

**Understanding the determinants of continuous knowledge sharing  
intention within business online communities**

**Kamarul Faizal Hashim**

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# Table of Content

Attestation of Authorship .....	vi
Acknowledgement .....	vii
Abstract.....	ix
List of Figures .....	xi
List of Tables.....	xii
CHAPTER 1.0 Introduction .....	1
1.0 Overview of Chapter 1 .....	1
1.1 Significance and Motivation of the Research .....	1
1.2 Overview of Continuous Knowledge Sharing Literature .....	4
1.3 Theoretical Foundations of This study.....	6
1.3.1 Information Systems Continuous Use Model.....	6
1.3.2 Commitment-Trust Theory .....	7
1.3.3 Expectancy Value Model.....	9
1.4 Aims and Research Questions .....	11
1.5 Methodology.....	13
1.6 Contributions .....	14
1.7 Outline of Thesis .....	17
1.8 Summary of Chapter 1 .....	18
CHAPTER 2.0 Literature Review .....	19
2.0 Overview of Chapter 2 .....	19
2.1 Online Knowledge Sharing.....	19
2.2 Continuous Use .....	24
2.2.1 Two Major Schools of Thought in Continuous Use Literature.....	25
2.3 Theoretical Underpinning of Continuous Use Behaviour .....	27
2.4 Continuous Knowledge Sharing.....	31
2.5 Literature Analysis: Continuous Knowledge Sharing.....	32
2.5.1 Research Focus of Previous Studies.....	35
2.5.2 Contributions of Previous Studies .....	36
2.5.3 Theoretical Underpinning of Previous Studies .....	37

2.5.4	Conclusion from the Literature Analysis.....	37
2.6	Business Online Communities .....	42
2.7	Summary of Chapter 2 .....	43
CHAPTER 3.0	Research Model and Hypotheses .....	44
3.0	Overview of Chapter 3 .....	44
3.1	Theories Employed for This Study .....	45
3.1.1	Information Systems Continuous Use Model .....	45
3.1.2	Commitment-Trust Theory .....	49
3.1.3	Expectation Value Model (EVM).....	50
3.2	Conceptual Model.....	52
3.2.1	Continuous Knowledge Sharing Intention and Satisfaction .....	53
3.2.2	Community Perceived Usefulness .....	55
3.2.3	Confirmation .....	56
3.2.4	Identification Trust.....	57
3.2.5	Affective Commitment.....	61
3.2.6	Attainment Value .....	63
3.2.7	Intrinsic Value .....	65
3.2.8	Utility Value.....	66
3.3	Research Hypotheses.....	68
3.4	Summary of Chapter 3 .....	69
CHAPTER 4.0	Research Methodology .....	70
4.0	Overview of Chapter 4 .....	70
4.1	Research Paradigm .....	70
4.2	Research Methodology.....	73
4.3	Research Processes.....	74
4.4	Data Collection Technique .....	76
4.4.1	Web Survey .....	76
4.4.2	Sampling.....	78
4.4.3	Unit of Analysis .....	79
4.4.4	Ethical Considerations .....	80
4.5	Data Analysis: Introduction to Structural Equation Modelling (SEM) .....	81
4.5.1	Rules of Thumb for Selecting CB-SEM or PLS-SEM .....	83
4.5.2	Partial Least Square (PLS) .....	86

4.5.3	Reflective and Formative Constructs .....	87
4.6	Evaluating Measurement and Structural Models using Partial Least Square .....	89
4.6.1	Measurement Model .....	89
4.6.1.1	Internal Consistency.....	89
4.6.1.2	Indicator Reliability .....	90
4.6.1.3	Convergent Validity.....	90
4.6.1.4	Discriminant Validity.....	91
4.6.2	Structural Model .....	92
4.6.3	Mediating Relationship .....	93
4.7	Instrument Development .....	95
4.7.1	Online Focus Group (OFG) .....	95
4.7.2	Items Selection.....	100
4.7.3	Pre-Test.....	104
4.7.4	Pilot Survey .....	106
4.7.5	Questionnaire Format and Administration .....	111
4.8	Final survey .....	113
4.8.1	Data Preparation.....	113
4.8.2	Descriptive Statistic of Respondents .....	114
4.8.3	Descriptive Statistics of Instrument.....	116
4.8.4	Verifying Data Characteristics.....	117
4.8.4.1	Missing Data.....	117
4.8.4.2	Data Normality.....	118
4.8.4.3	Common Method Bias .....	118
4.8.4.4	Control Variables.....	119
4.9	Summary of Chapter 4 .....	119
CHAPTER 5.0 Data Analysis and Findings.....		120
5.0	Overview of Chapter 5 .....	120
5.1	Measurement Model Assessment .....	120
5.1.1	Internal Consistency Reliability.....	121
5.1.2	Indicator Reliability .....	123
5.1.3	Convergent Validity.....	124
5.1.4	Discriminant Validity.....	125
5.2	Structural Model .....	130
5.2.1	Coefficient of Determination ( $R^2$ ) .....	130

5.2.2	Path Coefficients .....	132
5.2.3	Hypotheses Testing.....	134
5.3	Mediating Analysis.....	137
5.4	Summary of Chapter 5 .....	142
CHAPTER 6.0 Discussion of Results .....		143
6.0	Overview of Chapter 6 .....	143
6.1	Summary of Main Findings .....	143
6.2	Discussion of the Survey Findings.....	145
6.3	Summary of Chapter 6 .....	154
CHAPTER 7.0 Conclusions .....		155
7.0	Overview of Chapter 7 .....	155
7.1	Summary of the Research.....	155
7.2	Theoretical Contributions .....	158
7.3	Practical Contributions.....	161
7.4	Future Research Avenues .....	164
7.5	Concluding Remarks.....	165
REFERENCES .....		168
APPENDIX A .....		179
APPENDIX B .....		182
APPENDIX C .....		184
APPENDIX D .....		185

# Attestation of Authorship

"I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning."

Author's Signature:

A handwritten signature in black ink, appearing to read "Karan Arora", with a long horizontal flourish extending to the right.

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# Abstract

For the past decade, knowledge sharing scholars have paid a substantial amount of attention towards understanding the determinants of member knowledge sharing behaviour within business online community settings. Although enormous research efforts have been put forth, members are still unwilling to share what they know with others actively. Recently, knowledge sharing scholars are suggesting that the success/sustainability of consumer knowledge sharing based communities depends on their ability to promote continuous knowledge sharing among members. Although continuous knowledge sharing has been acknowledged as important, understanding of this continuous behaviour remains limited.

Thus, this study aims to provide a better understanding of continuous knowledge sharing by: i) examining the characteristics of continuous knowledge sharing; and ii) predicting the determinants of members' continuous knowledge sharing intentions within a business online community context.

A research model is developed to identify and evaluate the key driving factors influencing continuous knowledge sharing intention. The research model is grounded in information systems continuous use model (ISCM). In addition, two theoretical lenses—commitment-trust theory and the expectancy value model—are adapted to explain the mediating effects of trust and commitment, and to predict member beliefs of community perceived usefulness.

A Web survey technique is employed to collect data from business online community members who have experience sharing knowledge to the community. Two-hundred-twenty useable responses were received and further analysed using the appropriate statistical procedures. The research model was then tested using the partial least square (PLS) technique. Smart PLS 2.0M3 was used to validate the research model and test the proposed research hypotheses.

This study confirms that social, personal, and technology-related enablers drive members' continuous knowledge sharing intention. The empirical results of this study lead to several significant findings. The findings show that satisfaction and community perceived usefulness positively influence continuous knowledge sharing intention. Further, identification trust and affective commitment have positive significant mediation effect on members' continuous knowledge sharing intention. These two constructs (i.e., identification trust and affective commitment) have been identified to have partial mediation effects. Meanwhile, satisfaction is identified as influenced by community perceived usefulness and confirmation. Finally, the results also show that members' belief of community perceived usefulness are significantly predicted only by members' positive feeling of intrinsic value (e.g., enjoyment of sharing knowledge, the challenges and excitement from solving others' problem) obtained from sharing knowledge. Overall, the research model explains a substantial amount of variance (51%) in continuous knowledge sharing intention.

Given the substantial explanatory power of the model findings, this thesis has significant theoretical and practical contributions. Theoretically, this study provides a theoretical model that explains the determinants of continuous knowledge sharing intention within a business online community context. The theoretical contributions lie in extending the current ISCM theoretical framework. Two constructs (i.e., identification trust and affective commitment) are demonstrated to mediate significantly the relationship between satisfaction and continuous knowledge contribution intention. Further extension includes the demonstration of how expectation value model's antecedents are used to predict members' belief of community perceived usefulness. Further, this study also provides understanding and practical suggestions on how these determinants influence members' continuous knowledge sharing intention.

# List of Figures

Figure 3.1 Proposed Research Model .....	53
Figure 4.1 Research Processes for this Study .....	74
Figure 4.2 The Diagrams of Reflective and Formative Constructs.....	88
Figure 4.3 Mediation Model .....	94
Figure 4. 4 Web Survey Logic Flow .....	112
Figure 5.1 Results of Structural Model .....	131
Figure 5.2 The Results of Post-hoc Analysis.....	139

# List of Tables

Table 2.1 The Summary of ISCM and IDT in Conceptualising Continuous Use .....	29
Table 2.2 List of IS Publication Outlets .....	32
Table 2.3 Previous Studies on Continuous Knowledge Sharing within Online Communities .....	34
Table 3.1 Research Hypotheses .....	68
Table 4.1 Summary of Three Major Research Paradigms.....	72
Table 4.2 Reasons for Adopting Web-based Survey.....	77
Table 4.3 Summary of the Rules of Thumb in Selecting between CB-SEM and PLS-SEM .....	85
Table 4.4 Summaries of Validity Guidelines for Assessing Reflective Measurement Model.....	91
Table 4.5 Summaries of Validity Guidelines for Assessing Reflective Structural Model	93
Table 4.6 OFG Respondents Demographic Information .....	97
Table 4.7 Measurement Constructs.....	104
Table 4.8 Respondents' Demographic Information for Pilot Survey .....	108
Table 4.9 Summaries of the Assessment Conducted on the Research Measurement Model .....	109
Table 4.10 Correlations and Discriminant Validity .....	110
Table 4.11 Respondents' Demographic Information.....	115
Table 4.12 Descriptive Statistics for All Indicators.....	117
Table 5.1 Descriptive and Reliability Statistics .....	122
Table 5.2 AVE Value .....	124
Table 5.3 Inter-correlation Matrix .....	126
Table 5.4 The Cross Loading Output Using Smart PLS .....	129
Table 5.5 Path Coefficients, Observed T- Statistics, Significant Level for All Hypothesised Paths.....	133
Table 5.6 Summary of Hypothesis Testing.....	135
Table 5.7 Sobel's Test Results (Z value) .....	141
Table 6. 1 Summary of the Research Questions and Hypotheses .....	145

# CHAPTER 1.0 Introduction

## 1.0 Overview of Chapter 1

The first section of this chapter outlines the significance and motivation of this thesis in understanding continuous knowledge sharing intention within a business online community context. The next section provides an overview of the literature related to the continuous knowledge sharing topic. It then discusses the theoretical foundation of this study. The two following sections then outline the aims and the research questions of the thesis, and the research method. This is then followed by the discussion on the theoretical and practical contributions of the research. Finally, the structure of the thesis is outlined with a brief description of each chapter. The final section is the summary of this chapter.

## 1.1 Significance and Motivation of the Research

In recent years, online communities have become popular social spaces for individuals from around the world to interact with each other. Online communities can be defined as informal communities that are virtually connected and are glued together by specific areas of interest or shared problems (Ardichvili, Page, & Wentling, 2003). Generally, within online communities, people with different levels of experience and expertise will share what they know informally. This knowledge can be related to their hobbies or even involve specific types of expertise or skill (e.g., engineering, law, or programming) (Wasko & Faraj, 2005).

Within a business context, online communities are becoming the main reference source for customers to buy products or services (Lee, Cheung, Lim, & Sia, 2006). People are turning to online communities to know member opinions or recommendations regarding products or services. In addition to that, online

communities also are used by businesses as a platform to gather vital information from customers about their products (e.g., drawbacks of a product or preferences). To some extent, businesses are involving their customers as the source of ideas and co-creators of their products (Fuller, Jawecki, & Muhlbacher, 2007). Businesses are investing large sums of money to facilitate, collect, and distribute customer knowledge (Wang & Noe, 2010).

The extant knowledge sharing literature shows that a plethora of studies have focused their research agenda on investigating how and what motivates online knowledge sharing behaviour (Chiu, Hsu, & Wang, 2006; Hsu, Ju, Yen, & Chang, 2007; Sharratt & Usoro, 2003; Wasko & Faraj, 2005). Researchers have investigated this behaviour from various perspectives, ranging from technology to personal related enablers (Ardichvili, 2008). Based on the online knowledge sharing literature, promoting knowledge sharing among online community members is considered one of the largest challenges faced by many communities (Chen & Hung, 2010; Chiu et al., 2006; Chiu, Wang, Shih, & Fan, 2011). A recent study shows that almost 70% of Internet users are more interested in seeking knowledge than contributing their own (Solis, 2010).

Recently, knowledge sharing scholars have argued that the sustainability of an online community depends largely on whether the community is able to encourage its members to continuously share their knowledge (Chen, 2007; Wenger, Liu, Schneider, Prasarnphanich, & Chen, 2009). Online community sustainability refers to the community's ability to maintain active participation and encourage member willingness to stay and continuously share knowledge to the community (Cheung & Lee, 2009). Thus, by encouraging continuous knowledge sharing, not only will the community have a greater likelihood of retaining members who are willing to share their knowledge or experience with others but will also help businesses obtain relevant and useful knowledge through their discussions (Jin, Cheung, Lee, & Chen, 2009). Further, understanding how to encourage continuous knowledge sharing can keep the community from failing (Sangwan, 2005).

Despite the importance of continuous knowledge sharing within online communities, very little is known about this behaviour. Existing understanding of continuous knowledge sharing falls short in explaining the characteristics of this continuous behaviour. To what extent and how this behaviour is different from knowledge sharing is not clear. This lack of understanding then posted further questions such as— is knowledge sharing a separate behaviour from continuous knowledge sharing? Can the same set of determinants used to examine knowledge sharing be used to examine continuous knowledge sharing?

Further, the literature analysis also demonstrated that previous works are more directed to examine continuous knowledge sharing using social related enablers (e.g., justice, perceived identity verification, reciprocity and altruism) (Cheung & Lee, 2007a; Cheung & Lee, 2007b; Chiu et al., 2011; Chuo, Min, & Lin, 2010; Fang & Chiu, 2010; Jin, Cheung, Lee, & Chen, 2007; Zhang, Fang, Wei, & Chen, 2010). This study is not questioning the use of social related enablers as determinants; however, it is important to understand that knowledge sharing is a complex behaviour. Thus, it is better to examine this continuous behaviour using the three main categories of knowledge sharing enablers (i.e., personal, social and technology) as suggested by previous knowledge sharing scholars (Ardichvili et al., 2003; Ford & Staples, 2008).

Therefore, this study is motivated to provide a comprehensive understanding of continuous knowledge sharing and at the same time examine the determinants of this continuous behaviour within online communities using the three main categories of online knowledge sharing enablers (i.e., social, personal and technology).

## 1.2 Overview of Continuous Knowledge Sharing Literature

A literature analysis has been conducted on previous works that have focused on continuous knowledge sharing within online communities. This literature analysis is conducted to give better understanding on the state of research related to this topic. Journal and conference papers that are published from the year 2001 to 2011 were reviewed and analysed.

Based on the literature analysis, the following important points have emerged and require further attention: 1) previous understanding of continuous knowledge sharing is not clear. Questions like—Can knowledge sharing and continuous knowledge sharing share the same set of determinants? What theoretical stance can be used to shape the understanding of continuous knowledge sharing needs to be answered to give better view of this continuous behaviour; 2) the literature analysis also found that most previous works focused on professional online communities as their research context. Examining this continuous behaviour within different types of online communities (i.e., business online communities) can extend the understanding of what influences this behaviour within different context; 3) previous works are directed more to explore this continuous behaviour from the point of view of social related enablers (Chen, 2007; Jin et al., 2007; Jin, Lee, & Cheung, 2010; Zhang et al., 2010). Using all three categories of knowledge sharing enablers (i.e., personal, social and technology) in a single study can give a comprehensive understanding of continuous knowledge sharing determinants; and 4) most of the previous works adopt the information systems continuous use model (ISCM) when examining continuous knowledge sharing. Although it has been adopted as the main theoretical stance, most previous studies have not followed the main assumptions outlined by this theoretical model. According to ISCM, this theoretical model holds two important assumptions: i) continuous use should be treated as a separate construct from adoption; and ii) continuous use should be examined with post-adoption related determinants (Bhattacharjee, 2001b).

Therefore, to build a comprehensive understanding of continuous knowledge sharing, this study: 1) borrow the IS post-adoption literature as the building block to further examine the characteristics of continuous knowledge sharing. This is because knowledge sharing is considered as a way users adopt/accept the use of online community; while continuous knowledge sharing can be viewed as the post adoption behaviour (He & Wei, 2009). Based on the rich literature of IS adoption, which spanned from adoption to post-adoption, this study believes that it can provide strong support (i.e., empirically and theoretically) to clarify further the conceptualisation of continuous knowledge sharing; and 2) extend the current understanding of what determines continuous knowledge sharing using an integrative approach. The three main categories of online knowledge sharing enablers (i.e., social, technology and personal) are integrated to give a better view of continuous knowledge sharing determinants; and 3) extend the ISCM theoretical model by integrating it with two theoretical lenses—commitment-trust theory and the expectancy value model. In this study, commitment-trust theory is used to examine the mediating effect of trust and commitment on continuous knowledge sharing, while the expectancy value model is used to predict member beliefs of community perceived usefulness. The next section justifies the selection of the three theories as the underlying basis for the research model in this study.

### **1.3 Theoretical Foundations of This study**

Three theoretical lenses are employed to develop the research model for this study. The three theoretical lenses are: 1) information systems continuous use model (Bhattacharjee, 2001b), 2) commitment-trust theory (Morgan & Hunt, 1994), and 3) the expectancy value model (Eccles et al., 1983). The following subsections explain the importance of these theories and their relation in examining continuous knowledge sharing intention.

#### **1.3.1 Information Systems Continuous Use Model**

As for this study, the information systems continuous use model (ISCM) is adopted as the underlying theoretical lens to examine members' continuous knowledge sharing intention within business online communities. This theory is adopted because ISCM has shown its ability to examine a continuous phenomenon, and has received growing empirical-based support from marketing and continuous use literature that focused on a continuous topic (e.g., repurchase, loyalty, revisit and continuous use).

For instance, this model (i.e., ISCM) has been used to predict users' continuous use of a wide range of IS applications such as online banking (Bhattacharjee, 2001b), e-learning (Chiu et al., 2011; Chiu & Wang, 2008; Chiu, Sun, Sun, & Ju, 2007; Lee, 2010; Limayem & Cheung, 2008; Roca, Chiu, & Martinez, 2006; Sorebo, Halvari, Gulli, & Kristiansen, 2009), the World Wide Web (Hsu, Chiu, & Fu, 2004), knowledge management systems (He & Wei, 2009) and mobile Internet (Hong, Thong, & Tam, 2006; Thong, Hong, & Tam, 2006). The use of ISCM to examine members' continuous knowledge sharing intention within an online community setting has also been identified in the continuous knowledge sharing literature (Cheung & Lee, 2007b; Jin et al., 2007). Based on the empirical findings, this model has demonstrated its suitability as the underlying theoretical lens to examine continuous knowledge sharing intention. Further, this model has been tested empirically within post-adoption situations and has managed to demonstrate its parsimony in predicting continuous use intention (Bhattacharjee,

Perols, & Sanford, 2008). This study adopts all three important determinants of this theoretical model (i.e., satisfaction, confirmation and perceived usefulness).

### **1.3.2 Commitment-Trust Theory**

As for knowledge sharing, it is also a form of relational exchange as it involves exchanges of knowledge from both parties (e.g., knowledge seeker and knowledge contributor) to give and accept the knowledge (Sharratt & Usoro, 2003; Wasko & Faraj, 2005). The direct influence of trust and commitment has been identified as salient factors predicting member's online knowledge sharing behaviour.

However, according to Yen (2009) on going relationship within online communities does not only depend on member's feeling of satisfaction. It requires better understanding of how these factors (i.e., trust and commitment) mediates the relationship between satisfaction and continuous intention. Based on commitment-trust theory (CTT) (Morgan & Hunt, 1994), it posits that contextual factors (i.e., trust and commitment) play an important role to facilitate on going (continuous) relationship. According to Morgan and Hunt (1994), trust and commitment have been identified as central in building and maintaining successful and on going relationship (Morgan & Hunt, 1994). Although this theory originated from the marketing relationship field; previous works have adopted this theory in various relational-related studies like online retailing relationships (Mukherjee & Nath, 2007) and customers' relationships (Garbarino & Johnson, 1999). Morgan and Hunt (1994) argued that this theory would apply to all relational exchanges.

This theory has been used by previous studies to examine users' continuous use of virtual communities (Yen, 2009). However, to the best of this study's knowledge this is the first attempt taken to use this theoretical lens to examine continuous knowledge sharing behaviour.

In line with this theoretical lens, this study predicts that members' continuous knowledge sharing intention is mediated by trust and commitment. However, to ensure that this study follows the main assumption of ISCM, this study adopts identification trust and affective commitment respectively to represent trust and commitment constructs. Chapter 3 provides the detail justification of why only these two types of trust and commitment are chosen over others and how it mediates the relationship between satisfaction and continuous knowledge sharing.

In addition, based on the literature search, there are few potential determinants that have been identified to examine continuous knowledge sharing. One of them is reciprocity. According to Nahapiet and Ghosal (1998), reciprocity refers to knowledge exchanges that are mutual and perceived as fair to both parties. Logically, strong norm of reciprocity can facilitate members to help each other and promote continuous knowledge sharing. However, in this study, reciprocity is not considered as one of continuous knowledge sharing determinants because: 1) it is not clear how this construct is suitable to determine post-adoption behaviour as it has never been tested at post-adoption level. Most of previous works that adopted this construct examine its effect at initial stage of knowledge sharing; and 2) previous works have shown inconsistent results regarding the influence of this construct on knowledge sharing within online community context (Chen & Hung, 2010; Wasko & Faraj, 2005; Weirtz & de Ruyter, 2007). Hence, this study did not include reciprocity as a factor in determining continuous knowledge sharing behaviour.

### 1.3.3 Expectancy Value Model

Within ISCM, perceived usefulness is identified as one of the main determinants of users' continuous intention (Bhattacharjee, 2001b; Hong et al., 2006; Thong et al., 2006). Within this theoretical model, perceived usefulness has been identified to influence satisfaction and continuous use intention (Bhattacharjee, 2001b). Although perceived usefulness is originated from adoption-related theories (i.e., the technology acceptance model), its ability to explain continuous use intention had empirical support. Based on longitudinal studies, this study has been identified as a critical perception that drives user intention to continuously use an information system (IS) (Bhattacharjee, 2001b; Bhattacharjee & Premkumar, 2004).

In addition, the extant online knowledge sharing literature also shows that community perceived usefulness has been identified as an important factor influencing online knowledge sharing behaviour (Lu, Phang, & Yu, 2011). For instance, within an online community a critical mass activity (e.g., knowledge sharing) is required to attract others. "Without critical mass, the perception of the usefulness of the online community will inhibit its use" (Sharratt & Usoro, 2003, p. 190). Despite its importance, most previous studies usually conceptualised perceived usefulness as a single construct. Hence, this limits the understanding of what influence this construct.

Therefore, to better understand what influence community perceived usefulness, this study adopt expectancy value model (EVM) as the theoretical underpinning to predict community perceived usefulness. Originated from expectancy theory, EVM predicts that individual's choices, persistence and performance of conducting a task is influence directly by the values it gained from conducting it (i.e., the task) (Eccles, Adler, Futterman, Goff, & Kaczala, 1983). Based on this theoretical model, an individual's motivation to conduct a task (i.e., continuous knowledge sharing) is influenced by three values—attainment, intrinsic and utility values.

In relation to individual's belief of perceived usefulness, values have been identified as an important factor predicting member's cognitive instrumental process (Venkatesh & Davis, 2000). According to Agarwal (1998), individual belief of perceived usefulness is influenced by how they associate themselves with the value gained from using the system. Hence, for this study the influence of members' belief of community perceived usefulness is predicted using EVM's determinants (Intrinsic, Utility and Attainment value). Hence, based on that this study believes that EVM is a suitable theoretical lens that can be used to predict member's community perceived usefulness. Further, these three values have been identified as post-adoption related factors used to examine continuous behaviour (Chiu et al., 2011)

## 1.4 Aims and Research Questions

The aims of the research are to:

- 1) extend the existing understanding of continuous knowledge sharing by examining the characteristics and the theoretical underpinning that supports this continuous behaviour. A comprehensive understanding of continuous knowledge sharing characteristics is important to direct the course of this study and other studies that are interested in the continuous knowledge sharing topic.
- 2) extend the understanding of the factors that influence continuous knowledge sharing within a business online community context. The understanding of this behavioural intention is important to encourage continuous knowledge sharing within business online communities;
- 3) examine the effect of both trust and commitment on members' continuous knowledge sharing intention within a business online community context. Understanding the effect of trust and commitment towards continuous knowledge sharing is important as these factors are important to facilitate a cooperative environment that will encourage on going relationships between members; and
- 4) extend the understanding of the factors that influence members' belief of community perceived usefulness. This understanding is important as perceived usefulness has been identified as an important factor that influences members' feeling of satisfaction and continuous intention.

The following are the research questions related to the research aims mentioned above.

In a context of business online community:

**Research Question 1:** How do satisfaction and community perceived usefulness influence members' continuous knowledge sharing intention within a business online community?

**Research Question 2:** How do identification trust and affective commitment mediate the relationship between members' level of satisfaction and continuous knowledge sharing intention?

**Research Question 3:** How do community perceived usefulness and confirmation influence members' levels of satisfaction?

**Research Question 4:** How do the dimensions of the expectation value model (attainment, intrinsic and utility values) influence members' belief of community perceived usefulness?

## 1.5 Methodology

The aim of the research model is to identify and evaluate the factors that influence members' continuous knowledge sharing intention within business online communities. Data for this study is collected through a Web survey. This technique is used to collect data from business online community members with knowledge sharing experience within the community. Fifty business online communities were selected randomly. Invitations to participate in the Web survey were posted within the selected business online community 'lounge'.

The research model was tested using partial least square (PLS). This study follows the accepted structure in reporting the results of PLS analysis as proposed in previous studies (Chin, 2010). Specifically, SmartPLS 2.0M3 (Ringle, Wende, & Will, 2004) was used to examine the proposed hypotheses. The PLS analysis is presented in terms of the measurement model and then the structural model. The testing of the measurement model includes internal consistency reliability, indicator reliability, and the convergent and discriminant validity of the instrument items. The structural model and hypotheses are then assessed by evaluating the  $R^2$  values (i.e., explained variances) and the path coefficients (i.e., loadings and significance). Further, the significant of mediating relationships are then assessed by examining the Z values (based on Sobel's test).

These results are then discussed and the findings are then compared with previous research including those that are related to ISCM, CTT and EVM. The main academic contributions and contributions to practice are then presented.

## 1.6 Contributions

This thesis makes theoretical and practical contributions to the literature, as well as suggestions for future research. First, this research contributes to a more comprehensive understanding of continuous knowledge sharing by: i) providing an understanding of continuous knowledge sharing characteristics; ii) extending the current understanding of continuous knowledge sharing into a business online community context; and iii) synthesising and integrating three theoretical lenses (i.e. ISCM, CCT and EVM) as the basis of the research model in this study.

Second, this study provides a mechanism to understand better the mediating effects of identification trust and affective commitment on the relationship between satisfaction and continuous knowledge sharing intention. The mediating relationships are conceptualised based on CTT. This study is the first to demonstrate the mediating effects of identification trust and affective commitment on members' continuous knowledge sharing intention. Also, this study extends ISCM by introducing identification trust and affective commitment as two mediating variables that effect continuous knowledge sharing intention.

Third, this study provides a mechanism to understand better the influence of members' beliefs of community perceived usefulness using a business online community. This study has demonstrated empirically that EVM dimensions (i.e., attainment, intrinsic and utility values) influenced members' beliefs of community perceived usefulness. This study extended the ISCM, by predicting the factors that influence community perceived usefulness.

Fourth, this study provides a mechanism to understand members' continuous knowledge sharing within business online communities using three main categories of knowledge sharing enablers—social, personal and technology. This study provides empirical evidence that continuous knowledge sharing intention can be explained better by integrating technology (i.e., perceived usefulness), social (i.e., identification

trust and affective commitment) and personal (i.e., attainment, intrinsic and utility value) related factors as determinants. This is because previous studies usually dealt with the influence of technology, social or personal related factors separately. This is the first research that integrates all three categories of enablers in one single study.

Finally, this study extends the theoretical model of ISCM by integrating the uses of CTT and EVM. A CTT theoretical lens is used to explain the role of trust and commitment as two key mediating variables that affect continuous knowledge sharing. Meanwhile, EVM is used to predict the influence of members' belief of community perceived usefulness.

In terms of practical contributions, the research model provides a better understanding of how members actually perceive and evaluate business online communities, and continuously share knowledge within business online communities. This study provides practical guidelines for business online community owners on how to encourage members' continuous knowledge sharing behaviour.

First, this study suggests that ensuring members' feelings of satisfaction will strongly influence members' intention to share continuously knowledge within the business online communities. Thus to sustain members' levels of satisfaction, business online community owners have to give attention to the presentation of the knowledge within the community, clear classification of knowledge, simplify the view of collected contents and encourage active collaboration within the community.

Second, this study suggests that member beliefs of community perceived usefulness are strongly determined by the intrinsic value one has acquired while using the online platform. Thus, it is very important for business online community owners to incorporate elements of fun and enjoyment within the community. Within an online community, the intrinsic value can be injected to members not only through the platform functionalities but can also be achieved during the knowledge sharing activities. Within knowledge sharing context, fun or enjoyment in knowledge sharing is

achieved when members believe that sharing knowledge is challenging and able to test their knowledge (Wasko & Faraj, 2005). Thus, stimulating members' intrinsic value will positively influence member beliefs of perceived usefulness. Increasing members' perceived usefulness is important as it has a positive effect on members' feelings of satisfaction and continuous knowledge sharing intention.

Finally, this study suggests that it is important for business online community owners to facilitate identification trust and affective commitment within the community. This is because identification trust is essential in developing cooperative environment, whereas affective commitment helps members establish strong emotional bonding with others. Facilitating these two constructs within an online community is important, as it can mediate members' continuous knowledge sharing intention. To promote identification trust, business online community owners are suggested to: 1) involve employees from the hosting company to be within the community so that they can help build more trust; and 2) improve the quality of communication and minimise any opportunistic behaviour by other community members.

As for affective commitment, business online community owners are suggested to: 1) implement interactive chat rooms that offer members the opportunity to communicate interactively with the business entities or other members; and 2) design strategies to encourage a high level of emotional content and lasting relationships. Having ways to foster emotional linkage between a community owner and community members is important because by merely providing a 'state-of-the-art' platform for users to get together is not adequate. The platform should resemble personal interactions (Barners & Cumby, 2002).

## **1.7 Outline of Thesis**

This thesis is organised into seven chapters. The following are the brief explanations of each chapter.

Chapter 1 begins with the importance of the research and the motivation of the study along with its theoretical underpinnings. The aims and research questions of the study are presented, followed by an overview of the methodology. The theoretical and practical contributions of the research are then discussed.

In Chapter 2, it discusses about the conceptualisation of continuous knowledge sharing. The conceptualisation of this continuous behaviour is based on previous IS adoption works. A literature analysis also is conducted to understand the state of research related to continuous knowledge sharing within an online community context. Based on the literature analysis, the literature gaps are identified.

In Chapter 3, literature relating to the underlying theories employed in this study (i.e., ISCM, CTT, and EVM) are reviewed. Based on the discussions, four research questions are derived and a set of research hypotheses are developed in relation to the research questions. Based on the research questions and a set of research hypotheses, a research model is developed.

In Chapter 4, the research design is outlined and discussed. A detailed description of the survey procedures is provided. The measurement issues are identified and PLS-SEM is introduced as the structural equation modelling technique used to analyse the data. The approach used for instrument design is presented, and the preliminary details of the final survey are reported.

In Chapter 5, SmartPLS 2.0M3 is used to investigate the measurement and structural model. A number of observations are made from the results of the structural model

analysis. Chapter 6 discusses the findings from Chapter 5. All research questions are answered and the research hypotheses are discussed.

