國 立 交 通 大 學

經營管理研究所

博 士 論 文

No. 137

我們為何使用部落格？
部落格之接受、使用、與應用研究

Why Do We Blog?
The Blog Acceptance, Usage, and Application

研 究 生：張耀升

指導教授：楊　千 教授

中 華 民 國 一 〇 〇 年 五 月

我們為何使用部落格？
部落格之接受、使用、與應用研究

Why Do We Blog?
The Blog Acceptance, Usage, and Application

研 究 生：張耀升　　Student: Yao-Sheng Chang

指導教授：楊　千　　Advisor: Chyan Yang

國 立 交 通 大 學
經 營 管 理 研 究 所
博 士 論 文

A Dissertation
Submitted to Institute of Business and Management
College of Management
National Chiao Tung University
in Partial Fulfillment of the Requirements
for the Degree of
Doctor of Philosophy
in

Business and Management

May, 2011

Taipei, Taiwan, Republic of China

中 華 民 國 一 〇 〇 年 五 月

我們為何使用部落格？
部落格之接受、使用、與應用研究

研究生：張耀升　　指導教授：楊　千

國立交通大學經營管理研究所博士班

摘　　要

部落格的使用在近幾年呈現爆炸性的成長。部落格被認為是一種運用網路資訊技術的互動媒體，因為其容易使用與互動的特性，而吸引廣大的使用群，也創造出廣泛的應用。例如企業用於行銷，教育用於促進學習等應用。然而，哪些因素吸引我們使用部落格，以及部落格的應用能幫我們做什麼，都是值得探討的問題。因此，本文的研究目的將探討部落格的接受與使用行為，以及部落格的實際應用效果。

本文由兩個研究所組成，第一個研究將從媒體選擇與科技接受因素來探討部落格的接受與使用行為。媒體選擇因素包括：媒體豐富度、關鍵數量、媒體經驗、與社會影響。科技接受因素包括：有用性、與易用性。我們提出一個媒體選擇與科技接受因素影響使用者態度與使用意願的假設模型。使用線上調查法收集521個樣本資料，並使用線性結構模型來檢定模型與假設。研究結果顯示，媒體選擇與科技接受因素正向影響使用者對使用部落格的態度與使用意願。

第二個研究將探討部落格的應用效果。本研究架設兩個教學部落格平台，比較互動式部落格與孤立式部落格對學生同儕互動、學習動機與學業成就的影響。孤立式部落格

平台只是提供學生線上撰寫作業功能，互動式部落格平台則在學生線上撰寫作業後必須進行彼此評論。此研究使用準實驗設計法，進行兩學期 154 個學生樣本的比較研究。研究結果顯示，使用互動式部落格相對於使用孤立式部落格的組別，對於同儕互動與學習動機都呈現較正向態度。而部落格平台提供同儕共同工作的功能，不論在互動式或是孤立式的組別，都可以提高學習動機。最後，並提供相關的建議及意涵。

關鍵詞：部落格、媒體選擇因素、科技接受模型、同儕學習、網路學習。

Why Do We Blog?
The Blog Acceptance, Usage, and Application

Student: Yao-Sheng Chang Advisor: Dr. Chyan Yang

Institute of Business and Management
National Chiao Tung University

ABSTRACT

Blogs, or weblogs, have been experiencing a rapid growth rate in recent years. Blogs are easy to use and possess interactive features, thus attracting wide use and leading them to be regarded as communication media in web-based information technology. Therefore, blogs have become an increasingly popular form of communication on websites, and have been adopted by users for several applications in domains such as journalism, business, and education. However, why do so many people like to use blogs? What blog applications can do for us? The purpose of this thesis is to investigate the blog acceptance and usage behaviors, and its applications.

This thesis contains two studies. The first study incorporates the technology acceptance model with media choice factors to explain and predict the blog acceptance behaviors. The media choice factors include media richness, critical mass, social influence, and media experience. The technology acceptance factors include perceived usefulness and perceived ease-of-use. An online field survey was conducted and the structure equation modeling method was applied to investigate the empirical strength of the relationships in the proposed model. 521 experienced blog users were surveyed to examine this model. The results strongly support the proposed hypotheses indicating that technology acceptance and media choice

factors influence the blog acceptance behaviors.

The second study explores the usage of blogs in education setting, and how student attitudes towards online peer interaction and peer learning, as well as motivation to learn from peers, may differ when using the blog comments feature, and when students are encouraged to read and comment on each other's work. We contrast two ways blogs affect learning engagement: (a) solitary blogs as personal digital portfolios for writers; or (b) blogs used interactively to facilitate peer interaction by exposing blogging content and comments to peers. A quasi-experiment was conducted across two semesters, involving 154 graduate and undergraduate students. The result suggests that interactive blogs, compared to solitary blogs, are associated with positive attitudes towards academic achievement in course subjects and in online peer interaction. Students showed positive motivation to learn from peer work, regardless of whether blogs were interactive or solitary. The implications and recommendations resulting from the two studies are provided.

Keywords: Blog; Media choice factors; Technology acceptance model (TAM); Peer learning; Web-based learning.

誌　　謝

人生總是不斷充滿驚喜，期待打開一扇窗後，會是怎樣的景緻。攻讀博士是我人生的一段精彩時光，那些以校為家、以桌為床的日子;多少次與老師同學們研究學問的澎湃熱情;以及最後與期刊編審在學術文章上的攻防進退，都是我永生難忘的經歷。

首先，非常感謝我的指導教授 楊千老師，楊老師是位令人景仰的經師人師。在研究指導方面，楊老師總是展現如同沙場上將軍帶兵的睿智與謀略，方向精準而切中要害。在為人處事方面，老師總能在幽默的談笑間，告訴我人生的哲理。能在攻讀博士期間遇見楊老師，實在是一件最幸福的事。

另外，一路上承蒙 丁承老師嚴謹的統計訓練，讓我在面對解決學術問題時，有適當可用的工具。也感謝 胡均立老師在方法上的指導，使我不只看到點也可以看到面。而幾位口試委員的學問素養深厚，口試時給我論文精闢的見解，是我在博士班日子中最精彩的一堂課，其對我論文的結構與完整性，提供相當大的助益。

最後，我要感謝我的太太，照顧家庭與可愛的孩子們，及給我最大的支持。在無數次博士班上課的日子，容忍我天未亮就出門上課，孩子都睡了我才下課回到家。也感謝爸媽給我健康的身體與向上的力量，我才有體力及勇氣讀完博士班。

博士班旅程要感謝太多人，沒有這些一路相伴的老師、同學及家人的支持與鼓勵，我無法完成我的論文。我對你們獻上最深的敬意。

張耀升 謹誌

民國 100 年 5 月 台中

Table of content

List of tables

List of figures

Chapter 1. Introduction

1.1. Research background

Blogs, or weblogs, have been experiencing a rapid growth rate in recent years. According to Technorati (2009, 2008), the number of blogs doubled to 133 million between 2007 and 2008. A blog is a website comprising blog posts, or content written by the blogger, which is typically organized into categories and sorted in reverse chronological order (Wright 2006). Most of the blogs are similar to personal diaries, or are corporate marketing channels for engaging existing as well as potential customers. Because of their easy creation, blog pages have become the web-authoring tool for the novice, as well as the expert. Blogs create a context for dialogues between bloggers and readers. Through blogger-initiated conversations, blog platforms build a solid base of shared experiences and mutual relationships (Bausch *et al*. 2002).

Blogs are defined as “frequently modified web pages in which dated entries are listed in reverse chronological sequence” (Herring et al. 2005), and they could be considered a form of web-based information technology (Du and Wagner 2006). Blogs have some distinctive and attracting characteristics. First, blogs are usually managed by one author only, but many readers can leave a comment on posted entries and authors can answer it with another comment or by posting a subsequent or revised entry (Kaplan and Haenlein 2010). In other words, blogs are dynamic and are developed to facilitate and accommodate frequent changes in content, particularly by giving many readers the opportunity to comment on the primary messages that appear on them (Kim 2005). Besides, based on the previous researches, media have been conceptualized as transmission conduits (Axley 1984) or channels (Fisher 1978) through which information can be conveyed. Therefore, the blog could be considered as a form of media, making fully two-way online communication possible (Wright 2006, Kaplan

and Haenlein 2010). Second, the creator of the message prepares the content without having to be familiar with special coding and uploads the message to blogs just by clicking on the "Publish" button. Therefore, blogs can be considered as easy to use communication media in web-based information technology. Blogs made it feasible for the communication process to be much larger, less technical, with a higher number of users.

In the previous few years, blogs have been adopted by users for several applications in domains such as journalism (Hall and Bavison 2007), business (Tikkanen et al. 2009), and education (Chang et al. 2008). For example, teachers use blogs as a tool for encouraging interaction between students to facilitate learning (Chang et al. 2008). Corporate established blogs act as marketing channels for engaging existing and potential customers (Tikkanen et al. 2009). Blogs have become popular social media for facilitating interaction in a variety of specific fields.

Blog use in educational sectors has grown extensively and considerable research has focused on the educational use of blogs (Oravec 2002, Williams & Jacobs 2004, Richardson 2006; Dailey 2006, Churchill 2009, Kerawalla *et* al. 2009, Yang 2009). Although blogs did not originate in education sectors, they have become useful in various educational levels and settings, and as an authoring tool. For example, blogs often serve as a digital portfolio of student assignments and achievements (Liu & Chang 2010). Most blog platforms provide a personal writing space, which is easy to publish, sharable, and automatically archived, empowering users to form learning communities through inter-linkages. Therefore, blogs can combine solitary reflection and peer interaction in learning processes (Richardson 2006, Yang 2009). Furthermore, classroom discussion is often teacher-student centered, rather than a student-student dialog. The blog is a vehicle to ensure that everyone has a voice and is a valued member of the learning community. The instructor has previously been the only person to access student work. Students turn in their work to instructors and have no way to learn

how their peers scored on the same assignments, thereby losing the potential of appreciating student work. In contrast, peer learning is a form of cooperative learning that enhances the value of student-student interaction. Students using interactive blogs can read peer postings and leave comments, which enable them to learn from peers by creating dialogues with each other (Kay 2006). Therefore, blogs may have the potential to transform personal learning to collaborative learning.

Why do we blog? Blogs can be considered as easy to use communication media in web-based information technology. Blogs made it feasible for the communication process to be much larger, less technical, with a higher number of users. Moreover, what blog applications can do for us? Blogs have been adopted by users for several applications in domains such as journalism, business, and education. Many blog applications have been change our life.

This thesis tried to investigate why people accept blogs, how people use blogs, and what application people do on blogs. This thesis would conduct a field study to explore blog acceptance and usage behaviors, and furthermore take an experimental study to assess the effects of interactive blogging in higher education. The first study would incorporate the technology acceptance model with media choice factors to explain and predict the blog acceptance behaviors. The second study would explore the use of blogs in education setting, and how student attitudes towards online peer interaction and peer learning, as well as motivation to learn from peers, may differ when using the blog comments feature, and when students are encouraged to read and comment on each other's work.

1.2. Scope and objectives

1.2.1. Blog acceptance behaviors: From the perspectives of technology acceptance and media choice factors

Blogs are not only web-based information technology, but also media (Kim 2005, Yates 2008, Kaplan and Haenlein 2010). The research objectives of the first study are to incorporate the technology acceptance model (TAM) with media choice factors to explain and predict the blog acceptance behaviors. TAM assumes that an individual's attitude toward use affect behavioral intentions, and an individual's attitude toward using IT, is determined by two beliefs: *perceived usefulness* and *perceived ease-of-use.* The media choice factors include media richness, critical mass, social influence, and media experience. In this study, we address a proposed model and conduct a structure equation model. An online field survey, involving 521 experienced blog users, was conducted to investigate the empirical strength of the relationships in the proposed model. Therefore, this study would lead to a better understanding of how the two perspectives influence blog acceptance behaviors.

