with same interest), functional (e.g. seeking useful information), reciprocity (e.g. gaining something out of participating), hedonic (e.g. enjoy interaction with people and like to give advice), trust (e.g. security and anonymity), and technological (e.g. poor user interface and slow page loading time) factors influence consumer participation behaviour in B2C OBCs. Similar factors were also observed in a study by Utz (2009) who suggested several factors to motivate contributions in online business consumer communities. These factors include altruism (like to helping other), hedonic (gain pleasure from interaction), functional (earning money), reciprocity (gaining future reward such as profit), and reputation (gaining status) as motivational factors. Furthermore, Shang et al. (2006) have found three main factors; cognitive (e.g. information need), commitment, and trust positively relate to participation behaviour (e.g. lurking and posting) in online consumer communities. A research by Yen et al. (2011) indicates that, perceived benefits (e.g. self-enhancement, rewards, and problem solving support) are important for consumer participation behaviour in OCs. Table 2-4 shows a summary of all the currently discussed factors with relation to active participation.

Table 2-4 A Summary of the Reviewed Literature on Participation

Authors	Journal	Context of Study	Summary of prior related works (e.g. findings and proposed frameworks)	
<i>Chiu et al., 2006</i>	<i>Decision Support Systems</i>	Knowledge Sharing In Professional Virtual Communities	Social Interaction Ties	→ Quantity of Information Shared
			Reciprocity	→ Quantity of Information Shared
			Identification	→ Quantity of Information Shared
			Trust	→ Quality of Information Shared
			Shared Language	→ Quality of Information Shared
			Shared Vision	→ Quality of Information Shared
<i>Lu and Yang, 2011</i>	<i>Decision Support Systems</i>	Virtual Knowledge Sharing Communities	Trust	→ Quality of Information Shared
			Reciprocity	→ Quality of Information Shared
			Shared Vision	→ Quality of Information Shared
			Share Language	→ Quality of Information Shared
			Social Interaction Ties	→ Quantity of Information Shared
<i>Kankanhalli et al., 2005</i>	<i>Management Information Systems Quarterly</i>	Electronic Knowledge Repositories	Trust	→ Knowledge Contribution
			Reward	→ Knowledge Contribution
			Reputation	→ Knowledge Contribution
			Reciprocity	→ Knowledge Contribution
			Self-Efficacy	→ Knowledge Contribution
			Enjoying Helping Others	→ Knowledge Contribution
<i>Chen and Hung, 2010</i>	<i>Information & Management</i>	Knowledge Sharing and Community Promotion in Professional Virtual Communities	Trust	→ Participation Behaviour
			Self-Efficacy	→ Participation Behaviour
			Perceived Relative Advantage	→ Participation Behaviour
<i>Chai and Kim, 2012</i>	<i>International Journal of</i>	Knowledge Contribution Behaviour	Ethical Culture	→ Knowledge Contribution Behaviour
			Social Ties	→ Knowledge Contribution Behaviour

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	<i>Information Management</i>		Sense of Belonging	→	Knowledge Contribution Behaviour
<i>Hsu and Lin, 2008</i>	<i>Information & Management</i>	Knowledge Sharing in Blogs	Ease of Use	→	Knowledge Sharing Behaviour
			Enjoying Helping Others	→	Knowledge Sharing Behaviour
			Altruism	→	Knowledge Sharing Behaviour
			Reputation	→	Knowledge Sharing Behaviour
<i>Lee et al., 2006</i>	<i>Internet Research</i>	Customer Knowledge Sharing in Web-Based Discussion Boards	Self-Efficacy	→	Knowledge Sharing Behaviour
			Reward	→	Knowledge Sharing Behaviour
			Enjoying Helping Others	→	Knowledge Sharing Behaviour
			Reciprocity	→	Knowledge Sharing Behaviour
			Sense of Community	→	Knowledge Sharing Behaviour
			Perceived Usefulness and Ease of Use	→	Knowledge Sharing Behaviour
<i>Gurzick and Lutter, 2009</i>	<i>International Conference on Design Science Research in Information Systems and Technology/ ACM</i>	Online Travel Communities	Flexible Community Purpose	→	Improve Participation
			Encourage Members' Interaction	→	Improve Participation
			Protect Members' Identity	→	Improve Participation
			Manage Issues of Credibility	→	Improve Participation
			Common Ground Between Members	→	Improve Participation
			Purpose Constructed By Members	→	Improve Participation
			Motivate Members	→	Improve Participation
			Improve Technological Factors	→	Improve Participation
<i>Yen et al., 2011</i>	<i>International Journal of Electronic Commerce</i>	Online Consumer Communities	Self-Enhancement	→	Participation Behaviour
			Rewards	→	Participation Behaviour
			Problem Solving Support	→	Participation Behaviour
<i>Sangwan, 2005</i>	<i>System Sciences</i>	Knowledge Sharing Communities	Hedonic (Entertainment)	→	Motivation to Participate
			Social (Social Interaction)	→	Motivation to Participate

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			Psychological (Self Expression)	→	Motivation to Participate
			Functional (Information Need)	→	Motivation to Participate
<i>Chung and Buhalis, 2008</i>	<i>Information Technology and Tourism</i>	Online Social Networks	Hedonic	→	Level of Participation
			Socio- Psychological	→	Level of Participation
			Functional (Information Acquisition)	→	Level of Participation
<i>Bishop, 2007</i>	<i>Computers in Human Behavior</i>	Online Communities (General)	Interest	→	Active Participation
			Desire	→	Active Participation
			Goals	→	Active Participation
			Values	→	Active Participation
			Beliefs	→	Active Participation
<i>Preece et al., 2004</i>	<i>Computers in Human Behavior</i>	Online Communities (Discussion Boards On MSN)	Members Do Not Need to Post	→	Lurking
			Find Out More About The Community	→	Lurking
			Been Helpful by Not Posting	→	Lurking
			Can't Make the Software Work	→	Lurking
			Don't Like the Group	→	Lurking
<i>Yang et al., 2007</i>	<i>Information & Management</i>	Online Communities (Student Discussion Boards)	Social Outcome Expectancy	→	Intention Toward Participation
			Hedonic Outcome Expectancy	→	Intention Toward Participation
			Utilitarian Outcome Expectancy	→	Intention Toward Participation
			Perceived Importance of Learning	→	Intention Toward Participation
			Peer Pressure	→	Intention Toward Participation
			Superior Pressure	→	Intention Toward Participation
			Conformity Motivation	→	Intention Toward Participation
<i>Evans et al., 2001</i>	<i>Internet Research</i>	Online Consumer Communities	Social Interaction	→	Participation Behaviour
			Functional Need	→	Participation Behaviour
			Hedonic Need	→	Participation Behaviour

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			Reciprocity	→	Participation Behaviour
			Trust	→	Participation Behaviour
			Technological	→	Participation Behaviour
<i>Utz's, 2009</i>	<i>New Media & Society</i>	Online Consumer Communities	Altruism (Like to Helping Other)	→	Motivates Contribution
			Hedonic (Gain Pleasure from Interaction)	→	Motivates Contribution
			Functional (Earning Money)	→	Motivates Contribution
			Reciprocity (Gaining Future Reward)	→	Motivates Contribution
			Reputation (Gaining Status)	→	Motivates Contribution
<i>Wang and Fesenmaier (2003, 2004a, 2004b)</i>	<i>Electronic Markets</i> <i>Journal of Travel Research</i> <i>Tourism Management</i>	Online Travel Communities	Ease of Communication	→	Participation Behaviour
			Seeking/Providing Support	→	Participation Behaviour
			Finding Friends/Peers	→	Participation Behaviour
			Relationship Building	→	Participation Behaviour
			Group Attachment	→	Participation Behaviour
			Identity Expression	→	Participation Behaviour
			Hedonic Need & Social Need	→	Participation Behaviour
			Increasing Respect	→	Participation Behaviour
			Satisfying Others' Need	→	Participation Behaviour
			Helping Others	→	Participation Behaviour
			Seeking/Providing Advice	→	Participation Behaviour
			Sharing Enjoyment	→	Participation Behaviour
			Future Reciprocity	→	Participation Behaviour
			Membership Duration	→	Participation Behaviour

2.7 Active Participation in B2B OBCs

In Section 2.2.1 it was found that active participation is one of the important elements of OCs and need to be included when defining an OC. Subsequently, it was also included in the definition of B2B OBCs. Following this, several B2B OBC benefits (e.g. knowledge sharing, provide/seeking support, forming business relationships) for its members were identified in Section 2.4. The review of the existing literature suggested that without active participation a B2B OBC cannot deliver these benefits to its members, and therefore these types of OCs will not flourish without active participation. Particularly, prior studies have reported that only a small percentage of OCs' members make content contribution (Lampe et al., 2010, Preece et al., 2004, Nonnecke and Preece, 2000, Shang et al., 2006). For that reasons many OCs failed soon after their creation (Hsu and Lin, 2008). Following Section 2.6, it was found that the participation issue has been examined in various types of OCs. However, very little research has focused on B2B OBCs. It is believed that despite the recognition of all the benefits of B2B OBCs by researchers and business owner and managers, particularly their benefits for knowledge sharing, business are still unwilling to use them or actively participate in them (Chen et al., 2006). Accordingly, the current study proposes that research on B2B OBCs is still evolutionary, and particularly the current literature provides very limited insight in the area of active participation. Therefore, active participation in B2B OBCs is considered as a potential gap in the literature.

2.8 Critique

Based on an extensive review of literature, this research study proposes that active participation in B2B OBCs is a research gap in the literature and needs to be further examined for the following reasons:

Lack of Consensus on Active Participation Measure: Despite all the recognitions of active participation and its implication for the success of OCs, the literature lacks agreement on what exactly active participation means and how it can be measured (see Section 2.5.1). The construct is mostly measured by number of posts made to OCs (Preece et al., 2004, Nonnecke et al., 2006). However, the literature provides controversial accounts of what level of post active participation should be determined. For example, based on several studies active participants can be identified as those community members who post at least one message inside their community during their membership life time (Preece et al., 2004, Nonnecke et al., 2006, Soroka and Rafaeli, 2006) or as those community members who post at least one message during the last three months of their membership (Nonnecke and Preece, 2000). Several researchers suggested that active members should post more than one post to their community (Takahashi et al., 2002). Differently, active participants are also defined as those community members who make above average posts per community member (Chen et al., 2004). Average time spent in the community is also used as another way to measure the construct (Wang and Fesenmaier, 2004a). Moreover, several prior researchers have suggested that quality of posts (e.g. usefulness, accuracy, currency, and relevance) should also be included in the active participation measure, particularly in online knowledge sharing communities (Chiu et al., 2006, Lu and Yang, 2011). Accordingly, there has been a call for a better measure for active participation (Lu and Yanq, 2011). Reflecting on the currently discussed methods, one could argue that the active participation measure can vary from one study context to another depending on the community purpose. Considering very limited research was found with regards to active participation in B2B OBCs, this

study proposes that active participation measure in B2B OBCs requires some attention and needs to be further explored, since prior research provides very limited understanding of how to measure the construct in the context of B2B OBCs.

Lack of Research on Active Participation in B2B OBCs: having discovered numerous research on factors effecting participation in various types of OC ranging from online discussion forums to online knowledge sharing communities, none has adequately explained the factors impacting active participation within a B2B OBC context, which is the main focus of this study. A very limited study was discovered with regards to active participation in B2B communities. For example, few studies have focused on B2C OBCs (Evans et al., 2001, Shang et al., 2006, Utz, 2009, Yen et al., 2011) and several have focused on B2B e-commerce (e.g. Zimmer et al., 2010). Very little research focused B2B OBCs, and none directly focused on active participation (Nolan et al., 2007, Zahay and Handfield, 2004, Braun, 2003). In their study Zahay and Handfield (2004) focused on predicting adoption of B2B technologies. Similarly, Braun (2003) attempted to investigate SMEs motivations for using online business communities. Besides, Nolan et al. (2007) mainly aimed to understand trust mechanism between small businesses in online business communities.

Limitations of Past Studies: Although, the review of prior studies in Section 2.6 may provide some useful information on the factors affecting participation behaviour in OCs, yet one could argue that the results of these studies cannot be generalised to B2B OBCs due to the following limitations:

- First, some of the studies only collected data from a small numbers of participants (Kankanhalli et al., 2005, Lee et al., 2006).
- Second, several studies tested their model with only one OC that was based in a specific country. For example, Hsu and Lin (2008) only collected data from an OC that was based in Taiwan. Similarly, Kankanhalli et al. (2005) tested

their model with small sample of participants of an OC that was based in Singapore.

- Third, various studies had a sample bias issue as they only included active participants of OCs (e.g. Chiu et al., 2006).
- Fourth, various studies had an internal validity issue as some of their constructs did not meet the reliability criterion (e.g. Wang and Fesenmaier, 2004a).
- Fifth, inconsistencies were found with regards to the definitions and measures for several identified constructs such as functional need, psychological need, system quality, information quality, and participation. The definitions and measures for these constructs varied from one study context to another, and this had implications on study results. For example, when measuring structural capital, Lu and Yang (2011) have used social interaction as an indicator, whereas Wasko and Faraj (2005) have used a different indicator such as centrality. Also Lu and Yang (2011) measured information quality with very few indicators, while other OC scholars have identified more indicators of the construct (e.g. Lin, 2008). In Wang and Fesenmaier's (2004a) study functional need was measured by three indicators (information, efficiency, and convenience), whereas Sangwan (2005) measured the constructs with six indicators (objective information, information of high value, information for exact need, expert information, information from opinion leaders, and trust information for investment).
- Sixth, some of the reviewed studies were theoretically based and therefore their research applications were not implemented on specific types of OC (e.g. Bishop, 2007).
- At last, the majority of the reviewed studies have mainly focused on socially related factors when investigating the participation phenomenon, and therefore they failed to address technologically related factors (Kankanhalli et al., 2005, Chiu et al., 2006, Chen and Hung, 2010, Lu and Yang, 2011, Chai

and Kim, 2012). However, OC scholars have recognised OCs as socio-technical systems (Chai and Kim, 2012), and prior research has shown that technological factors have same implication as the socially related factors on participation in OC environments (Evans et al., 2001, Hsu and Lin, 2008).

Domain Specificity: Lastly, even if the prior conducted studies were free from all the above limitations, one could still argue that their results cannot be transferred directly to this study context. An examination of the current literature in the field shows that factors affecting active participation can vary from one community type to another. For example, in their study, Nonnecke and Preece (2001) have identified the top six reasons for low participation in OCs within an educational setting, namely the reasons shyness, a wish to be anonymous, limited time, poor quality messages, too many or too few messages, and work related constrains. In a later study, the same authors found these factors to be among the least for low participation in online discussion groups like MSN (Nonnecke et al., 2004). Following this observation, one could argue that it is essential to recognise the uniqueness of each OC type when investigating factors affecting active participation.

Based on the above discussions, this research programme suggests that active participation in B2B OBCs is a gap in the literature, and this study seeks to define it and examine the participation problem in this field. The aim of the research is to propose and test a model to investigate the most important factors affecting active participation in B2B OBCs. Towards achieving this goal and in the next chapter, this study proposes a theoretical framework depicting the factors affecting active participation in B2B OBCs.

2.9 Summary

This chapter started by reviewing OC definitions and this helped to identify several attributes that need to be included in OC definition. Further, after carefully reviewing the current OC classification schemas, this study proposes to classify OCs based on the disciplines they originate from. Accordingly, OBC was identified as one element of taxonomy and further sub communities such as B2B and B2C were identified as OBCs sub typologies. B2B was defined as relational or as trading (e-commerce). Next, active participation was further explored and it was discovered that this study could not directly adopt a measure for active participation from past studies. Subsequently, this study proposes to develop a new measure for active participation in the context of B2B OBCs. Finally, this chapter critically reviewed past studies in the field and it was found that the factors affecting active participation in B2B OBCs is the gap in the literature as very limited studies were found in this area. The next chapter focuses on developing the theoretical framework for factors affecting active participation in B2B OBCs.

3 Chapter Three: Conceptual Framework Development

3.1 Introduction

Based on three well known theories - Social Exchange Theory, Information Systems Success Model, and Uses and Gratification Theory - this chapter proposes a theoretical framework for factors affecting active participation in B2B OBCs.

3.2 Theories and Models Underpinning the Study

This study proposed a definition for B2B OBCs which consists of several attributes, some related to the social aspects of B2B OBCs (e.g. members, purpose, and participation) and some focused on technological aspects B2B OBCs (e.g. technology). Accordingly, this study recognises B2B OBCs as socio-technical systems that facilitate interaction between businesses. This is consistent with experts' views that also recognise OCs as socio-technical systems (Preece, 2001, Mason et al., 2008b). Considering that this study aim's to examine the important factors for active participation in B2B OBCs, this study takes a socio-technical approach in the investigation. This strategy is seen as a rational choice because it allows for covering both social and technical related factors predicting members' participation behaviours in B2B OBCs. This approach is also in line with strategies employed in several past studies that focused on both social and technical related factors when attempted to investigate factors predicting participation behaviour in various OC types: online knowledge sharing, online community of practice, B2B ecommerce, B2C, and online discussion groups (Fisher and Craig, 2005, Chin-Lung and Hsi-Peng, 2007, Steinfield et al., 2007, Hsiu-Fen, 2008, Mason et al., 2008a, Mason et al., 2008b, Cheung and Lee, 2009, Carr et al., 2010, Lampe et al., 2010). The majority of the factors discovered in past studies can be placed into two categories: 1) social related factors such as trust, commitment, reciprocity, functional, status, and enjoyment; and 2) technological related factors such as information quality and system quality. An examination of these factors can easily be explained by three theories namely: Uses and Gratification, Social Exchange, and Information System Success Model. These

are the most widely used theories that have been successfully used to explain people's behaviour in online environments including OCs. Accordingly, these three theories are also used to underpin this study. In the following subsequent sections a conceptual framework for factors affecting active participation in B2B OBCs is discussed.

3.3 Uses and Gratification Theory (U&G)

U&G theory has been recognised for more than seven decades (Ruggiero, 2000). Originally, it was used to examine what motivated people to engage with various media types such as radio and newspaper as well as the types of content that gratify their social and psychological needs (Ruggiero, 2000). Since then, researchers have been active in applying the theory to a wide range of media including OCs. The concept of need is a foundation base for the theory (Ruggiero, 2000). According to U&G, individuals are goal-oriented in their behaviour in OCs and are aware of their needs (Cheung and Lee, 2009). Thus, the paradigm suggests that individuals' participation in OC is affected by their needs such as functional, psychological, hedonic, and social (Wang and Fesenmaier, 2003, 2004a, 2004b).

U&G has successfully been used to explain why people are willing to continue using an OC and make content contributions (Cheung and Lee, 2009). Several prior studies have suggested that gratifying individual needs can have a positive impact on active participation in OC settings (Wang and Fesenmaier, 2003, 2004a, 2004b, Han et al., 2007, Raacke and Bonds-Raacke, 2008, Urista et al., 2008, Lampe et al., 2010). According to Wang and Fesenmaier (2003, 2004a) people participate in OCs to satisfy four fundamental needs: functional (e.g. accomplishing a specific activity), social (e.g. social interaction), hedonic (e.g. enjoyment and pleasure) and psychological (e.g. sense of belonging, identity expression, gaining status and reputation). Chung and Buhalis (2008) conducted a study to examine the relationships between perceived benefits and participation in online travel communities. Their research findings revealed that three factors such as functional (e.g. information

acquisition), social-psychological, and hedonic influence participation and attitude towards OCs.

Reviewing the existing literature shows that U&G theory has been applied widely at the individual level. Evidence is emerging, however, to suggest that it is equally important to look at U&G at B2B. This study suggests that B2B OBCs' members' individual needs differ from their business needs, as they join a B2B OBC for their business needs and not necessarily for their individual needs. For that reason, this study suggests that people participate in B2B OBCs to satisfy three fundamental needs: functional needs, psychological needs, and hedonic needs. As social need focuses on socialising and considering that this study attempt to apply the theory at B2B level, then social interaction may not be as so important and thereby is not included in the model. In a B2B OBC functional needs are met when members participate in the community to fulfil specific activities such as acquiring a specific knowledge, finding solutions for business-related problems, and forming business relationships with other members. Psychological needs include members seeking gaining status in the community through active participation. Finally, hedonic need focuses on fun and enjoyment. From this view, B2B OBC members make active participation because they are intrinsically motivated and enjoy helping others in their community. The following subsections focus on the constructs of U&G in the context of B2B OBCs.

3.3.1 Functional Need and Active Participation

Drawing upon U&G theory, it is believed that OC members participate in the community to gratify their functional needs such as fulfilling specific activities (Wang and Fesenmaier, 2004a, 2004b). These activities may include transactions where community members go online to buy or sell products and services (Hagel and Armstrong, 1997), information gathering for learning and decision-making purposes (Wang et al., 2002), or information acquisition or problem solving (Dholakia et al., 2004). Thus functional need varies from one community type to another depending

on the community purpose. For example, in OCs like ecommerce the functional need of the members can be described as buying and selling products and services, whereas in OCs like social networking sites the functional need can be described as socialising with friends. In OCs like communities of practice it can be described as information acquisition.

Prior research attempted to investigate IS continuance and factors predicting individuals' behaviour in online environments, focusing on the utilitarian which by definition indicates functional need attributes (Jin et al., 2009). In marketing and IS literature utilitarian need is defined as goal oriented and rational concerning effectiveness and instrumental value (Wertenbroch and Dhar, 2000), and this is also in line with the definition of functional need in OC environments (Wang and Fesenmaier, 2004a, 2004b). Subsequently, often researchers have recognised utilitarian as one dimension of functional need and found it as a motivational incentive for participation in OCs like organisational virtual communities (Daugherty et al., 2005). Accordingly, OC scholars have used the term 'functional need' and 'utilitarian need' interchangeably (Porter, 2004). However, this study only uses functional need.

The construct is successfully used to explain consumer behaviour both online and offline (Babin et al., 1994, Hartman et al., 2006). According to Sangwan (2005) satisfaction of functional needs determines individuals' attitudes toward continuance usage of a type of media and its content. The effect of functional need on an individual's behaviour in OCs is also well documented in the literature. Porter (2004) has described OCs like networked-based community as to geographically and socially dispersed groups with socially close relationships and high interaction. Further, Porter (2004) stated that such interaction and relationships between the community members is driven by members' functional needs. More research has identified the construct as one of the important components for modelling participation in OCs (Wang and Fesenmaier, 2004b). A qualitative study by Ardichvili et al. (2003) focused on motivation and barriers to employee participation in OCs of practice. Their study

findings suggest that functional need is one of the major reasons for people to participate in online knowledge sharing communities, since the vast majority of the participants of the study viewed OCs as an available system that they could use it for finding specific information and solutions about a specific problem. Consistent with this study's findings, Wasko and Faraj (2000) have also discovered that finding useful and valuable information and finding answers to specific questions were among the main reasons for people's participation in OCs such as community of practice.

More empirical evidence found in the IS and OC literature further supports the positive association between functional need and active participation. Based on social psychology literature Ma and Agarwal (2007) conducted an empirical study on identity verification and knowledge contribution in OCs. The findings from their study suggest that functional need in terms of information need fulfilment positively relates to members' satisfaction in OCs, which ultimately increases active participation (e.g. knowledge contribution). Hsu et al. (2007) described community related outcome expectation as individuals' expectations about achieving a specific goal and enriching knowledge, which is rooted in the definition of functional need. They found the construct as a motivational factor that impacts knowledge sharing behaviour in OCs. Similar outcomes were also noted in a study by Wang and Fesenmaier (2003). They carried out an investigation to better understand why OC members are willing to make active participation within their communities. They discovered that instrumental motives (e.g. seeking/providing support, finding friends/peers, and relationship building) are positively related to level of active contribution in OCs. More concrete evidence is found to provide support for the positive relationship between functional need and level of participation in OC settings (Chung and Buhalis, 2008).

Based on this literature review on functional need and its effect on participation behaviour in OCs, this study suggests that in the context of a B2B OBC members' functional needs reflect on the functions or the benefits the community provides to its members. These benefits include effective information sharing, providing/seeking

expertise and forming business relationships. Particularly, the importance of B2B OBCs for knowledge sharing between businesses is eminent in the current literature. In OCs information sharing has been recognised as a strategic asset and as a potential foundation for obtaining competitive advantage for businesses (Liang et al., 2008, Mason et al., 2008b, Chen et al., 2012). Further, knowledge sharing can prompt SME performances and further help them in overcoming some of their business obstacles (Watson, 2007). Accordingly, several research have recognised OCs as the most effective tool to facilitate knowledge sharing between businesses (Hagel and Armstrong, 1997, Van-Laere and Heene, 2003, Mason et al., 2008b, Hughes et al., 2009, Carr et al., 2010). Furthermore, through online tools like B2B OBCs, businesses can also accesses expertise advice and form business relationships effectively and cost-free (Fuller-Love and Thomas, 2004, Wu et al., 2006, Miller et al., 2007, Hughes et al., 2009, Carr et al., 2010). Thus, in this study, acquiring specific information (knowledge), accessing expert advice and forming business relationships are identified as three dimensions of functional need of members of B2B OBCs. Consistent with prior research in the field, this study postulates that functional need is a motivational factor to encourage B2B OBC members to make active participation. From this view, business owners and managers may participate in a B2B OBC to gratify their functional needs, and members who have a higher need for specific information or for expert advice and for building relationships with other members will be more willing to become actively involved in the community activities. Accordingly, this study hypothesises that functional need is positively related to active participation in B2B OBCs.

Hypothesis 1a: There is a positive association between functional need and active participation in B2B OBCs.

3.3.2 Psychological Need and Active Participation

As with functional need, psychological need is also recognised under the U&G theory as a motivational factor for active participation in OCs (Wang and Fesenmaier, 2004b, 2004a). In the OCs context, gaining status can be seen as a psychological need of the members (Lampel and Bhalla, 2007). Status is defined as a person's relative position in a group when this position is based on prestige, honour, or respect (Thye, 2000, Lampel and Bhalla, 2007). Similarly Liua et al. (2007) define status as one's standing in social hierarchy as determined by respect, deference, and social influence. From this view, Lampel and Bhalla (2007) stated that, "status seeking consists of activities designed to improve an actor's standing in a group, and is therefore judged by the degree to which associated activities result in increasing prestige, honour, or deference". Thus, it could be seen that status seeking is rooted in the psychological needs of individuals (Wang and Fesenmaier, 2004b, Stockdale and Borovicka, 2006, Lampel and Bhalla, 2007). Drawing upon psychological theory, it has been suggested that people who join an OC have a desire to fulfil their basic psychological needs such as sense of belonging and identity expressing (Wang and Fesenmaier, 2004a) and seeking status (Lampel and Bhalla, 2007). Hence psychological needs may vary from one OC type to another depending on the community purpose. For example, in online health communities, getting information and emotional support from other people with similar health related problems are seen as psychological benefits and this is seen as a motivational factor for people joining and participating in these types of OC (Rodgers and Chen, 2005). On the other hand, sense of belonging (affiliation), identity expression, gaining status, and reputation are also described as individuals' psychological need which motivates people to actively get involved in their OCs (Lampel and Bhalla 2007, Stockdale and Borovicka, 2006, Wang and Fesenmaier, 2004b). For example the findings from a study by Stockdale and Borovicka (2006) suggest that psychological factor (affiliation, belonging, and identification) is positively related to participation behaviour in OC environments. Lampel and Bhalla (2007), have argued that in online consumer communities people may seek status for

psychological and emotional reasons. Therefore, one might argue that businesses participate in B2B OCs because they have an expectation that their engagement will lead in some way to rewards such as status and respect.

The existence of people's need for gaining status and respect in OC environments is well documented in the literature. Scholars have shown that content contributors gain some respect by making content contribution (Constant et al., 1994, Constant et al., 1996). Further, a study by Chan et al. (2004) reports that self-expression and sharing expertise can increase personal identity, respect, and reputation in OCs. In further supporting what has been reported by Chan et al. (2004), the findings from an empirical study indicate that OC users can increase their status through active participation such as posting messages and replying to questions (Ye et al., 2006). Further, past studies indicate that to acquire the recognition from others and gain status within an OC, members have to ensure that they are frequently sharing relevant and important knowledge (e.g. Lakhani and Von, 2003).

Surprisingly, the research outcomes of a few studies indicate that psychological need may not be a major factor for active participation in certain types of OCs (Wang and Fesenmaier, 2003, Utz, 2009). Wang and Fesenmaier (2003) conducted research with the aim to assess the motivation for contributions in online travel communities. Their study findings suggested that status is the least likely motivation for contribution. Similarly, Utz (2009) also discovered that reputation was the least important motivation for contributing to online consumer communities. However, these studies' results contradict with the research outcomes of a large number of empirical examinations carried out on the participation phenomenon in various OC types. Particularly, contrary to findings of the two studies by Wang and Fesenmaier (2003) and Utz (2009), the results of the large majority of research in the field highlight the significant and positive relationships between psychological need and active participation in the OC context. For example IS researchers have found reputation to be positively related to attitude toward contributing to web blogs (Hsu and Lin, 2008). Lampel and Bhalla (2007) have found that status seeking plays

important role in creating and sustaining online consumer communities. Wasko et al. (2009) examined social structure in OCs like electronic networks of practice. They discovered that the active participants in these types of OC have higher needs for enhancing reputation. Within OCs like knowledge sharing communities, expectation to be seen as skilled, knowledgeable or gaining respect from other community members are seen as important reasons for willingness to share knowledge (Wasko and Faraj, 2005, Chiu et al., 2006). Furthermore, in an attempt to develop a theoretical model for factors affecting knowledge sharing in OCs like community of practice, Sharratt and Usoro (2003) proposed that status positively relates to knowledge sharing behaviour. Likewise, Liua et al. (2007) stated that in online entertainment communities, status is a powerful tool to increase participation because the desire for status can motivate users to take action to increase their status. Consistent with this study, Kollock and Smith (1999) have also reported that perceived enhancement of status can serve as an important motivator for users' content contribution behaviour. Further, Lakhani and Wolf (2002) conducted an empirical investigation to understand why contributors contribute to open source software communities. They found that a large proportion of the respondents stated that they were motivated by enhancing professional status and reputation. Similar findings were also discovered in information management literature. Particularly, in their study Hsu and Lin (2008) found that altruism and reputation were positively related to attitude toward blogging.

Reflecting on the above prior studies, there appears to be strong support for a positive relationship between psychological need and active participation in OC settings. Consistent with the above prior researches, this study suggests that gaining status is a motivational factor for active participation in B2B OBCs. Accordingly, in a B2B OBC members may decide to actively get involved in the community and make active participation in order to improve their status and reputation in the community. Therefore, this research postulates that there is a positive relationship between psychological need and active participation in B2B OBCs.

Hypothesis 1b: There is a positive association between psychological need and active participation in B2B OBCs.

3.3.3 Hedonic Need and Active Participation

As with functional need and psychological need, U&G theory also suggests that people participate in OCs to satisfy their hedonic needs such as entertainment and enjoyment (Wang and Fesenmaier, 2004b, 2004a). The phenomenon reflects on users' beliefs regarding the amount of fun and pleasure they anticipate from an Information Technology (IT) and this causes the IT users to perceive the site as abundant or interactive (Huang, 2003). In other words, if a user finds a website fun and enjoyable then he/she will have a positive attitude towards using the site. In contrast, lack of fun and pleasure will make the user stop using the site. Previous studies have shown that perceptions of enjoyment and fun positively influence a user's beliefs of perceived usefulness of a system, and this will enhance the user's performance (Saadé et al., 2007). Therefore, when a user is enjoying and having more fun with using a system, he/she will become more productive and effective. The need for enjoyment and fun can also have the same implication in OCs. For instance, Koh and Kim (2003) have reported that OC members whose hedonic needs (e.g. enjoyment, fun, and pleasure) are met through interaction with other members in the community are more likely to develop a stronger sense of belonging (attachment) to the community, and this will increase their level of participation.

More substantial evidence found in the IS and OC literature provides further support to the positive relationship between hedonic need and active participation. In the IS literature hedonic need is mainly described as 'perceived enjoyment' and used as the determinant for a user's intention to use a system. For example, IS researchers have found that perceived enjoyment is a strong determinant for intention to use information systems (Van der Heijden, 2004). According to Lin and Bhattacharjee (2010), perceived enjoyment reflects on pleasure and happiness gained from using an IT, which influences users' attitude toward using the technology. Building on U&G

theory, Wang and Fesenmaier (2004a) have argued that OC members have not only functional and psychological needs but also hedonic needs (e.g. fun, enjoyment, and amusement). Based on the same theory, Tonteri et al. (2011) have proposed a model to explore the community members' expected benefits and their linkages with different types of OC participation such as reading and posting. Their model proposed that expected benefits such as cognitive, social integrative, personal integrative, and hedonic need positively relate to OC participation. They further empirically tested the model with 395 participants of an OC (online discussion forums of a Finnish business newspaper), and they found that hedonic benefit had a significant positive impact on participation behaviour.

Empirical studies have also found that hedonic need is positively related to the level of participation in online travel communities (Chung and Buhalis, 2008). Within a similar study context, Wang and Fesenmaier (2004b) discovered that a hedonic need has a positive and significant effect on members' level of participation. In line with these studies, Yoo and Gretzel (2008) have also found enjoyment as one of the motivational factors for customers to write online reviews in OCs. The construct is also seen as an intrinsic motivational factor in various OC settings, where it affects people's participation behaviour (Bagozzi and Dholakia, 2002, Rodgers and Sheldon, 2002). Remarkably, the influence of intrinsic motivation on knowledge sharing behaviour is also well documented within the knowledge management literature. Particularly, intrinsically motivated by the feeling of helping others is seen as one of the main reasons for individuals' knowledge contribution to an OC (Wasko and Faraj, 2005). Ardichvili et al. (2003) have argued that in OC domains, participants are intrinsically motivated to share knowledge through helping others by sharing what they know.

Building upon the past studies, this research defines hedonic need as perceived enjoyment reflecting on that B2B OBC members' ability to gain pleasure from helping others in the community, and further recognise the construct as an intrinsic

motivational factor for active participation. Accordingly, this study hypothesises that in a B2B OBC the higher the hedonic need of the member the more active they are.

Hypothesis 1c: There is a positive association between hedonic need and active participation in B2B OBCs.

3.4 Social Exchange Theory (SET)

SET is the most commonly used theory for investigating the behaviour of individuals and their interaction in online environments, particularly OCs (Ridings et al., 2006, Wu et al., 2006, Liang et al., 2008, Faraj and Johnson, 2010). The theory originated from Economic Exchange Theory (EET) (Blau, 1986, Liao, 2008). SET views an OC as a place for exchanging resources (e.g. information and knowledge) between its participants (e.g. individuals, groups, or businesses). The paradigm suggests OCs participants use a cost-benefit approach to interact with each other and seek to maximise their benefits and minimise their costs when interacting with others (Liang et al., 2008). Ridings et al. (2006) stated that, “people chose to take part in behaviour if and only if, their expected outcomes from it compare favourably with their investment”. Hence, from a SET perspective participants in OCs expect some benefits in return when they contribute inside the community (Abrams et al., 2003, Tiwana and Bush, 2001). Thus, according to the theory an individual’s exchange behaviour in OCs depends upon reciprocity and reward (Wu et al., 2006).

The interaction between the participants of OCs has been well recognised as social exchange (Jin et al., 2010). Therefore SET has been successfully utilised in numerous prior studies that investigated the factor affecting participation behaviour in various OC types (Chiu et al., 2006, Ridings et al., 2006, Faraj and Johnson, 2010, Chen et al., 2010). Based on relevant literature in the field, this research identifies three components of SET, namely reciprocity, trust, and commitment (Ridings et al., 2006, Liang et al., 2008). These could have applicability to the context of B2B OBCs as prior researchers have shown the importance of these constructs between firms (Lu

and Yang, 2011, Chen and Hung, 2010, Wellman and Gulia, 1999). The following subsections reviews the three constructs in terms of SET.

3.4.1 Reciprocity

Reciprocity is an important construct of the SET model (Jin et al., 2010). Different definitions for reciprocity are reported in the existing literature. Early scholars have described the phenomenon as a sense of mutual gratitude between people, which is reciprocated by benefits they receive from each other and this ensures ongoing exchange between them (Shumaker and Brownell, 1984). Kankanhalli et al. (2005) defined the concept as a salient motivator for contributors of OCs. IS researchers have described reciprocity as a form of extrinsic motivation which affects knowledge contribution behaviour in OCs (Lin, 2007). In knowledge management literature reciprocity has been described as the moral obligation of individuals which influences knowledge sharing behaviour of individuals (Wasko and Faraj, 2000). The phenomenon is also explained by the theory of gift economy (Kollock, 1999, Wang and Fesenmaier). From the theory perspective, participation in OCs can be defined as gifts as the contributors do not receive payments for their contributions. Contributors offer advice, help and useful information to other members, who are often unknown to them and may never encounter them again. Regardless of these definitions, the evidence supporting the positive relationship between reciprocity and participation in OC environments is eminent (Wellman and Gulia, 1999). For example, OC scholars have reported that OC members tend to make more contributions if they think they will get pay-back for what they contribute (Wasko and Faraj, 2005, Ye et al., 2006). In their study Wasko and Faraj (2000) posited that knowledge sharing in OC of practice is facilitated by a strong sense of reciprocity. However, in a later study in 2005 the same authors discovered a contradictory finding (Wasko and Faraj, 2005). They conducted an empirical investigation, where they collected data from 593 participants, with the aim to investigate knowledge contribution in electronic communities of practice. The results of their research provided limited evidence

supporting the positive relationship between reciprocity and knowledge contribution. Similar outcomes were also reported in research that incorporated Wasco and Faraj's model in order to determine factors related to content contribution in firm hosted online customer communities (Wiertz and Ruyter, 2007).

The concept of reciprocity is one of the popular topics in the field of OC. Two types of reciprocity have been recorded in the literature, which includes 'direct reciprocity' and 'indirect reciprocity' or 'generalised reciprocity' (Kobayashi et al., 2006, Hew, 2009, Utz, 2009). Direct reciprocity occurs when one's given is reciprocated by the recipient, whereas in indirect reciprocity one's given is reciprocated by a third party. Thus, in an OC direct reciprocity is concerned with members who provide information to people and would expect the recipients to provide them with information in future. However, in the context of indirect reciprocity the contributor would expect help from the community as a whole rather than from individual members who received information from her/ him in the past.

Thus, reflecting on the above reciprocity taxonomy, it can be seen that Wasco and Faraj (2005) and Wiertz and Ruyter (2007) only focused on direct reciprocity rather than generalised reciprocity and this could be seen as the possible explanation for their inconsistent findings. Following this observation, it was discovered that a vast majority of prior studies in the field of OC have focused on generalised reciprocity (Preece, 2001, Kobayashi et al., 2006, Utz, 2009), and they further provide contradictory results to the two studies by Waso and Faraj (2005) and Wiertz and Ruyter (2007). For example, in their empirical examination Kobayashi et al. (2006) focused on indirect reciprocity and their study concluded that generalised reciprocity has positive effect on participation in OCs. Thus, one might conclude that reciprocity in OCs is only concerned with generalised reciprocity and this aligns with the experts' view (Preece, 2001, Utz, 2009). Preece (2001) posited that in OCs, "a measure of reciprocity should take account of the ratio of giving to and taking from a community". Further, Utz (2009) stated that in an OC generalised reciprocity is more important than direct reciprocity, since help from a community member is

reciprocated to another community member, not necessary the original helper. Accordingly, this study will only consider generalised reciprocity in the context of B2B OBCs.

3.4.1.1 Generalised Reciprocity and Active Participation

The importance of generalised reciprocity for participation in various OC types is well documented in the literature. The phenomenon is often described as extrinsic motivation for OC members. According to Huysman and Wulf (2006) motivation is one of key elements to encourage people to use and share information in IT tools like OCs. Lin (2007) provides further empirical support for Huysman and Wulf's claim as she conducted an empirical study to investigate extrinsic motivation (e.g. rewards and reciprocity) and intrinsic motivation (e.g. enjoyment and helping others) on employee knowledge sharing behaviour in OCs. Lin's study results showed that both extrinsic and intrinsic motivational factors were positively associated with employee knowledge sharing attitude and intention. More evidence found in the literature is consistent with Lin's study results. Particularly, Hew (2009) conducted research to investigate the success factors for OCs and further found a positive relationship between indirect reciprocity and participation. Hew (2009) discovered that OC members who were willing to share knowledge received help from other members in the community. Lu and Yang (2011) proposed a model based on several theories such as Relational Capital, Structural Capital, and Cognitive Capital to explain information exchange in OCs. Their model included generalised reciprocity and generalised trust as two elements of Relational Capital. The results of their study showed that Relational Capital was positively related to quantity of information posted in online discussion forums. Further, a study by Chen and Hung (2010) aimed to investigate factors influencing member's knowledge sharing and community promotion in an OC for professionals. They discovered that reciprocity significantly impacted knowledge sharing behaviour. The results of their empirical investigation coincide with the findings from several qualitative studies that focused on OC participation

(Henderson, 2007, Lampel and Bhalla, 2007). Henderson (2007) has found reciprocity to play an important role in teachers' participation in OCs. Similar outcomes were also discovered in Lampel and Bhalla's (2007) study in which aimed to investigate information contribution in OCs like student web discussion groups.

The literature also offers us a framework to understand the factors affecting knowledge sharing behaviour in OCs like social networks. Chai et al. (2011) indicate that trust and reciprocity have positive impact on knowledge sharing behaviour in online social networks. More research underpinned by SET further suggests that reciprocity increases self-disclosure of working professionals in OCs. For example, Posey et al. (2010) have found in an OC for working professionals, members who have a higher belief in reciprocity tend to disclose more information about their personal details, intentions, and activities, therefore they will make more content contribution within OCs.

There is however limited evidence regarding reciprocity and its effects on participation in B2B OBCs. Therefore, existing literature has yet to examine the phenomenon in the context of B2B OBCs. However, the review of the literature provides this study with a strong foundation on how the construct may also affect members' participation behaviour in B2B OBCs. Based on the findings from past studies in the area of OC, this research postulates that B2B OBCs members will be more willing to participate and make content contribution where they believe in generalised reciprocity. Subsequently, this study hypothesised that generalised reciprocity has a positive impact on active participation in B2B OBCs.

Hypothesis 2: There is a positive association between generalised reciprocity and active participation in B2B OBCs.

3.4.2 Commitment

Commitment has been well recognised as a central construct in the SET theory (Chiu et al., 2006, Liang et al., 2008, Jin et al., 2010). The notion has been described in many ways such as willingness to make short term sacrifices, desire to continue a relationship, investment in a relationship, and confident in the stability of a relationship (Stanko et al., 2007). Kim et al. (2008) describe commitment as a necessary condition for developing an on-going long term relationship, as desire to maintain a valued relationship, and as an exchange process in which an individual develops loyalty to another individual or organisation. The paradigm has also been referred to as the level of an individual's identification with and involvement in a particular organisation (Wang et al., 2010). In the organisational context the phenomenon has been defined as psychological bonds which make employees stay within an organisation even when higher paid jobs are available (Meyer and Allen, 1991, Meyer et al., 2002, Allen and Meyer, 2011). Morgan and Hunt (1994) stated that commitment is important to relational exchanges between firms. Further, they defined the concept as “an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it”. In a B2B relationship commitment is defined as willingness to make short term sacrifices to maintain the relationship (Tsiros et al., 2009). In the context of OC, scholars have described the phenomenon as a sense of emotional involvement with the community, and that it is important for maintaining long term relationships (Cheung and Lee, 2009). Similarly, Bateman et al. (2010) have defined the term as a psychological bond which stabilises individuals' online activities.

3.4.2.1 Conceptualizing Commitment

The earlier section revealed that commitment has been described in many ways and it could mean different things to different people. The concept has been studied from different disciplines and backgrounds. Particularly, a considerable amount of literature has focused on commitment, including literature from psychology, IS,

business, marketing, and organisational literature. Therefore, the phenomenon is well recognised as a multi-dimensional concept (Meyer and Allen, 1991, Meyer et al., 2002, Bateman et al., 2010, Allen and Meyer, 2011). Subsequently, different dimensions for commitment are reported in the literature. Three sub-constructs of commitment: continuance commitment, affective commitment, and normative commitment have been reported in the organisation and OC literature (Meyer and Allen, 1991, Bateman et al., 2010).

Continuance Commitment is often known as ‘calculative commitment’ (Dabholkar et al., 2009). It reflects on the notion that an individual may decide to stay with an organisation or an OC because of the costs (social and economic) associated with leaving the organisation or the OC (Bateman et al., 2010, Jin et al., 2010). In an organisational context it refers to an individual’s belief that leaving the organisation would be costly because the benefits received from the organisation are not available elsewhere (Whitener et al., 1998, Wang et al., 2010). Therefore, it describes people’s perceived benefits received from organisations or groups and this makes people stay with them for as long as these benefits are continually received. From an OC perspective, continuance commitment suggests members may decide to stay with the community because they feel that leaving the community would be costly and the received benefits (e.g. getting help, getting support, and receiving advice) from the community are not available elsewhere (Bateman et al., 2010).