A summary of each of the preceding six chapters is provided in Chapter 7. The main academic contributions and contributions to practice are presented. The chapter also highlights the limitations of this research, and then discusses and provides guidelines for future work. Finally, the concluding remarks of the thesis are presented.

## **1.8 Summary of Chapter 1**

This chapter laid the foundations for this study. First, it introduced the importance and motivation of the research. The aims and research questions of the research were then presented, and the research methodology was described briefly. The potential contributions to the literature and implications for practice were outlined, and then the organisation of the thesis was described. The following chapter reviews the existing literature in order to develop a clear understanding of members' continuous knowledge sharing intention within an online community context.

# CHAPTER 2.0 Literature Review

## 2.0 Overview of Chapter 2

The main objective of this chapter is to develop the understanding of continuous knowledge sharing within business online communities. Literature related to online knowledge sharing, continuous knowledge sharing and continuous use were reviewed. This chapter is divided into seven main sections. The first section provides an overview of online knowledge sharing. It discusses about the online knowledge sharing definition and the importance of continuous knowledge sharing. Section two and three elaborate the concepts of continuous use. These sections are used as the building blocks to help conceptualise continuous knowledge sharing. Section four discusses about continuous knowledge sharing. This section defines and conceptualise continuous knowledge sharing. Section five presents the literature analysis conducted on previous works related to the continuous knowledge sharing topic. Journal and conference papers published for the last 10 years were reviewed and analysed. The following section discusses the context of this study—business online community. Finally, the last section summarises this chapter.

## 2.1 Online Knowledge Sharing

The advancement of information communication technology has led to exponential development of new forms of online community (Li, 2011). Throughout the decades, many online communities have emerged ranging from public to organisational online communities. Online communities have gained popularity as an important tool used by organisations and the public to share and acquire knowledge (Ardichvili, 2008; Chiu et al., 2006; Hsu et al., 2007).

Through online communities, members can share knowledge in a way that was not possible before (Hsu et al., 2007). This is because online communities allow members

from around the world to discuss without worrying about geographical separation; receive first hand in-sights or information from experts (Wasko & Faraj, 2005); open interaction and communication with members from different levels of expertise to share their experiences; and most importantly “learn from, contribute to and collectively build upon that common knowledge” (Lee, Vogel, & Limayem, 2003, p. 153).

Knowledge sharing refers to a “process whereby knowledge is given by one party and received by another” (Sharratt & Usoro, 2003, p. 188). According to these authors, knowledge sharing involves the giving and receiving of information framed within a context by the knowledge of the source. Although there is a debate surrounding the knowledge sharing literature whether is it either knowledge or information that is shared between members (Sharratt & Usoro, 2003; Wang & Noe, 2010); this study supports previous work that hold that there is not much practical utility in distinguishing between information and knowledge (Kogut & Zander, 1992; Zander & Kogut, 1995). This is because knowledge is gained when the receiver is able to interpret the meaning of the information using his or her existing knowledge (Sharratt & Usoro, 2003). Knowledge is subjective and only resides within the mind of individuals. New knowledge to a person might mean nothing to others. In fact, there is still no consensus reached on the distinction between information and knowledge (Wang & Noe, 2010). Therefore, this study will use the term knowledge sharing as this is a more often used terminology compared to information sharing within the online knowledge sharing literature; as for information sharing it is usually used by researchers to refer to sharing of information, manuals or programs that occurs in experimental studies (Wang & Noe, 2010).

Members use an online community through the act of getting and giving knowledge to other community members (Ridings, Gefen, & Arinze, 2002; Sharratt & Usoro, 2003; Wasko & Faraj, 2000). Online knowledge sharing occurs when there are online conversations between knowledge seekers and contributors within the virtual platform (Sharratt & Usoro, 2003). Online conversation can take many forms within online

communities—such as writing a story/thread that explains one’s experience or step-by-step solutions to a problem; directing or contacting some other people who might know or are willing to help; or giving response to the asked questions (Sharratt & Usoro, 2003; Wasko & Faraj, 2000). Above all, knowledge sharing refers to the process of using the online communities to convey effectively what a person knows. Hence, following the definition of Sharrat and Usoro (2003), this study defines online knowledge sharing as members responding to posted problems by sharing what they know using online community platforms.

It is important to understand that the development of online communities would not promise successful online knowledge sharing activities within the community. Previous studies have shown that online communities have not lived up to expectations (Hsu et al., 2007). According to Hsu et al. (2007), although an online community brings people together, people are not willing to share their knowledge with others. Due to that, for the past decade IS researchers have been putting a lot of effort towards understanding knowledge sharing behaviour among online community members (Chiu et al., 2006; Li, 2011; Ma & Agarwal, 2007; Sharratt & Usoro, 2003; Wasko & Faraj, 2000).

The extant knowledge sharing literature shows that numerous studies have been conducted to understand individual knowledge sharing behaviour from a variety of perspectives. In general, individual knowledge sharing behaviour has been examined from three broad categories of enablers—personal factors (Chiu et al., 2006; Hsu et al., 2007; Hung, Durcikova, Lai, & Lin, 2011; Wasko & Faraj, 2005), social factors (Chiu & Wang, 2007; Nahapiet & Ghoshal, 1998; Ridings et al., 2002) and technology factors (Ma & Agarwal, 2007; Phang, Kankanhalli, & Sabherwal, 2009). This is because online knowledge sharing is a complex behaviour and requires careful understanding of what influences this behaviour (Ford & Staples, 2008).

Despite all of these efforts, people are still not willing to share their knowledge with others using the online communities. Studies by Solis (2010) showed that almost 70% of Internet users are not willing to share their knowledge; rather, they are more

interested in seeking available knowledge. An online community without rich knowledge will limit the value of the community (Chiu et al., 2006). In fact, encouraging members to share their knowledge actively to the community has been the biggest challenges in making an online community successful (Chiu et al., 2006; Hsu et al., 2007; Wenger et al., 2009). For a community to be truly vibrant it requires active and continuous knowledge sharing from its members (Ardichvili, 2008; Chen, 2007; Chuo et al., 2010).

Recently, knowledge sharing scholars are suggesting that to ensure online community success, it requires understanding on how to promote members' intention to share their knowledge continuously to the community. Continuous knowledge sharing has been acknowledged as one of the important factors to ensure online community sustainability (Chen, 2007; Chiu et al., 2011; Jin et al., 2007; Lin, Hung, & Chen, 2009; Zhang et al., 2010). Based on online knowledge sharing literature, the sustainability of online communities that involves ideas/knowledge sharing relies on its ability to continuously renew/regenerate ideas/knowledge (Wenger et al., 2009). Thus, encouraging continuous new contributions to the community is important to create a dynamic and stable system (i.e., online community). Online community sustainability refers to the community's ability to maintain active participations and encourage members' willingness to stay and continuously contribute knowledge to the community (Cheung & Lee, 2009). Thus, by encouraging continuous knowledge sharing, not only will the community have a greater likelihood of retaining members who are willing to contribute their knowledge or experience with others but will also help businesses obtain relevant and useful knowledge through their discussions (Jin et al., 2009).

Although continuous knowledge sharing has been acknowledged as an important factor to ensure online community sustainability, very little is known about it. The extant knowledge sharing literature shows that there is a limited explanation on what continuous knowledge sharing is. Previous works does not address some of the fundamental issues of this continuous topic, such as—is continuous knowledge sharing

an extension of knowledge sharing?; can the same set of determinants be used to examine knowledge sharing and continuous knowledge sharing?; should continuous knowledge sharing be treated as a post-adoption construct?; and what underlying theories support the conceptualisation of continuous knowledge sharing behaviour? In other words, within the literature there is no clear discussion on what are the characteristics of continuous knowledge sharing and which theoretical underpinning can be used to support the conceptualisation of this continuous behaviour.

Thus, to answer these questions, this study turns to IS adoption literature as support to conceptualise further continuous knowledge sharing. Driven by the spectrum of IS adoption—acceptance/adoption and post-adoption—this study assumes that knowledge sharing is the acceptance behaviour while continuous knowledge sharing is the post-adoption behaviour when using an online community. This assumption is made based on the fact that when examining online community usage, previous studies usually conceptualised knowledge sharing as the adoption/acceptance behaviour of the application (Hendriks, 1999; Ridings et al., 2002; Wasko & Faraj, 2000). This is because, although an online community is considered as an IS, it is important to clarify that the use of an online community is different when compared to other IS applications (He & Wei, 2009). Using an online community involves member efforts to share their knowledge to the online platform. Hence, a clear understanding of continuous knowledge sharing is important, as it will help guide the direction of this research.

As according to Bhattacharjee and Barfar (2011), there is usually confusion when it comes to examining adoption and the continuance related topic. Hence, the following subsections discuss about continuance behaviour from the IS adoption point of view. This understanding is important to help this research further examine continuous knowledge sharing characteristics.

## 2.2 Continuous Use

In general, previous studies have examined the technology-adoption topic from two main foci—pre-adoption (acceptance) and post-adoption (Bhattacharjee, 2001b; Cooper & Zmud, 1990; Hsu et al., 2004; Jasperson, Carter, & Zmud, 2005; Rogers, 1995). Technology acceptance refers to user beliefs on using or not using the technology (Agarwal, 2000). Usually at this stage (i.e., the acceptance stage), users do not have the experience of using the technology. Most of their expectations are based on indirect experiences (e.g., peer review, or information from third party) (Karahanna, Straub, & Chervany, 1999). After developing the initial expectations, users will go to the next stage—adoption. At this stage, users will gain experiences from using the technology. Users then will evaluate and judge their initial expectations or indirect experiences (Bhattacharjee, 2001b). Based on that judgement, users will decide either to proceed to the next stage (i.e., post-adoption or continuous use) or not.

Based on IS adoption literature most previous studies focused on understanding users' cognitive process during the acceptance stage (Jasperson et al., 2005; Rogers, 1995). According to Venkatesh and Bala (2008) as of December 2007, over 1,700 citations have been identified examining users' technology acceptance behaviour. As for the post-adoption related topic, not much attention has been given to it. One possible reason is because previous works usually addressed continuous use behaviour as an extension of acceptance/adoption behaviour and is predicted on the same set of factors that are used to examine acceptance and initial use (Bhattacharjee, 2001b; Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, & Davis, 2003). Continuous use is usually conceptualised as a behaviour that will take place after the adoption process as a result of frequent use.

However, according to Bhattacharjee (2001b), continuous use should be viewed as a separate construct (from acceptance) and being explained by its own set of determinants. This is because a continuous use decision involves rational calculus based on IS perceptions (e.g., perceived usefulness), which are derived from their experiences and various other beliefs. Based on these beliefs or expectations, they will

be influenced by their affective or emotional responses (i.e. satisfaction) towards the continuous use of the IS application (Bhattacharjee, 2001b; de Guinea & Markus, 2009).

Hence, to get better understanding on whether continuous use should be examined as a separate construct or as an extension for adoption/acceptance, this study examined the two major schools of thought that are used by previous IS adoption scholars when discussing about continuous use behaviour. The next subsection discusses the differences between adoption/acceptance and continuous use using the two main schools of thought.

### **2.2.1 Two Major Schools of Thought in Continuous Use Literature**

Based on IS adoption literature, the differences between adoption and continuous use can be explained by two schools of thought (Hsu et al., 2004). In the first school of thought, continuous use is viewed as an extension to adoption. In this view, continuous use refers to users' technology adoption that becomes part of users' normal routine activity (also known as 'routinisation') (Cooper & Zmud, 1990). In this view, continuous use is associated with the increased use of a technology (e.g., more usage or frequent adoption). For instance, continuous use of Facebook is due to users' frequent adoption of the medium and becoming their daily routine activity. This view "employs the same set of motivations or beliefs to explain both continuance and acceptance decisions... implicitly view continuance as an extension of acceptance behaviour" (Hsu et al., 2004, p. 766). In addition, the focus of this view exclusively is on beliefs about the technology and outcome of using the technology (Bhattacharjee, 2001b; Hsu et al., 2004). Researchers within this school of thought used technology acceptance related theories (e.g., the technology acceptance model, innovation diffusion theory or unified technology acceptance theory) to explain a continuous use decision. Further, this school of thought is said to have overly emphasised the causal relationships between cognitive beliefs and behavioural intentions, causing it to

overlook other factors such as social, psychology and economic influences (Bhattacharjee, 2001b; Hsu et al., 2004; Jaspersen et al., 2005).

On the other hand, in the second school of thought, continuous use is viewed as a distinct behaviour from technology adoption. Karahanna et al. (1999) in their study explicitly differentiate these two behaviours. These authors explained that adoption and continuous use are influenced by different types of experiences gained from the technology. For instance, continuous use is influenced by users' direct experience. Direct experience is gained through user ability to evaluate the technology clearly and confidently. This is because through direct experience, users' decision is based on their actual experience of using the technology rather than based on information described about the technology (also known as indirect experience). Karahanna et al. (1999) have empirically demonstrated that adoption and continuous use are influenced by different antecedents. Karahanna et al. (1999), in their study showed that pre-adopters are more likely to be influenced by users' perceived ease of use, trialability and result demonstrability. Bhattacharjee (2001b) also supports this line of thinking by demonstrating that continuous use is influenced strongly by 'post' acceptance factors such as satisfaction and perceived usefulness.

According to Hsu et al. (2004), the theoretical support for the second school of thought comes from expectancy confirmation theory (Oliver, 1980) that suggests during a continuous use stage, users would re-evaluate their earlier acceptance decision based on their level of satisfaction and confirmation using the system (i.e., performance expectations). According to Bhattacharjee (2001b) satisfaction and confirmation are needed to predict users' continuous use decision beyond the constructs offered by other technology acceptance-related theories (e.g. the technology acceptance model or social cognitive theory).

At this point, it is clear that based on the literature review there are two ways of viewing continuous use. The first approach is to view continuous use as an extension of adoption behaviour. Through this view, continuous use and adoption can share the

same set of determinants. This view assumes that continuous use of IS emerged after frequent use of the technology. On the other hand, continuous use can also be conceptualised as a separate construct from adoption. Through this view, a different set of determinants is needed to explain users continuous use behaviour. In this view, continuous use behaviour should be examined using post-adoption related factors.

Despite the two ways of viewing continuous behaviour, it is not clear which school of thought provides a better approach to understand continuous behaviour. Thus, to answer this question, the next subsection discusses about the theoretical lenses that ground the argument of each school of thought. This theoretical understanding is important to understand which view has a better theoretical support so that this study will be driven by strong theoretical underpinning.

The extant IS adoption literature shows that these two schools of thoughts received support from two theoretical lenses. The theories are—the information systems continuous use model (Bhattacharjee, 2001b) and innovation diffusion theory (Rogers, 1995). However, it is important to state that this analysis is not extensive but is sufficient to give theoretical understanding on how the two schools of thought are shaped by these theoretical lenses.

### **2.3 Theoretical Underpinning of Continuous Use Behaviour**

The extant IS adoption literature shows that information systems continuous use model (ISCM) has been identified as the most adopted theory used to examine continuous use behaviour. This theory has been adopted by previous works to predict continuous use of IS using a wide range of IS applications such as online banking (Bhattacharjee, 2001b), e-learning (Chiu et al., 2011; Chiu & Wang, 2008; Chiu et al., 2007; Lee, 2010; Limayem & Cheung, 2008; Roca et al., 2006; Sorebo et al., 2009), the World Wide Web (Hsu et al., 2004), virtual community (Cheung & Lee, 2007b; Jin et al., 2007), knowledge management system (He & Wei, 2009) and mobile Internet (Hong et al., 2006; Thong et al., 2006).

Based on this theoretical model, continuous use is viewed as a separate behaviour from adoption and it does not share the same set of determinants with adoption (Bhattacharjee, 2001a, 2001b; Bhattacharjee et al., 2008). This is because users' continuous use decisions involve rational calculus based on IS perceptions (e.g., perceived usefulness), which are derived from their experiences and various other beliefs. Based on these beliefs or expectations, they will be influenced by their affective or emotional responses (i.e. satisfaction) towards the continuous use of the IS application (Bhattacharjee, 2001b; de Guinea & Markus, 2009).

In this theoretical model, user's continuous use intention is influenced by post-adoption determinants—satisfaction, confirmation and perceived usefulness. Although perceived usefulness is used to examine pre-adoption behaviour; previous researchers have shown that this is a non-temporal construct and has been identified as a critical post-adoption factor that drives user intention continuously to use an IS (Bhattacharjee, 2001a; Bhattacharjee & Premkumar, 2004).

Aside from ISCM, innovation diffusion theory (IDT) has also been used by previous work to examine continuous use/post-adoption behaviour. IDT is used to predict the adoption of technology innovation implemented over time within a particular social system (i.e., organisation) (Rogers, 1995). Within a diffusion of innovation context, the adoption of technology is represented by a multiple-stage process (Cooper & Zmud, 1990; Karahanna et al., 1999), which includes the following stages: initiation, adoption, adaptation, acceptance, routinisation and infusion (Kwon & Zmud, 1987).

The stages are defined briefly as follows: *initiation*—identifying the organisational problems for undertaking an IT solution. The pressure to change can either be from top management or technology innovation, or both; *Adoption*—making decision and getting support to implement the technology; *Adaptation*—the process of developing, installing and maintaining the technology. During this stage, the organisation's procedures are revised and employees are sent for training; *Acceptance*—efforts are taken to induce employee's commitment to use the technology; *routinisation*—the use

of the technology is encouraged as part of an employee’s daily activity; and *infusion*—technology becomes embedded deeply within the organisation’s work systems.

Based on this theory, “adoption and diffusion processes are inseparable. Diffusion describes adoption across a population over time” (Straub, 2009, p. 630). Within this theoretical lens, continuous behaviour is viewed as a result of frequent use of the application, which has become a part of users’ daily activity (routinisation). Based on this theoretical lens, continuous use is viewed as an extension of adoption behaviour and the continuous use is determined by the same set of factors used to examine adoption behaviour. Table 2.1 summarises how these two theoretical lenses are used to explain continuous use behaviour.

		ISCM	IDT
1	View on continuous use	Continuous use is viewed as a separate construct from adoption.	Continuous use is viewed as an extension of adoption.
2	Main assumption	Continuous use must be treated as a separate construct.  The use of post-adoption related factors are required to explain post-adoption behaviour.	Continuous use is view as a results of the routinisation process of IS adoption. Continuous use is a result of frequent adoption.  Determinants that used to explain adoption can be used to explain continuous use.
3	Post-adoption factors used together with the theory	Satisfaction, Confirmation and Perceived usefulness	Not mentioned about the use of post-adoption factors
4	The use of the theoretical lens in previous studies	Examined only continuous use.	Examined adoption and continuous use.

Table 2.1 The Summary of ISCM and IDT in Conceptualising Continuous Use

Therefore, as a conclusion i) ISCM supports the view of continuous use as a separate construct from adoption, whereas IDT is more directed to see continuous behaviour as an extension of adoption. Through the IDT theoretical lens, continuous use is achieved after users have gone through multiple-stages; ii) in term of the antecedents used to examine continuance intention, ISCM strongly suggests that only post-adoption factors can be used to examine continuous intention. As for IDT, it did not mention about this clearly. Based on the literature there is evidence that pre-adoption factors have been identified as determinants to examine continuous use/post-adoption; and iii) ISCM usually is adopted to examine continuous use behaviour; whereas, IDT is mainly used to examine adoption and sometimes continuous related studies.

Above all, the extant IS adoption literature suggests that viewing continuous use as a separate construct provides a better understanding. This is because it can help to overcome the limited explanation of adoption models, which sometimes contradict observed continuous use (Bhattacharjee, 2001b; Bhattacharjee & Barfar, 2011; Bhattacharjee et al., 2008). Using the same antecedents to explain both pre-adoption and continuous-use decisions is inappropriate, as it would not give better understanding of continuous use behaviour. Also, using the same set of determinants limits the understanding of why some users discontinue using the technology after they have initially accepted the technology (Bhattacharjee, 2001b; Bhattacharjee & Barfar, 2011; Hsu et al., 2004).

Furthermore, the view of continuous use as a separate construct also received strong theoretical support by a growing empirical base in marketing (e.g., repurchase, loyalty) and IS continuous use literature (Bhattacharjee et al., 2008). This strong literature support is important to ensure that this view is theory-driven and to avoid inconsistency with core assumptions and tenets of continuance theory (Bhattacharjee & Barfar, 2011). Further, the theoretical lens that supports continuous behaviour as a separate construct from adoption (i.e., ISCM) has been tested empirically within post-

adoption situations and has managed to demonstrate its parsimony in predicting continuous use intention (Bhattacharjee et al., 2008).

Finally, from the literature review there are studies that adopted Theory of Planned Behaviour (TPB) when examining continuous behaviour. However, most of previous works used TPB as a complementary theory together with ISCM to predict continuous use intention (Liao, Chen & Chen, 2007; Chen, Chen & Chen, 2009; Limayem, Cheung & Chen, 2003). For instance, Limayem et al., (2003) used TPB to explain user's experience at initial stage and ISCM at post-adoption stage.

#### **2.4 Continuous Knowledge Sharing**

Thus, from the above discussions (conducted in subsections 2.2 and 2.3), this study comes to a conclusion that: i) continuous knowledge sharing is a post-adoption behaviour; ii) continuous knowledge sharing is better off conceptualised as a separate construct from knowledge sharing; iii) continuous knowledge sharing should not share the same set of determinants used to explain knowledge sharing and the determinants of continuous knowledge sharing must be post-adoption in nature. ; and iv) ISCM is used as the underlying theoretical lens to examine continuous knowledge sharing within online communities. Thus, following Bhattacharjee's (2001b) definition of continuous use, this study defines continuous knowledge sharing as members' repeated acts of posting what they know in business online communities.

A literature analysis is conducted on previous studies that have focused on the continuous knowledge sharing topic in an online community context. Examining previous studies helps to identify the 'state of research' related to continuous knowledge sharing especially in online communities. The following subsections discuss the literature analysis conducted in this study.

## 2.5 Literature Analysis: Continuous Knowledge Sharing

This section reviews previous studies that focused on members' continuous knowledge sharing intention. The main objective of this analysis is to understand better the 'state of play' and reveal patterns in the development of this topic. In order to understand the literature better, this study has outlined a few guideline questions. The questions are:

- a. What is the focus of previous studies?
- b. What are the key contributions of previous studies?
- c. What theoretical lenses were adopted by previous studies?

The process started by examining previous studies that focused on continuous knowledge sharing published in relevant IS journals and conference outlets. A list of IS journals and conference outlets generated by Mylonopoulos and Theoharakis (2001) is used as the source to find the publications. Table 2.2 presents the list of IS publication outlets used in this study.

<b>Main IS Conferences</b>
ICIS—International Conference on IS
ACIS—Australasian Conference of IS
PACIS—Pacific-Asia Conference on IS
HICSS—Human International Conference on System Sciences
AmCIS—Americas Conference on IS
ECIS—European Conference on IS
<b>IS Journal Outlets</b>
MIS Quarterly
IS Research
Journal of Management Information Systems
Decision Support Systems
Information and Management
ACM Transactions (i.e., Management Information Systems, Computer Human Interactions, and Communication)
Communication of AIS
Human-Computer Interaction
Behaviour and IT
IEEE Explorer

Table 2.2 List of IS Publication Outlets

In this study, aside from conducting a literature search from the IS publication outlets listed in Table 2.2. Google Scholar also is used to ensure papers that had been published outside IS domains were included. To help limit the search, this study only considered research papers that focused their discussion on continuous knowledge sharing and were published from the period of 2001 to 2011.

The papers were searched using the following key words—"continuous use", "continuous knowledge sharing" and "online communities". From the literature search, 35 papers were identified examining the topic of continuance intention in an online community context. Out of the 35 papers, only nine papers were selected for literature analysis. These papers are selected because it focused on continuous knowledge sharing in online communities. Table 2.3 lists the nine papers reviewed in the literature analysis.

	Authors	Type of Online Community	Theoretical underpinning	Dependent Variable	Enabling Factor Category	Determinants used to examine dependent variable
1	Chen (2007)	Professional virtual community (Programmers)	ISCM	Continuous use	Technology and Social	System quality, knowledge quality and social interaction ties
2	Cheung & Lee (2007b)	Professional virtual community (Teachers)	ISCM	Continuous knowledge sharing	Personal and Social	Knowledge sharing efficacy, reciprocity and helping others
3	Cheung & Lee (2007a)	Professional virtual community (Teachers)	ISCM	Continuous knowledge sharing	Social and personal	Helping others, reciprocity, moral obligation, knowledge self-efficacy and commitment
4	Jin et al. (2007)	University bulletin board system	ISCM and Uses and gratification Theory	Continuous use	Personal and Social	Purposive value, discovery value, maintaining interpersonal interconnection value, enhancement value, entertainment value and sense of belonging
5	Chou et al. (2010)	Public online communities	ISCM and Social Cognitive Theory	Continuous knowledge creation	Social and Technology	Perceived identity verification and performance expectancy
6	Fang & Chiu (2010)	Professional online community (Programmers)	Organisational Citizenship Behaviour, Trust and Justice Theory	Continuous knowledge sharing	Social	Altruism, conscientiousness, trust, distributive justice and procedural justice
7	Jin et al. (2010)	University bulletin board system	ISCM	Continuous use	Personal and Social	Purposive value, entertainment value and affective commitment
8	Zhang et al. (2010)	Public virtual communities	Psychology safety	Continuous knowledge sharing	Social	Trust and self-consciousness
9	Chiu et al. (2011)	Professional virtual communities (Programmers)	ISCM, Justice Theory and Subjective task value	Continuous knowledge sharing	Social and Personal	Distributive justice, procedural justice, interactional justice, system playfulness, attainment value, utility value, intrinsic value and cost

Table 2.3 Previous Studies on Continuous Knowledge Sharing within Online Communities

### **2.5.1 Research Focus of Previous Studies**

This subsection discusses the first question: “What is the research focus of previous studies?” The literature analysis shows that the majority of previous studies have examined members’ continuous knowledge sharing in professional online communities. Five papers examined continuous knowledge sharing in professional online communities (e.g., teacher and programmer); two within a university’s bulletin board system context. A bulletin board can be considered as an online community because it is a socio-technical platform that allows users to interact and share content (Lee et al., 2006); and two studies examined this behaviour within public online communities (e.g., Baidu.com and Yahoo knowledge+) (Chuo et al., 2010; Zhang et al., 2010).

Further, the analysis also demonstrates that previous studies have examined continuous knowledge sharing using a variety of dependent variables. For instance, prior works have examined continuous knowledge sharing using the following dependent variables—continuous use, continuous knowledge sharing and continuous knowledge creation. From the analysis, five prior works used continuous knowledge sharing (Cheung & Lee, 2007a; Cheung & Lee, 2007b; Chiu et al., 2011; Fang & Chiu, 2010; Zhang et al., 2010); three used continuous use (Chen, 2007; Jin et al., 2007; Jin et al., 2010) and one used continuous knowledge creation (Chuo et al., 2010) as dependent variables.

### **2.5.2 Contributions of Previous Studies**

This subsection will answer the second question—“What are the key contributions of previous studies?” The literature analysis shows that most of previous studies focused their contribution on understanding the determinants of continuous use behaviour. Overall, the antecedents used to examine continuous knowledge sharing can be categorised into three enabling factor categories—personal, technology and social. Social factors related to members’ surroundings and their interrelationships with others were used to examine its influence on one’s continuous behaviour. As for social related determinants, factors such as justice, trust, commitment, helping others, reciprocity, sense of belongingness, perceived identification verification and conscientiousness have been used to examine continuous knowledge sharing (Cheung & Lee, 2007a; Cheung & Lee, 2007b; Chiu et al., 2011; Chuo et al., 2010; Fang & Chiu, 2010; Jin et al., 2007; Zhang et al., 2010).

The second factor that the previous studies focused on was the influence of technology related factors. Technology related factors were conceptualised to examine the influence of IS characteristics on members’ decision to continuously share their knowledge using online communities. Antecedents such as information quality, system quality and system playfulness were used by the previous studies (Chen, 2007; Chiu et al., 2011). Finally, personal related factors also were used to investigate the motivation of online community members to keep on sharing their knowledge using online communities. Previous studies have used individual motivational needs (e.g., attainment value, utility value, intrinsic value, purposive needs) of using an IS and self-efficacy as the antecedents of continuous behaviour (Chiu et al., 2011; Jin et al., 2007; Jin et al., 2010).

### **2.5.3 Theoretical Underpinning of Previous Studies**

A majority of previous studies that examined continuous knowledge sharing used Bhattacharjee's (2001b) ISCM as the underlying theory. Only two studies (Fang & Chiu, 2010; Zhang et al., 2010) employed organisational citizenship behaviour and psychology safety as the underlying basis to examine this continuous behavioural intention.

Due to the different nature of knowledge sharing compared to IS adoption, previous works have integrated ISCM with other theories to give better explanation of what influence continuous knowledge sharing/continuous use within online communities. Previous works had integrated ISCM with theories like the theory of justice (Chiu et al., 2011; Fang & Chiu, 2010), uses and gratification (Jin et al., 2007), and the expectation value model (Chiu et al., 2011). These theories served as the determinants to explain members' continuous knowledge sharing intention within an online community context. As for other previous works, they have been identified to adopt factors that have been used to explain online knowledge sharing with ISCM to examine continuous knowledge sharing. Thus, factors like self-efficacy, helping others, altruism and moral obligation have been conceptualised to influence continuous knowledge sharing directly.

### **2.5.4 Conclusion from the Literature Analysis**

From the literature analysis, several important points emerged and require further attention:

1. Less attention has been given towards understanding members' continuous knowledge sharing intention beyond the professional online community context. For instance, majority of prior works have examined this topic within the teacher's online community (Cheung & Lee, 2007b), university's bulletin board (Jin et al., 2010) and programmer's online community contexts (Chiu et al., 2011; Fang & Chiu, 2010). Focusing only on the professional online

community actually limits the understanding of this behaviour only to this type of online communities.

This is because a professional online community is a type of online community that is influenced heavily by managerial and organisational-related factors. For example, within an organisational context, knowledge is power and it represents member's uniqueness within the community. Thus, the external benefits/rewards (e.g., community recognition, identification by others or rewards) are very important to encourage members' willingness to share knowledge (Kankanhalli, Tan, & Wei, 2005). Not only that, the decision to share knowledge also is governed by the institutional norms (e.g., fairness or tolerance of failure) (Bock, Zmud, & Kim, 2005). In other words, although a professional online community is administered beyond its organisation boundary, members' knowledge sharing behaviour still is bounded by their profession's norms and organisation's rules and regulations (e.g., secrecy of information) (Wasko & Faraj, 2005).

As compared to business related online communities (e.g., Microsoft online communities, SAP online communities) factors such as commitment, sportsmanship and enjoyment (e.g., the fun from helping others or the challenge of helping others solve their problem) are more salient to encourage members' willingness to share knowledge (Lee et al., 2006). Members share knowledge out of their own interest and not bounded by any rules or regulations related to their professions. For instance, members are free to share their experiences using a product or services without the fear of exposing the organisation's secret information. They are free to share anything, as the opinions shared do not represent their working organisation.

Based on the two examples explained above, this study contends that factors that are significant for a professional online community context might not be as significant in a business online community context. Hence, focusing on other types of online communities might give a better understanding of what

influences continuous knowledge sharing in online communities. Hence, for this study the focus is on understanding members' continuous knowledge sharing in business online communities.

2. Most of the previous works examined continuous knowledge sharing using social related factors. Although there are previous works that integrated social related factors with other factors (i.e., personal and technology), their main focus remains on understanding the effect of social related factors that influence continuous knowledge sharing intention within online communities. For instance, Chiu et al.'s (2011) work focused on the influence of motivational and sociological factors on continuous knowledge sharing within professional online communities. However, most of the discussions are on the influence of justice compared to members' motivation to share knowledge continuously.

Above all, this study is not criticising the use of social related factors to examine continuous knowledge sharing. However, based on knowledge sharing literature, knowledge sharing is a complex behaviour that needs to be explained by three categories of enablers—personal, social and technology (Ardichvili, 2008; Ford & Staples, 2008). Knowledge sharing scholars (Ardichvili, 2008; Kankanhalli et al., 2005; Wasko & Faraj, 2005) suggested that to understand how to encourage people to contribute knowledge requires the understanding of: i) members' motivations (personal factor)—online knowledge sharing is based on voluntary acts, understanding how and what motivate their voluntariness to contribute knowledge is important; ii) online contextual surrounding does not limit the interaction only to individuals whom the members know. In an online setting, most of the times members usually interact with people whom they did not know (i.e., strangers). Thus understanding the influence of contextual factors (e.g., trust, commitment, or sense of belonging) plays an important role in promoting members' willingness to share knowledge continuously; and iii) system attributes (technology factor)—within an online community context, knowledge are shared through the use of an ICT platform. For instance, members' perceived usefulness of the

platform is important to encourage members to contribute what they know (Usono, Sharratt, Tsui, & Shekhar, 2007). Therefore, this study believes that integrating all three factors in a single study might give a comprehensive understanding of what determines continuous knowledge sharing intention within business online communities.