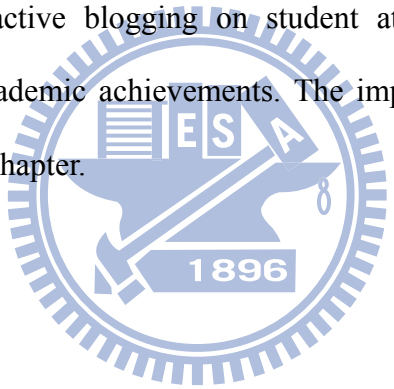
1.2.2. A blog application: Assessing the effects of interactive blogging in education setting

Blogs have been increasingly used to supplement traditional classroom lectures in higher education. This study would explore the use of blogs, and how student attitudes towards online peer interaction and peer learning, as well as motivation to learn from peers, may differ when using the blog comments feature, and when students are encouraged to read and comment on each other's work. We contrast two ways blogs affect learning engagement: (a) solitary blogs as personal digital portfolios for writers; or (b) blogs used interactively to facilitate peer interaction by exposing blogging content and comments to peers. A quasi-experiment was conducted across two semesters, involving 154 graduate and

undergraduate students, to investigate the effects of interactive blogging in higher education.

1.3. Organization of the dissertation

The dissertation is organized as the following order. Chapter 2 explores blog acceptance behaviors from the perspectives of technology acceptance and media choice factors, describing why bloggers accept and use blog. We addressed a proposed model from the literature review, and an online field survey was conducted to verify this model. Chapter 3 designs an empirical study of blog application. We employ blogs as interactive learning tools for communities of practice in higher education. Three hypotheses were suggested to verify the effects of interactive blogging in empirical setting. A quasi-experiment was conducted to assess the effects of interactive blogging on student attitudes towards peer interaction, learning motivation, and academic achievements. The implication and recommendation are provided at the end of each chapter.



Chapter 2. Blog acceptance and usage: From the perspectives of technology acceptance and media choice factors

2.1. Research background

Blogs, or weblogs, have been experiencing a rapid growth rate in recent years. Blogs are easy to use and possess interactive features, attracting wide use leading them to be regarded as communication media in web-based information technology (Du and Wagner 2006). However, they differ from other websites in two ways. First, websites tend to have static or rarely changing content. Blogs, on the other hand, are dynamic and are developed to facilitate and accommodate frequent changes in content, particularly by giving readers the opportunity to comment on the primary messages that appear on them (Kim 2005). In most instances, readers will be able to place their contributions on social media such as blogs without requiring authorization. Therefore, fully two-way online communication is made possible (Wright 2006, Kaplan and Haenlein 2010). A second difference is the user empowerment characterized by the ease with which content can be placed on blogs (Du and Wagner 2006). The creator of the message prepares the content without having to be familiar with special coding and uploads the message to blogs by clicking on the “Publish” button. Therefore, blogs can be considered as easy to use communication media in web-based information technology.

Over the previous two decades, the technology acceptance model (TAM) (Davis 1989, Davis *et al.* 1989), has been widely used to explain and predict the acceptance behaviors of information systems (e.g. Adams *et al.* 1992, Agarwal and Karahanna 2000, Karahanna *et al.* 2006, Venkatesh *et al.* 2008). The TAM suggests that both perception usefulness and ease of use are key determinants of the adoption of user technology. Although TAM is a well

established model, many studies have extended TAM with other constructs in various web-based information technologies, such as trust in online shopping (Gefen *et al.* 2003), playfulness in WWW context (Moon and Kim 2001), perceived risk in online transactions (Pavlou 2003), perceived enjoyment in internet-based learning (Lee *et al.* 2005), and social influence in online gaming (Hsu and Lu 2004). Blogs have been an emerging web-based information technology (Boulos and Wheeler 2007); hence, TAM could be applied to explain and predict the acceptance behaviors of blog. Therefore, our study extends TAM with some other constructs to investigate blog acceptance behaviors.

Blogs are not only web-based information technology, but also media (Kim 2005, Yates 2008, Kaplan and Haenlein 2010). Yates *et al.* (2008) addressed the genre model (Yates and Orlikowski 1992) to evaluate media usage, including blogs as a form of media. Kaplan and Haenlein (2010) provided a classification of social media according to media richness and self-presentation, and included blogs. Media have been conceptualized as transmission conduits (Axley 1984) or channels (Fisher 1978) through which information can be conveyed. Media vary in their capacity to convey information, which can influence individual/organizational media choices (e. g. Daft *et al.* 1987, Carlson and Zmud 1999). Several media choice theories have been developed to study individual/organizational communication, including media richness (Daft and Lengel 1984, Rice 1992), critical mass (Markus 1987), social influence (Fulk 1993, Schmitz and Fulk 1991), and media experience (Sitkin *et al.* 1992). Consequently, the purpose of this study is to incorporate the perspectives of technology acceptance and media choice factors to investigate blog acceptance behavior. Therefore, this study may lead to a better understanding of how the two structures influence blog acceptance behavior. This study applied a structure equation model and conducted an online field survey to investigate the empirical strength of the relationships in the proposed model.

2.2. Literature review

2.2.1. Blog

Weblogs, or blogs, are defined as "*frequently modified web pages in which dated entries are listed in reverse chronological sequence*" (Herring *et al.* 2005). The original blogs were used mostly for web pages with links to other sites or blogs of interest, providing blogger commentary for added value (Blood 2002). After mid-1999, when free and easy-to-use blogging software (e.g. Pitas, Blogger, and Groksoup) was released, the nature of blogs changed with numerous blogs becoming more like personal websites containing diverse types of content posted in reverse chronological order. According to Winer (www.scripting.com), a blogging pioneer, blogs have four characteristics: they are personalized, web-based, community-supported, and automated (meaning easy-to-use). Herring (2005) presented the results of the content analysis of 203 randomly-selected weblogs, and proposed that blogs have the following characteristics: they are frequently updated, have reverse chronological order, a personal journal, an asymmetrical exchange, and hyperlinks. Blogs made it feasible for the communication process to be much larger, less technical, with a higher number of users. Therefore, blogs create a platform for dialogues between bloggers and readers. Through conversations initiated by bloggers and engaged in by readers, blog platforms build a solid base of shared experiences and mutual relationships.

Blogs are often viewed as similar to other media such as e-mail, bulletin board systems, and web pages. Blogs are a form of internet media (Kim 2005) and the social media equivalent of personal web pages, coming in a multitude of different variations, from personal diaries describing the author's life to summaries of all relevant information in one specific field (Kaplan and Haenlein 2010). In the previous few years, blogs have become an increasingly popular form of communication on websites, and have been adopted by users for several

applications in domains such as journalism (Hall and Bavison 2007), business (Tikkanen *et al.* 2009), and education (Chang *et al.* 2008). For example, teachers use blogs as a tool for encouraging interaction between students to facilitate learning (Chang *et al.* 2008). Corporate established blogs act as marketing channels for engaging existing and potential customers (Tikkanen *et al.* 2009). Two famous business examples include Jonathan Schwartz, CEO of Sun Micro-systems, who maintains a personal blog to improve the transparency of his company, and the automotive giant General Motors. Blogs have become popular social media for facilitating interaction in a variety of specific fields. In addition, blogs are web-based information technology (Du and Wagner 2006). Blog acceptance behaviors can be explained in part by TAM. Consequently, this study will discuss blog acceptance behavior from the perspectives of technology acceptance and media choice.

2.2.2. Technology acceptance model (TAM)

TAM, adapted from the Theory of Reasoned Action (TRA) (Fishbein and Ajzen 1975) and originally proposed by Davis (1986), has become a widely accepted model in the field of information systems to explain and predict an individual's acceptance of IT (Lee *et al.* 2004). TRA suggests that an individual's behavior is determined by his or her intention to perform the behavior, which in turn is determined by the individual's attitude concerning the behavior. TAM is based on TRA's belief-attitude-intention relationship to explain an individual's IT acceptance behaviors.

TAM assumes that an individual's attitude toward use affect behavioral intentions, and an individual's attitude toward using IT, is determined by two beliefs: *perceived usefulness* (PU) and *perceived ease-of-use* (PEOU) (Davis 1989). Davis defined PU as "*the degree to which a person believes that using a particular system would enhance his or her job performance*", and PEOU as "*the degree to which a person believes that using a particular system would be*

free of effort". Furthermore, PEOU is a determinant of PU because, ceteris paribus, users consider IT more useful when it is requires less effort. Also, there is the belief that PU affects an individual's behavioral intentions. Furthermore, both beliefs are influenced by external variables, such as development process, system characteristics, and social influences. Figure 2.1 shows the TAM model.

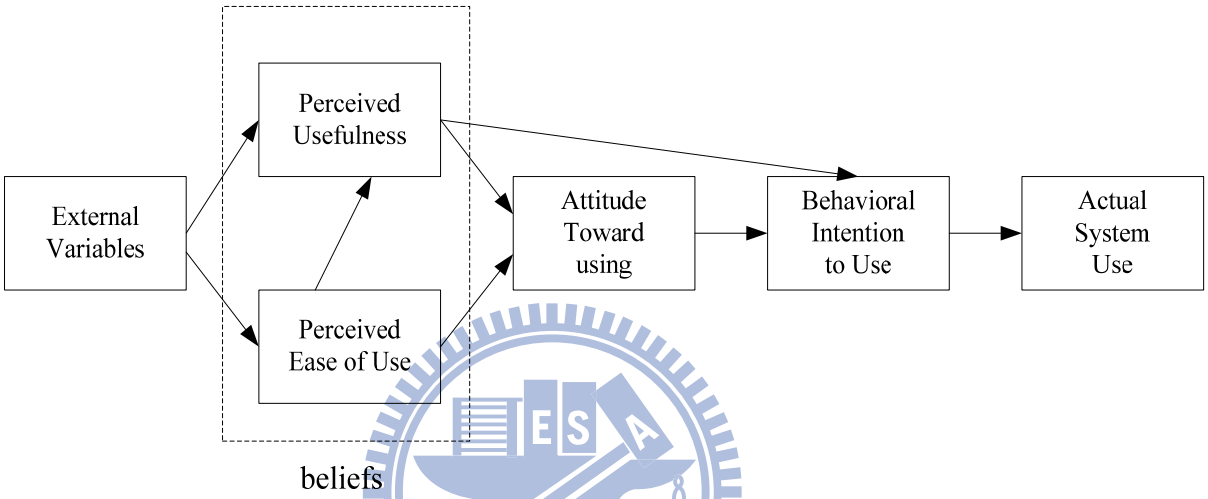


Figure 2.1. The technology acceptance model

Based on TAM, numerous studies have extended the TAM with other constructs to enhance the understanding of an individual's IT acceptance behavior in a specific context. For example, Gefen *et al.* (2003) proposed trust as an extended variable of TAM for online shopping acceptance research. Agarwal and Karahanna (2000) addressed cognitive absorption as a structure reflecting an individual's intrinsic belief in WWW acceptance. Cheng *et al.* (2006) extended the TAM with playfulness and risk to explain consumer acceptance of the internet as a channel of distribution. Moreover, other studies have shown that TAM is a robust model of technology acceptance behavior. The TAM has been successfully applied to predict technology acceptance behavior, across time (Venkatesh 2000, 2008), across settings (Vance *et al.* 2008, Straub *et al.* 1997), and across samples (Taylor and Todd 1995). The TAM has

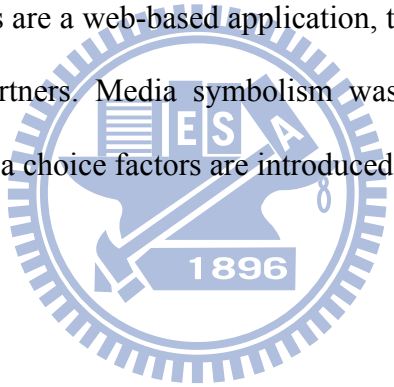
not only been applied in job related IT acceptance (e.g. Gefen and Straub 1997, Lederer *et al.* 2000, Hernandez *et al.* 2008), but also revised in other IT applications such as entertainment (Hsu and Lu 2004), online consumer behavior (Koufaris 2003, Kwon *et al.* 2007, Shin 2009), and media technology (Lederer *et al.* 2000). Since blogs are not only an IT application, but also media, this research attempts to extend TAM using media choice factors to understand an individual's IT blog acceptance behaviors.