Normative Commitment unlike continuance commitment refers to an individual’s feelings of obligation to stay with an organisation regardless of any direct benefits received from their relationship with the organisation (Bateman et al., 2010, Wang et al., 2010). Thus in an OC, a participant may decide to stay with the community and wish to participate in the community activities because of a sense of obligation. This sense of obligation is often as a result of the participant’s interaction with the community in the past. For example, a community member who received help from other members in the past may feel indebted to the community and feel an obligation to stay with the community to repay the received benefits (Bateman et al., 2010).

Affective Commitment reflects on individuals' emotional attachment to an organisation (Meyer and Allen, 1991, Bateman et al., 2010). Thus, a high level of affective commitment would mean a high level of emotional attachment to an organisation or a group. In the context of OC, Bateman et al. (2010) describe affective commitment as a “bond between a member and a particular community that is based on the member’s strong emotional attachment to the community”. Similarly, Lin (2010) posits that affective commitment is an individual’s attitudinal perception which reflects on a member’s attachment to and identification with a particular OC. Table 3-1 summarises all commitment definitions.

Table 3-1 : A Summary of Commitment Definitions

	Definitions	Source
Commitment	Willingness to make short term sacrifices, desire to continue a relationship, investment in a relationship, and confident in the stability of a relationship	<i>Stanko et al., 2007</i>
Commitment	A necessary condition for developing on-going long term relationship, desire to maintain a valued relationship, and an exchange process in which make an individual to develop loyalty to another individual or organisation.	<i>Kim et al., 2008</i>
Commitment	The level of an individual’s identification with and involvement in a particular organisation	<i>Wang et al., 2010</i>
Commitment	Psychological bonds which make employees to stay within organisations even when higher paid jobs are available	<i>Meyer et al., 2002, Allen and Meyer, 2011</i>
Commitment	“an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it”.	<i>Morgan and Hunt, 1994</i>
Commitment	willingness to make short term succrfices to maintain the relationship	<i>Tsiros et al., 2009</i>
Commitment	Sense of emotional involvement with the community that maintains long term relationships	<i>Cheung and Lee, 2009</i>
Commitment	A psychological bond which stabilises individuals’ online activities.	<i>Bateman et al., 2010</i>

Continuance Commitment	<p>Individual's believing that leaving an organisation would be costly and the benefits are received from an organisation is not available elsewhere.</p> <p>People's perceived benefits received from organisations or groups which makes people to stay with them for as long as these benefits are continually received.</p>	<p><i>Whitener et al., 1998, Wang et al., 2010, Bateman et al., 2010</i></p>
Normative Commitment	<p>An individual's feelings of obligation to stay with a particular organisation regardless of any direct benefits received from their relationship with the organisation.</p>	<p><i>Bateman et al., 2010, Wang et al., 2010</i></p>
Affective Commitment	<p>Individuals' emotional attachment to and involvement with an organisation.</p> <p>Bond between a member and a particular OC / the people's strong emotional attachment to the community".</p> <p>Individual's attitudinal perception which reflects on a member's attachment to an identification with a particular OC.</p>	<p><i>Meyer and Allen, 1991</i></p> <p><i>Bateman et al., 2010</i></p> <p><i>Lin, 2010</i></p>

3.4.2.2 Affective Commitment and Active Participation

Drawing upon prior research, one may argue that all three types of commitments identified in the previous section may coexist in OC domains. However, in this study only affective commitment is considered as a predictor for active participation in B2B OBCs for the following three reasons:

Firstly, normative commitment has been excluded from the majority of past studies examining the commitment phenomenon in OC settings (Gautam et al., 2004, Casaló et al., 2007, Jin et al., 2010, Wang et al., 2010). This is because researchers have argued that there is no significant difference between normative commitment and affective commitment (Felfe et al., 2008, Wang et al., 2010). Another possible explanation for excluding normative commitment in past studies could be because the construct focuses on feelings of obligation or responsibility, which does not apply to the OC context. In further supporting this argument, the outcomes of Jin et al.'s

(2009) study show that a sense of obligation does not make OC participants stay with and contribute to their communities. For that reason, affective commitment and continuance commitment are the only two forms of commitment types that are most frequently cited in the OC literature (Jin et al., 2010). More empirical evidence is found to further support the argument made in this study. For example, Dabholkar et al. (2009) described calculative (continuance) commitment and affective commitment as the only two dimensions of commitment. They also posited that normative commitment is not relevant to the context of OCs.

Secondly, although the current literature shows that continuance commitment is exist in OC settings, very limited evidence is found with regards to the construct effects on active participation in terms of posting and making content contribution. For example, the findings from a study by Bateman et al. (2010) revealed that continuance commitment is positively associated with reading contents (e.g. lurking) in OCs like online discussion boards, but it does not affect active participation behaviour such as posting threads and replying to the posted questions.

Lastly, the importance of affective commitment on active participation within the OC context is well known in the literature (Blanchard and Markus, 2004, Casaló et al., 2007, Kim et al., 2008, Cheung and Lee, 2009, Bateman et al., 2010, Jin et al., 2010). Particularly, some researchers have only considered affective commitment in the definition of commitment in OCs (Casaló et al., 2007). Further, Blanchard and Markus (2004) have emphasised the existence of affective commitment in OCs as they stated that OC members form strong emotional attachment and strong effective bonds with their communities. It has been suggested that in the context of OCs affective commitment is more important than other two types of commitment (Huang et al., 2007). This claim can be backed up by empirical evidence. For example, in their study Bateman et al. (2010) found that in OCs affective commitment is positively associated with active participation behaviour evidenced by members posting messages and replying to posted messages. Their research established that members with high emotional attachment and identification to their OCs are more

willing to help other members of their communities. Furthermore, the findings from a study by Cheung and Lee (2009) suggest that the stronger a user's sense of emotional attachment to an OC the higher the likelihood he/she will make contribution. Therefore, the research results from Cheung and Lee's study show that affective commitment has significant and positive impact on OC users' behaviour such as joining and making contribution. A further empirical study reports the significant relationship between affective commitment (mutual commitment) and online knowledge sharing behaviour (Wu et al., 2006). Consistent with Wu et al.'s study, Ye et al. (2006) also found the construct to be one of the key motivators for users' intention to share knowledge in OCs. Dabholkar et al. (2009) conducted a study to examine B2C relationship forming in OCs like chatting groups. The results of their study also indicate that users' continuance intention to participate in an OC is determined by affective commitment.

For the above three main reasons, this study suggests that affective commitment is the only commitment type that could have an impact on active participation in B2B OBCs. More substantial evidence is found to further support this postulation. For example, Sweeney and Webb (2007) posited that commitment is central to the foundation of successful relationships for both individuals and firms. Therefore, it is believed that in B2B relationships commitment is a key element determining the relationship outcomes (Ryssel et al., 2004). Perry et al. (2002) considered affective commitment as the end point of the development of a relationship which ensures the relationship will continue in the future. Moreover, the findings from a research by Young and Denize (1995) suggest that in a B2B relationship with higher affective commitment, firms are more likely to honour to decisions and agreements they make, to open with another, and to share more information with one another. Following these studies and based on the findings from prior research in the field of OC, one might also suggest that in a B2B OBC the stronger a member's sense of emotional attachment to the community the more likelihood he/she will participate actively in that community's activities such as sharing information, providing support and advice

to other community members. Accordingly, this study hypothesises that affective commitment is positively related to active participation in B2B OBCs.

Hypothesis 3: There is a positive association between affective commitment and active participation in B2B OBCs.

3.4.3 Trust

In addition to reciprocity, researchers have also recognised trust as another crucial construct in the SET model (Liao, 2008, Staples and Webster, 2008, Posey et al., 2010). Trust has also been identified as an important factor that influences participation behaviour in online environments such as OCs (Chiu et al., 2006, Mason et al., 2008a, Mason et al., 2008b). The need for trust in OCs perhaps can be explained by the existence of difference between OCs and offline communities ‘traditional communities’. In OCs individuals share information and interact with people whom they seldom meet or had no prior interaction with, and this can create uncertainties and a risky atmosphere for the people. Unlike OCs, in traditional communities such uncertainties and risky atmospheres can be minimised by the face-to-face interaction. Further supporting this argument, prior research suggests that in OCs the need for trust emerges due to uncertainty and risky domains (Gefen et al., 2003). Several scholars indicate that trust is a social factor that is difficult to achieve in OCs, because members lack face-to-face contacts (Preece, 2001, Lin, 2008). Bhattacharjee (2002) posits that trust is an important element in online relationships because an online environment is characterised by lack of control, anonymity, and potential opportunism. Bhattacharjee’s proposition is further supported by an empirical study by Pavlou and Gefen (2004) who investigated trust from a sociological and economic perspective. They found trust to be important in a relationship where there is uncertainty, and fear of opportunism.

3.4.3.1 Conceptualizing Trust

As with commitment, trust is also a multi-dimensional concept and it has captured the attention of researchers for many decades (Ratnasingam, 2003, Ratnasingam, 2005, Nolan et al., 2007). The phenomenon has been studied from a wide variety of disciplines and backgrounds such as sociology, philosophy, socio-psychology, and economics (Leimeister et al., 2005). As a result of that, the concept has been defined differently throughout the literature, and this has resulted in various definitions of trust (McKnight and Chervany, 2002, McKnight et al., 2002a). Several researchers have argued that there is neither a standard definition, nor an accepted typology for the paradigm (McKnight et al., 2002a, Wu and Chang, 2005). Indeed, some researchers have been reluctant to provide a definition as they found it difficult to define the concept. For example, McKnight et al. (2002a) posited that some researchers chose not to define trust and some believe the concept is indefinable. Gefen et al. (2003) extensively reviewed the definition of trust in various literature sources including business and marketing literature focused on B2B relationships. Gefen et al.'s study further provides numerous different definitions of trust, which shows the long lasting confusions about the concept. For example, in the context of B2B relationships trust has been described as the following: an expectation of honest and cooperative behaviour (Anderson and Narus, 1990), beliefs in dependability or willingness to depend (Morgan and Hunt, 1994), expectation that eases the fear the other party will be opportunistic (Gulati, 1995), beliefs of honesty and benevolence (Kumar, 1996), and intention to accept the vulnerability based upon positive expectations of the behaviour of others (Rousseau et al., 1998).

A broad definition of trust is found in the literature which can be applied to various online domains including OCs. From a broader perspective, trust is defined as beliefs or the willingness of a party to be vulnerable to the actions of another party based on the anticipation that the other party will perform a particular action important to the trustor, regardless of the ability to monitor or control the other party (Mayer et al., 1995, Jarvenpaa et al., 1998, Dwyer et al., 2007). This definition is further utilised by

several IS authors who investigated trust in OCs (Dwyer et al., 2007, Chow and Chan, 2008, Hsu and Lin, 2008, Vatanasombut et al., 2008). Based on this definition, in the context of OC trust would mean the tendency to believe in others and their posted messages. However, considering the multidimensional aspect of trust, a more robust definition is required. Towards this goal, McKnight et al. (1998) attempted to develop a model to help to better understand trust in newly formed relationships. In a later study the same authors attempted to make a standard definition and to develop a standard typology for trust in OC environments like B2B e-commerce (McKnight et al., 2002a). They identified three components of trust such as disposition to trust, institution based trust, and trusting beliefs.

Disposition to trust: This refers to a consistent tendency to be willing to depend on others in various situations (McKnight and Chervany, 2002, McKnight et al., 2002a). Further, McKnight and Chervany (2002) stated that this type of trust would not imply that one believes others to be trustworthy, because the definition does not refer to a person's attributes. The disposition to trust definition also conflicts with the majority of the definitions of trust in OC context (Preece, 2001, Ridings et al., 2002, Nolan et al., 2007, Lin, 2008). Subsequently, one might argue that this type of trust would not best capture trust definition in the context of B2B OBCs.

Institution based trust: This refers to a belief that favourable conditions are in place to increase the probability of achieving successful outcome (McKnight et al., 2002a). In the IS and Marketing literature this type of trust is mostly known as 'systems trust' and further defined as an individual's perceptions of the institutional surrounding of a system and the structural assurance (e.g. regulation and law) by a system provider that make the participants feel secure (Benlian and Hess, 2011). Thus, it could also be then argued that this type of trust is more applicable to online domains where the main concern is the interactions between people and system and this can be seen in B2B ecommerce. In fact, prior research have found institution-based trust as more important than the other two dimensions of trust in a situation where a transaction occurs such as B2B ecommerce and B2C ecommerce (Walczuch and Lundgren, 2004,

Awad and Ragowsky, 2008, Jones and Leonard, 2008). Accordingly, it could then be easily argued that this type of trust is also not applicable to OCs like B2B OBCs, since the primary focus is the interaction between the community members (e.g. business owners and managers), and therefore trust is required between members and not between members and the system .

Trusting beliefs: This refers to one's beliefs that others have one or more characteristics beneficial to oneself (McKnight et al., 2002a). Trusting beliefs is also known as 'interpersonal trust' pertaining to a type of trust one agent has in another agent on a personal level (Leimeister et al., 2005). This definition is in line with the vast majority of the definitions reported in the literature. Considering that B2B OBCs are sustained by interaction between members, one could postulate that trusting beliefs can be considered more relevant to the context of B2B OBCs. This claim can be further supported by prior research that examined trust in online knowledge sharing communities (Abrams et al., 2003, Wu and Chang, 2005, Nolan et al., 2007, Lu et al., 2010). For example, in their study Lu et al., (2010) found that institution based trust stimulates intention to buy and trusting beliefs increase intention to share information.

Having discovered the multi-dimensional aspect of trust, McKnight et al. (2002a) further identified three sub-constructs of trusting beliefs namely: competence which is concerned with an individual's belief that others are able to help fulfil his/her needs, integrity that focuses on an individual's belief that others are telling the truth and will fulfil promises they make, and benevolence related to an individual's belief that others voluntarily care about his/her needs. Correspondingly, Ridings et al. (2002) identified three similar dimensions of trusting beliefs namely: ability (e.g. skills or competencies that enable an individual to influence others), integrity (e.g. the expectation that another will act in accordance with socially accepted standards or honesty, or set of principles that the trustor accepts), and benevolence (e.g. the expectation that others will have a positive desire to do good). Furthermore, in an attempt to develop individual trust in online firms, Bhattacharjee (2002) has also

identified three similar dimensions: ability based trust which reflects on one's beliefs about other's competencies and knowledge, integrity based trust which reflects on one's beliefs about that others will hold to a set of acceptable principles or rules, and benevolence based trust which reflects on one's beliefs about other's good intentions beyond their own profit motives.

Based on a careful examination of the above three studies in relation to the reported dimensions of trusting beliefs, one might suggest that the identified three dimensions in the three different studies are compatible with each other as they hold a similar meaning. Accordingly, this study adopts ability/competence, integrity, and benevolence to capture trusting beliefs and sufficiently capture the multi-dimensional aspect of the phenomenon. Also numerous prior researchers that examined trust in various OC types, have utilised these three dimensions to measure trusting beliefs (Bakker et al., 2006, Sanchez-Franco et al., 2009, Lu et al., 2010, Wu et al., 2010). Table 3-2 summaries all the definitions of trust discussed in this section.

Table 3-2 : A Summary of Trust Definitions

Trust	Definitions	Source
Trust	Expectation of honest and cooperative behaviour.	<i>Anderson and Narus, 1990</i>
	Beliefs in dependability or willingness to depend.	<i>Morgan and Hunt, 1994</i>
	Expectation that ease the fear the other party will be opportunities.	<i>Gulati, 1995</i>
	Beliefs of honesty and benevolence.	<i>Kumar, 1996</i>
	Intention to accept the vulnerability based upon positive expectations of the behaviour of others.	<i>Rousseau et al., 1998</i>
Willingness of a party to be vulnerable to the actions of another party based on the anticipation that the other will perform a particular action important to the trustor, regardless of the ability to monitor or control the other party.	<i>Mayer et al., 1995</i> <i>Jarvenpaa et al., 1998,</i> <i>Dwyer et al., 2007</i>	

Disposition to Trust	A consistent tenancy to be willing to depend on others in various situations.	<i>McKnight and Chervany, 2002, McKnight et al., 2002a</i>
Institution Based Trust	Favourable conditions to increase the probability of achieving successful outcome. An individual's perceptions of the institutional surrounding of a system and the structural assurance (e.g. regulation and law) by the system provider that make the participants feel secure	<i>McKnight et al., 2002a</i> <i>Benlian and Hess, 2011</i>
Trusting Beliefs	One's beliefs that others have one or more characteristics beneficial to oneself. "Interpersonal trust" pertaining to a type of trust one agent has in another agent on a personal level.	<i>McKnight et al., 2002a</i> <i>Leimeister et al., 2005</i>
Ability Based Trust	An individual's belief that others are able to help fulfil his/her needs. Skills or competencies that enable an individual to influence others. One's beliefs about other's competencies and knowledge,	<i>McKnight et al., 2002a</i> <i>Riding et al., 2002</i> <i>Bhattacharjee, 2002</i>
Integrity Based Trust	An individual's belief that others telling the truth and will fulfil promises they make. The expectation that another will act in accordance with socially accepted standards or honesty, or set of principles that the trustor accept. One's beliefs that others will hold to a set of acceptable principles or rules.	<i>McKnight et al., 2002a</i> <i>Riding et al., 2002</i> <i>Bhattacharjee, 2002</i>
Benevolence Based Trust	An individual's belief that others are voluntarily caring about his/her needs. The expectation that others will have a positive desire to do good. One's beliefs about other's good intention beyond their own profit motives	<i>McKnight et al., 2002a</i> <i>Riding et al., 2002</i> <i>Bhattacharjee, 2002</i>

3.4.3.2 Trusting Beliefs and Active Participation

The role of trusting beliefs in OCs has received substantial attention by IS and OC scholars (Ridings et al., 2002, Levin and Cross, 2004, Pavlou and Gefen, 2004, Chiu et al., 2006, Roberts, 2006, Chow and Chan, 2008, Palvia, 2009, Yen, 2009, Chen and Hung, 2010). According to Chen and Hung (2010) in an OC trust refers to the degree of belief in good intention, benevolence, competence, and reliability of members who are sharing knowledge. Chen and Hung (2010) conducted an empirical study on knowledge contribution in OC for professionals and found that trusting beliefs (interpersonal trust) positively affects knowledge contribution. Yen, (2009) posited that trust is an important factor for continued use of OCs. Further, Palvia (2009) pointed out that trust can facilitate online exchange relationships. According to Chow and Chan (2008) trusting beliefs is a crucial success factor for knowledge sharing, which improves interaction between people. Roberts (2006) suggested that without trusting beliefs members of OCs like communities of practice are reluctant to share knowledge. The construct has also been identified as the key factor for effective collaboration in online knowledge sharing communities (Pavlou and Gefen, 2004). The findings from a study by Levin and Cross (2002) suggest that trusting beliefs can increase a person's desire to share knowledge (Levin and Cross, 2002). Knowledge management scholars have also reported that trusting beliefs will lead to greater knowledge exchange in OCs (Ridings et al., 2002).

In an OC context participation involves carrying out several activities, these include providing help and support, socialising, discussing ideas, sharing information, forming relationship, and getting involved with other members (Preece, 2000, 2001, Preece et al., 2003, Preece et al., 2004). These activities inside OCs have been found to have direct relationships with trust. For example, Preece (2000) pointed out that without trust people's relationships may not flourish because sharing personal information with another requires some level of trust. Lin (2008) stated that trust is important for members who are willing to exchange information, and further asserted that lack of trust among participants is a major obstacle in fostering OCs, since

members lack face-to-face communication. On the other hand, it is believed that in OCs when the level of trust is high, members are more willing to interact with each other (Han et al., 2007). According to Abrams et al. (2003) trust helps promoting effective knowledge creation and sharing in OCs, and leads to increasing the overall knowledge exchange at low cost. Further supporting this, the findings from Levin and Cross (2004) study also showed that trust will lead to greater knowledge exchange, and can increase a person's desire to share.

From a B2B OBC view trust also can be seen as crucial component, since the findings from the past studies suggest that trust is an important element for active participation because it affects members behaviour such as information sharing behaviour (McKnight and Chervany, 2002, Perry et al., 2002, Shankar et al., 2002, Ratnasingam, 2003, Wu and Chang, 2005, Nolan et al., 2007, Mason et al., 2008a, Palvia, 2009). Perry et al., (2002) posited that trust is a crucial social bond in B2B relationships. Marketing researchers have also emphasised the importance of trust between firms (Lu and Yang, 2011, Wellman and Gulia, 1999). Mason (2008) reported that trust is one of the main factors affecting SMEs' willingness to share knowledge online. Nolan et al. (2007) conducted research to examine trust in OBCs. The findings from their study suggest that trust is required at the individual level and it is important for OCs like B2B OBCs development. Wu and Chang (2005) carried out an empirical investigation towards understanding members' interactivity and trust in OCs like online travel communities. They found that trust was positively associated with interactivity (participation). According to Ratnasingam (2003) trust is a crucial factor for the success of OCs and it can play an important role in exchange relationships as it reduces conflicts and creates a competitive advantage.

The current literature provides a full understanding of the importance of trust, particularly trusting beliefs in relation to active participation in various OC types including B2B OBCs. In the B2B OBCs context, the participation can be described as sharing information, seeking/providing support and expertise, forming business relationships, and finding business contact. This would require some level of trust as

businesses may be reluctant to share information or disclose such sensitive information with other businesses they don't trust. For example, Mason et al. (2008) posited that disclosing one's business weakness and providing such vital information can be used to harm the business. Thus, this study suggests that the importance of trust in B2B OBCs is indisputable. Accordingly, this study postulates that B2B OBCs members with a high level of trust will participate more actively in the community activities.

Hypothesis 4a: There is a positive association between trusting beliefs and active participation in B2B OBCs.

Moreover, drawing upon the literature on commitment-trust theory, one may suggest that trusting beliefs is also positively related to affective commitment in B2B OBCs. Great support has been discovered in the literature with regards to this postulation (Morgan and Hunt, 1994, Wieselquist et al., 1997, Perry et al., 2002, Ryssel et al., 2004, Theron et al., 2008, Vatanasombut et al., 2008). Perry et al. (2002) posited that trust is a positive determinant of commitment. According to psychology researchers trust and commitment are two constructs that play an important role in shaping motivation and behaviour in an ongoing relationship (Wieselquist et al., 1997). Further, Morgan and Hunt (1994) stated that parties are more willing to commit themselves to a relationship that trust is highly valued. Vatanasombut et al. (2008) conducted a study to investigate IS continuance intention in web-based applications like OCs. They found trust positively related to commitment. Similar outcomes were also reported in other marketing literature (Ryssel et al., 2004, Theron et al., 2008). According to Theron et al. (2008) trusting beliefs positively impact commitment in B2B relationships because trusting one partner to be honest and benevolent reduces uncertainty and creates a positive supportive atmosphere. Furthermore, research conducted aimed to examine B2C relationship forming in OCs like chatting groups has also found trusting beliefs positively associated with affective commitment (Dabholkar et al., 2009). Consistent with these studies, this research models trusting beliefs as the antecedent to affective commitment.

Accordingly, this research hypothesizes that trusting beliefs is positively associated with affective commitment in B2B OBCs.

Hypothesis 4b: There is a positive association between trusting beliefs and affective commitment in B2B OBCs.

3.5 Information System Success Model (ISSM)

This study also proposes that two factors system quality and information quality of the Information Systems Success Model (ISSM) by Delone and Maclean, (2003, 2004), can be recognised as the antecedent of active participation and trusting beliefs in B2B OBCs. These factors are successfully used to determine the success of various information systems including OCs, and thereby they are seen as a foundation for empirical research in the OC field (Molla and Licker, 2001, Lin and Lee, 2006, Lin, 2008, Zhang, 2010). And therefore, they are also used to underpin the framework in this study. Adding these factors to the framework completes the socio-technical strategy of this study and this allows for addressing the technological related factors that might impact active participation in B2B OBCs. In the ISSM, another technological related factor 'service quality' has been reported. However, this was not included in the model mainly because B2B OBCs are self-run communities that are sustained by their voluntary members and participation is entirely voluntary in these types of communities. In B2B OBCs members are not obliged to provide any kind of services such as making sure the community is up and running or the members' problems are dealt with immediately. Whereas, in OCs like B2C and B2B ecommerce a company or an organisation may host the community site and they are seen responsible for providing the service to community members. For that reason, the vast majority of prior researchers have only identified information quality and system quality as the two system characteristics for OCs and therefore have excluded service quality (Lin, 2008, Hsu et al., 2011).

3.5.1 Information Quality

According to prior research information quality is a multi-dimensional concept and therefore different attributes are used to measure the constructs (McKinney et al., 2002, Delone and McLean, 2003, Delone and McLean, 2004, Wang, 2008). As a general term, the construct focuses on the quality of information systems output (Nelson and Todd, 2005). According to McKnight et al. (2002a) the concept reflects on content quality and content-delivery in online environment. Zhang (2010) posits that the term ‘information quality’ describes “the quality of the content of a social networking system”. Similarly Chakraborty et al. (2005) posit that information quality refers to the quality of the content in a website. Several attributes of information quality are reported in the literature. For example, in knowledge management literature, it has been described as knowledge quality reflecting on knowledge relevance, timeliness, comprehensibility, and completeness (Kulkarni et al., 2007). Wang (2008) identified three dimensions of information quality such as content, accuracy, and timelines. Further, Rai et al. (2002) have identified three attributes of information quality. These attributes include content, accuracy and format. Hew’s (2009) study describes information quality in OCs as high quality content referring to information that is accurate and up to date, which has positive impact on the success of OCs.

OC scholars and IS researchers seem to agree on several dimensions of the construct such as accuracy, completeness, currency, usefulness, and format and presentation (Delone and Mclean, 2004, Nelson and Todd, 2005, Lin and Lee, 2006, Lin, 2007, Zhang, 2010). Drawing upon prior research, this study describes information quality in the context of B2B OBCs by several attributes related to posted messages. These characteristics include: accuracy of posted messages, meaningfulness and relevancy of posted messages (Wang and Strong, 1996, Nelson and Todd, 2005), completeness of posted messages (Nelson and Todd, 2005), currency of posted messages (Nelson and Todd, 2005), and format of posted messages (Nelson and Todd, 2005).

3.5.1.1 Information Quality and Active Participation

The importance of information quality in OCs is eminent in the literature (Chakraborty et al., 2005, Chen, 2007). An examination of the current literature reveals that the construct can positively impact people's participation behaviour in OCs (Sharrat and Usoro, 2003, Lin and Lee, 2006, Chen, 2007). Chen (2007) identified information quality and system quality as two technological factors and found them to have positive impacts on an individual's intention to stay in professional OCs. Sharrat and Usoro (2003) conducted an extensive literature review on knowledge sharing mechanism in OC of practice. Following that, they proposed a theoretical model with the aim to identify the factors affecting participation behaviour (e.g. knowledge sharing) in communities of practice. Their model identified information quality (e.g. perceived usefulness) and system quality (e.g. perceived ease of use) as two key determinant factors for online knowledge sharing behaviour. More empirical support is found with regards to the positive relationship between information quality and participation in OC environments. Particularly, based on the updated ISSM by DeLone and McLean (2003), Lin and Lee (2006) have proposed a framework to examine the determinants of success for OCs. Using SEM they tested the model with 165 participants of an OC. The results of their study indicate that information quality has a significant effect on OC users' participation intention. Furthermore, research by Chakraborty et al. (2005) suggests that OC users' expectations are high and they are unwilling to accept low quality of information. Thus, low quality of information (i.e. outdated or inaccurate information) can be a deterrent factor for using OCs (Barnes and Vidgen, 2002). On the positive side, high information quality is found to increase web users' satisfaction (Robbins and Stylianou, 2003). In particular, the findings from a study by Chakraborty et al. (2005) suggests that information quality is an important factor that influences web sites' effectiveness which ultimately can influence individuals' participation behaviour in OC environments. Consistent with past reports, this study postulates that B2B OBCs members expect to obtain quality information from their communities and this will

impact their decision to make active contributions. Accordingly, this study hypothesises that there is a positive relationship between information quality and active participation in B2B OBCs.

Hypothesis 5a: There is a positive association between information quality and active participation in B2B OBCs.

3.5.1.2 Information Quality and Trusting Beliefs

A considerable amount of research examined the relationship between information quality and trust in e-commerce (e.g. Ba and Pavlou, 2002). However, little research has focused the positive impact of information quality on trusting beliefs in OC settings, particularly in B2B OBCs. Nevertheless, in OC environments there is lack of face-to-face contact between the members (Lin, 2007), and therefore any information exchange may require accuracy, completeness, currency. Thus, one may postulate that outdated, inaccurate and irrelevant and incomplete data can be seen as a deterrent factor and makes B2B OBC members lose their trust in their community. For that reason, this study also postulates that information quality is expected to positively influence trusting beliefs in B2B OBCs. Accordingly this study hypothesises that information quality has a positive impact on trusting beliefs in B2B OBCs.

Hypothesis 5b: There is a positive association between information quality and trusting beliefs in B2B OBCs.

3.5.2 System Quality

According to the IS literature system quality refers to the characteristics of information systems such as usability, reliability, adaptability, stability, and security (Delone and McLean, 2003, 2004, Kulkarni et al., 2007). Wang (2008) describes ease of use and adaptation as two attributes of the construct. Rai et al. (2002) have described user friendliness and ease of use as two dimensions of system quality.

Similarly, several previous researchers have also used ease of use when defining system quality (Segars and Grover, 1993, Hendrickson et al., 1994). Drawing upon the IS literature, OC scholars have described system quality as the functionalities of the OC such as easy access, good user interfaces, fast response time, and system reliability (Min-Ho et al., 2009, Zhang, 2010). Further OC researchers have recognised these attributes as usability characteristics which facilitate interaction between OC members (Preece, 2001, Jin et al., 2010). Consistent with prior research, in the context of B2B OBCs, this study defines system quality as having several characteristics. These include ease of use reflecting on members believing that using the B2B OBC do not need significant effort (Yang and Fang, 2004, Lin, 2007), accessibility reflecting on that posted messages inside the B2B OBC can be easily accessed with low effort (Miller, 1996, Nelson and Todd, 2005), response time reflects on the speed of the B2B OBC website (Nelson and Todd, 2005), and reliability referring to the availability of the B2B OBC website over time (Nelson and Todd, 2005).

3.5.2.1 System Quality and Active Participation

The current literature provides controversial information on how system quality might impact members' participation behaviour in B2B OBCs. According to research, business owners and managers who are confident in using web-based applications are more willing to share knowledge online (Carr et al., 2010). Wang and Fesenmaier (2004a) stated that the ease of communication of OC systems encourages members' contribution. A study by Preece et al. (2004) collected data from 375 online communities ranging from health, government, sports, and organisations community. Their research outcomes revealed that software related issues such as usability was one of the top five reasons for lurking. On the other hand, several researchers have discovered that usability issues were not the major factors affecting content contribution within OCs (Lampe et al., 2010). According to Yang et al. (2007) usability is not a negative factor influencing people intention to participate in OCs

like discussion forums. One might argue that the contradictory findings in the literature in relation to system quality could be due two main reasons. First, the construct may have different effects on participation depending on the community type. For example, in an OC where the members have advanced IT skills because of their professions, then system quality may not play an important role. Whereas, in an OC where the members are less IT literate, then system quality could be seen as an important factor. Secondly, system quality may influence other factors (e.g. trust) rather than active participation itself and this is further supported by prior studies (Riding et al 2002, McKnight et al., 2002b). However, considering lack of research in the area of B2B OBCs, it is important to investigate the system quality phenomenon in the context of B2B OBCs. Accordingly, this study hypothesises that system quality is positively impact active participation in B2B OBCs.

Hypothesis 5c: There is a positive association between system quality and active participation in B2B OBCs.

3.5.2.2 System Quality and Trusting Beliefs

Well established literature reports the positive effect of system quality on trust. Several prior reports suggest that in an OC system quality affects trusting beliefs but it does not directly affect participation behaviour (Riding et al 2002, McKnight et al., 2002b). Consistent with past reports, this study also suggests that system quality has a positive impact on trusting beliefs in B2B OBCs. This proposition is in line with the findings from previous empirical studies in the field of IS and OC (McKnight et al., 2002b, Corbitt et al., 2003, Zhang and Zhang, 2005, Nicolaou and McKnight, 2006, Thaw and Mahmood, 2009). For example, in an attempt to better understand online trust building mechanism, Zhang and Zhang (2005) have proposed a theoretical framework based on several theories such as SET, Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), and Expectation Confirmatory Theory (ECT).

In their framework they have identified system quality (perceived system reliability and perceived system design interface) as one of the influencing factors for trusting beliefs in online environment. Similarly, a study by Nicolaou and McKnight (2006) also found that system quality is an important factor for trust building in online interaction. The findings from these two prior studies are further supported by several empirical examinations on the phenomenon, which found system quality increase trust in online environments (Corbitt et al., 2003, Ratnasingam, 2005, Thaw and Mahmood, 2009). In their study McKnight et al. (2002b) developed and tested a model of consumer trust in an electronic ecommerce vendor. Their framework included system quality (e.g. website quality) as an antecedent factor for trusting beliefs. They further empirically tested their model and the result of their research suggests that system quality is a powerful tool that vendors can use to increase consumer trust. According to Thaw and Mahmood (2009), several attributes such as perceived security, perceived privacy and trustworthiness of web vendors positively associate with trust in OCs like B2C. Similarly, Corbitt et al. (2003) have also discovered that site quality and technical trustworthiness have significant and positive effect on trust in B2C OBCs. Moreover, it is believed that in online settings problems with system quality will lower members' trust and raise dissatisfaction. For example, Yoo et al. (2002) argued that in an OC members are reluctant to use the community website when they experience lack of access, delays in responses, and difficulty in navigation. Hence, the findings from past studies provide strong evidence, which allows for making the assumption that system quality will also influence trusting beliefs in B2B OBCs. In B2B OBCs members may lose their trust with their community if they find that the site is not easy to use, site loading is slow or the site is not available to use regularly. Accordingly, this study hypothesises that system quality is positively associated with trusting beliefs in B2B OBCs.

Hypothesis 5d: There is a positive association between system quality and trusting beliefs in B2B OBCs.

3.6 Community Members' Business Characteristics

It is believed that individuals' characteristics such as gender, age, and education influence their participation behaviour in OCs. Particularly, the effects of these characteristics on individuals' attitude towards using technologies and their behaviour in online communication are well documented in the literature (Comber et al., 1997, Venkatesh and Michael, 2000, Thayer and Ray, 2006). Prior researchers have also reported the impact of individuals' characteristics on community participation in OC context (Wang and Fesenmaier, 2004a). However, unlike most OCs, B2B OBCs members are largely business owners and managers, and therefore this study suggests that their business characteristics such as the business size, business age, and business type may have an effect on their participation behaviour, rather than their individual characteristics such as age, gender, and education. This is because business owners and managers may decide to join B2B OBCs for their business needs rather than their individual needs.

The current literature shows the impact of business size on the adoption of e-business applications and its use (Burke, 2005). Given that B2B OBCs utilise similar technologies it could then be argued that business size also has an impact on participation in B2B OBCs. Accordingly, this research suggests that B2B OBCs members' business size will determine the level of participation of the members. Particularly, prior researchers have reported that smaller businesses are more willing to share information online than larger businesses (Carr et al., 2010). From that perspective, if the B2B OBC members see the community as a conduit through which valuable business information can be obtained, and then the members are likely to make more of an effort to participate as active contributors. Furthermore, researchers have also reported that younger businesses have a stronger inclination to expand their knowledge resources, and thereby they have greater tendency to share knowledge online (Chen et al., 2006). Carr et al. (2010) posited that younger businesses have greater needs for knowledge and making business connections. Further, a study by

Mason et al. (2008a) explored the relationship between business age and willingness to share knowledge online. They found that younger businesses are more willing to share knowledge online than established businesses. This may be influenced by the idea that younger businesses have a higher growth need and they have needs to be more innovative (Mason et al., 2008a). In addition, business type is another characteristic that may impact on participation in B2B OBCs. For example, it is believed that different industries have different knowledge acquisition online (Carr et al., 2010), and this is found to have an effect on SMEs' engagement in online knowledge sharing activities (Watson, 2007). Accordingly, this study proposes the following hypotheses:

Hypothesis 6a: There is an indirect association between members' business size and active participation in B2B OBCs.

Hypothesis 6b: There is an indirect association between members' business age and active participation in B2B OBCs.

Hypothesis 6c: There is an indirect association between members' business type and active participation in B2B OBCs.

Table 3-3 shows a summary of the developed hypotheses and Figure 3-1 depicts the theoretical framework of the study.

Table 3-3 : Summary of Developed Hypotheses

H#	Hypotheses
1a	There is a positive association between functional needs and active participation in B2B OBCs
1b	There is a positive association between psychological need and active participation in B2B OBCs
1c	There is a positive association between hedonic need and active participation in B2B OBCs
2	There is a positive association between generalised reciprocity and active participation in B2B OBCs
3	There is a positive association between affective commitment and active participation in B2B OBCs
4a	There is a positive association between trusting beliefs and active participation in B2B OBCs
4b	There is a positive association between trusting beliefs and affective commitment in B2B OBCs
5a	There is a positive association between information quality and active participation in B2B OBCs
5b	There is a positive association between information quality and trusting beliefs in B2B OBCs
5c	There is a positive association between system quality and active participation in B2B OBCs
5d	There is a positive association between system quality and trusting beliefs in B2B OBCs
6a	There is an indirect association between members' business size and active participation in B2B OBCs
6b	There is an indirect association between members' business age and active participation in B2B OBCs
6c	There is an indirect association between members' business type and active participation in B2B OBCs

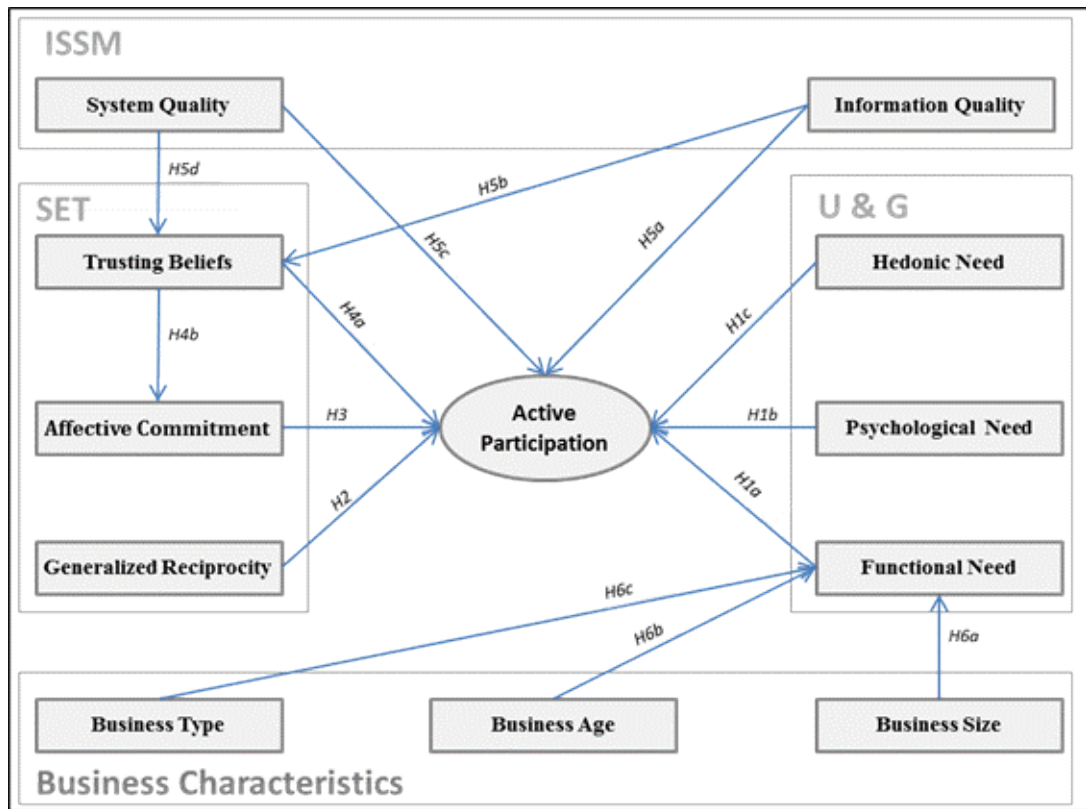


Figure 3-1: The Proposed Theoretical Framework

3.7 Summary

This chapter focused on developing the theoretical framework. Based on three well known theories an integrated framework was proposed, which consists of six main hypotheses. Under U&G three factors, functional need, psychological need, and hedonic need, were hypothesised to have positive impact on active participation in B2B OBCs. Next, based on SET, generalised reciprocity, trusting beliefs and affective commitment were also identified as the determinant factor for active participation. In addition, trusting beliefs was recognised as the antecedent of affective commitment. Following the ISSM, two constructs such as information quality and system quality were hypothesised to have positive impact on active participation and trusting beliefs. Finally, it was postulated that members' business characteristics, business age, business size, and industry type, to influence members' participation behaviour in B2B OBCs. This chapter has provided the necessary theoretical foundation to answer the research questions. The next chapter focuses on the methodology for collecting data to test the proposed framework.

4 Chapter Four: Methodology

4.1 Introduction

This chapter begins by providing an overview of different research philosophies and research methods. Next, it selects an appropriate methodology (mixed method), research paradigm (pragmatism), and research strategy (abduction or hybrid). It further presents the research design and processes involved in this study. First, it details an exploratory study that was carried out in order to develop a new measure for active participation. Finally, it provides full details on the empirical part of the study (online survey). This includes survey design, sampling, data collection, and data analysis.

4.2 Research Philosophy

When undertaking research, it is important to understand research philosophy (Saunders et al., 2007, Guba and Lincoln, 1994). Research philosophy is often known as ‘research paradigm’ and it is defined as the basic belief systems or world views that guide researchers (Guba and Lincoln, 1994, p.105). According to Weaver and Olson (2006) paradigms are “patterns of beliefs and practices that regulate enquiry within a discipline by providing lenses, frames, and processes through which investigation is accomplished”. The phenomenon relates to important assumptions researchers make about the way they view the world, and that underpin their research strategy and the method they choose to investigate their inquiry (Saunders et al., 2007, p.108). From that perspective, a research paradigm is a philosophical understanding of research investigation which guides researchers with their data collection, data analysis and interpretation (Mackenzie and Knipe, 2006). Thus, it helps researchers to make choices with regards to choosing an effective research strategy and suitable research methods, and that will have significant impacts on their research investigation outcomes (Johnson et al., 2007).

Numerous research paradigms are reported in the literature; these include positivism, postpositivism, constructivism, interpretivism, realism, pragmatism and so forth (Fitzgerald and Howcroft, 1998, Mackenzie and Knipe, 2006). However, an examination of the IS literature shows that two research paradigms: positivism and interpretivism are most commonly used (Orlikowski and Baroudi, 1991, Fitzgerald and Howcroft, 1998, Walsham, 1995). The two paradigms are also known as ‘hard’ and ‘soft’ paradigms by many IS scholars (Fitzgerald and Howcroft, 1998). Researchers have also argued that realism (critical realism) provides great explanation in IS research, and therefore it is utilised in many IS studies (Smith, 2006). Accordingly, the current literature review shows that researchers are largely guided by three main research paradigms; these are positivism, interpretivism, and realism.

Researchers have taken two major approaches - epistemology and ontology - to study research paradigms (Guba and Lincoln, 1994). The epistemological approach or assumption relates to what makes up knowledge in a field of study (Saunders et al., 2007). According to Bryman (2008) epistemology refers to the ways to acquiring knowledge. Therefore it is the question of what knowledge is and how it is acquired. It is concerned with the question of how humans can achieve true knowledge (Niehaves, 2007). On the other hand, the ontological approach or assumption is concerned with the nature of reality, and therefore it is a question of the way the world operates (Saunders et al., 2007, p.110). In their book Saunders et al. (2007) further identify two aspects of ontology, objectivism and subjectivism. The first aspect ‘objectivism’ assumes that a social phenomenon exists in reality external to social actors (Saunders et al., 2007, p.110). The second aspect ‘subjectivism’ assumes that social phenomena are developed from the perceptions and consequent actions of social actors (Saunders et al., 2007, p.111). From that perspective, the existence of a social phenomenon in the real world is the consequence of human actions. Thus, ontology is concerned with the question of whether or not a real world exists and does reality exist beyond human speech or cognition process.