3. Analysis of previous works showed that previous studies that adopted ISCM did not follow the main assumptions of this theoretical model. The main assumption of ISCM is that continuous use is viewed as a separate behaviour from adoption and it requires post-adoption related factors to explain this continuance behaviour (Bhattacharjee, 2001b; Bhattacharjee & Barfar, 2011; Bhattacharjee et al., 2008). One possible reason for it is that, previously there is no clear conceptualisation of continuous knowledge sharing. Previous works did not examine the fundamental issues (e.g., characteristics, theoretical underpinning) of continuous behaviour. Perhaps due to that, there is no clear direction on what type of factors are needed to be used in examining continuous knowledge sharing. Thus, this study predicts that using post-adoption related factors can provide better explanatory power to examine the determinants of continuous knowledge sharing.
4. ISCM has been identified as the main theoretical underpinning used by most previous works that examined this topic. Due to the limited constructs used in this theoretical model to examine continuance behaviour (i.e., satisfaction, confirmation and perceived usefulness), previous works tended to integrate these theoretical models with other theories (e.g., uses and gratification, justice theory and the expectancy value model).

Perhaps by extending this theoretical model it can give better explanatory ability to examine continuous knowledge sharing. For instance, identifying what influence perceived usefulness could increase the ability of the theoretical model to explain continuous behaviour. Thus, on that basis, this study suggests that further work is needed to extend the existing theoretical model (i.e., ISCM)

so that it can give better explanatory power to examine continuous intention especially continuous knowledge sharing in online community context.

From the above discussion, this study extends the understanding of continuous knowledge sharing in online communities by: i) examining this continuance behaviour within a business online community context; ii) integrating the three main factors in knowledge sharing literature (i.e., social, personal and technology) to examine continuous knowledge sharing; and iii) extending the existing ISCM model by adopting commitment trust theory (CTT) and the expectation value model (EVM). For this study, CTT is adopted because based on marketing literature trust and commitment have been identified as two key mediating variables that can be used to explain continuous relationships (Morgan & Hunt, 1994). Although trust and commitment have been examined within an ISCM context, most of them are directed to examine it as having a direct relationship with continuous behaviour. This study is different as it is interested in examining the mediating effect of trust and commitment on continuous knowledge sharing intention. According to Henseler, Ringle and Sinkovics (2009), understanding the mediating effects can “provide more reasonable grounds for conclusion” (p.304) and also help researchers to learn more about the indirect effect of the predecessors of the endogenous latent variable. On the other hand, EVM is adopted to predict member beliefs of community perceived usefulness. EVM posits that an individual’s intention to conduct a task is influenced by how he/she values the task. Although perceived usefulness is defined as belief, this belief is actually perceived after members have used the online communities (e.g., a task). Without conducting the task (i.e., using the online communities), members would not be able to evaluate their expectations (i.e., community perceived usefulness) (Bhattacharjee, 2001b). The following section is dedicated to providing understanding of the context of this study—business online communities.

## 2.6 Business Online Communities

A business online community is an online community that focuses on consumption of products or services. Business online communities provide customers with product information, allow customers to learn about the products or services, provide a platform for consumers to organise activities and build relationships with others that have shared interest in the same product (Lee et al., 2006; Ramaswamy, 2008). Kozinets (1999) refers to this community as an online community that is based on members' enthusiasm to share knowledge that is related to specific consumption activity or related groups of activities. This community is acknowledged as an important platform for consumers to learn about a product and share their knowledge and past experiences with others.

Business online communities can either be operated by consumers (e.g. enthusiasts) or firm-hosted communities (e.g., firms that produce the brands or products) (de Guinea & Markus, 2009; Morgan & Hunt, 1994). Firm-hosted business online community refers to an online community that is owned by a business-entity; and members collectively produce and consume content that is related to commercial products that are central to the community (Brown & Duguid, 2001). Weirtz and Ruyter (2007) indicated that although companies owned the online community, all of the activities and contents depend entirely on the members. The organisation has less control over the community. On the other hand, enthusiasts hosted business online community refers to a business online community that is hosted by individuals who voluntarily share information, knowledge, user tips and discuss products on their own free will (de Guinea & Markus, 2009).

Although both firm and enthusiast-hosted business online communities hold the same purpose (i.e., sharing related knowledge regarding specific consumption activities), there are however differences between these communities. Within an enthusiast-hosted business online community: 1) there is no official advertisement and the latest news about the firm or products; 2) customers are not able to launch complaints to the firm directly; and 3) there are no direct interactions or involvements from the firm

(de Guinea & Markus, 2009). On the other hand, using a firm-hosted business online community, consumers have the opportunity to get involved directly in product innovations or designs; this is also known as co-creation (de Guinea & Markus, 2009; Fuller et al., 2007).

Therefore, this study will focus on firm-hosted business online communities. This study defines a business online community as a firm-owned online community that supports generation of content that is related to the products that are central to the community. In this study, member-generated content includes the sharing of information, experience, knowledge or solutions to problems that are related to the products.

## **2.7 Summary of Chapter 2**

This chapter discusses the conceptualisation of continuous knowledge sharing. The conceptualisation of this construct is based on previous IS adoption works. Based on the conceptualisation, continuous knowledge sharing should be treated as a separate construct from knowledge sharing and does not share the same set of determinants with knowledge sharing. Further, this chapter reveals the patterns of previous works that focus on continuous knowledge sharing within online communities. This discussion is based on a literature review and analysis conducted on continuous knowledge sharing literature published for the past ten years. Finally, this chapter reviews the context of this study, which is business online communities.

# CHAPTER 3.0 Research Model and Hypotheses

## 3.0 Overview of Chapter 3

The main objective of this chapter is to develop a conceptual research model to examine continuous knowledge sharing intention within business online communities. In order to achieve the objective, previous studies that have adopted Information systems continuous use model (ISCM), commitment-trust theory (CTT) and the expectation value model (EVM) are examined and analysed. Then in the second section, these theories are synthesised to conceptualise the research model. Within this section, the interrelationships between constructs that build up the research model are discussed. The research model for this study is presented within this section. The following section then presents the research hypotheses for this study. This chapter ends with a summary.

### **3.1 Theories Employed for This Study**

In this study, ISCM is used as the underlying theoretical framework to examine continuous knowledge sharing. CTT is used to examine the influence of contextual factors on members' continuous knowledge sharing intention within business online communities. Meanwhile, EVM is used to predict the influence of member beliefs of community perceived usefulness. Thus, the following subsections discuss these theories in relation to this study.

#### **3.1.1 Information Systems Continuous Use Model**

Information systems continuous use model (ISCM) is derived from expectation confirmation theory (ECT) (Oliver, 1980). ECT is a behavioural model used to explain and predict consumer satisfaction and repurchase intention. ECT depicts that consumer repurchase intention of a product or to reuse a service is primarily determined by a consumer's level of satisfaction with prior usage of that product or service (Oliver, 1980). Within this theoretical model, repurchase or reuse intention is jointly determined by consumer feelings of satisfaction and confirmation of expectations.

According to Oliver (1980), a consumer's repurchase of a product or reuse of a service intention is determined by a five-step process. First, the consumer forms initial expectations of a specific product or service before making any purchase. Second, the consumer accepts and uses that product or service. After a period of initial consumptions, the consumer will form post perceptions about the product's or service's performance. Third, the consumer will assess its perceived performance expectations and compare them with initial expectations. At this level, the consumer will determine the extent to which his or her expectations are confirmed. Fourth, the consumer will determine which expectations are confirmed. Based on this confirmation, the consumer will form the feeling of satisfaction. Finally, the consumer's feeling of satisfaction will help form the consumer's intention to

repurchase or reuse the product or service, while dissatisfied users discontinue its subsequent use.

Despite the different nature of IS adoption compared to consumer repurchase behaviour, Bhattacharjee (2001b) has adapted ECT and modified it so that it fits into IS adoption context. According to Bhattacharjee (2001b), although users continuous use of IS will likely go through a similar decision process that a consumer went through when repurchasing a product, few theoretical extensions are needed. This author proposes the following theoretical extensions: 1) based on the ECT paradigm, pre-consumption expectation is often based on third-party opinion or information dissemination through the mass media or peers. This expectation usually will be updated or replaced with post-consumption (first-hand experience) expectation once the consumer starts using the product. Therefore, rather than examining both pre-consumption and post-consumption expectations, IS continuous use model extends the ECT model by examining only post-acceptance expectations. 2) ECT only focuses on the effect of pre-consumption experience but not post-consumption experience. Within IS continuous model, pre-consumption expectation is excluded because this expectation is temporal in nature and may change significantly. Thus, based on the IS usage experiences, a user's pre-adoption expectation is unlikely to be retained during the post-adoption stage (Bhattacharjee & Premkumar, 2004). Finally, 3) the IS continuous use model proposed perceived usefulness as post-adoption expectation. This construct is used due to its ability consistently to influence the user's intention across temporal stages of IS use (Bhattacharjee, 2001b; Karahanna et al., 1999).

Based on the ISCM theoretical model, users' continuous behavioural intention is determined strongly by two constructs—satisfaction and perceived usefulness. Meanwhile, satisfaction and perceived usefulness are influenced by confirmation. Based on continuous use literature, the relationships between these constructs within ISCM have been parsimonious (Bhattacharjee & Barfar, 2011; Bhattacharjee et al., 2008). Previous studies consistently have demonstrated these relationships within a variety of continuous use contexts (Hong et al., 2006; Limayem & Cheung, 2008; Thong et al., 2006).

Within the ISCM lens, satisfaction refers to users' transactional experiences when using the system that influenced their continuous use intention (Bhattacharjee et al., 2008). In other words, satisfaction is a construct used to capture a user's feeling of positive or negative emotion towards the use of an IS (Bhattacharjee, 2001b). For this study, Ong and Lai's (2007) measures of satisfaction are adopted to examine members' level of satisfaction when using online communities to share knowledge continuously. These measures are adopted because, when it comes to measuring satisfaction of knowledge based IS applications, previous researchers focused on their ability to support knowledge sharing activities (Ong & Lai, 2007). Factors like community collaboration, quality of knowledge and clear classification of shared knowledge are among the indicators being used to measure members' level of satisfaction when using online communities to share knowledge. Hence, for this study, satisfaction is defined as members' positive or negative feelings toward the fulfilment of desire needs and the pleasure as a result of using business online communities when sharing knowledge.

Aside from satisfaction, members' belief of perceived usefulness also is identified as an important factor influencing users' level of satisfaction and continuous use intention (Bhattacharjee, 2001a, 2001b; Hong et al., 2006; Saeed & Abdinnour, 2008; Thong et al., 2006). Perceived usefulness is defined as an individual's beliefs that using the IS would enhance his or her job performance (Davis, 1989). Although perceived usefulness is rooted in pre-adoption related theories (i.e. Theory of Acceptance Model), its ability to explain continuous use intention had empirical supports. Based on empirical evidence, perceived usefulness has been identified as a critical perception that drives a user's intention continuously to use an IS (Bhattacharjee, 2001b; Bhattacharjee & Premkumar, 2004).

In this study, the focus is given towards understanding the influence of member beliefs of community perceived usefulness. According to previous studies, member beliefs of community perceived usefulness may transcend from an organisational job boundary to personal growth of knowledge and exposure (Lu et al., 2011). For instance, sharing knowledge with others within an online community allows members to get new views

or experiences beyond the working boundaries. In fact, members will continue participating in online community activities if they believe the content provided by the community members are useful and beneficial (Lu et al., 2011). Thus, in this study, community perceived usefulness is defined as member beliefs in using the business online community would benefit and enhance individuals' performance.

Meanwhile, confirmation refers to cognitive beliefs representing the extent of users' initial expectations (Bhattacharjee, 2001a). Based on the literature, confirmation is related positively to satisfaction and perceived usefulness. Confirmation infers realisation of the expected benefits of using the system and can be used to adjust users' expectations especially when users are not certain of what to expect from the usage of the IT (Bhattacharjee, 2001b; Thong et al., 2006).

Finally, within the post-adoption literature there are two alternative theoretical models being proposed by researchers to examine continuous behaviour. There are: 1) Bhattacharjee and Premkumar's (2004) two stage model and 2) He and Wei's (2009) continuous knowledge seeking and contributing model. However, despite the differences these two models still adopt Bhattacharjee's original continuous use model (ISCM) as the main underlying theory when it comes to predicting post-adoption behaviour. For instance, Bhattacharjee and Premkumar's (2004) model incorporated the Theory of Acceptance Model (TAM) and ISCM. TAM is used to capture the pre-usage experiences while ISCM is used to capture the post-adoption experiences. The same goes for He and Wei's (2009) model where they used ISCM as the underlying theoretical basis to examine knowledge seeking and contribution as two competing models. Thus looking from the bigger picture, it shows that ISCM is still the main theoretical lens used to examine post-adoption behaviour. Since the main motivation of this study is to examine the determinants of continuous knowledge sharing, ISCM is therefore suitable to be used to examine continuous knowledge sharing behaviour.

### 3.1.2 Commitment-Trust Theory

Commitment-trust theory (CTT) (Morgan & Hunt, 1994) posits that the success or failure of an on-going marketing relationship is more dependent on the contextual factors that facilitate the relationship. Trust refers to the “confidence in an exchange of partner’s reliability and integrity” (Morgan & Hunt, 1994 p. 23), while commitment refers to “an exchange of partner believing that an on-going relationship with another is so important as to warrant maximum efforts at maintaining it” (p. 23). Originally, this theory positions trust and commitment as mediating variables that influence the relationships between five antecedents (i.e., relationship termination costs, relationship benefits, shared values, communication, and opportunistic behaviour) and five outcomes (i.e., acquiescence, propensity to leave, cooperation, functional conflict, and decision-making uncertainty) (Morgan & Hunt, 1994).

Past research in relationship marketing has shown strong support of the theory by considering trust as a psychological aspect and commitment as an outcome variable that keep both parties maintaining a relationship (Hsu, Liu, & Lee, 2010). According to this theory, trust and commitment can encourage a successful relationship by: 1) upholding the relationship by promoting a cooperative environment between exchange partners; 2) help partners abstain from attractive short-term alternatives and in favour of long-term benefits; and 3) viewing potentially high-risk actions as being prudent and believing that their partners will not act opportunistically.

According to this theory, committed individuals are more likely to express a long-term orientation towards maintaining a relationship. While trust influences commitment and at the same time exists when individuals believe that the other party is trustworthy and not being opportunistic. The existence of trust and commitment are said to promote cooperative behaviours that are conducive to a successful relationship (Morgan & Hunt, 1994). Trust and commitment is necessary to motivate positive development and the maintenance of on-going/successful interpersonal relationships.

This theory would apply to almost all relational exchanges (Morgan & Hunt, 1994). Previous studies have used this theory to examine various relational context like online retailing relationships (Mukherjee & Nath, 2007), consumer-enterprise relationships through micro-blogging (Hsu et al., 2010) consumer-bank relationships using Internet banking, IS department-user service relationships (Carr, 2006), relationships between researchers (Rampersad, Quester, & Troshani, 2010) and customer-seller relationships (Garbarino & Johnson, 1999). The use of this theory can also be extended to online knowledge sharing context. This is because knowledge sharing within an online community also is based on the social relationships that exist between members within the community. Through social exchange, members combine and form knowledge (Chiu et al., 2006).

The existing continuous use literature also shows that trust and commitment are able to influence members' continuous participation when using online communities (Yen, 2009). According to this author, trust and commitment are two important factors that influence members' continuous participation significantly within an online community. However, within an online community, member trust and commitment will decrease if others show opportunistic behaviour (e.g., lurking). Members in an online community do care about each other especially when other members keep their promises. If members view others as opportunistic, it can reduce their trust and commitment and at the same time lower their intention to participate continuously within a community (Yen, 2009). However, to what extent trust and commitment can mediate members' continuous knowledge sharing is not clear. Hence, examining the mediating effect of these two important factors can add better understanding of how these factors influence members' continuous knowledge sharing behaviour beyond the direct relationship demonstrated by previous studies.

### **3.1.3 Expectation Value Model (EVM)**

As described earlier in the previous subsection (subsection 3.1.1), user beliefs of perceived usefulness play an important role affecting continuance intention (Bhattacharjee, 2001b; Hong et al., 2006; Thong et al., 2006). Despite the strong

influence of perceived usefulness on satisfaction and continuous intention, not much is known about what influences this construct, as it is usually operationalized as a single construct.

This study adopts the expectancy value model (EVM) as the underlying theoretical lens to predict member beliefs of community perceived usefulness. Based on EVM, individual's choice/decision of conducting a task is influenced by the values gained from conducting that task (Eccles et al., 1983). According to Eccles et al. (1983), value of conducting a task can be divided into four different components—attainment value, intrinsic value, utility value and cost.

At this stage, it is important to highlight that although perceived usefulness is defined as belief, this belief is derived after members have used the system (i.e., online community). Without conducting the task (using the community), members would not be able to develop this belief (i.e., community perceived usefulness) (Bhattacharjee, 2001b). Based on IS adoption literature, one of the factors that influences user beliefs of perceived usefulness is its cognitive instrumental processes (Venkatesh & Davis, 2000). Individual's beliefs of perceived usefulness are positively influenced by how they value the system (Agarwal, 1998). For instance, an experienced user who can identify the usefulness of a system easily will recognise the value gained from using the system (Agarwal, 1998).

Thus, based on that, this study predicts that member beliefs of community perceived usefulness can be predicted using EVM's determinant factors—attainment, utility and intrinsic value. Empirically, all these values have been identified to explain post-adoption behaviour (Chiu & Wang, 2008; Chiu et al., 2007). However, in this study cost is dropped from the theoretical model as the influence of this construct has been identified as not significant (Chiu et al., 2007) and to some extent has not been included by previous studies (Chiu & Wang, 2008) when adopting this theoretical lens to examine continuous behaviour.

Importantly, according to Cabrera & Cabrera (2002), in a situation where knowledge sharing is seen as a public-good situation (i.e., online community), the value gained from sharing knowledge have stronger effect compare to the cost acquired from the act of sharing knowledge. Hence, based on that further support why cost is not included in the research model for this study.

### **3.2 Conceptual Model**

The conceptualisation of the research model for this study is based on the three theories discussed previously—ISCM, CTT and EVM. Nine constructs have been identified and their relationships between one another are elaborated in detail within the following subsections. This study develops a research model as in Figure 3.1. Based on this research model, all constructs are related positively to each other. The research model is grounded using ISCM. This model predicts that continuous knowledge sharing intention is influenced by satisfaction and community perceived usefulness. Satisfaction is influenced by confirmation and community perceived usefulness. This study also predicts that members' community perceived usefulness is influenced by subjective task values—attainment, intrinsic and utility value. Meanwhile based on CTT, identification trust and affective commitment are predicted to mediate the relationship between satisfaction and continuous knowledge sharing intention.

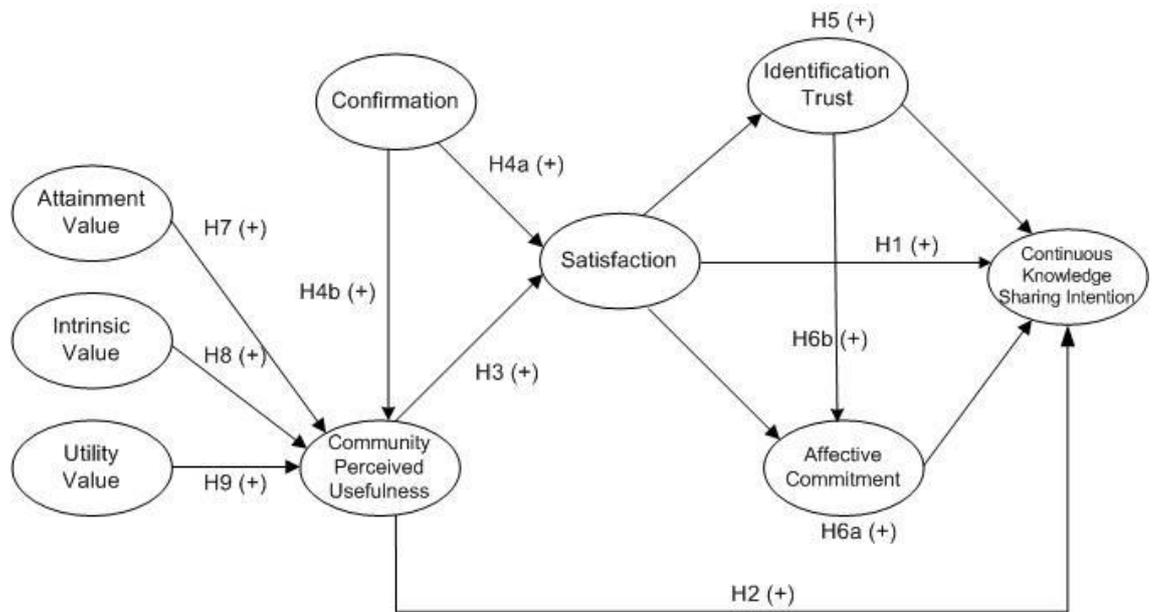


Figure 3.1 Proposed Research Model

### 3.2.1 Continuous Knowledge Sharing Intention and Satisfaction

In this study, continuous knowledge sharing intention refers to members' repeated acts of posting what they know to the online community. Existing continuous knowledge sharing literature shows that satisfaction is an important factor that influences online community member decisions to continuously share their knowledge (Cheung & Lee, 2007a; Jin et al., 2010). For instance, online community members are more likely to share their knowledge if they have a positive level of satisfaction using the online communities (Cheung & Lee, 2007a). In addition, this positive relationship is supported strongly by continuous use literature, whereby previous studies have shown a strong relationship between satisfaction and continuous use using a variety of IS applications (Bhattacharjee, 2001a, 2001b; Bhattacharjee & Premkumar, 2004; Hong et al., 2006; Thong et al., 2006).

In this study, members' level of satisfaction is measured using Ong and Lai's (2007) satisfaction measures. These authors have introduced a set of measures to examine members' level of satisfaction using knowledge sharing based IS (e.g., knowledge management system or online community). According to these authors, members'

levels of satisfaction when using knowledge sharing based IS are determined by the following factors: 1) the representativeness of the knowledge. Knowledge shared within the application should receive endorsement or support from the experts or authorities in that topic. Otherwise, it might lead to potential misuse. Correct knowledge and being integral, easy to read and logical may influence users to keep using the application; 2) classification or mapping of knowledge is important to help collect and integrate the organisation or group knowledge. Proper classification can help to eliminate the recognition gap between knowledge contributors; 3) it is important to provide a simple view of the collected content to users. Users should be able to personalise the shared knowledge according to their needs; and 4) encourage collaboration in a community so that users will be able to share freely what they think without the fear of criticism and ability to acknowledge their membership. In other words, members' levels of satisfaction when using online community for knowledge sharing activities is based on the following factors: 1) quality of knowledge shared within the community, 2) clear classifications/mapping of knowledge, 3) ability to personalise knowledge and 4) providing supportive knowledge community.

Previous studies have shown that members who are satisfied with the online community are more likely to be involved in activities that are aimed at maintaining their interactions within the community by continuously facilitating or taking part in knowledge sharing activities (Chuo et al., 2010; Ma & Agarwal, 2007). Therefore, this study predicts that members' level of satisfaction with the online community will positively influence their continuous knowledge sharing intention within business online communities. Hence, this study hypothesises:

*Hypothesis 1: Members' level of satisfaction has positive influence on members' continuous knowledge sharing intention within business online communities*

### 3.2.2 Community Perceived Usefulness

Within ISCM context, expectation of using an IS “provides the baseline level against which confirmation is assessed by users to determine their evaluative response or satisfaction when using an IS (Bhattacharjee, 2001b, p. 355). Within continuous use literature, perceived usefulness is identified as an important determinant of users’ continuous intention and satisfaction (Bhattacharjee, 2001a, 2001b; Hong et al., 2006; Saeed & Abdinnour, 2008; Thong et al., 2006). For instance, an individual will be more inclined to fully examine and keep using the system if they find the system to be useful for their daily or job-related tasks (Saeed & Abdinnour, 2008).

Within online knowledge sharing the usefulness of the communities depend on the benefits (e.g., improving their own knowledge) a member can acquire from the shared knowledge. Community perceived usefulness is closely associated with members’ beliefs that using the online community can help members acquire additional/new knowledge (Lu et al., 2011). According to Lu et al. (2011), through the additional knowledge acquired, members can use them to improve their performance in a workplace or even daily lives. Hence, members with positive belief of community perceived usefulness will positively influence their continuous knowledge sharing intention within business online communities. Hence, this study hypothesises:

*Hypothesis 2: Members’ belief of community perceived usefulness has positive influence on members’ continuous knowledge sharing intention within business online communities*

According to online knowledge sharing scholars, online communities have been identified as one of the most appropriate platforms that enable its member in developing personal knowledge, as it allows members to interact directly with experts (Wasko & Faraj, 2000, 2005). The ability of online communities to provide first-hand discussions with the experts has been identified as one of the factors that attract a lot of people to visit a site (Wasko & Faraj, 2005). Based on continuous use literature, a user will feel satisfied if the system is capable of fulfilling his/her belief of perceived

usefulness (Bhattacharjee, 2001b; Bhattacharjee & Premkumar, 2004). In other words, if the system is able to fulfil user expectations (i.e., perceived usefulness), he/she will have a positive judgement of the system (i.e., satisfaction). Therefore, a member who believes that through the use of the online communities they are able to improve and update their personal knowledge is more likely to have positive judgement (i.e., satisfaction) towards the communities. Hence, this study hypothesises:

*Hypothesis 3: Members' belief of community perceived usefulness has positive influence on members' level of satisfaction with the business online community*

### **3.2.3 Confirmation**

According to Bhattacharjee and Premkumar (2004), confirmation also is identified as an emergent construct that has a positive effect on satisfaction and individuals' beliefs (i.e., expectations). Confirmation is related positively to satisfaction as it infers realisation of the expected benefits using an IS (Bhattacharjee, 2001b). Users' confirmation of expectations indicates that the users have obtained expected benefits through their use of the IS (Thong et al., 2006). According to Bhattacharjee and Barfar (2011), users' level of satisfaction is influenced by how a user confirms his IS usage expectations during actual use. If a user feels that the IS actual performance exceeds his/her initial expectations, a user will experience positive confirmation; hence, will feel satisfied with the IS usage. However, if a user believes the actual IS usage is below his expectations; then he/she will experience negative confirmation and will feel dissatisfied.

Within continuous knowledge sharing literature, the same relationship also is identified. Previous studies have shown that confirmation is posited as an antecedent of user feelings of satisfaction. For instance, the more users feel that their expectations around knowledge sharing activity are confirmed using an IS, the more satisfied users will be (He & Wei, 2009). Hence, the same relationship is expected in this study. Thus, this study hypothesises that:

*Hypothesis 4a: Members' extent of confirmation has positive influence on members' level of satisfaction.*

It also is suggested that confirmation can elevate users' expectation beliefs (Bhattacharjee, 2001b; Bhattacharjee & Premkumar, 2004). According to Thong et al. (2006), users expectation could be adjusted by confirmation experience, especially when the users' initial expectations are not concrete due to the uncertainty over what to expect from the usage of the IT.

Within a knowledge sharing context, the influence of confirmation on individuals' expectations also is identified. For instance, a user who is using an IS to share knowledge will modify his/her expectations of using the application if he/she believes that the application is unable to fulfil his/her expectations (e.g. providing the required knowledge) (He & Wei, 2009). Hence, in the context of this study, the same relationship is expected to occur, where members will modify their extent of confirmation based on how useful they perceive the community. Thus, this study hypothesises that:

*Hypothesis 4b: Members' extent of confirmation has positive influence on members' belief of community perceived usefulness.*

### **3.2.4 Identification Trust**

Generally, trust can be defined as individuals' willingness to be vulnerable to the actions of other members (Ridings et al., 2002). Trust is used to manage social uncertainty and complexity. They reduce the complexity by allowing a desirable conduct to be viewed as certain (Lewicki, McAllister, & Bies, 1998).

The role of trust within an online community has received substantial attention by previous IS researchers (Chiu et al., 2006; Hsu et al., 2007; Jarvenpaa, Knoll, & Leidner, 1998; Ridings et al., 2002). Within an online community, there are no specific rules provided to manage the relationship between members; trust is considered as a

subjective substitute to rules so that a more open relationship atmosphere can be created (Ridings et al., 2002). Within an online community context, trust can be used to control “unscrupulous members who might flame or ridicule post or provide members information to external organisations without permission (Ridings et al., 2002, p. 275)”. Therefore, trust is important in shaping reliable and socially accepted behaviour within a situation where there is an absence of workable rules.

Existing continuous use literature shows that previous studies have used trust to examine users’ continuance intention using virtual community (Fang & Chiu, 2010; Yen, 2009), knowledge management systems (Thatcher, McKnight, Baker, Arsal, & Roberts, 2011), websites (Li, Troutt, Brandyberry, & Wang, 2011; Pi, Li, Chen, & Chen, 2007) and online banking applications (Vatanasombut, Igbaria, Stylianou, & Rodgers, 2008). However, the understanding of how trust influences continuous intention is limited only to a direct relationship between trust and continuous use (except for, Yen, 2009).

Based on relationship marketing literature, trust has been identified as one of the key mediating variables that influence a successful relationship. Further, understanding the mediating effect of trust is important as relying only on satisfaction to examine continuous behaviour might give an incomplete understanding (Reichheld & Aspinall, 1993). This is because in a relationship, relying only on satisfaction alone will not ensure a continuous/long-term relationship. Thus, to ensure long-term relationships, researchers should look into other factors beyond satisfaction (i.e., trust and commitment) (Morgan & Hunt, 1994).

In an online community context, member’s continuous participation is affected by the level of trust he/she has on others within a community. Trust has been identified to mediate users’ judgement on their surroundings. For instance, Hsu et al., (2010) show that after consumers joined and gained positive experience (i.e., satisfaction) from using the online communities they would start to evaluate others behaviour within the community (e.g., trustworthy, fairness). Understanding how their surrounding behaves

is important for consumers to decide whether they can achieve what they expect from the relational exchange (i.e., on-going relationship).

According to Yen (2009) trust plays an important role in mediating users decision to continue using an online community. For instance, members will not continue using an online community despite their positive evaluation towards it, if they believe that others within the community are being opportunistic (e.g., lurking). On the other hand, members in an online community will continue participating in an online community if he/she believes that others do care about each other and they are keeping their promises. If members view others as opportunistic (i.e., low trust), it can lower their intention to continuously participate within a community. According to Morgan and Hunt (1994), trust motivates consumers to view potential high-risk action as more favourable because they believe that others will not act opportunistically. Trust psychologically influences (by mediating) individuals' decisions to participate in a long-term relationship.

It is very important to clarify that trust is a multi-dimensional construct. The extant knowledge sharing literature shows that trust's sub-dimensions have been conceptualised differently according to the context of the study. The variety of ways trust is conceptualised is due to the context-specific nature of this construct. Trust conceptualisation depends upon the situation in which it is being considered (Rotter, 1971). Therefore, since the context of this study is to examine continuous knowledge sharing of business online communities, this study adopts the conceptualisation of trust by Hsu et al. (2007).

According to Hsu et al. (2007), the cultivating of trust within online communities is dynamic and a time consuming process. Trust has different characteristics at different stages of any relationship. These authors suggested that when sharing knowledge within virtual communities, trust occurs in three stages - economy-, knowledge- and identification-based trust.

At the early stage, economy-based trust plays an important role to attract members to participate and trust the community. In this stage, economy-based trust acts as a mechanism to calculate the obtainable economic benefits acquired from joining the community. An online community member will have initial trust (i.e., economic-based trust) with the community if he/she can believe that the community has a mature community infrastructure, sound managerial mechanism and they can obtain economic benefits out of the community. As the relationship develops, it will move to knowledge-based trust. In this stage, members try to get familiar with the community and try to reduce uncertainty and risk. According to Hsu et al., (2007), knowledge-based trust is developed among members through technical standards, security procedures and protection mechanism introduced within the community. Within this stage, through standard procedures/rules members are able to predict how others might behave. As a result, it will raise trust among the parties participating within the community.