Although the TAM has been widely applied in MIS research, many limitations of the TAM also were discussed (Venkatesh and Davis 2000, Agarwal and Karahanna 2000, Agarwal and Karahanna 2000, Karahanna and Straub 1999). Lee *et al.* (2003) investigated many TAM studies in a couple of decades and summarized its limitations as follows: The most commonly reported limitation is self-reported use, although 36 studies relied mainly on self-reported use, assuming that self-reported use successfully reflects actual usage. The second limitation is the generalization problem, examining only one information system with a homogeneous group of subjects performing a single task at a single point of time. Other suggested limitations of TAM studies included student samples, a single subject (or restricted subjects), a one-time cross sectional study, single measurement scales, self-selection bias of the subjects. Consequently, follow-up IT acceptance studies which apply TAM would avoid the limitations.

2.2.3. Media choice factors

Media have been conceptualized as transmission conduits (Axley 1984) or channels (Fisher 1978) through which information can be conveyed. Moreover, some researchers have considered the capacity of different media to convey data (Daft and Lengel 1984, Sitkin *et al.* 1992), while others have focused on the capacity of different media to convey symbolic meaning (Feldman and March 1981, Trevino *et al.* 1987). From the different perspectives of media, several interrelated theories and studies have examined a variety of contingencies that affect which media are chosen and how effective choices are likely to be. Several media

choice theories have been developed to study individual/organizational communication, and how to affect individual/organizational media attitudes, behavioral intentions, and usage behaviors (Carlson & Zmud, 1994; Fulk *et al.*, 1995; Webster, 1998; Cameron & Webster, 2005). Webster (1998) summarized the prior literature and outlined the media choice factors, including media richness (Daft and Lengel 1984, 1986, Daft *et al.* 1987, Rice 1992), critical mass (Markus 1987, Oliver 1988), social influence (Fulk 1993, Schmitz and Fulk 1991), individual characteristic --- media experience (Sitkin *et al.* 1992), situational factors (Trevino et al 1987, Rice 1992), and media symbolism (Trevino *et al.* 1990). This study selects media richness, critical mass, social influence, and media experience, which are suited to the context of a blog, while excluding situational factors and medium symbolism. The situational factors were excluded because blogs are a web-based application, that it is not limited by the distance between communication partners. Media symbolism was also excluded because a blog's symbolism is not clear. Media choice factors are introduced in the following sections.



2.2.3.1. Media richness

Media richness theory (MRT), introduced by Daft and Lengel (1984), suggests that the use of communication media in an organization is a rational process that achieves a match between the information processing tasks and the media capacities. Daft and Lengel (1986) defined media richness as the capacity of media to evolve shared meaning, overcome different frames of reference, and clarify ambiguous issues to change understanding in a timely manner. Media richness could be measured by four criteria sets (Daft and Lengel 1986), including (1) capacity for immediate feedback, (2) multiple information cues, (3) personalization, and (4) language verity. MRT proposed that an organization processes information to reduce uncertainty and equivocality (Daft and Lengel 1986). The uncertainty was defined as the difference between the amount of information required to perform the task and the amount of

information already possessed by the organization (Galbraith 1977). The equivocality means that multiple and conflicting interpretations of an organizational situation exist (Weick, 1979). Moreover, organizations can facilitate the amount of information to reduce uncertainty and the richness of information to reduce equivocality (Daft and Lengel 1986).

Rich media are thought to be best when communication is ambiguous. A richer medium can be seen as equally useful for unambiguous tasks as for ambiguous ones (Schmitz and Fluk, 1991). The capacity of process information is as diverse as the different communication media. Schmitz and Fulk (1991) ranked the order of media richness as face-to-face, telephone, e-mail, personal written text (letters, memos), formal written text (documents), and formal numeric text. Face-to-face communication would be the richest medium because it provides maximum immediate feedback, multiple cues via body language and tone of voice, and the message context is expressed in natural language.

Many blogs offer communication tools for supporting interactions with others, and the most distinctive characteristic are comments and "Trackback" (Miura and Yamashita 2007), a reverse hyperlink tracking the referrer weblogs. Blogs are usually managed by one author only, but readers can leave a comment on posted entries and authors can answer it with another comment or by posting a subsequent or revised entry (Kaplan and Haenlein 2010). Therefore, blogs provide the capacity for feedback through readers' comments, which are managed by the author, allowing the author to maintain his own personal requirements. Also, the blog readers can maintain their personal requirements through "Trackback". Moreover, multiple information cues are present on blogs, because the majority of blogs provide multimedia capability (such as pictures, music, and emoticons) to very different cues more than just text content with the same click-and-post ease (Du and Wagner 2006). Consequently, the media richness of blogs can be measured by the set of media richness criteria provided by Daft and Lengel, and blogs fall somewhere on the media richness scale.

Numerous studies have been conducted using the MRT to investigate media selection and usage behavior (e.g. Dennis and Kinney 1998, Carlson and Zmud 1999, Trevino *et al.* 2000, Lim and Benbasat 2000, Cameron & Webster, 2005). Trevino (2000), for example, found that general attitudes toward different media (including e-mail, fax, letters, and face-to-face meeting) were influenced by perceived media richness. Moreover, new media attitudes were also influenced by person/technology interaction factors. Dennis and Kinney (1997) tested the media richness in computer-mediated and video communication to exam the effect of cues, feedback, and task equivocality. Therefore, media richness was proposed as the factor that reflected the acceptance behaviors of blog. In this study, we used the four criteria (immediate feedback, multiple information cues, personalization and language verity) defined by Daft and Lengel to measure the media richness of blogs.

2.2.3.2. Critical mass

Critical mass refers to "the idea that some threshold of participants or actions has to be crossed before a social movement explodes into being" (Oliver et al. 1985). This definition suggests that critical mass is the basis for producing collective actions. Blog acceptance requires the participation and collective actions from all individuals whose activities are affected by the technology. Markus (1987) indicated that "even individuals who would prefer to use interactive media may not really perceive these media to be viable options in the absence of universal access". Moreover, Markus and Connolly (1990) showed that interactive media might fail without securing a critical mass of users for the technology. Hence, the success of blog acceptance is not only dependent on an individual's use of blogs, but on other responses to this use. If few people are willing to contribute to the blog, it will not be effectively used. Furthermore, from the network externality perspective, critical mass refers to the effect that the value of technology to a user increases with the number of people who

adopt it (Nault and Dexter 1994, Wang and Seidmann 1995). For example, the more people who use e-mail, the more valuable e-mail is to each user. Online social networks work in the same way, with sites like Twitter and Facebook being more useful as more users join. Applying network externality perspective, Luo and Strong (2000) pointed out that the users may develop a perceived critical mass through interaction with others. The perception of critical mass is rapidly strengthened as more people participate in network activities. Consequently, achieving a "critical mass" of users has been recognized as the key for successful media acceptance (Markus and Connolly 1990, Grudin 1994, Lim *et al.* 2003, Cameron & Webster, 2005; Slyke *et al.* 2007). Therefore, critical mass was proposed as the factor that reflected blog acceptance behaviors.

2.2.3.3. Media experience

Media experience, representing individual use, skills, and comfort with the media (King and Xia 1997), plays an important role in influencing user attitudes and can facilitate or constrain choices and general use (Sitkin *et al.* 1992, King and Xia 1997). Some individuals may have little or no experience or skill with media and as a result have negative attitudes toward it and/or may avoid using it (Webster 1998). Schmitz and Fulk (1991) indicated that expertise in using new media facilitates choice and use. Moreover, human behavior is more about self-interest, and efficiency oriented than rationality motivated (Williams 1985). But human behavior is also experience based. If individuals are uncomfortable or unfamiliar using a new medium, and view learning to use a new medium as more time consuming and inefficient than traditional media, they will choose a familiar medium rather than a rationally efficient medium (King and Xia 1997).

Carlson and Zmud (1994) indicated that media choice is determined by the fit of the perceived media richness and the perceived information richness. These perceptions are built

upon previous experience with the media in addition to the objective view of media characteristics. Experience enables the development of familiarity, expertise, and comfort with the media, which in turn enables users to improve his attitude toward using the media, and to facilitate appropriate media choice. For example, because individuals have high levels of expertise and familiarity with face-to-face communication, they would naturally and instinctively prefer this medium over other unfamiliar ones. This argument is consistent with the study by Schmitz and Fulk (1991), which found face-to-face communication to be the richest medium. Empirical studies (Schmitz and Fulk 1991, Webster 1998) provided confirmation of positive relationships between media attitudes and media experience. Accordingly, media experience was proposed as the factor that best reflected blog acceptance behaviors.

2.2.3.4. Social influence

Fulk *et al.* (1991) presented the social influence model of technology usage to explain media choices. They suggested that social influences such as work group norms, and coworker and supervisor attitudes and behaviors can influence individual/organizational media attitudes, use and choice. According to social influence theory, it is proposed that media perceptions vary and are, at least in part, socially constructed. In addition, based on the theory of reasoned action, an individual's behavioral intentions are influenced by subjective norms as well as attitude. Innovation diffusion research also suggests that user adoption decisions are influenced by a social system that goes beyond an individual's decision style and the characteristics of the IT (Valente 1996).

The effect of social influences on media choices has been empirically supported in a number of studies (Schmitz and Fulk 1991, Fulk 1993, Kraut *et al.* 1998, Gu and Higa 2009). Fulk *et al*. (1991), for example, found that attitudes and e-mail usage were affected by social influences from coworkers, supervisors, and networks. Kraut *et al.* (1998) found that people

used a particular system (e.g. video telephone) more when more people in general were using it. Gu and Higa (2009) indicated that social influence was identified as the most important factor for the primary medium selection in multiple media usage settings, followed by a rational factor and environment factor. As empirical examples, Facebook and Twitter are famous for their social network service. They successfully used social influence to quickly improve their customer base. Accordingly, social influence was proposed as the factor that reflected blog acceptance behaviors.

2.3. Research model and hypotheses

2.3.1. Research model

Figure 2.1 illustrates our proposed model, which incorporates TAM with media choice factors in the blog context. The proposed model has as its core the TAM constructs and the four media choice factors: media richness, critical mass, social influence, and media experience. The specific elements of the model and related hypotheses are presented in further detail below.