4.2.1 Positivism

Positivism focuses on hypothesis testing through empirical approaches and any results have to be objective through a scientific method. According to Mackenzie and Knipe (2006), positivism is referred to as a scientific method or science research that aims to test theory through rationalistic and empiricism. The paradigm assumes the existence of a real world and that one can in principle achieve objective knowledge about reality (Orlikowski and Baroudi, 1991). Thus, positivism assumes that reality is objective and external from humans and does not need any human interpretation (Orlikowski and Baroudi, 1991). According to Niehaves (2007), in positivism the data and its analysis are free from researchers' beliefs and values and therefore the data do not change because they are being observed (Krauss, 2005). Thus, the researchers distance themselves from the world they study, and therefore they don't have to participate in the real world life to better understand a phenomenon (Krauss, 2005). For example, Guba and Lincoln, (1994) have stated that with positivism, researchers are natural observers, and do not have any influence on their research outcomes and therefore their study outcomes are not biased by their values and beliefs. Furthermore, Bryman (2008) stated that with this paradigm the researchers aim to achieve objectivity by distancing themselves from the research subjects (research participants) during the data collection and data analysis. In addition, according to several researchers, the paradigm assumes that there are certain truths that can be known and therefore it typically focuses on hypothesis testing (Scott and usher, 1996). Thus, the paradigm assumes true reality can be discovered through rigorous empirical investigation (Creswell, 2007). For that reason, positivism is usually linked to deductive theory testing strategy to examine research hypotheses (Orlikowski and Baroudi, 1991).

4.2.2 Interpretivism

Interpretivism is concerned with acquiring knowledge through investigating a social phenomenon in many ways and that will result in obtaining many

interpretations (Saunders et al., 2007). The paradigm suggests that there is a difference between humans and social actors (Saunders et al., 2007). Therefore it assumes that there is difference conducting research between humans (people) and objects such computers and machines (Saunders et al., 2007). Interpretivism assumes the existence of real world but neglects the possibility of achieving objective knowledge of it. Therefore, it allows researchers to develop subjective meanings from research subjects (Creswell, 2007, Bryman (2008). Thus researchers can often be biased by their values and beliefs as they try to understand a phenomenon through their interpretation and that is affected by their individual experiences (Creswell, 2007). Therefore, unlike positivism, Interpretivist researchers do not distance themselves from the research subjects as they are interacting directly with research participants. For example, Mackenzie and Knipe (2006) have reported that Interpretivism assumes that reality is socially constructed and researchers rely on participants' view of a phenomenon being studied, and any findings are directly impacted by the researchers' background and experiences. Another major difference between positivism and Interpretivism is that researchers generally do not begin with theory when taking an interpretivist approach (Mackenzie and Knipe 2006). Thus, interpretivist research is generally linked to inductive reasoning approach (Mackenzie and Knipe 2006). Contrary to positivism, interpretivist researchers usually rely on a qualitative data collection approach to investigate a phenomenon (Mackenzie and Knipe, 2006).

4.2.3 Realism

The realism paradigm has elements of both positivism and interpretivism (Krauss, 2005) as it focuses on what senses show us is reality and true (Saunders et al., 2007, p.114). The paradigm has elements of positivism as it assumes that a social phenomenon is a reality independent from humans, and therefore realism is about constructing the knowledge. There are two types of realism: direct realism and critical realism (Saunders et al., 2007). Direct realism suggests that what you see is what you

get, whereas critical realism suggests that the experience of the real world are sensations and images but not necessarily the real work (Saunders et al., 2007). Realism also has elements of interpretivism as it suggests that knowledge of reality tends to change by certain conditions such as criticising the practical, politics, and social issues, and therefore, research results can be subjective (Saunders et al., 2007). For example, Guba and Lincoln (1994) stated that realism assumes that reality is shaped by social, political, economic and demographic values. According to the paradigm, knowledge of reality is the result of social conditions and that cannot be understood without the researchers' interference in the knowledge derivation process (Dobson, 2002). Since realism has elements of both positivism and interpretivism, it is believed that both qualitative and quantitative methods are seen as appropriate for the paradigm (Krauss, 2005).

An examination of the literature revealed that two research paradigms (positivism and interpretivism) could be applied to help selecting the research method. However, problems occurred when attempting to implement these two research philosophies. First, interpretivism paradigm was implemented, and this allowed for utilising only a qualitative approach to answer the research question. However, this approach was seen as incomplete because to answer the research question this study required testing a theoretical framework and this was achievable through a quantitative approach. Second, positivism was tried and similar issue occurred. This is because by adopting positivism, this study was tied to selecting a quantitative method. This would limit the ability to answer the research question, because a qualitative approach was needed to develop the measure for active participation.

From the above discussions it is clear that, this study could not follow the traditional route by first selecting an appropriate research paradigm then choosing a research method. Accordingly, it was concluded that choosing an effective paradigm can depend upon the necessary research method based on the formulated research questions and research objectives. The chosen research method is discussed in the subsequent sections and the chosen research paradigm is further discussed in a later

section (See Section 4.3.4). This is to help to understand the research philosophy that underpins this study.

4.3 Research Methods

Research methods are defined as techniques and procedures that are used to collect and analyse data in order to answer research questions (Saunders et al., 2007). Thus, it helps researchers with sample selection, collecting data, and finding a solution to a problem. Typically three main research methods such as quantitative and qualitative and mixed method are reported in the literature (Saunders et al., 2007, Bryman, 2008).

4.3.1 Quantitative Vs. Qualitative

Quantitative and qualitative methods are distinctly different in many ways. Quantitative methods refer to a systematic empirical investigation of a phenomenon through statistical or mathematical techniques, while qualitative methods focus on gathering an in-depth understanding of a phenomenon through observation and the researchers' interpretation (Given, 2008). The quantitative method is linked to the positivism paradigm as it is characterised by empiricism and therefore it requires all phenomena (variables) to be reduced to empirical indicators (Sale et al., 2002). On the other hand the qualitative method is linked to interpretivist paradigms and therefore it emphasises processes and meanings rather than empiricism (Sale et al., 2002). Thus, with the quantitative approach researchers aim to measure and analyse causal relationships between variables and constructs, whereas in qualitative studies researchers aim to find patterns and themes (Saunders et al., 2007, Bryman, 2008). Furthermore, the quantitative methods techniques (e.g. questionnaire and survey) are highly structured (Sandelowski et al., 1997) and therefore take short time to complete. However, the techniques (e.g. semi-structured interviews, focus groups, and observations) used in qualitative studies are more flexible but take relatively longer to complete compared to quantitative methods techniques. With quantitative research

the question format is usually closed and the data is always represented in numerical forms, whereas in qualitative research the question formats are open-ended and the data are normally represented in text formats. In quantitative research generalisation is usually the main focus and therefore it requires statistical analysis (e.g. power analysis) to ensure the selected sample is the representative of the total population (Saunders et al., 2007, Bryman, 2008). However, such statistical analysis is not required in qualitative research since generalisation is not the main concern (Saunders et al., 2007, Bryman, 2008). Thus, quantitative research requires relatively large sample size compared to qualitative research (Sale et al., 2002). Table 4-1 shows some major differences between the two research methods.

Table 4-1: Differences between Quantitative and Qualitative Methods

Quantitative Approach	Qualitative Approach
Focuses on systematic empirical investigation of a phenomenon	Focuses on in-depth understanding of a phenomenon
Linked to positivism paradigm	Linked to interpretivism paradigm
Highly structured	Flexible in structure
Takes relatively shorter time to complete	Takes relatively longer time to complete
Aim to measure and analyse causal relationships between variables	Aim to find patterns and themes
Examples of quantitative data collection techniques include questionnaire and survey	Examples of qualitative data collection techniques include interview and focus groups
Question formats are closed	Question formats are open-ended
Data are represented in numerical formats	Data are represented in textual formats
Require statistical analysis (e.g. g power analysis) to determine representative sample	Statistical analysis is not required to determine representative sample
Require larger sample size	Does not require larger sample size
Generalisation is the main focus	Generalisation is not important

Reflecting on the two research methods, one could argue that it would be difficult to draw a conclusion as to which method is better than the other since both methods

are distinctly different from each other as they serve different purposes and both approaches have advantages and disadvantages. For example, quantitative approaches (e.g. survey) has many advantages such as being low cost, easy to implement, and easy to administrate (De Vaus, 2002). It is also more convenient for respondents as they can complete the questionnaire at their convenience (De Vaus, 2002). However, it suffers from many drawbacks such as low response rate, it is less flexible, and there is no room for mistakes as once the data is collected then the researcher cannot go back to collect more data if needed (De Vaus, 2002). On the other hand, the qualitative approach has a higher response rate and it is seen as more flexible as researchers can collect more data during the interview, and therefore they can gather more rich information data (De Vaus, 2002). However, this approach is often seen as costly and time consuming for researchers (De Vaus, 2002). Considering the drawbacks associated with the two methods, researchers have often suggested that mixed methods be employed instead of a single approach to overcome the major drawbacks associated with a single method (Johnson et al., 2007). However, any mixed method is a complex phenomenon and selecting the approach depends upon the research question(s) and objectives. Accordingly, the next subsequent section further discusses the approach in more details.

4.3.2 Mixed Method

The mixed method has been recognised since the beginning of the 20th century in social and behavioural science (Johnson et al., 2007), yet it has been widely employed in Information Systems (IS) research for over three decades (Fidel, 2008). Particularly, most recently IS researchers have recognised the mixed method as a powerful approach for IS research (Venkatesh et al., 2013). The concept has been described with different terminologies such as mixed method, multiple methods, multi-methods research, multiple operation, integrated method, hybrid method, combined method, and triangulation (Rocco et al., 2003, Driscoll et al., 2007, Johnson et al., 2007, Fidel, 2008). The mixed method is a very complex phenomenon

and therefore it has been described in many ways throughout the literature (Johnson et al., 2007). For example, in their study Johnson et al. (2007) report 19 definitions of mixed methods. Based on an examination of these definitions, one could argue that the approach represents a combination of qualitative and quantitative methods in a single study (Fidel, 2008). Thus, for research to be considered as mixed method, it should contain elements of both qualitative and quantitative study to answer the same research question in single study or a programme of inquiry (Rocco et al., 2003, Johnson et al., 2007, Cameron, 2009). Accordingly, one could argue that not every multi-method research is a mixed method. Particularly, researchers often combine two quantitative methods or two qualitative approaches in a single study, and that does not meet the criteria of mixed methods.

Methods can be mixed in different ways for diverse reasons (Fidel, 2008). It is believed that a mixed method provides researchers with many great advantages. It can be used to answer a broader and wider range of research questions, since the researchers are not tied to using a single method (Johnson et al., 2007). It has been reported that, using a single method (e.g. qualitative or quantitative), each method has drawbacks, and thereby the mixed method can be seen as an effective approach to defuse the drawbacks of each method (Johnson et al., 2007, Petter, 2004). In addition, the mixed method approach assists researchers to provide stronger conclusion through convergence and corroboration findings (Johnson et al., 2007). It can also add some understanding that could be missed when using a single method and therefore it can increase the generalizability of study results (Peter, 2004). Specifically, a mixed method approach is seen as a valuable technique in IS research as it enables researchers to succeed in achieving the goals initially set by the researchers and it leads to the success of finding extensive results that are difficult to achieve through using a single method (Peter, 2004).

One of the primarily reasons for conducting mixed methods is triangulation which test the validity and accuracy of a study (Fidel, 2008). Johnson et al. (2007) report four types of triangulation: 1) data triangulation which involves using a variety of

sources in a study; 2) investigator triangulation which involves using several different researchers; 3) theory triangulation which involves using multiple theories to explain the findings of a study; and 4) methodological triangulation which involves utilising multiple methods to investigate a phenomenon. From a triangulation perspective, a mixed method helps researchers to achieve several objectives such as achieving consistency of results by different data collection methods, checking consistency of different data sources within the same method, benefiting from multiple analysts to check study results, and utilising multiple theories or perspective to interpret data (Fidel, 2008). Accordingly, the approach provides many great benefits to researchers as it enables them to be more confident of their research findings, helps them to reveal contradictions, enables them to be creative in data collection, provides them with more rich information, and helps them to facilitate better the generalisation of their research findings (Johnson et al., 2007).

Moreover, a mixed method is found to be useful in a situation where researchers are unable to use a single method to fully investigate a phenomenon (Fidel, 2008). For that reason, it enables researchers to examine issues more widely and completely than one research method can do. It also enables researchers to develop constructs and hypotheses that are difficult to find or adapt from prior studies due to lack of research in the area (Fidel, 2008). According to Fidel (2008) with a mixed method researchers can carrying out a qualitative exploratory investigation to develop variables and hypotheses that are not only based on prior studies, then use a quantitative approach to test the developed hypothesis.

However, using a mixed method approach has some drawbacks as it can be difficult for a single researcher to carry out both qualitative and quantitative study under a single research project, since the researchers are required to learn about both methods and that demands time and effort (Johnson et al., 2007). Subsequently, a mixed method could be more time consuming and more expensive than a single method (Johnson et al., 2007).

4.3.3 Selecting a Research Method and Justification

Selecting which research method to use is determined by several factors such as the types of research question asked and the research aims and objectives. Considering these factors, one might suggest that selecting a mixed method approach better suits the need of this study. Particularly, through a single method, it would be difficult to answer the type of question asked, e.g. “what are the factors affecting active participation in B2B OBCs”. This is because the measure for the dependent variable ‘active participation’ needs to be developed prior to testing the identified hypotheses. This research aim was to investigate the factors affecting active participation in B2B OBCs. Although, several factors have been identified in prior studies, there is still a lack of understanding of what active participation means in B2B OBCs and how it can be measured (See Chapter 2 Section 2.5.2). Several measures for active participation were found from past studies; this study is unable to adapt any of these measures. This is because, as the literature review demonstrated, active participation means different things to different people and the measure of the construct varies from one OC type to another. Also, several limitations were discovered with regards to the currently used measures and this made it difficult to directly adapt measures from these prior studies. Besides, very limited research was found with regards to measuring active participation in the context of B2B OBCs. Hence, to answer the research question, this research project first needed to carry out an investigation to identify an appropriate active participation measure in the context of B2B OBCs, before conducting hypotheses testing. Accordingly, a mixed method was selected as the research approach for this research programme. By using a mixed method, this study needed to select an appropriate research paradigm, research strategy and research design. These issues are considered in the following sub-sections.

4.3.4 Selecting a Research Paradigm and Justification

Issues related to research paradigm are some of the major issues associated with the implementation of a mixed method (Fidel, 2008). Following an in-depth understanding of the three identified research paradigms in the preceding section (Section 4.2) along with the guidelines for selecting a research paradigm by experts (Scott and Usher, 1996), one might suggest that this study is in line with the positivist epistemological assumption, because it involves theory testing as the research started by developing a framework based on prior existing theories and pre-scientific observations. Choosing a positivism epistemological assumption is also consistent with the advice from experts. For example, in their book Scott and Usher (1996, p.10) stated that in research where the researcher's subjectivity is eliminated, and the researcher was objective and personal characteristics did not intrude in the research process then the epistemological positivist assumption is a rational choice. On the other hand, one can argue that this research could also be interpretivist as this study also involves some qualitative elements since the active participation measure needs to be developed through an exploratory study. However, researchers have argued that studies that use a mixed method approach do not fall comfortably within a single worldview (Feilzer, 2009). For that reason, there is still some confusion among researchers as to whether to link mixed methods to a research paradigm at all (Feilzer, 2009). However, if there is a need for that, then researchers are required to ask an important question as suggested by experts: is it acceptable to link to a single research paradigm or to several paradigms? Answering these questions depends upon the way the two approaches are combined which is often known as 'research design'. For example, often in mixed method research, one approach is dominant, either quantitative or qualitative. Several scholars have reported that it is acceptable to link the research paradigm to the dominant approach (Morse, 1991, Fidel, 2008). Accordingly, a researcher may decide to choose positivism in a mixed method study where the quantitative approach is more dominant or may decide to link to interpretivism where the qualitative is the dominant approach. Conversely, it has also

been suggested that multiple paradigms are permissible in a mixed method, particularly with sequential mixed method research design. Mingers and Brocklesby, (1997) stated that multi-methodology research can be conducted using either a single paradigm or multiple paradigm. Multiple paradigms enable researchers to draw on more than one paradigm in their studies and move from one paradigm to another (Mingers and Brocklesby, 1997). However, there is serious debate and discussion amongst researchers about the mixed method research paradigm, and this is often so called ‘paradigm war’ (Mingers and Brocklesby, 1997). There appears to be little agreement amongst mixed method researchers on using multiple paradigms or linking research paradigm to the dominant approach, and therefore both ideas are rejected by many researchers, particularly IS researchers (Feilzer, 2009, Venkatesh et al., 2013).

Nevertheless, researchers have proposed ‘pragmatism’ as an alternative paradigm to overcome the long-lasting debate on the mixed method paradigm war. It has been suggested that pragmatism is the best paradigm for justifying use of mixed method research (Venkatesh et al., 2013). Although pragmatism is not a new paradigm it can be traced back to the 19th century (Cameron, 2009) yet researchers have only recently started to recognise it as a useful paradigm in mixed method research. The paradigm gives researchers more flexibility as it provides both epistemological justification and logic for mixing two different approaches or methods (Johnson et al., 2007). It encourages researchers to use whatever philosophical approach works for their research inquiry (Rocco et al., 2003). Thus, it rejects a forced choice between existing paradigms with regard to ontology and epistemology (Venkatesh et al., 2013). Pragmatism pays little attention to what methods a researcher uses as long as the chosen methods have the potential to answer the research question (Feilzer, 2009). Therefore it offers researchers a middle position both philosophically and methodologically and this way it enables researchers to be more productive (Cameron, 2009). Furthermore, pragmatism is compatible with all research designs such as deductive, inductive, and hybrid (abduction) (Feilzer, 2009). According to Venkatesh et al., (2013) the pragmatism approach is well-suited to the hybrid research

design and it enables researchers to move back and forth between inductive and deductive. Accordingly, it has been suggested that pragmatism is practically relevant for all types of research such as quantitative, qualitative, and mixed method (Feilzer, 2009).

The above discussion provides enough justification to reach the conclusion that selecting pragmatism as a research paradigm better serves the need of this research. More specifically, the paradigm has been identified as an effective research paradigm for research that focuses on communities (Johnson et al., 2007), particularly OCs (Denscombe, 2008). A study of OCs is in line with pragmatism because it focuses on the problem-driven nature of inquiry and therefore it allows researchers to choose methods based on their practical values regardless of being tied to a particular research philosophy (Denscombe, 2008). Subsequently, pragmatism was chosen as a research paradigm for this study.

4.3.5 Research Strategy

Selecting a research strategy is another issue in the mixed method approach that requires careful consideration. In general two main research strategies or ‘research approaches’ guide researchers with their investigations; the deductive and inductive approaches (Saunders et al., 2007, p.60, Bryman, 2008). With the deductive strategy researchers develop theory or a conceptual framework, and then test it using a research approach. Thus, with this type of strategy, researchers start by carrying out some critical literature review in order to gain some good understanding of the phenomenon being studied. Subsequently, the researchers will develop a framework, then choose an appropriate research method, collect data, and analyse data to test the framework. Contrary to deductive approaches, with an inductive strategy researchers explore data and then develop a theory or framework, and then relate this back to the literature (Saunders et al., 2007, Bryman, 2008). One could argue that the two strategies are almost exact opposite to each other. With deductive reasoning the research process moves from theory to data, whereas with inductive reasoning the

research process moves from data to theory (Saunders et al., 2007, Bryman, 2008). Another characteristic of the deductive approach is that it is typically associated with the collection of quantitative data. On the other hand inductive is usually linked to qualitative data collection. Thus, with a deductive strategy the research process is highly structured and rigid, while with an inductive research process one can have a more flexible structure which can allow for changes to be made as the research progresses (Saunders et al., 2007). For that reason, an inductive research process normally requires a longer period for data collection and analysis; whereas a deductive research process is often seen to be much quicker to accomplish, and the data collection period is normally predicted (Saunders et al., 2007). Typically, a deductive strategy is known as low risk strategy even though there is a fear of a low response rate (Saunders et al., 2007, p.127). An inductive strategy is associated with higher risk as the researchers have the fear of not finding useful data patterns or themes (Saunders et al., 2007).

Another major difference between the two strategies is generalizability of the study outcomes. A deductive approach requires selecting a sample of sufficient size in order to generalise the study outcome, however an inductive approach is less concerned with generalizability (Saunders et al., 2007). Furthermore, with an inductive approach the researchers are part of the research process, while with a deductive approach the researchers are independent from the research process (Bryman, 2008). Finally, the deductive approach is sequential unlike the inductive approach (Bryman, 2008). Particularly, Robinson (2002) reported that the deductive approach is characterised by five sequential stages namely: 1) detecting hypotheses which involves identifying testable propositions between two or more variables or constructs; 2) defining the measures of the variables or constructs in the hypotheses; 3) Testing hypotheses using one or more research strategy such as quantitative, qualitative or both; 4) examining the outcomes of the hypotheses testing which either confirms theory or show the need for model identification; and lastly 5) modifying the theory according to the findings if necessary. Similarly, Bryman (2008, p.10) has

reported six sequential steps involved in the deductive approach, these include reviewing theories (literature review), building hypotheses, collecting data, analysing and reporting the findings, hypotheses confirmed or rejected, and revision of theory. Table 4-2 shows some of the major differences between the two approaches.

Table 4-2: Differences between Deductive and Inductive Strategies

Deductive Strategy	Inductive Strategy
Starts with developing theory or conceptual framework then test it with data	Starts with data exploration then develop theory or conceptual framework
Moves from theory to data	Moves from data to theory
Typically linked with quantitative approach	Typically linked with qualitative approach
It is a highly structured and rigid approach	A more flexible structure and permit changes
Typically it takes short time to complete	Normally it takes longer time to accomplish
It is a low risk strategy	It is a high risk strategy
Researchers independence of the data collection and analysis	Researchers are involved in the data collection and analysis
Aim to generalise the study outcome	Less concerned with generalizability
Requires sample selection of a sufficient size	Sample size is not a major concern
Research process is sequential	Research process is iterative

4.3.6 Selecting a Research Strategy and Justification

Reflecting on the major differences between deductive and inductive strategies, one could argue that the both strategies are applicable within this study context since this study entails both qualitative and quantitative elements. One of the main objectives of this research was to develop and test a framework. Towards this goal the research started with a critical literature review and then proposed a conceptual framework in Chapter 3 and this needed to be tested through a quantitative method. This is in line with the identified stages in deductive reasoning (Robson, 2002,

Bryman, 2008). On the other hand, a qualitative study was required to develop measures for active participation prior to conducting the quantitative study. This is also consistent with the inductive approach (Bryman, 2008). Accordingly, one could argue that an integration of both strategies is required, and this often known as ‘hybrid’ or ‘abduction’ strategy, where researchers can move back and forth between deductive and inductive (Brown, 1997, Venkatesh et al., 2013). IS researchers have successfully utilised this approach in their inquiries and collected data utilising abduction strategy (Brown, 1997). Selecting an abduction approach is also consistent with the chosen research paradigm ‘pragmatism’ in the earlier section (Venkatesh et al., 2013). Consequently, hybrid strategy was chosen for this study purpose.

4.3.7 Research Design

Choosing an appropriate research design is one of the difficult challenges that researchers face in mixed method research (Rocco et al., 2003, Fidel, 2008). This entails detailed planning of the data collection of the research. However, understanding mixed method research design can be a challenging task for research beginners, particularly doctoral students (Leech and Onwuegbuzie, 2009). Several issues need to be considered when designing a mixed method research such as priority or weight given to an approach, the sequence of data collection and analysis, and stages to connect the quantitative and qualitative results together (Ivankova et al., 2006). Towards solving these issues researchers have attempted to develop a mixed method taxonomy to better guide researchers to design their studies (Rocco et al., 2003, Creswell et al., 2007, Johnson et al. 2007, Fidel, 2008, Leech and Onwuegbuzie, 2009, Venkatesh et al., 2013).

Fidel (2008) has identified five types of mixed method research designs for IS researches. These include variable discovery, system design, data collection, triangulation, and interpretation. In ‘variable discovery’ design researchers conduct qualitative analysis to discover factors relevant to the phenomenon being studied. Then for the purpose of answering the research questions, they perform statistical

analysis on the discovered factors and other factors from prior theories or researches. In 'system design' researchers first conduct qualitative analysis to collect data to identify system requirements and then develop the system. In the final stage the researchers conduct statistical analysis to evaluate the quality of developed system. Differently, in 'data collection' design researchers first conduct a quantitative study to collect information about potential participants for the qualitative study. With 'triangulation design' researchers conduct a qualitative study then carry out a quantitative study to test the validity and accuracy of the findings from the qualitative study. Finally, with 'interpretation design' researchers first carry out a quantitative study and then a qualitative study to interpret and explain the quantitative study results.

Drawing upon Tashakkori and Teddlie's (1998) work, Rocco et al. (2003) have reported six mixed method types: 1) confirmatory investigation (qualitative data → statistical analysis), 2) confirmatory investigation (qualitative data → qualitative analysis); 3) confirmatory investigation (quantitative data → qualitative analysis); 4) exploratory investigation (quantitative data → statistical analysis); 5) exploratory investigation (qualitative data → statistical analysis); and 6) exploratory investigation (quantitative data → qualitative analysis). Similarly, in his book Creswell (2007) reports four main mixed method designs: triangulation design, embedded design, explanatory design, and exploratory design. Furthermore, in their study Johnson et al. (2007) have also identified three different types of mixed method approach namely: 1) qualitative dominant where the research findings are based purely on the qualitative approach; 2) equal status where the research findings are based on both approaches; and 3) and quantitative dominant where the research findings are based purely on the quantitative approach.

Reflecting on the above mixed method taxonomies, one might suggest that it would be difficult to choose one of these research designs as they are either unnecessary or are made too complicated (e.g. Rocco et al., 2003, Fidel 2008) or they are too simple and provide little information to guide researchers (e.g. Johnson et al.,

2007). However, several other researchers have attempted to develop clearer and simpler mixed method research design taxonomies to better guide beginner researchers, particularly doctoral students (Leech and Onwuegbuzie, 2009). Leech and Onwuegbuzie's (2009) taxonomy includes eight research design types and was developed based on three factors: mixing dimension (partially mixed or fully mixed), time dimension (concurrent or sequential), and emphasis dimension (equal status or dominant status). Table 4-3 provide more information on the eight research design types identified by Leech and Onwuegbuzie (2009).

Table 4-3: Eight Mixed Method Design Types (Leech and Onwuegbuzie, 2009)

Research design type	Description
Partially mixed concurrent equal status design	This involves conducting a study that has two phases that occur concurrently such that the quantitative and qualitative phases have approximately equal weight.
Partially mixed concurrent dominant status design	This involves conducting a study with two facets that occur concurrently, such that either facet has the greater emphasis.
Partially mixed sequential equal status design	This involves conducting a study with two phases that occur sequentially, with the quantitative and qualitative phases having equal weight.
Partially mixed sequential dominant status design	This involves conducting a study with two phases that occur sequentially, such that either the quantitative or qualitative phase has the greater emphasis.
Fully mixed concurrent equal status design	This involves conducting a study that mixes qualitative and quantitative research within one or more or across four components (e.g. research objective, type of data and operations, type of analysis, and type of inference) in a single research study. In this design, the quantitative and qualitative phases are mixed concurrently at one or more stages or across the components. Both elements are given approximately equal weight.
Fully mixed concurrent dominant status design	This involves conducting a study that mixes qualitative and quantitative research within one or more of, or across the aforementioned three components in a single research study. In this design, the quantitative and qualitative phases are mixed concurrently at one or more stages or across the stages.
Fully mixed sequential equal status design	This involves conducting a study that mixes qualitative and quantitative research within one or more of, or across the

	stages of the research process. In this design, the quantitative and qualitative phases occur sequentially at one or more stages or across the stages. Both elements are given approximately equal weight.
Fully mixed sequential dominant status design	This involves conducting a study that mixes qualitative and quantitative research within one or more of, or across the stages of the research process. In this design, the quantitative and qualitative phases occur sequentially at one or more stages or across the stages.

4.3.8 Selecting a Research Design and Justification

It has been suggested that IS researchers need to pay careful attention to the appropriateness of utilising a mixed method in their research (Venkatesh et al., 2013). In general choosing a mixed method design should be linked to research questions, objectives, and contents (Venkatesh et al., 2013). According to Creswell, (2007, p.60) research design should match the research problem, purpose, and questions. Following these suggestions, one could argue that selecting “partially mixed sequential dominant status design” in Leech and Onwuegbuzie (2009) framework would be a rational choice for this study purpose. It enables this study to conduct a qualitative study to identify the indicators to measure active participation construct as well as employ a quantitative study to answer the research question. This research design is also consistent with the selected research strategy ‘abduction’ (See Section 4.3.6). It is also consistent with the vast majority of IS studies that adopted a mixed method approach. For example, Venkatesh et al. (2013) reviewed thirty one IS articles published between 2001 and 2007 within six IS journals. They discovered that seven main purposes encourage IS researchers to conduct mixed methods research. These reasons include complementary, completeness, developmental, expansion, corroboration/confirmation, compensation, and diversity. An examination of the revised articles in Venkatesh et al.’s (2013) study revealed that the vast majority of the IS studies employed a mixed method approach for developmental purpose where researchers conducted a qualitative study for developing constructs and hypotheses and then carried out a quantitative study to test the hypothesis. Thus, it was also found that the quantitative approach was the dominant in the vast majority

of the articles. The selected research design is also consistent with the ‘variable discovery’ research design (Fidel, 2008), quantitative dominant mixed method research design (Johnson et al., 2007), and exploratory research design (Creswell, 2007). It also has some communality with sequential mixed method research design (Cameron, 2009). Yet in sequential mixed methods typically the quantitative study is performed prior to the qualitative research (Ivankova et al., 2006, Cameron, 2009). The major difference between partially mixed sequential quantitative dominant design and other similar research designs is that more weight is given to the quantitative approach. For that reason, the qualitative study is carried out less rigorously as compared to the quantitative approach and the study outcomes mainly relies on the quantitative results (Venkatesh et al., 2013).

The main characteristic of partially mixed sequential quantitative dominant design is that the research process is carried out in two sequential phases. Accordingly, the research process of this study was carried out in two different phases as shown in Figure 4-1. Phase one mainly focused on the qualitative study with the aim of identifying the measures for active participation and also identifying any other important factors that may be missed during the framework development. The second phase primarily focused on the quantitative aspect of the study that aimed to test the developed framework. The following sub-sections provide full details on the works carried out during the two phases.

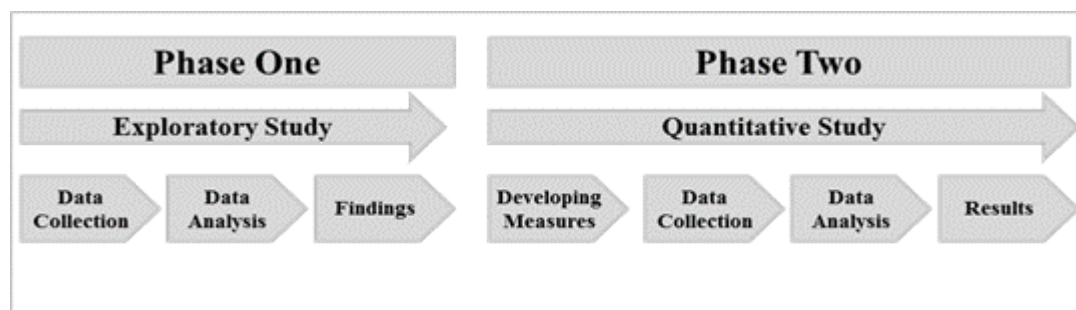


Figure 4-1: Research Processes of the Study

4.4 Phase One

4.4.1 Exploratory Study

In Chapter 2 Section 2.5.2 it was discovered that the active participation measure was not clearly defined in the literature. It was also found that the definition and measure of the construct can vary from one community type to another. Numerous measures for active participation were discovered, and these measures suffered from several limitations when applied to B2B OBCs. Therefore, this study needed to explore these issues in the context of a B2B OBCs and establish a definition and measure for the construct in the context of B2B OBCs. Towards achieving this goal an exploratory study was carried in order to better understand how active participation can be measured in B2B OBC context. The study also aimed to identify any other important constructs that might have been missed during the framework development. Further, it aimed to carry out a preliminary test on the identified relationships between the constructs. Yet it did not aim to draw any conclusion with regards to the hypotheses' results. This was just to sanity check the identified relationships in the framework. The outcome of this exploratory study was published in one of the leading international IS conferences (Ahmad, et al., 2012).

4.4.2 Data Collection

For the purposes of the exploratory study a qualitative approach semi-structured interview was utilised. This exploratory study did not aim to report statistical relationships among variables but just to explore the active participation measure, and therefore a qualitative methodology was entirely appropriate. This approach is considered to be effective in order to obtain rich information when exploring social, natural, and cultural phenomena in IS research (Klein and Myers, 1999). Numerous OC scholars have adopted a similar approach in diverse exploratory studies focusing on various OC types ranging from OCs of practice to online knowledge sharing communities (Ardichvili et al., 2003, Ridings and Gefen, 2004).

Using non-probability sampling snowballing technique this study collected data from members of B2B OBCs. Twelve semi-structured interviews with B2B OBC members were conducted. The questions are shown in Appendix B. The questions were piloted with five PhD researchers and two academics and then adapted for clarity. All interviews were recorded and transcribed and typically each interview lasted twenty to twenty five minutes and was conducted at locations convenient to the interviewees.

The participants (Male = 68%, Female = 32%) belonged to four different age groups (21-30= 17%, 31-40 = 17%, 41-50 = 33%, 51-60=33%). The majority of the participants held a recognised qualification (by highest qualification: Master Degree = 17%, Bachelor Degree = 42%, AS/A–Levels = 17%, Professional/Industry = 25%). 50% of the participants were managers and 50% were staff. Participants came from micro businesses (50%), small businesses (42%), and large businesses (8%), from more than four different industry sectors (Business Services = 50%, Financial Services = 25%, Retail = 17.5%, Public Sectors = 17.5%).

4.4.3 Data Analysis

A deductive thematic analysis was taken using the guidelines introduced by Boyatzis (1998). The deductive thematic process started by putting all the transcribed interviews in NVIVO v8 (qualitative data analysis software). Individual responses to the questions were coded to match the framework constructs and the approach was to understand and detect whether there was corroboration, contradiction or important new variables emerged from the responses of interviewees. Following Boyatzis's (1998) suggestions, transcribed data and coded themes were cross-checked by an academic and three PhD students in order to ensure transcription quality and reliability respectively.

4.4.4 Findings With Regards to Active Participation Measure

With regards to active participation the thematic analysis provided rich information on how to measure active participation in the context of B2B OBC. The participants were asked what active participation in B2B OBCs meant to them?, and who do they consider as active participants of their B2B OBCs? Following the thematic analysis it was found that the participants considered someone as an active participant who carried out several activities on a regular basis at least daily or weekly. These activities include login to the community website, keeping their profile up to date, complying with community rules and regulation, posting quality posts that engender discussions, and replying to people's questions. Accordingly these activities were used as indicators to measure active participation in B2B OBCs. Table 4-4 presents sample comments from the participants supporting the identified themes with regards to the active participation measure.

Table 4-4: Sample Comments with Regards to Active Participation Measure

Themes	Label	Sample Comments From the Participants
1	Login regularly and reading discussions (i.e. daily or weekly)	<p><i>"[Active Participants]...Logging and browsing at least once a day..."</i></p> <p><i>"[Active participation] I suppose means to be there every day, login in the morning checking out who is talking to you ,....at least once or twice a day, ..."</i></p>
2	Have an up to date profile	<p><i>"[Active Participants] ...keep profile current.... contribute to discussions, respond to emails,... start discussions regularly. Don't just sign up and do nothing...."</i></p> <p><i>"I'd expect that person to sort of have a profile in that community, sort of have an opinion about different things, not about everything..."</i></p>
3	Post quality questions that create discussions on regular basis (daily or weekly)	<p><i>"...if it's going to be active participation, is got to be as many people as possible and putting thing on there that are constructive and make a discussion move on."</i></p> <p><i>"They are putting information on that can be shared and that's engenders a discussion or some kind..."</i></p>
3	Replying to posted questions on	<p><i>"...The activist is actually getting involved, so not just sitting there watching the discussions. [Active Participant]"</i></p>

	regular basis (daily or weekly)	<i>is actually contributing to some of the discussions that are going on”.</i> <i>“I would say an active participant is somebody who answer questions on weekly basis”</i>
3	Comply with the community rules and regulations	<i>“[Active Participants] ...follow the rules of that community and not to go outside the parameters of the community”</i>

4.4.5 Findings With Regards to Functional Needs

In Chapter 2 Section 3.3.1, it was discovered that the measure for functional need can vary from one community type to another depending on the community purpose. Accordingly, it was found necessary to also explore the construct measure through understanding the B2B OBCs perception. The thematic analysis shows that the participants perceived the constructs as the benefits or the functionalities that B2B OBCs provide to them. These benefits include business promotion, forming business relationships, acquiring specific information and knowledge. Subsequently, these were identified as indicators to measure the construct. Table 4-5 shows sample comments from the interviewees which further provide evidence supporting the functional need measure:

Table 4-5: Sample Comments with Regards to Functional Need Measure

Theme	Label	Sample Comments from the Participants
1	Acquiring information, knowledge, and accessing expertise advise.	<i>“... I am start asking somebody’s for advice on this...” “...I was looking for some specific information...”</i> <i>“Get the knowledge from different places all over the world...”</i> <i>“... I expect to get from them information that I cannot find them in the books...”</i>
2	Forming business relationships	<i>“to connect to other professionals...” “...expand my network of contacts...” “...finding resources there is always an opportunity, and finding partners ...”</i>
2	Finding business opportunities	<i>“...to look for business opportunities ...” ... “...partly sharing, partly to be honest to find business”</i>

		<i>ultimately....”</i> <i>“...trying to get work, sales, ...new clients , new sales , potential resource...”</i>
4	Promoting business	<i>“...predominantly so I can promote my business” ... “... I would say to promote my business...”</i>

4.4.6 Preliminary Findings With Regards to the Hypotheses

4.4.6.1 U&G and Active Participation

Under U&G, H1a proposed that there is a positive relationship between functional need and active participation. The analysis of the data suggested that members with higher functional needs (e.g. gaining knowledge, business promotion, and finding business contacts) would participate more actively in their B2B OBCs. Thus evidence was found to support H1a. The majority of the interviews were considered as active members of their B2B OBCs and they were more concentrated on achieving their business needs than achieving their individual needs such as socialising. These findings are consistent with the findings from priors studies attempted to investigate the factors affecting participation in various OCs (Wasko and Faraj, 2000, Evans et al., 200, Ardichvili et al., 2003, Porter, 2004, Sangwan, 2005, Hsu et al., 2007). The following comments from the participants provide support for H1 a.

*“..don't forget the website it was not just a discussion board . One of the hooks was the fact that they could **promote their company** on the website free of charge ...”*

*“I guess **solutions to problems**, if I had a problem. I'd first of all I go to that forum if thought they could **provide solution**.”*

*“Yes, I see it [active participation] as a **way for promoting my business**”*

*“... there was comments on there that had been sent through like – **how good was the networking meal**, or the food was, **I think that's wasting my time**..”*

“I have to see value...I use the site because I am dealing with business professionals....but if I start seeing a photo of somebody's Xmas party on there I will be dropping out”

H1b suggested that there is a positive relationship between psychological need (i.e. status and reputation) and active participation. The thematic analysis results provided evidence supporting H1b as almost all the participants expressed that increasing their business reputation and status inside their community played an important role in their decision to make active participation. This finding corresponds to the Wang and Fesenmaier's (2003, 2004a, 2004b) studies on online travel communities. The following comments eloquently illustrate support for H1b:

*“I think it would do, because it [active participation] **increases your presence**....”*

*“... being part of that discussion group would **give more credibility** and people would be more likely to use my service if they saw me as a specialist in that field ...”*

*“If I am dealing with fellow professionals in my area , and I've been seen to contribute to meaningful content, then I think that **gives me some standing**...”*

*“I am using those forums to create a **personality**....and **increase our reputation**. and is a really affective way of doing it actually”*

However, very limited evidence were found to support H1c as only one participant considered participating in her B2B OBCs as fun and enjoyment. This finding contradicts the outcomes of a study by Wang and Fesenmaier (2004a) who indicated that enjoying helping others seem to be positively associated with active participation.

4.4.6.2 SET and Active Participation

From the SET model, H2 postulated that there is a positive relationship between generalised reciprocity and active participation in B2B OBCs. The analysis of the interview provides evidence supporting this relationship. The participants saw participation in B2B OBCs as two way things. This demonstrates that people participate actively in their B2B OBCs if only they get some benefits. These benefits were seen similar to their functional needs such as gaining knowledge, learning new information, finding new business contacts, and business promotion. Furthermore, it was found that some participants were not even willing to remain in their B2B OBCs

if they felt no clear business benefit. Therefore, this study's finding concurs with previous studies by Kankanhalli et al. (2005) and Ye et al. (2006) who found reciprocity as one of the most important factors influencing active participation in an OC environment. Evidence supporting H2 is demonstrated in the following direct quotes from the participants:

*"I think anything is **two way transaction**, is always gonna be more interested than me **just contributing and nothing coming back.**"*

*"If I didn't think there is not any **benefit to me, I wouldn't continue.** However, I think for my experience, that **you get out of it what you were prepared to put into it.**"*

*"..to have an active participation , means that will **give you benefits.**'.. '... if I wasn't **going to get what I expected**, then there is no point in diverting my time"*

*"... the more likely **get response** to a questions you asked, the more likely you **want to contribute...**"*

*"if you think that you **not benefiting from this** you know you **wasting your time participating** somewhere that nobody give you more insight to your business."*

Unexpectedly, contradictory results were discovered with regards to the positive relationship between affective commitment and active participation (H3). Commitment was mainly measured by how participants felt connected and attached to their B2B OBCs and the amount of time they spent in their B2B OBCs. The thematic analysis showed that the majority of the interviewees were active members of their B2B OBCs, but they were not committed to their communities. In addition, it was discovered that some participants were reluctant to take members serious who commit too much of their time participating in their community. Thus findings provided contradictory counts on how commitment may affect active participation in B2B OBCs. This finding contradicts the results from prior studies of OCs that reported commitment to have a positive impact on active participation (Wu et al., 2006, Ye et al., 2006). Thus the analysis of the data provides limited understanding with regards to H3 as shown in the following comments:

*“...you will get some people **more committed** at some points than others, and some people will be **very committed to their community**, and, and **their commitment** will also depend on other issues”*

*“I would be hesitant if people who **commit too much** to something like that, if you know what I mean? If they spent literally all day on that community, I wouldn't, what they said too seriously”*

*“I'd say the **biggest commitment** you could give to them is time rather than money, because if you give a lot of time on the community”*

*“but also if they spent too much time on there, I would say, that will give me a negative opinion on them **because they committing a lot of their valuable time** to something that doesn't get them work or anything.”*

Moreover, the analysis of the data also provides rich data to support H4a and H4b. Trust was found to be important for active participation in B2B OBCs. Almost all participants regarded trust as very important. This finding accords with the findings from previous studies that proposed trust as an important factor affecting participation in OCs (Levin and Cross, 2004, Han et al., 2007, Lin, 2008). The following comments eloquently illustrate support for H4a and H4b:

*“You know you have to have **a sense of trust**...there are many “hunters” out there...”*

*“I think I place myself in a position where I know already I am in a **fairly safe** place ... I am more cautious and **less trusting** of people generally.”*

*“I think that is really crucial, that is really, really **important that you trust**”*

*‘like I said earlier, I think there'll be **two parts to the trust**... it's an anonymous community , if it's all anonymous , its slightly **less easy to trust** the answers of the other people give...’*

*“...they are obviously trying to **be dishonest**, then you can't have them as part of your community, so you've got to have that **feeling of trust** in the community that everybody behaving in a trustworthy way.”*

4.4.6.3 ISSM and Active Participation

Based on ISSM H5a, H5b, H5c and H5d hypothesised that in B2B OBCs, system quality and information quality play an important role in members' participation behaviour and their trusting beliefs. The findings from the interview data provided evidence supporting all hypotheses. Particularly, the participants considered system quality mainly as easy to use and easy to navigate of B2B OBC websites. The vast majority of the participants believed the system quality was important for them as this was expressed in their comments:

*“They [the B2B OBCs] have got to **be easily accessible**...if you've got to go through various stages to get where you want to be , then you are not going to spend the time doing it...”*

“I don't find (named) **very easy**...we were **trying to work out how to post a message** and I don't think I did it right at all at the end...”

“They [the B2B OBCs] have **got to be quick**; you can go to it and get a thread that you can respond to **quickly and easily**....”