Finally, identification-based trust is developed at the later stage (i.e., on-going) of a relationship where it helps parties within the community to understand and appreciate what others want and effectively facilitate how they should act between each other (Hsu et al., 2007). Identification-based trust is important to develop emotional bonding that contributes to genuine care and concern of others, their welfare and enables people to work together and create collective strength.

Thus based on above discussion, instead of adopting all three sub-dimensions of trust as proposed by Hsu et al. (2007), this study only used identification trust as the determining factor of continuous knowledge sharing intention. This is because, the work of Hsu et al. (2007) has identified that economic- and knowledge- based trust are developed at the initial stage of knowledge sharing within online communities, while identification-based trust is developed at the later stage of knowledge sharing (i.e., continuous knowledge sharing). Furthermore, according to Usoro et al. (2007), when the community's identification trust is strong, members will be more likely to share and maintain the sense of community (by continuously sharing knowledge with others).

Hence, based on that, this study predicts that identification trust might have an effect on the relationship between satisfaction and continuous intention. This is based on studies that have shown that individuals who achieved satisfaction using a website will tend to trust the website more and continue buying products online (Wang, 2009a). Further, the work of Caceres and Paparoidamis (2007) also provides further support where they have empirically demonstrated that satisfied individuals (with the service) will have positive feeling of trust towards the services and at the same time will increase their feeling of loyalty towards the service provider.

Within online context, the same relationship has also been identified. According to Kim et al. (2011), consumers' feeling of satisfaction will positively leads to consumers' level of trust towards online transaction. From this positive feeling of trust it then build up consumer's loyalty towards an e-commerce platform. Based on the above discussions, this study predicts that members who are satisfied with the business online communities will develop positive feeling of satisfaction towards the community as they see others as being helpful and willing to work together (i.e. identification trust). This positive feeling of identification trust then acts as a mediating construct that influences members' intention to continuously share knowledge within the business online communities. Therefore, this study hypothesises that:

*Hypothesis 5: The relationship between satisfaction and continuous knowledge sharing intention is mediated positively by identification trust.*

### **3.2.5 Affective Commitment**

Based on the CTT paradigm, commitment is said to stabilise the behaviour in time and influence long-term loyalty (Morgan & Hunt, 1994). Within relationship marketing, commitment is used as the emotional bonding tool that is useful to set a norm between consumers and the business organisation. Commitment can be described as a "customer's long term orientation towards a business relationship" (Henning-Thurau, Gwinner, & Gremler, 2002, p. 232).

Within continuous use literature, commitment acts as an important mediator to maintain positive behaviour among community members. For instance, consumers increasingly rely on the online community for information and repurchase of products. Without a strong sense of cohesiveness and belongingness with other members, they can easily switch to another alternative community by just a click (Kim, Choi, Qualls, & Han, 2008).

According to Yen (2009), commitment mediates continuous participation within an online community by enhancing member feelings of association and bonding with other members that lead to long-term relationships. According to Goo and Huang (2008), commitment is an important moderating factor that influences relationship durability. Strong commitment can decrease high turnover and establish stable relationships. This is because commitment mediates the relationship by helping partners to abstain from attractive short-term alternatives and in favour of long-term benefits (Morgan & Hunt, 1994). Relying only on satisfaction will not ensure continuous use of online community because members use online community not only because of the technology but also because of the relationships that emerge from the online interactions (Koh & Kim, 2003).

As with trust, commitment is also a multi-dimensional construct. Commitment can be divided into three sub-dimensions—*affective*, *continuance* and *normative* commitment (Meyer & Allen, 1991). However, this study only adopts *affective* commitment as this construct has been demonstrated in previous studies to influence continuous use intention (Jin et al., 2010; Wang & Datta, 2006). Thus, based on Jin et al.'s (2010) definition of *affective* commitment, this study defines *affective* commitment as members' emotional attachment to, identification with and involvement in the knowledge sharing activities within business online communities.

According to Morgan and Hunt (1994), consumers' high satisfaction with an enterprise would result in higher commitment; and committed consumers will be more loyal. Hsu et al. (2010) also show that a consumer who is satisfied with a product will make a commitment to the enterprise. This kind of commitment will drive customers to

continually purchase products produced by the enterprise. Therefore, this study predicts that affective commitment plays an important role in influencing the relationship between satisfaction and continuous knowledge sharing intention within business online communities. This is because members who are satisfied with the community will feel more emotionally attached and thus influencing their continuous knowledge sharing intention. Therefore, this study hypothesises that:

*Hypothesis 6a: The relationship between satisfaction and continuous knowledge sharing intention is mediated positively by affective commitment.*

Further, based on the commitment-trust theory, a user's feeling of commitment has been identified to be influenced directly by trust (Caceres & Paparoidamis, 2007; Yen, 2009). According to Morgan and Hunt (1994), when individuals trust others, they will be committed to maintain their relationship within the community. Committed individuals will be more likely to attach and involve themselves in the community activity (i.e. sharing knowledge). Trust is important to increase the confident level between both parties that take part in a relationship. When both parties trust each other, it will result in a positive outcome (e.g. commitment) and avoid members from conducting unexpected actions (Morgan & Hunt, 1994). Therefore, this study hypothesises:

*Hypothesis 6b: Member's identification trust has positive influence on members' affective commitment.*

### **3.2.6 Attainment Value**

An individual will have high attainment value when he/she is able to absorb fully the importance of the behaviour into one's self (Ryan & Deci, 2000a). When the integration between the importance of behaviour and identification has occurred, one will behave with a true sense of willingness (Ryan & Deci, 2000b). According to Eccles et al. (1983), attainment value is related closely to individuals' feeling of doing well in conducting a certain task. An individual will have higher attainment value if he/she is

able to assimilate the importance of the task (Wigfield, 1994). For instance, a student will give more effort to use an e-learning system if he/she believes that using the e-learning will give him/her higher attainment value (Chiu et al., 2007).

Within a knowledge sharing context, previous studies have shown that one of the important reasons why community members are willing to share their knowledge with others is because of their expectation to be seen as skilled, knowledgeable or gaining respect from other community members (Chiu et al., 2006; Wasko & Faraj, 2005). Through knowledge sharing, one believes that it can increase his or her reputation within the community (Hsu & Lin, 2008). To acquire the recognitions from others within the community, members have to ensure that they are sharing relevant and important knowledge. Reputation can be gained by sharing members' knowledge intelligently and frequently (Lakhani & von Hippel, 2003). Hence, this study assumes that members will have higher attainment value if they believe that by sharing knowledge they can increase their reputations.

According to Saade (2007), users will have a higher belief of perceived usefulness towards a system when they can see that through the use of the system it can help them reveal their intellectual capacity. According to previous studies, the ability to elevate one's social status with the use of a system will influence positively one's belief of perceived usefulness towards the system (Venkatesh & Bala, 2008; Venkatesh & Davis, 2000). For instance, users are oriented more to view the system as useful when the use of the system can help demonstrate their competence. This is because users' belief of perceived usefulness is influenced by how much the use of the system can alter users' performance and betterment (Saade, 2007).

Based on the above discussion, community members who believe that through continuous knowledge sharing they can acquire reputations and recognitions (i.e., higher attainment value) from the community will be more likely to view the community as useful. Hence, this study hypothesises that:

*Hypothesis 7: Members' attainment value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.*

### **3.2.7 Intrinsic Value**

According to Eccles and Wigfield (2002), individuals' feeling of enjoyment intrinsically can motivate them to complete a task. For instance, when an individual feels the personal enjoyment of conducting a behaviour in its 'own right' aside from the instrumental value of the technology; he or she will be motivated intrinsically (Eccles & Wigfield, 2002).

Within knowledge sharing literature, the influence of intrinsic motivation on knowledge sharing intention has been identified. Individuals contribute knowledge voluntarily to an online community because they feel intrinsically motivated by the feeling of helping others (Wasko & Faraj, 2005). Helping others by sharing what they know will motivate knowledge sharing behaviour intrinsically (Ardichvili et al., 2003). In addition, engaging in intellectual discussions and helping others to solve problems is considered challenging and fun (Wasko & Faraj, 2000, 2005). For instance, the knowledge sharing activities can help renew, reshape and give new insight to one's thinking. Hence, through knowledge sharing activity, community members enjoy the learning and sharing of knowledge with others. In this study, intrinsic utility thus, is defined as the enjoyment that an online community member receives from contributing knowledge within business online communities.

Previous studies have shown that intrinsic motivation also influences user beliefs of perceived usefulness (Saade, 2007). This author argues that intrinsic motivation plays an important role towards influencing user beliefs of perceived usefulness. This is because the enjoyment of using the system would enhance users' performance. For instance, when users are motivated intrinsically, they will become more productive and effective as they are enjoying using the system (Csikszentmihalyi, 1990). Hence, in relation to this study, online community members who believe that contributing

knowledge can offer intrinsic value will be more likely to perceive the business online community's usefulness. Hence, this study hypothesises that:

*Hypothesis 8: Members' intrinsic value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.*

### **3.2.8 Utility Value**

Eccles and Wigfield (2002) explain that a person will have positive value over a task if it is related to their important future goals. Utility value relates to how an individual fits a task into an individual's future plans, for instance, taking a mathematics class to fulfil a requirement for a science degree (Wigfield, 1994). Extrinsic motivation reflects "a conscious valuing of a behavioural goal, such that the action is accepted or owned as personally important" (Ryan & Deci, 2000a, p. 72). For instance, a student who values writing and manages to relate it with his or her learning goal will find it relevant. Utility value taps more instrumental reasons for engaging in a task.

When using an online community, members' knowledge sharing behaviour is driven by goals like one's moral obligation to the community of interest (Ardichvili et al., 2003), or expand social connections or networking, expecting mutual reciprocal benefits (Wasko & Faraj, 2005). Further, being a part of the community and contributing to the building of the community also have been identified as the driving goals to encourage members' willingness to contribute knowledge to the community (Chiu et al., 2006). Thus in this study, utility value is defined as how an online community member relates the value of knowledge sharing using business online communities with his or her current goals.

According to Vekantesh and Davis (2000), users' perceived usefulness also is influenced by the instrumental determinants that link to higher-level goals of using a system. These authors further explain that users' judgement about the system perceived usefulness is based on how the adoption of the system can be related to an ideal future goal. When evaluating the system's perceived usefulness, users will

conduct a mental assessment to match between the consequences of using the system and future goals. For instance, a user of a web-based learning system is more likely to perceive the system as useful if the user believes that it can help him or her obtain a better grade (Saade, 2007).

Hence, in the context of this study, an online community member who believes that by contributing knowledge within business online communities can increase one's utility value (e.g., extending social interactions, building the community) will be more likely to perceive the business online community as useful. Hence, this study hypothesises that:

*Hypothesis 9: Members' utility value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.*

### 3.3 Research Hypotheses

Table 3.1 lists all of the research hypotheses for this study.

	<b>Hypotheses</b>
H1	Members' level of satisfaction has positive influence on members' continuous knowledge sharing intention within business online communities.
H2	Members' belief of community perceived usefulness has positive influence on members' continuous knowledge sharing intention within business online communities.
H3	Members' belief of community perceived usefulness has positive influence on members' level of satisfaction with the business online community.
H4a	Members' extent of confirmation has positive influence on members' level of satisfaction.
H4b	Members' extent of confirmation has positive influence on members' belief of community perceived usefulness.
H5	The relationship between satisfaction and continuous knowledge sharing intention is mediated positively by identification trust.
H6a	The relationship between satisfaction and continuous knowledge sharing intention is mediated positively by affective commitment.
H6b	Member's identification trust has positive influence on members' affective commitment.
H7	Members' attainment value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.
H8	Members' intrinsic value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.
H9	Members' utility value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.

Table 3.1 Research Hypotheses

### **3.4 Summary of Chapter 3**

In this chapter, three theories—ISCM, CTT and EVM—are synthesised to conceptualise the research model for this study. Based on the conceptualisation, research questions and hypotheses are generated. The research model incorporates ISCM constructs (satisfaction, perceived usefulness and confirmation), EVM constructs (attainment, intrinsic and utility value) and CTT constructs (identification trust and affective commitment). The next chapter discusses the research's methodology, design, and implementation used towards understanding what determines members' continuous knowledge sharing intention within business online communities.

# CHAPTER 4.0 Research Methodology

## 4.0 Overview of Chapter 4

This chapter outlines the methodology used in this study. In the first four sections of this chapter, it discusses the research paradigm adopted; the research methodology employed; the research processes designed to achieve the main objective; and the method used to collect data from the targeted sample. Then, the following two sections discuss the data analysis technique (i.e. partial least squares); and the statistical analyses used to assess the reliability and validity of the research model. This is then followed by a section that discusses the steps taken to develop the research instrument. Statistical analysis conducted on the demographic data is presented next.

## 4.1 Research Paradigm

Paradigm is defined as “the basic belief systems or worldview that guides the investigator” (Guba & Lincoln, 1994, p. 105). Research paradigm helps researchers to identify what type of methodology is suitable for their research. Research paradigm helps researchers to reflect their primary assumptions concerning the world and the foundation of knowledge (Guba & Lincoln, 1994). In general, researchers usually are guided by three major research paradigms—positivism, constructivism and critical theory.

A positivist research paradigm usually is associated with a quantitative research approach that assumes there is one true reality that can be discovered by means of rigorous empirical study (Creswell, 2009). Within this paradigm, researchers view themselves as neutral observers where the outcome of the research is not influenced by their values, beliefs and biases (Guba & Lincoln, 1994). Hence, within a positivism

paradigm, researchers are expected to distance themselves from the research subject in order to ensure objectivity during the data collection and analysis phases (Bryman & Bell, 2007).

Meanwhile, a constructivist paradigm holds the assumption that researchers are allowed to develop subjective meanings from individuals' experiences towards certain issues in order to understand a certain phenomenon (Creswell, 2009). This research paradigm is often associated with a qualitative research approach. Within this paradigm, researchers are allowed to interact directly with the subjects in order for the researchers to interpret the meaning that the subject has about a phenomenon.

Finally, the critical theory research paradigm holds the assumptions that reality is shaped by social, political, cultural, economic, ethnic and gender values (Guba & Lincoln, 1994). Within this research paradigm, a researcher's main objective is to acquire a single apprehensible reality, whereby that reality is shaped by social values and by influences from other forces.

Table 4.1 summarises the differences in terms of the research approach taken by researchers based on the three research paradigms.

Criteria	Positivism	Constructivism	Critical Theory
Theory building/ Theory testing	Postulate theories that can be tested in order to confirm or reject  Test theories in a controlled setting, empirically supporting or falsifying hypotheses through a process of experimentation.	Theories are constructed from multiple realities.  Theory is shaped by social and cultural contexts.	Theories are built from analysing power relationships (deconstructing the world).
Role of researcher	Uncover reality  Scientifically explain, describe and predict phenomena	Study social, cultural and mental phenomena to reveal why people behave in certain ways  Describe the multiple realities	Political emancipation and increasing critical consciousness
Nature of reality	Objective, true reality exists by the unchangeable natural cause-effect laws  Reality is generalized  Researchers and reality are independent	Reality is constructed, interpreted and experienced by people in their interactions with each other and wider social systems	Reality is shaped by social, political, cultural, economic, ethnic and gender values
Nature of Knowledge	Knowledge is based on verified hypotheses	Knowledge is based on subjective beliefs, values, reasons and understanding	Knowledge is constituted by the live experience and the social relations that structure these experiences

Adopted from: Guba and Lincoln (1994) and Bryman and Bell (2007)

Table 4.1 Summary of Three Major Research Paradigms

Based on the above table, it shows that the positivist research paradigm is identified as the most suitable belief that can be used to guide this study. This is because the way this study views the nature of knowledge and reality espouse with the positivist research paradigm. The positivist research paradigm assumes that knowledge is based on verified hypotheses; an objective and true reality exists; the reality can be generalised; and researcher and reality are separated. Further, this study also involves theory testing; and developing and testing hypotheses in order to predict the online continuous knowledge sharing phenomenon within business online communities.

## **4.2 Research Methodology**

Research methodology is described as the types of quantitative or qualitative designs that provide specific guidance for the procedures in a research approach (Creswell, 2009). In other words, research methodology is about the steps taken on how to answer a set of research questions and research objectives. The selection of methodology is crucial as it can guide the conduct of the research and affect the quality of research results (Creswell, 2009).

Since this study adopts a positivistic paradigm, attention is given towards: i) quantification in data collection and analysis and ii) testing the relationships between theory and research (theory testing) (Bryman & Bell, 2007). The relationships among variables are analysed using statistical procedures (Creswell, 2009). Within quantitative research, there are two common research methodologies being adopted by researchers—survey research and experimental research (Creswell, 2009).

For this study, a survey research methodology is adopted in this study, as this approach helps to provide standardised information to describe variables or to study relationships between variables (Malhotra & Galletta, 1998). Thus, in this study, survey research is suitable to help this study collect data from the respondents, which are then used to examine the relationships between the determinants and continuous knowledge sharing. Further, the “what-type” of research questions used in this study require this study to adopt a survey research methodology. According to Yin (1994), a survey

research methodology is the suitable method when it involves studies that try to answer who and what types of questions.

### 4.3 Research Processes

Generally, from a positivist point of view, research is defined as a systematic and scientific search for pertinent information on a certain topic. It involves the process of defining and redefining the research problem, formulating hypotheses; collecting, organizing and evaluating data; making deductions and reaching conclusions; and finally testing the conclusions to determine whether they fit the formulated hypotheses (Kothari, 2004). Figure 4.1 shows the overview of the research processes conducted in this study.

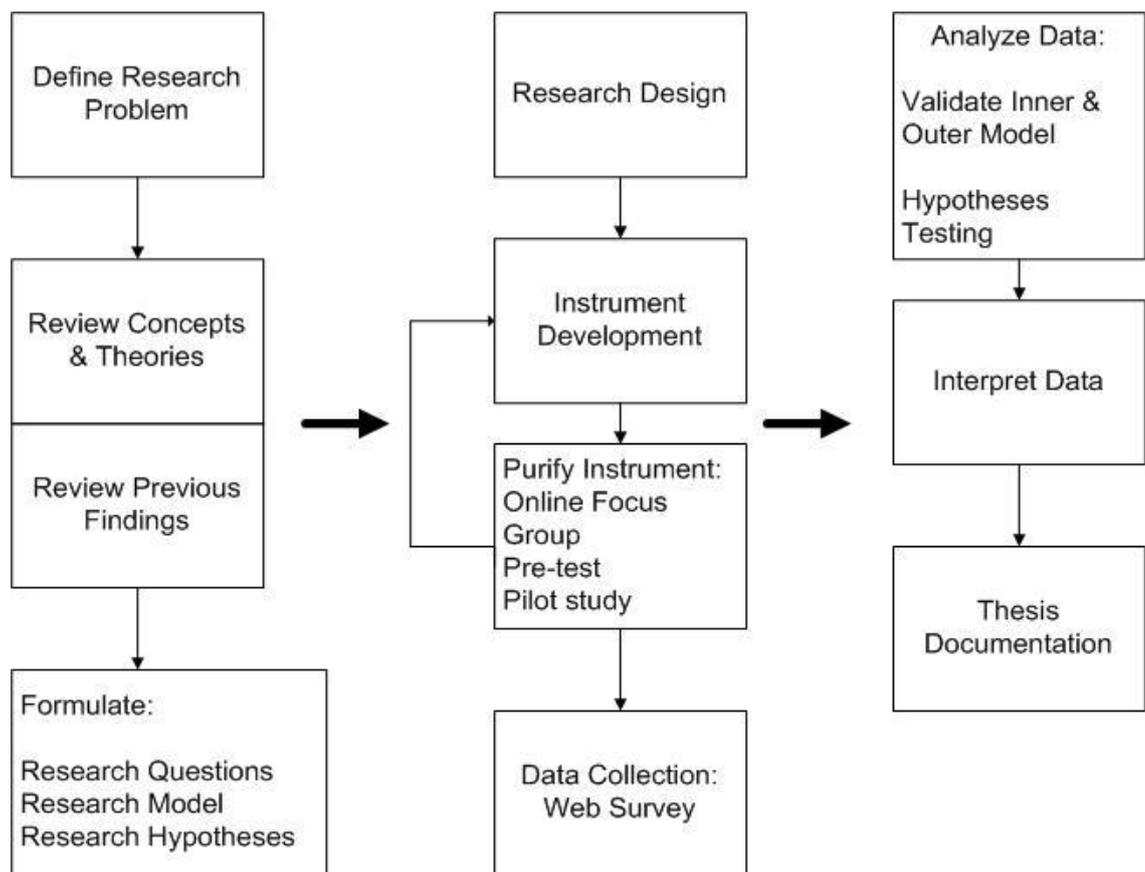


Figure 4.1 Research Processes for this Study

In this study, the research processes are begun by defining the research problem. In general, the problem statement for this study is generated after literature related to continuous use and continuous knowledge-sharing topics are reviewed and analysed. Based on the analysis, this study concludes that further understanding is needed to understand the determinants for members' continuous knowledge sharing intention within business online communities.

During the literature analysis phase, attention is given to two types of important information: 1) findings demonstrated by previous studies that focus on continuous knowledge sharing using online communities; and 2) theories and concepts adopted by previous studies when examining continuance-related topics (e.g., continuous use, continuous knowledge sharing, loyalty, repurchase behaviour). Based on that information, the research questions, research model and research hypotheses are formulated.

During the development of the research design, considerations have been given on the following six basic aspects of research design as suggested by Sekaran (2003)—purpose of the study, types of investigation, researcher interference, unit of analysis and time horizon. After making considerations based on the six basic concepts, this study adopts a cross-sectional study that uses Web survey technique to collect data from business online community members. In this study, the researcher's interference to respondent's (i.e., a business online community member) routine system is ensured to be minimal. Based on the individual's data source, the research hypotheses, research model and research questions are validated, assessed and answered.

For this study, the research instrument is developed using measurement scales identified from previous studies. Changes are made towards the selected items to make sure it fits into the context of this study. The research instrument's validity and reliability are accessed using data from online focus groups, pre-test and a pilot study conducted. The actual data collection starts after fulfilment (in terms of validity and reliability) of the research instrument is achieved.

Further, the data for this study is collected using a Web survey technique. The sample for this study is selected using the convenience sampling technique. The data is analysed using partial least square (PLS)—a structural equation modelling (SEM) technique. Finally, the results are interpreted and documented as a thesis.

#### **4.4 Data Collection Technique**

The following subsections discuss issues related to Web survey, sampling technique, unit of analysis and ethical considerations in relation to this study.

##### **4.4.1 Web Survey**

With the emergence of ICT technology, the use of the Internet can help researchers to have access to a large population cost effectively (Wright, 2005). Since the focus of this study is to examine members' continuous knowledge sharing intention within business online communities, adopting a Web survey as the data collection tool is viewed as the most appropriate option for this study. A web-based survey is adopted based on the advantages it offers as listed in Table 4.2.

<b>Advantage</b>	<b>Explanation</b>
Global reach	Since, this study examines continuous knowledge sharing intention within business online communities, employing a pen and pencil type of survey seems inappropriate. Hence, the advantage of a Web survey that allows global reach makes it easier and cheaper to obtain information from respondents that are dispersed geographically.
Attractive format	A Web survey offers a wide variety of stylistic formats in presenting a questionnaire. Its ability to represent questions in many forms (e.g., single and multiple responses, dichotomous questions, multiple-choice questions, and even open-ended questions) makes it more attractive. Also, its ability to filter and control the logic flow is useful to avoid confusions.
Fewer unanswered questions	A Web survey can be designed in such a way that respondents cannot go to subsequent questions without answering the current one. Thus, it can help reduce the number of incomplete responses.
Ease of data entry and analysis	The responses are stored automatically in a database and can be easily extracted for data analysis.

Adapted from: Bryman and Bell (2007)

Table 4.2 Reasons for Adopting Web-based Survey

Despite the advantages of using a Web survey, it also holds a few disadvantages. Thus, understanding the disadvantages is important as it helps provide better ways of administering the data collection process. According to Bryman and Bell (2007), when administering a Web survey, researchers have to give attention to issues such as multiple replies, confidential issues and unclear answering. Not being able to handle these issues may affect the data collection process. For instance, using a Web survey there is a risk that some respondents intentionally may complete the questionnaire more than once (multiple replies) or respondents might not be willing to participate if the issues with the security of data transmissions and how their answers are going to be treated confidentially are not being clearly explained before they engage in the Web survey.

Therefore, this study overcomes these issues by: i) controlling the access of respondents by allowing only users with a unique IP address to complete the survey; and ii) providing clear written steps on how the data is transmitted and how respondent confidentiality is treated in this study. Section 4.4.4 elaborates on this issue in detail.

This study selects Survs.com as the survey authoring package. Although most of the authoring packages on the market offer similar functionalities, this survey package is selected because it is easy to manage (e.g., logic flow, skip function); allows multiple channels distribution; and allows the researcher to analyse the demographic data in real time format. Also, the low pricing package offered to students contributed to the selection of this survey authoring package.

#### **4.4.2 Sampling**

The goal of sampling is to draw a representative number of participants from a larger population of interest. By understanding the sample's characteristics it allows a researcher to generalize it to represent the population (Sekaran, 2003). For this study only members with knowledge sharing experiences are selected as participants. This is because the main objective of this study is to understand the determinants of members' continuous knowledge sharing intention. Hence, only respondents who can provide the required information are selected as respondents.

Business online communities can be categorized according to the type of business they are involved in. Selecting a sample that reflects the structure of the business online community population is very important. Hence, this study adopts random sampling with stratified approach as the sampling technique for this study. According to Sekeran (2003), stratified sampling involves the process of categorising members of the population into homogeneous subgroups (i.e., type of business online community) before sampling. After the members are divided into subgroups, the respondents are then selected using random sampling technique.

Thus to ensure all types of business online community is included, this study follows the approach suggested by Ridings et al. (2002). Key words such as 'business online communities', 'online forums', 'consumer online communities' and 'consumer forums' are used to help facilitate the searching process of online communities through the used of search engines (i.e., Yahoo and Google). In addition, Riding et al., (2002) also suggested the use of exclusion criteria that can help researchers to include only active online communities. According to these authors, an online community is considered as active, if:

- 1) there are more than 10 postings per day,
- 2) there are more than 15 different individuals posting per day, and
- 3) it has 80% postings with one reply at least.

In total, 50 business online communities (see Appendix A) are identified from the searching process ranging from automotive to consultation businesses. Based on the criteria suggested by Ridings et al. (2002), all of the identified business online communities are considered active and are included in this study.

Invitation threads are posted on the business online community's lounge. An online community lounge is an area where community members usually hang around and have off-topic discussions. Within the lounge area, members are allowed to talk just about anything with other members. Further, based on observations, the majority of online community administrators allow its members to post threads consisting links (e.g., advertisement link, survey links) within that area. Thus, respecting the community's rules, all invitation threads for this study are posted within the lounge area

#### **4.4.3 Unit of Analysis**

The unit of analysis can be viewed as the main entity type being studied, about which data are gathered (Bailey & Pearson, 1983). Yin (1994) suggested a general guide that can be used to determine the unit of analysis is by reflecting on how the research questions are defined or stated. In this study, the research questions make clear

references to understanding members' continuous knowledge sharing intention. Therefore, the unit of analysis in this study is the level of the individual.

#### **4.4.4 Ethical Considerations**

Ethical approval was sought from Auckland University of Technology Ethics Committee (AUTEC) before the actual survey was conducted. The ethical approval was granted by AUTEC on 16/06/2010 for a period of three years (reference no 09/278). This study follows the ethical guidelines published by AUTEC throughout the data collection process (see Appendix B).

AUT obliges all research that involves human beings to be approved by the AUTEC to ensure that the research is conducted in an ethical manner; observing the principles of informed consent, respect for privacy, truthfulness, avoidance of conflict of interest and respect for cultural sensitivity (AUTEC, 2007). This research will be conducted based on the following principles of Treaty of Waitangi—partnership, participation and protection.

**Partnership:** This research involves a partnership between the researcher and business online community users. This study aims to understand better what determines business online community members' continuous knowledge sharing intention. Participants have the opportunity to get a summary of the research findings, which ensures that they are not only involved in providing input for the research but also its process.

**Participation:** All participants are aware that their participation is voluntary and can be withdrawn at any stage of the research. They are all informed on this matter through the distribution of an information sheet and consent form before they participate in the online focus group and Web survey.

**Protection:** All questions are generic. There are no sensitive or personal questions except for demographics data. Participations are treated as anonymous and no

questions regarding specific practices and culture are required from participants. The principles of privacy and confidentiality are acknowledged.

For privacy issues, respondents are asked to read an information sheet prior to engaging in the data collection process. By participating in the Web survey, or by signing the consent form (for the online focus group sessions), they agree to participate in this research. Participants are allowed to withdraw at any time during the data collection process, even after signing the consent form. They are as well informed that their participations are voluntary and assured that any data gathered would remain anonymous.

All of the information collected about the participants is kept strictly confidential. No information on specific individuals completing Web surveys or online focus groups are identified in any report or publication that arises from this research thesis.

The data and consent forms will be stored for six years according to AUT's standard research practice. Since this study utilizes a Web survey, all of the data are downloaded from the software and saved in the researcher's computer. A back up is copied into a compact disc (CD) and kept in the researcher's locked filing cabinet. Meanwhile the consent forms are printed out and stored in the primary supervisor's office. At the end of six years, all of the questionnaires, data and consent forms will be eliminated. Also, the electronic data will be destroyed by deleting permanently from the system.

#### **4.5 Data Analysis: Introduction to Structural Equation Modelling (SEM)**

SEM allows researchers to assess the overall fit of a model as well as test the structural model all together (Chin, 1998b; Gefen, Straub, & Boudreau, 2000). Using SEM, it does not only evaluate the hypothesised structural linkages among variables but the linkages that exist between a variable and its respective measures. SEM is a family of multivariate statistical techniques used to examine direct and indirect relationships between one or more independent latent variables (LVs) and one or more dependent

LVs (Gefen et al., 2000). SEM can be seen as a flexible modelling tool for conducting many multivariate statistical analyses, including regression analysis, path analysis, factor analysis, canonical correlation analysis, and growth curve modelling (Gefen et al., 2000; Urbach & Ahlemann, 2010).

When applying SEM correctly, it offers better advantages over the first generation of analysis techniques (e.g. principal component analysis, factor analysis, or multiple regression) where it allows flexibility for researchers to interplay between theory and data (Chin, 1998a). According to Chin (1998a), SEM allows researchers to: 1) model relationships among multiple predictors and criterion variables; b) construct unobservable LVs; 3) model errors in measurement for observed variables; and 4) statistically test a priori theoretical and measurement assumptions against empirical data.

Overall, there are two main approaches within SEM: a component-based approach such as partial least square (PLS-SEM) and a co-variance-based approach (CB-SEM) (Fornell & Bookstein, 1982; Marcoulides, Chin, & Saunders, 2009; Wetzels, Odekerken-Schroder, & van Oppen, 2009). These two approaches are different in terms of underlying statistical assumptions and the nature of fit statistic they produce (Gefen et al., 2000).

CB-SEM uses the maximum likelihood (ML) function to minimize the differences between the sample covariance and those predicted by the theoretical model. The estimated parameters attempt to reproduce the observed values' co-variance matrix. When applying the ML function, the observed variables have to follow a normal distribution and observations must be independent of one another (Chin, 1998b; Hair, Ringle, & Sarstedt, 2011; Urbach & Ahlemann, 2010). On the other hand, PLS-SEM's main objective is to maximise the co-variance between the predictor latent variable and the dependent latent variable (Sosik, Kahai, & Piovoso, 2009). PLS uses least square estimation for single and multi-component models and for canonical correlation (Chin, 1998b). The PLS approach avoids many of the restrictive

assumptions underlying ML techniques and ensures against improper solution and factor indeterminacy (Fornell & Bookstein, 1982).

However, within the literature, PLS-SEM is viewed as a method that is less rigorous and not suitable for examining relationships between LVs (Rouse & Corbitt, 2008). Despite all of the critiques, recently PLS-SEM has been applied increasingly in marketing and other business disciplines (Henseler et al., 2009). Scholars are now accepting the PLS-SEM method as a more robust estimation of the structural model (Henseler et al., 2009). PLS-SEM is also viewed as an alternative method when CB-SEM distributional assumptions cannot be met (Hair et al., 2011). Furthermore, the informational and distributional demand required by CB-SEM is viewed as unrealistic for many fields of inquiry especially in the social sciences (Wold, 1982). Hence, this study agrees with the stance of not viewing both statistical methods as a competitive statistical method; rather, it should be viewed as a complementary method (Joreskog and Wold, 1982). Therefore, in deciding which statistical method is suitable to use, this study follows the rules of thumbs proposed by Hair et al. (2011) for selecting between CB-SEM and PLS-SEM.