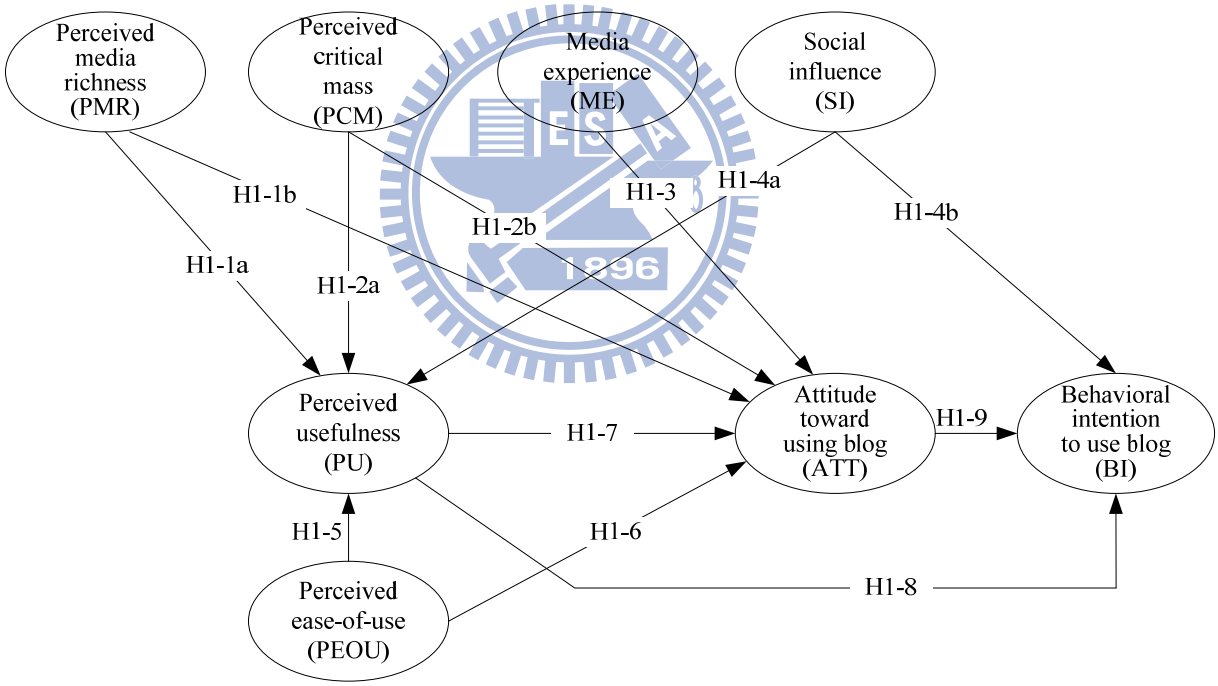


Figure 2.2. The proposed research model

2.3.2. Hypotheses

2.3.2.1. Perceived media richness

Following Daft and Lengel (1986), *perceived media richness* (PMR) is the degree to which an individual perceives the capacity of blog to evolve shared meaning, overcome different frames of reference, and clarify ambiguous issues to change understanding in a timely manner. Blogs offer various communication functions to provide a more efficient channel to interchange information than other forms of Web sides. Trevino *et al.* (1987) argued that rich media can better handle a greater variety of tasks because they more effectively can convey equivocal messages. If individuals perceive a medium as rich, it is likely to be perceived as more useful because it may be used successfully for more and different tasks. Fulk (1993) and Lim and Benbasat (2000) indicated that media richness has a positive effect on perceived usefulness. Furthermore, if resources are not constrained, individuals will tend to use a rich media than a lean one. For example, individuals can have a very positive attitude toward a face-to-face communication, because it is the richest medium providing the largest capacity for communication. Researchers provided empirical evidence that perceived media richness has been associated with positive media attitudes (Trevino *et al.* 2000). Therefore, PMR could affect both PU and attitude toward using blog (ATT). Consequently, the following hypotheses were proposed:

H1-1a: Perceived media richness (PMR) will have a positive effect on perceived usefulness (PU) of blog.

H1-1b: Perceived media richness (PMR) will have a positive effect on attitude toward using blog (ATT).

2.3.2.2. Perceived critical mass

We defined *perceived critical mass* (PCM) as the degree to which a person believes that most of his or her peers are using blogs. Critical mass refers to the fact that the value of technology to a user increases with the number of its adopters (Markus 1987). One reason is that using technology that has reached critical mass allows users to communicate to the largest number of people with the least effort. As a blog increases in popularity it becomes increasingly useful, attracting more users to adopt the media technology. Lou and Strong's study (2000) provided empirical evidence of the positive impact of perceived critical mass on perceived usefulness. Besides, from social psychological and economic perspectives, perceived critical mass is a type of social influence. Rice and Aydin (1991) indicated that individuals' attitudes toward a new medium are affected by social influence. That is, critical mass affects individuals' attitudes toward a new medium. Hsu and Lu (2004) and Slyke *et al.* (2007) found that critical mass positively affects individual attitudes toward using IT. Therefore, PCM could affect both PU and ATT. Consequently, the following hypotheses were proposed:

H1-2a: Perceived critical mass (PCM) will have a positive effect on perceived usefulness (PU).

H1-2b: Perceived critical mass (PCM) will have a positive effect on attitude toward using blog (ATT).

2.3.2.3. Media experience

Following King and Xia (1997), *media experience* (ME) is the degree to which an individual perceives his use, skills, and comfort with the blog. Experience enables the development of familiarity, expertise, and comfort with the media, which in turn enables users

to improve their attitude toward using the media. Empirical studies (Fulk *et al.* 1995, Webster 1998) provided confirmation of positive relationships between media attitudes and media experience. Consequently, the following hypothesis was proposed:

H1-3: Media Experience (ME) will have a positive effect on attitude toward using blog (ATT).

2.3.2.4. Social influence

In our study, *social influence* (SI) was defined as the degree to which an individual perceived that others approved of their participation in blogs. Social psychological theory has suggested that group members tend to comply with the social norm, and moreover, that these in turn influence the perceptions and behaviors of members (Lascu and Zinkhan 1999). According to this theory, perceptions of media are proposed to vary and be, at least in part, socially constructed. TRA identified that attitude and social influence (social norm) as two sole determinants of behavioral intention (Fishbein & Ajzen, 1975). When blog users interact with each other, they tend to comply with the social norm, and influence each others' behaviors. Werster and Trevino (1995) suggested that social influence will more positively affect choices of new media. Furthermore, Schmitz and Fluk (1991) discovered that co-worker use of e-mail and supervisors' perceptions of usefulness of the medium, namely social influence, had a significant effect on perceived usefulness of e-mail. Clearly, SI could affect both PU and behavioral intentions to use blog (BI). Consequently, the following hypotheses were proposed:

H1-4a: Social influence (SI) will have a positive effect on perceived usefulness (PU).

H1-4b: Social influence (SI) will have a positive effect on behavioral intentions to use blog (BI).

2.3.2.5. TAM

This research model adopted the TAM's belief–attitude–intention–behavior relationship. The present study revalidates those relationships in the context of the blog with the following hypotheses:

H1-5: Perceived ease-of-use (PEOU) will have a positive effect on perceived usefulness (PU).

H1-6: Perceived ease-of-use (PEOU) will have a positive effect on attitude toward using blog (ATT).

H1-7: Perceived usefulness (PU) will have a positive effect on attitude toward using blog (ATT).

H1-8: Perceived usefulness (PU) will have a positive effect on behavioral intentions to use blog (BI)

H1-9: Attitude toward using blog (ATT) will have a positive effect on behavioral intentions to use blog (BI).

2.3.2.6. Control variables

To lower the impact of individual specific characteristics on bias levels, control variables were introduced, including blog experiences and demographics which may influence attitudes and behavioral intentions to use the blog. Schmitz and Fulk (1991) suggested that e-mail experience positively influenced e-mail use. Fulk (1993) used the response's age and education as control variables to study social construction of communication technology. Therefore, the responder's blog experience, age, and education were introduced as control variables. Without loss of generality, these three variables may act as antecedents of all dependent and mediating variables in the proposed model, and thus are controlled.

2.4. Methodology

2.4.1. Measurement development

The questionnaires were developed from the literature. Items used to measure the constructs were adopted from prior research to ensure content validity. PEOU and PU were developed from the study of Davis (1989), and were slightly modified to fit the blog context. ATT was measured using five standard 7-point semantic differential rating scales as suggested by Ajzen and Fishbein (1980) for operationalizing attitudes toward behaviors. The scale items to measure BI were adopted from Agarwal and Karahanna (2000). Additionally, the scale items to measure PCM were developed from Luo and Strong (2000). SI was measured by items taken from Venkatesh and Morris (2000). ME was measured by items modified from King and Xia (1997). Finally, four items for each set of criteria to measure PMR were adapted from Carlson and Zmud (1999). Seven point Likert scales with anchors ranging from "strongly disagree" (1) to "strongly agree" (7) were used for all items except for the items of ATT. The list of items is presented in Appendix A.

Both a pre-test and pilot test of the measures were conducted by the selected users, as well as experts in the field of web design. In the process of pre-test, five blog experts were asked to comment the design of questionnaires. Based on the expert feedback, a slight modification was made in the questionnaires and in the wording of some of the items to reflect the practices in the blogosphere. The second stage of pilot test involved 50 blog users answering the questionnaire so that the length, tone, and content were improved.

2.4.2. Data collection and analysis

An online field survey was conducted to test the proposed model. The questionnaire was

placed on www.my3q.com, which is a specific online questionnaire website that allows people to respond voluntarily. To increase the response rate of participants, we placed several survey messages on the top ten heavily trafficked online message boards in Taiwan (MIC 2009), such as the Wretch blog(http://www.wretch.cc/blog), the Yahoo! Kimo blog (Http://tw/blog/yahoo.com/), the Sina blog (http://blog.sina.com.tw/), the Xuite blog (http://blog.xuite.net/), and the Pixnet blog (http://www.pixnet.net/blog), during the two-month period of data collection. The message stated the study purpose, and provided a hyperlink to our online questionnaire on www.my3q.com. The participants could respond to the online questionnaire by entering the URL provided on the message.

Incomplete responses to questionnaires were considered invalid samples. Those without blogging experience were not taken into account when testing the hypotheses. As a result, the number of valid samples was 521. The characteristics of the samples are shown in Table 2.1. The data indicates that respondents have a gender ratio of F : M= 53.8% : 46.2%, 88% are ages between 16 and 25, 83.7% have college degrees, 80% use blogs at home, 50.6% have 1 to 3 years of blogging experiences, and 84.9% currently maintain their own blogs. Their demographic findings from respondents were roughly consistent with the Market Intelligence and Consulting Institute (MIC) 2008 report (MIC 2009).

When participants fail to return a survey or fill it out completely, the results can affect the characteristics of the sample. Non-response bias occurs when some subjects choose not to respond to particular questions and when the non-responders are different in some way from those who do respond (Armstrong and Overton, 1976). Palmquist and Stueve (1996) suggested that younger and more affluent males are the individuals most likely to respond to surveys on the web. To measure non-response bias, we divided respondents into two groups (Armstrong and Overton 1976, Straub 1989): early respondents (71%) and latter respondents (29%) (the latter were surveyed one month later than the former). These two groups were

compared on the basis of their sample characteristics of age, education, blog and computer experiences. The MANOVA's results showed no significant difference (Wilks' Lambda= 0.92, F=0.80, p=0.53). The result indicated that non-response to the internal validity of this study's results were limited, suggesting that the respondent sample was a random subset of the total population.