“**easy navigation** and **easy to use**” that probably be the key ones, because **it a bit frustrate** me if you always going backwards and forwards **I lose patient** very quickly”

Moreover, the participants considered information quality mainly as accuracy and currency of the contents of their B2B OBCs and saw it as an important factor for their active participation. This concurred with the findings from the previous studies that found that information quality affects participation in OCs (Koh and Kim, 2004, Joyce and Kraut, 2006, Jin et al., 2010), and therefore evidence was also found with regard to H5c and H5d as shown in the following comments:

*“Poor **quality messages** and spelling mistakes would affect me...”*

*“...if I find the **information bad**...I would not visit three times a week...”*

*“It would be a deterrent factor, if the site was hijacked by amateurs for example. And they were **putting up miss information** and **swamping** with that because they have more time than yea you would probably. You would be in touched with the moderator, if it wasn't dealt with probably, then **there is not point been part of that community**.”*

Most importantly, one important new theme emerged from the interviews. The majority of B2B OBCs are managed by moderators. During the first interview, it was found that moderation appeared to be a major factor impacting active participation. Questions regarding the importance of moderation were then asked in the subsequent interviews. The role of the moderator is not just to encourage members to take active participation, but also to prevent people's actions that negatively influence active participation. For example, the impact of lack of moderation became more apparent in the following comments:

*"...I found out that **unless I personally intervened** and contacted everybody...unless I made that intervention, **hardly anybody participated at all.**"*

*"Whoever is **facilitating the forum will not allow people to be bullied or trolled** or any of those things that, you know, that make people feel uncomfortable"*

*"**Moderation is obviously quite important one**, because if there are people on there either posting false information on purpose or they're just on there to cause trouble. **I'd hope the moderators would fairly swift and getting rid of them** , if I was paying for the service , I'd expect that to be one of the key things I was paying in for, because obviously moderators need to get paid"*

*"... there was a lot of '**bickering**'... and there was a lots of, I don't know what you call it '**kick-haling**', may be **trying to put people down** a little bit,... those sorts of things **stop me from going on to certain sites**"*

*"...**I got some really shouting answers** from people. I thought it wasn't meant like that. A couple of people emailed me back, so I thought **I won't bother with that again.**"*

*"I would expect a good community host to be able to **identify the active members** and be able to **introduce new members** to the relevant person if they had a question...."*

The above comments from the participants provide evidence suggesting that another important construct in relation to the service quality provided by moderators should be considered in the framework. This is also in line with the revised version (ten year update) of the ISSM by DeLone and McLean (2003). They argued that the quality of services provided to the end users had become increasingly important in facilitating the use of information systems. Therefore, they added service quality as

another dimension affecting IS success in the revised ISSM. The role of moderators in this study context is therefore one of the important items in measuring the service quality of B2B OBCs. Consequently, another two research hypotheses (H5e and H5f) proposed:

Hypothesis 5e: There is a positive relationship between service quality and active participation in B2B OBCs

Hypothesis 5f: There is a positive relationship between service quality and trusting beliefs in B2B OBCs

Figure 4-2 shows the revised version of the theoretical framework.

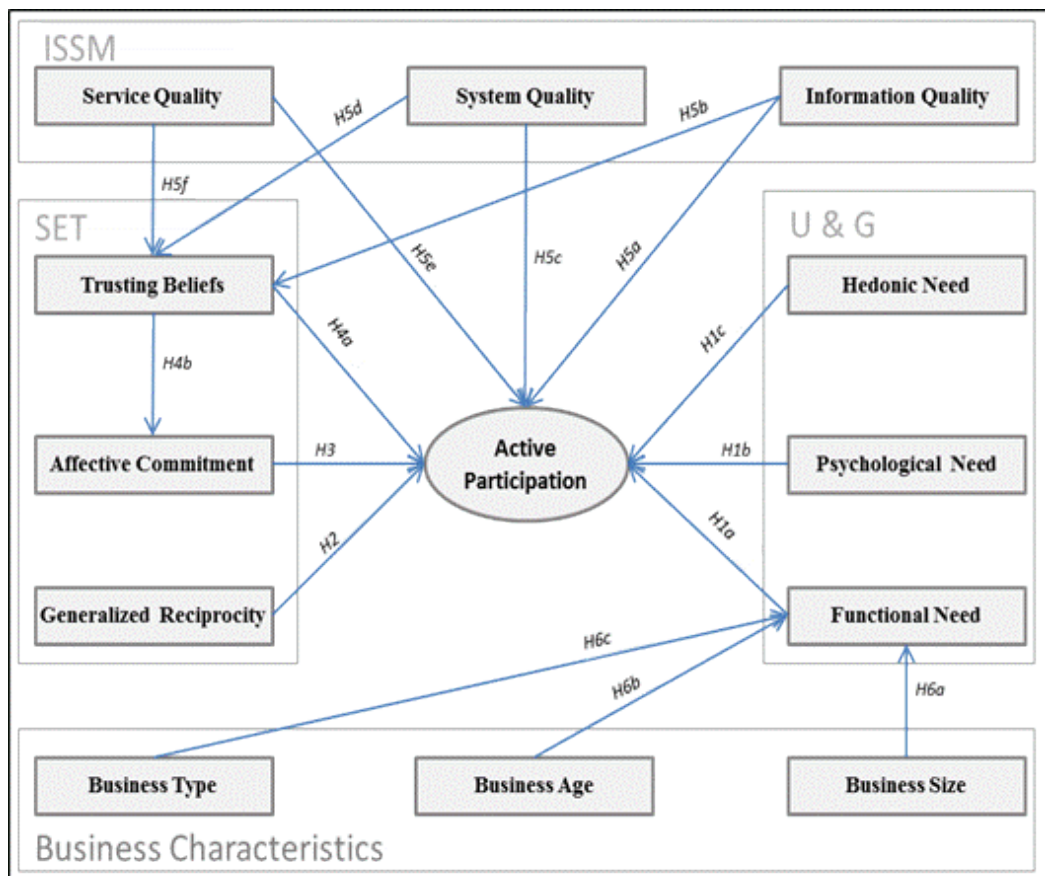


Figure 4-2: The Revised Version of the Framework

4.4.7 Summary of the Exploratory Study

The exploratory study helped in identifying five indicators to be used to measure active participation in B2B OBCs. It also assisted in finding several indicators to measure functional needs. This study also helped to pre-test the identified hypotheses. The findings from the thematic analysis provided evidence supporting most of the hypotheses and this built confidence that similar outcomes could be achieved when conducting the empirical investigation. Most importantly, this study helped in identifying another two hypotheses that were missed during the literature review. It was found that that service quality (moderator's role) has a significant impact on B2B OBCs members' participation behaviour.

4.5 Phase Two

4.5.1 Developing Measures

The vast majority of the indicators used to measure the constructs in the framework were directly adapted from prior studies except for three variables: active participation, functional need, and service quality. Adapting measures from prior studies help increasing the reliability and validity of the variables (De Vaus, 2002, p.50). Three indicators rule was utilised, this to make sure to use at least three indicators to measure each construct as experts advised (De Vaus, 2002, p.50). The following sub sections discusses the indicators were used to measure the constructs inside the framework.

4.5.1.1 Active Participation Measure

The measure for active participation was developed mainly from the exploratory study in Section 4.4.4. These indicators reflect on B2B OBCs members carrying out several activities such as login regularly, keeping their profile up-to-date, complying with the community rules and regulations, making quality posts such as posting

questions that generate discussion and replying to posed questions. Table 4-6 shows the indicators used to measure active participation.

Table 4-6: Indicators Used to Measure Active Participation

Code	Active Participation	Source
ACP1	I regularly login to the XXXX and read posted discussions	<i>Exploratory Study</i>
ACP 2	I always keep my profile up to date on the XXXX	
ACP 3	I regularly post relevant and useful information to the XXXX that engender discussions	
ACP 4	I regularly reply with relevant and useful information to posted questions on the discussion boards of the XXXX	
ACP5	I always conform to the rules and regulations outlined by the XXXX	

Key: XXXX = Community Name

4.5.1.2 Measures of U&G Constructs

Three constructs such as functional need, psychological need, and hedonic need were identified under the U&G theory. Items measuring functional need were adapted from prior studies as well as the preliminary study in Section 4.4.5. The measures for this construct reflected on members believing their participation in the B2B OBCs would allow them to acquire knowledge that was beneficial to their business, finding solutions for business related problems, finding business opportunities and business contacts, and promoting their business. Furthermore, four items were used to measure psychological need and these were directly adapted from a study by Wasko and Faraj (2005). These indicators reflected on B2B OBC members believing that making active participation would improve their respect, credibility, status, and reputation inside their communities. Finally, four items measured the hedonic need construct which were also adapted from prior studies by Wasko and Faraj (2005) and Kankanhalli et al. (2005). These indicators reflected on B2B OBC members liking helping other members, feeling good helping other members, and enjoying helping other members. Table 4-7 shows the indicators used to measure all the three constructs identified under U&G theory.

Table 4-7: Indicators Used to Measure Constructs under U&G

Code	Functional Need	Source
FND1	I participate in XXXX to acquire knowledge and information that could be beneficial for my business	<i>Literature review</i>
FND2	I participate in XXXX to access experts advise and to find solutions for specific problems	<i>Exploratory Study</i>
FND3	I participate in XXXX to make business contacts with other businesses	
FND4	I participate in XXXX to promote my business	
Code	Psychological Need	Source
PND1	I earn respect from other members by making content contributions to the discussion boards of XXXX	<i>Wasko and Faraj, 2005</i>
PND2	I feel making content contribution to the discussion boards of XXXX, would improve my status in the community	
PND 3	I participate in the discussion boards of XXXX, to improve my reputation in the community	
PND 4	I earn credibility from other members, by participating in the discussion boards of XXXX	
Code	Hedonic Need	Source
HND1	I like helping other members of XXXX	<i>Kankanhalli et al., 2005</i>
HND2	I feel good helping other members of XXXX to solve their problems	
HND3	I enjoy helping others members of XXXX in the discussion boards	
HND4	Participating in the discussion boards of XXXX gives me pleasure	

Key: XXXX = Community Name

4.5.1.3 Measures of SET Constructs

Generalised Reciprocity was measured using three items adapted from prior studies by Kankanhalli et al. (2005). The measurement items focused on members' beliefs and expectations that responding to other members' questions would lead to their questions being answered in future. These items were also adapted and validated in various OC studies (Lin, 2007, Posey et al., 2010). In addition, affective commitment was measured by five indicators which were adapted from a prior study by Bateman et al. (2010), who used an organisational commitment scale that was

originally developed by Meyer and Allen (1991). These items focused on members' feelings of being part of a group, members' emotional attachment, business meaningfulness, and sense of belonging and connectivity to their B2B OBC. These items were also validated in studies that examined the effects of commitment on users' continuance intention to participate in OCs (Jin et al., 2010, Cheung and Lee, 2009), knowledge contribution in virtual communities (Ye et al., 2006), online participation behaviour (Lampe et al., 2010), customer loyalty towards e-brokerages (Huang et al., 2007), and B2B exchange relationships (Tsiros et al., 2009). Finally, the three sub-constructs of trusting beliefs namely: ability based trust, integrity based trust, and benevolence based trust were adapted from prior studies (McKnight et al., 2002, Ridings et al., 2002). Six items measured ability based trust which focused on trusting other members' skills, knowledge, capabilities and performances in the B2B OBCs. Four items measured integrity based trust which focused on the other members' behaviour, fairness, trustworthiness, and honesty. Four items measured benevolence based trust which related to B2B OBC members caring about helping other members, caring about the important of others, and not taking advantage of other members or disturbing other members. Table 4-8 shows the indicators used to measure the three main constructs of SET.

Table 4-8: Indicators Used to Measure the Constructs under SET

Code	Generalised Reciprocity	Source
RCP1	I know that other members will help me, so it's only fair to help other members	<i>Kankanhalli et al., 2005</i>
RCP2	I trust that someone would help me if I were in a similar situation	
RCP3	When I respond to other members' questions, I expect my queries to be answered in future	
Code	Affective Commitment	Source
ACM1	I feel like a part of the group at the XXXX	<i>Bateman et al., 2010</i>
ACM2	I have a real emotional attachment to the XXXX	
ACM3	The XXXX has a great deal of personal meaning for my business	
ACM4	I feel a strong sense of belonging to the XXXX	
ACM5	I feel a strong connection to the XXXX	

Trusting beliefs		
Code	Ability Based Trust	Source
ABT1	I feel very confident about the skills that the other members have in relation to the topics we discuss	<i>McKnight et al., 2002</i>
ABT2	The other members have much knowledge about the subject we discuss	<i>Ridings et al., 2002</i>
ABT3	The other members have specialized capabilities that can add to the conversation on the discussion boards	
ABT4	The other members are well qualified in the topics we discuss	
ABT5	The other members are very capable in performing tasks in the topics we discuss	
Code	Integrity Based Trust	Source
IBT1	The other members are fair in dealing with one another	<i>McKnight et al., 2002</i>
IBT2	The other members are truthful in dealing with one another	<i>Ridings et al., 2002</i>
IBT3	The other members are genuine and sincere in dealing with one another	
IBT4	The other members do not behave in a consistent manner (R)	
Code	Benevolence Based Trust	Source
BBT1	The other members are very concerned about the ability of members to get along	<i>McKnight et al., 2002</i>
BBT2	The other members would not intentionally do anything to disrupt the conversations	<i>Ridings et al., 2002</i>
BBT3	The other members are concerned about what is important to others	
BBT4	The other members would do everything within their capacity to help others	

Key: XXXX = Community Name R = Reversed Item

4.5.1.4 Measures of ISSM Constructs

Five items were used to measure information quality which reflected on the information accuracy, usefulness, completeness, currency, and format of information presentation. Five indicators were also used to measure system quality and these reflected on the system reliability, accessibility, response time, and flexibility. All these indicators from both constructs were adapted from prior studies (Lin, 2008, Delone and McLean, 2003, Nelson and Todd, 2005). These adapted measures were also validated in studies the investigated the sustainability and success of OCs (Lin 2007; Lin 2008; Hew, 2009), participation level in OCs (Wang and Fesenmaier,

2008), blog writing (Hsu and Lin, 2008), knowledge sharing behaviour (Sharratt, 2003), understanding the effectiveness of B2B websites (Chakraborty et al., 2005), online business discussion forum (Lau, 2007), and information exchange in OCs (Lu, 2011). The items used to measure service quality were developed from the preliminary study in Section 4.4.6.3. These items mainly reflected on the moderator's role such as getting involved in solving problems and disputes, stopping disruptive members, and encouraging active participation. Table 4-9 shows a summary of the measures for the constructs under ISSM.

Table 4-9: Indicators Used to Measure the Constructs of ISSM.

Code	Information Quality	Source
IFQ1	The content of the discussion boards of XXXX is always accurate	<i>Lin, 2008</i> <i>Delone and McLean, 2003</i> <i>Nelson and Todd, 2005</i>
IFQ2	The content of the discussion boards of XXXX is always complete	
IFQ3	The content of the discussion boards of XXXX is always up-to-date	
IFQ 4	The content of the discussion boards of XXXX is well formatted	
IFQ5	The content of the discussion boards of XXXX is always useful	
Code	System Quality	Source
STQ1	The XXXX always operates reliably	<i>Lin, 2008</i> <i>Delone and McLean, 2003</i> <i>Nelson and Todd, 2005</i>
STQ2	The XXXX allows information to be readily accessible	
STQ3	It takes too long for XXXX to respond to my request (R)	
STQ4	The XXXX can be adapted to meet a variety of needs	
STQ5	It's easy to use the XXXX website	
STQ6	It is easy to navigate through the XXXX website	
Code	Service Quality	Source
SRQ1	The moderator of XXXX does not show a sincere interest in solving member's problems (R)	<i>Exploratory Study</i>
SRQ2	The moderator of XXXX protects its members from disruptive members	
SRQ3	The XXXX is well moderated	
SRQ4	The moderator of XXXX often encourages me to take part in the discussions	
SRQ5	The moderator of XXXX won't allow people to disrupt the discussion boards	

Key: XXXX = Community Name R = Reversed Item

4.5.1.5 Business Characteristics Measure

Measures for members' business characteristics were also adapted from prior studies (Zahra et al., 2002). Company size was measured by finding the total number of employees, company age by number of years in business, position in the company by participants' job title, and business type by finding the industry (sector) type in which the businesses operates in.

4.5.2 Reliability and Validity of the Measures

After developing the indicators to measure the variables, it is crucial to test the reliability and validity of the measures. Reliability refers to measurement accuracy or the overall consistency of the measures (Boudreau et al., 2001). This implies that similar results should be achieved every time researchers collect data from the same sample (Straub et al., 2004, Hair et al., 2010). There are several techniques to carry out a reliability test. These include internal consistency (Cronbach's alpha), split halves, test-retest, alternative or equivalent forms, and inter-rater reliability (Boudreau et al., 2001). There are three types of validity such as convergent validity, discriminant validity, and nomological validity (face validity). Convergent validity refers to the fact that indicators belonging to the same construct should have similar variance in common which means the items belonging to a construct should have high inter-correlations and this can be determined through factor loading (Boudreau et al., 2001, Straub et al., 2004, Hair et al., 2010). Discriminant validity assumes that a construct is unique from other constructs and this means indicators under a construct should have low correlation with indicators belonging to other constructs and that can be determined through Average Variance Extracted (AVE) values and Squared Interconstruct Correlations (SIC) (Hair et al., 2010). Face Validity refers to that the identified measures should make sense (Hair et al., 2010). This can be achieved in several ways such as developing measures based on strong theoretical backgrounds, developing measures based on relevant measures that have already been validated and tested in prior studies, and checking the measures with experts in the

field (Hardesty and Bearden, 2004). Accordingly, face validity of the measures was already achieved as the vast majority of the measures were adapted from prior studies. The measures were also checked with two experts in the field. However, the full procedures for testing reliability, convergent validity, and discriminant validity are further discussed in the next chapter (See Chapter 5 Section 5.14.2).

4.5.3 Online Survey

The second phase of the study involved a quantitative approach, and for that purpose an online survey was selected to collect empirical data in order to test the proposed framework. Prior research has shown that online survey technique has more superiority and provides more advantages over other data collection techniques such as interview and postal surveys (Sheehan, 2001). Particularly, conducting an online survey is much quicker than other approaches (Sheehan and McMillan, 1999). The technique provides an easier and more immediate means of response (Flaherty, et al., 1998). Besides, an online survey is more cost effective than a paper survey (Sheehan and Hoy, 1999). In addition, an online survey is easy to administer and it is effortless. There are many online software tools which allow researchers to create and distribute their questionnaires online at low effort. Appendix C provides some examples of the currently used online packaging tools for distributing online survey. After considering several factors (e.g. functionality, availability, productivity, and cost), it was decided to use Qualtrics (www.qualtrics.com) to design and distribute the online survey. Through this type of tool researchers can distribute their questionnaires to a geographically dispersed population of thousands of people in a very short period of time (Sheehan 2001). While other approaches such as postal survey, interview, and focus group take a longer time to target large populations and would be very costly (Wright, 2005). Furthermore, online survey tools also enable researchers to track and monitor the questionnaires constantly, to find out the number of people accessing the questionnaire, to find out about the number of people completing the questionnaire, to discover the number of undelivered questionnaires, which ultimately helps improve

the sampling procedures (Sheehan 2001). Accordingly, online surveys enable researchers to save time by allowing researchers to collect data while they carry out other work (Sheehan 2001). Moreover, researchers can also save money through utilising an online survey as postal surveys can often be costly (Wright, 2005). It is believed that online surveys enable researchers to collect less biased data as compared to other approaches such as interview and focus groups (Wright, 2005). For example, prior studies have reported that individuals are often seen to hesitate to express themselves and their views openly in face-to-face communications (Wright, 2005). Therefore, for all the great benefits online surveys provide, it has been increasingly used to study online populations and it has being seen as a successful data collection technique for studying online behaviours and internet use (Andrews, et al., 2003, Wright, 2005).

However, online surveys suffer from several drawbacks which require some careful considerations (Sheena, 2001, Wright, 2005). Particularly, collecting data through an online survey is a challenging task to achieve because low response rate and incomplete returned questionnaires are the two of major problems associated with the technique (Deutskens et al., 2004, De Vaus, 2002, p.97). In addition, issues related to the sampling procedures are other disadvantages of online surveys (Andrews et al., 2003, Wright 2005). However, the current literature shows that several considerations (e.g. paying careful attention to formatting, survey lengths, question structure, and user interface design) can help mitigate these issues. Accordingly, in the following subsections these considerations were carefully considered during the survey.

4.5.3.1 Quality Design

Previous researchers have suggested that the quality of design of an online questionnaire is a significant factor that can improve the online survey response rate (Dillman, 2000, Deutskens et al., 2004). Based on an extensive literature review, Andrews et al. (2003) have provided several guidelines for designing quality online

surveys as shown in Table 4-10. Accordingly, these guidelines were implemented during the survey design.

Table 4-10: Quality Guidelines to Improve Survey Design (Andrew et al., 2003)

Guidelines	
1. Supports multiple platforms and browsers/e-mail clients	2. Provides automatic transfer of responses to a database
3. Controls for browser settings	4. Prevents survey alteration
5. Detects multiple submissions automatically	6. Provides response control and displays
7. Presents questions in a logical or adaptive manner	8. Provides for links to definitions, menus, button and check box options and so forth
9. Allows saving responses before completion	10. Does not require familiarity with survey presentation software
11. Collects open-ended or quantified-option responses	12. Displays appear quickly to participant
13. Provides automatic feedback with completion	14. Tracks response source of response failure
15. Uses paper questionnaire design principles	16. Provides automatic transfer of responses to a database

4.5.3.2 Survey Length

It is believed that a long online questionnaire has a negative impact on the response rate (Dillman, 2000, Deutskens et al 2004). Although there is no agreement on the terms ‘long’ and ‘short’ for online questionnaires, it has been suggested that the shorter the questionnaire the better response rate (Deutskens et al, 2004, Deutskens et al 2004). For that reason, attempts were made to make the survey as short as possible. A pilot study was carried out and this helped in reducing the number of the questions asked (See Section 4.5.5).

4.5.3.3 Survey Language

Survey language also affects the response rate in online surveys. It is believed that when designing a questionnaire it is important to formulate the questions in a way that is easy to understand by the participants (De Vaus, 2002). Accordingly, throughout the questionnaire words were used that were clear and easy to understand. Explanation was given for words that were ambiguous. For example the word ‘regularly’ could mean different things to different people. Hence, in the survey it was explained by two words ‘on daily or weekly bases. To ensure the language was easy to understand and there was no ambiguity, the survey was tested with experts, colleagues, and the target audiences (See Section 4.5.5).

4.5.3.4 Follow-up

Following-up contacts have been seen as a powerful technique for increasing response rates in online surveys (Dillman, 2000, Deutskens et al., 2004). Researchers have reported that, this technique has to be done carefully as sending several follow-ups could irritate potential respondents (Deutskens et al., 2004). It has been suggested to send a follow up email after a specific period of time. For example, the average response time typical in an online survey is 5 to 6 days (Deutskens et al., 2004), and therefore it has been suggested that one can maximise responses by following up one week after the initial invitation (Dillman, 2000). Consequently, follow-up emails were sent to all the participants and this helped improve the response rate.

4.5.3.5 Incentives

Financial incentive (e.g. money, vouchers, and books) has been recognised as another effective technique for increasing online survey response rate (Wright 2005, Deutskens et al., 2004). However, providing an incentive require some careful attention, since providing rewards to every participant could often result in obtaining incorrect information because some people may participate just to receive the gift. For that reason, a different approach was used in this study. Participants were entered

into a raffle draw to win a memory stick. They were also offered an executive summary of the research outcome.

4.5.3.6 Ethical and Privacy Issue

Ethical and privacy concerns remain important in online surveys and this has a significant impact on response rate (Evans and Mathur, 2005). Accordingly, the informed consent form was designed and then embedded in the survey and the invitation letter to address any ethical and privacy issues that the participant may have. In the invitation letter the aim of the research was explained to the participants and promises made to them that the survey will not do any harm to their businesses and their information was going to be kept 100% confidential (See Appendix D)

4.5.4 The Questionnaire and Structure

The questionnaire was developed according to the hypotheses developed. Throughout the questionnaire a 'Likert Scale' was utilised to make it easier for the participants to answer the questions (De Vaus, 2003). Each question asked aimed to test the identified variables and measures and relationships in developed framework. In total the questionnaire consisted of 18 main questions which were divided into five main parts. The first part contained questions with regards to the participant's business characteristics. The second part contained questions with regards to the participants' active participation behaviour, followed by the third part which contained questions associated with variables identified under U&G. The next two sets of questions related to the variables identified under SET and ISSM. In the final section some demographic questions were asked.

4.5.5 Pilot Testing

Once the questionnaire was developed the next crucial phase was the pilot testing stage to detect any issues with the survey. Prior researchers have developed a pilot testing technique for testing online surveys (Andrews et al., 2003). In their study

Andrews et al. (2003) have identified four important stages in pilot testing for online survey (See Figure 4-3). Accordingly, these stages were followed during piloting the online survey. First the questionnaire was tested with two experts and several colleagues so to ensure the wording could be understood, interpretation consistency, question completeness, relevancy, efficiency, and format appropriateness. Next, the survey was tested with just over 60 members of B2B OBC participants. This was mainly to detect any issues and to reduce the number of questions. In the last stage the survey was checked with people who had no connection with the survey. This was to identify any incremental typos and errors. For this purpose, the survey was checked with five English lecturers. Following the pilot study, some improvements were made to the survey these included rewording some questions, removing duplicate and unnecessary questions, and re-ordering the questionnaire. Appendix E shows the final version of the questionnaire.

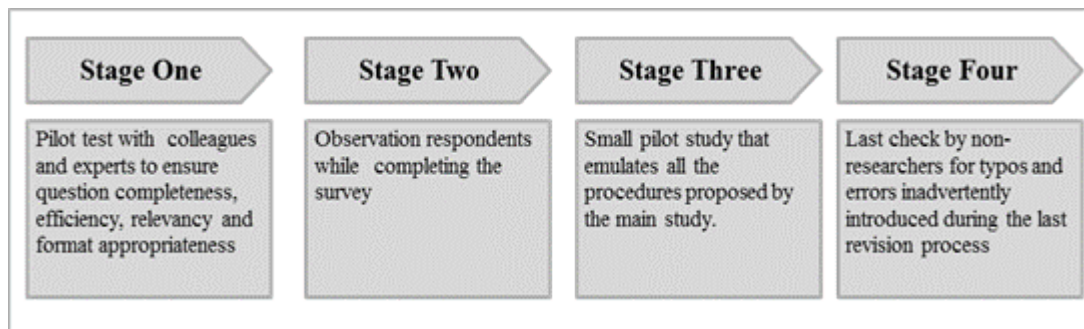


Figure 4-3: Stages in the Pilot Testing (Andrews et al., 2003)

4.5.6 Sampling

Once the questionnaire was designed and piloted, the next important stage was to select an appropriate sampling technique. In an online survey it would be impractical and sometimes impossible to survey the entire population due to cost constraints and often it would be unfeasible to identify all the members of a population. When conducting online surveys researchers select a representative sample from the population of interest. Thus, sampling provides researchers with many great advantages such as low cost, less effort to administer, better response rate and greater accuracy (Fricker, 2006). Several sampling techniques have been identified for online surveys which can be divided into two main categories; these are probability and non-probability sampling (Andrews et al., 2003, Fricker, 2006). The first category is any method of sampling that utilises some form of random selection. This method requires some formal statistical interference to draw a sample from a population. Thus, researchers need to know the sample frame (total population) in order to obtain a representative sample. There are several probability sampling techniques, these include simple random sample, stratified random sampling, cluster sampling, and systematic sampling (Fricker, 2006). On the other hand, non-probability sampling is utilised in research where researchers cannot determine the sampling frame (Fricker, 2006). Several non-probability sampling techniques reported in the literature. These include convenience sampling, judgement sampling, and snowball sampling.

Following an understanding of the above sampling techniques, it was decided to choose a no-probability convenience sampling approach. This is because it would be difficult for the researcher to generate a representative sample when collecting data from OCs like B2B OBCs for several reasons. Firstly, there are not a known number of B2B OBCs and this would be impossible to find. Particularly, OC scholars have reported that there is no universal global list for OCs (Ridings and Gefen, 2004). Therefore, generating a random sample from a list of all OCs would be impossible to achieve. For that reason, it has been suggested that selecting non-probability sampling using convenience techniques is the best sampling method for studying OCs

(Ridings and Gefen, 2004). Secondly, even if there were a universal global list for B2B OBCs, one could still argue that it would still be difficult to utilise a probability sampling approach, because when collecting data from a B2B OBC, the researcher need to have a physical access to the community's website and this requires permission from the community owner. Obtaining such permission is not easy and this is one the obstacles facing OC researchers. Some OCs provide limited information about their members (Wright, 2005), and therefore it would be impossible to generate a sampling frame from an OC which does not provide information about their members (Wright, 2005). Thus, it would be difficult to collect data that would be a representative sample without having physical access to the community's site. Thirdly, even if it was possible to get physical access to a B2B OBC and find the list of members, one could still argue that it would still be difficult to generate a correct sampling frame as B2B OBCs are dynamic and their size constantly change. Participation in B2B OBCs is voluntary and therefore people may register with a community and then leave and never visit the community again. Besides, some B2B OBC members are lurkers, who are invisible to the community. For these reasons, again it would be difficult to draw a correct sample frame form a B2B OBC.

Considering the above sampling issues related to B2B OBCs, a non-probability convenience sampling technique was selected for this study purpose. Prior studies have shown that the chosen sampling method is appropriate for studying OCs (Bos et al., 2007, Ridings and Gefen, 2004). However, employing online surveys to collect data through a non-probability sampling approach generates some limitations. Particularly, researchers have stated that generating biased data due to self-selection is one of major drawbacks associated with online surveys, and that inhibits researchers' ability to generalise their study outcomes (Thompson et al., 2003, Wright, 2005). The limitations of this study related to the selected sampling technique are discussed in the final chapter.

4.5.7 Data Collection

After selecting an appropriate sampling technique, the next stage involved collecting data. Several factors need to be considered when utilising convenience sampling to collect data from OCs. These include minimum traffic, minimum of different number of user posting, and high proportion of messages with responses (Ridings and Gefen, 2004). Based on these factors, Ridings and Gefen (2004) have proposed the following guidelines for selecting OCs:

- The OC must have at least 10 posts per day over a randomly selected three day period
- The OC must have 15 different members posting over a randomly selected three day period
- At least 80% of the posts must have at least one reply over a randomly selected three day period

Following the above guidelines, it was decided to select several B2B OBCs that represented a large group of people who were actively communicating with one another (Ridings and Gefen, 2004). The popular web search engines “Google” was used to identify B2B OBCs. Generic search terms were used to identify B2B OBCs. The search term included ‘b2b online communities’, ‘b2b online business communities’, ‘online business discussions forums’, and ‘b2b forums’ and so forth. The initial search returned just over 16 million records. Subsequently, following the above guidelines just over thirty B2B OBCs were selected. See Appendix F for more details on the communities. An invitation email was sent to community owners requesting their permission to distribute the survey to their communities (see Appendix G). However, only two communities agreed to facilitate the survey. The first community ‘My Local Forums’ (www.mylocalforums.com) had about 5,000 threads, 35,000 posts, and 2,400 registered users. The second community ‘Business Advice Forum’ (www.businessadviceforum.com) had about 32,000 threads, 177,000 posts, and 35,000 registered users. However, the owners of these two communities

only agreed to post the link of the survey as a discussion. They were neither willing to send an email to all community members nor to put the link on their website where everyone could see it. For that reason, not all members had the chance to see the link. This had huge impact on the survey response rate, only 30 useable responses were received over a two month period. Next it was decided to post the survey as a discussion on several other B2B OBCs. However, this only helped to collect six more useable responses. Thus, accessing community members temporarily became an issue.

Following the same procedure as the above, it was decided to collect data from B2B OBCs on LinkedIn to overcome the accessibility issue. Using the same search terms, forty B2B OBCs were selected. Appendix H shows further details on these LinkedIn communities. The researcher joined the selected communities on LinkedIn, and this way the researcher managed to obtain a list of community members who made contributions. In total 4,500 invitation emails were sent out. See Appendix I for details on the invitation letters. After several weeks a follow-up email was sent out. See Appendix J for more details on the follow up emails. Subsequently 521 useable questionnaires were returned. The respondent profiles are further discussed in Chapter 6.

4.5.8 Data Analysis

The next crucial stage after the data collection was analysing the data which involved testing the hypotheses developed. For this purpose, an extensive literature review was conducted to evaluate and choose a data analysis technique. Following an evaluation of several techniques, it was decided to utilise AMOS. The next chapter provides full details on the processes involved in the data analysis stage.

4.6 Summary

This chapter covered the important steps that were carried out in order to implement this study. Different research paradigms, methodology, and research strategies were explored. This chapter provided a full description of the research process. For the purpose of the research design, ‘partially mixed sequential dominant status design’ was selected. This involved two sequential phases. In the first phase, an exploratory study was carried in order to develop a better measure for active participation in B2B OBCs. The exploratory study also helped in pre-testing the framework and further assisted in discovering a new construct (service quality) which mainly focused on the moderators’ role. Subsequently, two new hypotheses were added to the framework. In the second phase, the measures for all the variables inside the framework were identified. This was followed by designing a quantitative study (online survey) to collect empirical data in order to test the developed framework. The next chapter focuses on the process involved in the data analysis. It further provides the study results.

5 Chapter Five: Data Analysis

5.1 Introduction

This chapter focuses on the data analysis. This is divided into three main sections. Section One describes the data coding and data editing procedures and further reports some descriptive statistics. Section Two presents discussions on the data analysis approach utilised. Furthermore, it presents some preliminary data analysis such as checking for missing data, checking for data normality, checking for outlier observations, checking for linearity and co-linearity tests, and checking for adequate sample size. Section Three focuses on the advanced statistical analysis which was carried out in two sub-stages. The first sub-stage covers the factor analysis in order to validate the proposed measurement model. There are two main types of factor analysis such as Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) (Hair et al., 2006). However, for this study purpose CFA was selected to confirm the identified factors in the theoretical model. This is because the proposed model was based on a strong theoretical background and an exploratory study. At this stage the measurement model was validated through conducting construct reliability and validity tests. This was followed by the final sub-stage which involves validating the structural model and testing the hypotheses.

Section One

5.2 Data Coding and Editing

As discussed in the previous chapter the questionnaire was collected through Qualtrics. The collected data was then exported to a SPSS file. Subsequently, a rigorous examination of the data took place prior to performing any kind of analysis. This took place to ensure no mistakes occurred during the data exportation stage. The process started by checking for errors and mistakes because any errors could have a huge impact on the results of the study. This initial examination of the data showed that there were not any unusual records or any typographic errors inside the SPSS file. To further confirm this, twenty records were randomly selected from the exported data set and checked against the original data set in the Qualtrics system. Again no discrepancies were found and therefore it was concluded that the data was transferred to SPSS correctly, free from any errors or typographic mistakes. The next stage involved coding the variables using a combination of characters and numbers to make the data analysis easier in the later stages. Thus, each question was represented using an abbreviation code. For example, reciprocity was measured by three questions and these were represented as RCP1, RCP2, and RCP3 inside the SPSS database. There were some open ended questions and these were converted to categorical data then coded accordingly. For instance, responses for Question 4 (What is your job title?) were categorised into five main categories: CEO/President/Owner, Director, Manager, Senior Staff, and Normal Staff. The questionnaire also included four negatively worded questions that were adapted from prior studies. The recorded data to these questions were reversed inside the data file.

5.3 B2B OBCs' Profile

In total 557 useable responses were collected from two different sample groups: 36 responses from 5 B2B OBCs on internet and 521 responses from 41 B2B OBCs on LinkedIn. Table 5-1 and Table 5-2 show the profile of both sample groups.

Table 5-1: Profiles of the B2B OBCs on the Internet

Community Name	Total Members	Total Posts	Community Age	Responses Collected
Business Advice Forum	33802	161233	5	23
My Local Forum	3053	33802	5	7
Small-Business-Forum	552326	208448	3	1
Home Business Online	21384	28854	5	4
UK Business Forum	154449	1947194	5	1

Table 5-2: Profile of the B2B OBCs on LinkedIn

Community Name	Total Members	AV Monthly Posts	Community Age	Responses Collected
Irelands Small Business Community	2812	102	3	17
Dubai Business Network	61,966	4600	5	31
East Africa Business Communities	11655	6300	5	20
Croatian Business Forum	3390	277	5	3
Africa Business Communities	13,292	1650	3	23
Business and Professional Network	7,020	146	3	25
Small Business Online Community	21,816	4300	5	27
Small Businesses Forum	7,502	167	3	14
Business Support Network UK	9,294	600	3	19
SME Business Professionals (UK)	1,039	45	3	9
The UK Small Business Network	1,586	30	3	7
UK Business Growers Club	1200	10	2	1
Business Knowledge Share	6,914	50	3	21
Global Business & Commerce Network	7,303	1300	5	9
Enterprise Europe Network	2,107	50	5	17
New Zealand Business and Professional Network	22,536	500	5	18
Germany Business and Professional Network	12,293	150	5	7
France Business and Professional Network	2,938	50	5	6
EU Business and Professional Network	2,996	30	5	7
Australia Business and Professional Network	12,166	200	5	5
Small Biz Nation	17,688	55	3	4
Small Business Network	26,746	4300	5	15
Start-Up Phase Forum	20,000	60	5	5
The Community For Entrepreneurs	321,192	1100	4	42
Turkish Business Network	104,174	800	4	23
Business Owners Idea Cafe	2,327	15	3	3
Business Link	9,948	110	4	22
Lebanon Business and Professional Network	3,247	12	4	5

Kuwait Business and Professional Network	8,421	170	4	9
Business Network: Poland and Central Europe	6,622	75	5	18
Bahrain Business and Professional Network	10,771	460	4	6
UA Emirates Business and Professional Network	10,018	100	4	17
Jordan Business and Professional Network	10,282	85	4	20
Oman Business and Professional Network	8,651	360	4	3
Abu Dhabi Business Network	13,038	170	3	9
Business Network International	24,939	500	5	6
Business Consulting Buzz Group	3,504	40	3	10
Business Link Networking Groups	3,748	160	3	7
International Business	45,173	3850	5	9
Saudi Arabia Business and Professional Network	41,600	2600	4	2

5.4 Identical Sample Distribution

Referring back to Chapter 4 Section 4.5.7, it should be noted that the data were collected from two sample groups on two different occasions. This highlighted the need for an extra analysis in order to eliminate any bias effects. Therefore the two sample groups needed to be compared to find out if they could be combined without generating any biased results. The most commonly used test for this purpose is known as ‘Independent T-Test’ or ‘Levene's Test’ which is based on the assumption of equal variances and can be easily implemented through SPSS (Field, 2000). For the purpose of the test, the participants’ demographic variables and business characteristics were selected to be included in the test. Table 5-3 illustrates the results of the T-Test which shows that the two samples groups were different. This is because the mean for the respondent’s age, business age, business type, and position were significantly different across both groups. In other words, this would mean the participants from the B2B OBCs on the Internet (first group) were different from the people of B2B OBCs on LinkedIn (second group). Subsequently, it was concluded that the data collected from the first group needed to be excluded from the data set. Thus, a total of 521 useable responses were remained in the final data set.

Table 5-3: T-Test for Comparing the Participants of the Two Sample Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Position	Equal variances assumed	8.09	.005	.90	552.00	.367	.22	.25	-.26	.71
	Equal variances not assumed			.76	35.93	.455	.22	.30	-.38	.82
Business Type	Equal variances assumed	6.35	.012	-1.92	555.00	.055	-.53	.28	-1.08	.01
	Equal variances not assumed			-1.68	38.64	.101	-.53	.32	-1.17	.11
Business Age	Equal variances assumed	.28	.600	.99	555.00	.321	3.35	3.37	-3.27	9.97
	Equal variances not assumed			1.01	40.23	.317	3.35	3.30	-3.33	10.03
Gender	Equal variances assumed	3.22	.074	.80	555.00	.425	.06	.08	-.09	.21
	Equal variances not assumed			.85	40.75	.402	.06	.07	-.09	.21
Age Group	Equal variances assumed	9.12	.003	2.81	555.00	.005	.68	.24	.20	1.15
	Equal variances not assumed			2.13	37.59	.040	.68	.32	.03	1.32
Education	Equal variances assumed	5.08	.025	4.73	555.00	.000	.98	.21	.57	1.38
	Equal variances not assumed			3.78	37.95	.001	.98	.26	.45	1.50

5.5 Respondents Demographic Profile

Table 5-4 illustrates the demographic variables of the participants for gender, age, and education. It can be seen from Table 5-4 there was a low response from female members (28%) compared to male members (72%). Moreover, the majority of the respondents belonged to the age groups 31-40 (28%) and 41-50 (25%). This was followed by the age group 51-60 with almost 20% and the age group 26-30 with just under 12%. The fifth highest age group was 61+ with 9%, followed by 6% for the age

group 22-25 and just under 1% for the age group 18-21. This indicates that the vast majority of the respondents were middle-aged people. Finally, the majority of the respondents had a Bachelor degree qualification (40.9%). About 38% had Master Degree and almost 5% had a PhD. Thus, just over 11% had school qualifications such as A Levels or GCSEs. In addition to the secondary and tertiary ones, about 6% of the participants indicated that they had other qualifications (e.g. professionals).

Table 5-4: Demographic Variables of the Respondents

Gender	Frequency	Percentage %
Male	373	71.6
Female	148	28.4
Age Group	Frequency	Percentage %
18-21	4	0.8
22-25	31	6.0
26-30	61	11.7
31-40	148	28.4
41-50	128	24.6
51-60	102	19.6
61+	47	9.0
Education Background	Frequency	Percentage %
School Certificate or equivalent	22	4.2
GCSE/ O Levels or equivalent	8	1.5
AS/A Levels or equivalent	29	5.7
Bachelor Degree or equivalent	213	40.9
Master Degree or equivalent	196	37.6
PhD or equivalent	24	4.6
Others	29	5.7

5.6 Respondents' Business Characteristics Profile

The business characteristics profile of the respondents is shown in Table 5-5. It can be seen from the table that over half of the respondents were from Business Services (57%), followed by Manufacturing with the second highest (10%). The rest of the respondents were from Financial Services (7%), Retail (5%), Research & Development (7%), and other Industry Types (13%). The majority of the participants were business owners/CEO (30%), followed by senior staff with 23%, and managers with 21%. About 16% of them were directors and only 10% were normal staff. With regards to business size, it can be seen that a large number of the respondents were from micro businesses with nearly 58%, followed by small business with just over 16%. About 10% of them were from medium sized businesses and just fewer than 16% were from large companies.

Table 5-5: Respondents' Business Characteristics Profile

Industry type	Frequency	Percentage %
Manufacturing	53	10.2
Business Services	298	57.2
Financial Services	35	6.7
Retail	27	5.2
Research & Development	36	6.9
Others	72	13.8
Position	Frequency	Percentage %
Staff	53	10.2
Senior Staff	118	22.6
Manager	108	20.7
Director	85	16.3
CEO	157	30.1
Company size	Frequency	Percentage %
1-10	304	58.3
11 - 50	84	16.1
51 - 250	50	9.6
251 - 1000	41	7.9
Over 1000	42	8.1

Section Two

5.7 Selecting a Data Analysis Method and Justification

In research the data analysis involves several stages starting from conducting basic statistics (e.g. Descriptive Statistics, Multivariate Normality Test, Outlier Test, Co-linearity and Linearity Test) to advanced statistics such as measurement model analysis (CFA or EFA) and Model analysis (hypothesis testing). There are numerous techniques available to perform model analysis. However, selecting a technique requires a careful consideration as each method has its own advantages and disadvantages. Data analysis approaches can be divided in-to two main categories: first generation (e.g. simple linear regressions, multiple regression, ANOVA, and MANOVA) and second generation (e.g. SEM). Review of the literature indicates that the second generation approaches have many advantages over the first generation approaches. For the past two decades second generation techniques have gained popularity among IS researchers. For example, a study by Gerow et al. (2010) shows that just over 70% of articles from early 1990 to 2008 published in the IS leading journals including Management Information Systems Quarterly, Information Systems Research, and Journal of Management Information Systems utilised a second generation approach. This is because the researcher can achieve better results using second generation approaches compared to using first generation approaches (Gerow et al., 2010). One of the major drawbacks of first generation approaches is that the researcher can only test one layer of relationships between independent variables (IVs) and a dependent variable (DV) in a single analysis (Hair et al., 2010). This signifies that first generation approaches can limit the ability of researchers to perform more than one layer of relationships between IVs and DVs at a time. And therefore, researchers are unable to test a model with more than one DV in a single analysis. However, this can be easily achieved through a second generation approach like SEM. Therefore, this has been seen as a major advantage of the second generation approaches over the first generation approaches (Hair et al., 2010).