#### **4.5.1 Rules of Thumb for Selecting CB-SEM or PLS-SEM**

Understanding the assumptions underlying these statistical methods can help the researcher determine which statistical method is appropriate to use. According to Hair et al. (2011), the selection between CB-SEM and PLS-SEM can be made based on a few factors such as research objective, types of measurement model specification, the modelling of structural model, data characteristics and model evaluation. These authors suggest five useful rules of thumb, which can be used as guidance when selecting between PLS-SEM and CB-SEM.

First, when selecting between these two methods, the researcher has to identify the objective of conducting the research. CB-SEM is an appropriate method to use if the research objective is to test or confirm a theory. This is because when testing a theory it requires the ability to show how well a theoretical model fits the observed data

(Barclay, Higgins, & Thompson, 1995). According to these authors, CB-SEM is more appropriate for hard modelling where the aim is to minimise the co-variance matrix. This has been the strength of CB-SEM. Meanwhile, PLS-SEM is suitable when the research objective is for prediction and theory development. This is also known as soft modelling. In soft-modelling the focus is on identifying the best prediction of relationships between variables and the focus is on maximizing the amount of covariance between LVs in order to increase the model interpretation (Sosik et al., 2009).

Second, the use of CB-SEM is limited only to research models that use reflective constructs. Although previous studies have used formative measures within the structural model but they usually lead to identification problems (Henseler et al., 2009). For instance, the use of formative constructs within CB-SEM would create a situation where the explanation of the covariance of all indicators is not possible (Chin, 1998b). Further, the use of CB-SEM in handling both reflective and formative constructs is relatively complicated (Urbach & Ahlemann, 2010). On the other hand, PLS-SEM can be used to analyse a research model that consists of both reflective and formative constructs (Chin, 1998b). Using PLS, it allows researchers to use either reflective, formative or the combination of both reflective and formative constructs at the same time.

Third, using CB-SEM, there is a set of assumptions needed to be fulfilled before further analysis can be conducted using CB-SEM software. The assumptions involve the assessment of: 1) data multivariate normality, 2) observation independence, and 3) variable metric uniformity (Sosik et al., 2009). Using CB-SEM requires the data to have normal distribution and a large sample size. If one of the assumptions is violated, CB-SEM results will be highly imprecise (Hair et al., 2011). Whereas, for PLS-SEM it is a more robust approach and can be used to analyse data with non-normality distribution. Using PLS-SEM, data normality is not a demanded aspect because PLS uses calibration mechanisms, which transform any non-normal data into data that adheres to the central limit theorem (Beebe, Pell, & Seasholtz, 1998).

Finally, in terms of structural model evaluation, the PLS main objective is to test/predict the theoretical model that has been suggested based on the literature and not to test which alternate model fits the data better (Sosik et al., 2009). The residuals on manifest and latent variables are correlated in PLS; thus allowing PLS to “estimate” (Falk & Miller, 1992, p. 10). Table 4.3 summarises the rules of thumb between selecting CB-SEM and PLS-SEM.

	<b>Criteria to evaluate</b>	<b>CB-SEM</b>	<b>PLS-SEM</b>
1	<b>Research goal</b> i. Predicting key target constructs ii. Theory testing, theory confirmation or comparison of alternative theories iii. Exploratory of an extension of an existing structural theory	√	√
2	<b>Measurement model specification</b> i. If formative constructs are part of the structural model ii. If error terms require additional specification such as co-variation	√	√
3	<b>Structural model</b> i. If a structural model is complex ii. If a structural model is non-recursive	√	√
4	<b>Data characteristics and algorithm</b> i. Data meet distributional assumptions ii. Data did not meet distributional assumptions iii. Small sample size consideration iv. Large sample size consideration <sup>1</sup> v. Non-normal distribution vi. Normal distribution <sup>2</sup>	√  √ √ √	√ √ √ √ √
5	<b>Model evaluation</b> i. Use latent variable scores in subsequent analyses ii. Requires global goodness of fit criterion iii. Need to test for measurement model invariance	√ √	√

Adapted from: Henseler et al. (2009) and Hair et al. (2011)

Table 4.3 Summary of the Rules of Thumb in Selecting between CB-SEM and PLS-SEM

<sup>1</sup> With large data sets, CB-SEM and PLS-SEM results are similar provided that a large number of indicator variables are used to measure the latent construct (consistency at large) (Hair et al., 2011)

<sup>2</sup> Under normal data conditions, CB-SEM and PLS-SEM results are highly similar, with CB-SEM providing slightly more precise model estimates (Hair et al., 2011).

Therefore, based on the above rules of thumb, this study adopts PLS-SEM as the statistical method to assess the research model based on the following reasons:

1. The focus of the analysis in this study does not involve the measuring of model invariance. The focus of this study is on prediction factors related to members' continuous knowledge sharing intention. Hence, the use of latent variable (LVs) scores is important to examine the underlying relationship between the LVs.
2. This study uses a large number of LVs and complex modelling of a research model. According to Henseler et al. (2009), PLS is suitable for large complex models with many latent variables. According to Urbach & Ahlemann (2010), large complex model refers to a research model that has 100 constructs and 1,000 indicators.
3. The focus of this study is to test the relationships according to prior theoretical knowledge. The ability of PLS-SEM to estimate the correlations between the residuals and assess their impacts on the model make this technique the appropriate approach.

#### **4.5.2 Partial Least Square (PLS)**

PLS was originated by an econometrician named Herman Wold in the '60s and '70s (Chin, 1998b). PLS is a family of alternating least squares algorithms, which extend principal component and canonical correlation analysis (Henseler et al., 2009). Its path models are usually defined using two sets of linear equations known as the measurement model and structural model (Henseler et al., 2009). The measurement model specifies the relationships between unobserved or latent variables (LV) whereas the outer model specifies the relationships between a LV and its manifest variables. The inner and outer model are sometimes also known as the structural and measurement model.

The PLS algorithm is essentially a sequence of regressions in terms of weight vectors (Henseler et al., 2009). The basic PLS algorithm involves the following stages:

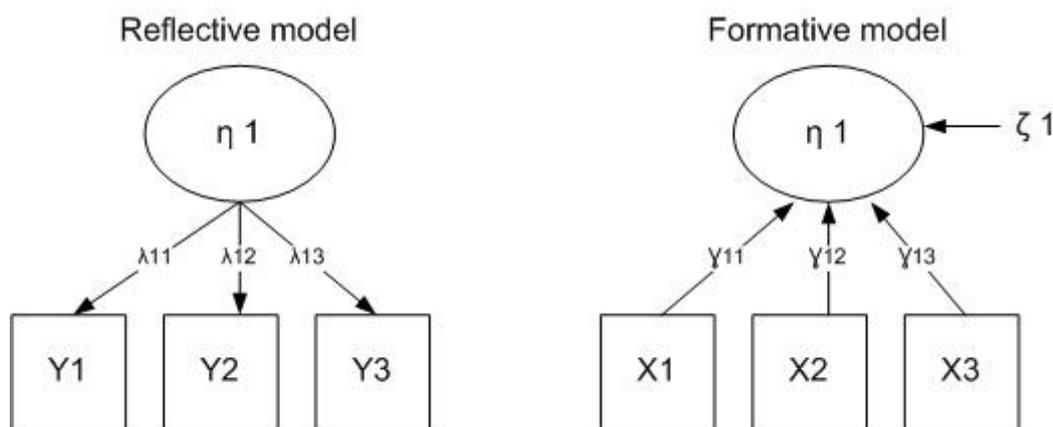
1. Stage 1: Iterative estimation of LV scores consisting of a four-step iterative procedure that is repeated until convergence is obtained:
  - a. outer approximation of the LV scores,
  - b. estimation of inner weights,
  - c. inner approximation of the LV scores, and
  - d. estimation of the outer weights.
2. Stage 2: Estimation of outer weights/loading and path coefficients.
3. Stage 3: Estimation of location parameters.

#### **4.5.3 Reflective and Formative Constructs**

Based on SEM literature, LV can be modelled using either formative or reflective indicators. According to Jarvis, Mackenzie and Podsakoff (2003), reflective constructs are viewed as a construct that is affected by the same underlying construct, which uses parallel measures that co-vary and it is measuring the same underlying construct. For a reflective construct, the direction of causality is from the construct (i.e., LV) to the indicators, and changes in the underlying construct are hypothesised to cause changes in the indicators (Jarvis et al., 2003). In reflective construct, the arrow direction points from LV to reflective indicators. Furthermore, indicators for a reflective construct should be consistent internally because all of the measures are assumed to be equally valid indicators of the underlying LV (Petter, Straub, & Rai, 2007).

Meanwhile, formative construct refers to constructs that have formative indicators, which are combined to give rise to the meaning of the LV (Petter et al., 2007). In contrast to a reflective construct, a formative construct assumes that the measures (indicators) have an impact on the underlying construct (Jarvis et al., 2003). In a reflective construct, the group of indicators jointly determines the conceptual and empirical meaning of the construct. The direction of causality flows from indicators to LV (Jarvis et al., 2003). Figure 4.2 shows the diagram of reflective and formative constructs.

According to Petter et al. (2007), internal consistency is important for a reflective construct. Thus, the uses of internal reliability measures are required to ensure the measures are reliable. In addition to that, a reflective construct should be uni-dimensional and if any measures are removed, it would not affect the content validity (Petter et al., 2007). On the other hand, formative indicators need not be correlated nor have high internal consistency and any changes in the formative measures will cause changes in the underlying construct (Jarvis et al., 2003). A formative construct causes the latent construct representing different dimensions of it (Gefen et al., 2000). These observed variables are not assumed to be correlated with each other or to represent the same underlying dimension (Chin, 1998a).



Adopted from: Petter et al. (2007)

Figure 4.2 The Diagrams of Reflective and Formative Constructs

For constructs using reflective measures, it is appropriate to examine the loadings as they represent the correlation between the indicators and component scores (Gefen et al., 2000). While for those constructs with formative measures, the interpretation of formative indicators should be based on weight, as it provides information regarding the importance of each indicator in the formation of the component (Chin, 1998a).

In this study, all LVs are modelled as reflective measures. The causality flows of each LV are based on prior knowledge gathered during the literature review phase. Using

prior knowledge to determine the causality flow is very important to avoid measurement model misspecification (Henseler et al., 2009).

#### **4.6 Evaluating Measurement and Structural Models using Partial Least Square**

For this study, the research model is assessed using a two-step process: 1) the assessment of the measurement model and 2) the assessment of the structural model. In general, the purpose of model validation is to determine whether both measurement and structural model fulfil the quality criteria for empirical work (Urbach & Ahlemann, 2010). The following subsections discuss the guidelines used in this study to assess both measurement and the structural model of this study.

##### **4.6.1 Measurement Model**

Based on previous studies, the validation of a reflective measurement model can be established by testing its internal consistency, indicator reliability, convergent validity and discriminant validity (Lewis, Templeton, & Byrd, 2005; Straub, Boudreau, & Gefen, 2004).

###### **4.6.1.1 Internal Consistency**

Traditionally, a measurement item's internal consistency is evaluated using Cronbach's alpha (CA). Constructs with high CA values mean that the items within the construct have the same range and meaning (Cronbach, 1971). Using CA provides an estimate for the reliability based on indicator inter-correlations. However, within PLS, internal consistency is measured using composite reliability (CR) (Chin, 1998b). This is because even though both CA and CR measure the same thing (internal consistency), CR takes into account that indicators have different loadings. CA provides a severe underestimation of the internal consistency reliability where it does not assume tau equivalent among the measures and assuming all indicators are equally weighted (Werts, Linn, & Joreskog, 1974).

Despite which particular reliability coefficient is used, an internal consistency reliability is considered satisfactory when the value is at least 0.7 in the early stage and values above 0.8 or 0.9 in more advanced stages of research, whereas value below 0.6 indicate a lack of reliability (Nunnally & Bernstein, 1994).

#### **4.6.1.2 Indicator Reliability**

When assessing indicators' reliability, the researcher is evaluating the extent to which a variable or a set of variables is consistent with what it intends to measure (Urbach & Ahlemann, 2010). The reliability construct is independent of and calculated separately from other constructs. According to Chin (1998b), indicator loadings should be significant at least at the 0.05 level and the loading must be greater than 0.7. This is because with the loading value at 0.707, an LV is said to be able to explain at least 50 percent of its indicator's variance. The significance of the indicator loadings can be tested using a resampling method such as bootstrapping or jack-knifing. According to Hensler et al. (2009), taking into consideration PLS characteristics of consistency at large, one should be careful when deciding to eliminate an indicator. It makes sense to eliminate an indicator only when the indicator's reliability is low and the elimination of that indicator goes along with a substantial increase of CR.

#### **4.6.1.3 Convergent Validity**

Convergent validity involves the degree to which individual items reflect a construct converging in comparison to items measuring different constructs (Urbach & Ahlemann, 2010). Using PLS, convergent validity can be evaluated using the value of average variance extracted (AVE). According to Fornell and Larcker (1981), sufficient convergent validity is achieved when the AVE value of a construct is at least 0.5.

#### 4.6.1.4 Discriminant Validity

Discriminant validity is used to differentiate measures of a construct from one another. In contrast with convergent validity, discriminant validity test whether the items do not unintentionally measure something else (Urbach & Ahlemann, 2010). In PLS, two measures of discriminant validity are commonly used—cross loading (Chin, 1998b) and Fornell-Larcker’s criterion (Fornell & Larcker, 1981).

According to Chin (1998b), cross-loading is obtained by correlating each LV’s component scores with all of the other items. If each indicator’s loading is higher for its designated construct compared to any other constructs, then it can be inferred that the different constructs’ indicators are not interchangeable.

Using Fornell-Larcker’s criterion requires an LV to share more variance with its assigned indicators than with any other LV. Thus, the AVE of each LV should be greater than the LV’s highest squares correlation with any other LV. The summary of validity guidelines to assess a reflective measurement model is listed in Table 4.4.

	<b>Validity Type</b>	<b>Criterion</b>	<b>Guidelines</b>
1	Internal consistency	CR	CR > 0.7 (for exploratory study) CR > 0.8 (advance research) CR < 0.6—lack of reliability
2	Indicator reliability	Indicator loadings	Item’s loading > 0.7 and significant at least at the 0.05 level
3	Convergent validity	AVE	AVE > 0.50
4	Discriminant validity	Cross loading  Fornell and Larcker	Item’s loading of each indicator is highest for its designated construct.  The square root of the AVE of a construct should be greater than the correlations between the construct and other constructs in the mode

Table 4.4 Summaries of Validity Guidelines for Assessing Reflective Measurement Model

Therefore, in this study, the measurement model's validity is satisfactory when:

1. CR is greater than 0.8.
2. Item's loading is greater than 0.7 and significant at least at the 0.05 level.
3. AVE value for each construct is larger than 0.50.
4. Item's loading of each indicator is highest for its designated construct.
5. The square root of the AVE of a construct should be greater than the correlations between the construct and other constructs in the mode.

#### **4.6.2 Structural Model**

Validating the structural model can help the researcher to evaluate systematically whether the hypotheses expressed by the structural model are supported by the data (Urbach & Ahlemann, 2010). The structural model can only be analysed after the measurement model has been validated successfully. In PLS, a structural model can be evaluated using coefficient of determination ( $R^2$ ), and path coefficients.

The first important criterion for assessing the PLS structural model is to evaluate each endogenous LV's coefficient of determination ( $R^2$ ).  $R^2$  measures the relationship of an LV's explained variance to its total variance. According to Chin (1998b), a value of  $R^2$  around 0.67 is considered substantial, values around 0.333 are average and values of 0.19 and lower are considered weak.

While by examining the path coefficient value, a researcher is able to know the strength of the relationship between two LVs. To examine the relationship between two LVs, the researcher should check the path coefficients, algebraic sign, magnitude and significance. According to Huber et al. (2007), the path coefficients should exceed 0.100 to account for a certain impact within the model and be significant at least at the 0.05 level of significance. Table 4.5 summarises the guidelines to validate the structural model.

	Validity Type	Criterion	Guideline
1	Model validity	Coefficient of determination ( $R^2$ )	0.67—substantial 0.333—moderate 0.190—weak
2		Path coefficients	Path coefficient must be at least 0.100 and at significance (at least 0.05)

Table 4.5 Summaries of Validity Guidelines for Assessing Reflective Structural Model

Therefore, in this study the structural model is evaluated using the following test:

1. Coefficient of determination must be larger than 0.19.
2. Path coefficient between LVs must be at least 0.1, follow the correct algebraic sign (in the case of this study—positive) and significant (at least 0.05)

#### 4.6.3 Mediating Relationship

According to Baron and Kenny (1986), a mediating factor refers to a third variable that accounts for the relations between the independent (predictor) and dependent (outcome) variables. A mediator is the mechanism through which a predictor influences an outcome variable.

When it comes to analysing a mediation relationship, Baron and Kenny's (1986) guideline is the most common method used by previous researchers. These authors outlined four guidelines in order to show that the mediating relationship exists between a predictor and an outcome variable (Figure 4.3 is used to illustrate Barron and Kenny's (1986) guideline). The following are the guidelines used to determine a mediating relationship:

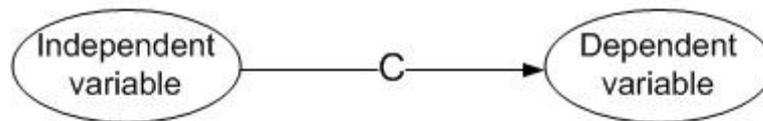
1. To show that there is a significant relationship between the predictor (independent variable) and the outcome (dependent variable) (path  $c^3$  in Figure 4.3A).

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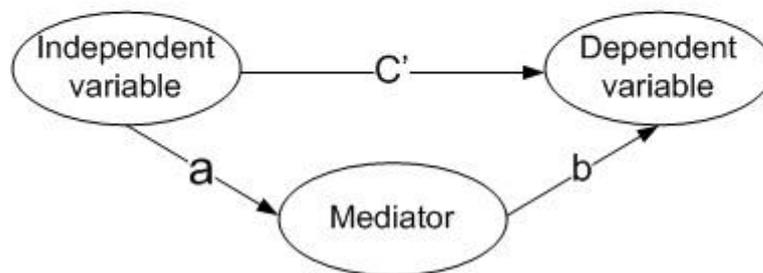
<sup>3</sup> According to Kenny (2011), path  $c$  is called the total effect and  $c'$  is called the indirect effect. Indirect effect exists when a mediator variable is introduced within a predictor and outcome relationship.

2. To show that the predictor is related to the mediator (path a in Figure 4.3B)
3. To show that the mediator is related to the outcome variable (path b in Figure 4.3B).
4. To show the strength of the relations between the predictor and the outcome is reduced significantly when the mediator is added to the model (path  $c'$  in Figure 4.3B). If it is a complete mediation, the value of path  $c'$  will not differ from zero. If it is a partial mediation, the path  $c'$  value will be significantly smaller compared to path c.

4.3 A



4.3 B



Adopted from: Kenny (2011)

Figure 4.3 Mediation Model

After all four guidelines are met, it shows that the relation between predictor and outcome variables is mediated fully by a mediator variable (Kenny, Kashy, & Bolger, 1998). If only the first three steps were met, it shows that the relationship between predictor and outcome variable is mediated partially. After the relationship between mediator, predictor and outcome is demonstrated, then the significance of mediated effect needs to be evaluated. The following formula is used to determine the statistical significance of the mediation reduction.

$$Z = \frac{ab}{\sqrt{(a^2 s_b^2 + b^2 s_a^2)}}$$

In this equation, a and b are the path coefficient values from the predictor variable to the mediating variable, and from the mediating variable to outcome variable, whereas  $s_a$  and  $s_b$  are the standard error values for the path coefficients. These values can be obtained from bootstrapping output. The significant indirect effects between two variables are decided based on the Z value. The null hypothesis (there is no indirect effect between two variables) is rejected when the Z value is greater than 1.96.

After the structural model has been evaluated successfully, then the interpretation of the structural equation model can be conducted based on theoretical foundations (Urbach & Ahlemann, 2010).

#### **4.7 Instrument Development**

For this study, the validity and reliability of the research instrument is tested using an online focus group, pre-test and pilot survey techniques. The following subsections explain how each of the technique is used in relation to this study.

##### **4.7.1 Online Focus Group (OFG)**

An OFG session was conducted before the items from previous studies are selected to develop the research instrument for this study. The main objective of the OFG session is to get additional support towards the selection of relevant constructs. Although it is aware that FG is a useful tool that can be used to help researcher delve deeper into understanding the phenomena of interest; the used of FG for this study is limited only to provide some suggestions as to which determinants are important than others. This is because there are no previous studies conducted in the context of this study—continuous knowledge sharing intention within business online communities. Through

OFG, the researcher is ensuring that the right constructs are selected to measure members' continuous knowledge sharing intention. The use of a focus group as a technique to select relevant constructs for a research instrument has been identified in previous studies (Churchill, 1986; Davis, Bagozzi, & Warshaw, 1989; Pavlou & Fygenson, 2006). This process can be viewed as a 'counter check' to avoid research from missing out needed or relevant constructs that might be ignored during the literature analysis.

The OFG is administered in accordance with standard procedures as suggested by previous studies (Oringderff, 2004). The initial invitations were posted on selected business online communities. Eligible participants for this study are limited only to online community members with the experience of contributing knowledge to the community. In total, 30 e-mail invitations were sent out to potential respondents who expressed their interest. Within the e-mail, potential participants were briefed about the purpose of this study and its procedures. However, only eight respondents returned their consent form as an indication of their willingness to participate in the OFG. This number is deemed as sufficient. According to Krueger and Casey (2000), focus group interviews should involve between eight to 12 people.

In this study, the OFG session was administered using a weblog. A weblog was selected because of its ease of use. Twelve days were allocated for the whole OFG session. The questions were distributed in three sub-sessions and each sub-session was four days long (see Appendix C for OFG questions). Three to four questions were posted in each sub-session.

The first OFG session started after the respondents were given the link to the first weblog posting. An e-mail was sent out to participants reminding and acknowledging their participation on the 3rd day of each sub-session. At the end of the OFG session, a personal e-mail was sent out, thanking all participants. Every participant was given a NZD 20 gift card as a token of appreciation for all the effort and time given. The responses were satisfactory; however, not all participants participated in every sub-session conducted. Out of eight respondents, five respondents participated in every

OFG sub-session. However, the responses given are sufficient to support the selection of constructs to be included in the research model for this study.

Table 4.6 demonstrated the demographic information related to the OFG participants. Overall, 80% of the respondents were males, and 20% were females. 62.5% of the respondents were aged above 30 years old. All respondents have at least a Bachelor’s degree. The majority (62.5%) of the respondents have experience of using the online communities less than one year; 25% has experience between one to three years and 12.5% has experience more than three years. Among the respondents, one of them is the administrator of an online community. The participants also contributed in a variety of other communities such as computing, mobile and software-based online communities.

<b>Demographic Constructs</b>	<b>Frequency (n=8)</b>	<b>Percentage (%)</b>
<b>Age</b>		
Less than 30	3	37.5
30- 35	1	12.5
35-40	3	37.5
Above 40	1	12.5
<b>Education</b>		
Undergraduate	4	50
Master’s degree	2	25
PhD degree	2	25
<b>Experience using online communities</b>		
Less than 1 year	5	62.5
1- 3 years	2	25
More than 3 years	1	12.5

Table 4.6 OFG Respondents Demographic Information

The OFG questions were developed by the researcher based on the constructs identified from previous studies. In general, the respondents were asked to discuss the factors that influence their decision to contribute their knowledge within the business online communities continuously. The questions are developed based on the research model discussed in Chapter Three. Participants also are asked to suggest additional

factor(s) that they might think are relevant towards influencing their continuous knowledge sharing intention.

From the analysis, three aspects of ISCM (i.e., satisfaction, perceived usefulness, and confirmation), three aspects of EVM (attainment value, intrinsic value and utility value) and two aspects of CTT (trust and commitment) are mentioned by the respondents during the OFG sessions. The findings of the OFG session are discussed below. Participants' comments are presented within parentheses and within double quotation marks.

### ***ISCM factors***

1. ***Satisfaction***: The majority of the respondents agreed that satisfaction is an important factor influencing their intention to share knowledge to the community continuously. (“I would contribute more if the topic interests me. I will be more satisfied if I get more feedbacks and more knowledge”; “If I'm satisfied with the community, yes I will contribute more”)
2. ***Community perceived usefulness***: Most of the respondents believe that the usefulness of the online community is an important factor influencing their decisions to continue sharing their knowledge (“If it (an online community) can provide me with useful information and new updates it does influence me. If not able to that, I'll probably stay away from it” )
3. ***Confirmation***: The majority of the respondents believe that confirmation of expectations plays an important role. Being able to confirm their expectations will help them to continue sharing knowledge within the community. (“Yes and this will go back to the main reason why I want to participate in an online community. To what extent I can confirmed my expectations are important because it will influence my decision to participate within the community”)

### ***EVM factors***

1. ***Attainment value:*** Participants believed that attainment value has influence on perceived usefulness. Establishing one's self-image within the community has effect on how they view the community. ("As time goes by I want to move from being a 'novice' to become an 'expert'. This change of status will help me be more comfortable to contribute more to the community"; "When your contribution are acknowledged by the community and others will refer to you if they need any help makes you feel great").
2. ***Intrinsic value:*** The findings show that the intrinsic value derived from knowledge sharing is important towards how members view the community. ("I will feel happy when others tell me that my contribution has helped them solve their problems. This good feeling keeps me wanting to help others more in the future"; "I know somehow, somewhere I am helping some individuals out there")
3. ***Utility value:*** The findings show that achieving utility value from sharing knowledge with others in the community gives positive feeling towards the community. ("For me the sustainable of the community and the development of the community is important. Online community depends on its ability to provide quality content to their members. Being able to help the community sustain is a big achievement")

### ***CTT factors***

1. ***Trust:*** Trust is identified as the key factor that keep members contributing their knowledge to the community. Having lack of trust, community members are reluctant to contribute their knowledge. Trust also makes users feel comfortable to continue sharing knowledge in the community. ("If the community members are not trustworthy I will stop using the community. Trust is the key ingredient to keep people together in the community especially when it involves the exchange of information/knowledge. If I can't trust the community, it is better for me to find other community")

2. **Commitment:** The analysis supports that commitment can influence members to have strong obligation towards the community, and willingness to spend their own time and effort to continue sharing knowledge to the community. (“Commitment will drive people to work harder and help others. For instance, a Wikipedia will not be a source of references like what it is today if the people who contributed the articles are not committed. Committed members will show strong obligation to the community”)

The findings from the OFG session give good support towards the selection of constructs used in this study. The OFG findings were then utilised to develop the survey instrument.

#### **4.7.2 Items Selection**

For this study, the measurement items are adapted from previously validated constructs in IS and marketing research (based on psychometric properties reported in the original studies). As suggested by Straub (1989), when employing survey methods, it is advisable to reuse previous validated instruments.

Another advantage of using existing measures is that the reliability and validity testing of the measures have already taken place, allowing the researcher to know about the measurement qualities of the existing measures (Bryman & Bell, 2007). Further, the nomological validity of the construct can help established when it is tested and validated in a variety of persons, settings and time (Straub et al., 2004).

Hence, in this study, the wording of each item is modified to fit the context of continuous knowledge sharing within business online communities. Nine constructs are measured using multiple items (See Table 4.7). Three constructs (i.e., satisfaction, attainment value and utility value) have four items; two constructs (i.e., identity trust and affective commitment) have five items and four constructs (i.e., intrinsic value, perceived usefulness, confirmation and continuous knowledge sharing intention) have

three items. All items are measured using seven-point Likert scales ranging from “strongly disagree” (1) to “strongly agree” (7).

The ISCM constructs are measured as follows. Measures for continuous knowledge sharing intention and confirmation are adopted from Bhattacharjee (2001b). Satisfaction measures are adopted from Ong and Lai (2007). Community perceived usefulness measures are adopted from Koh and Kim (2003). Meanwhile identification trust measurement scales are adopted from Chiu et al. (2006). Affective commitment measures are adopted from Kim et al. (2008) and Yen (2009). Finally, the measurement scales for attainment, intrinsic and utility value are adapted from Chiu and Wang (2008) and Chiu et al. (2007). Table 4.8 lists the measurement constructs used in this study.

	<b>Construct</b>	<b>Items</b>	<b>Coding</b>	<b>Reference</b>
1	Continuous knowledge sharing intention	<p>I plan to continue contributing knowledge using the business online community in the future.</p> <p>I will frequently use the business online community to contribute knowledge continuously in the future.</p> <p>I will continue to contribute knowledge using the business online community as much as possible.</p>	<p>CKS1</p> <p>CKS2</p> <p>CKS3</p>	Bhattacharjee (2001b)
2	Satisfaction	<p>I am satisfied with the knowledge map of the business online community (e.g., knowledge classification).</p> <p>I am satisfied with the knowledge manipulation of the business online community (e.g., easy to create, upload knowledge).</p> <p>I am satisfied with the personalization of the business online community (e.g., control</p>	<p>SAT1</p> <p>SAT2</p> <p>SAT3</p>	Ong and Lai (2007)

		<p>the settings and presentation of knowledge).</p> <p>I am satisfied with the knowledge community of the business online community (e.g., convenience to discuss, share knowledge with other community members).</p>	SAT4	
3	Confirmation	<p>My experience of using the community was better than what I expected.</p> <p>The service level provided by the community was better than what I expected.</p> <p>Overall, most of my expectations from using the community were confirmed.</p>	<p>CONF1</p> <p>CONF2</p> <p>CONF3</p>	Bhattacharjee (2001b)
4	Community perceived usefulness	<p>Topics in the business online community are useful to me.</p> <p>It is useful to interact with other members in the business online community.</p> <p>It is useful to contribute knowledge on on-going discussions in business online community.</p>	<p>PUSE1</p> <p>PUSE2</p> <p>PUSE 3</p>	Koh and Kim (2003)
5	Identification trust	<p>I can discuss with the community members about my personal issues.</p> <p>If I share my problems with a community member, I know he/she will respond constructively and caringly.</p> <p>I know most of the members in this online community will do everything within their capacity to help others.</p>	<p>TRUST1</p> <p>TRUST2</p> <p>TRUST3</p>	Chiu et al. (2006)

		I know most members of this community are honest.	TRUST4	
		I know the community members will not knowingly do anything to disrupt the conversation.	TRUST5	
6	Affective commitment	I have a sense of belonging to the community. I have emotional attachment to the members of the community. I think that exchanging opinions with other members is important. I expect that I will participate continuously in community activities. I am an actively participating member of the community.	COMM1 COMM2 COMM3 COMM4 COMM5	Kim et al. (2008) and Yen (2009)
7	Attainment value	I think continuously contributing knowledge makes me a more knowledgeable person. I think continuously contributing knowledge helps me establish my reputation within the community. I think being successful at continuously contributing knowledge confirms my competence. I think being successful at continuously contributing knowledge give me a sense of confidence.	ATT1 ATT2 ATT3 ATT4	Chiu and Wang (2008) and Chiu et al (2007)
8	Intrinsic value	I think continuously contributing knowledge is interesting. I think continuously contributing knowledge is enjoyable. I think continuously contributing	INT1 INT2 INT3	Chiu and Wang (2008) and Chiu et al

		knowledge is fun.		(2007)
9	Utility value	<p>I think continuously contributing knowledge is useful to expand social interactions.</p> <p>I think continuously contributing knowledge is useful to receive feedback from others in the future (reciprocal benefits).</p> <p>I think continuously contributing knowledge is helpful to maintain the online community's sustainability.</p>	<p>UTL1</p> <p>UTL2</p> <p>UTL3</p>	<p>Chiu and Wang (2008) and Chiu et al (2007)</p>

Table 4.7 Measurement Constructs

### 4.7.3 Pre-Test

Pre-testing is the “first attempt to get empirical feedback from a highly controlled sample to assess the appropriateness of the original instrument” (Lewis et al., 2005, p. 392). During the pre-test, participants are asked to complete the instrument and critique matters relevant for initial instrument design, for instance: format, content, understandability, terminology, and ease and speed of completion (Lewis et al., 2005). According to Bryman and Bell (2007) pre-testing of an instrument is important as it will give an indication of how well the questions flow and improve instrument comprehension; and allows the researcher to check the adequacy of instructions to respondents.