Table 2.1. Demographic profile

Measure items	Frequency	Percent (%)	Cumulative (%)
Gender			
Male	242	46.2	46.2
Female	279	53.8	100.0
Age			
Less than 15	3	0.6	0.6
16-20	241	46.3	46.9
21-25	219	42.2	89.0
26-30	34	6.4	95.5
31-35	14	2.6	98.1
36-40	4	0.8	98.9
Over 41	6	1.1	100.0
Education			
Junior high school or less	3	1.1	1.1
High school	61	11.6	12.7
Bachelor' degree	438	83.7	96.4
Graduate degree	17	3.2	99.6
doctor's degree	2	0.4	100.0
Place of blogging			
Home	415	80.0	80.0
Campus	65	12.3	92.3
Office	32	6.0	98.3
Other	9	1.7	100.0
Experience in blogging			
under 6 months	76	14.4	14.4
6 months - 1 year	86	16.3	30.6
1 year - 2 years	144	27.2	58.0
2 year - 3 years	117	23.4	81.5
3 year - 4 years	50	9.5	90.9
4 year - 5 years	30	5.7	96.6
over 5 years	18	3.4	100.0
Currently maintain their own blog			
Yes	441	84.9	84.9
No	80	15.1	100.0

Following data collection, structural equation modeling (SEM) was used for analysis. Data analysis was performed in accordance with a two-stage methodology developed by Anderson

and Gerbing (1988). In the first stage, the measurement model was assessed in terms of item loading, internal consistency, convergent and discriminant validity of the constructs with the confirmatory factor analysis (CFA). Next, the structural model was used to evaluate the proposed research model by examining the path coefficients. The SAS and AMOS were adopted as the tools to compute the results.

2.5. Results

2.5.1. Measurement model

The measurement model in CFA was revised by dropping items. The modification index (MI) is the index used to select indicator variables (Joreskog and Sorbom 1984). Through repeated filtering, three indicator variables were deleted (see the items with the * symbol in Appendix A). After dropping items, the CFA showed an acceptable model fit (Hatcher 1994). The chi-square to degrees of freedom ratio (chi-square/d.f.) was less than 2.0. The CFI, GFI, NFI, and NNFI were all greater than 0.9; the RMSEA is less 0.05. The overall goodness-of-fit indices are shown in Table 2.2.

Table 2.2. Goodness-of-fit indices for measurement model

Indices	χ^2	df	p-value	NFI	NNFI	CFI	GFI	AGFI	RMSEA
Measurement model	516.87	312	<0.001	0.96	0.98	0.98	0.94	0.92	0.04

Descriptive statistics for the research constructs are presented in Table 2.3. Fornell and Larcker (1981) recommended that item loading (standardized factor loading) and internal consistencies greater than 0.7 are considered acceptable. Overall item loadings exhibited high

loadings (>0.7) on their respective constructs. In CFA, composite reliability can reflect the internal consistency of the indicators with their respective constructs. In Table 2.4, all composite reliabilities greater than 0.7, Cronbach's alphas greater than 0.7, and average variance extracted (AVE) greater than 0.5, exhibit good internal consistency with the measurement model (Hatcher 1994).

Table 2.3. Descriptive statistics and reliability

Variables	Mean	Standard deviation	Standardized factor loading	t-value
Perceived media richness				
PMR1	4.98	1.35	0.83***	21.8
PMR2	4.88	1.33	0.83***	21.7
PMR3	5.09	1.33	0.83***	21.7
PMR4	5.21	1.35	0.84***	21.9
Perceived critical mass				
PCM1	5.20	1.44	0.94***	28.3
PCM2	5.07	1.48	0.90***	26.6
PCM3	5.16	1.50	0.92***	27.7
Media experience				
ME1	3.32	1.40	0.69***	16.6
ME2	3.74	1.23	0.94***	13.8
Social Influence				
SI1	4.57	1.42	0.88***	24.9
SI2	4.69	1.40	0.90***	25.2
Perceived usefulness				
PU1	5.04	1.37	0.84***	23.2
PU2	5.01	1.29	0.83***	22.4
PU3	4.84	1.36	0.80***	21.6
PU4	4.80	1.40	0.73***	19.0
PU5	5.07	1.33	0.87***	24.6
Perceived ease-of-use				
PEOU1	5.22	1.30	0.85***	23.9
PEOU2	5.04	1.33	0.84***	22.9
PEOU3	5.07	1.32	0.87***	24.5
PEOU5	5.10	1.33	0.87***	24.7
PEOU6	5.12	1.36	0.90***	26.2
Attitude toward using blog				
AT1	5.12	1.30	0.88***	25.2
AT2	5.06	1.35	0.93***	27.7
AT3	5.09	1.35	0.89***	25.6
AT4	4.96	1.28	0.86***	24.3
Behavioral intention to use blog				
BI1	4.91	1.34	0.87***	24.0
BI2	4.86	1.41	0.84***	22.3
BI3	4.97	1.40	0.86***	23.5

Notes: *** $p < 0.001$.

Table 2.4. Discriminant validity and composite reliability

	Composite Reliability (CR)	Cronbach's alphas	AVE	1	2	3	4	5	6	7	8
1. Perceived media richness (PMR)	0.90	0.92	0.69	**0.83**							
2. Perceived critical mass (PCM)	0.94	0.94	0.85	0.59	**0.92**						
3. Media experience (ME)	0.81	0.79	0.71	0.26	0.35	**0.84**					
4. Social Influence (SI)	0.88	0.88	0.82	0.58	0.74	0.38	**0.90**				
5. Perceived usefulness (PU)	0.91	0.91	0.66	0.63	0.47	0.29	0.50	**0.81**			
6. Perceived ease-of-use (PEOU)	0.94	0.95	0.75	0.66	0.56	0.33	0.51	0.67	**0.87**		
7. Attitude toward using blog (ATT)	0.94	0.93	0.79	0.66	0.57	0.34	0.65	0.72	0.69	**0.89**	
8. Behavioral intention to use blog (BI)	0.89	0.92	0.74	0.59	0.60	0.45	0.70	0.64	0.66	0.78	**0.86**

Note: Diagonals elements are the square root of average variance extracted (AVE). Off-diagonals elements are the correlations between the different constructs.

To assess convergent validity, the t test for the factor loading in the same construct should be statistically significant (Hatcher 1994). Table 2.3 indicates that all indicators were satisfactory. To assess discriminant validity, the square root of AVE should exceed the inter-construct correlation (Hatcher 1994, Hair *et al.* 2006). As shown in Table 2.4, the inter-construct correlation among indicators was smaller than the square root of AVE by the constructs. Therefore, these results indicate that convergent and discriminant validities were all achieved.

2.5.2. Structure model

Figure 2.2 shows the standardized path coefficients and explains the variances. This study used maximum likelihood estimates for each parameter. The analytical results for the proposed research model are presented in Table 2.5. Most of the hypotheses are supported except for Hypothesis 2a. PMR had significant positive effects on PU ($\beta_{1a} = 0.28,\ p < 0.01$)

and ATT ($\beta_{1b} = 0.20,\ p < 0.01$), rendering support for Hypotheses 1-1a and 1-1b. PCM had significant effect on ATT ($\beta_{2b} = 0.15,\ p < 0.01$), providing support for Hypothesis 1-2b. Unexpectedly, PCM had no significant effect on PU ($\beta_{2a} = -0.06,\ p > 0.05$), and did not support Hypothesis 1-2a. PMR had significant positive effects on ATT ($\beta_3 = 0.07,\ p < 0.05$), validating Hypotheses 1-3. SI had significant positive effects on PU ($\beta_{4a} = 0.16,\ p < 0.05$) and BI ($\beta_{4b} = 0.35,\ p < 0.01$), validating Hypotheses 1-4a and 1-4b. TAM hypotheses were all significant ($\beta_5 = 0.43,\ p < 0.01$; $\beta_6 = 0.22,\ p < 0.01$; $\beta_7 = 0.36,\ p < 0.01$; $\beta_8 = 0.13,\ p < 0.01$; $\beta_9 = 0.48,\ p < 0.01$), providing support for Hypotheses 1-5, 1-6, 1-7, 1-8, and 1-9.

ATT is directly and significantly affected by PMR, PCM, ME, PU, and PEOU. Together, they accounted for 65 percent of the variance in ATT. Moreover, PU is directly and significantly affected by PMR, SI, and PEOU. Together, they accounted for 53 percent of the variance in PU. Finally, BI is significantly affected by ATT, SI, and PU. Together, they accounted for 69 percent of the variance in BI.

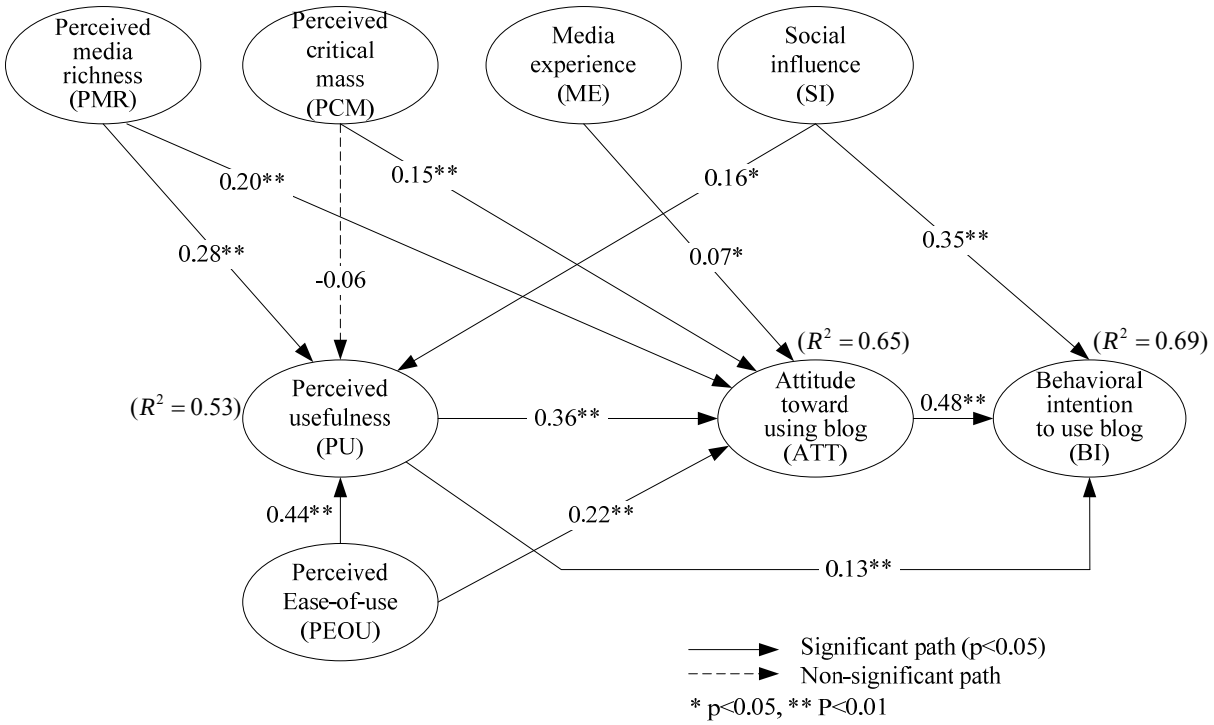


Figure 2.3. Results of structural modeling analysis

Table 2.5. Parameter estimates for hypothesized paths in structure equation model

Research hypothesis	Path description	Path coefficient	Result
H1-1a	PMR → PU	0.28**	Supported
H1-1b	PMR → ATT	0.20**	Supported
H1-2a	PCM → PU	-0.06	Not supported
H1-2b	PCM → ATT	0.15**	Supported
H1-3	ME→ATT	0.07*	Supported
H1-4a	SI → PU	0.16*	Supported
H1-4b	SI → BI	0.35**	Supported
H1-5	PEOU → PU	0.44**	Supported
H1-6	PEOU →ATT	0.22**	Supported
H1-7	PU →ATT	0.36**	Supported
H1-8	PU →BI	0.13**	Supported
H1-9	ATT →BI	0.48**	Supported

Note: PMR= Perceived media richness; PCM= Perceived critical mass; ME= Media experience; SI= Social Influence; PU= Perceived usefulness; PEOU= Perceived ease-of-use; ATT= Attitude toward using blog; BI= Behavioral intention to use blog (BI).
*p<0.05; **p<0.01

2.6. Discussions

Numerous issues affect an individual's decision to select media. This study examined two theoretical aspects of this decision, technology acceptance and media choice factors, and showed how these aspects relate to the acceptance of a blog. The results of this proposed model show that the TAM hypotheses were all supported, and the media choice factors, significantly and directly, affect attitude toward using blog and behavioral intention to use blog in different ways. Incorporating technology acceptance with the media choice factors perspectives predicts attitude toward using blog ($R^2 = 0.65$) and behavioral intention to use blog ($R^2 = 0.69$).