Moreover, using a second generation approach allows a researcher simultaneously to check for mediating factors whilst testing the relationships between IVs and DVs (Hair et al., 2010). However, this cannot be achieved using first generation approaches. In addition, having the ability to estimate direct and indirect effects during model estimation can be seen as another advantage of the second generation techniques over the first generation methods (Hair et al., 2010). Furthermore, other advantages of second generation techniques include estimating the error variance parameters (Hair et al., 2010). First generation techniques ignore measurement error, and therefore using first generation methods can lead to inaccurate results, in the case when measurement error occurs. Nevertheless, this problem can be solved by employing a second generation approach like SEM. In addition, through a second generation technique researchers can assess both the measurement model and the structural model in a single test (Hair et al., 2010). This allows researchers to conduct the analysis in fewer steps compared to first generation techniques. Table 5-6 summarises the advantages of second generation approaches over first generation approaches.

Table 5-6: Second Generation Approaches Vs. First Generation Approaches

Features	1 st Generation	2 nd Generation
Testing more than one layer of relationship in a single analysis	No	Yes
Suitable for models with more than one dependent variable	No	Yes
Allow for testing direct and indirect effects in a single analysis	No	Yes
Allow a variable to work as both IV and DV in a single model	No	Yes
Suitable for both recursive model and non-recursive model	No	Yes
Estimate the error variance parameters	No	Yes
Testing the measurement model and the structural model in a single analysis	No	Yes

The above evaluation indicates that a second generation approach is seen as the more rational choice for this study, since the proposed framework includes several DVs and this requires conducting a series of regression analyses in a single test.

Accordingly, SEM was chosen as the data analysis approach. Several techniques and programs such as LISERL, AMOS, EQS and PLS-Graph are used to perform SEM (Hair et al., 2010). Based on statistical algorithms these are also divided into two categories such as covariance-based SEM approach (e.g. LISERL and AMOS) and partial-least-squares-based SEM approach (e.g. EQS and PLS-Graph) (Hair et al., 2010, Gerow et al., 2010). Covariance-based can be used in research aiming to develop and test theory as it enables researchers to find the overall model fit through examining the generated set of fit indices (e.g. Chi-square (X^2), Normed (X/df^2), and Standardised Root Mean Square (SRMR)). This way a researcher can determine the best fitted model to the collected data in comparison to the proposed model. Whereas, PLS is more suitable in exploratory studies because it tests model fit through examining the paths and square roots (R^2) (Petter et al., 2007). Taking into consideration the primary aim of this study (model development) and the confirmatory (theory testing) nature of this study, then SEM is again a rational choice. Further, IS scholars have suggested that the degree of knowledge and time are the two important factors that researchers should consider in reaching a better decision when selecting an analysis technique (Gerow et al., 2010). Considering these two factors, it was decided to use AMOS as the main data analysis technique.

5.8 SEM

In the earlier section SEM was selected to analysis the data in this study. This is because it is the most widely used data analysis technique which provides many advantages over other analysis techniques. One characteristic of SEM is that it enables researchers to estimate the measurement model and the structural model (causal relationships) simultaneously; this known as a ‘one step approach’ (Hair et al., 2010). However researchers have advised using a two-step approach (Hair et al., 2010), where the first step involves testing the constructs’ reliability and validity and the second step focuses on testing the theoretical framework or the structural model. Conducting SEM requires several considerations and these are discussed in the

subsequent sections. For the purpose of this study, SPSS version 21 was used to conduct the preliminary analysis and AMOS version 19 was used to conduct the SEM analysis.

5.9 SEM Model Strategy

SEM model strategy is one of the most important concepts that researchers must learn when utilising a SEM approach (Hair et al., 2010). According to Hair et al. (2010) there are three modelling strategies that enable researchers to achieve their research objectives. The first strategy is called Confirmatory Modelling Strategy. It is utilised when a researcher proposes a single model consisting of several causal relationships based on theories, collects data, and then applies a SEM technique to examine how well the model fits the collected data. However, under this strategy no modification will be made to the model, and therefore the results either reject or accept the model. The second modelling strategy is known as Competing Modelling Strategy, which enables researchers to compare the estimated model with alternative models through over all model comparisons. Subsequently, the researcher selects a model that best represents the data. The third strategy, Model Development Strategy, differs from the other two strategies, because it enables researchers to confirm and modify both the measurement and the structural model. However, vigilant contemplation is needed when employing this strategy as any major model re-specification should be based on a sound theoretical background (Hair et al., 2010).

Different modelling strategies can be applied to different situations depending upon the research objectives. Model development is a primary objective of this study, so one would accept that the third model strategy (Model Development Strategy) is a suitable choice for this study. This allows for model modification; so in the case of initial model rejection, in this way a stronger model can be developed.

5.10 Assumption of SEM

SEM like any other multivariate techniques requires several pre-data examinations to ensure accurate and unbiased results are achieved. These include evaluating and treating missing data, testing for data normality, checking for linearity, and co-linearity, checking for outliers, and checking for adequacy of the sample size. The following sub-sections discuss the processes undertaken for these pre-data examinations.

5.10.1 Missing Data

SEM automatically assumes the data is complete and free from missing values (Hair et al., 2010). Missing data occurs in most social science studies for various reasons including respondents' unwillingness to answer certain types of questions or accidentally missing some questions (Allison, 2002, Acock, 2005, Graham, 2009). Lack of time also could be seen as another cause for having missing values as some respondents may choose to leave the questionnaire uncompleted. Mishandling missing data can lead to biased results and this will have a significant impact on the generalization of the research outcomes (Hair et al., 2010, Graham, 2009, Pallant, 2005). Consequently, experts call upon researchers to handle their missing data cautiously, particularly when using SEM techniques (Hair et al., 2010). Various methods have been introduced for identifying and dealing with missing data. Although the importance of missing data and its impacts on research outcomes is well known in the literature, examination of the literature revealed that OC scholars pay very little attention to the phenomenon. Surprisingly, a swift examination of the reviewed articles on OC participation in Chapter revealed that only a few researchers rigorously dealt with their missing data. Numerous articles were found with no mention of the practice. A few articles utilised the case deletion technique, yet they failed to provide a reasonable justification for this chosen approach. Thus, one may argue that the validity of some study results could be questioned.

To ensure the integrity and consistency of the collected data, vigilant consideration was given to the missing data by following the three step guidelines introduced by Hair et al. (2010). These steps are reporting the amount of missing data, identifying the missing data types, and selecting a suitable data treatment method. Commensurate with these steps, it was discovered that the missing values in the data set were just above 10% and this was within the accepted range as suggested by the majority of scholars (Graham, 2009, Schafer and Graham, 2002, Bennett, 2001). This allowed for proceeding to the next steps, which is identifying the missing data types as well as selecting a data treatment method.

5.10.1.1 Missing Data Type

There are three main missing data types such as Missing Completely at Random (MCAR), Missing at Random (MAR), and Not Missing at Random (NMAR). In MCAR, there are no patterns for the missing data since it is not related to any variables. Acock (2005) posited that, in MCAR the data set is like a large matrix and the missing values are randomly distributed throughout the matrix. With regards to MAR, the data is missing at random, yet the missing data points relate to other variables in the data set unlike MCAR (Allison, 2002, Graham, 2009, Schafer and Graham, 2002). Thus the missing values occur as a result of some specific questions. For instance, participants refusing to give their answer to questions related to their beliefs about their B2B OBCs can create MAR. In the third type NMAR the data is missing systematically, and therefore there are not patterns for the missing values in the data set (Hair et al., 2010, Allison, 2002, Graham, 2009, Schafer and Graham, 2002). This distinguishes NMAR from MAR. The missing value of a variable may be related to the way the respondent responded to that variable. In another word, NMAR related to how a participant responds to a question. For example, if a participant responds too high/low for a question then he or she may skip that question. Although, NMAR is not ignorable, researchers have reported that it is difficult to determine

NMAR as it would be hard to evaluate the association between the amusingness and how the participant would have responded (Hair et al., 2010, Graham, 2009).

A test was carried out in order to determine the missing data type and the results indicated that it was MCAR. Figure 5-1 depicts a visual presentation of the missing data points in the data set. As shown from the figure the data was MCAR, there was not a particular pattern and the missing values were randomly spread around the database. Further, Little’s MCAR test in SPSS also confirmed the missing data pattern was MCAR (Little's MCAR test: Chi-Square = 1263.377, DF = 1491, Sig. = 1.000) (See Appendix K).

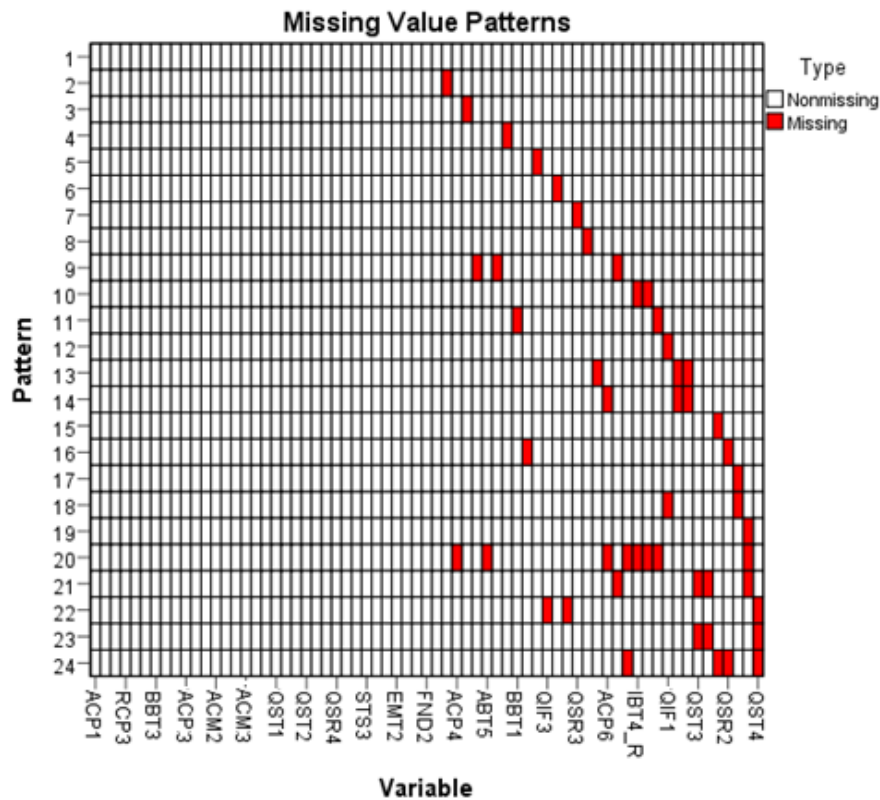


Figure 5-1: Missing Data Test (A Visual Examination)

5.10.1.2 Data Treatment Methods

Once the missing data type has been determined, the next stage involved selecting a suitable data treatment method that could have less impact on the results of the SEM analysis. Several methods have been identified for treating missing data. One of the earliest and the most commonly used technique is Listwise which is often known as ‘Case Deletion’ or ‘Complete Case Analysis’ (Hair et al., 2010, Graham, 2009, Schafer and Graham, 2002, Bennett, 2001). This method gained its popularity among researchers in the past because it is easy to use and it is automatically set to default in most statistical tools like SPSS. Nevertheless, it lost its popularity as researchers have discovered that several drawbacks are associated with the technique. Data reduction is one of the major disadvantages of this method (Hair et al., 2010). A large amount of data can be lost as a result of utilising this approach. Ultimately the sample size could be reduced and this can impact the statistical power and the generalizability of the study (Hair et al., 2010, Tabachnick and Fidell, 2007). The findings from several studies indicate that Listwise can result in losing data by up to 50% (Bennett, 2001, Acock, 2005, Raaijmakers, 1999). This could lead to having biased results and any effect will be amplified in multivariate analysis, and therefore the outcome of the study could be incorrect (Acock, 2005, Bennett, 2001). For that reason, scholars have strongly advised against using the method (Hair et al., 2010, Acock, 2005, Bennett, 2001, Tabachnick and Fidell, 2007).

Pairwise Deletion is another traditional method that was introduced as a substitute for Listwise technique to overcome the sample size issue. This method often known as ‘Available Case Analysis’ since it uses all available variables (Acock, 2005, Tabachnick and Fidell, 2007, Nakai and Ke, 2011). In SEM, the covariance two variables based on the participants’ answer for those two variables regardless of their answer to other variables (Acock, 2005). This way the correlation matrix will be based on different set of participants, and therefore the results can still be biased (Acock, 2005, Graham, 2009). Other drawbacks include the difficulty of calculating the degrees of freedom because the sample size varies for different parts of the model.

Consequently, researchers have strongly advised against using this method in SEM analysis (Acock, 2005).

Another very commonly used data treatment method is known as Single Imputation (SI). The technique entails replacing the missing data point either with the last submitted value from the same case or with the mean of the missing variable in that data set, in which case it is called Mean Substitution (Bennett, 2001, Acock, 2005, Graham, 2009, Hair et al., 2010). Although SI does not result in the loss of data, yet it can still yield biased results and it can be problematic with a data set with a large amount of missing values (Acock, 2005). Another major drawback of this method is the automatic recognition of the data as MCAR and this leads to yielding incorrect results in the case of MAR or NMAR. In addition, SI tends to underestimate the standard errors and overestimate the standard precision, and thus it produces a poor estimate of variances and covariance (Acock, 2005). Similar to Listwise and Pairwise techniques, expert again advised against using this method (Acock, 2005).

Nevertheless, new data treatment methods such as Expectation Maximizations (EM) and Multiple Imputation (MI) have been introduced to overcome the bias issue associated with the traditional methods (Hair et al., 2010, Graham, 2009, Schafer and Graham, 2002, Tabachnick and Fidell, 2007). EM is a maximum likelihood technique and the most commonly used method. It is done through an iteration process as it first estimates new parameters for the missing variable then uses these parameters to determine the most likely value for the missing data. EM is seen as a popular method as it can be easily conducted using SPSS (Hair et al., 2010, Tabachnick and Fidell, 2007). It also enables researchers to avoid losing data while yielding less biased results (Nakai and Ke, 2011). MI is also seen as a popular method which helps researchers overcome the data loss issue and biased results problem (Hair et al., 2010, Tabachnick and Fidell, 2007). The MI technique replaces a missing data point with two or more possible estimated values. It also provides standard errors of estimated parameters, this way the results are less biased than data been treated using a traditional method (e.g. Listwise and Pairwise) (Acock, 2005). However, MI is seen

as a complex technique compared to EM and other data treatment methods (Hair et al., 2010). This is because it requires additional software to carry out the imputation process and researcher's input also is needed during the analysis (Nakai and Ke, 2011). Table 5-7 shows an evaluation of the above data treatment methods.

Table 5-7: An Evaluation of the Data Treatment Methods

	Method	Maintain Statistical Power	Unbiased Results	Easy to Use	Not Additional Software Required	Recommended by Researchers
Traditional Techniques	Listwise	X	X	✓	✓	X
	Pairwise	X	X	✓	✓	X
	SI	X	X	✓	✓	X
Contemporary Techniques	EM	✓	✓	✓	✓	✓
	MI	✓	✓	X	X	✓

5.10.1.3 Selecting a Data Treatment Method and Justification

In Section 5.10.1 it was found that just over 10% of the records had missing values and this was within the accepted range (5% to 30%) as per advice from experts and researchers (Graham, 2009, Schafer and Graham, 2002, Bennett, 2001). Further, the visual examination and Little's MCAR test confirmed that the data was MCAR. Therefore, it was found that the majority of the discussed data treatment methods can be utilised to treat the missing values. However, the discussions in Section 5.10.1.2 revealed that most of these methods can result in producing biased results and loss of statistical power. For example, Listwise was seen as a reasonable choice, but it would

have resulted in the loss of 10% of the data. However, one could argue the sample size could still have remained relatively large. Yet the method was still discarded so to avoid any bias and impact on the generalisability of the study. Pairwise and SI were also eliminated from the choices as it was discovered that both techniques could have resulted in achieving biased results (Brown, 1994, Byrne, 2001). Subsequently, EM and MI were the only two remaining options that would have resulted in obtaining less biased results (Hair et al., 2010, Tabachnick and Fidell, 2007). However, EM was selected over MI, since it is easier to use and less complex compared to MI. EM unlike MI can be easily implemented using SPSS without the need for any additional software or the need for researcher inputs. Further, it was found that both methods can yield similar results. Collins et al. (2001) reported that the two methods are conceptually and theoretically similar, but operationally different. They found that both approaches produce similar results, and therefore they concluded that neither approach was better than the other. Thus, EM was selected to treat the missing data and then applied accordingly.

5.10.2 Multivariate Normality

Multivariate Normality is another crucial assumption of SEM, which refers to the shape of the data distribution for individual variables (Hair et al., 2010). Lack of data normality affects the outcomes of a study because it impacts the goodness fit indices and standard errors, which ultimately affect the overall results of the CFA and the structural model (Hair et al., 2010, Tabachnick and Fidell, 2007). There are various ways to conduct a multivariate normality test. One of the most widely used and most effective one is known as Skewness-Kurtosis Z score values. This is an easy process that can be carried out through using SPSS (Hair et al., 2010). Data with Skewness-Kurtosis Z score within the range of ± 1.96 is considered to be normal (Hair et al., 2010, Tabachnick and Fidell, 2007). Other researchers have suggested that a Z score within the range of ± 2.58 still can be considered normal (Tabachnick and Fidell, 2007). Accordingly, Skewness-Kurtosis Z score values was used to assess the normal

distribution of the data. As shown in Appendix L the test results confirmed that the Skewness-Kurtosis Z score values for all the variables were within the accepted range. Subsequently, it was concluded that the data meet the assumption of multivariate normality.

5.10.3 Linearity and Collinearity

Linearity and Collinearity are another two pre-data analysis tests that need to be investigated prior to conducting the SEM. Co-relational measures of relationship is the core in SEM, and correlations are represented only by linear relationships between variables (Hair et al., 2010, Tabachnick and Fidell, 2007). Non-linear relationships between IVs and DVs will have an effect on the strength of the relationships (Hair et al., 2010). Scatter plots are the most commonly used technique for determining linearity (Hair et al., 2010). Any non-linear patterns in the scatter plots indicate that the data violates the assumption of linearity. For the purpose of the linearity test a scatter plot was produced (See Appendix M). A visual examination of the scatter plot confirmed that there was no problem with linearity. Thus it was concluded that the data also met the assumption of linearity. Moreover, Collinearity impacts the correlation outcomes in a similar way as to Linearity does, and it impacts the overall outcome of the study (Hair et al., 2010). Collinearity occurs when the independent variables are highly correlated with each other. Calculation of Variance Inflation Factor (VIF) values is the most commonly used method to determine Collinearity. Calculating VIF can be easily conducted using SPSS. Issues with Collinearity exist when the VIF value is more than 10 (Hair et al., 2010). Appendix N shows the Collinearity test results. As shown in the tables all the VIF values were less than the threshold, and therefore there was no problem with Collinearity.

5.10.4 Outliers

Identification and treatment of outliers are other essential stages of the pre-data analysis process. Outliers are defined as extreme data points that are distinctly

different from other responses in the data set (Kline, 2005). Social Science and IS researchers have emphasized the impact of outliers on results of studies, particularly in studies with small sample size (Yu et al., 2002, Cousineau and Chartier, 2010, Hair et al., 2010). It is believed that outliers can have a direct impact on the CFA results (Hair et al., 2010). This is because they can increase or decrease the Cronbach's alpha value, and this way they affect the overall reliability and validity of the measurement model (Liu et al., 2010). Accordingly, careful consideration was given to the outliers. The following sub-sections provide full details on detecting and dealing outlier cases.

5.10.4.1 Detecting Outliers

Several methods exist for detecting outliers. These include Box-Plot, Scatter-Plot, and Standard-Deviation (Yu et al., 2002, Hodge and Austin, 2004, Shaari et al., 2009, Ben-Gal, 2005, Hair et al., 2010, Cousineau and Chartier, 2010). However, outlier detection through standard deviation has been recognized as the most effective and widely used method (Hair et al., 2010, Pallant, 2005, Field, 2000). This method calculates the standard deviation value around the mean for each variable. It has been suggested that observations with standardized values exceeding ± 2.5 can be classed as outliers (Hair et al., 2010). However, some researchers have argued that standardized values below ± 3 are still tolerable (Pallant, 2005, Field, 2000). Utilising the three standard deviation rules, it was found that 39 cases had outliers on at least one of the indicators (See Table 5-8).

Table 5-8: Outlier Data Points with More Than 3 Standard Deviations

	Frequency	Percent
Outlier Cases	39	7.5%
Not Outlier Cases	482	92.5%
Total	521	100%

5.10.4.2 Dealing with Outliers

Once outliers are identified, they then need to be dealt with carefully to minimise any effect on the study outcome. A wide range of techniques has been introduced to treat outlier cases. These include deleting outlier cases from analysis and applying data remedies such as square root, and cube (Hair et al., 2010). Although, some researchers have suggested removing outlier cases from the analysis, the vast majority of scholars have argued that outliers should always be retained to ensure the generalisability to the entire population (Hair et al., 2010, Tabachnick and Fidell, 2007). Particularly, outliers often can be used in analysis without making serious distortions to the analysis results (Hair et al., 2010). It has been suggested that it is necessary to measure the effects of outliers on construct reliability and validity, before deciding on deleting or retaining outliers (Pallant, 2005). This can be achieved by running the analysis with outlier and without outlier, then comparing the results. Alternative methods for revealing outliers' effects on study results can be achieved through comparing the means of the outlier cases with the normal cases. The outlier cases can be retained in the case of no means differences between the two groups (Pallant, 2005). This is because no mean differences would imply little variation across the two groups, which also signify little impact on the CFA results. On the other hand, outlier cases should be removed or remedies should be applied in the case of means differences between the two groups (Pallant, 2005). Accordingly, a compare means test was conducted to reveal the outliers impacts on the results of the study. It was found that they had very little impact as there were no significant differences between the means for outlier cases and non-outlier cases (See Appendix O). This was further confirmed by conducting the reliability and validity tests with and without the outliers, in which again no significant impacts were detected. Thus it was concluded that the outliers could be retained and they were used in the subsequent analysis.

5.10.5 Adequate Sample Size

Sample size is another crucial issue which require careful consideration when conducting SEM (Hair et al., 2010). Researchers lack an agreement on a suitable and adequate sample size (Hair et al., 2010, Kline, 2005). It has been suggested that 150 to 200 responses is an adequate sample size (Kline, 2005), while other researchers have argued sample size below 300 is considered small (Blaikie, 2003). Some researchers have suggested using between 250 and 500 responses (Schumacker and Lomax, 2010). Differently, Hair et al. (2010) have suggested using a minimum of 5 responses per independent variable. Commensurate with researchers' advice, it was found that the sample size was adequate as a total 521 useable questionnaires were collected.

5.11 The SEM Process

In the preceding sections some of the necessary considerations and assumptions of SEM were discussed. The subsequent sections focus on the rest of the SEM processes and stages involved with the data analysis. Conducting a SEM test is not an easy and straight-forward process. The data analysis in SEM is widely carried out in two main steps and this often called 'two-step-approach' (Hair et al., 2010). The first step involves constructing and assessing the measurement model which is often known as CFA, where the validity and reliability of the constructs are evaluated. The second step is the structural model evaluation stage, where the causal relationships (hypotheses) are tested through examining the paths estimates and directions between the constructs. Although, a one-step-approach is also achievable, yet researchers have advised using the two-step-approach (Hair et al., 2010). This is because in a one-step-approach both the measurement model and the structural model are evaluated simultaneously and therefore bad measurement can result in inaccurate results. Besides, a two-step-approach also helps increase the interpretability of both the measurement model and the structural model. Accordingly, a two-step-approach was employed for this study purpose.

Hair et al. (2010, p.636) identified six main stages for conducting SEM analysis which have been followed during this study. As shown in Figure 5-2 stage one to stage three involved defining the individual constructs, defining the overall measurement model, and designing a study to collect data. Most of these stages have already been employed in Chapters 3 and 4. Stage four involved testing the measurement model. The final two stages (five and six) focused on specifying and testing the structural model. Works carried out in each of these stages are further discussed in the following subsequent sections.

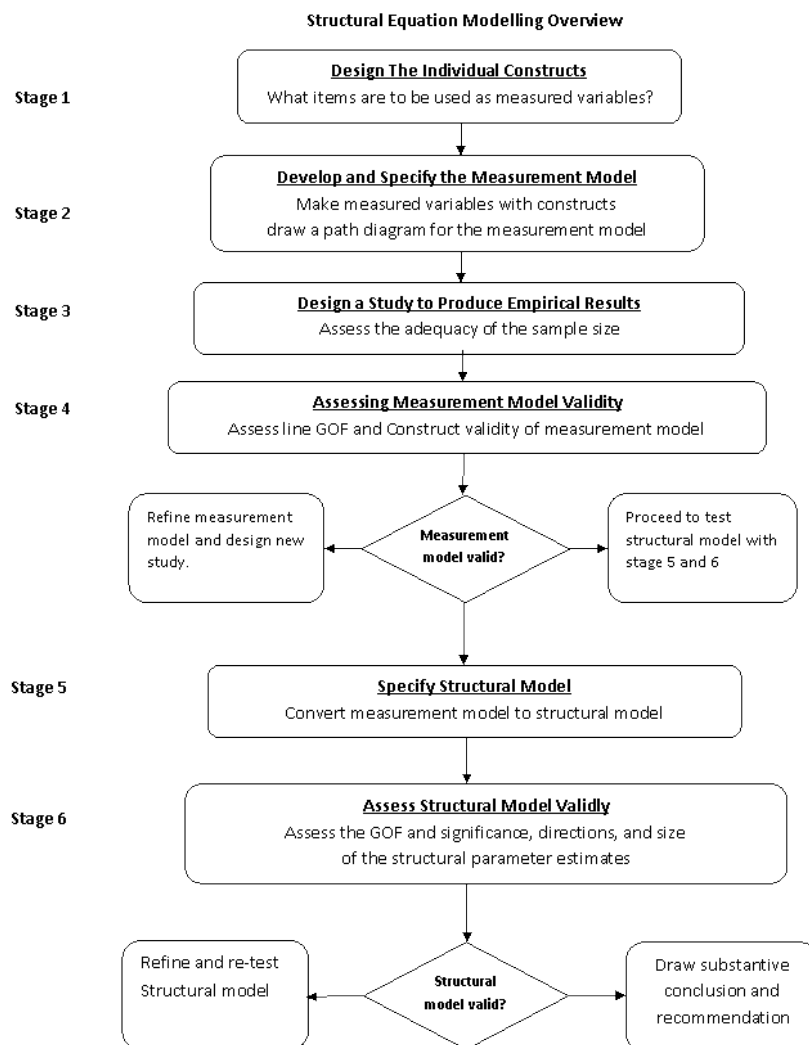


Figure 5-2: Six Stages of the SEM Analysis (Hair et al., 2010, p.636)

5.12 Specifying Measurement Model (Stage 1 and 2)

Prior to specifying the measurement model, several considerations such as construct identifications, types of measures, and level of measures require a careful attention (Hair et al., 2010). Accordingly, these are discussed in the following sections.

5.12.1 Construct Identification

With regards to construct identification there are various rules applied such as one-indicator¹, two-indicator² and three-indicator³ rules (Hair et al., 2010). Researchers have advised against using one-indicator and two-indicator rules as they result in construct identification problems. These issues include producing large standard errors, the program failing to yield solutions, and item cross loading (Sethi and King, 1991, Hair et al., 2010). For example, under the one-indicator rule, in the case of item cross-loading, an entire construct could be dropped out from the model and this will have a dramatic impact on the causal model. However, the three-indicator rule solves most of these problems (Hair et al., 2010). Therefore researchers have shown significant massive support for the three-indicator rule. Subsequently, it was applied to this study, and this way constructs inside the model were measured by at least three indicators to avoid construct identification problems.

5.12.2 Types of Measures (Reflective VS Formative)

Prior scholars have emphasised the importance of the types of measures used in IS research (Hair et al., 2010, Diamantopoulos and Sigauw, 2006, Jarvis et al., 2003, Cenfetelli and Bassellier, 2009). Reflective and Formative measures are the two types of measurements identified in the literature (Hair et al., 2010). Under a reflective measurement theory, constructs cause the measured variables and there are error

¹ One-indicator rule: use at least one item (indicator) to measure a construct

² Two-indicator rule: use at least two items (indicators) to measure a construct

³ Three-indicator rule: use at least three items (indicators) to measure a construct

(Hair et al., 2010)

results (error terms) which demonstrate the inability of the construct to fully explain the measured variables (Hair et al., 2010, p.735). In the CFA diagram, these are indicated by arrows pointing to the indicators from the constructs. The theory assumes that all items that belong to a construct are highly correlated with each other. In contrast, a formative measurement theory assumes that the measured variables cause the construct. In the CFA diagram this has been illustrated by arrows leaving from the measured variables to the construct. Unlike reflective measures, high correlation between all items under a construct is not a necessity in formative measures. Additionally, there are no error terms in formative measures, therefore they can also be used to distinguish between the two measurement types. Figure 5-3 illustrates the differences between both types of measures. After a careful examination of the measurement model and commensurate with the guidelines provided by Hair et al. (2010, p.737), it was concluded that only reflective measures were needed. Reaching this decision was not so difficult, since the majority of measures were adapted from prior studies that were already identified as reflective measures.

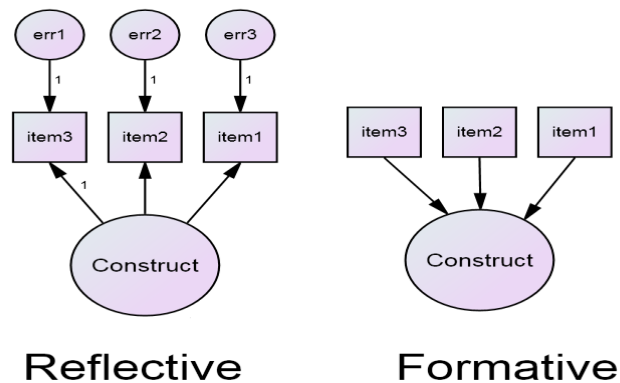


Figure 5-3: Reflective Measurement vs. Formative Measurement

5.12.3 Second Order Factor

Having the ability to use higher order (second order) factors is another great advantage of SEM. In most CFA models the co-variances between the measured items are illustrated with a single latent factor layer and this is known as a first-order factor model (Chen et al., 2005, Hair et al., 2010, p.739). However, using a first-order factor is not suitable for every type of construct, particularly with multi-dimensional constructs that are difficult to explain with just several indicators. Hence, deploying a second order factor is seen as a solution. For that reason second order factors are used increasingly among researchers from various disciplines ranging from Psychology to IS (Chen et al., 2005). Following the guidelines by Hair et al. (2010, p.743), it was found necessary to utilise a second-order factor for one construct, Trusting Beliefs. This is because the construct was multi-dimensional and had three dimensions: ability based trust, integrity based trust and benevolence based trust. These three sub-constructs were each further measured by several indicators.

5.12.4 The Measurement Model

Following the considerations in the preceding sections, the measurement model was specified (See Figure 5-4). The model consisted of thirteen main reflective constructs and a second-order factor. As is illustrated in the diagram, a three-indicator rule was employed to ensure at least three variables (items) per construct to avoid model identification problems. Active participation (ACP) and Reciprocity (RCP) constructs were measured by six and three items respectively. The three sub-constructs of trust - Ability Based Trust (ABT), Integrity Based Trust (IBT), and Benevolence Based Trust (BBT) - were measured by five, four, and four items respectively. These formed a second-order factor, Trusting Beliefs (TRB). Affective Commitment (ACM) was measured by five indicators. The three constructs under ISSM such as Information Quality (IFQ), System Quality (STQ), and Service Quality (SRQ) were measured by five, six, and five items respectively. Finally all the three

constructs identified under U&G - Functional Need (FND), Psychological Need (PND), and Hedonic Need (HND) - were measured by four items each.

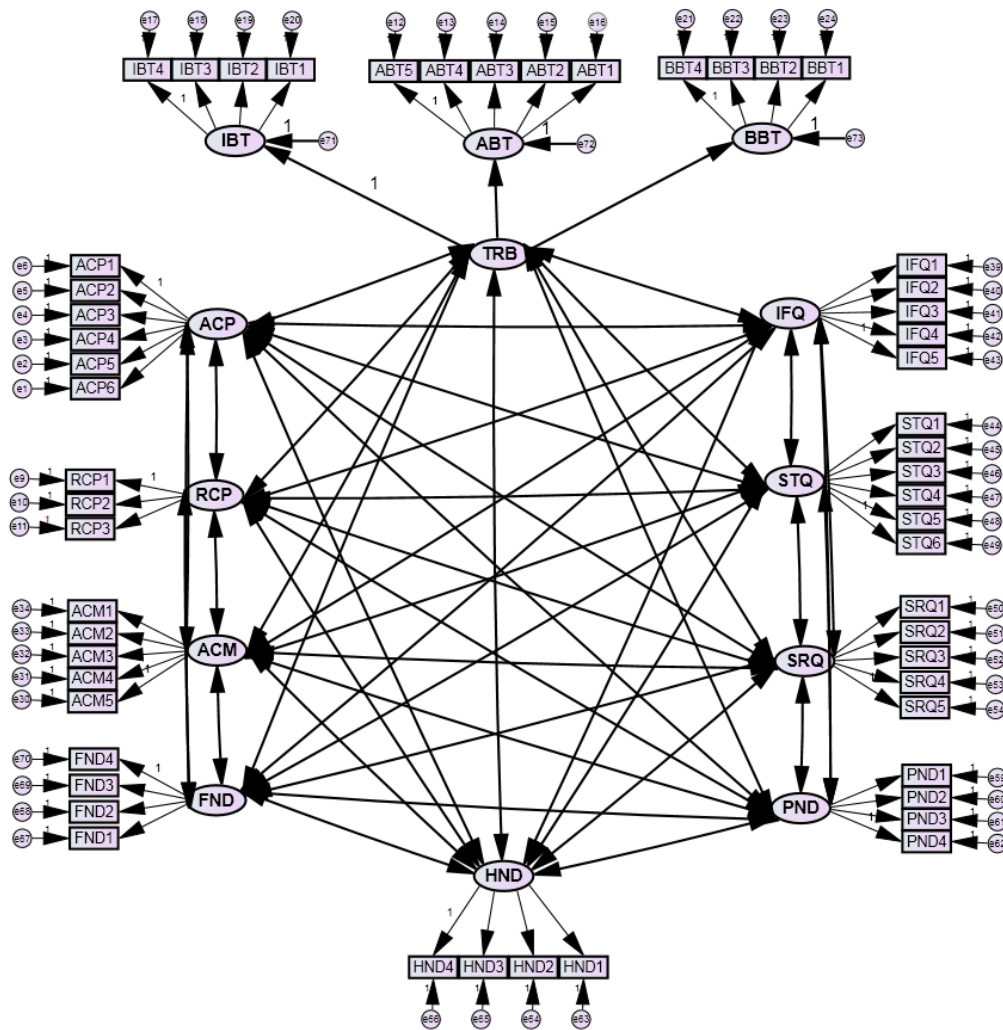


Figure 5-4: The Specified Measurement Model

5.13 Design a Study to Produce Empirical Results (Stage 3)

Once the measurement model was specified, the next stage was to design a study to collect data. This entails selecting a target group to collect data through an appropriate methodological approach. This is to test both the measurement model and the structural model in later stages. Referring back to Chapter 4, note this stage was already implemented. The next stage in the SEM process was testing the measurement model.

5.14 Assess the Measurement Model (Stage 4)

This stage is one of the most vital stages in the SEM process. This is also known as Factor Analysis or Confirmatory Factor Analysis (CFA) stage, because at this point the reliability and validity of the constructs are examined to ensure all items included in the model are reliable and accurately measuring the supposed constructs. In SEM the measurement model is validated through carrying out a goodness fit test. This test shows how the measurement model fits the collected data. However, prior to conducting this test, several procedures require vigilant contemplation. These include choosing a model evaluation method and selecting fit indices to determine the overall model fit. Accordingly, these are further discussed in the following sequent sections.

5.14.1 Goodness Fit Test

With regards to model evaluation method, several techniques such as Maximum Likelihood Estimation (MLE), Asymptotically Distribution Free (ADF), Generalised Least Square (GLS), and Weighted Least Square (WLS) have been identified (Hair et al., 2010). However, MLE was selected for this study because it is the most commonly used one amongst researchers and it provides more valid and reliable results compared to other model evaluation methods (Hair et al., 2010).

The CFA outputs include several fit indices that are used to assess the overall model fit. Selecting a fit index or a set of fit indices is the most crucial process of the

goodness fit test. The fit indices are grouped into three categories (Hair et al., 2010, p.648-650). The first category, Absolute Fit Indices, measures how well the model fit the collected data. The second category, Incremental Fit Indices, assesses how well the model fits relatively to the collected data. The final category, Parsimony Fit Indices, helps in selecting a best model among the set of competing models. However, Parsimony Fit Indices is less commonly used in measurement model evaluation, because the second category, Incremental Fit Indices, provides similar information (Hair et al., 2010, p.651).

5.14.1.1 Absolute Fit Indices

Chi-square (X^2) is the most commonly used absolute fit index associated with degrees of freedom (df) and the probability value (p-value). A model is considered good fit when the p-value associated with X^2 is significant at the 95% confidence interval (Hair et al., 2010, p.648). However, researchers have advised against using X^2 due to sensitivity to sample size (Hair et al., 2010, p.648). **Normed Chi-square (X^2/df)** has been preferred because it represents a simple ratio of X^2 to the df which diffuses the effect of sample size (Hair et al., 2010, P 648). Under this fit index, a model is considered good fit where X^2/df is 3.0 or less (Hair et al., 2010, p.649).

Goodness-of-fit (GFI) is another absolute measure which overcomes the sample size problem. With GFI the sample size (N) is ignored and not included in the formula, and therefore it is less sensitive to the sample size. GFI values range from 0 to 1 where values greater than 0.90 indicate good fit (Hair et al., 2010). Nevertheless, one may suggest that, ignoring N is not advisable since it is one of the most vital mechanisms of SEM and it has direct impact on statistical power and generalisability of a study.

Root Mean Square Error of Approximation (RMSEA) is another widely used absolute fit index. It can compensate for the drawbacks associated with X^2 and GFI, because it is less sensitive to both sample size and model complexity (Hair et al., 2010). Unlike, GFI, it includes both the sample size and model complexity in its

formula ($RMSEA = \sqrt{[(\chi^2 - df) / (N - 1)] / df}$). It represents how well the model fits the population rather than the used sample (Hair et al., 2010). Although there is not a cut-off value for RMSEA, researchers have suggested that values between 0.03 and 0.08 indicate good model fit (Hair et al., 2010, p.649).

Root Mean Square (RMR) is the final absolute fit index which shows the average differences between the sample size and the estimated covariance matrix (Hair et al., 2010). However, it has problems related to the scale of the covariance. Alternatively **Standardised Root Mean Square (SRMR)** is used to overcome this issue. According to Hair et al. (2010, p.649), the lower the SMRS value the better model fit and typically values greater than 0.1 indicates problems with the model fit.

5.14.1.2 Incremental Fit Indices

The incremental fit indices include **Normed Fit Index (NFI)**, **Tucker Lewis Index (TLI)**, and **Comparative Fit Index (CFI)**. NFI represent the ratio difference in the X^2 of the fitted model and a null model divided by the X^2 value of the null model. NFI values range from 0 to 1 and values close to 1 indicate better model fit (Hair et al., 2010, p.650). Researchers have suggested that NFI values exceeding 0.90 represents good model fit (Tabachnick and Fidell, 2007, Byrne, 2001). However, one of the main drawbacks associated with NFI is that, its value is easily affected by model complexity, and therefore the more complex model the better the NFI value.

TLI is conceptually similar to NFI but statistically different (Hair et al., 2010). It represents a comparison between the specified model and the null model. TLI values can fall below 0 or over 1, and values close to 1 or greater represent a better model fit. CFI is the last incremental fit index which is better than NFI (Hair et al., 2010, p.650). Its values range from 0 to 1 and usually values equal to or greater than 0.90 represent good fit. CFI is more widely used compared to other incremental values because it is less sensitive to model complexity (Hair et al., 2010, p.650).

5.14.1.3 Selecting Fit Indices and Justification

Selecting a fit index or set of fit indices to examine the overall model fit requires a cautious evaluation. Particularly, in the preceding sections it was discovered that some of the fit indices have drawbacks such as sensitivity to sample size and sensitivity to model complexity. It was also found that there are not cut-off values for some of the reported fit indices (e.g. X^2/df , RMR, SRMR, NFI, TLI and CFI). For these reasons, it could then be then argued that using a single value to assess the overall model fit could be problematic.

Prior researchers have provided guidelines for determining model fit (Hooper et al., 2008, Bollen, 1990, MacCallum et al., 1996). These scholars have argued that it is less acceptable to use GFI due to its sensitivity to model complexity and sample size. For a similar reason several other researchers have also shown their dislike for using GFI (Fan and Sivo, 2007). On the other hand, some researchers have shown their preferences for other indices such as CFI, RMSEA, TLI, SRMR, and X^2/df , because they are found to be less sensitive to model complexity and sample size (Hair et al., 2010).

It has been suggested that to use more than one fit index when testing overall model fit (Hair et al., 2010). Experts have suggested using at least one fit index from the absolute category and one fit index from the incremental category (Hair et al., 2010). Kline (2005) posited using four fit indices and his preferences included RMSEA, X^2/df , CFI, and SRMR. Other researchers have agreed with Kline, but with a slightly better proposition as they suggested using two absolute fit indices and two incremental fit indices (Hair et al., 2010, p.653).

Following the above discussion, it became apparent that selecting at least four fit indices is a rational choice. Taking into account some of the drawbacks associated with some of the fit indices, it was decided to choose X^2/df , RMSEA, SRMR, CFI, and TLI to assess the overall model fit (Hair et al., 2010, Tabachnick and Fidell,

2007, Kline, 2005). Table 5-9 shows the recommended thresholds for the selected fit indices, and these are based on the guidelines provided by Hair et al. (2010, p.654)

Table 5-9: Recommended Thresholds for the Selected Fit Indices

Fit Indices		Recommended Thresholds
X^2/df	\leq	3.00
RMSEA	$<$	0.08
SRMR	$<$	0.10
CFI	\geq	0.90
TLI	\geq	0.90

5.14.1.4 Model Diagnoses

In addition to fit indices, the SEM outputs also provide additional diagnostic information that could help to examine problems related to the measurement model (Hair et al., 2010, p.688). These diagnostic cues include Standardised Residuals and Modification Indices, which can provide information on indicators causing poor model fit.

Standardised Residuals (SRs) are negative or positive outputs which represent the individual difference between observed covariance terms and the estimated covariance terms (Hair et al., 2010). These values are used to determine item pairs that are not predicted in the model. Typically a small SR value is an indication for a better model fit. There is lack of agreement among scholars on the accepted SR value. It has been suggested that SR values up to 2.5 are acceptable and values up to 4.0 still satisfactory (Hair et al., 2010). Large SR values associated with an indicator suggest problems with that indicator and that can have an impact on the overall model fit and construct validity results. Subsequently, dropping items associated with large SR values can improve overall model fit and help in achieving better construct validity figures (Hair et al., 2010).

Modification Indices (MIs) provide different information, but have much communality with SRs. They estimate every possible relationship that is not predicted in the model including relationships between the residuals and between the constructs (Hair et al., 2010). Problematic indicators can also be detected through MIs. Hence, MIs can be used as a tool for improving SEM models and dissolving issues associated with construct validity (Hair et al., 2010). Large MIs values between the residuals of two observed measures indicate both variables are theoretically similar. In another word, this implies that both variables are measuring the same construct. Often a co-vary technique is used to solve the problem and this is done by adding double-headed arrows between the residuals. This would result in achieving better fit indices which ultimately leads to model fit improvement. However, a co-varying mechanism is only acceptable between items from the same constructs (Hair et al., 2010). This is because a large MIs value between two items from two different constructs is the indication for existence of item cross-loading. Similarly, a large MIs value between two constructs designates the need for adding a new path into the model, which ultimately could also help improving the overall model fit.

However, dropping items or appending paths indicate changes to the measurement model and these needs to be carried out cautiously. Measurement model alterations are acceptable as long as they do not affect the integrity of the model (Hair et al., 2010). Large changes have to be made based on strong theoretical foundations (Hair et al., 2010). Model modification without strong theoretical basis would mean that the model needs to be re-tested on a new sample (Hair et al., 2010). For that reason, it has been suggested to avoid any modification to the model that is entirely based on empirical criteria (Hair et al., 2010). Meanwhile, it has also been suggested that minor modification is tolerable without the need for strong theoretical foundation (Hair et al., 2010). Recall that in Section 5.9 the model development strategy was selected. This would mean model modification is expected. Yet, following the above discussions, any major modification should be entirely based on sound theoretical background.

5.14.2 Construct Reliability and Validity

The main underlining reasons behind the measurement model test (CFA) is to assess the reliability and validity of the constructs. This is one of the essential stages of the SEM process because it has direct impact on the results of the structural model.