The pre-test process is important to establish the instrument’s content validity (Straub, 1989). Establishing content validity is important as it represents the appropriateness of the items on the instrument for measuring constructs (Lewis et al., 2005; Straub et al., 2004; Straub, 1989). Each of the items should be representative of the construct and comprehensively cover all aspects of the construct. This study follows the suggestions of Lewis et al. (2005) on establishing content validity by conducting pre-tests and a pilot-test.

For this study, the pre-test was done in two steps. First, a number of experts were approached for their opinions relating to knowledge sharing using online communities and the questionnaire design. Second, a pre-test survey was carried out with postgraduate and undergraduate students to evaluate the measurement properties and the relationships specified in the structural model. Based on the IS literature, it is highly advisable to have rounds of pre-testing with different groups of experts (Straub, 1989). Through the pre-testing phase, experts are allowed to identify items that could be added or deleted from the instrument, and make suggestions for enhancements, if necessary (Lewis et al., 2005).

Thus in this study, two groups of experts were consulted. The first group consisted of one IS professor (AUT) and two IS associate professors (one from Universiti Utara Malaysia and one from Wollongong University in Dubai). They were approached for their expertise in IS research. Meanwhile, the second group consists of two senior lecturers (both from AUT University) where they are asked to comment on the questionnaire's design and research methodology. Each of the items is reviewed by the experts for its content, scope, and purpose. Experts are asked to comment on various aspects of the survey design such as the clarity or ambiguity of definitions, item representativeness, appropriateness of the scale, and clarity of instructions. The pre-tests are conducted to establish the questionnaire's content validity. As a result, from the discussions with experts, twelve minor wording changes were made; no items were removed or added; and two new demographic questions (experience using online communities and types of business online community) were added to the Web survey.

The pre-test survey was carried out in December 2010 with AUT students. All surveys are confidential and no identifying of personal information is required. A total of 35 students (both postgraduate and undergraduate) participated in this pre-test survey, but five were excluded because they have no knowledge sharing experience using business online communities. In total, 30 respondents participated in this survey, where 86.7% are male; 43% are PhD students, 33 % are Master's students and 24% are

undergraduate students. Seventy percent of the respondents are aged between 20 to 37 years old, and 56.7% have more than one year of experience contributing knowledge to business online communities.

Students were approached personally by the researcher (after they have completed the Web survey) and briefed about the pre-test. The presence of the researcher is important to identify and respond immediately to difficulties with interpretation of questions. During the pre-test session, emphasis is placed on identifying items that respondents find difficult to answer; and the flow of the Web survey or any design issues. Attention also is given to the instructions stated to the respondents on the Web survey. At the end of the pre-test session, students are required to provide a written comment about the length and wording of items; and the Web survey flow, design and instructions.

Based on the students' comments, a few changes were made to the design of the Web survey. The changes were made to the question's format. Instead of using one answer per row matrix, respondents preferred to use a multiple answer per row matrix. This is aesthetically more appealing and, most of all, respondents know how many questions are left that need to be answered. Further changes also were made to the flow of the questions. Respondents suggested that the question should be put in sections rather than listing all the questions in one page. After the pre-testing phase, the instrument was pilot-tested again using respondents that are similar to the real survey sample. The next section discusses this process in detail.

#### **4.7.4 Pilot Survey**

According to Lewis et al. (2005), after the pre-test of the research instrument, a pilot survey needs to be administered to appraise further and purify the instrument. According to these authors, the pilot survey is a "dress-rehearsal" of the instrument with a small sample and it is required to involve respondents that are similar to the actual sample. The main aim of the pilot survey is to detect any problems associated

with the measures and Web survey design from the perspective of a similar target sample.

The pilot survey follows the procedures of the real data collection phase. However, in the pilot survey, only three business online communities are selected randomly from the list of business online communities identified during the sampling process. This pilot survey was conducted on January 2011, involving community members who have experience contributing knowledge within business online communities. These online communities are excluded and not included during the actual data collection.

Online community members are invited through an invitation thread posted on the online community 'lounge'. Within the invitation thread, the researcher introduced himself and the reason why this pilot survey is conducted. The researcher explained the importance of obtaining feedback from the respondents. A hyperlink is inserted within the invitation thread linking participants to the Web survey page. Finally, participants are invited to give comments on the Web survey. Results indicated that there are no major problems in understanding the Web survey instructions and items. Table 4.8 provides demographic information of the participants.

A total of 68 community members participated in the pilot study, but eight were excluded because they have no experience contributing knowledge using business online communities. Overall, the total sample size is 60, where 75% were males and the remaining were females. 68.3% of the respondents have experience using online communities more than three years. The majority of them (66.7%) are intermediate members of an online community. Most of the respondents (73%) were aged between 21 to 35 years old; 10% was less than 20 years old and 17% was above 36 years old. 58.3% were members of computing; 28.3% were members of automotive and 13.4% were members of consulting-based business online communities. Finally, 90% of the respondents have at least a Bachelor's degree.

<b>Demographic</b>	<b>Frequency (n=60)</b>	<b>Percentage (%)</b>
<b>Gender</b>		
Male	45	75%
Female	15	25%
<b>Age</b>		
Less than 20	6	10%
21-25	22	36.4%
26-30	12	20%
31-35	10	16.6%
36-40	6	10%
41-46	3	5%
Above 46	1	2%
<b>Education</b>		
College/Secondary	6	10%
Undergraduate	31	51.6%
Master's degree	18	30%
PhD degree	5	8.4%
<b>Experience using online communities</b>		
Less than 1 years	40	66.7%
1-3 years	20	33.3%
<b>Types of business online community</b>		
Computing	35	58.3%
Automotive	17	28.3%
Consulting	8	13.4%

Table 4.8 Respondents' Demographic Information for Pilot Survey

Smart PLS 2.0M3 (Ringle et al., 2004) is then used to evaluate both the measurement and structural model. PLS is suitable for handling small sample sizes (Straub et al., 2002). The quality of the measurement model is evaluated using the guidelines discussed in section 4.6. The measurement model is estimated using a bootstrapping technique where it generates 200 samples of the 60 cases used. Table 4.9 shows all of the assessment conducted on the research model.

	<b>Assessment</b>	<b>Criterion</b>	<b>Result</b>	<b>Comment</b>
1	Internal consistency	CR	CR value for all constructs range from 0.8983 to 0.9765	Exceeded 0.8, thus demonstrating internal consistency
2	Indicator reliability	Indicator loadings	All items loading exceed 0.7, ranging from 0.8162 to 0.9751 except for one item in attainment value construct (0.6483)  All items are significant at the 0.001 level	All items loaded more than 0.7, hence, demonstrating indicator reliability.  The item that loaded less than 0.7, was retained, as dropping the item does not change the CR value significantly.
3	Convergent validity	AVE	AVE value for all constructs range from 0.6915 to 0.9328	Each construct has an AVE value more than 0.5, thus demonstrating convergent validity
4	Discriminant validity	Cross loading Fornell and Larcker criterion	All items load with a high loading for its respective constructs  The square root of AVE > the correlations between the construct and other constructs (see Table 4.10)	No items cross-loaded; and  The square root AVE is greater than the inter-correlations;  Thus, demonstrating discriminant validity

Table 4.9 Summaries of the Assessment Conducted on the Research Measurement Model

	Mean (SD)	SAT	CONF	PUSE	TRUST	AC	ATT	INT	UTL	CKS
Satisfaction (SAT)	5.21 (1.001)	<b>0.894</b>								
Confirmation (CONF)	5.25 (0.892)	0.594	<b>0.895</b>							
Community perceived usefulness (PUSE)	5.49 (0.784)	0.610	0.670	<b>0.928</b>						
Identification trust (TRUST)	5.65 (0.924)	0.615	0.647	0.653	<b>0.878</b>					
Affective commitment (AC)	5.51 (0.958)	0.790	0.633	0.712	0.686	<b>0.876</b>				
Attainment value (ATT)	5.41 (1.066)	0.689	0.703	0.612	0.792	0.745	<b>0.832</b>			
Intrinsic value (INT)	5.48 (1.107)	0.770	0.579	0.671	0.726	0.833	0.699	<b>0.946</b>		
Utility value (UTL)	5.63 (0.954)	0.667	0.596	0.599	0.759	0.787	0.707	0.762	<b>0.875</b>	
Continuous knowledge sharing intention (CKS)	5.51 (1.092)	0.657	0.634	0.721	0.743	0.786	0.684	0.777	0.684	<b>0.966</b>

Table 4.10 Correlations and Discriminant Validity

\* Note: Square root of the AVE on the diagonal (shaded boxes)

The results indicated satisfactory reliability and validity of the measures. Through the measurement statistics, results are good enough to move to the actual data collection phase.

#### **4.7.5 Questionnaire Format and Administration**

There are three main sections in the Web survey used in this study (see Appendix D). The first section gives an introduction related to the purpose of the research and definitions related to continuous knowledge sharing and business online community. In the introduction section, assurance of confidentiality and anonymity are stated clearly.

In the second section, there is a filtering question, which is used to allow only respondents with knowledge sharing experience to continue answering the Web survey. Since the focus of this study is to understand continuous knowledge sharing intention, only those with experience contributing knowledge within the business online communities are allowed to participate in the Web survey. This filtering question is used to ensure the Web survey is answered by the right sample target. The filtering question is "Have you ever contributed to knowledge to a business online community?" Respondents who answered "No", are directed to the demographic section. They are asked to give their demographic information. Respondents who answered 'Yes' are directed to the third section of the Web survey.

In the third section, participants are asked to answer the questions referring to the business online community in which they have participated before. The questions used a seven-point Likert scale, ranging from 1 ("strongly disagree") to 7 ("strongly agree"). In total, 34 questions are related to the factors influencing continuous knowledge sharing intention within business online communities. In addition, using the control function in the Web survey, respondents are forced to answer all questions. Incomplete responses are not allowed to be submitted. In the last section, participants are asked to fill in some personal demographic information for statistical purposes. After that, all respondents who have completed the Web survey are invited for a lucky

draw. It is a form of incentive to encourage participation. Ten gift cards worth NZD 20 are given to randomly selected participants. Figure 4.4 shows the logic flow of the Web survey.

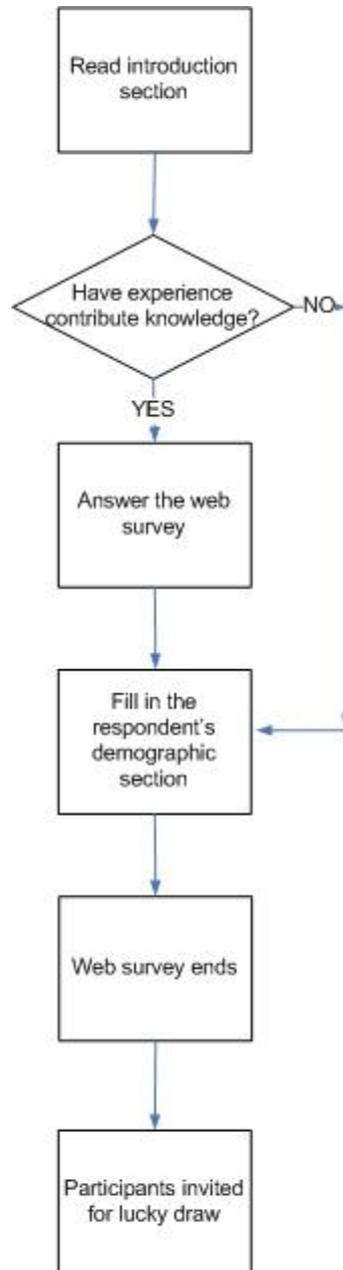


Figure 4. 4 Web Survey Logic Flow

## **4.8 Final survey**

The data collection process was conducted for two months starting from March 1, 2011 to May 1, 2011. Invitation threads are posted in 50 selected business online communities. The invitation threads are posted in the online community lounge. Within the invitation thread, respondents are briefed about the purpose of the study and given a link to the Web survey. After three weeks, the Web survey is put online, a reminder thread is posted in the online community lounge. The thread is posted to encourage more participation from the business online communities. A reminder thread is again posted on the seventh week of data collection to notify participants that the Web survey is not accepting any responses after the 1<sup>st</sup> of May 2011.

In total, the Web survey was viewed 900 times. This number is generated by the tracking functionality embedded within the survs.com survey authoring package. The completion time for the Web survey ranged from seven to twelve minutes.

### **4.8.1 Data Preparation**

The data preparation processes involve coding and data entry into a database, data filtering and finding any missing responses. Using the Web survey, the data is entered automatically into a database. A total of 300 participants responded to the Web survey invitation. Upon downloading the Web survey responses, a scrutiny is made to spot any incomplete or invalid data. Out of the 300 responses, 80 responses are found to be incomplete and invalid. Among the reasons why these responses are considered incomplete are:

1. Cases have the same responses for all asked questions (e.g., answered 7 for all questions).
2. Incomplete questionnaire. Although the Web survey is set to force respondents to answer all questions, there are some cases where respondents stop answering the questionnaire halfway through. This caused the responses to be incomplete.

3. Respondents take less than five minutes to complete the Web survey. Responses less than three minutes indicate that the respondents are not giving attention when answering the Web survey.

After the preliminary scrutiny, all 220 usable cases are loaded into SPSS version 19 software for the following reasons:

1. generating descriptive statistical reports,
2. generating exploratory analyses on every variable to check for missing or invalid data, and
3. generating additional analyses to check for normality test, response biasness and common method biasness.

For PLS-SEM analysis purposes, Smart PLS 2.0 M3 (will be known as Smart PLS onwards) was used to analyse the measurement and structural models. Using Smart PLS the data was transformed into an Excel CVS file to generate raw input for the application.

#### **4.8.2 Descriptive Statistic of Respondents**

These statistics give insight into the demographic profiles of respondents who participated in the Web survey. Based on the analysis, the response rate was 18.6% (220responses/1180views). Among these respondents, 82.7% were males and 17.3% were females. 29.5% of the respondents have at least five years of experience contributing knowledge using business online communities. 54.6 % of the respondents have experience between one to five years and 15.9% with less than one year of experience contributing knowledge using business online communities. The majority of the respondents (75%) have Bachelor's degree, nine per cent have a Master's degree, seven per cent have a PhD degree and nine per cent have secondary education. The analysis also shows more than half (58.1%) of the respondents were below 30 years old. 21.8% age between 31 to 35 years old, 11.8% age between 36 to 40 years old and 8.1% age above 40 years old. Finally, 38.6% of the respondents were members of computing-based business online communities, 21.4% were members of

communication-based business online communities, 10% were members of automotive and consultation business online communities and the remaining were members of financial, construction and banking-based business online communities. Table 4.11 shows the demographic information of the respondents who participated in this study.

<b>Demographic</b>	<b>Frequency (n=220)</b>	<b>Percentage (%)</b>
<b>Gender</b>		
Male	182	82.7%
Female	38	17.3%
<b>Age</b>		
Less than 20	0	0
21–25	49	22.2%
26–30	79	35.9%
31–35	48	21.8%
36–40	26	11.8%
41–46	16	7.4%
Above 46	2	0.9%
<b>Education</b>		
College/Secondary	20	9%
Undergraduate	165	75%
Master’s degree	20	9%
PhD degree	15	7%
<b>Experience using online communities</b>		
Less than 1 years	59	26.8%
1–3 years	89	40.5%
3–5years	42	19.1%
5–7 years	22	10%
More than 7 years	8	3.6%
<b>Categories of business online community</b>		
Computing	85	38.6%
Communication	47	21.4%
Automotive	24	10.9%
Consultation	22	10%
Financial	20	9.1%
Construction	13	5.9%
Banking	9	4.1%

Table 4.11 Respondents’ Demographic Information

### 4.8.3 Descriptive Statistics of Instrument

Using the statistical software SPSS version 19.0, the mean, standard deviation, variance, minimum value and maximum value of each indicator were examined. Table 4.12 outlines the descriptive statistics for all indicators.

<b>Construct</b>	<b>Indicator</b>	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Standard Deviation</b>
Attainment Value	ATT1	220	1	7	5.18	1.044
	ATT2	220	1	7	5.51	0.939
	ATT3	220	1	7	5.51	0.830
	ATT4	220	1	7	5.64	0.873
Intrinsic Value	INT1	220	1	7	5.28	0.908
	INT2	220	3	7	5.89	0.820
	INT3	220	1	7	5.65	0.771
Utility Value	UTL1	220	1	7	5.51	0.894
	UTL2	220	1	7	5.42	0.905
	UTL3	220	1	7	5.42	0.978
Community perceived usefulness	PUSE1	220	1	7	5.66	0.808
	PUSE2	220	2	7	5.29	0.825
	PUSE3	220	1	7	5.90	0.833
Identification Trust	TRUST1	220	2	7	5.31	0.755
	TRUST2	220	1	7	5.42	0.838
	TRUST3	220	1	7	5.26	0.777
	TRUST4	220	1	7	5.40	0.755
	TRUST5	220	1	7	5.63	0.768
Affective Commitment	COMM1	220	1	7	5.35	0.952
	COMM2	220	1	7	5.56	0.912
	COMM3	220	1	7	5.66	0.792
	COMM4	220	1	7	5.44	0.861
	COMM5	220	1	7	5.79	0.818

Confirmation	CONF1	220	1	7	5.28	0.722
	CONF2	220	1	7	5.33	0.754
	CONF3	220	2	7	5.58	0.859
Satisfaction	SAT1	220	1	7	5.33	0.933
	SAT2	220	2	7	5.42	0.880
	SAT3	220	2	7	5.44	0.866
	SAT4	220	1	7	5.66	0.815
Continuous knowledge sharing	CKS1	220	1	7	5.57	0.811
	CKS2	220	1	7	5.55	0.850
	CKS3	220	1	7	5.62	0.916

Table 4.12 Descriptive Statistics for All Indicators

#### 4.8.4 Verifying Data Characteristics

This section discusses the analysis undertaken to verify the collected data. This step is important to ensure that the data used in the higher-level analysis is valid and complete. There are a few analyses conducted to verify the data normality; to ensure the data does not have missing values, and to verify if there is any potential of common method bias.

##### 4.8.4.1 Missing Data

In this study, a missing value analysis is not necessary as it uses a Web survey authoring package. Through the Web survey service, the system automatically checks for incomplete responses. The system only accepts a response that is complete. Hence, all of the downloaded responses were complete and did not have any missing data.

#### **4.8.4.2 Data Normality**

The data normality test for this study is examined using two statistical analyses: 1) Shapiro-Wilk test and 2) skewness and kurtosis. The results from the Shapiro-Wilk test show that all variables have significant values of 0.00. This indicates that the data are not normal (non-normal). Further tests are conducted by calculating the data skewness and kurtosis values. The result of this test confirms that the data distribution is non-normal, where about 80% of the data presented skewness and kurtosis above the recommended threshold, -3 to +3. Therefore, it shows that the data normality distribution assumption was violated; thus, further supporting the use of PLS-SEM.

#### **4.8.4.3 Common Method Bias**

Finally, the data also is investigated for its potential common method bias. This study adopted Harman's one factor test as used by previous studies (Koh & Kim, 2003; Leimeister, Sidiras, & Krcmar, 2006; Shen, Yu, & Khalifa, 2010). The objective of this test is to examine the result of the unrotated factor solutions to determine the number of factors accounting for the variance in the variables (Koh & Kim, 2003). According to these authors, common method biasness is identified based on two conditions: 1) a single factor emerged from the factor analysis, and 2) one 'general' factor will account for a majority of the co-variance in the independent and criterion variables. In general, according to Podsakoff et al. (2006), the amount of variance accounted for common method biasness varies according to the field of research (e.g., marketing, management, and psychology). For instance, studies that investigate behavioural-related topics, common method biasness exists when the co-variance accounted for that single factor is greater than 40.7 per cent. For this study, based on the Harman's one factor test, six factors were presented and the most co-variance explained by one factor is 29.7 per cent, indicating that common method biasness is not a likely contaminant of the research results.

#### **4.8.4.4 Control Variables**

Assessing the impact of control variables on the dependent variable is important in order to rule out other possible effects that are unrelated to the hypothesised relationships (Kock, Chatelain-Jardon and Carmona, 2008). According to these authors, demographic variables are usually good candidate that can be used as a control variable. For this study, gender, age and education were selected as control variables. In a post-hoc analysis, the control variables are treated as independent variables together with other latent variables (i.e., identification trust, affective commitment and satisfaction). Using SmartPLS, the path coefficient and the significant values are examined. From the analysis, the relationships between all the independent variables (i.e, identification trust, affective commitment, and satisfaction) and dependent variable (i.e., continuous knowledge sharing) are found to be statistically significant despite the inclusion of the control variables (i.e., age, gender and education). Thus it is concluded that the hypothesised relationships are still significant when the effects of age, gender and education are controlled for.

#### **4.9 Summary of Chapter 4**

This chapter elaborates the researcher's philosophical stance. It also covers the research processes and survey method designed for this study. The measurement issues are identified and PLS-SEM is introduced as a data analysis technique. The approaches used to develop the research instrument are explained in this chapter. It involves the use of online focus groups, items selection, a pre-test and a pilot survey. The discussions on how the Web survey is formatted and administered are included. Finally, the preliminary details of the actual survey also are reported. The following chapter describes the findings in terms of both the measurement and structural model.

# **CHAPTER 5.0 Data Analysis and Findings**

## **5.0 Overview of Chapter 5**

This chapter presents the empirical findings of this study. The analyses are conducted using the statistical technique discussed in Chapter 4. This chapter follows the widely accepted reporting style of PLS analysis as suggested by previous studies (Chin, 2010). First, the validity and reliability of the measurement model is assessed. After assessing the quality of the measurement model, then the structural model is validated. Since this study involves assessing the mediation effect of trust and commitment on continuous knowledge sharing, a post-hoc analysis is conducted to examine this affect. This chapter ends with a summary of this chapter.

### **5.1 Measurement Model Assessment**

The research model for this study is tested using partial least squares (PLS). Smart PLS 2.0 M3 (Ringle et al., 2004) is used to assess the measurement and structural model for this study. This statistical program assesses the psychometric properties of the measurement model and estimates the parameters of the structural model.

As discussed in Chapter 4, the validity and reliability of the measurement model for this study is evaluated using the following analyses: internal consistency reliability, indicator reliability, convergent validity and discriminant validity. The following subsections present the findings for each of the analysis used to evaluate the validity of the measurement model for this study.

### 5.1.1 Internal Consistency Reliability

A measurement model has satisfactory internal consistency reliability when the composite reliability (CR) of each construct exceeds the threshold value of 0.7. Table 5.1 shows that the CR of each construct for this study ranges from 0.8410 to 0.9231 and this is above the recommended threshold value of 0.7. Thus, the results indicate that the items used to represent the constructs have satisfactory internal consistency reliability.

<b>Constructs</b>	<b>Item</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Loadings</b>	<b>T-Statistics</b>
<b>Attainment value</b>  CR = 0.8769	ATT1	5.18	1.044	0.824	9.764
	ATT2	5.51	0.939	0.815	9.456
	ATT3	5.51	0.830	0.828	6.523
	ATT4	5.64	0.873	0.731	5.420
<b>Intrinsic value</b>  CR =0.9161	INT1	5.28	0.908	0.873	17.130
	INT2	5.89	0.820	0.924	28.498
	INT3	5.65	0.771	0.859	9.740
<b>Utility value</b>  CR =0.8577	UTL1	5.51	0.894	0.791	6.371
	UTL2	5.42	0.905	0.795	7.992
	UTL3	5.42	0.978	0.864	5.919
<b>Community perceived usefulness</b>  CR =0.8426	PUSE1	5.66	0.808	0.806	14.852
	PUSE2	5.29	0.825	0.764	11.477
	PUSE3	5.90	0.833	0.831	20.504
<b>Identification trust</b>	TRUST1	5.31	0.755	0.827	26.232

CR =0.9194	TRUST2	5.42	0.838	0.865	22.121
	TRUST3	5.26	0.777	0.790	16.626
	TRUST4	5.40	0.755	0.820	22.412
	TRUST5	5.63	0.768	0.864	22.263
<b>Affective commitment</b>  CR =0.8756	COMM1	5.35	0.952	0.756	10.704
	COMM2	5.56	0.912	0.715	6.917
	COMM3	5.66	0.792	0.791	13.006
	COMM4	5.44	0.861	0.784	6.728
	COMM5	5.79	0.818	0.807	8.396
<b>Confirmation</b>  CR =0.8716	CONF1	5.28	0.722	0.839	24.592
	CONF2	5.33	0.754	0.860	18.002
	CONF3	5.58	0.859	0.798	16.690
<b>Satisfaction</b>  CR =0.8410	SAT1	5.33	0.933	0.754	11.231
	SAT2	5.42	0.880	0.738	12.471
	SAT3	5.44	0.866	0.758	14.848
	SAT4	5.66	0.815	0.768	16.391
<b>Continuous knowledge sharing intention</b>  CR = 0.9231	CKS1	5.57	0.811	0.877	21.756
	CKS2	5.55	0.850	0.886	26.334
	CKS3	5.62	0.916	0.920	42.998

Table 5.1 Descriptive and Reliability Statistics

### **5.1.2 Indicator Reliability**

Indicator reliability of the measurement model is measured by examining the items loadings. A measurement model is said to have satisfactory indicator reliability when each item's loading is at least 0.7 and is significant at least at the level of 0.05. Based on the analysis, all items in the measurement model exhibited loadings exceeding 0.700; ranging from a lower bound of 0.715 to an upper bound of 0.924. All items are significant at the level of 0.001. Table 5.1 shows the loading for each item and its T-statistic values on their respective constructs. Based on the results, all items used for this study have demonstrated satisfactory indicator reliability.

### 5.1.3 Convergent Validity

In this study, the measurement model's convergent validity is assessed by examining its average variance extracted (AVE) value. Convergent validity is adequate when constructs have an average variance extracted (AVE) value of at least 0.5 or more. Table 5.2 shows that all constructs have AVE ranging from 0.570 to 0.800, which exceeded the recommended threshold value of 0.5. This result shows that the study's measurement model has demonstrated an adequate convergent validity.

<b>Constructs</b>	<b>Average Extracted Variance (AVE)</b>
Attainment value	0.641
Intrinsic value	0.784
Utility value	0.668
Community perceived usefulness	0.641
Identification trust	0.730
Affective commitment	0.585
Confirmation	0.694
Satisfaction	0.570
Continuous knowledge sharing intention	0.800

Table 5.2 AVE Value

#### 5.1.4 Discriminant Validity

In this study, the measurement model's discriminant validity is assessed by using two measures: 1) Fornell and Larcker's (1981) criterion, and 2) cross loading. As discussed in Chapter 4, a measurement model has discriminant validity when 1) the square root of the AVE exceeds the correlations between the measure and all other measures, and 2) the indicators' loadings are higher against their respective construct compared to other constructs.

Thus, to determine the first assessment of measurement model's discriminant validity, the AVE value of each construct is generated using the smartPLS algorithm function. Then the square roots of AVE are calculated manually. Based on the results, all square roots of AVE exceeded the off-diagonal elements in their corresponding row and column. The bolded elements in Table 5.3 represent the square roots of the AVE and non-bolded values represent the intercorrelation value between constructs. Based on table 5.3, all off-diagonal elements are lower than square roots of AVE (bolded on the diagonal). Hence, the result confirmed that the Fornell and Larcker's criterion is met.

	ATT	INT	UTL	PUSE	TRUST	COMM	CONF	SAT	CKS
Attainment value	<b>0.800</b>								
Intrinsic value	0.574	<b>0.885</b>							
Utility value	0.525	0.598	<b>0.817</b>						
Com perceived usefulness	0.405	0.496	0.435	<b>0.800</b>					
Identification trust	0.681	0.528	0.563	0.501	<b>0.854</b>				
Affective commitment	0.642	0.638	0.619	0.522	0.615	<b>0.765</b>			
Confirmation	0.484	0.433	0.455	0.549	0.524	0.509	<b>0.833</b>		
Satisfaction	0.475	0.52	0.466	0.402	0.513	0.57	0.464	<b>0.755</b>	
Continuous knowledge sharing intention	0.503	0.589	0.531	0.499	0.608	0.624	0.487	0.527	<b>0.894</b>

Table 5.3 Inter-correlation Matrix

\* Square root of the AVE on the diagonal (bold) \* Com = community

The second assessment of discriminant validity is to examine the indicators' loadings with respect to all construct correlations. The output of cross loadings is produced by the SmartPLS algorithm function. Table 5.4 shows the output of cross loading between constructs and indicators. Table 5.4 also shows that all measurement items loaded higher against their respective intended latent variable compared to other variables. The table also demonstrated that the loading of each block is higher than any other block in the same rows and columns. The loading clearly separates each latent variable as theorised in the conceptual model. Thus, the cross loading output confirmed that the second assessments of the measurement model's discriminant validity are satisfied. This study therefore concludes that the measurement model has established its discriminant validity.

	<b>ATT</b>	<b>INT</b>	<b>UTL</b>	<b>PUSE</b>	<b>TRUST</b>	<b>COMM</b>	<b>CONF</b>	<b>SAT</b>	<b>CKS</b>
ATT1	<b>0.824</b>	0.486	0.373	0.357	0.588	0.509	0.420	0.414	0.388
ATT2	<b>0.815</b>	0.496	0.469	0.397	0.557	0.588	0.446	0.468	0.502
ATT3	<b>0.827</b>	0.450	0.426	0.266	0.571	0.532	0.379	0.326	0.374
ATT4	<b>0.730</b>	0.379	0.416	0.22	0.443	0.381	0.250	0.248	0.291
INT1	0.410	<b>0.873</b>	0.497	0.436	0.401	0.536	0.350	0.405	0.469
INT2	0.508	<b>0.924</b>	0.517	0.457	0.463	0.549	0.394	0.474	0.523
INT3	0.609	<b>0.859</b>	0.577	0.424	0.543	0.512	0.406	0.503	0.574
UTL1	0.468	0.517	<b>0.791</b>	0.306	0.484	0.490	0.370	0.386	0.403
UTL2	0.291	0.388	<b>0.795</b>	0.285	0.336	0.404	0.301	0.299	0.378
UTL3	0.497	0.542	<b>0.864</b>	0.442	0.532	0.589	0.424	0.436	0.498
PUSE1	0.304	0.347	0.344	<b>0.806</b>	0.383	0.406	0.456	0.31	0.330
PUSE2	0.336	0.353	0.341	<b>0.764</b>	0.405	0.463	0.415	0.225	0.382
PUSE3	0.332	0.474	0.360	<b>0.831</b>	0.415	0.394	0.449	0.41	0.471
TRUST1	0.601	0.372	0.417	0.373	<b>0.827</b>	0.418	0.402	0.338	0.460
TRUST2	0.536	0.493	0.507	0.486	<b>0.865</b>	0.557	0.500	0.466	0.547
TRUST3	0.469	0.434	0.488	0.454	<b>0.790</b>	0.539	0.507	0.495	0.565
TRUST4	0.593	0.397	0.437	0.332	<b>0.820</b>	0.471	0.347	0.407	0.438
TRUST5	0.656	0.485	0.483	0.417	<b>0.864</b>	0.549	0.403	0.405	0.499
COM1	0.518	0.450	0.472	0.314	0.470	<b>0.756</b>	0.306	0.433	0.487
COM2	0.493	0.454	0.342	0.36	0.403	<b>0.681</b>	0.368	0.342	0.377
COM3	0.509	0.500	0.467	0.348	0.503	<b>0.790</b>	0.386	0.435	0.509
COM4	0.427	0.508	0.545	0.494	0.444	<b>0.783</b>	0.396	0.454	0.462
COM5	0.512	0.528	0.522	0.478	0.520	<b>0.807</b>	0.483	0.500	0.534

	ATT	INT	UTL	PUSE	TRUST	COM	CONF	SAT	CKS
CONF1	0.494	0.380	0.403	0.478	0.532	0.457	<b>0.839</b>	0.419	0.429
CONF2	0.403	0.357	0.384	0.467	0.39	0.425	<b>0.860</b>	0.347	0.400
CONF3	0.301	0.341	0.346	0.426	0.379	0.384	<b>0.798</b>	0.39	0.384
SAT1	0.385	0.412	0.373	0.315	0.399	0.428	0.382	<b>0.754</b>	0.380
SAT2	0.341	0.354	0.324	0.256	0.349	0.367	0.324	<b>0.738</b>	0.365
SAT3	0.337	0.370	0.328	0.319	0.363	0.414	0.326	<b>0.758</b>	0.376
SAT4	0.367	0.425	0.375	0.319	0.428	0.497	0.364	<b>0.768</b>	0.458
CKS1	0.438	0.500	0.448	0.439	0.521	0.556	0.414	0.452	<b>0.877</b>
CKS2	0.392	0.513	0.444	0.433	0.505	0.515	0.433	0.433	<b>0.886</b>
CKS3	0.509	0.565	0.528	0.466	0.599	0.599	0.459	0.524	<b>0.919</b>

Table 5.4 The Cross Loading Output Using Smart PLS

Overall, the reliability and validity tests conducted on the measurement model are satisfactory. All reliability and validity tests are confirmed and this is an indicator that the measurement model for this study is valid and fit to be used to estimate parameters in the structural model.