By examining the relative importance of the four media choice antecedents identified in this study, we found that perceived media richness, perceived critical mass, and media experience beliefs of structural assurances have a direct effect on attitude toward using blog. perceived media richness has by far the largest effect on attitude toward using blog of the four media choice factors. The standardized path coefficient of media richness was 0.28, whereas the other path coefficients of perceived critical mass and media experience were 0.15 and 0.07, respectively. A possible explanation of this finding may be as follows: Since the blog was in its infant stage, users were not very popular, and most users had limited experience. However, the blog offered various communication functions to support users to effectively interact with each other. Therefore, users consider perceived media richness as more important than other media choice factors. Moreover, perceived media richness and social influence have an indirect effect on attitude toward using blog through perceived usefulness. Perceived usefulness was an effective mediator between the media choice factors and attitudes toward use. Therefore, media choice factors not only directly influence attitude toward using blog, but also indirectly and partially influence attitude toward using blog through perceived usefulness.

In addition, the TAM construct perceived usefulness remains an important predictor of acceptance behaviors, as in many previous studies (Venkatech and Morris 2000, Gefen *et al.* 2000 2003). Of the significant standardized β coefficients, perceived usefulness is larger (β=0.36) than perceived ease-of-use and media choice factors. This suggests that while all factors are important, perceived usefulness is a stronger direct predictor than other TAM and media choice factors.

2.7. Limitations

Although our findings have meaningful implications for enhancing the understanding of an individual's blog acceptance behavior, this study has some limitations. First, because the subjects of this study were internet users and were not randomly selected from a specific population, the potential for self selected samples exists. Even though the no-response bias was not significant, the issue of sample bias may still exist. In addition, given that measurements of all structures were taken at the same time and using the same instrument, causality can only be inferred with the potential for common method variance. Finally, because of the blog features and the restrictions on research methods, some media choice factors were not taken into account.

Chapter 3. A blog application: Assessing the effects of interactive blogging on student attitudes towards peer interaction, learning motivation, and academic achievements

3.1. Research background

Blog use in educational sectors has grown extensively in the last decade and considerable research has focused on the educational use of blogs (Oravec 2002, Williams & Jacobs 2004, Richardson 2006; Dailey 2006, Churchill 2009, Kerawalla *et* al. 2009, Yang 2009). Although blogs did not originate in education sectors, they have become useful in various educational levels and settings, and as an authoring tool. For example, blogs often serve as a digital portfolio of student assignments and achievements (Liu & Chang 2010). Most blog platforms provide a personal writing space, which is easy to publish, sharable, and automatically archived, empowering users to form learning communities through inter-linkages. Therefore, blogs can combine solitary reflection and peer interaction in learning processes (Richardson 2006, Yang 2009). Williams and Jacobs (2004) suggest that students learn as much from each other as they do from an instructor or a textbook - what matters is finding an appropriate vehicle for facilitating this learning. They considered blogging as potential transformational technology for teaching and learning. Oravec (2002) observed the many blog dimensions suited to the individual voices of students, empowering them, and encouraging them to become more critically analytical in their thinking. The typical scenario when a teacher poses a question in a classroom is that a few dominate the discussion. Students also express their opinions without solid support from content they are studying, perhaps because there is not enough time to prepare or reflect. Disengaged students frequently remain silent and others

who might have something truly relevant to contribute, are too shy to do so. Dailey (2006) considered time as the biggest advantage of blogs. Blogging gives students the time to think. This motivates us to investigate ways of using blogs to engage students in learning when they are not in class.

Critical reflection is the process of thinking back on prior learning to determine whether what one has learned is justified under present circumstances (Mezirow & Associate 1990). The process of creating comments involves reflecting on prior readings of original posts authored by a peer and on other prior knowledge acquired to date. Hall and Davison (2007) investigated hundreds of blog comments in an interactive learning environment and observed a significant number of reflective comments, posting messages, and noteworthy comments leading to an inquiry that accentuated critical reflection. In particular, composing blog comments involves stepping back, reflecting, and analyzing, which enables individuals to become more thoughtful and mindful of their work. Yu *et al.* (2010) indicated that sharing culture is strongly linked to member knowledge sharing behavior via weblogs. Participants appreciated the opportunity to use technology to communicate with peers.

Classroom discussion is often teacher-student centered, rather than a student-student dialog. The blog is a vehicle to ensure that everyone has a voice and is a valued member of the learning community. The instructor has previously been the only person to access student work. Students turn in their work to instructors and have no way to learn how their peers scored on the same assignments, thereby losing the potential of appreciating student work. In contrast, peer learning is a form of cooperative learning that enhances the value of student-student interaction. Students using interactive blogs can read peer postings and leave comments, which enable them to learn from peers by creating dialogues with each other (Kay 2006). Students enhance their analytical thinking while engaged in such meaningful dialogues. In this sense, blogs may have the potential to transform personal learning to

collaborative learning. This motivates us to compare and contrast the individual use of student blogs for personal e-portfolios/learning diaries with their collaborative use in the context of a wider social network.

A general awareness of blogs exists in higher education, and some students and faculty may even have maintained personal blogs for years in non-educational settings (Makri & Kynigos 2007). However, blogs in educational environments have not generated a comparable level of momentum as those in non-educational use. Some researchers (Hall and Davison, 2007) argue that our understanding of how to use social software such as discussion forums and blogs in an effective and meaningful way is minimal at best. The problem partially rests in the absence of more cohesive information to assess quality and effectiveness. Enthusiastic claims for blogging in educational settings need to focus on a comprehensive research base broadly supported by vigorous empirical studies conducted in the framework of educational theory.

Research methods such as the user survey (Williams & Jacobs 2004) and ethnography (Dailey 2006, Hall & Davison 2007, Makri & Kynigos 2007, Yang 2009) have been used to assess blogging quality and effectiveness, but the perspective differences in surveys and methodologies make it difficult to combine the results into a cohesive knowledge base that can guide practice and education (Hall & Davison 2007). This study will provide substantial insights beyond enthusiasm for educators who consider the use of blogs to improve the quality of student learning experiences. This study investigates blog technology for encouraging interactions between students, as well as its consequences in terms of attitude changes towards learning motivation, peer learning, and academic achievement.

We proposed a hypothesis testing approach to assess the effects of blogs on student attitudes towards peer learning, academic achievements, and community interaction. The hypotheses to contrast solitary and interactive use of blogs were tested through a quasi-experiment employing a repeated measures design (Rosenthal & Rosnow 1991) where

the “control group” was compromised of students participating in the solitary use of blogs, and where the “experimental group” was compromised of students participating in the interactive use of blogs. Participants were electronics majors who enrolled in two courses for two consecutive semesters from 2006 to 2007. Students used blogs when not in class. Questionnaires were used as an instrument to collect data for quantitative analysis.

3.2. Theoretical background and hypothesis development

The traditional classroom-learning environment includes only an instructor and learners. The instructor is responsible for delivering content, answering questions, and testing learning, while learners play a passive role. Communication of course content is mostly one-way, from the instructor to the learner. In a hybrid-learning environment, the instructor designs the classroom instruction and becomes more of a facilitator to engage learners through computer mediated communication (CMC). Technology has created opportunities for learning to become a more interactive process between instructors and learners as well as among learners.

We used the expectancy theory of Vroom (Rao 2000) as a framework to explore factors, which motivate one to contribute and collaborate in online learning environments: blogs as compared to other social tools such as discussion forums. The expectancy theory includes the three dimensions of valence, instrumentality, and expectancy when investigating choices people make. Motivation is produced by individual expectancy that a certain effort will lead to an intended performance, the instrumentality of this performance achieving a certain result, and the desirability of this result for the individual, known as valence (Condrey 1998). Blogs provide more control in configuration, content sharing, and customization than discussion forums. Diverse expectancy levels involve the efforts required that lead to the intended results in peer learning. In other words, what matters is whether the efforts will eventually lead to the

end-results. Findings in the work of Kay (2006) suggest that idea sharing and online interaction in discussion forums are significant in learning environments. Hall and Davison (2007) also provide evidence of learning effectiveness in terms of peer support, propositional stances, and group affective tones. However, blogs might be a better instrument to achieve idea sharing and collaborative learning without sacrificing too much on customizing blogging space, tuning its look and feel, and the sense of ownership (Hall & Davison 2007). In contrast, members jointly own discussion forums, administrators design their look and feel, and member-specific customization is hardly possible. With regard to valence, blogs compared to discussion forums leave more room for students to present their results in multiple forms of media other than text, a major form of media seen in discussion forums.

The content analysis of blogs (Hall & Davison 2007) reveals that interactive use of blogs with students composing comments in educational settings results in a substantial degree of online peer interaction among learners. This leads us to the following hypothesis:

H2-1: The use of the comments feature in blogs is associated with positive attitudes towards online peer interaction.

Studies have supported that "good conversations" in blogs as social media are beneficial to peer learning. Makri and Kynigos (2007) conducted a study on 48 university students assigned to publish their answers to open-ended questions and problems on the blog, make their ideas explicit and "readable" by others, and comment on the work of their peers. They analyzed excerpts of written transcripts from participant blog entries, observation notes, informal interview transcripts, and a final evaluation questionnaire. Their ethnography method identified most students in their experiments as "blog frequent visitors," who visited blogs quite often, but did not comment or contribute to a discussion; rather, they merely

observed ongoing activities or debates. Hall and Davison (2007) conducted content analysis of 79 student blogs in a university class setting and provided an evidence base for peer support through reflective learning activities facilitated by student blogs. The students were free to interpret the instruction to be "reflective" to mean that they should challenge statements posted on peer blogs as much as possible. Based on the role model theory of Merton (Holton 2004), individuals compare themselves with reference groups of people who occupy the social role to which the individual aspires. Similarly, exposing oneself to good postings, which translate postings with reflection and insight, identifies role models in the learning context among many peers.

A behavior pattern in the blogging context involves some motivated students who perceive differences among themselves, to some students who deepen their thinking, and finally, to some accomplished students who successfully compose feedback in their comments (Chang & Chang, in press). From the perspective of Piaget (1926), students interacting with their peers in learning situations will cause disequilibration, expose inconsistent knowledge, explore opposing perceptions and ideas, and challenge inadequate logical reasoning and strategies, resulting in higher-quality comprehension by learners. This leads us to hypothesis **H2-2**.

H2-2: The Use of the comments feature in blogs is associated with more motivation to learn from peers than not using the comments feature.

From the social modeling perspective (Bandura 1986), student-student interaction presents opportunities for observing and imitating successful behaviors and achievements, which essentially results in changes in peer levels of competence in a task. Peer learning is a form of cooperative learning that enhances the value of student-student interaction and results in

various advantageous learning outcomes. By opening opportunities for peers to view blogs created by others and encouraging comments and suggestions after examining their viewpoints, exemplars are exhibited for observations and modeling, which, in the light of social modeling by Bandura (1986), should enhance observer knowledge levels in a task. Consequently, course subjects reflected in interactive blog conversation, dialogues, and comments may enhance academic achievements. Therefore, we propose our third hypothesis:

H2-3: The use of the comments feature in blogs is associated with positive attitudes towards academic achievements in course subjects.