5.14.3 Construct Reliability

Construct reliability refers to the internal consistency of a construct, which implies that similar results should be achieved every time researchers collect data from the same sample (Straub et al., 2004, Hair et al., 2010). There are several techniques for conducting a reliability test and these include Split-Half, Test-Retest, and Cronbach's alpha (α) (Straub et al., 2004, Hair et al., 2010). The Split-Half procedure divides the sample into two equal sub-samples. However, under this method different results can be achieved depending on how the sample is divided. Thus, often researches have raised their concerns with using the technique (Straub et al., 2004). The Test-Retest method suggests similar results should be achieved when administering a questionnaire to a sample at two different occasions. This means a user's response to a question should be same when he/she takes the questionnaire second time. This approach is seen as more suitable for longitudinal studies. However, one could argue that this approach would be time consuming, costly and difficult to employ as people are more likely be reluctant to answer the same questionnaires twice. For that reason, Cronbach's α is widely used methods for estimating reliability; it can be easily implemented utilising SPSS without the need for collecting data twice (Hair et al., 2010). In their study Boudreau et al. (2001) reported that almost 80% of IS researchers have used Cronbach's α to estimate reliability. Further, in their study Boudreau et al. (2001) aimed to provide guidelines for validating measures in IS research and found researchers can achieve better reliability results with Cronbach's α . Accordingly, this method was selected to estimate the reliability of the measures. Typically, the Cronbach's α . value for a construct equal to or greater than 0.7 indicates good reliability (Hair et al., 2010).

5.14.4 Construct Validity

Validity refers to the accuracy of the items measuring a construct. Convergent Validity, Discriminant Validity, and Nomological Validity (Face Validity) are the three forms of Construct Validity (Hair et al., 2010, p.126).

5.14.4.1 Convergent Validity

Convergent Validity assumes that items belonging to a construct should have similar variance in common (Hair et al., 2010, Boudreau et al., 2001, Straub et al., 2004). This implies that all items belonging to a construct should have high inter-correlations with each other. It is mostly identified through the size of the factor loading. Typically the factor loading value for an item equal to or greater than 0.5 indicate good Convergent Validity (Hair et al., 2010, p.686). The test can be carried out through SPSS. It is also possible to use AMOS because it provides standardised loading estimates for each item under a construct, which provide similar information as to factor loading in SPSS. Standardised loading estimates equal to 0.5 or higher indicate good convergent validity (Hair et al., 2010, p.686). AVE can also be used to test construct validity. AVE value for a construct represents the total of all squared standardised factor loadings divided by the number of items under that construct. AVE values of 0.5 or higher again represent a good convergent validity (Hair et al., 2010).

5.14.4.2 Discriminant Validity

Discriminant Validity is another form of validity which corresponds to the extent to which a construct is unique from other constructs (Hair et al., 2010). It suggests that items belonging to a construct should have low correlation with items belonging to other constructs. Cross-loading occurs when an item from a construct has high correlations with items from another construct, and this is an indication of Discriminant Validity problem (Hair et al., 2010, p.688). Discriminant Validity is more rigorously assessed through comparing AVE with Squared Interconstruct

Correlations (SIC) (Hair et al., 2010, Tabachnick and Fidell, 2007, Boudreau et al., 2001, Straub et al., 2004). In order to achieve discriminant validity, the AVE for a construct should be greater than the SIC associated with that constructs (Hair et al., 2010).

5.14.4.3 Nomological Validity

Nomological Validity is often known as ‘face validity’. It is the third type of construct validity that needs to be tested prior to conducting the CFA (Hair et al., 2010, p.688). Nomological validity reflects that the correlation among the constructs in the measurement theory should make sense. Hair et al. (2010) reported that nomological validity implies that a construct should relate to other constructs in accordance with the proposed hypotheses. Further, Straub et al. (2004) reported that nomological validity is achieved when using constructs that are driven from well-developed theoretical research that is validated and tested with different samples in a variety of settings and at different times. Considering that the vast majority of the measures in this study were adapted from prior studies, one could then argue that nomological validity was already achieved during the model specification stage.

5.14.5 The Measurement Model Test Results

Important procedures involved with the measurement model evaluation were discussed in full details in the preceding sections. The CFA model was specified based on a three-indicator rule. The model consisted of twelve constructs represented by 56 indicators. Each construct was co-varied with other constructs in the model. The CFA test was run utilising the MLE method and the AMOS outputs (fit indices) were further examined. The initial results are shown in Table 5-10 which indicate poor model fit. This is because although the obtained values for χ^2/df (2.71), RMSEA (0.06), and CFI (0.90) were within the accepted range, the rest of the fit indices exceeded the recommended value. The AMOS program failed to display the SRMR

value due to poor model fit. In addition, the attained value for TLI (0.89) was also below the accepted threshold value of (0.90).

Table 5-10: The Overall Model Fit Test Result

Fit Indices	Obtained Value		Recommended Value
χ^2	3749.86; df = 1382 p=.00;		
χ^2/df	2.71	<	3.00
RMSEA	0.06	<	0.08
SRMR	null	<	0.10
CFI	0.90	\geq	0.90
TLI	0.89	\geq	0.90

Achieving a poor model fit highlighted the need for model diagnoses to determine the issues associated with model. Typically, problematic indicators are the causes of poor model fit and these can be determined through investigating reliability and validity of the measures (Hair et al., 2010). MIs and SRs are the other two CFA outputs which can also help in determining the problematic indicators (Hair et al., 2010). The subsequent sections show the results of the construct reliability and validity tests as well as the MIs and SRs outputs.

5.14.5.1 Constructs Reliability Test Result

Recall that in Section 5.14.3 Cronbach's α was selected as a tool for conducting the reliability test. Following the reliability test it was found that IBT had a reliability issue as the Cronbach's α for the construct was below the accepted threshold (See Table 5-11). Through an examination of the indicators, it was discovered that IBT4 was causing the reliability issue and therefore it was deleted from the model. Subsequently, the reliability test was performed again and the Cronbach's α value for all the constructs were above the recommended threshold (0.7). The model was re-evaluated again and it was found that the overall model fit slightly increased. The

χ^2/df became 2.66 and the SRMR value became 0.06 and these were within the accepted range. However, the TLI (0.89) value still remained the same.

Table 5-11: Constructs Reliability Test Result

Construct	Cronbach's (α) Values	Construct	Cronbach's (α) Values	Construct	Cronbach's (α) Values
ACP	0.84	BBT	0.81	SRQ	0.88
RCP	0.81	ACM	0.95	PND	0.92
ABT	0.93	IFQ	0.92	HND	0.93
IBT	0.64	STQ	0.77	FND	0.88

5.14.5.2 Convergent Validity Test Result

The discussion in Section 5.14.4 revealed that factor loading provides accurate estimation for convergent validity. Typically factor loading below 0.50 indicates problems with convergent validity (Hair et al., 2010). Table 5-12 shows the factor loadings for all the variables on-to their constructs. As shown in the table two items, ACP5 (0.39) and STQ3 (-0.08), had low factor loading below the suggested value (0.5). This indicated that the variance extracted for these indicators were smaller than the error variance of their latent factors. In another word, this would mean that these items were not truly measuring their latent factors. Accordingly, these items were deleted from the measurement model. Subsequently, the issue with convergent validity was solved.

Table 5-12: Convergent Validity Test Result

Factor Loading	Weight	Factor Loading	Weight	Factor Loading	Weight
ACP1 ---> ACP	0.67	FND1 ---> FND	0.77	IBT2 ---> IBT	0.92
ACP2 ---> ACP	0.67	FND2 ---> FND	0.86	IBT3 ---> IBT	0.86
ACP3 ---> ACP	0.77	FND3 ---> FND	0.87	IFQ1 ---> IFQ	0.82
ACP4 ---> ACP	0.78	FND4 ---> FND	0.71	IFQ2 ---> IFQ	0.87
ACP5 ---> ACP	0.39	PND1 ---> PND	0.70	IFQ3 ---> IFQ	0.85
ACP6 ---> ACP	0.76	PND2 ---> PND	0.94	IFQ4 ---> IFQ	0.82
RCP1 ---> RCP	0.84	PND3 ---> PND	0.95	IFQ5 ---> IFQ	0.84
RCP2 ---> RCP	0.91	PND4 ---> PND	0.85	SRQ1 ---> SRQ	0.81
RCP3 ---> RCP	0.58	ABT1 ---> ABT	0.80	SRQ2 ---> SRQ	0.81
ACM1 ---> ACM	0.78	ABT2 ---> ABT	0.85	SRQ3 ---> SRQ	0.83
ACM2 ---> ACM	0.88	ABT3 ---> ABT	0.83	SRQ4 ---> SRQ	0.68
ACM3 ---> ACM	0.88	ABT4 ---> ABT	0.91	SRQ5 ---> SRQ	0.77
ACM4 ---> ACM	0.94	ABT5 ---> ABT	0.88	STQ1 ---> STQ	0.80
ACM5 ---> ACM	0.94	BBT1 ---> BBT	0.57	STQ2 ---> STQ	0.82
HND1 ---> HND	0.81	BBT2 ---> BBT	0.68	STQ3 ---> STQ	-0.08
HND2 ---> HND	0.91	BBT3 ---> BBT	0.85	STQ4 ---> STQ	0.72
HND3 ---> HND	0.95	BBT4 ---> BBT	0.82	STQ5 ---> STQ	0.80
HND4 ---> HND	0.84	IBT1 ---> IBT	0.80	STQ6 ---> STQ	0.76

5.14.5.3 Discriminant Validity Test Result

In section 5.14.4.2 it was concluded to test discriminant validity through comparing the AVE estimates for each factor with the SIC values between the constructs. In order to achieve discriminant validity the AVE value of a construct should be greater than the SIC associated with that construct (Hair et al., 2010, p.701). Table 5-13 shows the test results which indicate there was no problem with discriminant validity. All the AVE estimates from Table 15-13 are greater than the corresponding SIC.

Table 5-13: Discriminant Validity Test Result

	FND	ACP	RCP	ACM	IFQ	STQ	SRQ	PND	MT	TRB
FND	0.65									
ACP	0.25	0.54								
RCP	0.14	0.26	0.62							
ACM	0.08	0.23	0.19	0.78						
IFQ	0.12	0.12	0.21	0.35	0.71					
STQ	0.20	0.18	0.22	0.27	0.52	0.61				
SRQ	0.15	0.14	0.24	0.34	0.52	0.59	0.61			
PND	0.40	0.17	0.14	0.16	0.15	0.22	0.18	0.75		
HND	0.37	0.29	0.25	0.16	0.18	0.31	0.21	0.44	0.77	
TRB	0.38	0.20	0.64	0.36	0.49	0.48	0.58	0.23	0.27	0.74

AVE values are shown as bold in the diagonal of the table (—)

SIC values are shown as normal in the columns and rows

5.14.5.4 Model Diagnoses Results

In the previous sections it was found that three constructs (IBT, ACP, and STQ) had reliability and validity issues due to three indicators (IBT4, ACP5, and STQ3). Therefore, these problematic indicators were removed from the analysis. The model was further diagnosed for other problematic indicators. Referring back to Section 5.14.1.4 on model diagnoses, it was discovered that SRs and MIs are seen as excellent tools to detect problematic indicators. Subsequently, the model was further explored by examining the SRs and MIs outputs, and no more problematic indicators were found. Accordingly, the measurement model was re-evaluated and all the fit indices were found to be within the accepted range (See Table 5-14). This allowed for moving to the next stage which focused on testing the structural model and the hypotheses.

Table 5-14: Overall Model Fit Test Results (Revised Model)

Fit Indices	Obtained Value	Recommended Value
χ^2	3214.16 ; df= 1226 ; p=.00;	
χ^2/ df	2.60	< 3.00
RMSEA	0.05	< 0.08
SRMR	0.06	< 0.10
CFI	0.91	\geq 0.90
TLI	0.90	\geq 0.90

Section Three

5.15 Specifying the Structural Model (Stage 5)

After successfully completing the CFA and achieving a satisfactory measurement model, the next stage involved specifying the structural model. The structural model consisted of the several elements: latent constructs (IVs and DVs), observed variables, residuals, covariance, and paths. In SEM, paths are shown as single arrow heads (\rightarrow) which represent the causal relationships between the latent constructs, and this distinguishes the structural model from the measurement model. These paths are also known as the hypotheses in the theoretical framework. In SEM, typically the DVs are called 'endogenous' and the IVs are known as 'exogenous'. Items or indicators under the latent constructs are also called 'observed variables'. Figure 5-5 shows the specified structural model which is entirely based on the theoretical model in Chapter 4. As shown in the diagram the model included 51 observed variables and 6 control variables, and these are represented by the rectangle shapes. Each observed variable and endogenous variable were also linked to residuals represented by a small circle shape. The model also consisted of 4 endogenous and 6 exogenous variables, and these are illustrated as large oval shapes. Accordingly, thirteen paths were added to the model representing the causal relationships (hypotheses) between the latent constructs. The model consisted of a second order factor (TRB) linked to three latent constructs (ABT, IBT, and BBT). Further three paths were included to represent the causal relationships between an indigenous variable (FND) and three control variables from members' business characteristics (e.g. Business Age, Business Size, and Business Type). Also three more paths were added between the members' demographic variables (e.g. Age, Gender, and Education) and the main indigenous variable (ACP). Having specified the structural model, the next stage involved model validation and hypotheses testing.

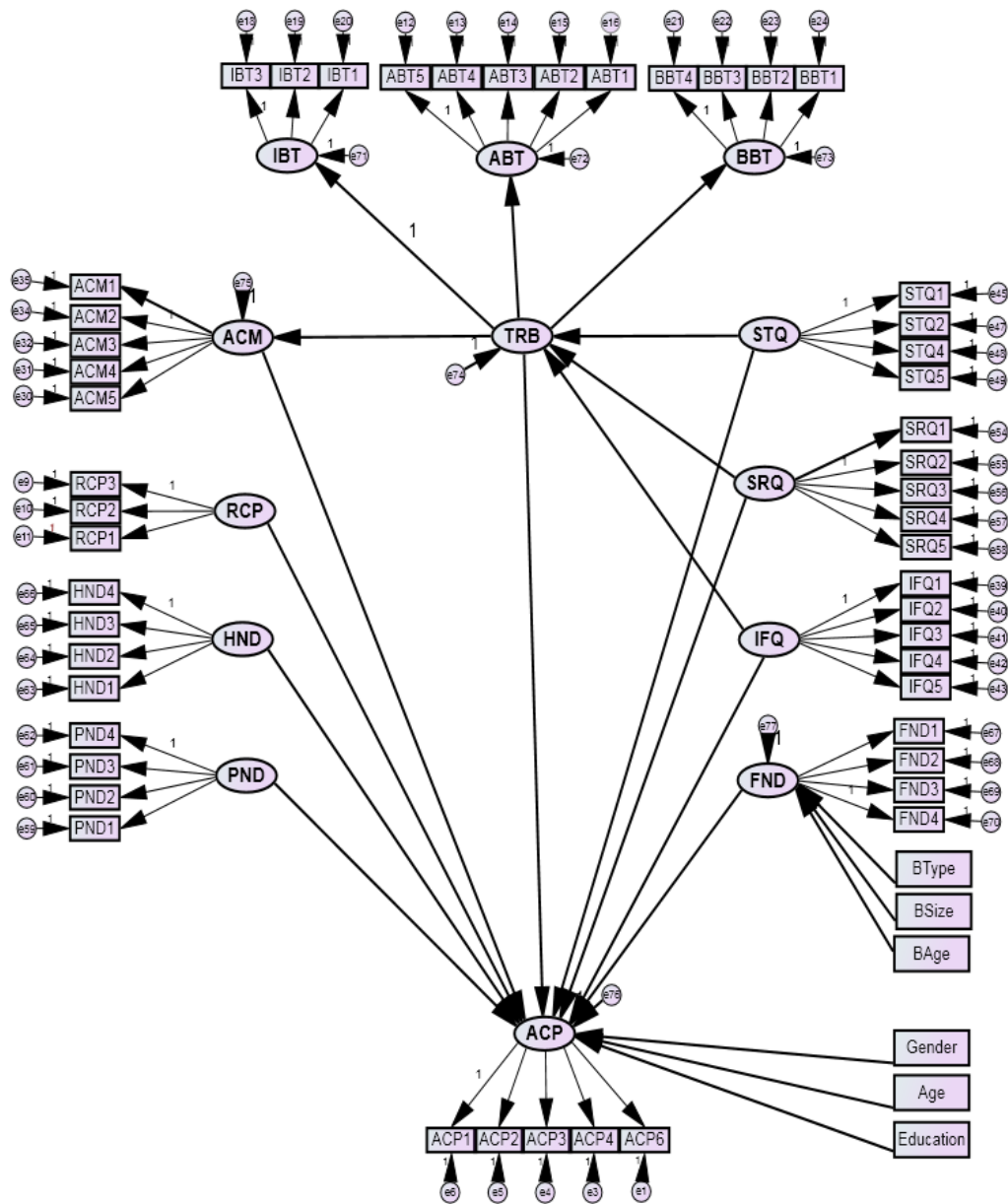


Figure 5-5: The Specified Structural Model

5.16 Assessing the Structural Model Validity (Stage 6)

Once the structural model is specified, then the next vital stage is validating the model. Testing the structural model should be conducted in the same way as testing of the measurement model (Hair et al., 2010). Thus, the same fit indices were used to examine model fit. Table 5-15 shows the structural model goodness fit test results, which indicates poor model fit. Although, the fit indices for Normed χ^2 (2.54), RMSEA (0.05), and CFI (0.90) were within the accepted range. Yet, SRMR (0.12) and CFI (0.89) just exceeded the recommended values by 0.02 and 0.01 respectively. One could argue that exceeding the threshold value by such a small figure was tolerable. Yet, it was concluded that a satisfactory figure was still needed to avoid any risks of yielding biased results. Recall that in Section 5.9 the model development strategy was selected. This allows for model modification in the case of poor model fit, and therefore model modification was compelling. The next section focuses on the model modifications procedures.

Table 5-15: Structural Model Test Results

Fit Indices	Obtained Value		Recommended Value
χ^2	3705.71; df = 1457; p = .00	≤	0.05
χ^2 / df	2.54	<	3.00
RMSEA	0.05	<	0.08
SRMR	0.12	<	0.10
CFI	0.90	≥	0.90
TLI	0.89	≥	0.90

5.16.1 Model Modification

A rigorous procedure was followed prior to any model modification to ensure the integrity of the analysis. The structural model was diagnosed in a similar way to diagnosing the measurement model, and this was implemented through investigating SR and MI values (Hair et al., 2010). Hair et al. (2010) stated that problems with the structural model can be examined through possible relationships between exogenous and endogenous constructs or endogenous and endogenous constructs or between

error terms of endogenous constructs. These can be determined by large SR values or large MI values (Hair et al., 2010). Subsequently, the examination started by first investigating the SR values; this provided very limited information on ways to improve the model, since none of the SR values exceeded the threshold (4.0). The examination continued by checking the MI values for the estimated parameters. Two large MI values between the two constructs Psychological Need and Functional Need (MI=176.82) and between Hedonic Need and Functional Need (MI=161.02) were detected. This indicated the possibility for adding two more paths to the model. Accordingly, the two possible new paths were further examined, and finally it was concluded to add a new path between Psychological Need and Functional Need (PND → FND). As suggested by experts (e.g. Hair et al., 2010) a minor model modification is permitted without the need for strong theoretical support. For that reason no further justification was needed for the new path. Following adding the new path, the model was re-examined and the overall model fit improved as all the fit indices were within the accepted range (see Table 5-16). The next section focuses on testing the hypotheses.

Table 5-16: Structural Model Test Results after Adding a New Path (PND→FND)

Fit Indices	Obtained Value		Recommended Value
χ^2	3483.23; df = 1456; p=000	≤	0.05
χ^2/df	2.39	<	3.00
RMSEA	0.05	<	0.08
SRMR	0.07	<	0.10
CFI	0.91	≥	0.90
TLI	0.90	≥	0.90

5.16.2 Hypotheses Test Results

After achieving a satisfactory model, the final process involved testing the causal relationships (hypotheses) between the latent constructs. This was carried out through examining the path coefficients estimates, standard errors and t-values. The path coefficient estimates reflect on the strength of the relationships between the latent

constructs. The t-value (p value) reflects the critical ratio (CR) which is obtained through dividing the path coefficient estimates by the standard errors. A relationship is considered significant where the CR is greater than ± 1.96 at $p\text{-value} \leq 0.05$ or ± 2.58 at $p\text{-value} \leq 0.01$ or ± 3.09 at $p\text{-value} \leq 0.001$ (Gefen et al., 2000). The direction of the relationships can be determined through the plus and minus signs associated with the estimated path coefficients, where (+) indicates positive relationships and (-) indicates negative relationship between the indigenous and exogenous variables. Figure 5-6 summarises of the hypothesis results. Table 5-17 shows further details on the results including direct effects and indirect effects.

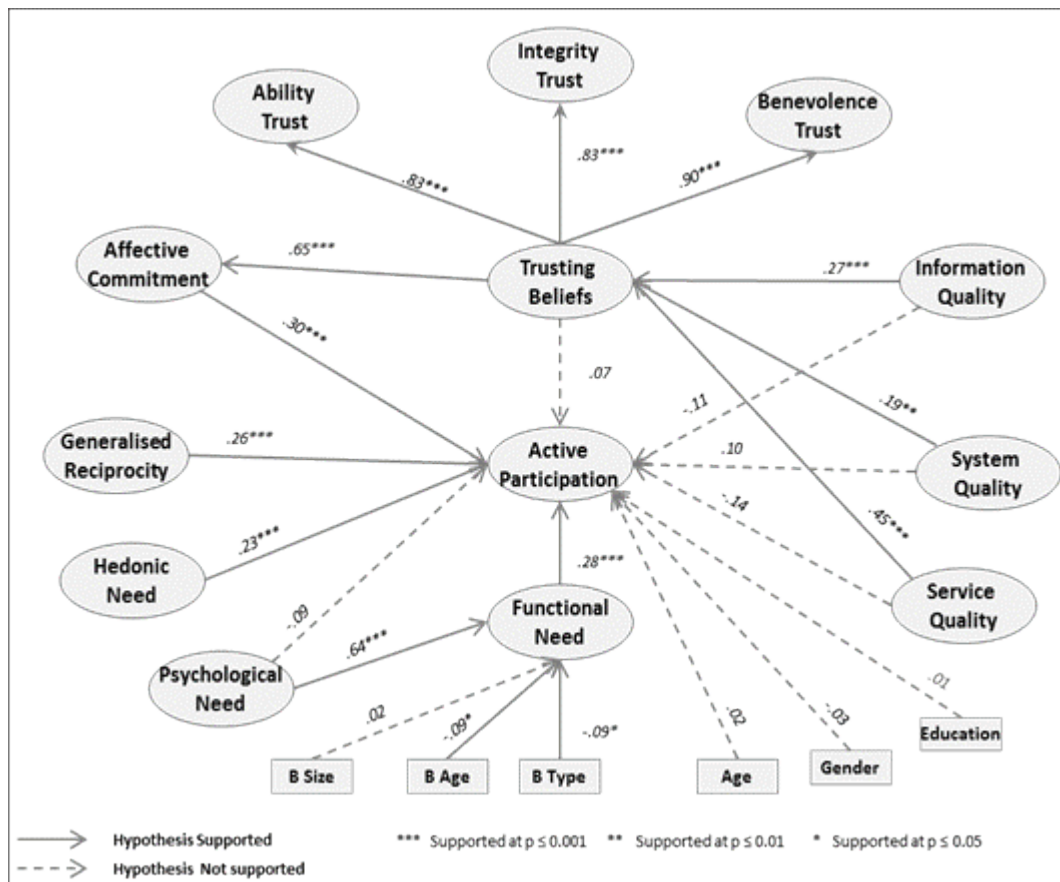


Figure 5-6: The Structural Model Test Results (Hypotheses Test Results)

Table 5-17: The Structural Model Results Including Direct and Indirect Effects

Relationships	Direct Effect			Indirect Effect		Mediated Factor
	Estimate	C.R.	p	Estimate	p	
FND → ACP	0.28	4.73	***	----	----	----
HND → ACP	0.23	3.52	***	----	----	----
PND → FND	0.64	12.51	***	----	----	----
PND → ACP	-0.09	-1.31	0.16	0.18	***	FND
RCP → ACP	0.26	4.36	***	----	----	----
ACM → ACP	0.30	5.08	***	----	----	----
TRB → ACM	0.65	13.16	***	----	----	----
TRB → ACP	0.07	0.65	0.56	0.19	***	ACM
IFQ → TRB	0.27	4.65	***	----	----	----
IFQ → ACM	----	----	----	0.18	**	TRB
IFQ → ACP	-0.11	-1.36	0.19	0.02	*	TRB
STQ → TRB	0.19	2.62	**	----	----	----
STQ → ACM	----	----	----	0.12	.10	TRB
STQ → ACP	0.10	1.03	0.22	0.05	.06	TRB
SRQ → TRB	0.45	6.49	***	----	----	----
SRQ → ACM	----	----	----	0.29	***	TRB
SRQ → ACP	-0.12	-1.48	0.14	0.12	**	TRB
BSize → FND	0.02	0.45	0.65	----	----	----
BSize → ACP	----	----	----	0.01	0.64	FND
BAge → FND	-0.09	-1.95	*	----	----	----
BAge → ACP	----	----	----	-0.02	0.06	FND
BType → FND	-0.09	-2.38	*	----	----	----
BType → ACP	----	----	----	-0.03	**	FND

*** Supported at $p \leq 0.001$ ** Supported at $p \leq 0.01$ * Supported at $p \leq 0.05$

----: Not applicable C.R: Critical ration P: T-value or significant level

The SEM analysis provided empirical evidence supporting H1a and H1c under U&G, because functional need and hedonic need were both found to be positively associated with active participation (FND→ACP = 0.28 at $p \leq 0.001$; HND→ACP = 0.23 at $p \leq 0.001$). No positive and direct association between psychological need and active participation (PND→ACP = -0.09 at $p = 0.16$) was detected, and therefore

H1b was rejected. During the model modification stage, another path between psychological need and functional need was added and the relationship was found to be significant ($PND \rightarrow FND = 0.64$ at $p \leq 0.001$). This allowed for carrying out further analysis, which revealed that the relationship between psychological need and active participation was indirect via functional need ($PND \rightarrow FND \rightarrow ACP = 0.18$ at $p \leq 0.001$). The analysis provided evidence supporting all the hypotheses identified under SET except for one (H4a). A positive relationship was found between reciprocity and active participation ($RCP \rightarrow ACP = 0.26$ at $p \leq 0.001$) and between affective commitment and active participation ($ACM \rightarrow ACP = 0.30$ at $p \leq 0.001$). These two findings provided empirical evidence supporting H2 and H3. In addition, it was hypothesised that trusting beliefs is also positively related to active participation (H4a). However, this hypothesis was rejected as the direct association between trusting beliefs and active participation ($TRB \rightarrow ACP = 0.07$ at $p = 0.56$) was not significant. Nevertheless, a positive relationship between trusting beliefs and affective commitment ($TRB \rightarrow ACM = 0.65$ at $p \leq 0.001$) was detected, and this way H4b was accepted. This allowed for carrying out further analysis, which revealed that trusting beliefs had an indirect positive relationship with active participation via affective commitment ($TRB \rightarrow ACM \rightarrow ACP = 0.19$ at $p \leq 0.001$).

The three sub-constructs in terms of ISSM - information quality, system quality, and service quality - were found to be positively associated with trusting beliefs ($IFQ \rightarrow TRB = 0.27$ at $p \leq 0.001$; $STQ \rightarrow TRB = 0.19$ at $p \leq 0.01$; $SRQ \rightarrow TRB = 0.45$ at $p \leq 0.001$), and this evidence supports H5b, H5d, and H5f. The analysis revealed that these three factors did not have a direct association with active participation ($IFQ \rightarrow ACP = -0.11$ at $p = 0.19$; $STQ \rightarrow ACP = 0.10$ at $p = 0.19$; $SRQ \rightarrow ACP = -0.12$ at $p = 0.14$). Accordingly, it was concluded that H5a, H5c, H5e were rejected. However, further analysis revealed that information quality and service quality had an indirect positive relationship with active participation ($IFQ \rightarrow TRB \rightarrow ACP = 0.02$ at $p \leq 0.05$; $SRQ \rightarrow TRB \rightarrow ACP = 0.12$ at $p \leq 0.01$). Surprisingly, system quality had neither a direct nor an indirect link with active participation ($STQ \rightarrow TRB \rightarrow ACP =$

0.05 at $p = 0.06$). Moreover, further analysis revealed that information quality and service quality were also found to have an indirect impact on affective commitment ($IFQ \rightarrow TRB \rightarrow ACM = 0.18$ at $p \leq 0.01$; $SRQ \rightarrow TRB \rightarrow ACM = 0.29$ at $p \leq 0.001$). Yet, system quality did not have any impact on affective commitment ($STQ \rightarrow TRB \rightarrow ACM = 0.12$ at $p = 0.10$). Hypotheses H6a, H6b, and H6c postulated that there is an indirect relationship between community members' business characteristics (Business Size, Business Age, and Business Type) and active participation. It was postulated that members' demographic variables such as age, gender, and education do not impact active participation in B2B OBCs. As expected, no significant relationships were found between the demographic variables and active participation ($Age \rightarrow ACP = 0.02$ at $p = 0.96$; $Gender \rightarrow = -0.03$ at $p = 0.49$; $Education \rightarrow ACP = 0.01$ at $p = 0.83$). The analysis also indicated that H6a was not supported, because business size did not have a direct relationship with functional need nor an indirect association with active participation ($BSize \rightarrow FND = 0.02$ at $p = 0.65$; $BSize \rightarrow FND \rightarrow ACP = 0.01$ at $p = 0.64$). Furthermore, although the results showed that the relationship between business age and functional need was significant ($BAge \rightarrow FND = -0.09$ at $p \leq 0.05$). Yet, the indirect relationship between business age and active participation was not significant ($BAge \rightarrow FND \rightarrow ACP = -0.02$ at $p = 0.06$) and therefore H6b was also rejected. On the other hand, it was found that business type had significant association with functional need ($BType \rightarrow FND = -0.09$ at $p \leq 0.05$) which ultimately had an indirect relationship with active participation ($BType \rightarrow FND \rightarrow ACP = -0.03$ at $p \leq 0.01$). Thus, the analysis provided empirical evidence to support H6c. Table 5-18 summarises the above findings in relation to the hypotheses result.

Table 5-18: Summary of the Findings in Relation to the Hypotheses

Hs	Hypothesis	Supported/ Yes or No
H1a	There is a positive association between functional need and active participation in B2B OBCs	Yes
H1b	There is a positive association between psychological need and active participation in B2B OBCs	No
H1c	There is a positive association between hedonic need and active participation in B2B OBCs	Yes
H2	There is a positive association between generalised reciprocity and active participation in B2B OBCs	Yes
H3	There is a positive association between affective commitment and active participation in B2B OBCs	Yes
H4a	There is a positive association between trusting beliefs and active participation in B2B OBCs	No
H4b	There is a positive association between trusting beliefs and affective commitment in B2B OBCs	Yes
H5a	There is a positive association between information quality and active participation in B2B OBCs	No
H5b	There is a positive association between information quality and trusting beliefs in B2B OBCs	Yes
H5c	There is a positive association between system quality and active participation in B2B OBCs	No
H5d	There is a positive association between system quality and trusting beliefs in B2B OBCs	Yes
H5e	There is a positive association between service quality and active participation in B2B OBCs	No
H5f	There is a positive association between service quality and trusting beliefs in B2B OBCs	Yes
H6a	There is an indirect association between community members' business size and active participation in B2B OBCs	No
H6b	There is an indirect association between members' business age and active participation in B2B OBCs	No
H6c	There is an indirect association between members' business type and active participation in B2B OBCs	Yes

5.17 Summary

This chapter presented full details on the statistical methods used to analyse the collected data. The chapter was divided into three main sections. The first section involved reporting some basic statistical analysis such as reporting the community profiles as well as the participants' demographic variables and their business characteristics. This was followed by performing independent sample t-test to eliminate any biases related to the sample. The next section started by selecting an appropriate advanced statistical method to analyse the data and evaluate the framework proposed. After reviewing several data analysis techniques, it was decided to select SEM using AMOS. This section also presented some preliminary data analysis that needed some careful consideration prior to conducting the SEM test so to insure the integrity of the data analysis and eliminate any biased affects. The final section focused on testing the model, which was carried out in two sub-stages. In the first sub-stage, the measurement model was specified and evaluated. For that purpose CFA was carried out in order to establish construct reliability and validity. The CFA test resulted in dropping several indicators that caused discriminant validity issues. Subsequently, a satisfactory measurement model was established. The next sub-stage involved specifying and evaluating the structural model. After achieving a satisfactory structural model, then the final process involved testing the hypotheses. This was undertaken by examining the path coefficients estimates, standard errors and t-values between the latent constructs. Subsequently, the hypotheses results were reported. The next chapter provides full details on the findings from the data analysis in this chapter.

6 Chapter Six: Discussion

6.1 Introduction

Underpinned by three theories (U&G, SET, and ISSM), this research proposed a theoretical framework for factors affecting active participation in B2B OBCs. An exploratory study was carried out in order to develop a new measure for active participation as well as identifying other important factors that were missed during the framework development stage in Chapter 3. Following that, a new measure for active participation was developed and a new construct (service quality) was added to the model. The proposed framework was then revised and evaluated in the previous chapter. This involved assessing the measurement model through conducting construct reliability and validity test. After achieving a satisfactory model, the next stage focused on assessing the structural model, which involved testing the identified hypotheses. In Chapter 5, the hypotheses results were reported. This chapter follows on to discuss the research main results. It discusses the key factors found that affect active participation in B2B OBCs. It also presents the study findings in connection to previous studies. The sections following provide a detailed discussion on the hypotheses results.

6.2 U&G and Active Participation

U&G theory was recognised as useful theory to underpin this research study. The model originally was applied to understand people's engagement with various media types such as radio, TV, and newspaper (Ruggiero, 2000). Scholars have also successfully employed the theory to investigate people's participation behaviour in OC environments (Wang and Fesenmaier, 2004b, Han et al., 2007, Raacke and Bonds-Raacke, 2008, Urista et al., 2008, Lampe et al., 2010). Subsequently, U&G was also applied in this study. From the theory perspective, it was postulated that people's participation behaviour in B2B OBCs is affected by their needs. Built upon the U&G theory, three factors (functional need, psychological need, and hedonic need) were hypothesised to have positive impact on active participation in B2B OBCs

(H1a, H1b, and H1c). These hypotheses results are discussed in the following sections.

6.2.1 Functional Need and Active Participation

H1a: There is a positive association between functional need and active participation in B2B OBCs

In an OC context, functional need reflects on specific activities members carry out inside the community. These activities reflect on the benefits the OC provides to its members (Wang and Fesenmaier, 2004a). The benefits provided by OCs can change from one community type to another, depending upon the community purpose. For example, people participate in a B2B e-commerce to fulfil a specific activity such as buying and selling products or services (Hagel and Armstrong, 1997). People may also participate in an OC of practice to gather information for learning and decision-making purpose (Wang et al., 2002), to acquire specific information or to solve a specific problem (Dholakia et al., 2004). Following the framework development stage in Chapter 3 and the exploratory study in Chapter 4, this study defined functional need as the benefits people expect from their B2B OBCs. These benefits included finding business opportunities, business promotion, forming business relationships, and acquiring specific information or knowledge.

The findings from past studies revealed that functional need has a positive impact on active participation in various OC types ranging from online consumer communities (Utz, 2009) to online knowledge sharing communities (Wasko and Faraj, 2000, Porter, 2004, Hsu et al., 2007). Consistent with the findings from past studies, this current study provides strong evidence to support H1a. Particularly, the data analysis in the previous chapter showed that functional need had a positive association with active participation ($\beta = 0.28$ at $p \leq 0.001$). The beta value shows the weight of the path between the two constructs. This represents the amount of change in the dependent variable (active participation) that is caused by one standard unit of the independent variable (functional need). This analysis result implies that functional

need is an important factor for active participation in B2B OBCs. Hence, this study suggests that members of B2B OBCs who have a higher functional need will participate more actively within their communities. This finding is in line with the vast majority of the current literature. For example, Utz (2009) carried out an empirical investigation to examine the motivational factors for contribution to online consumer communities. Their study outcomes indicated that functional need motivates consumers to make content contributions to their OCs. In their study Chung and Buhalis (2008) have examined the relationship between perceived benefits and participation in an online travel community. They discovered that the need for information acquisition significantly affects members' participation level and attitudes towards an online travel community. A similar finding was also reported in a study by Wang and Fesenmaier (2003). They discovered that instrumental motives: seeking/providing support, finding friends/peers, building relationships, positively relate to participation behaviour in online travel communities. Based on social psychology theory, Ma and Agarwal (2007) carried out an investigation to understand identity verification and knowledge contribution in OCs. They discovered that functional need in terms of information needs fulfilment positively influence members' satisfaction in OCs, which ultimately increase their active participation behaviour (e.g. knowledge contribution). Likewise, Hsu et al. (2007) have also established a similar result. The outcomes of their study suggest that functional need can be seen as one of the key motivational factors for knowledge sharing behaviour in OCs. This finding was also replicated in several other studies that focused on knowledge contribution behaviour in OC environments (Ardichvili et al., 2003, Wasko and Faraj, 2000, Porter, 2004).

6.2.2 Psychological Need and Active Participation

H1b: There is a positive association between psychological need and active participation in B2B OBCs

In an OC psychological need is defined as gaining status and reputation (Lampel and Bhalla, 2007). It represents people's relative position within their OCs, which is

based on prestige, honour, and respect (Thye, 2000, Lampel and Bhalla, 2007). Consistent with this definition, in this research study, psychological need was defined as gaining status, improving reputation, and earning respect. Contrary to expectation, the data analysis results indicated that psychological need did not have a direct relationship with active participation. The link between the two constructs was found to be insignificant ($\beta = -0.09$ at $p = 0.16$). Accordingly, hypothesis H1b was rejected. This result contradicts with the research outcomes of several past studies found in the OC literature. For example, in their study Wang and Fesenmaier (2003) have found a considerable amount of empirical support for the positive relationship between psychological need (i.e. increasing respect and identify expression) and participation behaviour in online travel communities. Within a similar study context Utz (2009) has also discovered that the need for gaining status and improving reputation better motivate people to contribute to OCs like online travel communities. A more sophisticated research on online knowledge sharing communities was undertaken by Kankanhalli et al. (2005). Their study outcomes suggested that gaining reputation has a positive influence on knowledge contribution behaviour in Electronic Knowledge Repositories. Within a similar context, Chiu et al. (2006) have also discovered that psychological need in terms of gaining status has a positive impact on quantity of information shared in online knowledge sharing communities. Similar outcomes were also reported in study by Chung and Buhalis (2008). Their research outcomes suggest that psychological need motivates people to contribute to OCs like online social networking sites.

Hence, the finding in this research contradicts with the extant literature on OC participation. Nevertheless, the data analysis indicated that psychological need is still an important factor for active participation in B2B OCs. Particularly, the construct found to have an indirect association with active participation. During the model modification in Chapter 5, another link was added between psychological need and functional need. This relationship was found to be significant ($\beta = 0.64$ at $p \leq 0.001$). This allowed for carrying out further analysis through examining the indirect

association between psychological need and active participation. The additional analysis revealed that the indirect relationship between the two variables was significant ($\beta = 0.18$ at $p \leq 0.001$). Thus, it was found that psychological need affects active participation via functional need. It was discovered that active participation increased by 0.18 standard units when psychological need increased by 1 standard unit. From this analysis results, it was concluded that psychological need is also an important factor for active participation in B2B OBCs. Hence, members of B2B OBCs who have higher needs to improve their reputation; to gain status in the community; and to earn respect from other community members; will participate more actively.

6.2.3 Hedonic Need and Active Participation

H1c: There is a positive association between hedonic need and active participation in B2B OBCs

The literature review indicated that people also participate in OCs and decide to make active contributions to satisfy their hedonic need: entertainments and enjoyments (Wang and Fesenmaier, 2004a). Subsequently, it was hypothesised that there is a positive association between hedonic need and active participation in B2B OBCs (H1c). From the OC perspective, hedonic need reflects on members' beliefs regarding the amount of fun and pleasure they gain from their participation in their communities (Wang and Fesenmaier, 2004a). Therefore, in this study context, the construct was measured by 3 indicators which mainly reflected on B2B OBC members' enjoyment from helping others in the community. The model evaluation revealed that this measure was reliable and valid. Furthermore, the SEM analysis provided evidence supporting H1c as a positive relationship between hedonic need and active participation was recorded ($\beta = 0.23$ at $p \leq 0.001$). It was found that the dependent variable (active participation) increased by 0.23 unit for every extra unit of the independent variable (hedonic need). This hypothesis results suggests that in B2B OBCs people who enjoy helping others tend to participate more actively inside their communities. A similar result was also reported in several prior studies that examined

the relationship between hedonic need and participation in various OC types (Wang and Fesenmaier, 2004a, Chung and Buhalis, 2008, Yoo and Gretzel, 2008, Tonteri et al., 2011). In their study Wang and Fesenmaier (2004a) measured hedonic need by the amount of fun and pleasure people gained from their participation in online travel communities. They discovered that the construct had a positive effect on participation level. Within a similar study context, Chung and Buhalis (2008) have also found that hedonic need positively relates to the level of participation in OCs like travel communities. Further, based on U&G theory, Tonteri et al. (2011) carried out an investigation in order to examine the community members' expected benefits and their linkages with different types of participation behaviour (e.g. reading and posting) in OCs. Their research outcomes provide empirical evidence supporting the positive association between hedonic need and participation behaviour. Consistent with the results of Tonteri et al.'s research, a further study by Yoo and Gretzel (2008) also suggested that enjoyment is one of the motivational factors for participation behaviour such as posting information in online customer communities. Commensurate with this research outcome, the results from several other empirical studies have also provided similar information (Bagozzi and Dholakia, 2002, Rodgers and Sheldon, 2002, Wasko and Faraj, 2005). These studies identified hedonic need as intrinsic motivational factors for participation behaviour in OC environments. In particular, in their study Wasko and Faraj (2005) found that intrinsically motivated by the feeling of helping others is one of the main reasons for individuals' knowledge contribution to an OC.

6.3 SET and Active Participation

SET was also employed to underpin the theoretical framework. The OC theory suggests that an OC is a place for exchanging resources (e.g. information and knowledge) between individuals or groups or businesses. In an OC participants seek to maximise their benefits and minimise their costs when interacting with others (Liang et al., 2008). Hence, from the SET perspective, this study suggested that

participants of B2B OBCs expect some benefits in return when they contribute to their communities (Abrams et al., 2003, Tiwana and Bush, 2001). The literature review in Chapter 2 & 3 revealed that SET has been successfully employed in numerous studies to understand several important factors affecting participation behaviour in various OC types (Ridings et al., 2006, Faraj and Johnson, 2010, Chen et al., 2010). Based on the findings from current studies in the literature, this study employed SET to identify several key factors affecting active participation in B2B OBCs. Three components of SET: generalised reciprocity, trusting beliefs, and affective commitment, were identified (Ridings et al., 2006, Liang et al., 2008). The following subsections discuss this study results in relation to these factors.

6.3.1 Generalised Reciprocity and Active Participation

H2: There is a positive association between generalised reciprocity and active participation in B2B OBCs

Most commonly reciprocity has been defined as a cost/benefits ratio (Blau, 1986, Ye et al., 2006) or as a mutual gratitude that can facilitate information exchange between people (Shumaker and Brownell, 1984). In this study and in the context of B2B OBCs, it was rather defined as an extrinsic motivational factor that has a positive impact on active participation. In Chapter 3 Section 3.4.1.1, two types of reciprocity: ‘direct reciprocity’ and ‘generalised reciprocity’, were identified (Kobayashi et al., 2006, Hew, 2009, Utz, 2009). An examination of the literature revealed that generalised reciprocity was more important in the context of OC (Preece 2001, Utz, 2008). Particularly, several empirical studies have shown the positive impact of generalised reciprocity on participation in various OC types. (Lin, 2007; Hew, 2009, Lu and Yang, 2011, Chen and Hung, 2010). Subsequently, it was hypothesised that the construct is also positively associated with active participation in B2B OBCs (H2). Three items were used to measure generalised reciprocity in this study, and these were directly adapted from a prior research by Kankanhalli et al. (2005). These items captured the participants’ perceptions and expectations of future returns from other community members when making active participations. The

measure for the construct was later validated in Chapter 6 through assessing construct reliability and validity. It was found to be valid and reliable, and therefore all three items were retained in the measurement model.