## **5.2 Structural Model**

The following subsections discuss the tests used to assess the validity of the structural model for this study. As discussed in Chapter 4, the validity of the structural model is assessed using the coefficient of determination ( $R^2$ ) and path coefficients. In addition, this study also assesses the mediation relationships that are being proposed in the research model. The mediation relationships are tested using the guidelines proposed by Baron and Kenny (1986) and the significance of the mediating relationships are tested using Sobel's test (Z).

### **5.2.1 Coefficient of Determination ( $R^2$ )**

The  $R^2$  value indicates the amount of variance in dependent variables that is explained by the independent variables. Thus, a larger  $R^2$  value increases the predictive ability of the structural model. In this study, SmartPLS algorithm function is used to obtain the  $R^2$  values, while the SMartPLS bootstrapping function is used to generate the t-statistics values. For this study, the bootstrapping generated 500 samples from 220 cases. The result of the structural model is presented in Figure 5.1.

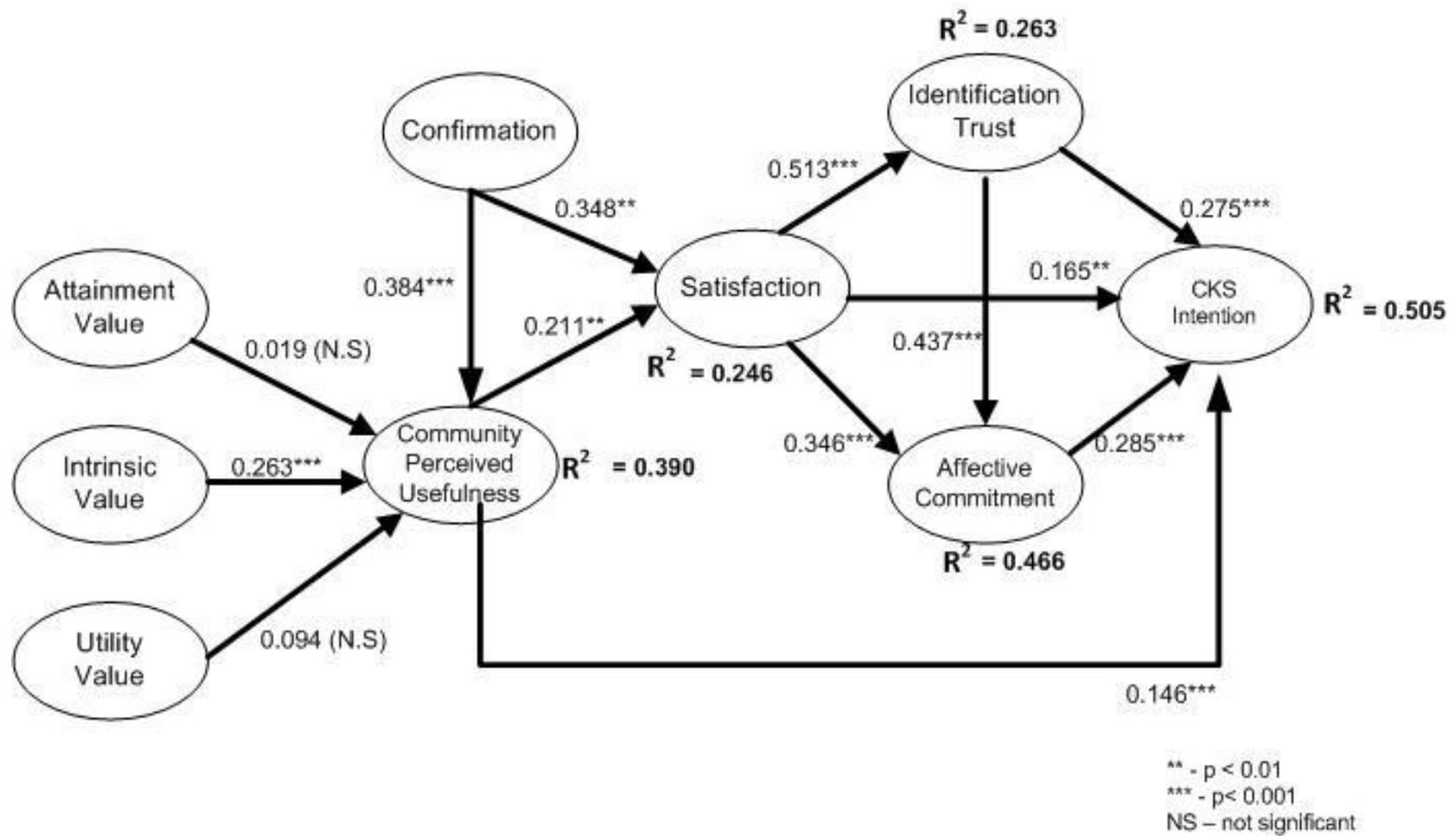


Figure 5.1 Results of Structural Model

Referring to Figure 5.1, satisfaction, community perceived usefulness, identification trust and affective commitment are able to explain 50.5% of the variance in continuous knowledge sharing intention (CKS). Meanwhile, satisfaction explains 26.3% of the variance in identification trust and 46.6% of variance in affective commitment. On the other hand, 24.6% of the variance in satisfaction is explained by community perceived usefulness and confirmation. Finally, confirmation, attainment, utility and intrinsic values explain 39% of the variance in community perceived usefulness (PUSE). Furthermore, the  $R^2$  for the continuous model constructs (i.e., CKS, SAT, and PUSE) and trust-commitment constructs, are comparable to recent findings in the literature (Chiu et al., 2011; Limayem & Cheung, 2011; Yen, 2009).

### **5.2.2 Path Coefficients**

Within the structural model, each path connecting two latent variables represented a hypothesis. Based on the analysis conducted on the structural model, it allows the researcher to confirm or disconfirm each hypothesis as well as understand the strength of the relationship between dependent and independent variables.

Using the SmartPLS algorithm output, the relationships between independent and dependent variables were examined. However, in SmartPLS in order to test the significant level, t-statistics for all paths are generated using the SmartPLS bootstrapping function. Based on the t-statistics output, the significant level of each relationship is determined. Table 5.5 lists down the path coefficients, observed t-statistics, and significance level for all hypothesised path. Using the results from the path assessment, the acceptance or rejection of the proposed hypotheses is determined. The testing of the proposed hypotheses is discussed in the next section.

<b>Dependent Construct</b>	<b>Independent Constructs</b>	<b>Path Coefficient (<math>\beta</math>)</b>	<b>Observed T – statistics</b>	<b>Significance Level</b>
<b>Continuous Knowledge Sharing (CKS) (<math>R^2= 0.505</math>)</b>	← AC	0.285	3.486	0.001
	← TRUST	0.275	3.948	0.001
	← SAT	0.165	2.206	0.05
	← PUSE	0.146	2.580	0.01
<b>Affective commitment (<math>R^2=0.466</math>)</b>	← SAT	0.346	4.097	0.001
	← TRUST	0.523	4.836	0.001
<b>Identification trust (<math>R^2= 0.263</math>)</b>	← SAT	0.513	4.421	0.001
<b>Satisfaction (<math>R^2= 0.246</math>)</b>	← PUSE	0.211	2.185	0.05
	← Confirmation	0.348	3.656	0.001
<b>Community perceived usefulness (<math>R^2= 0.369</math>)</b>	← Attainment value	0.019	0.274	N.S.
	← Intrinsic value	0.263	3.367	0.001
	← Utility value	0.094	1.174	N.S.
	← Confirmation	0.384	6.174	0.001

Table 5.5 Path Coefficients, Observed T- Statistics, Significant Level for All Hypothesised Paths

### 5.2.3 Hypotheses Testing

To validate the proposed hypotheses and the structural model, the path coefficient between two latent variables is assessed. Based on previous studies, the path coefficient value needs to be at least 0.1 to account for a certain impact within the model (Hair et al., 2011; Wetzels et al., 2009). Assessment of the path coefficient (refer Table 5.6) shows that all proposed hypotheses are supported, except for hypothesis H7 and hypothesis H9. From the analysis, supported hypotheses are significant at least at the level of 0.05, have expected sign directions (i.e., positive) and consist of a path coefficient value ( $\beta$ ) ranging from 0.146 to 0.523.

<b>Hypothesis statement</b>		<b>Result</b>
H1	Members' level of satisfaction has positive influence on members' continuous knowledge sharing intention within business online communities.	Supported
H2	Members' belief of community perceived usefulness has positive influence on members' continuous knowledge sharing intention within business online communities.	Supported
H3	Members' belief of community perceived usefulness has positive influence on members' level of satisfaction with the business online community.	Supported
H4a	Members' extent of confirmation has positive influence on members' level of satisfaction.	Supported
H4b	Members' extent of confirmation has positive influence on members' belief of community perceived usefulness.	Supported
H5	The relationship between satisfaction and continuous knowledge sharing intention is mediated positively by identification trust.	Supported
H6a	The relationship between satisfaction and continuous knowledge sharing intention is mediated positively by affective commitment.	Supported
H6b	Member's identification trust has positive influence on members' affective commitment.	Supported
H7	Members' attainment value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.	Not Supported
H8	Members' intrinsic value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.	Supported
H9	Members' utility value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.	Not Supported

Table 5.6 Summary of Hypothesis Testing

Based on the analysis, it shows that CKS is influenced directly by satisfaction ( $\beta=0.165$ ,  $t=2.206$ ,  $p<0.05$ ), and community perceived usefulness ( $\beta=0.146$ ,  $t=2.580$ ,  $p<0.01$ ). As a result, hypothesis H1 and hypothesis H2 are supported.

From the analysis, satisfaction is influenced directly by community perceived usefulness ( $\beta=0.211$ ,  $t=2.185$ ,  $p<0.05$ ) and confirmation ( $\beta=0.348$ ,  $t=3.656$ ,  $p<0.001$ ). As a result, hypothesis H3 and H4a are supported.

Further, from the analysis, affective commitment is influenced directly by identification trust ( $\beta=0.523$ ,  $t=4.836$ ,  $p<0.001$ ). As a result, hypothesis H6b is supported.

Meanwhile, community perceived usefulness is influenced directly by intrinsic value ( $\beta=0.263$ ,  $t=3.367$ ,  $p<0.001$ ) and confirmation ( $\beta=0.165$ ,  $t=2.206$ ,  $p<0.05$ ). As a result, hypothesis H8 and H4b are supported.

On the other hand, community perceived usefulness is not influenced directly by attainment value ( $\beta=0.019$ ,  $t=0.274$ , not significant) and utility value ( $\beta=0.94$ ,  $t=1.174$ , not significant). As a result, hypothesis H7 and H9 are not supported.

### 5.3 Mediating Analysis

According to Henseler et al. (2009), assessing the direct and indirect relationships between exogenous and endogenous latent variable is another important evaluation of a structural model. This direct and indirect relationship can be examined by conducting mediating or moderating analysis. In this section, it only assessed the significance of the mediating relationships. This is based on the theoretical reasoning that suggests trust and commitment as two key mediating factors that influenced long-term relationships (Morgan & Hunt, 1994).

Figure 5.2 shows the result of the post-hoc analysis conducted to examine the mediating effect of identification trust and affective commitment on continuous knowledge sharing intention. The post-hoc analysis is started by examining the influence of satisfaction on continuous knowledge sharing intention. From the analysis continuous knowledge sharing intention is influence positively by satisfaction ( $\beta=0.528$ ,  $t= 4.092$ ) (please refer to Figure 5.2 A). To test the mediating effect of identification trust, the mediating variable is introduced into the relationship between satisfaction and continuous knowledge sharing intention (please refer Figure 5.2 B). From the analysis, identification trust is identified to influence positively continuous knowledge sharing intention ( $\beta=0.459$ ,  $t=5.516$ ) and has been influenced positively by satisfaction ( $\beta=0.513$ ,  $t=4.167$ ). The introduction of the mediating variable reduces the coefficient value between satisfaction and continuous knowledge sharing from 0.528 to 0.292. Based on Baron and Kenny's guidelines, this study concludes that identification trust has mediated partially the relationship between satisfaction and continuous knowledge sharing intention. Further based on analysis, it also shows that the introduction of identification trust as mediator have increased the  $R^2$  value from 0.279 (or 27.9%) to 0.434 (or 43.4%).

Then the post-hoc analysis is continued to examine the mediating effect of affect commitment on the relationship between satisfaction and continuous knowledge sharing intention (please refer to Figure 5.2 C). From the analysis, affective commitment is identified to influence continuous knowledge sharing intention

positively ( $\beta=0.479$ ,  $t=4.070$ ) and has been influenced positively by satisfaction ( $\beta=0.571$ ,  $t=4.416$ ). The introduction of the mediating variable reduces the coefficient value between satisfaction and continuous knowledge sharing from 0.528 to 0.254. Based on Baron and Kenny's guidelines, this study concludes that affective commitment partially has mediated the relationship between satisfaction and continuous knowledge sharing intention. Further based on analysis, it also shows that the introduction of affective commitment as mediator have increased the  $R^2$  value from 0.279 (or 27.9%) to 0.444 (or 44.4%).

Finally, the effect of both mediating effect also is tested in the post-hoc analysis (refer Figure 5.2 D). From the analysis, both factors partially have mediated the relationship between satisfaction and continuous knowledge sharing intention. The result showed that satisfaction has a positive influence on identification trust ( $\beta=0.513$ ,  $t=4.227$ ) and affective commitment ( $\beta=0.571$ ,  $t=4.516$ ); while identification trust ( $\beta=0.315$ ,  $t=4.683$ ) and affective commitment ( $\beta=0.329$ ,  $t=3.464$ ) positively influence continuous knowledge sharing intention. The coefficient value between satisfaction and continuous knowledge sharing decreased from 0.528 to 0.178 ( $t=2.317$ ). While the  $R^2$  value increased from 0.279 (or 27.9%) to 0.492 (or 49.2%).

As a result of the post-hoc analysis, hypothesis H5 and hypothesis H6a are supported.

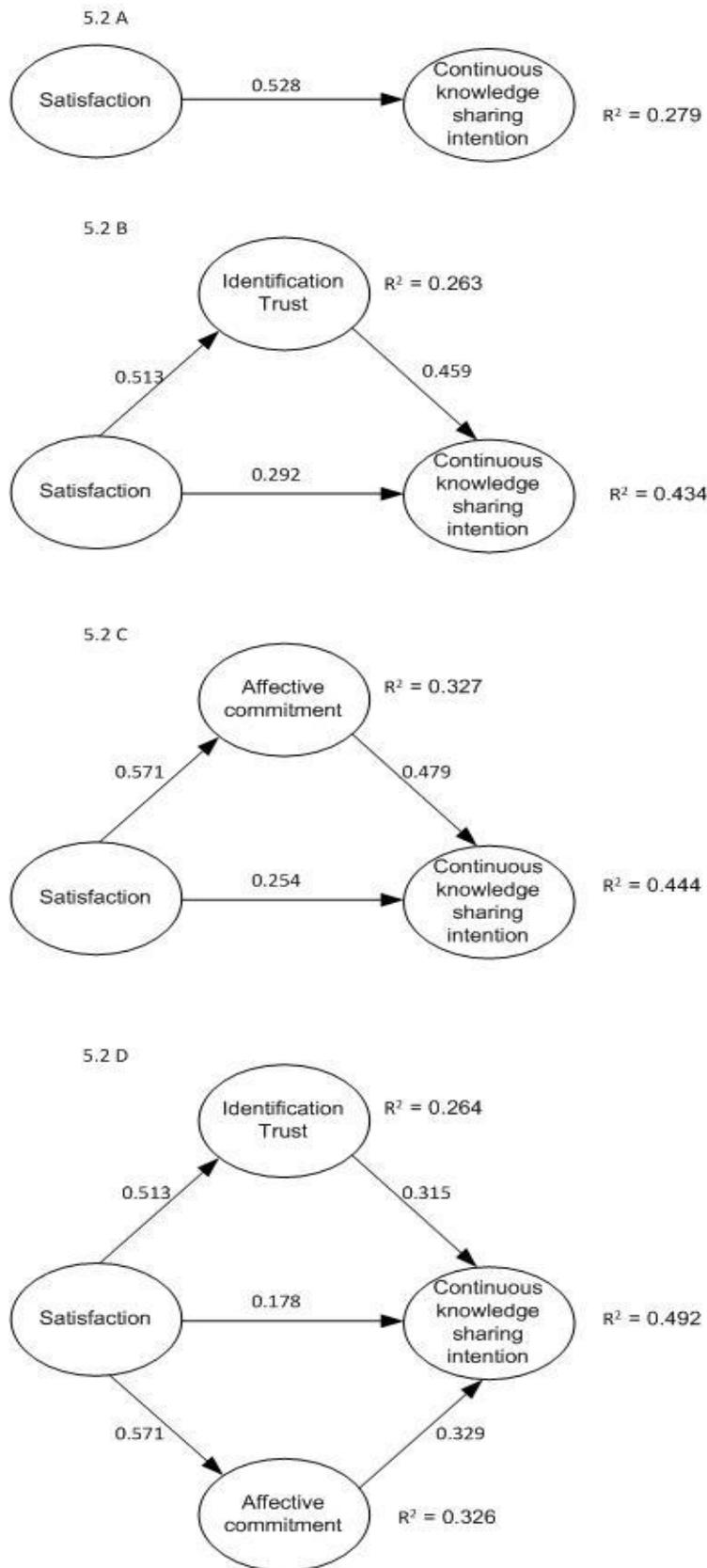


Figure 5.2 The Results of Post-hoc Analysis

Sobel's test is then used to test the significance of the mediating relationships hypothesised in this study. Table 5.7 shows the summary of the direct and indirect relationships based on the structural model. Based on Table 5.10, the relationship between satisfaction and CKS is mediated significantly by identification trust and affective commitment. The Z value greater than 1.96 explains both identification trust ( $Z= 3.183, p < 0.01$ ) and affective commitment ( $Z =3.203, p < 0.01$ ) as significant mediators. The strength of the relationship between identification trust ( $\beta=0.315$ ) and affective commitment ( $\beta=0.329$ ) on CKS shows that both factors have equal importance in affecting members' continuous knowledge sharing intention within business online communities.

	Path	Path Coefficient	Standard Error	Type of mediation	Z	Result
Path a	SAT → AC	0.571	0.1149			The relationship between satisfaction and CKS is significantly mediated by AC (p < 0.01).
Path b	AC → CKS	0.479	0.1017			
Path c	SAT → CKS	0.528				
Path c'	SAT → AC → CKS	<b>0.254</b>		<b>Partial</b>	<b>3.203</b>	
Path a	SAT → TRUST	0.513	0.1114			The relationship between satisfaction and CKS is mediated by TRUST (p < 0.01).
Path b	TRUST → CKS	0.459	0.0871			
Path c	SAT → CKS	0.528				
Path c'	SAT → TRUST → CKS	<b>0.292</b>		<b>Partial</b>	<b>3.183</b>	

Table 5.7 Sobel's Test Results (Z value)

#### 5.4 Summary of Chapter 5

SmartPLS is used to investigate the determinants influencing members' continuous knowledge sharing intention within business online communities. A number of observations can be made from the analysis conducted on the measurement and structural model.

First, the structural model demonstrated satisfactory reliability and validity measures. In terms of internal consistency, all constructs have composite reliability values more than 0.7. All item loadings are greater than 0.7 and are significant at the level of 0.001, demonstrating indicator reliability. The measurement model also demonstrated satisfactory convergent and discriminant validity by having AVE value greater than 0.50, all manifest variables loaded on their respective latent variable and the square roots of AVE for each construct are greater than its inter-correlation.

Second, the validation of the structural model demonstrated satisfactory results. The  $R^2$  were substantial with a value of 51%. This demonstrates strong explanatory power. Moreover, nine out of twelve proposed paths within the structural model are supported. Based on the path coefficient assessment, nine proposed relationships have  $\beta$  value greater than 0.1 and are significant at least at the level of 0.01. Finally, the structural model exhibited two significant mediating relationships. Both constructs have partial mediation effects on the relationship between satisfaction and CKS. The next chapter provides a summary of the main findings and the discussion of the theoretical constructs used in this thesis in connection with the results obtained.

# CHAPTER 6.0 Discussion of Results

## 6.0 Overview of Chapter 6

This chapter provides a summary of the hypotheses in relation with the findings obtained from the data analysis presented in Chapter Five. The discussions of the hypotheses are presented based on the four research questions outlined in Chapter Three. This chapter also analyses the findings of this study in the light of existing literature. This chapter reports the consistency or inconsistency of the research findings with previous studies. This chapter ends with a summary of the chapter.

## 6.1 Summary of Main Findings

Based on the research findings, members' continuous knowledge sharing intention within business online communities is found to be influenced positively by their level of satisfaction and belief of community perceived usefulness. Identification trust and affective commitment also are found to have significant partial mediation effects on the relationship between satisfaction and members' continuous knowledge sharing intention. Further, members' affective commitment is demonstrated to be influenced positively by identification trust. The results also demonstrated that members' level of satisfaction is influenced positively by their belief of community perceived usefulness and confirmation. Finally, members' belief of community perceived usefulness is influenced positively by intrinsic value and confirmation. From the analysis, the positive relationships between members' attainment value and utility value on perceived usefulness did not receive statistical support.

As shown in Table 6.1, a summary of the research hypotheses are provided under each research question. Nine hypotheses (i.e., H1, H2, H3, H4a, H4b, H5, H6a, H6b and H8)

are supported by the empirical findings and two hypotheses (i.e., H7 and H9) are not supported.

Research Questions and Hypotheses Statements		Result
<b>Research Question 1:</b> How do satisfaction and community perceived usefulness influence members' continuous knowledge sharing intention within a business online community?		
H1	Members' level of satisfaction has positive influence on members' continuous knowledge sharing intention within business online communities.	Supported
H2	Members' belief of community perceived usefulness has positive influence on members' continuous knowledge sharing intention within business online communities.	Supported
<b>Research Question 2:</b> How do identification trust and affective commitment mediates the relationship between members' level of satisfaction and continuous knowledge sharing intention?		
H5	The relationship between satisfaction and continuous knowledge sharing intention is mediated positively by identification trust.	Supported
H6a	The relationship between satisfaction and continuous knowledge sharing intention is mediated positively by affective commitment.	Supported
H6b	Member's identification trust has positive influence on members' affective commitment.	Supported
<b>Research Question 3:</b> How do community perceived usefulness and confirmation influence members' levels of satisfaction?		
H3	Members' belief of community perceived usefulness has positive influence on members' level of satisfaction with the business online community.	Supported
H4a	Members' extent of confirmation has positive influence on members' level of satisfaction.	Supported
H4b	Members' extent of confirmation has positive influence on	Supported

	members' belief of community perceived usefulness.	
<b>Research Question 4:</b> How do the dimensions of the expectation value model (i.e., attainment, intrinsic and utility values) influence members' beliefs of community perceived usefulness?		
H7	Members' attainment value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.	Not supported
H8	Members' intrinsic value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.	Supported
H9	Members' utility value gained from continuous sharing knowledge has positive influence on members' belief of community perceived usefulness.	Not supported

Table 6. 1 Summary of the Research Questions and Hypotheses

## 6.2 Discussion of the Survey Findings

In this section, the findings of the Web survey are presented in accordance with the underlying research questions. The results are discussed and compared with related previous studies.

**Research Question 1: How do satisfaction and community perceived usefulness influence members' continuous knowledge sharing intention within a business online community?**

In this study, satisfaction has been identified to have positive influence on members' continuous knowledge sharing intention ( $\beta = 0.165$ ,  $t = 2.206$ ,  $p < 0.05$ ). This result is consistent with previous studies that examined continuous knowledge sharing intention using online community (Chen, 2007; Chiu et al., 2011; Fang & Chiu, 2010; Jin et al., 2007; Jin et al., 2010). For instance, Jin et al. (2010) examined the influence of satisfaction on continuous knowledge sharing intention using a bulletin board based

community. In that study, satisfaction also has been identified as the strongest predictor of continuous knowledge sharing intention. The findings of this study also are aligned with previous studies that examined user's continuous use intention using IS applications (e.g. online banking application, mobile Internet, web-based learning) (Bhattacharjee, 2001b; Limayem & Cheung, 2008; Thong et al., 2006), where previous studies have demonstrated empirically that continuous intention is influenced directly by users' level of satisfaction.

In this study, satisfaction refers to as an evaluative function used to assess members' positive or negative feelings toward the use of business online communities when sharing knowledge. This study uses Ong and Lai's (2007) satisfaction measures to assess members' level of satisfaction. It measures members' level of satisfaction towards the business online community to support the knowledge sharing activities. From the analysis, it shows that members of business online community are satisfied with the quality of shared knowledge, classifications/mapping of knowledge, ability to personalise knowledge and supportive knowledge community.

Based on the research findings, besides satisfaction, members' continuous knowledge sharing intention also is being identified to be influenced by their belief of community perceived usefulness ( $\beta = 0.146$ ,  $t = 2.580$ ,  $p < 0.01$ ). This finding is in line with previous studies that examined continuous use behaviour (Hong et al., 2006; Limayem & Cheung, 2011; Roca & Gagne, 2008; Thong et al., 2006). According to Roca and Gagne (2008), users who believe that they will achieve positive outcome (i.e., usefulness) from using the application will tend to keep using the application. Members will have positive feeling of community perceived usefulness when the community is able to provide them with knowledge that can be used in their workplace or even daily lives (Lu et al., 2011). The positive relationship between community perceived usefulness and knowledge sharing has emerged within knowledge sharing literature (Bock, Kankanhalli, & Sharma, 2006; Sharratt & Usoro, 2003; Taylor, 2004). This study extends the relationship by demonstrating that members' continuous knowledge sharing within business online communities is influenced by their belief of community perceived usefulness to improve or update members' knowledge.

Hence, in terms of the first research question, this study confirms that members' level of satisfaction and belief of community perceived usefulness are two important factors that have positive influence on members' continuous knowledge sharing intention within business online communities.

**Research Question 2: How do identification trust and affective commitment mediate the relationship between members' level of satisfaction and continuous knowledge sharing intention?**

To answer the second research question, a post-hoc analysis is conducted. The objective of this post-hoc analysis is to demonstrate that identification trust and affective commitment mediate the relationship between members' level of satisfaction and continuous knowledge sharing intention within business online communities.

The post-hoc analysis findings demonstrated that these two constructs partially mediate the relationship between satisfaction and continuous knowledge sharing intention. The mediating relationships are found to be significant with identification trust ( $Z = 3.183$ ,  $p < 0.01$ ) and affective commitment ( $Z = 3.203$ ,  $p < 0.01$ ) partially mediate the relationship between satisfaction and continuous knowledge sharing intention.

From the analysis, this study is able to demonstrate that continuous knowledge sharing intention is influenced positively by satisfaction ( $\beta = 0.528$ ,  $t = 4.092$ ,  $p < 0.01$ ); satisfaction is related positively to identification trust ( $\beta = 0.513$ ,  $t = 4.167$ ,  $p < 0.01$ ) and affective commitment ( $\beta = 0.571$ ,  $t = 4.416$ ,  $p < 0.01$ ); and continuous knowledge sharing are influenced positively by identification trust ( $\beta = 0.459$ ,  $t = 5.515$ ,  $p < 0.01$ ) and affective commitment ( $\beta = 0.479$ ,  $t = 4.070$ ,  $p < 0.01$ ) These findings support the guidelines of Kenny and Baron's in determining a mediation effect.

From the analysis, also it demonstrated that identification trust has a partial mediating effect on the relationship between satisfaction and continuous knowledge sharing intention. This is because the introduction of identification trust as mediating factor reduces the coefficient value between satisfaction and continuous knowledge sharing intention from 0.528 to 0.292. According to Kenny and Baron (1986), a partial mediation effect occurs when the introduction of mediating variables is not able to reduce the coefficient value between predictor and outcome to zero. The introduction of identification trust as a mediating variable has increased the  $R^2$  from 0.279 to 0.434. This result is consistent with previous studies (Caceres & Paparoidamis, 2007; Kim, Hong, Min, & Lee, 2011; Wang, 2009b).

Further, this study also demonstrated that affective commitment has a partial mediation affect as it only reduced the coefficient value between satisfaction and continuous knowledge sharing intention from 0.528 to 0.254. Also, the introduction of affective commitment as a mediating variable has increased the  $R^2$  from 0.279 to 0.444. This result is consistent with previous studies (Hsu et al., 2010; Morgan & Hunt, 1994).

An additional test is also conducted where both mediating variables are introduced together in a same model. From the analysis, the introduction of both mediating variables has reduced the coefficient value between satisfaction and continuous knowledge sharing from 0.528 to 0.178. The  $R^2$ , on the other hand, increased from 0.279 to 0.492. These results clearly show that the introduction of these two mediating variables can provide a richer picture of the relationship.

Based on the results, members' affective commitment has a more dominant mediating effect on continuous knowledge sharing intention compared to identification trust. These results are consistent with previous studies that used commitment and trust as mediating factors within an online community context (Caceres & Paparoidamis, 2007; Kim et al., 2008; Yen, 2009).

According to Caceres and Paparoidamis (2007), within an online community context, commitment acts as an important mediator compared to trust when it comes to maintaining positive attitude within the community. Since an online community is based just on shared information, the existence of a strong sense of cohesiveness and belongingness with other members is important as members can switch easily to another alternative community by just a click (Kim et al., 2008). However, the role of trust is not deniable as the existence of trust together with commitment is important in developing a high quality successful relationship that is able to influence continuous behavioural intention (Caceres & Paparoidamis, 2007).

In addition, the research findings also show that affective commitment is influenced directly by identification trust ( $\beta = 0.523$ ,  $t = 4.836$ ,  $p < 0.001$ ). This strong influence is consistent with previous studies in continuous use literature that tested the relationship between trust and commitment (Yen, 2009). For instance, Yen (2009) demonstrates that members' commitment is influenced positively by their level of trust. According to this author, trust is an important factor as it helps to reduce opportunistic behaviour by other members. Members with a high level of trust usually care about others and would not take advantage over others (Yen, 2009). Thus, members who trust others will have a better commitment to maintain their relationship with others within the community.

Hence, with regard to the second research question, this study confirms that identification trust and affective commitment have a significant partial mediating effect on the relationship between members' level of satisfaction and continuous knowledge sharing intention.

### **Research Question 3: How do community perceived usefulness and confirmation influence members' levels of satisfaction?**

Based on ISCM, satisfaction is influenced positively by users' beliefs of perceived usefulness and confirmation of expectations (Bhattacharjee, 2001b). Perceived usefulness is identified as an important determinant of users' level of satisfaction (Bhattacharjee, 2001a, 2001b; Hong et al., 2006; Saeed & Abdinnour, 2008; Thong et al., 2006). According to Bhattacharjee (2001b), perceived usefulness acts as a stimulus to enhance ones' level of satisfaction. For instance, Limayem and Cheung (2011) report that students achieved satisfaction using an e-learning application if it is perceived as useful in helping their learning related tasks.

Based on the research findings, community perceived usefulness is identified to influence members' feeling of satisfaction positively ( $\beta=0.211$ ,  $t=2.185$ ,  $p < 0.05$ ). Thus, members who believe that the business online communities are able to help them obtained additional knowledge that is useful to improve their performance in the workplace or daily lives will be more likely to feel satisfied. This result is consistent with previous studies that examined the direct relationship between perceived usefulness and satisfaction (Bhattacharjee, 2001a, 2001b; Hong et al., 2006; Saeed & Abdinnour, 2008; Thong et al., 2006).

Based on the research findings, confirmation has direct influence on both satisfaction ( $\beta=0.348$ ,  $t=3.656$ ,  $p < 0.001$ ) and community perceived usefulness ( $\beta = 0.384$ ,  $t = 6.174$ ,  $p < 0.001$ ). These relationships receive support from previous studies (Bhattacharjee, 2001b; He & Wei, 2009; Limayem & Cheung, 2011; Sorebo et al., 2009; Thong et al., 2006). For example, He and Wei (2009) demonstrate that users' satisfaction increase when they believe that their expectations (using Knowledge Management System) are confirmed. Confirmation is used repeatedly to refine and modify users' expectations (e.g. perceived usefulness) (Sorebo et al., 2009). These direct relationships are consistent with previous studies that examined continuous use topic (Bhattacharjee, 2001b; He & Wei, 2009; Limayem & Cheung, 2011; Sorebo et al., 2009; Thong et al., 2006).