3.3. Methods

3.3.1. Participants

Students aged 20 to 26 from two classes, namely Electronic Commerce, and Design of Internet Applications, were surveyed during the fall semester of 2006 (N=71) and the spring semester of 2007 (N=83), as to the use of blogs as a supplement to traditional classroom lectures. The students were all electronics majors with a male to female ratio greater than 5:1. All the participants had used computers and the Internet on a day-to-day basis for at least ten years. Viewed in the cultural context, the users, similar to typical college students in Taiwan, were mostly hesitant to raise questions in classroom settings and preferred to study alone rather than sit in study groups. They also tended to consider asking questions in classrooms as an interruption to the ongoing lecture of the professor, and therefore impolite.

3.3.2. Setting

Students were required to create their own blogs as part of a regular face-to-face course that

met once a week for three hours. After each class meeting, participants were required to go online and write essays on ICT subjects such as IT off shoring and globalization, software business models in the third world, and the future of nonprofit computing. Two classes participated in the experiments. Class members enrolled in Electronic Commerce participated in the solitary use of blogs, and members in the Design of Internet Applications class participated in the interactive use of blogs. The former was called the "Solitary" Group or S-Group, and the latter was called the "Interactive" Group or I-Group. The graduate class was assigned to the I-Group that performed interactive blogging, while the undergraduate class was assigned to the S-Group that performed solitary blogging. The graduate class consisted of first-year graduates and undergraduate seniors while the undergraduate class consisted of only undergraduate seniors. The ratio of the class size was about 1:2. Participants in the I-Group were required to electively make comments or express thoughts about their peer blog postings, while participants in the S-Group were not required to do so. Blog comments were intended to be student-led, and the teacher would only intervene if there were problems that students could not resolve, such as severe controversies and emotional disputes. Individuals who were willing to report abuse of the system to the lecturer used a reporting tool. In the orientation session, students received legal and ethical advice against plagiarism and language abuse since they would be making comments in written form.

The I-group was expected to browse blog postings of their peers, and then select three of them to make verbal comments weekly. However, students were not expected to look at the work of other students. Commenting participation was worth 1/30 of the final grade, to minimize the negative impact of being graded, and yet provide incentives for making comments. The grading was based on the quality of comments, efforts made to compose the comments, and practical contextuality. Students in the S-Group could read blogs of their peers, but that was not expressly required. However, the blog system we used was able to track the

viewing history for each post in terms of page views, times pages were visited, and visitor addresses. Students in the S-group were also assigned to summarize in their own blogs what they read on the blogs of others, to further ensure they read the blogs of others.

The instructor also created a blog as a central hub for the students of both groups to be able to communicate with each other. The instructor blog was for posting course materials in the curriculum, categorizing descriptions of resources, and making announcements to class members. Students of both groups were encouraged to read the instructor blog before the class met to better prepare themselves for class activities.

3.3.3. Platform

The blog in our study is based on the platform of Blogger at http://www.blogger.com, which is now a property of Google. Although it is a commercial operation, there are no mandatory advertisements that may pop up. This quiet atmosphere is one of the reasons for its selection, because we do not like to see students distracted in the middle of a lab simply because of eye-catching advertising media. The search engine along with Blogger is Google, with which most students already feel familiar. Blogger provides a set of ready-to-use templates to choose from, and allows users to make a change later on. This personalization function increases sense of ownership. Due to vandalism arising in blogs, we adopted a built-in challenge mechanism to fight with crawler-based vandal programs to filter unwanted posts and comments.

3.3.4. Measures and data collection

With the use of the blog as a learning environment during class, the learning engagement and social networking of students enrolled in the class were of interest. Thus, at the end of

each semester, a questionnaire was used to understand student attitudes for the two groups. Based on the suggestions of Hinkin (1998) regarding development measures for use in survey questionnaires, we invited education experts to participate in item generation. According to the three factors that we defined for the purpose of our study, online peer interaction, motivation to learn from peers, and academic achievements, a set of five items were designed for each individual factor. The questionnaire was poised by a score on a 5-point Likert scale, where 5 (Strongly Agree) represents the maximum score of the scale and 1 (Strongly Disagree) represents the minimum score. The original questionnaire included 15 questions. For each set of data collected in the survey, we checked its factor loading individually. We kept questions with loadings 0.7 or higher to confirm that independent variables identified a priori are represented by a single appropriate factor. For each of the three factors, there were five questions at the beginning, but only three remained after checking factor loadings. Confirmatory Factor Analysis also indicated reasonable goodness-of-fit (CFI>0.9, GFI>0.9, NNFI>0.9, RMSEA<0.05). Factor loading of each remaining item showed convergent validity in the empirical data. A chi-square different test on each factor further confirmed discriminant validity of the results collected from the questionnaire. Finally, reliability analysis was used to check the dependability, consistency, and homogeneity of each item in a given factor. Cronbach's α for all factors were all higher than 0.80 for the two consecutive semesters, satisfying the general requirement of reliability for research instruments (Hatcher 1994). See Appendix for the questionnaire.

To check the difference in samples from the two groups, multivariate analysis of variance (MANOVA) was used to detect the questionnaire to probe background data, including years of computer experiences to date, daily usage of computer, and experiences in web authoring. The result of the MANOVA showed that the two groups had no statistical significance ($F=2.03$, $p=0.14$). Both groups were electronics majors with more than ten years of computer

experiences. Although the two groups were studying separate subjects, the two subjects were both technical in the electronics context, their instructor was the same, and the instruction format was similar.

In addition to investigating student attitudes toward interactive blogging through questionnaire, we were interested in the content of their comments. Using the same method as in Hall and Davison (2007), we performed content analysis by digging into student comments on the posts. As suggested by Oravec (2002) and Yu *et al.* (2009) in their study of educational blog, reflection is a useful indicator to the learning effectiveness of blogs. Therefore, we read the comments, classified them, and determined the percentage of comments, which could be regarded as "reflective" in nature.

The classification was based on a coding scheme for reflection shown in Table 3.1. The boundary between reflection and non-reflection, as well as between relevance and irrelevance, is somewhat blurred for some comments. Some comments show no reflection at all; some comments demonstrate sufficient reflection, while others possess marginal reflection. Basic rules of good practice in coding (Fielding 2008) were adhered to. When problems or ambiguity arose, the context of the original entry was checked and a comparison of other similar cases was made to resolve the coding issue. Two researchers conducted independent analysis on the same dataset and cross-examined the results. In the presence of any inconsistency, the individual items were retrieved for discussion and recoded by consensus of the two researchers. The degree of care enhanced the reliability of the coded output and confidence in the statistical analysis process towards research findings.

Table 3.1. Coding scheme for reflection

Dimension	Code	Interpretation	Evidence
Reflection	C	Context-free	Comments made out of the context of the original entry
	U	Non-reflective	Comments made without demonstrating perceivable reflection on the original entry
	R	Reflective	Comments made with substantial reflection

The first semester produced 242 coded comments and the second semester produced 247 coded comments, both in the I-Groups.

3.4. Findings

For each semester, we conducted an unpaired samples t-test to assess whether the outcomes of the two groups were statistically distinct from each other. Table 3.2 summarizes the results. The mean values for all the question statements in both groups were above the midrange point (i.e. 3), which suggested that the use of blogs in both groups generally led to positive perceptions regarding levels of interaction by the use of blogs, motivation to learn from peers, and academic achievements in course subjects. The t-test yielded statistically significant results for items 1~3 regarding H1 (Fall 2006: t=2.503, p=0.015; Spring 2007: t=2.634, p=0.010), and items 7~9 regarding H3 (Fall 2006: t=3.807, p<0.001; Spring 2007: t=3.717, p<0.001)**.** The means for items related to H1 and H3 were higher in the interactive use of blogs than in the solitary use. These combined results provide general support for hypotheses **H2-1** and **H2-3**. The t-test yielded statistically insignificant results for items 4 ~ 6 in connection with **H2-2** (Fall 2006: t=-0.466, p=0.643; Spring 2007: t=-0.458, p=0.648). Therefore, the statistical analysis does not support hypothesis **H2-2**. The statistical agreement of the two data sets from Fall 2006 to Spring 2007, evidenced reliability and consistency with

regard to the three hypotheses tested. Table 3.3 summarizes the results in connection with the hypotheses.

Table 3.2. t-test results of I-Group and S-Group in two consecutive semesters

Fall 2006	I-Group (n=23)		S-Group (n=48)		t-value	Cronbach's α
Items	mean	S.D.	Mean	S.D.		
1~3	4.437	0.496	4.105	0.720	2.503*	0.945
	4.465	0.483	4.021	0.681		
	4.225	0.531	3.862	0.598		
4~6	4.070	0.604	4.181	0.740	-0.466	0.936
	4.324	0.689	4.453	0.776		
	4.282	0.781	4.393	0.817		
7~9	4.545	0.366	4.211	0.747	3.807**	0.823
	4.577	0.339	4.020	0.651		
	4.453	0.320	3.798	0.648		

Spring 2007	I-Group (n=25)		S-Group (n=58)		t-value	Cronbach's α
Items	mean	S.D.	mean	S.D.		
1~3	4.370	0.395	3.932	0.559	2.634*	0.892
	4.481	0.401	4.019	0.690		
	4.534	0.443	4.126	0.723		
4~6	4.222	0.709	4.331	0.811	-0.458	0.921
	4.144	0.624	4.103	0.717		
	4.129	0.630	4.212	0.767		
7~9	4.661	0.442	3.959	0.787	3.717**	0.824
	4.502	0.339	3.872	0.654		
	4.474	0.287	3.744	0.640		

Notes: I-Group= Interactive Group; S-Group= Solitary Group
** p<0.01; * p<0.05

Table 3.3. Summary of the results in connection with hypotheses

Hypotheses	Results
H2-1: Use of the comments feature in blogs is associated with positive attitudes towards online peer interaction.	Supported
H2-2: Use of the comments feature in blogs is associated with significantly more motivation to learn from peers than use of the comments feature is disabled.	Not supported
H2-3: Use of the comments feature in blogs is associated with positive attitudes towards academic achievements in the course subjects.	Supported

This study suggests that the interactive use of blogs in higher education, when compared with the option of using blogs in isolation, was associated with more positive attitudes towards online peer interaction among learners by at least 9% (which was found to be statistically significant), and academic achievements in course subjects by at least 13% (which was found to be statistically significant). However, interactive use of blogging was not associated with significantly more motivation to learn from peers than solitary use of blogging -- even though, as indicated by the results in connection with items 4~6 in Table 3.2, students of both groups showed above the midrange point (i.e. 3) motivation to learn from peers (with mean values of 4.17 and 4.26 in the first semester; 4.15 and 4.22 in the second semester respectively on a scale of 1 to 5), regardless of the individual groups they belonged to.

Suggested by question #9 on the questionnaire, it is interesting that students improved their academic performance though the use of blogs. At the end of the first semester grading, we examined student academic achievements and perceived attitudes towards blogs in educational settings. The academic achievements were divided into five groups (A, B, C, D, and F) according to the grades students received, where F stood for the failing grade. Table 3.4 summarizes the results.

A chi-square test for independence evaluates statistically significant differences between

proportions for five groups in the data set of Table 3.4. Based on the data analysis, the academic performance positively relates with perceived attitudes towards blogs ($\chi 2 = 9.57$, df=4, p=0.048,; Fisher's Exact Test p=0.047). This yields a statistically significant difference in student academic achievement versus perceived attitudes towards educational blogs.