The SEM analysis in the earlier chapter provided support for H2 as a positive association between generalised reciprocity and active participation was found ($\beta = 0.26, p < 0.001$). The beta (β) value illustrates the amount of change in active participation that is caused by 1 standard unit of generalised reciprocity. This hypothesis result indicates that generalised reciprocity is another predictor for active participation in B2B OBCs. Thus, this study finding suggests that in B2B OBCs, members who have a higher belief in generalised reciprocity will participate more actively. A contradictory result was discovered in the literature with regards to the result of H2. Particularly, the outcomes of several past studies indicated that reciprocity is not positively related to members' participation behaviour in OC settings (Wasko and Faraj, 2005, Wiertz and Ruyter, 2007). On the other hand, a large number of studies have shown a different result (Lee et al., 2006, Chen and Hung 2008, Hew, 2009, Poesy, 2009, Lu and Yang, 2011). These studies have found reciprocity as an important factor that has a positive influence on participation behaviour in OC environments. For example, Wang and Fesenmaier (2004a) carried out a study to assess the motivational factors for contribution in OCs like online travel community. The results of their study showed that several motivational factors including expectancy (e.g. reciprocity) to have a positive effect on level of contribution. Further, in an attempt to understand customers' knowledge sharing behaviour in OCs like web-based discussion forums, Lee et al. (2006) have found that extrinsic motivational factors (reciprocity, reward, and image/reputation) are the key factors for knowledge sharing. Consistent with Lee et al.'s study results, IS research has revealed that extrinsic motivation in terms of reward and reciprocity is the key motivator for knowledge sharing in OC environments (Lin, 2005). Similar outcomes were also reported in several other IS studies that focused on OC (Chen and Hung 2008, Lu and Yang, 2011). A study by Lu and Yang (2011) has found reciprocity to be

associated positively with the quantity of information posted in OCs. Further, Chen and Hung (2008) carried out a study to determine factors influencing member's knowledge sharing and community promotion in OCs. They proposed a model and further tested it with 323 online questionnaires from members of two OCs. Their research outcome suggested that generalised reciprocity significantly affects participation behaviour (e.g. knowledge sharing) in OCs for professionals. This finding was also confirmed in a study by Kobayashi, (2006) who discovered that online reciprocity has a positive effect on intention to participate in OC.

A critical evaluation of the above studies suggests that the possible reason for the contradictory finding in the literature is, because the two studies by Wasko and Faraj (2005) and Wiertz and Ruyter (2007) only focused on direct reciprocity. See Chapter 3 Section 3.4.1 on the difference between direct reciprocity and generalised reciprocity. Nevertheless, contrary to study outcomes of Wasko and Faraj's (2005) and Wiertz and Ruyter's (2007), the finding from this study also concurs with the majority of the current research in the field of OC. The discovered large stream of research on the phenomenon of reciprocity in OCs, allows for making the assumption that the factor could play an important role in any types of OCs. The result of this study is further supported by more substantial empirical reports. For example, Hew (2009) carried out a study to determine the success of OCs, and found reciprocity as one of the key factors influencing members of OCs to share their knowledge. The participants in Hew's (2009) study clearly indicated that the reasons they wanted to share their knowledge because they received help from others in the past. This was also the reason the participants in this study wanted to help others in their B2B OBCs. The participants of a study by Kankanhalli et al. (2005) were also motivated by a similar cause to make knowledge contribution to their communities. Kankanhalli et al.'s (2005) study aimed to understand the reasons for knowledge contribution to OCs like Electronic Knowledge Repositories. Their study outcome found generalised reciprocity and organisational reward to impact knowledge contribution behaviour. Furthermore, a cross-sectional study by Poesy (2009) indicated that reciprocity

increases self-disclosure in OC settings. In Posey's (2009) study, self-disclosure was defined by revealing personal information, making an attempt to contact other community members, and posting information, and these can be seen as a form of active participation.

6.3.2 Affective Commitment and Active Participation

H3: There is a positive association between affective commitment and active participation in B2B OBCs

Commitment was identified as another construct in the SET model (Chiu et al., 2006, Jin et al., 2010, Liao, 2008). Several definitions for commitment were found in the literature. The concept was defined as a willingness to make short-term sacrifices, desire to maintain a valued relationship, investment in a relationship, on-going long term relationship, loyalty to individuals or organisations, an individual's identification with and involvement in a particular organisation, sense of emotional involvement, psychological bonds and confidence in the stability of a relationship (Bateman et al., 2010, Cheung and Lee, 2009, Meyer and Allen, 1991, Meyer et al., 2002, Morgan and Hunt, 1994, Stanko et al., 2007, Tsiros et al., 2009, Wang et al., 2010). Having large and diverse definitions for commitment is due to the phenomenon being studied from different disciplines and backgrounds. For that reason commitment was recognised as a multi-dimensional construct. Three sub-constructs of commitment such as continuance commitment, affective commitment, and normative commitment were found in the literature (Bateman et al., 2010, Allen and Meyer, 2011). These sub-constructs were carefully evaluated in Chapter 3 Section 3.4.2.1. Subsequently, affective commitment was seen as the only relevant and important dimension of commitment which could explain active participation in B2B OBCs. And therefore it was used to capture the commitment concept in this study.

The positive effects of affective commitment on participation behaviour in various OC types are well documented in the existing literature. drawing upon prior research, it was hypothesised that affective commitment is positively associated with active

participation in B2B OBCs (H3). Several indicators were used to measure the construct, and these were adapted from a prior study by Bateman et al. (2010). These indicators mainly reflected on B2B OBC members' sense of belonging and emotional attachment to their communities. Following the measurement model validation, the construct measure was found to be reliable and valid.

During the hypothesis testing evidence was discovered to support H3, since a positive relationship between affective commitment and active participation was found ($\beta = 0.30$ at $p < 0.001$). The data analysis revealed that when affective commitment increased by 1 unit, then active participation is also increased by 0.30 units. Thus, the results of this study discovered that in a B2B OBC, members with a strong sense of connection, a strong emotional attachment, and a strong sense of belonging to the community will participate more actively. This hypothesis result was expected in view of considerable support in the OC literature. Specifically, based on the IS continuance model Cheung et al. (2009) carried out an investigation to examine participation (e.g. intention to use and recommend) in OCs. They discovered that affective commitment has a positive impact on both intention to use OCs and to recommend OCs to other people. Commensurate with Cheung et al.'s (2009) research, a study by Jin et al. (2010) has also found a similar outcome. Based on the IS continuance model, Jin et al. (2010) carried out an investigation with the aim to develop and empirically test a model to examine user's continuance intention to participate in OCs. They collected 240 online questionnaires and further analysed the data using PLS. Their research results indicated that affective commitment has a positive impact on user's continuance intention to participate in OCs. The studies by Cheung et al. (2009) and Jin et al. (2010) did not directly focus on active participation. Yet one can argue that intention to participate is the initial stage of active participation in OC environments. Nevertheless, well established empirical studies have been found which provide more solid evidence supporting the hypothesis result in this research project. Towards the goal of understanding the impact of commitment on participation in OCs, Bateman et al. (2010) carried out a

sophisticated study. They started their research process by proposing a model showing the impact of the three sub-constructs of commitment on different participation types such as reading, posting and replying, and moderating. They tested their model with 192 online questionnaires from an online discussion forum with 50000 members. Their study results suggested that affective commitment positively impacts active participation behaviour (e.g. posting and replying). It can be seen that, in Bateman et al.'s (2010) study, the members who felt a strong connection and a strong emotional attachment to their community, were more willing to help others and they were more engaged in the conversations. And this was seen as one of the main reasons that the participants in this study wanted to actively get engaged with their B2B OBCs. This finding also coincides with the results of a study by Dabholkar et al. (2009) that found affective commitment to positively impact on OCs users' participation behaviour such as joining and making contribution. Moreover, in an attempt to better understand motivational factors for knowledge contribution in OCs, Ye et al. (2006) developed a theoretical model and tested it with 363 OC members. They also discovered that commitment was one of the key motivational factors that directly influenced knowledge contribution intention in OCs.

6.3.3 Trusting Beliefs and Active Participation

H4a: There is a positive association between trusting beliefs and active participation in B2B OBCs

H4b: There is a positive association between trusting beliefs and affective commitment in B2B OBCs

Numerous definitions of trust were discovered in the literature. The most cited and popular definition described the phenomenon as a belief in or the willingness of a party to be vulnerable to the actions of another party (Mayer et al., 1995, Jarvenpaa et al., 1998, Dwyer et al., 2007). Trust has been studied from different disciplines and backgrounds. For that reason, it has been recognised as a multi-dimensional construct (Nolan et al., 2007, Ratnasingam, 2003). Three sub-constructs of trust: disposition to trust, institution based trust and trusting beliefs, were identified in the context of OC

environments. After a careful examination of these three dimensions, it was found that trusting beliefs was more appropriate to explain active participation in the context of B2B OBC, and therefore it was used to define the concept in this research (See Chapter 2 Section 3.4.3.1). Further, three sub-constructs of trusting beliefs namely: ability, integrity, and benevolence were also found in the literature (Bhattacharjee, 2002, McKnight et al., 2002, Ridings et al., 2002). Several items were used to measure these sub-constructs, which were adapted from prior studies (Bhattacharjee, 2002, McKnight et al., 2002, Ridings et al., 2002). During the measurement model specification, the three sub-constructs were represented by a second order factor 'trusting beliefs' and it was validated using reliability and validity tests. The measurement model test results revealed that all items were reliable except for one item under integrity based trust (IBT4), and therefore it was removed from the model. This was because the indicator was cross loading onto other constructs. This item was also found to cause the reliability problem in past studies. For example, in their study Ridings et al. (2002) also discovered that the same item cross-loaded on to the benevolence based trust construct, and therefore they also deleted it from their model.

The implication of trusting beliefs on participation behaviour in various OC types is well known in the literature (Pavlou and Gefen, 2004, Chen and Hung, 2010, Ridings et al., 2002, Palvia, 2009). Thus, it was hypothesised that the construct is positively associated with active participation in B2B OBCs (H4a). Based on trust-commitment theory, it was also hypothesised that trusting beliefs is positively related to affective commitment in B2B OBCs (H4b).

The SEM test results revealed that trusting beliefs was a strong antecedent for affective commitment ($\beta = 0.65$ at $p < 0.001$). This provided evidence to support H4b. This finding means that in B2B OBCs when the level of trust is high between the members, then they will become more committed to the community. This is because, in a B2B OBC trusting the knowledge of other members and trusting them to be trustworthy and honest can reduce uncertainty and create a positive, supportive

atmosphere, and this makes members commit to the community. In further supporting this outcome, the findings from a prior study by Theron et al. (2008) suggest that in a B2B relationship integrity based trust and benevolence based trust reduce uncertainty between partners and create a positive supportive atmosphere for them, and that increase their commitment to their relationships. Indisputably, trust in B2B relationship in conventional settings is also transferable to online environments. The finding in this study in relation to H4b is also in line with the research outcomes of several empirical studies. In particular, Dabholkar et al. (2009) conducted a research in order to examine relationship forming in B2C OCs. They found that trusting beliefs is positively associated with affective commitment. More research found in the marketing literature further supports this study finding. For example, Gounaris (2005) carried out an empirical investigation to examine the role of trust and commitment on the behavioural intentions in relationship marketing. They discovered that clients, who are more trusting of their service providers, are more affectively committed to their service provider.

Although one might argue that the above studies did not directly focus on B2B OBCs, more solid evidence is found in the literature that focused on different types of OCs to further support the finding of study. In particular, Vatanasombut et al. (2008) found out that trust is positively related to commitment in web-based applications like OCs. Commensurate with the results of this study, Wu et al. (2010) have also reached a similar conclusion. They investigated the underlying driving forces that cultivate both the trust and returning behaviour of OC members. Their finding suggested that trusting beliefs significantly enhance affective commitment in online knowledge sharing communities.

Moreover, contrary to expectations, H4a was rejected as the data analysis revealed that the direct relationship between trusting beliefs and active participation was not significant ($\beta = 0.07$ at $p = 0.56$). Therefore, one might suggest that there is inconsistency between the finding of this study and the results from prior studies in the field of OC. Particularly, Usoro et al. (2007) carried out an empirical investigation

which focused on the role of trust in knowledge sharing in the context of OC of practice. Their study outcomes revealed that all three dimensions of trusting beliefs had a positive correlation with knowledge sharing behaviour. Similarly, Casaló et al. (2007) have also discovered that trust has a positive and significant effect on members' participation in OC environments. Likewise, Shang et al. (2006) reported similar outcomes when they conducted an examination to determine the factors affecting consumer's participation behaviour such as lurking and posting in online consumer communities.

However, this study result still provided evidence supporting the importance of trusting beliefs in B2B OBCs. The hypotheses test results in the earlier chapter discovered that there was a positive relationship between affective commitment and active participation. This allowed for carrying out further analysis on the link between trusting beliefs and active participation. Subsequently, the indirect relationship between the two variables was further explored. The SEM test results showed that there was a positive and indirect association between trusting beliefs and active participation via affective commitment ($\beta = 0.19$ at $p < 0.001$). The beta value (0.19) indicates the amount of change in active participation caused by 1 standard unit of trusting beliefs. Thus, in a B2B OBC, members who have a higher level of trusting beliefs are more actively involved in the community's activities. Therefore, one might suggest that trusting beliefs can also be seen as an important factor for active participation in B2B OBCs.

6.4 ISSM and Active Participation

In addition to U&G and SET, the ISSM by DeLone and MacLean (2003, 2004) was partially utilised to underpin the theoretical framework to examine the technological related factors affecting active participation in B2B OBCs. Initially, only two constructs, information quality and system quality, were identified under the theory. Service quality was excluded from the model because B2B OBCs are seen as self-sustained communities which are run by volunteers. Participations in these types

of communities are entirely voluntary, and therefore members are not obliged to provide any kind of services such as making sure the community is running or the members' problems are dealt with immediately. For a similar reason, IS scholars who attempted to investigate OCs have also excluded service quality in their model (Lin, 2008, Hsu et al., 2011). However, during the exploratory study in Chapter 4, service quality was added to the model and this reflected on moderators' role such as stopping disruptive members, solving disputes between members, and encouraging members to make contributions. The following subsequent section discusses the findings in relation to the three identified technological related factors in terms of ISSM.

6.4.1 Information Quality and Active Participation

H5a: There is a positive association between information quality and active participation in B2B OBCs

Drawing upon prior studies, in the context of B2B OBCs information quality was defined by several attributes (e.g. accuracy, completeness, currency, and Format referring) related to the posted messages. The measurement model analysis revealed that all items of the construct were reliable and valid. However, during the hypotheses testing it was found that the construct was not directly associated with active participation ($\beta = -0.11$ at $p = 0.19$), and therefore H5a was rejected. This finding opposed with the outcomes of several prior studies that found a positive association between the two constructs (e.g. Sharrat and Usoro, 2003, Lin and Lee, 2006, Chen, 2007). Sharrat and Usoro, (2003) found information quality as one of the key determinant factor for knowledge sharing behaviour in OC environment. Further, in their study Lin and Lee (2006) have discovered that information quality had a positive effect on OC users' participation intention. A similar result was also reported in a study by Chen (2007). Although this study failed to find evidence to support H5a, information quality was still seen as a crucial element in B2B OBCs. Particularly, further analysis revealed the construct had an indirect positive association with

affective commitment ($\beta = 0.18$ at $p \leq 0.01$) and active participation ($\beta = 0.02$ at $p \leq 0.05$).

6.4.2 Information Quality and Trusting Beliefs

H5b: There is a positive association between information quality and trusting beliefs in B2B OBCs

The analysis revealed the information quality had a positive impact on trusting beliefs ($\beta = 0.27$ at $p \leq 0.001$). The beta value indicates the amount of change in trusting beliefs caused by 1 standard unit of information quality. This finding suggests that information quality is a predecessor for trusting beliefs in B2B OBCs. Thus, members will develop a higher level of trust in B2B OBCs where the posted information are found to be accurate, up-to-date, relevant to the community, and presented in an appropriate format. This finding is consistent with the findings from past studies that identified information quality as the antecedent of trusting beliefs in OC environments (Joyce and Kraut., 2006, Lin, 2007). Furthermore, further analysis also revealed that information quality had an indirect positive association with affective commitment ($\beta = 0.18$ at $p \leq 0.01$). It was discovered that affective commitment increased by 0.18 standard unit for every increase of 1 standard unit of information quality. This new relationship test result indicates that in B2B OBCs where the quality of posted messages is high, then the members will become more committed to their community. However, this finding contradicts with outcomes of a study by Jang et al. (2008). They carried out an investigation to examine on-line brand community's characteristics effects on community commitment. Their study results showed that OC members' commitment is significantly influenced by community interaction and the rewards for their activities, but not by information quality or system quality. One possible explanation for this contradictory finding is that Jang et al. (2008) have only explored the direct relationships between information quality and commitment. Therefore one might suggest that their study results would have been different if trusting beliefs was added in their model.

6.4.3 System Quality and Active Participation

H5c: There is a positive association between system quality and active participation in B2B OBCs

System quality was defined as B2B OBCs websites having several characteristics such as ease of use, accessibility, response time, and reliability (Yang and Fang, 2004, Nelson and Todd, 2005, Lin, 2007). These characteristics were used as indicators to measure the construct. During the measurement model evaluation it was found that one item under the construct (STQ3 = response time) was causing a convergent validity issue, and therefore it was removed from the model. The possible explanation for that was because the item was a poor reflector for system quality. The item was more measuring response time from the community provider rather than the response time of their interaction with the system (website loading). Accordingly, in this study context system quality was defined as ease of use, accessibility, and reliability of B2B OBCs.

Contrary to expectations, the structural model evaluation revealed that system quality did not have any impact on active participation as the direct relationship between the two constructs was not significant ($\beta = 0.10$ at $p = 0.22$). Further analysis also revealed that neither did it have any indirect affect on active participation ($\beta = 0.05$ at $p = 0.06$). This finding contradicts the results of numerous empirical studies that explored the relationship between system quality and participation in OC environment. For example, the findings from a study by Wang and Fesenmaier, (2004a) suggest that system quality in terms of ease of communication of OCs' website can influence members' level of participation. In their study Preece et al. (2004) discovered that software related issues (e.g. usability) were one of the top five reasons for low participation in various OC types such as health, government, sports, and community of practice. The differing finding in this research could be because system quality may no longer be an issue as the technology has been around for many years and has now reached a stage where most applications are designed in a way that are easy to use by people. This could also be the reason most recent studies are

commensurate with this study's finding in relation to H5c. For example, the findings from several past studies suggest that system quality is no longer an important factor for participation in OC environments (Yang et al., 2007, Lampe et al., 2010). Lampe et al. (2010) have discovered that usability was not a major factor affecting content contribution in OCs. Yang et al. (2007) have also reported that system quality in terms of usability do not have an impact on people's participation in OCs like discussion forums. Another possible reason for the unexpected finding in this study is that, in a B2B OBC system quality influences other factors (e.g. trusting beliefs) rather than active participation itself. Empirical evidence was found supporting this cause, and this is further discussed in the next section.

6.4.4 System Quality and Trusting Beliefs

H5d: There is a positive association between system quality and trusting beliefs in B2B OBCs

The analysis revealed that system quality had a positive association with trusting beliefs ($\beta = 0.19$ at $p \leq 0.01$). This means that system quality is another antecedent of trusting beliefs in B2B OBCs. Thus, making B2B OBCs websites easy to use, easy to navigate, and easy to access, will increase the trusting beliefs between the members. This discovery is commensurate with the findings from studies by Riding et al. (2002) and McKnight et al. (2002b) who found system quality to be positively associated with trusting beliefs in OCs like knowledge sharing communities and B2B e-commerce. Their studies results further coincide with this study outcome as they also discovered that system quality did not have any direct impact on participation behaviour.

More solid evidence is found in the literature providing additional support for this study result. In their study Zhang and Zhang (2005) discovered that system quality (i.e. perceived system reliability and perceived system design interface) was one of the vital influencing factors for trusting beliefs in online environments. Similarly,

Nicolaou and McKnight (2006) have also found that system quality was an important factor for trust building in an OC environment.

6.4.5 Service Quality and Active Participation

H5e: There is a positive association between service quality and active participation in B2B OBCs

H5f: There is a positive association between service quality and trusting beliefs in B2B OBCs

Following the findings from the exploratory study in Chapter 4, two more hypotheses related to service quality were added to the model (H5e and H5f). Five indicators were developed from the exploratory study to measure the service quality construct. These items focused on the moderators' role in B2B OBCs. The measurement model evaluation in the earlier chapter showed that all these indicators were found to be reliable and valid. During the hypotheses testing, evidence was found to support H5f as a positive relationship was detected between service quality and trusting beliefs ($\beta = 0.45$ at $p \leq 0.001$). This finding suggests that service quality is also the antecedent of trusting beliefs in B2B OBCs. Therefore, in B2B OBCs high level of service quality will lead to the development of high level of trusting beliefs between the members of B2B OBCs. However, the direct relationship between service quality and active participation was not significant ($\beta = -0.12$ at $p = 0.14$), and therefore H5e was rejected. Nonetheless, through carrying out further analysis it was found that service quality had an indirect relationship with affective commitment ($\beta = 0.29$ at $p \leq 0.001$). The beta value shows the amount of change in affective commitment caused by 1 standard unit of service quality. This finding indicates that improving service quality in B2B OBCs can help members to develop a stronger sense of belonging and a stronger emotional attachment to their community. In addition, service quality was also found to have an indirect relationship with active participation ($\beta = 0.12$ at $p \leq 0.01$). The data analysis revealed that when service quality increased by 1 standard unit, then active participation is also increased by 0.12

units. This finding suggests that in B2B OBCs, good quality of service motivates members to get actively involved in their communities.

The above findings indicate that service quality is also an important element in B2B OBCs. Thus, in a B2B OBC where the community moderators provide good quality service such as solving disputes between the members, encouraging members to make contributions, and stopping destructive members, it will help members to develop a higher level of trust between them and this will make them more committed to the community, which ultimately motivates them to engage actively in the community's activities. The current literature provides a limited insight in relation to this finding. The majority of studies discovered have mainly focused on OCs like B2C and B2B e-commerce (Everard and Galletta, 2005, Haque et al., 2009). Service quality in these prior studies is defined by services provided by the system providers rather than the moderators. For that reason, definition of service quality in this study is different from the one is reported in the literature.

6.5 Members Business Characteristics and Active Participation

H6a: There is an indirect association between members' business size and active participation in B2B OBCs

H6b: There is an indirect association between members' business age active participation in B2B OBCs

H6bc: There is an indirect association between members' business type and active participation in B2B OBCs

In OC settings members' demographic variables (age, gender, and education) are found to have an influence on their participation behaviour (Comber et al., 1997, Venkatesh and Michael, 2000, Wang and Fesenmaier, 2004a, Thayer and Ray, 2006). However, this study postulates that these demographic variables are not important in B2B OBCs. This is because in these types of communities members are mostly business owners and managers. They joined such communities for their business purpose rather than their individual needs. Therefore their participation behaviours

are driven by their business needs (e.g. knowledge acquisition, forming relationship, and business promotion) not necessarily by their individual needs. Accordingly, this study suggested that in B2B OBCs members' business characteristics: business, size, business age, and business type, are more important than the members' demographic variables. Subsequently, H6a hypothesised that in B2B OBCs small business have a higher functional need, and this will make them more active. H6b predicted that business age also has the same implication as business size in B2B OBCs. H6c postulated that in B2B OBC members from different industry types will have different functional need, and therefore they participate differently.

As expected the analysis revealed that members' demographic variables did not have any relationship with active participation, since none of the relationships were found to be significant ($\beta = 0.02$ at $p = 0.96$; $\beta = -0.03$ at $p = 0.49$; $\beta = 0.01$ at $p = 0.83$). Contrary to expectations and the findings from a prior study by Carr et al. (2010), the hypothesis test results showed that there was not a significant relationship between members' business size and functional need ($\beta = 0.02$ at $p = 0.65$). Business size also did not have an indirect association with active participation ($\beta = 0.01$ at $p = 0.64$). Further, although the data analysis recorded a significant direct association between business age and functional need ($\beta = -0.09$ at $p \leq 0.05$), yet the indirect link between business age and active participation was found not to be significant ($\beta = -0.02$ at $P = 0.6$). These findings contrast with the findings from prior studies by Carr et al. (2010) and Watson (2007). However, the unexpected findings in this study could be because the large majority of the participants were young companies coming from micro and small size businesses (See Chapter 5 Section 00). Nevertheless, the link between business type and functional need was found to be significant ($\beta = -0.09$ at $p \leq 0.05$), and therefore the indirect association between business type and active participation was also significant ($\beta = -0.03$ at $p \leq 0.01$). This implies that, in B2B OBCs members from different industry types participate differently.

6.6 Summary

The main purpose of this chapter was to discuss the outcomes of the data analysis in relation to the proposed hypotheses. The study confirmed that two factors (functional need and hedonic need) identified under U&G had a positive impact on active participation. Contrary to expectation, psychological need was found to have no direct impact on active participation. Yet, it was still considered important for B2B OBCs as the construct had an indirect association with active participation. Consistent with prior studies, two SET factors (affective commitment and reciprocity) were found to have a direct impact on active participation. However, no empirical evidence was found to support the direct relationship between trusting beliefs and active participation. Nonetheless, it was concluded that the construct is still an important element in B2B OBCs, because it had an indirect association with active participation. Similarly, the three constructs of ISSM were also found to have no direct association with active participation. Yet, they were also found to be important ingredients in B2B OBCs. Particularly, the data analysis revealed all the three factors had a positive association with trusting beliefs. Furthermore, information quality and service quality were also found to have an indirect association with affective commitment and active participation. The final model of this study for active participation in B2B OBCs is shown in Section 7.5.5 in Chapter 7. The developed model provides both researchers and B2B OBC providers with insightful information about the most important factors affecting members' participation behaviour in B2B OBCs. The next chapter discusses the original contributions of this study to knowledge and further provides practical implications for B2B OBCs owners and managers on how to develop and maintain a successful community.

7 Chapter Seven: Conclusion

7.1 Introduction

This chapter first presents a summary of the whole study. It then provides an overview of the research question, research aim, and research objectives. Next, it discusses how this study achieved the identified objectives. This is followed by a statement of the original contributions to knowledge, literature and practice. Finally, it discusses some of the considered limitations of the study and further identifies some potential areas for future research.

7.2 Research Summary

The purpose of this study was to investigate factors affecting active participation in B2B OBCs. The research programme started by carrying out an extensive literature review in the area of OC, in particular active participation. Having discovered the importance of active participation and its effect on OC success, it was found necessary to include the element of active participation in the OC definition. Accordingly, the concept was also included in the definition of B2B OBCs. Several B2B OBC benefits such as knowledge sharing, providing/seeking support, and forming business relationships were identified. However, the review of the extant literature suggested that without active participation B2B OBCs cannot deliver these benefits to their members, and therefore these types of OC will not flourish without active participation. Following the literature review it was found that the participation issue has been examined in various types of OCs. Yet, very little research has focused on B2B OBCs. Subsequently, active participation in B2B OBCs was identified as the gap in the literature. Besides, the review of literature on the construct provided evidence suggesting that there is lack of understanding about what exactly active participation means and how it can be measured. For that reason this study proposed that research on active participation in B2B OBCs is still evolutionary. Therefore this study attempted to answer the following question:

What are the factors affecting active participation in B2B OBCs?

To address this research question, this study proposed a conceptual framework underpinned by three well known theories: U&G, SET, and ISSM. A mixed method approach using sequential design was employed to achieve the aim and objectives of the study. Hence, the research process was divided into two main phases. In the first phase an exploratory study was carried out in order to identify the measure for active participation in B2B OBCs as well as identifying other important factors that were missed during the literature review. Following the exploratory study, a new measure for active participation was developed. Further, a new construct ‘service quality’ reflected on the moderator’s role was also added to the model. In the next phase, an online questionnaire was designed to collect data in order to test the developed framework. Using non-probability sampling this study collected 521 useable online questionnaires from 41 B2B OBCs on LinkedIn. The data was then analysed using SEM utilising AMOS. The data analysis was carried out in two main stages. In the first stage the measurement model was evaluated. This involved conducting construct reliability and validity tests. After achieving a satisfactory model, the next stage focused on testing the structural model (hypotheses testing), and these are discussed in Chapter 6. The discussion is also focused on how the quantitative results relate to the theoretical base and literature foundation of the research. This helped in the development of the final framework of this research.

7.3 An Overview of the Research Aim and Objectives

This study’s aim was to investigate factors affecting active participation in B2B OBCs. In order to achieve this aim the following objectives were set:

- To better understand OBCs in particular B2B OBCs through a critical literature review
- To better understand the active participation phenomenon in B2B OBCs

- To better understand theoretical concepts and theoretical debate on factors that may affect active participation in B2B OBCs
- To develop and test a framework underpinned by OC theories to address factors affecting active participation in B2B OBCs
- To contribute to the literature on B2B OBCs in particular active participation
- To provide B2B OBCs' owners and managers with some practical guidelines on how to develop and maintain a successful B2B OBCs
- To provide implications for future research

7.4 Research Outcomes

7.4.1 Better Understanding B2B OBCs

This objective was achieved through the literature review in Chapter 2 which helped the author to understand: a) what OCs are and how they can be defined; b) how OCs are classified; c) what a B2B OBC is. The research started by reviewing the relevant literature in the area of OCs. It was discovered that OC is a very complex phenomenon and it has been known by different terms and definitions. Some of the term used included virtual communities, computer-mediated communities, and electronic communities (Hagel and Armstrong, 1997, Wasko and Faraj, 2000, Wang and Fesenmaier, 2004). However, the term OC was used throughout this thesis for all of these terms. The literature search revealed that there is not a standard definition for OCs. Particularly, it was found that the definition of OC can vary from one researcher's point of view to another's and from one study context to another (Koh and Kim, 2004, Porter, 2004, Lin, 2007, Lin, 2008, Hew, 2009). After reviewing several OC definitions, it was found necessary to include several OC attributes (e.g. people, purpose, participation, technologies, and policies) when defining an OC. Considering these OC characteristics, in this study OC was defined as:

“a virtual place consisting of a group of people from different physical locations with a shared purpose or interest governed by policies, who have already established some level of participation regardless of time through a communication technology”

It was also found that there is no universally agreed way to classify OCs as numerous typologies for OCs were discovered in the literature. These classifications were based on different attributes of OCs such as community purpose, members' needs, types of people involved in the community, and technologies used (Hagel and Armstrong, 1997, Lazar and Preece, 1998, Plant, 2004). However, this study postulated that an OC can also be classified based on the discipline it originated from. Subsequently, Online Business Community (OBC) was defined as one typology for OC belonging to the business discipline. Further, OBC was classified into two more categories which are B2B and B2C. B2B communities were also divided into two sub-categories namely: B2B e-commerce and B2B OBC. This study only focused on B2B OBC and it was defined as:

“a virtual place consisting of a group of people (business owners and managers) from different physical locations with a shared purpose or interest (provide/seek support and expertise, share information and knowledge, discuss business related issues, and forming business relationships) governed by policies (community rules and regulations), who have already established some level of participation (posted questions, replied to others' questions, and established contacts) regardless of time through a communication technology (discussion boards, chatting system, or website)”

7.4.2 Understanding the Active Participation Phenomenon

The review of current literature in Chapter 2 helped to achieve this objective. It was discovered that active participation is the fundamental success factor for any type of OC. It was also found that for an OC to be able to achieve its value there should be a significant number of members who are willing to actively get involved in the community activities (Cothrel and Williams, 1999, Cothrel, 2000, Ardichvili et al.,

2003). Despite the importance of active participation for OCs, the literature review demonstrated that it is still not clear what it meant by 'active participation' and how it can be measured. Particularly, it was found that there was no standard definition for active participation or a universally agreed way to measure it. Researchers have used different approaches to measure active participation. Several OC scholars have used the time spent in the community as a way to measure participation level (Dholakia et al., 2004). However, this measure suffered from some limitations as some members (lurkers) could be spending time inside their OCs but they may not actively getting involved in the community activities. Largely, the number of posted messages per member is used to measure the construct (Nonnecke and Preece, 2000, Chen et al., 2004, Han et al., 2007). However, OC scholars lacked agreement on the number of posts a participant should make in order to be considered as an active participant. Besides, this measure suffered from other drawbacks as prior research discovered that some OC members might provide a high quantity of posts but low quality posts and this was seen as a problem that deters active members (Preece et al., 2004). For that reason, some researchers have shown their dislike of using number of posts to measure the construct (Lee et al., 2006, Chen and Chang, 2011). These scholars suggested that quality of information should also be included in the participation measure. Considering the limitations of the currently used measures and lack of research in the area of active participation in B2B OBCs, this study suggested further exploration on the phenomenon. Thus, it was found necessary to develop a new measure for active participation in the context of B2B OBCs. Towards achieving this goal, an exploratory study was carried out, which collected data from twelve members of B2B OBCs using semi-structured interviews. Thematic analysis was employed to analyse the collected data. Subsequently, a new measure for active participation was developed. This reflected on B2B OBC members carrying out several activities such as logging on daily or weekly basis, complying with the community rules and regulations, having an up-to-date profile, posting quality

questions that create discussions on a daily or weekly basis, and replying to posted questions on a daily or weekly basis.

7.4.3 Understanding Factors Affecting Active Participation

This study found very limited studies with regards to active participation in B2B OBCs. Numerous studies were discovered in the area of OBCs, but they mainly focused on B2C OBCs and B2B ecommerce (Zimmer et al., 2010). Although little research was discovered with regards to B2B OBCs (Zahay and Handfield, 2004, Nolan et al., 2007), they did not directly focus on active participation. Considering the lack of research in this area, this objective was still achieved through reviewing relevant literature in the field of OCs that focused on participation. Well established knowledge management literature was discovered on factors affecting knowledge sharing behaviour in OCs (Hsu and Lin, 2008, Chen and Hung, 2010, Lu and Yang, 2011, Chai and Kim, 2012). A large stream of research was also discovered that attempted to examine factors affecting participation level in OCs like communities of practice (Wang and Fesenmaier, 2003, 2004a, 2004b). Numerous empirical studies were also found in relation to factors affecting participation in various other OC types (Preece et al., 2004, Bishop, 2007, Yan et al., 2007). Further examination on the outcomes of past studies revealed that factors affecting active participation could be categorised into two main categories. These were technological related factors and social related factors. Accordingly, a socio-technical approach was followed to identify both social and technical related factors. Several key factors for active participation in B2B OBCs were identified and used to build the theoretical framework of the study.

7.4.4 Developing and Testing a Framework

The primary objective of this study was to develop and test a theoretical framework for factors affecting active participation in B2B OBCs. Towards achieving this goal, this study reviewed prior related studies. As discussed in the earlier section,

the literature review helped in identifying several important factors. The majority of the identified factors were covered by three theories: U&G, SET, and ISSM. Several hypotheses were developed showing the relationships between the constructs inside the framework. The proposed framework was then tested using online questionnaires. The final version of the framework is shown in Figure 7-1.

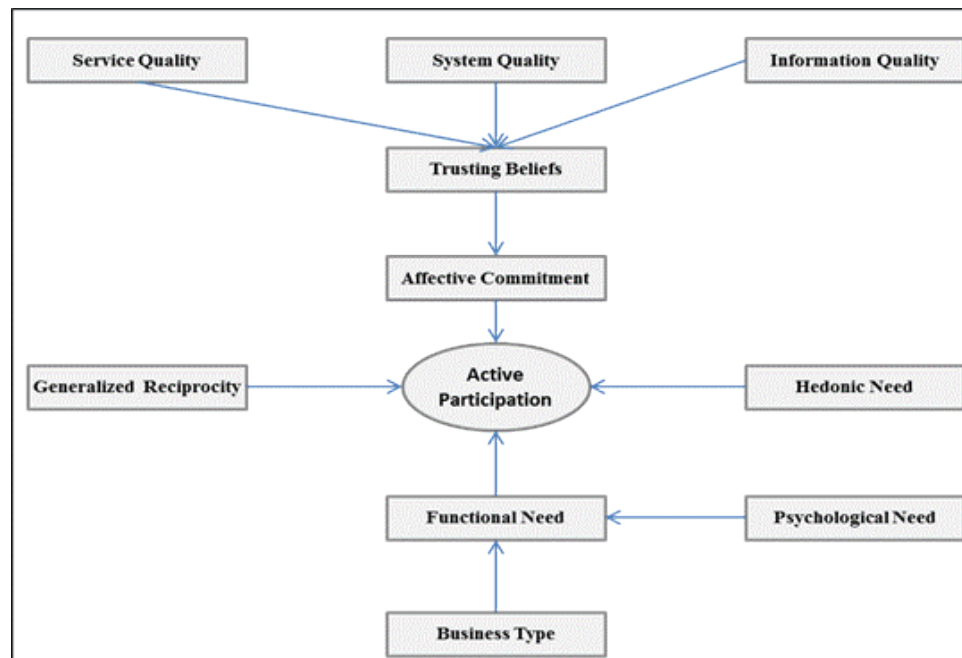


Figure 7-1: The Final Version of the Theoretical Framework

As shown in Figure 7-1, two constructs under U&G were found as predictors for active participation in B2B OBCs. This study discovered that functional need and hedonic need are positively related to active participation in B2B OBCs. These hypotheses results were consistent with the findings from past studies (Ardichvili et al., 2003, Porter, 2004, Wang and Fesenmaier, 2004b, Kankanhalli et al., 2005). Contrary to the findings of prior research (e.g. Chiu et al., 2006, Utz, 2009, Wang and Fesenmaier 2003), this study did not find a direct association between psychological need and active participation. Yet, the construct was still found to be an important factor in B2B OBCs because it had a positive and indirect relationship with active participation via functional need. In addition, in line with the findings from a large

stream of empirical studies (e.g. Chen and Hung 2008, Bateman et al., 2010, Lu and Yang, 2011), this study outcomes also revealed that two SET constructs (reciprocity and affective commitment), were also found to have a direct impact on active participation in B2B OBCs. Unexpectedly, no direct relationship between trusting beliefs and active participation was detected. This finding contradicted the results of several past empirical studies (e.g. Casaló et al., 2007, Shang et al., 2006, Usoro et al., 2007). Nevertheless, trusting beliefs was still considered as a crucial element in B2B OBCs, because the construct had an indirect association with active participation via affective commitment.

Moreover, three factors, information quality, system quality, and service quality were identified under ISSM. The SEM analysis revealed that, information quality played an important role in the model as the construct found to be positively related to trusting beliefs. It was also found to have an indirect and positive relationship with affective commitment and active participation. Although, system quality was positively related to trusting beliefs, yet it did not have a direct or an indirect impact on active participation. Contradictory results were discovered in the literature in relation to the positive link between the two constructs. Particularly, the findings from several empirical studies provided evidence supporting the positive relationship between system quality and active participation in an OC environment (Preece et al., 2004, Wang and Fesenmaier, 2004a). On the other hand, several research outcomes indicated that system quality does not have a significant impact on active participation in various OC types (Yang et al., 2007, Lampe et al., 2010). Nevertheless, system quality was still found to be important for B2B OBCs as it had a positive influence on trusting beliefs. Accordingly, this study concluded that system quality is the antecedent of trusting beliefs in B2B OBCs, and it has little impact on active participation. The final construct, 'service quality', identified under ISSM, was defined as the moderators' role. This construct was added as the result of the exploratory study in Chapter 4. The data analysis result indicated that service quality plays an important role in B2B OBCs because the construct had a positive impact on

trusting beliefs. Further, it also had an indirect impact on affective commitment and active participation. Finally, the analysis showed that members from different industry types participate differently in B2B OBCs. This finding was in line with the research outcomes of several prior studies (e.g. Watson, 2007, Carr et al., 2010).

7.5 Original Contributions

This study has succeeded in identifying a gap in the literature in the field of OC. It has also successfully developed and validated an integrated framework underpinned by three well known theories to understand the important factors affecting active participation in B2B OBCs. The final outcomes of this study make the following contributions to the knowledge and literature in the field of OC.

7.5.1 Contribution to Knowledge on OC Definition

This study contributes to the knowledge on OC definitions. Considering the complexity of the phenomenon, researchers have provided various definitions for OCs. Some of these definitions are found to be very simple and provide little information on OCs (Ahuja and Galvin, 2003, Lin, 2007, Hew, 2009). Several researchers have taken a different approach as they provided details on OC characteristics instead of providing a precise definition (Maloney-Krichmar and Preece, 2002, de Souza and Preece, 2004, Stockdale and Borovicka, 2006). Based on a careful review of the discovered definitions and OC attributes reported in the literature, this study proposed a much richer definition for OCs which included attributes like participation and policies that were not mentioned in the majority of discovered definitions (See Section 7.4.1).

7.5.2 Contribution to Knowledge on B2B OBCs

Another contribution of this study is extending the existing knowledge on OC classification. A new classification schema for OC is proposed. Past studies have classified OCs differently based on different attributes such as community purpose,

members, and technology. However, this study showed that OCs can also be classified based on the discipline they originated from. Accordingly, an OBC was identified as a type of OC belonging to the business discipline. Further, B2C and B2B were recognised as two sub-categories of OBCs. B2B were divided into two types: B2B e-commerce and B2B OBCs. B2B OBCs are also divided into two types: Online and Online+Offline (See Section 2.2.2 in Chapter 2). This extends the existing knowledge with regard to a better understanding ways to classify OCs.

7.5.3 Contribution to Literature on the Active Participation Measure

An enhanced, validated, and tested measure for the active participation construct was developed. Initially, this study was unable to find a standard measure for active participation because the literature review revealed that the construct was measured differently. Besides, a critical evaluation of current measures revealed that they suffered from several limitations (See Chapter 2 Section 2.5.2). Accordingly, from the exploratory study a new measure for active participation in B2B OBCs was developed. The new measure was later validated using confirmatory factor analysis, and found to be reliable and valid. This provides a new, tested instrument for researchers to adopt in OC research, particularly B2B OBCs .

7.5.4 Contribution to Knowledge on the Functional Need Measure

The critical literature review in Chapter 2 revealed that the functional need measure can also vary from one community type to another depending on the community purpose. Considering the lack of research in the area of B2B OBCs, it was found necessary to develop a measure for the construct in the context of B2B OBCs. From the exploratory study a new measure was then developed (See Chapter 4 Section 4.5.1.2). This was later validated during the CFA process in Chapter 5. This new validated measure provides a new tested instrument for functional need, that can be adapted by B2B OBC researchers.

7.5.5 Contribution to Literature by Developing an Integrated Framework

This study proposed, modified and validated a framework for factors affecting active participation in B2B OBCs. The framework was underpinned by three theories: U&G, SET, and ISSM. The final outcome of this study demonstrates the appropriateness and robustness of the model for helping to better understand B2B OBCs members active participation behaviour. The final model for active participation is illustrated in Figure 7-1. This model can provide a foundation for future studies in the field. It can better guide OC scholars interested in modeling and explaining participation in OCs by highlighting the need for more integrative theoretical approaches. In the past, the vast majority of scholars utilised a single theory for explaining participation behaviour in OC environment. These studies suffered from some limitations and they were considered incomplete because some of them only focused on socially related factors and therefore ignored the technological related factors. However, the results of this study indicate that the three theories (U&G or SET or ISSM) can mutually coexist in a single model and be used to explain more fully the participation phenomenon in OCs, particularly B2B OBCs. For that reason, one can proffer that any attempt to investigate members' participation behaviour in OCs would be incomplete unless all three theories are considered.

7.5.6 Extending the Existing Knowledge on OC Commitment

During the framework development stage in Chapter 3, it was discovered that commitment is a multi-dimensional construct that has been studied from different backgrounds. However, the multi-dimensional aspect of commitment was not recognised in many research that investigated participation in OC environments. Many past studies have used commitment as single dimension construct and measured it in different ways. In this study, following the literature review three dimensions of commitment (continuance commitment, affective commitment, and normative commitment) were identified. After a careful evaluation of these dimensions, only affective commitment was found to be an important factor for active

participation in B2B OBCs. As suggested, the data analysis in Chapter 5 provided strong empirical evidence in relation to the positive association between affective commitment and active participation. This finding suggests that OC scholars should pay careful attention to the multi-dimensional aspect of commitment when investigating participation phenomenon in any type of OCs.

7.5.7 Extending the Existing Knowledge on OC Trust

Trust was found to be a multi-dimensional construct which has been studied from different disciplines and backgrounds (See Chapter 3 Section 3.4.3.1). Three types of trust were reported in the literature: disposition-based trust, institution-based trust, and trusting-beliefs. After cautiously evaluating these types of trust in the context of OC environments, it was found that trusting beliefs was the only dimension applicable to the context of B2B OBCs. A further three dimensions of trusting beliefs were discovered: ability, integrity and benevolence. Accordingly, they were used to capture trusting beliefs in B2B OBCs. The SEM test results revealed that trusting beliefs is the core construct for active participation in B2B OBCs. However, the vast majority of OC scholars have failed to recognise the multi-dimensional aspect of trust when investigating participation phenomenon in various OC types. This study provides a better understanding of different types of trust in OC settings and can better guide future studies by focusing on a specific type of trust.