Further, based on related literature, confirmation also is linked positively to perceived usefulness because it implies realisation of the expected benefits of using a system (Bhattacharjee, 2001b). According to Bhattacharjee and Barfar (2011), users' level of satisfaction is influenced by how users confirmed their expectations during actual use. If users feel the actual performance of a system exceeds their initial expectations, users will experience positive confirmation. Positive confirmation indicates that the system is able to fulfil users' expectations (e.g., perceived usefulness) (Bhattacharjee, 2001b; Bhattacharjee & Premkumar, 2004).

Hence, for the third research question, this study confirms that members' level of satisfaction is influenced positively by community perceived usefulness and confirmation.

**Research Question 4: How do the dimensions of the expectation value model (attainment, intrinsic and utility values) influence members' beliefs of community perceived usefulness?**

Within this study, expectation value model determinants are used to predict members' belief of community perceived usefulness. Based on the theoretical framework, this study proposes that members' community perceived usefulness is influenced by attainment, intrinsic and utility value.

Based on the research findings, only intrinsic value has significant positive influence on members' belief of community perceived usefulness ( $\beta=0.263$ ,  $t=3.367$ ,  $p < 0.001$ ). This finding receives strong support from the knowledge sharing and IS adoption literature (Lee et al., 2006; Saade, 2007; Wasko & Faraj, 2005). This is because when users are motivated intrinsically, they will become more productive and effective as they are enjoying using the system (Csikszentmihalyi, 1990). According to Cho et al. (2010), members share knowledge out of good will. By sharing with others, what they know can intrinsically influence their knowledge sharing attitude. Engaging in intellectual discussions and helping others to solve problems is challenging, fun and useful as it

helps users to renew, reshape and give new insight to one's thinking (Wasko & Faraj, 2000, 2005). Thus, members who believe that sharing knowledge is able to provide them with desired intrinsic enjoyment will have stronger beliefs of perceived usefulness (Saade, 2007; Venkatesh & Davis, 2000).

On the other hand, the relationship between community perceived usefulness and attainment value ( $\beta=0.019$ ,  $t=0.274$ , N.S.); and community perceived usefulness and utility value ( $\beta=0.094$ ,  $t=1.174$ , N.S.) did not receive statistical support. As for attainment value, one possible reason for its non-significant relationship with community perceived usefulness is because reputation is not an important factor when contributing comments to online communities (Utz, 2009). Within consumer-based online community, being active knowledge contributors within the community will not be enough to boost ones' status or reputation (Marett & Joshi, 2009). According to Utz (2009), within a business online community context, reputation can become one of the main factors to drive active participation if the community is equipped with a proper reputation system. Within an online setting, knowing others' history is important for members to make future decisions (Utz, 2009). From the analysis conducted in this study, most of the business online communities that are involved in the Web survey are not equipped with a proper reputation system. As a result, members are unable to associate themselves with intellectual recognition when sharing knowledge. This is because the ability to elevate ones' social status (e.g., being seen as expert, skilful) when sharing knowledge using business online communities will have positive influence on members' beliefs of perceived usefulness (Venkatesh & Bala, 2008; Venkatesh & Davis, 2000).

Meanwhile, one possible explanation for the non-significant relationship between utility value and community perceived usefulness is that online knowledge sharing behaviour has been identified to have no significant relationship with the community outcome expectations (Hsu et al., 2007). This is because of the voluntary nature of a business online community, which hinders members from having higher utility value. Members view the act of knowledge sharing as less useful because they feel that their sharing within the community is not as important and will not contribute much to the

development of the community (Lee et al., 2006). In fact, the lack of reciprocal norms within business online communities also limits members' personal goals of obtaining mutual reciprocal benefits. According to Weirtz and de Ruyter (2007) within a business online community, to obtain help from other members, users have to interact. Through interaction with others, members can request for help. Thus, when members believe that through the community they are unable to achieve a personal goal, the community is perceived as less useful. This is because members form their belief of perceived usefulness by conducting a mental assessment to match the consequences of using the system with their future goals (Saade, 2007; Venkatesh & Davis, 2000).

It should be noted that although the relationships between attainment value and utility value dimensions on community perceived usefulness are found to be non-significant, these constructs are not dropped from the research model. Perhaps one plausible reason is that, within a business online community, members belief of community perceived usefulness is more driven by intrinsic value (e.g. helping others) (Lee et al., 2006). However, within a professional online community, extrinsic motivations (e.g. reputation, community outcome expectation) are identified as dominant factors influencing knowledge sharing behaviour (Chiu et al., 2006; Wasko & Faraj, 2005). Thus, all three dimensions are retained in order to ensure sufficient breadth of coverage to determine member's community perceived usefulness of other types (e.g. professional online community).

Hence, with the fourth research question, this study confirms that members' community perceived usefulness is influenced positively by intrinsic value but not by attainment and utility values.

### **6.3 Summary of Chapter 6**

This chapter discusses the findings presented in Chapter 5. All four research questions are answered and the eleven hypotheses are discussed in the light of previous studies.

Based on the results, members' continuous knowledge sharing intention is influenced by satisfaction and community perceived usefulness; and partially mediated by identification trust and affective commitment. Meanwhile, members' level of satisfaction is influenced directly by community perceived usefulness and confirmation. Finally, members' belief of community perceived usefulness is influenced directly by intrinsic value and confirmation. As a result from the analysis, the following hypotheses are supported – H1, H2, H3, H4a, H4b, H5, H6a, H6b and H8, while hypotheses H7 and H9 are not supported by the research findings. In the next chapter, an overall summary of the research and concluding remarks are presented.

# CHAPTER 7.0 Conclusions

## 7.0 Overview of Chapter 7

This chapter begins with a section that summarises each of the previous six chapters. Within this section, it provides the conclusion of how the four research questions are answered by this study. It is then followed by two sections that are dedicated to discussing academic and practical contributions made by this study. This is followed by a section that highlights the limitations of this study, and then makes suggestions and provides guidelines for future work. Finally, this thesis ends with concluding remarks.

## 7.1 Summary of the Research

The first chapter provides the underlying foundation for this study. It explains the importance and motivation of this study. Overall, this study aims to understand the determinants of members' continuous knowledge sharing intention within business online communities. This study is motivated by a lack of conceptualisation of continuous knowledge sharing and also by the call for more empirical research to examine the determinant factors of continuous knowledge sharing intention within an online community context (Jin et al., 2009; Sangwan, 2005). This chapter elaborates briefly on the literature on continuous knowledge sharing. The elaboration is made based on the results of a literature analysis conducted on previous works that focused on this topic. Then the chapter also discusses about the theoretical foundation of this study. In this study, three theoretical lenses—information systems continuous use model, commitment-trust theory and the expectation value model—are conceptualised in modelling the research model. The selections of these theories are based on relevancy to examine the continuous phenomenon. In general, information systems continuous use model is used as the underlying theory to examine continuous

knowledge sharing. While, commitment-trust theory is adopted to help this study understand the effect of trust and commitment on continuous knowledge sharing. The expectation value model, on the other hand, is used to predict members' beliefs of community perceived usefulness. Finally, this chapter provides a brief discussion on the methodology used and contributions expected from this study.

The main objective of Chapter 2 is to provide an overview and understanding of the patterns in previous studies that examined the continuous knowledge sharing topic. A literature analysis was conducted on previous studies that focused on this topic. To limit the scope of the analysis, only previous studies that examined the continuous knowledge sharing topic and were published from 2001 to 2011 were reviewed and analysed. Based on the analysis, this study has identified knowledge gaps that required further attention. Chapter 2 also discusses the conceptualisation of continuous knowledge sharing (i.e., characteristics, underlying theory supporting continuous behaviour) based on the IS adoption literature; examines and analyses past works that focused on continuous knowledge sharing within online communities context; and discusses the context of this study—business online community.

In Chapter 3, the focus is to review and analyse the three theories adopted (i.e., information systems continuous use model, commitment-trust theory and the expectation value model) by this study and its relation to the continuous knowledge sharing topic. From the analysis, four research questions are derived, eleven research hypotheses proposed, and a research model developed.

Chapter 4 describes the research design employed in this study. A Web survey is used as the data collection technique to gather field information from business online community members who have experience sharing knowledge to the community. The Web survey raised business online community members' views on how technology, personal and social related enabling factors influenced their continuous knowledge sharing intention. This chapter also discusses the data analysis technique used in this study. In this study, a structural equation modelling (SEM) technique is used to analyse the research model. To be specific, SEM-partial least squares (PLS) is adopted to assess

the validity and reliability of this study's measurement and structural model. At the end of this chapter, the preliminary findings (i.e., demographic statistics) of the actual survey are reported.

Within Chapter 5, the reliabilities and validities of the research model together with the research hypotheses are assessed according to the methodology described in Chapter 4. The findings are presented in terms of the measurement model and structural model. Further, the findings of the mediating relationships also are presented in accordance to Baron and Kenny's mediating analysis procedures.

Finally, in Chapter 6, a summary of the hypotheses and research findings is discussed in accordance with the research questions. Overall, nine out of eleven research hypotheses are supported (i.e. H1, H2, H3, H4a, H4b, H5, H6a, H6b, and H8) by the research findings and two research hypotheses are not supported (i.e. H7 and H9). The summary is presented below.

**Research Question 1:** How do satisfaction and community perceived usefulness influence members' continuous knowledge sharing intention within a business online community?

The research findings showed that satisfaction and community perceived usefulness influenced positively members' continuous knowledge sharing intention within business online communities. In this study, satisfaction emerged as a stronger predictor compared to community perceived usefulness. These results validated both hypotheses H1 and H2.

**Research Question 2:** How do identification trust and affective commitment mediates the relationship between members' level of satisfaction and continuous knowledge sharing intention?

The research findings showed that both identification trust and affective commitment significantly mediated the relationship between satisfaction and members' continuous

knowledge sharing intention. These two factors have been identified to mediate the relationship partially between satisfaction and continuous knowledge sharing intention. From the analysis, members' affective commitment is found to have a more dominant mediating effect on continuous knowledge sharing intention compared to identification trust. This study also showed that members' affective commitment is influenced directly by identification trust. These results validated hypotheses H5, H6a and H6b.

**Research Question 3:** How do community perceived usefulness and confirmation influence members' levels of satisfaction?

The research findings showed that members' community perceived usefulness and confirmation directly influenced members' level of satisfaction. Also, this study identified that members' beliefs of community perceived usefulness is influenced positively by confirmation. These results validated hypotheses H3, H4a, and H4b.

**Research Question 4:** How do the dimensions of the expectation value model (i.e., attainment, intrinsic and utility values) influence members' beliefs of community perceived usefulness?

The research findings showed that members' community perceived usefulness is influenced positively only by intrinsic value. As for attainment and utility value, they did not receive statistical support. These results only validated hypothesis H8 and not H7 and H9.

## **7.2 Theoretical Contributions**

In general, this thesis has made contributions to research by further explaining the characteristics of continuous knowledge sharing and the determinants of this continuous intention within a business online community context. The theoretical contributions are presented as below:

First, this thesis contributes by giving a better understanding of continuous knowledge sharing. It extended the current understanding of continuous knowledge sharing literature by examining the characteristics of continuous knowledge sharing; and identifying the theoretical underpinnings that ground this continuous behaviour. IS adoption literature is used as the building block in conceptualising continuous knowledge sharing characteristics. From the literature analysis, this study concludes: i) continuous knowledge sharing is a post-adoption behaviour; ii) continuous knowledge sharing is conceptualised best as a separate construct from knowledge sharing; iii) continuous knowledge sharing does not share the same set of determinants used to explain knowledge sharing and the determinants of continuous knowledge sharing must be continuous in nature; and iv) the information systems continuous use model is used as the underlying theoretical lens to examine continuous knowledge sharing within online communities.

Second, this study is one of the first to integrate all three theories (i.e., information systems continuous use model, commitment-trust theory and the expectation value model) into one research model, in order to clarify further what determines members' continuous knowledge sharing intention within business online communities. In this study, information systems continuous use model is used as the basis to understand continuous knowledge sharing. This study follows strictly the main assumption of this theoretical model by only using continuous related factors as determinants. In order to do that, commitment-trust theory and the expectation value model are adopted as these theories have been used to examine continuous phenomena. In this study, the expectation value model is used to examine the effect of trust and commitment on members' continuous knowledge sharing behaviour; identification trust and affective commitment are used to represent trust and commitment; and the expectation value model determinants are adopted to explain members' beliefs of community perceived usefulness. Using these three theories, this study provides a mechanism to understand members' continuous knowledge sharing using the three main categories of online knowledge sharing enablers—social, technology and personal/motivation. The integration of these three enablers is important as it gives a more comprehensive understanding of the determinants of continuous knowledge sharing intention. Also, it

helps to overcome the lack of previous studies that usually dealt with the influence of social, technology and personal enablers separately.

Third, this study also contributes to further development of a robust theory of the information systems continuous use model by confirming which dimensions are most important within an online knowledge sharing context. Further, this study has moved the continuous use body of knowledge forward by proposing the use of commitment-trust theory and the expectation value model to extend the information systems continuous use model theoretical model. This study is one of the first to extend the information systems continuous use model by proposing: 1) the use of trust and commitment as two mediating factors. These factors are proposed to mediate the relationship significantly between satisfaction and continuous knowledge sharing intention. The conceptualisation of these two factors is based on commitment-trust theory; and 2) the use of expectation value model antecedents (i.e., attainment, intrinsic and utility value) to determine members' beliefs of community perceived usefulness. This extension is made because members' beliefs of perceived usefulness have been identified as the main factor in influencing members' level of satisfaction and continuous intention within information systems continuous use model theoretical framework. Further, previous studies also suggested that there is a need to understand what influence members' beliefs of perceived usefulness as this construct are important towards determining members' continuous use intention (Lee, Cheung, & Chen, 2005).

Fourth, this study supports the nomological validation proposed by commitment-trust theory in the context of continuous knowledge sharing intention within business online communities. As proposed by commitment-trust theory, both identification trust and affective commitment have been identified to mediate members' continuous knowledge sharing intention significantly. The findings of this study provide additional support to the robustness of this theory in explaining almost all relational exchanges. Also, the results of this study extend the current understanding of the role of trust and commitment when examining the continuous knowledge sharing topic. This is because previous studies often dealt with trust and commitment as having a direct relationship

with continual intention in an online community context (Cheung & Lee, 2007a; Fang & Chiu, 2010; Jin et al., 2010; Wang & Datta, 2006). Based on the findings of this study, it shows that identification trust and affective commitment play important roles as two key mediating variables that affect continuous knowledge sharing intention within business online communities. Also this study provides further support on the correlation between identification trust and continuous knowledge sharing intention as claimed by previous studies (Hsu et al., 2007).

Finally, this study contributes by identifying the factors influencing members' perceived usefulness within a continuous knowledge sharing context. This study is the first to examine the influence of members' beliefs of community perceived usefulness within a continuous context. Building the understanding of what influences these beliefs is important as it can give better knowledge of how to motivate members to view this community as useful. When members have strong beliefs that the community is useful, it will give a better chance to encourage continuous participation by the members (Lu et al., 2011).

### **7.3 Practical Contributions**

The findings of this study provide important implications for business organisations that utilise online community as a platform for its consumers to share knowledge. Business online community owners will be interested in the findings of this study as it gives better understanding on how to encourage continuous knowledge sharing within the community. With this knowledge, business online community owners can understand: 1) the basis upon which members evaluate their level of satisfaction when using business online communities, 2) how to promote cooperative (trust) and committed surrounding within a business online community, and 3) how to encourage members' beliefs of perceived usefulness when using business online communities. The practical contributions are presented below.

The results of this study show that member's feeling of satisfaction directly influence continuous knowledge sharing intention within business online communities. Based on

the research findings, business online community owners can increase members' levels of satisfaction by giving attention to the community in the following areas: 1) knowledge representation. It is important to ensure that the knowledge is correct, integral, easy to read and logical; 2) clear classification of knowledge. This clear classification is important to help collect and integrate the group knowledge; 3) simple view of the collected content to users; and 4) encourage collaborative community so that users will be able to share freely what they think without the fear of criticism and ability to acknowledge their membership. Having good understanding of users' level of satisfaction is important for community owners to evaluate the implementation by the community and help community owners to understand the variations in members' level of satisfaction (Ong & Lai, 2007).

The findings of this study provide evidence that identification trust and affective commitment are two important mediating variables that mediate significantly the relationship between satisfaction and continuous knowledge sharing intention. Facilitating identification trust is important as it can help create a cooperative surrounding within the community. Business online community owners can facilitate identification trust by involving employees from hosting companies to participate in the community activities (Ridings et al., 2002). Hosting companies can do that by appointing employees from their company to observe the activities within the communities. The involvement of the employees is important as it can increase members' identification trust as compared to the use of passive trust features like policies or rules. The existence of employees within the community can also help prevent members from engaging in unwanted behaviour (e.g., flaming or bad rumours). Employees can take prompt actions (e.g., advising the members to behave according to the community norms, or deleting unnecessary or inappropriate comments) when this type of situation occurs without waiting for other members to lodge reports.

The level of identification trust can also be increased by improving the quality of communication between members (Li, Browne, & Chau, 2006). Within online communities, members are considered as recommendation agents; thus, having a

mechanism to promote quality and fruitful discussions within the community is important. For instance, introducing a reward mechanism to acknowledge a contribution that has been seen as useful or helpful by members can attract quality contributions/responses from members. This is because members' level of trust towards the community can help them ameliorate their perceptions on the hosting companies and members' future actions (Thatcher et al., 2011).

On the other hand, based on the research findings, affective commitment also demonstrated a significant mediating influence on satisfaction and continuous knowledge sharing intention relationships. Members' willingness to stay and participate within the community is influenced by their social involvement with others. Members will be reluctant to leave a community if they manage to establish strong emotional bonding with others. Hence, to increase affective commitment, business online community owners are encouraged to design strategies to promote lasting relationships. For instance, hosting companies can implement interactive chat rooms that can offer members the opportunity to communicate interactively and effectively (Thatcher & George, 2004). Incorporating features that allow one-to-one communication with business representatives is important as it shows the seriousness of the hosting companies in knowing what their members think of the product or services (Li et al., 2006).

The research findings show that community perceived usefulness is related directly to member's continuous knowledge sharing intention and satisfaction. Based on previous studies on continuous use, perceived usefulness acts as a stimulus that influences continuous intention and satisfaction (Saade, 2007). Thus, to increase members' belief of perceived usefulness, it is important to know what determines this construct. In this study, the research findings only managed to show that members' beliefs of community perceived usefulness are determined by intrinsic value.

Practically, to increase members' intrinsic value, business online community owners are encouraged to work together with online community developers and designers on how to create a more enjoyable, compelling and informative environment of business

online communities (Chiu & Wang, 2007). For instance, integrating the use of gaming innovative tools and techniques (e.g., 3D animation, skill-building challenges, network multimedia to deliver a knowledge sharing experience) within the community can enhance members' intrinsic value. Further, to engage members into intellectual discourses, business online community owners are suggested to hire experts who are responsible to supply the community with the latest knowledge (Hung et al., 2011). Thus, from their contributions, it may trigger members' interest to engage themselves intellectually in further discussions.

#### **7.4 Future Research Avenues**

This section discusses the theoretical and empirical limitations of this study. Based on the discussions, some directions for future research are proposed.

First, understanding the effect on how members' community perceived usefulness and level of satisfaction change over time is important as these two constructs tend to fluctuate with time and have effects on attitude and intention (Bhattacharjee & Premkumar, 2004). Thus, future research should include the use of a two-stage model of belief and attitude change (Bhattacharjee & Premkumar, 2004) and employ them within a longitudinal study setting to check if the constructs and their relationships are consistent over time, or to monitor the impact of changes on continual intention.

Second, this study's research model does not measure the relationship between intention and actual behaviour. By not examining the actual behaviour of continuous knowledge sharing within business online communities, its potential effect remains unclear. Thus, future research should try to integrate the use of information systems continuous use model with the theory of plan behaviour (TPB) when trying to examine continuous knowledge sharing behaviour. Antecedents from TPB (e.g. facilitating condition, subjective norms and attitude) can be used further to predict members' continuous knowledge sharing behaviour.

Third, the participants of this research are selected based on purposive sampling and only include current and active business online community members. This study is not able to reach members who have ceased participation in the business online communities. Acquiring information from this group of members is worthwhile because they may have different views on the impact of the proposed constructs towards continuous knowledge sharing intention. Further, the majority of the respondents are from computing, communication and automotive business online communities. Thus, it is not clear whether the key findings of this study can be generalised and are able to represent business online communities as a whole. Therefore, further verification of this research finding is highly encouraged.

Fourth, this research proposes the use of EVM dimensions (i.e. attainment, intrinsic and utility value) as antecedents to explain members' beliefs of perceived usefulness. However, attainment and utility value emerged as non-significant. However, these factors are not dropped from the research model since it has demonstrated logical relationships based on prior knowledge. Thus, the understanding of how these factors are related requires further examination.

Finally, future research should also aim to enhance the predictive power of the research model developed in this study. Perhaps future studies can examine the impact of members' habits on continuous behaviour. According to Limayem and Cheung (2008), this construct has a significant impact on continuous behaviour. Its importance in extending the current ISCM model has been acknowledged by scholars in continuous use (Bhattacharjee & Barfar, 2011).

## **7.5 Concluding Remarks**

This research identifies and evaluates the determinant factors that influence members' continuous knowledge sharing intention within business online communities. To achieve this objective, a Web survey is adopted to gather field information from business online community members.

The study conducts a comprehensive literature review and a thorough examination on the theories used in the continual topic (i.e., continuous use and continuous knowledge sharing). Based on the reviews, four research questions are derived; eleven research hypotheses generated, and a research model developed.

The research model is significant in that it explains 51% of variance in members' continuous knowledge sharing intention within business online communities, 25% of variance in member's feeling of satisfaction using business online communities, 39% of variance in member's belief of community perceived usefulness, 26% of variance in member's identification trust and 47% of variance in member's affective commitment. Furthermore, nine out of eleven paths in the research model are found to be significant and in the direction proposed by this study, supporting nine hypothesised relationships.

Based on the research findings, members' continuous knowledge sharing intention is influenced by their level of satisfaction and belief of community perceived usefulness. Identification trust and affective commitment have mediated significantly the relationship between members' level of satisfaction and continuous knowledge sharing intention. Members' affective commitment is influenced directly by identification trust. Based on the research findings, members' level of satisfaction is found to be influenced by perceived usefulness and confirmation. Finally, the research findings also demonstrated that members' beliefs of perceived usefulness are directly influenced by intrinsic value.

Given the fairly high explanatory power of the model, this thesis has significant theoretical and practical implications. From a theoretical viewpoint, this study provides a theoretical framework to examine the determinants of members' continuous knowledge sharing intention within business online communities. The theoretical sharing lies in extending the current information systems continuous use model theoretical framework. Two constructs (i.e., identification trust and affective commitment) are demonstrated to mediate the relationship between satisfaction and continuous knowledge sharing intention significantly. Further extension includes the

demonstration of how the expectation value model's determinants are used to determine members' beliefs of perceived usefulness.

From a practical viewpoint, this study provides an important guidance to business online community owners. In general, the findings of this study can help business online community owners to understand: 1) how members evaluate their level of satisfaction when using business online communities, 2) how to promote cooperative and committed surroundings within a business online community, and 3) how to encourage members' belief of community perceived usefulness. Having a clear understanding of what and how these determinants influence members' continuous knowledge sharing intention is important as it can help make business online communities the main source of reference when it comes to knowledge about consumers' opinions or recommendations regarding products or services. Not only that, it also provides the opportunities for the consumers to channel their ideas and suggestions in co-creating the products in which they are interested.

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## APPENDIX A

### List of Selected Business Online Communities

	Name of Business Online Community (BOC)	Category of BOC
1	Adobe Learning Communities	Software
2	American Express Business Travel Connexion	Banking
3	American Express American Express Open	Banking
4	Avnet Partner Community	Technology
5	Bank Of America Small Business Community	Banking
6	BT Radianz Financial Services Community	Financial
7	Building Network	Construction
8	Caterpillar Community	Automotive
9	Cisco Learning Network	Computing
11	Cognizant eCommunity	Consultation
12	Cortera Community	Financial
13	Dell Small and Medium Business	Computing
14	Diversified Communications Integrative Practitioner	Healthcare
15	EMC Community Network	Computing
16	EMC-SAP Ecosystem community	Consultant
17	Hewlett Packard Enterprise Business Community	Computing
18	Hewlett Packard Business Support Forums	Services
19	Hewlett Packard Software Solutions Community	Technology
20	HSBC Business Network	Banking
21	IBM Communities	Technology
22	Flexera Software Community	Software

23	Intel Software Network Communities	Computing
24	Intuit Developer Network	Software
25	Jigsaw Community	Entertainment (Gaming)
26	Kodak Filmmaker Community	Education
27	Mathworks MatLab Central	Education
28	Microsoft CRM User Group	Computing
29	Microsoft Developers Network	Computing
30	Microsoft Dynamics Community	Computing
31	Motorola Enterprise Mobility Group	Telecommunication
32	NetApp User Groups	Technology
33	Oracle Community	Technology
34	Oracle Enterprise Manager	Technology
35	Vodafone Online Community	Telecommunication
36	Palladium Group XPC	Consultancy
37	Pitney Bowes User Forum	Software
38	Toyota Community	Automotive
39	SalesForce Discussion Forums	Marketing
40	SAP Community Network SDN Community	Consultancy
41	Sage Community	Accounting
42	Sermo Community	Accounting
43	Spiceworks IT Community	Technology
44	Xerox support community	Technology
45	Planet PTC Community	Technology
46	Honda Community	Automotive

47	Lexis Nexis Communities	Consultancy
48	Android forum	Computing
49	Linux forum	Computing
50	Harley's Owner Group	Automotive

## APPENDIX B

Ethics Application Approval



# MEMORANDUM

## Auckland University of Technology Ethics Committee (AUTEC)

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To: Felix Tan  
From: **Dr Rosemary Godbold and Madeline Banda** Executive Secretary, AUTEC  
Date: 16 June 2011  
Subject: Ethics Application Number 09/278 **Understanding continuous knowledge contribution within business online communities.**

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Dear Felix

We are pleased to advise that on 13 June 2011, we approved minor amendments to your ethics application allowing the alteration of the title and adjustment of the design to reflect the change in research focus. This delegated approval is made in accordance with section 5.3.2 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 27 June 2011.

We remind you that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 18 December 2012;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 18 December 2012 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration

to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEK grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this. Also, if your research is undertaken within a jurisdiction outside New Zealand, you will need to make the arrangements necessary to meet the legal and ethical requirements that apply within that jurisdiction.

When communicating with us about this application, we ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact Charles Grinter, Ethics Coordinator, by email at [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz) or by telephone on 921 9999 at extension 8860.

On behalf of AUTEK and ourselves, we wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Dr Rosemary Godbold and Madeline Banda  
**Executive Secretary**  
**Auckland University of Technology Ethics Committee**

Cc: Kamarul Faizal Bin Hashim [khashim@aut.ac.nz](mailto:khashim@aut.ac.nz)

# APPENDIX C

## Questions for Online Focus Group

### Session 1

**Question 1:** How do you think level satisfaction using an online community/online forum influence continuous knowledge sharing intention?

**Question 2:** How do you think an online community/online forum's usefulness influence level of satisfaction?

**Question 3:** How do you think an online community/online forum's usefulness influence continuous knowledge sharing intention?

### Session 2

**Question 1:** In your opinion, is your belief of the community usefulness is influenced by the enjoyment you conceived from contributing knowledge or participating within the online community discussions? IF YES please elaborate on that matter.

**Question 2:** In your opinion, is your belief of the community usefulness is influenced by the future goals (e.g., help others, mutual reciprocal) that you wish to achieve from using the platform? IF YES please elaborate on that matter.

**Question 3:** In your opinion, is your belief of the community usefulness is influenced by the importance to be seen as skilful and intelligent (reputation)? IF YES please elaborate on that matter.

### Session 3

**Question 1:** Do you think that the feeling of confirmation towards the expectations of using the community (e.g., community usefulness) will influence your feeling of satisfaction and your intention to continuously share knowledge?

**Question 2:** In your opinion, how would the feeling of trust on others within the community could influence your continuous knowledge sharing intention?

**Question 2:** In your opinion, how would the feeling of commitment towards the community could influence your continuous knowledge sharing intention?

**Question 4:** In your opinion, do you think that there are other factors (besides what being discussed) might have influence your intention to continuously share knowledge using business online community?

# APPENDIX D

## Web Survey Questionnaire

### Section A

#### ***Purpose of this study***

The purpose of this research is to understand the factors that influenced members' continuous knowledge contribution intention within business online communities. Participation will only take **5-10minutes**. All responses from the survey are **anonymous** and will be kept **strictly confidential**. **Completion** of the questionnaire is deemed to be **consent** to research participation. The responses to this web survey will provide information for my study.

#### ***Definition of business online communities (BOC)***

A group of individuals who interact about products or services using an online community platform and the platform is hosted by a business company.

#### ***Definition of knowledge sharing***

Members' action of posting what they know using the community platform. Knowledge sharing/contribution using the community can be in the form of:

1. Posting new articles/threads;
2. Posting answers (e.g. solution, feedback, opinion) to asked questions; or

#### ***Definition of continuous knowledge sharing***

Members' repeated act of posting what they know using BOC.

**Have you ever contributed any content to the business online community for the past 3 months?**

**\*Yes / \*\*No**

\*\*For those who answered 'No' are directed to Section C (Demographic information)

\* For those who answered 'Yes' are directed to Section B.

**Section B:**

The following statements refer to continuous knowledge sharing using business online communities in general. Please select your responses for each of the statement using the scale from 1 to 7, where 1 indicates “Strongly disagree” and 7 indicates “Strongly agree”.

1. I plan to continue contributing knowledge using the online community in the future
2. I will frequently use the online community to continuously contribute knowledge in the future
3. I will continue to contribute knowledge using the online community as much as possible
4. I am satisfied with the knowledge map of the online community (e.g. knowledge classification)
5. I am satisfied with the knowledge manipulation of the online community (e.g. easy to create, upload knowledge)
6. I am satisfied with the personalization of the online community (e.g. control the settings and presentation of knowledge)
7. I am satisfied with the knowledge community of the online community (e.g. convenience to discuss, share knowledge with other community members)
8. My experience with using the community was better than what I expected
9. The service level provided by the community was better than what I expected
10. Overall, most of my expectations from using the community were confirmed
11. Topics in the BOC re useful to me
12. It is useful to interact with other members in the BOC
13. It is useful to contribute knowledge on ongoing discussions in BOC
14. I can discuss to the community members about my personal issues
15. If I share my problems with a community member, I know he/she will respond constructively and caringly
16. I know most of members in this online community will do everything within their capacity to help others
17. I know most members of this community are honest
18. I know the community members will not knowingly do anything to disrupt the conversation
19. I have a sense of belonging to the community
20. I have emotional attachment to the members of the community
21. I think that exchanging opinion with other members is important.
22. I expect that I will continuously participate in community activities.

23. I am an actively participating member of the community.
24. I think continuously contributing knowledge makes me a more knowledgeable person
25. I think continuously contributing knowledge helps me establish my reputation within the community
26. I think being successful at continuously contributing knowledge confirms my competence
27. I think being successful at continuously contributing knowledge give me sense of confidence
28. I think continuously contributing knowledge is interesting
29. I think continuously contributing knowledge is enjoyable
30. I think continuously contributing knowledge is fun
31. I think continuously contributing knowledge is useful to expend social interactions
32. I think continuously contributing knowledge is useful to receive feedback from others in the future (reciprocal benefits)
33. I think continuously contributing knowledge is helpful to maintain the online community sustainability

**After finish answering all the questions, respondents are directed to Section C**

**Section C**

Please provide information about your background for our study by answering the following questions. This survey is anonymous and confidentiality will be strictly adhered (circle or tick where necessary).

Gender : Male/Female

Age:

a. 15-20 b. 21-25 c. 26-30 d. 31-35 e. 36-40 f. 41-45 g. 46 years and above

Education:

a. Primary school b. Secondary school c. Undergraduate degree d. Postgraduate degree

Experience using business online communities

a. Less than 1 year b. 1-3 years c. 3-5 years d. 5-7 years e. More than 7 years

Ranking within the communities

a. Beginner b. Intermediate c. Experts

Categories of business online community that you are actively engaged with

Computing

Communication

Automotive

Consultation

Financial

Construction

Banking

Services

Networking

Software

Technology

Education

Others (Please state): \_\_\_\_\_

**Thank you for completing this Web survey.**