7.5.8 Contribution to Literature on Service Quality in the OC Context

This study further extends the existing knowledge on how service quality should be measured in OC environments, particularly in B2B OBCs. The literature review discovered that the majority of OC scholars pay little attention to how service quality may affect participation in OCs. The reason for that is because OCs are mostly run by their members who are not obliged to provide any types of services. However, the findings from the exploratory study in Chapter 4 indicated that service quality in B2B OBCs relates to the role of moderators rather than to community providers.

According, a new validated measure for service quality was developed. This provides a new instrument for OC scholars to adopt in the future. Moreover, the data analysis revealed that the construct was one of the most important elements of B2B OBCs as it positively associated with three constructs in the model. Service quality was found to be the antecedent of trusting beliefs and affective commitment and had a positive impact on active participation. These findings suggest that OC scholars should carefully consider the moderator's role when investigating participation in any type of OC.

7.6 Original Contributions to Practice

This study has several practical implications for practice. The research results can help B2B OBC owners and managers in developing and maintaining a successful community through considering eight guidelines identified in the following subsections. These guidelines will be disseminated to community owners and managers in several ways. First, an executive summary of this research along with the practical guidelines will be emailed to the owners of B2B OBCs that were included in this study and to the participants of this study who showed interest in the research findings. Second, the guidelines will also be posted on several B2B web blogs (e.g. exploreb2b.com) that focus on business technologies similar to B2B OBCs. Third, the guidelines will also be presented in B2B networking events such as the Knowledge Hub Network by University of Bedfordshire and the Cambridge Network. At last, the outcomes of this study and the postulated practical guidelines will be published in an international IS leading journal.

7.6.1 Raising Members' Awareness of the Benefits of Participation

A positive relationship between functional need and active participation was found. This implies that B2B OBC owners and managers therefore need to understand their members' functional needs, which reflect on the benefits they expect from their communities. It is important for community providers to make sure that all

members are aware of the benefits available through the community. One possible way to achieve this is through testimonials showing stories of members who benefited greatly from the community. This needs to be disseminated to community members via emails (community newsletters). It is also crucial for community owners to maximise the benefits they provide to their members. This can be done through becoming more aware of the diversity of community member needs by collecting regular feedback and making changes whenever necessary. However, this requires careful consideration because introducing radical changes could deter some members.

7.6.2 Promoting the Contribution of Active Members in the Community

This study also found that in B2B OBCs members who seek to improve their reputation and status in the community tend to participate more actively in the community activity. Therefore, community owners and managers should build a mechanism into their community website where active members are automatically identified and emphasised inside the community. One way to achieve this is by displaying a summary of individual activities (e.g. top contributors) somewhere on the website which is visible to every community members. Allowing members' status and posts to be rated by other community members is also a possible way for achieving this.

7.6.3 Encouraging Altruism in the Community

Generalised reciprocity was seen as another important factor for active participation in B2B OBCs. The participants in this study were more willing to participate in their community's activities and provide support and help to other community members if they believed they would be helped in the future. Thus, it is important for community owners and managers to regularly remind the members about the help they have received from other community members and encourage them to provide help and support to other members in need.

7.6.4 Increasing the Level of Members' Commitment to their Community

Affective commitment played a crucial role in understanding members' active participation behaviour in B2B OBCs. In this study members who felt a strong sense of connection and strong sense of belonging to their communities, were found to be actively involved in their community activities. Therefore, in a B2B OBC, the community providers should find ways to make the members be more affectively committed to the community. However, such a type of commitment is difficult to develop and foster as this study discovered that members' participation behaviour (e.g. posting and replying) was still driven by their individual needs (e.g. functional, psychological, and hedonic). Nevertheless, with support from the data analysis, this study can draw several suggestions on how to increase affective commitment in B2B OBCs. The SEM test results revealed that affective commitment is increased by trusting beliefs, information quality, and service quality. It was found that high level of trusting beliefs influenced members to be more emotionally attached and feel a stronger sense of belonging to their communities. Therefore it is important for community owners and managers to encourage a higher level of trusting beliefs between the members. The analysis also revealed that the quality of posted messages inside B2B OBCs influenced members to develop a higher level of emotional attachment and a stronger sense of belonging to their communities. Thus, it is also necessary for B2B OBCs owners to ensure the quality of posted messages inside their communities. Furthermore, it was discovered that service quality had a positive impact on affective commitment. This finding implies that the moderators play an important role in members' affective commitment. Hence, one might suggest that community owners and managers should encourage moderators to actively get involved in the community and their contributions should always be acknowledged.

7.6.5 Increasing the Level of Members' Trust in the Community

Trusting beliefs was positively linked to effective commitment and it had an indirect impact on active participation. Therefore, the construct was found to be

another important element in B2B OBCs. Thus, making sure trusting beliefs are flourishing between the community members is another recommendation for B2B OBCs providers. One possible way to do that is through making sure the posted messages inside the community are always up-to-date, accurate, relevant to community, and presented in an aesthetically relevant format. This guideline can be backed by empirical evidence from the data analysis and the literature. The hypotheses test results discovered a positive association between information quality and trusting beliefs. Moreover, increasing trusting beliefs is also possible through improving the quality of B2B OBCs websites. Particularly, the test results in Chapter 5 showed that system quality was positively related to trusting beliefs. This finding implies that making a community website easy to use, easy to navigate, and trustworthy will encourage members to develop a higher level of trust. In addition, service quality was also found as a strong predictor for trusting beliefs. Thus, encouraging moderators to actively get involved in the community can also be seen as another way to improve trusting beliefs between the members of B2B OBCs. Particularly, this was more apparent from the exploratory study as it was found that the majority of participants were relying on the moderators to deal with their issues such as solving disputes between the members.

7.6.6 Improving Quality of Posted Messages in the Community

It is important for B2B OBC providers to ensure the quality of posted messages inside their community. Particularly, information quality was found to be positively related to trusting beliefs. It was also found to have an indirect impact on affective commitment and active participation. Besides, the importance of quality of posted information also became apparent during the exploratory study because the participant clearly indicated that they were discouraged by low quality posts. Possible suggestions to increase quality of posts in B2B OBCs include: raising members awareness about the importance of the quality of posting by setting clear guidelines, frequently monitoring the posted messages and removing messages that are not

relevant to the community and removing posts that are offensive to other community members.

7.6.7 Improving Quality of the Community Website

Although system quality was found to have no impact on active participation, it still played an important role in B2B OBCs. The data analysis results show that system quality was the antecedent of trusting beliefs. Therefore, B2B OBC providers should ensure their website is easy to use, easy to navigate, and information is easily accessible to members. Community owners should regularly elicit feedback from members on their experience with the community website and make changes whenever necessary.

7.6.8 Encouraging More Members' to Become Moderators

Service quality in terms of moderators' role is crucial for B2B OBCs as the construct was found to have a positive impact on trusting beliefs. The construct was also found to have an indirect impact on affective commitment and active participation. Thus, community owners should acknowledge the moderators' contributions and encourage them to get more involved in the community activities. Further, they should try to recruit more moderators by encouraging the experienced members (e.g. experts) to take on a moderator role.

The outcomes of this research will have impact both academically and economically. In terms of academic impact, this research made several contributions to knowledge and literature (see Section 7.5.1 to Section 7.5.8). The outcomes of this study along with the contributions will be published in academic journals (e.g. Information Systems Journal). With regards to economic impact, as mentioned in Chapter 1 Section 1.3, this research was part of a collaborative project which aimed to develop an online platform to support business growth. The guidelines provided in Section 7.6.1 to 7.6.8 will help increasing members' active participation behaviour which ultimately leads to the success of B2B OBCs. The guidelines will be applied to

several B2B OBCs. After a period of time, feedback will be collected from the community owners and members to assess the impact of the guidelines. As part of dissemination activity, results will be presented back to the sponsors and feedback elicited towards ‘impact statements’.

7.7 Limitations

This study has some limitations that provide some directions for future research. One limitation comes from the exploratory study. The measurement model for three of the dependent variables, active participation, functional need, and service quality, were developed from a small sample size consisting of twelve participants. While the results of validity and reliability tests provided sufficient confidence, developing measures for these constructs is desirable based on a larger sample; a psychometric test could yield more powerfully richer results.

External validity is also another limitation to consider. Although this study has followed the common practice of sampling in data collection and achieved a large data set, it is important to mention some sampling issues associated with the data collection. The sample was drawn from B2B OBCs only on LinkedIn and that limits the generalisation of the study outcomes to other B2B OBCs on the Internet who use different online platforms such as vBulletin, iPBoard, phpBB, SMF, and many others. In addition, when collecting data from the B2B OBCs on LinkedIn, the author was only able to target members who had some visible activities and whose profile was available to the public; this could also limit the generalisation of the study results to other B2B OBCs on LinkedIn.

7.8 Direction for Future Research

The identified limitations in the earlier section provide some directions for future research. There is opportunity to develop a standard measure for active participation in OC environments. This can be achieved by collecting more objective data from members of OCs. This is expected to help to include other important elements in the

active participation measure to increase our understanding of the phenomenon. The definition and model of active participation could be tested with other types of OC. The confirmed indicators then could be used as a standardised measure for the construct. Following the same process a standard measure for service quality can also be developed. Future research is also required to validate the model with other B2B OBCs that use different platforms to LinkedIn. Besides, more research would also be useful in examining other possible relationships in the framework. For example, the association between reciprocity and affective commitment or functional need and affective commitment could be further explored.

8 References

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9 Appendices

Appendix A : Examples of B2B OBCs

B2B OBCs	Type	B2B OBCs	Type
aardvarkbusiness	O	Top Business Forums	O
About my Business	O	UK Business Forum	O
Bizface Community	O	UK Business Labs	O
Work at Home Forum	O	West Midlands Collaborative Market Place	O+F
Business Advise Forum	O	Business Network Northeast	O+F
Business Forum	O	Young Entrepreneur small business	O+F
Business Forum	O	Business Ideas and Opportunities	O+F
A1 Business Forum	O	In Business Blogs for Successful entrepreneur	O+F
Business Ideas Forum	O	Web Designer Forum	O+F
Business Know How	O	Web Master Business Forum	O+F
Dubai Forum	O	4 Networking	O+F
Entrepreneur Forum	O	Big Money	O+F
Experienced People	O	Biz Forum	O+F
FBQ	O	Bizmeed	O+F
Free Business Forum	O	Business forum International	O+F
Geek Point .net	O	Business In The Community	O+F
Home based Business	O	Business Midlands	O+F
Home Business Online	O	Business North West	O+F
UK Small Biz World	O	Business Opportunities and Ideas	O+F
Internet Business	O	business support solution	O+F
Internet Money Forum	O	Business West of England	O+F
Launch Lab	O	Business Yorkshire	O+F
Money Maker Discussion	O	Cambridge Business Action Network	O+F
My Local Forums	O	Cambridge Network	O+F
Online Forum	O	Enterprise UK	O+F
Sales and Marketing UK	O	EU Business	O+F
Scottish Business Forum	O	Lancaster Forum	O+F
Small Business Forum	O	Mums Club	O+F
Small Business Forum	O	Oxford Business Alumni	O+F
Small Business Forums	O	Plato Ireland	O+F
Surrey Online	O	Scottish Business in the Community	O+F
Tenric Business Forum	O	Skoll World Forum	O+F
The V7 Network	O	Small Business Online Community	O+F
The Whole Sale Forum	O	South East Business Portal	O+F
Top Business Forums	O	The Knowledge Network	O+F

O: Online O+F: Online and Offline

Appendix B: Semi-Structured Interview Questionnaires

Part One: Interview Questions

1. How many B2B online communities you are registered with or you make regular visit to? Please could you name some of them?
2. What activities do you normally carry out when visiting the B2B online communities you stated earlier? How often do you carry out these activities?
3. Could you please tell me what are the reasons for joining or visiting the B2B online communities you stated earlier?
4. Now I would like to capture your view about active participation inside B2B online communities. What does active participation mean to you? Who do you consider as active member?
5. What are the factors that may affect your active participation within the B2B online communities that you are registered with or make regular visit to? Is there any other factors may affect your participation?
6. What sort of benefits do you expect from the B2B online communities that you are registered with or make regular visit? Would you still continue making active participation, if you don't get these benefits?
7. How trust may affect your participation in the B2B online communities that you are registered with or make regular visit?
8. How commitment may affect your participation inside the B2B online communities that you are registered with or make regular visit to
9. What are the information qualities that you would expect from the B2B online communities that you are registered with or make regular visit to? And how these may affect your participation inside?
10. What are the system qualities that you would expect from the B2B online communities that you are registered with or make regular visit to? And how these may affect your participation?
11. What are the service qualities that you would expect from the B2B online communities that you are registered with or make regular visit to? How this may affect your participation?
12. Do you think improving your business reputation/status in the B2B OCs affect your participation? Please elaborate.
13. Now we talked about (do a recap). Is there any other factor that may affect your participation inside the B2B online communities that you are registered with or make regular visit?

Part Two: Demographic Questionnaire																						
Q1	What is your <u>gender</u> ? <input type="checkbox"/> Male <input type="checkbox"/> Female																					
Q3	What is your <u>age group</u> ? <input type="checkbox"/> Less than 20 <input type="checkbox"/> 31-40 <input type="checkbox"/> 51-60 <input type="checkbox"/> 21-30 <input type="checkbox"/> 41-50 <input type="checkbox"/> 61 and over																					
Q4	What is your highest <u>level of education</u> ? <input type="checkbox"/> School Certificate <input type="checkbox"/> GCSE/ O Levels or equivalent <input type="checkbox"/> AS/A Levels or equivalent <input type="checkbox"/> Diploma or equivalent <input type="checkbox"/> Bachelor's degree <input type="checkbox"/> Master's degree or equivalent <input type="checkbox"/> PhD or equivalent <input type="checkbox"/> Other qualification, please specify: _____																					
Q5	<table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top; width: 33%;"><u>White</u></td> <td style="vertical-align: top; width: 33%;"><u>Asian or Asian British</u></td> <td style="vertical-align: top; width: 33%;"><u>Black or Black British</u></td> </tr> <tr> <td><input type="checkbox"/> British</td> <td><input type="checkbox"/> Indian</td> <td><input type="checkbox"/> Caribbean</td> </tr> <tr> <td><input type="checkbox"/> Irish</td> <td><input type="checkbox"/> Pakistani</td> <td><input type="checkbox"/> African</td> </tr> <tr> <td><input type="checkbox"/> Other White background, please specify: _____</td> <td><input type="checkbox"/> Other Asian or Asian British background, please specify: _____</td> <td><input type="checkbox"/> Other Black or Black British background, please specify: _____</td> </tr> <tr> <td>Mixed</td> <td>Chinese</td> <td>Any Other Background</td> </tr> <tr> <td><input type="checkbox"/> White and Asian</td> <td><input type="checkbox"/> Chinese</td> <td><input type="checkbox"/> Other Ethnic Group Please Specify: _____</td> </tr> <tr> <td><input type="checkbox"/> White and Black Caribbean</td> <td><input type="checkbox"/> White and Black African</td> <td><input type="checkbox"/> Other Mixed background Please specify: _____</td> </tr> </table> <p>Which of the following option(s) best describes <u>your ethnic group</u>?</p>	<u>White</u>	<u>Asian or Asian British</u>	<u>Black or Black British</u>	<input type="checkbox"/> British	<input type="checkbox"/> Indian	<input type="checkbox"/> Caribbean	<input type="checkbox"/> Irish	<input type="checkbox"/> Pakistani	<input type="checkbox"/> African	<input type="checkbox"/> Other White background, please specify: _____	<input type="checkbox"/> Other Asian or Asian British background, please specify: _____	<input type="checkbox"/> Other Black or Black British background, please specify: _____	Mixed	Chinese	Any Other Background	<input type="checkbox"/> White and Asian	<input type="checkbox"/> Chinese	<input type="checkbox"/> Other Ethnic Group Please Specify: _____	<input type="checkbox"/> White and Black Caribbean	<input type="checkbox"/> White and Black African	<input type="checkbox"/> Other Mixed background Please specify: _____
<u>White</u>	<u>Asian or Asian British</u>	<u>Black or Black British</u>																				
<input type="checkbox"/> British	<input type="checkbox"/> Indian	<input type="checkbox"/> Caribbean																				
<input type="checkbox"/> Irish	<input type="checkbox"/> Pakistani	<input type="checkbox"/> African																				
<input type="checkbox"/> Other White background, please specify: _____	<input type="checkbox"/> Other Asian or Asian British background, please specify: _____	<input type="checkbox"/> Other Black or Black British background, please specify: _____																				
Mixed	Chinese	Any Other Background																				
<input type="checkbox"/> White and Asian	<input type="checkbox"/> Chinese	<input type="checkbox"/> Other Ethnic Group Please Specify: _____																				
<input type="checkbox"/> White and Black Caribbean	<input type="checkbox"/> White and Black African	<input type="checkbox"/> Other Mixed background Please specify: _____																				
Q5	Which of the following option(s) best describes your <u>company's industry type</u> ? <input type="checkbox"/> Manufacturing <input type="checkbox"/> Retail/trading <input type="checkbox"/> Architecture/engineering <input type="checkbox"/> Travel/tourism/hotel <input type="checkbox"/> Finance/banking/insurance <input type="checkbox"/> Business services <input type="checkbox"/> Computer/IT <input type="checkbox"/> Health/medical <input type="checkbox"/> Real estate/property <input type="checkbox"/> Other business industry, Please Specify: _____																					
Q6	What position do you held in your company: _____																					
Q7	What is the approximate number of employees in your company: _____																					
Q8	What is the year of your company's establishment date: _ _ _ _																					
Part two: Active participation questionnaires																						
Q1	Please write down the <u>list of activities</u> you carry out when visiting the B2B OCs you stated above?																					
Q2	Imagine <u>participant A</u> is an <u>active member</u> of your B2B OC, please write down the <u>list of activities</u> that you would expect Participation A to carry out when visiting the B2B OC?																					

Appendix C: Tools for Designing Online Questionnaire

Tools	Website
Qualtrics	www.qualtrics.com
Active Websurvey	www.activewebsoftwares.com
Apian Software	http://www.apian.net
CreateSurvey	www.createsurvey.com
EZSurvey	www.raosoft.com
FormSite	www.formsite.com
HostedSurvey	www.hostedsurvey.com
InfoPoll	www.infopoll.net/
InstantSurvey	www.netreflector.com
KeySurvey	www.keysurvey.com
Quask	www.quask.com
Ridgecrest	www.ridgecrestsurveys.com
SumQuest	www.sumquest.com
SuperSurvey	www.supersurvey.com
SurveyCrafter	www.surveycrafter.com
SurveyMonkey	www.surveymonkey.com
SurveySite	www.surveysite.com
WebSurveyor	www.websurveyor.com
Zoomerang	www.zoomerang.com
PollPro	www.pollpro.com

Appendix D: Consent Form

Purpose of the Study: The purpose of this study is to examine the factors affecting active participation in B2B Online communities. To participate in this study, you will complete a 15 minutes survey, which includes some demographic questionnaire and some questions about your business such as business type, business start date, number of employees. It also includes some questions about your activities inside your B2B Online Community, your perceptions of other members of your B2B Online Community and the community itself.

Benefits of this Study: By participating in this study you will be contributing to knowledge on active participation in B2B Online Communities. As a thank you, you will receive a summary of my study if you wish. Also you will be entered **a raffle for a prize of 32GB memory stick**. After I finished the data collection, I will conduct the drawing. The three winners will be contacted via their email address to provide their postal address so their winning prize will be posted to them. In order to be entered into the raffle you must complete the survey.


Confidentiality: Your participation in this research will be kept 100% confidential and data will be analyzed and reported in aggregate. You will be asked for your e-mail address when you complete the survey so that I can send you the study outcomes and to inform you about the winners of the raffle drawing. The collected data from this study will be stored electronically in a password protected folder a hard copy will be stored in a locked filing cabinet. All data will be destroyed according to the policies and procedure of University of Bedfordshire.

Risks or discomfort: There are no risks or discomforts with this survey. However, if you feel uncomfortable with a question, you can skip that question or stop completing the study.

Decision to withdraw at any time: Your participation is completely voluntary and you have the right to terminate or withdraw your participation at any time. If you do not want to continue with the survey, you can just leave the survey website. If you wish to withdraw your participation after completing the survey, you can contact us and your response will be removed from our database.

Contact information: If you have concerns or questions about this study, please contact Abid Ahmad at abid.ahmad@beds.ac.uk or Abid Ahmad, Business School, University of Bedfordshire, Luton, UK, LU1 1RR.

Agree/disagree to participate: By beginning the survey, you acknowledge that you have read this information and agreed to participate in this research, with the knowledge that you are free to withdraw your participation at any time without penalty.

Appendix E: The Online Questionnaire (Final Version)

Informed Consent Form

Purpose of the Study: The purpose of this study is to examine the factors affecting active participation in B2B Online communities. To participate in this study, you will complete a 15 minutes survey, which includes some demographic questionnaire and some questions about your business such as business type, business start date, number of employees. It also includes some questions about your activities inside your B2B Online Community, your perceptions of other members of your B2B Online Community and the community itself.

Benefits of this Study: By participating in this study you will be contributing to knowledge on active participation in B2B Online Communities. As a thank you, you will receive a summary of my study if you wish. Also you will be entered a raffle for three prizes: 32GB, 8GB, and 2GB memory stick. After I finished the data collection, I will conduct the drawing. The three winners will be contacted via their email address to provide their postal address so their winning prize will be posted to them. In order to be entered into the raffle you must complete the survey.

Confidentiality: Your participation in this research will be kept confidential and data will be analyzed and reported in aggregate. You will be asked for your e-mail address when you complete the survey so that I can send you the study outcomes and to inform you about the winners of the raffle drawing. The collected data from this study will be stored electronically in a password protected folder a hard copy will be stored in a locked filing cabinet. All data will be destroyed according to the policies and procedure of University of Bedfordshire.

Risks or discomfort: There are no risks or discomforts with this survey. However, if you feel uncomfortable with a question, you can skip that question or stop completing the study.

Decision to withdraw at any time: Your participation is completely voluntary and you have the right to terminate or withdraw your participation at any time. If you do not want to continue with the survey, you can just leave the survey website. If you wish to withdraw your participation after completing the survey, you can contact us and your response will be removed from our database.

Contact information: If you have concerns or questions about this study, please contact Abid Ahmad at abid.ahmad@beds.ac.uk or Abid Ahmad, Business School, University of Bedfordshire, Luton, UK, LU1 1RR.

Agree/disagree to participate: By beginning the survey, you acknowledge that you have read this information and agreed to participate in this research, with the knowledge that you are free to withdraw your participation at any time without penalty.



Q2. Which of the following options best describe your company's activity? (Please tick [√])

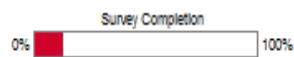
- Manufacturing
 Financial Services
 Research & Development
 Business Services
 Retail
 Others please specify:

Q3. What is the number of employees in your company? Please tick [√]

- 1-10
 51 - 250
 Over 1000
 11 - 50
 251 - 1000

Q4. What is your job title?

Q5. When was your company established? (Please select)



<<- Back Next ->>



Q6.

With regard to your participation in XXXX, to what extent do you agree or disagree with following statements?

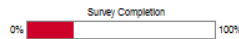
Please note: for this study purpose, in the following sentence the word "regularly" means on weekly basis.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1- I regularly login to the XXXX and read posted discussions .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- I always keep my profile up to date on the XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- I regularly post relevant and useful information to the XXXX that engender discussions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- I regularly reply with relevant and useful information to posted questions on the discussion boards of the XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5- I always conform to the rules and regulations outlined by the XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7. *The findings from our prior study suggests that an active member of the XXXX is someone who always keeps his/her profile up to date in the community, who always conforms with the rules and regulations outlined by the XXXX, who starts relevant and useful discussions on a regular basis (e.g. on weekly), and who replies to questions/messages posted by other members on a regular basis (e.g., on weekly).*

In comparison to the above statement, how active you are inside the XXXX?

Not Active At All
 Not active
 Somewhat not active
 Neither Active nor Not Active
 Somewhat Active
 Active
 Very Active



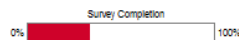
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Q8.

With regard to other members of the XXXX, to what extent do you agree or disagree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1- I know that other members will help me, so it's only fair to help other members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- I trust that someone would help me if I were in a similar situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- When I respond to other members' questions, I expect my queries to be answered in future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

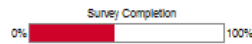


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Q9.
With regard to your perceptions about other members of XXXX, to what extent do you agree or disagree with following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1- I feel very confident about the skills that the other members have in relation to topics we discuss.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- The other members have a lot of knowledge about the subjects we discuss.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- The other members have specialized expertise that can add to the conversation on the discussion boards.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- The other members are well qualified in the topics we discuss.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5- The other members are very capable of performing tasks in the topics we discuss.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7- The other members are fair in dealing with one another.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8- The other members are truthful in dealing with one another.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9- The other members are genuine and sincere in dealing with one another.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10- The other members do not behave in a consistent manner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11- The other members are very concerned about the ability of members to get along.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12- The other members would not intentionally do anything to disrupt the conversations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13- The other members are concerned about what is important to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14- The other members would do everything within their capacity to help others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



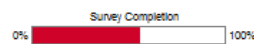
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Q10.

With regard to your experiences in XXXX, to what extent do you agree or disagree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1- I feel like a part of the group at the XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- I have a real emotional attachment to the XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- The XXXX has a great deal of personal meaning for my business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- I feel a strong sense of belonging to the XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5- I feel a strong connection to the XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Q11. With regard to the XXXX's website, the content of the discussions, and the services that provided by the XXXX, to what extent do you agree or disagree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1- The content of the discussion boards of XXXX is always accurate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- The content of the discussion boards of XXXX is always complete.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- The content of the discussion boards of XXXX is always up to date .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- The content of the discussion boards of XXXX is well formatted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5- The content of the discussion boards of XXXX is always useful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6- The XXXX always operates reliably.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7- The XXXX allows information to be readily accessible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8- It takes too long for the XXXX to respond to my request.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9- The XXXX can be adapted to meet a variety of needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10- It is easy to use the XXXX website.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11- It is easy to navigate through the XXXX website.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12- The moderator of XXXX does not show a sincere interest in solving member's problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13- The moderator of XXXX protects its members from disruptive members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14- The XXXX is well moderated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15- The moderator of XXXX often encourages me to take part in the discussions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16- The moderator of XXXX won't allow people to disrupt the discussion boards.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Survey Completion
0% 100%

University of Bedfordshire

Q12. With regard to your participation in XXXX, to what extent do you agree or disagree with the following statements?

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1- I earn respect from other members by making content contributions to the discussion boards of XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2- I feel making content contribution to the discussion boards of XXXX, would improve my status in the community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3- I participate in the discussion boards of XXXX, to improve my reputation in the community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4- I earn credibility from other members, by participating in the discussion boards of XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5- I like helping other members of XXXX.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6- I feel good helping other members of XXXX to solve their problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7- I enjoy helping others members of XXXX in the discussion boards.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8- Participating in the discussion boards of XXXX gives me pleasure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8- I participate in XXXX to acquire knowledge and information that could be beneficial for my business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9- I participate in XXXX to access experts advise and to find solutions for specific problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10- I participate in XXXX to make business contacts with other businesses .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11- I participate in XXXX to promote my business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Survey Completion
0% 100%



Q13. What is your gender ?

- Male
 Female

Q14. What is your age group? Please tick [✓]

- under 18 22-25 31-40 51-60
 18-21 26-30 41-50 61 or over

Q15. What is your highest level of education? Please tick [✓] the relevant box:

- School Certificate or equivalent AS/A Levels or equivalent Master Degree or equivalent Others please specify:
 GCSE/ O Levels or equivalent Bachelor Degree or equivalent PhD or equivalent

Q16. Please write down your Nationality ?

Q17. Thank you very much for taking the time to fill out this questionnaire. Your participation in this study is highly appreciated.

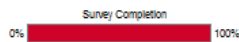
Please enter your email address below, if you wish to receive a copy of the research results.



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We thank you for your time spent taking this survey.
Your response has been recorded.



Key: XXXX = Name of the B2B OBC

Appendix F: The Selected First B2B OBCs

B2B OBCs	B2B OBCs
aardvarkbusiness	Scottish Business in the Community
About my Business	Business Network Northeast
Bizface Community	Young Entrepreneur small business
Work at Home Forum	Business Ideas and Opportunities
Business Advise Forum	Business Opportunities and Ideas
Business Forum	business support solution
Small Business Forum	Business West of England
A1 Business Forum	4 Networking
Business Ideas Forum	Big Money
Business Know How	Biz Forum
Dubai Forum	Bizmeed
My Local Forums	Business forum International
UK Business Forum	Business In the Community
The V7 Network	Business Midlands
Business Advice Forum	Small Business Online Community
UK Business Labs	The Knowledge Network

Appendix G: Invitation Email Sent to the B2B OBC Owners

Dear Community Owner/Manager,

I am a researcher at University of Bedfordshire, Luton, UK. I am currently conducting a research on Business to Business Online Communities (B2B OCs). Examples of these types of communities include [Name of the targeted community]. Particularly, I am interested to investigate the factors affecting active participation in OB2BCs. Currently, I am in a process of sending out a questionnaire to the members of B2B OCs in order to achieve the aims and objective of my research, which is to assist B2B OCs' owners and managers to develop and maintain a successful B2B OC through better understanding the factors affecting active participation within their communities.

I would greatly appreciate it if you could allow me to put my questionnaire on to your community website or to disseminate it to your members via email.

I would like to assure you that my research will not make any harm to your community, neither to your community members.

I am pleased to provide you with a copy of the outcome of my research once it's completed.

If you have any query please do not hesitate to contact me.

I look forward to hearing from you soon.

Yours Sincerely,
Abid Ahmad

Researcher
Business School
University of Bedfordshire
Luton, UK
Mobile: 07849330361
Email: abid.ahmad@beds.ac.uk



Appendix H: Selected B2B OBCs on LinkedIn

Community Name	Community Name
Irelands Small Business Community	Small Biz Nation
Dubai Business Network	Small Business Network
East Africa Business Communities	Start-Up Phase Forum
Croatian Business Forum	The Community For Entrepreneurs
Africa Business Communities	Turkish Business Network
Business and Professional Network	Business Owners Idea Cafe
Small Business Online Community	Linked Business
Small Businesses Forum	Lebanon Business and Professional Network
Business Support Network UK	Kuwait Business and Professional Network
SME Business Professionals (UK)	Business Network: Poland and Central Europe
The UK Small Business Network	Bahrain Business and Professional Network
UK Business Growers Club	UA Emirates Business and Professional Network
Business Knowledge Share	Jordan Business and Professional Network
Global Business & Commerce Network	Oman Business and Professional Network
Enterprise Europe Network	Abu Dhabi Business Network
Business Network International	New Zealand Business and Professional Network
Germany Business and Professional Network	Business Consulting Buzz Group
France Business and Professional Network	Business Link Networking Groups
EU Business and Professional Network	International Business
Australia Business and Professional Network	Saudi Arabia Business and Professional Network

Appendix I: Invitation Email to B2B OBC Members on LinkedIn

Dear [Name],

I am conducting a research to find out what are the factors affecting active participation in Online B2B Communities like [Community Name], with the aim to examining methods in increasing participation and making communities more beneficial for their members.

If you can spare me some time to complete a 15 minute survey, I'd be most grateful. Any information is 100% confidential, and as a thank you, you will be entered into a raffle to win a 32GB memory stick. Now it's got to be worth it just for that!

To take the survey please click on the following link

https://beds.eu.qualtrics.com/SE/?SID=SV_0HTsiwMw83attBO

your contribution is highly appreciated.

If you have any questions please contact Abid Ahmad, Business School, University of Bedfordshire, Luton, UK, Mobile: 07849330361, Email: abid.ahmad@beds.ac.uk

Yours Sincerely,
Abid Ahmad

Researcher
Business School
University of Bedfordshire
Luton, UK
Mobile: 07849330361
Email: abid.ahmad@beds.ac.uk



Appendix J: Follow up email

Dear [Name],
Few weeks ago I sent you an e-mail requesting for help with my study on active participation in B2B Online Communities by filling out a questionnaire. If you have already taken the survey, thank you and please ignore this email.

If you have not had a chance to take the survey, then I would appreciate your reading the message below and filling out my questionnaire. The survey will take only 15 minutes and it will be available until 18th July 2012.

This message has gone to everyone in the selected sample population. Since no personal data is retained with the surveys for reasons of confidentiality, we are unable to identify whether or not you have already completed the survey.

* To take the survey, click on:
https://beds.eu.qualtrics.com/SE/?SID=SV_0HTsiwMw83attBO

Yours Sincerely,
Abid Ahmad

Researcher
Business School
University of Bedfordshire
Luton, UK
Mobile: 07849330361
Email: abid.ahmad@beds.ac.uk



Appendix K: Little's MCAR test

EM Means ^a								
ACP1	ACP2	ACP3	ACP4	ACP5	ACP6	RCP1	RCP2	RCP3
5.22	5.12	4.49	4.47	5.84	4.68	5.38	5.31	5.19

EM Means ^a								
ABT1	ABT2	ABT3	ABT4	ABT5	IBT1	IBT2	IBT3	IBT4
5.06	5.07	5.32	5.07	5.02	5.07	4.96	4.97	4.07

EM Means ^a								
IBT4	BBT1	BBT2	BBT3	BBT4	ACM1	ACM2	ACM3	ACM4
3.93	4.43	5.03	4.87	4.78	4.72	3.82	4.07	4.10

EM Means ^a								
ACM5	IFQ1	IFQ2	IFQ3	IFQ4	IFQ5	STQ1	STQ2	STQ3
4.11	4.41	4.42	4.69	4.75	4.57	4.92	5.13	4.07

EM Means ^a								
STQ3	STQ4	STQ5	STQ6	SRQ1	SRQ2	SRQ3	SRQ4	SRQ5
3.93	5.01	5.25	5.18	4.96	4.74	4.95	4.44	4.64

EM Means ^a								
PND1	PND2	PND3	PND4	HND1	HND2	HND3	HND4	FND1
4.89	5.19	5.21	5.15	5.30	5.57	5.50	5.35	5.19

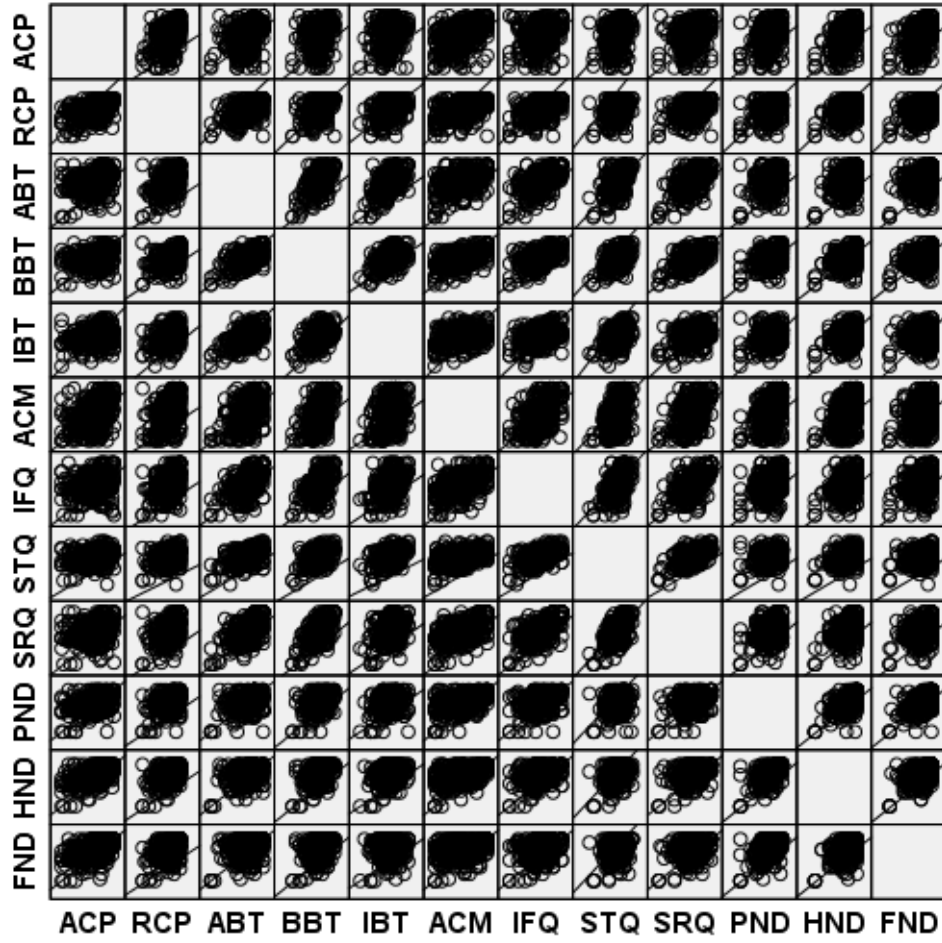
EM Means ^a								
FND2			FND3			FND4		
5.36			5.57			5.68		

a. Little's MCAR test: Chi-Square = 1263.377, DF = 1491, Sig. = 1.000

Appendix L: Normality Test Results

	Skewness		Kurtosis			Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error		Statistic	Std. Error	Statistic	Std. Error
ZACP1	-1.01	0.11	0.32	0.21	ZIFQ2	-0.15	0.11	-0.14	0.21
ZACP2	-1.02	0.11	0.47	0.21	ZIFQ3	-0.39	0.11	0.00	0.21
ZACP3	-0.47	0.11	-0.61	0.21	ZIFQ4	-0.54	0.11	0.32	0.21
ZACP4	-0.45	0.11	-0.61	0.21	ZIFQ5	-0.48	0.11	0.10	0.21
ZACP5	-1.42	0.11	2.05	0.21	ZSTQ1	-0.47	0.11	0.86	0.21
ZACP6	-0.70	0.11	-0.14	0.21	ZSTQ2	-0.69	0.11	0.83	0.21
ZRCP1	-1.13	0.11	1.36	0.21	ZSTQ3	-0.08	0.11	-0.06	0.21
ZRCP2	-1.06	0.11	1.27	0.21	ZSTQ4	-0.38	0.11	0.43	0.21
ZRCP3	-0.94	0.11	0.73	0.21	ZSTQ5	-0.62	0.11	0.70	0.21
ZABT1	-0.75	0.11	0.63	0.21	ZSTQ6	-0.58	0.11	0.59	0.21
ZABT2	-0.83	0.11	1.00	0.21	ZSRQ1	-0.28	0.11	0.52	0.21
ZABT3	-0.86	0.11	1.45	0.21	ZSRQ2	-0.18	0.11	0.38	0.21
ZABT4	-0.64	0.11	0.80	0.21	ZSRQ3	-0.65	0.11	0.88	0.21
ZABT5	-0.61	0.11	0.86	0.21	ZSRQ4	-0.38	0.11	-0.21	0.21
ZIBT1	-0.52	0.11	0.38	0.21	ZSRQ5	-0.27	0.11	0.35	0.21
ZIBT2	-0.38	0.11	0.34	0.21	ZPND1	-0.50	0.11	0.55	0.21
ZIBT3	-0.54	0.11	0.52	0.21	ZPND2	-0.66	0.11	0.81	0.21
ZIBT4	0.07	0.11	-0.48	0.21	ZPND3	-0.67	0.11	0.99	0.21
ZBBT1	-0.30	0.11	0.35	0.21	ZPND4	-0.61	0.11	0.86	0.21
ZBBT2	-0.54	0.11	0.42	0.21	ZHND1	-0.70	0.11	0.68	0.21
ZBBT3	-0.47	0.11	0.21	0.21	ZHND2	-0.99	0.11	1.71	0.21
ZBBT4	-0.49	0.11	0.16	0.21	ZHND3	-0.81	0.11	0.98	0.21
ZACM1	-0.54	0.11	-0.13	0.21	ZHND4	-0.79	0.11	0.79	0.21
ZACM2	0.08	0.11	-0.84	0.21	ZFND1	-0.81	0.11	0.24	0.21
ZACM3	-0.12	0.11	-0.80	0.21	ZFND2	-0.96	0.11	0.77	0.21
ZACM4	-0.17	0.11	-0.79	0.21	ZFND3	-1.13	0.11	1.69	0.21
ZACM5	-0.21	0.11	-0.80	0.21	ZFND4	-1.36	0.11	2.51	0.21
ZIFQ1	-0.32	0.11	-0.07	0.21					

Appendix M : Linearity Test Results



Appendix N : Co-linearity Test Results

→		VIF	→		VIF	→		VIF
IBT	ABT	1.57	BBT	IBT	2.26	ACM	BBT	3.610
BBT	ABT	2.18	ACM	IBT	3.65	IFQ	BBT	2.194
ACM	ABT	3.65	IFQ	IBT	2.21	STQ	BBT	2.123
IFQ	ABT	2.18	STQ	IBT	2.04	SRQ	BBT	2.413
STQ	ABT	2.12	SRQ	IBT	2.50	PND	BBT	2.105
SRQ	ABT	2.45	PND	IBT	2.11	HND	BBT	2.208
PND	ABT	2.12	HND	IBT	2.19	FND	BBT	1.762
HND	ABT	2.20	FND	IBT	1.72	ABT	BBT	2.278
FND	ABT	1.75	ABT	IBT	2.06	IBT	BBT	1.806

→		VIF	→		VIF	→		VIF
STQ	IFQ	2.03	SRQ	STQ	2.29	PND	SRQ	2.11
SRQ	IFQ	2.39	PND	STQ	2.12	HND	SRQ	2.21
PND	IFQ	2.12	HND	STQ	2.16	FND	SRQ	1.76
HND	IFQ	2.21	FND	STQ	1.75	ABT	SRQ	2.38
FND	IFQ	1.76	ABT	STQ	2.43	IBT	SRQ	1.85
ABT	IFQ	2.40	IBT	STQ	1.79	BBT	SRQ	2.24
IBT	IFQ	1.86	BBT	STQ	2.33	ACM	SRQ	3.62
BBT	IFQ	2.31	ACM	STQ	3.61	IFQ	SRQ	2.11
ACM	IFQ	3.64	IFQ	STQ	2.11	STQ	SRQ	1.94

→		VIF	→		VIF	→		VIF
HND	PND	1.90	FND	HND	1.61	ABT	FND	2.42
FND	PND	1.60	ABT	HND	2.43	IBT	FND	1.82
ABT	PND	2.44	IBT	HND	1.85	BBT	FND	2.33
IBT	PND	1.86	BBT	HND	2.33	ACM	FND	3.65
BBT	PND	2.32	ACM	HND	3.63	IFQ	FND	2.22
ACM	PND	3.65	IFQ	HND	2.22	STQ	FND	2.11
IFQ	PND	2.22	STQ	HND	2.08	SRQ	FND	2.51
STQ	PND	2.13	SRQ	HND	2.51	PND	FND	1.92
SRQ	PND	2.51	PND	HND	1.82	HND	FND	2.01

→		VIF	→		VIF	→		VIF
IFQ	ACM	2.21	PND	ACM	2.11	ABT	ACM	2.44
STQ	ACM	2.10	HND	ACM	2.20	IBT	ACM	1.86
SRQ	ACM	2.49	FND	ACM	1.76	BBT	ACM	2.30

Appendix O: Compare Mean Difference for Outlier Cases

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif	Std. Error Dif	95% Confidence Interval of the Difference	
									Lower	Upper
Education	Equal variances assumed	1.08	0.30	0.93	519.00	0.36	0.18	0.20	-0.20	0.57
	Equal variances not assumed			0.84	42.99	0.41	0.18	0.22	-0.26	0.62
AgeGroup	Equal variances assumed	0.60	0.44	-0.40	519.00	0.69	-0.09	0.23	-0.54	0.36
	Equal variances not assumed			-0.38	43.40	0.71	-0.09	0.24	-0.58	0.40
Gender	Equal variances assumed	23.35	0.00	-1.88	519.00	0.06	-0.14	0.08	-0.29	0.01
	Equal variances not assumed			-2.27	48.13	0.03	-0.14	0.06	-0.27	-0.02
BSize	Equal variances assumed	0.16	0.69	0.56	519.00	0.57	0.12	0.22	-0.31	0.55
	Equal variances not assumed			0.56	44.19	0.58	0.12	0.22	-0.32	0.57
Position	Equal variances assumed	0.10	0.76	-0.03	518.00	0.97	-0.01	0.23	-0.46	0.44
	Equal variances not assumed			-0.03	44.12	0.97	-0.01	0.23	-0.48	0.46
BAge	Equal variances assumed	0.50	0.48	0.38	519.00	0.71	1.24	3.26	-5.17	7.65
	Equal variances not assumed			0.34	42.77	0.74	1.24	3.68	-6.18	8.65