Table 3.4. Level of academic achievements versus perceived attitudes towards educational blogs

Achievement	Like blogs (%)	Do not like blogs/ Neutral (%)	# Students (%)
A	4 (5.63%)	0 (0.00%)	4 (5.63%)
B	12 (16.90%)	6 (8.45%)	18 (25.35%)
C	19 (26.76%)	15 (21.13%)	34 (47.89%)
D	5 (7.04%)	6 (8.45%)	11 (15.49%)
F	0 (0.00%)	4 (5.63%)	4 (5.63%)
Total	40 (56.34%)	31 (43.66%)	71 (100%)

Notes: Question no. 9 on the questionnaire is poised by a score on a 5-point Likert scale with anchors 5 (strongly agree) to 1 (strongly disagree). Like blogs = 4, 5; Neutral=3; Do not like blogs=1, 2.

3.5. Discussions

Both groups showed remarkable motivation to learn from peers through blogs. The data did not confirm that making blogs available to students in a hybrid-learning environment, using the comments feature in blogs, was associated with significantly more motivation to learn from peers. However, the data suggested that dialogues in the form of blog comments was associated with positive attitudes towards academic achievements in course subjects and online peer interaction, compared to no such engagement.

Critical reflection not only imparts meaning to what has been described, but also adds depth and breadth to the meanings by asking questions about, and relating meanings to, a spectrum of learning issues. In our study, we found that 61% of the comments were reflective. Based on content analysis, Chang and Chang (in press) reported that reflective comments in their

hybrid-learning environments for electronics majors ranged from 34% to 79%, depending on classes. Yang (2009) reported that 375 of 977 blog postings, i.e. 38%, were reflective by 43 EFL student teachers in a practice community during the fall semester of 2005.

The findings also suggest that dialoguing by making comments reinforced the interaction atmosphere. Some students responded more to other student comments. We observed threaded discussions that typically involved multiple users replying to particular postings within a topic thread. Although blog postings without comments do not necessarily mean they were unread, comments are a trace for blog authors to recognize that they have gotten their messages across to those who already made comments and perhaps to many more who only read. Therefore, comments seem to help foster online peer discussion, enhance interaction, and sharing culture. We observed that a significant number of students made clever efforts to decorate their blogs to look more personal and stylish. These we viewed as signs to engage in online interaction with peers. Some students even selected special fonts to distinguish their blogs from others. From a teacher point of view, we felt students had been motivated to pay more attention to online work on their blogs than to "offline work" that was only to be graded by instructors. One significant factor that made the difference is the peer who can view the work of others quite easily online, but can hardly do so in an offline environment.

Chapter 4. Implications and conclusions

4.1. Implications

4.1.1. First study implications

The purpose of the first study is to apply the media choice factors perspective and modify the TAM to explain and predict an individual's acceptance of the IT on blogs. An online field survey was conducted to empirically examine the proposed model. The results indicate that the blog acceptance was significantly affected by technology acceptance and media choice factors. The media choice factors included media richness, critical mass, social influence, and media experience. These findings provide some contributions to both researchers and practitioners.

For researchers, this study attempts to develop a new theory by grounding new factors in a well-accepted general model (TAM) and applying them in a new context. It is important to note that the four new media choice factors - media richness, critical mass, social influence, and media experience - are placed within the nomological structure of the original model and are compatible with TAM factors. This approach is likely to ensure a consistent model of the drivers of web-based media and stable theory development. Therefore, the proposed model makes an important contribution to the emerging literature on web-based media.

The characteristics of web-based media can affect an individual's media acceptance behavior, but the strengths of these influences may be different at different stages. The media characteristics (such as media richness) are more important than social influence and experience characteristics at the infant stage. Given the findings of this study, it appears necessary for media researchers to compare the influences of the media choice factors at different stages by conducting a longitudinal study.

Prior studies suggested media choice factors directly influence attitudes or behavioral intentions; however, this study included an mediating factor, namely perceived usefulness. This study found that media choice factors not only directly affect individuals' attitude or behavioral intention, but also indirectly affect them through perceived usefulness. User interest in new media results from various different characteristics of the media. However, users may first need to perceive its usefulness or uselessness, before changing their attitude and behavioral intentions. Therefore, future research could further examine direct and indirect influences between media choice factors and individual behavior to reach a deeper understanding of the media acceptance process.

For practitioners, this study also generated some practical implications for blog-hosting service providers and bloggers. First, our study highlights the importance of media richness in blog acceptance. Blogs provide a communication channel for blog posts and readers. A blog with high media richness reduces uncertainty and equivocality between users to effectively increase interactions. Accordingly, bloggers should provide a more rapid response and more diverse information to maintain with high media richness on their blogs, and blog-hosting service providers should build in more communication functions to enable the utilization of richer forms of media. Second, social influence is an important factor in blogging that affects an individual's acceptance behavior. Therefore, the blog-hosting service providers should strengthen the development of community applications to attract more users. Third, two beliefs, namely perceived usefulness and perceived ease-of-use, have crucial influences on an individual's acceptance behavior. Blogs allow users to communicate to the largest number of people with the least effort, providing a useful communication environment. Bloggers prepare their blog entries without having to be familiar with special coding and upload the message to their blog by clicking on the "Publish" button. Blog-hosting service providers should be committed to providing a more user friendly and accessible environment to attract more

bloggers.

4.1.2. Second study implications

This second study describes a study involving undergraduate and graduate students, majoring in electronics, from a large university in Taiwan. Of those students, approximately 68% participated in solitary use of blogs as a supplement to traditional classroom lectures, and the remainder in interactive use of blogs that were designed to enhance peer learning experiences. In this study, student feedback was collected to conduct a quantitative survey study. Our main conclusion is that engaging in dialogues in the form of blog comments is associated with positive attitudes towards online peer interaction and academic achievements, and both groups show positive motivation to learn from peers.

The study results reported for student attitudes towards peer interaction, learning motivation, and academic achievements are limited for several reasons. In the future, we will extend our study in five major directions to address some limitations of the current study. First, the learning context was narrowly defined, focusing on learning a technical, procedure-based subject, namely Electronic Commerce and Design of Internet Applications. A plan that includes investigations of blog use in other disciplines such as Business Administration and Women's Studies would be more comprehensive. Second, blogging acted as a supplement to a traditional face-to-face course, both inside and outside of school. The value of the blog for reflective learning and peer support in distance learning settings should be investigated in a separate study. Third, although student attitudes towards peer interaction, learning motivation, and academic achievements have been investigated, in-depth content analysis with more dimensions (such as subjective perceptions of reflection, stances, and tones to contrast the empirical findings) would be interesting. Fourth, the current study was designed to last for two semesters. Our future research will emphasize a longitudinal semester-by-semester study using the same methodology to indicate the overall quality of the learning experience and

outcome. Fifth, this study did not address a general concern about shared learning platforms as plagiarism. The dark side of social learning could be its openness to potential plagiarism under the disguise of peer learning. If this is a serious issue in blogs, what strategies can tackle it? The implication of using blogs to address plagiarism can be complicated and require further research.

The primary data in the study was collected between Autumn 2006 and Spring 2007. Since then, Web 2.0 includes several new applications that enable arbitrary subsets of users to communicate with each other. Such communication increasingly occurs, not just on Facebook, but also on several smaller network applications such as Twitter. While the blog includes a solitary mode, Twitter and Facebook are intrinsically collective and social. Research has found that college students who accessed the Facebook website of a teacher with high self-disclosure anticipated higher levels of motivation and affective learning and a more positive classroom climate (Mazer, Murphy, & Simonds, 2007). Twitter also shows similar potential in the educational context, and can be appropriated for conversational interaction. Twitter users with similar intentions connect and collaborate with each other while seeking or sharing information (Java, Song, Finin & Tseng, 2007). Our results, combined with the proliferation of social networking software, suggest that future development of educational tools should pay more attention to social networks.

4.2. Conclusions

Blogs are easy to use and possess interactive features, thus attracting wide use and leading them to be regarded as communication media in web-based information technology. Blogs made it feasible for the communication process to be much larger, less technical, with a higher number of users. Therefore, blogs have become an increasingly popular form of

communication on websites, and have been adopted by users for several applications in domains such as journalism, business, and education. This thesis tried to investigate why people accept blogs, how people use blogs, and what blog applications do for people.

This thesis contains two studies. The first study incorporates the technology acceptance model with media choice factors to explain and predict the blog acceptance behaviors. The media choice factors include media richness, critical mass, social influence, and media experience. The technology acceptance factors include perceived usefulness and perceived ease-of-use. An online field survey was conducted and the structure equation modeling method was applied to investigate the empirical strength of the relationships in the proposed model. 521 experienced blog users were surveyed to examine this model. The results strongly support the proposed hypotheses indicating that technology acceptance and media choice factors influence the blog acceptance behaviors.

The second study explores the usage of blogs in education setting, and how student attitudes towards online peer interaction and peer learning, as well as motivation to learn from peers, may differ when using the blog comments feature, and when students are encouraged to read and comment on each other's work. We contrast two ways blogs affect learning engagement: (a) solitary blogs as personal digital portfolios for writers; or (b) blogs used interactively to facilitate peer interaction by exposing blogging content and comments to peers. A quasi-experiment was conducted across two semesters, involving 154 graduate and undergraduate students. The result suggests that interactive blogs, compared to solitary blogs, are associated with positive attitudes towards academic achievement in course subjects and in online peer interaction. Students showed positive motivation to learn from peer work, regardless of whether blogs were interactive or solitary.

Reference

Liu, Z. F., and Chang, Y. F., 2010. Gender differences in usage, satisfaction, self-efficacy and

Adams, D. A., Nelson, R. R. and Todd, P. A., 1992. Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS Quarterly,* **16,** 227–247.

Agarwal, R. and Karahanna, E., 2000. Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. *MIS Quarterly,* **24,** 665–694.

Ajzen, I. and Fishbein, M., 1980. *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice Hall.

Anderson, J. C. and Gerbing, D. W., 1988. Structural equation modeling in practice: A review and recommended two-step Approach. *Psychological bulletin,* **103** (3), 411-423.

Armstrong, J.S. and Overton, T., 1977. Estimating nonresponse bias in mail surveys. *Journal of Marketing Research,* **14**, 396-402.

Axley, S. R., 1984. Managerial and oOrganizational communication in terms of the conduit metaphor. *Academy of Management Review, 9 (3),* 428-437.

Bandura, A.,1986. *Social cognitive theory*. Holt, Rinehart and Winston, New York.

Bausch, P., Haughey, M. & and Hourihan, M., (2002). *We bBlog: Publishing oOnline with Weblogs (Chapter 8).* John Wiley & Sons, New York.

Blood, R., 2002. *The weblog handbook*: *Ppractical advice on creating and maintaining your blog*. Perseus Publishing.

Boulos, K. and Wheeler, S., 2007. The emerging Web 2.0 social software: an enabling suite of sociable technologies in health and health care education. *Health Information and Libraries Journal,* **24** (1), 2-23.

Cameron, A. F. and Webster, J., 2005. Unintended consequences of emerging communication technologies: Instant Messaging in the workplace. *Computers in Human Behavior,* **21** (1), 85-103.

Carlson, J. R. and Zmud, R. W., 1994. Channel expansion theory: A dynamic view of media and information richness perceptions. *Academy of Management Conference Proceedings*, Dallas, TX, 280-284.

Carlson, J. R. and Zmud, R. W., 1999. Channel expansion theory and the experiential nature of media richness perceptions. *Academy of Management Journal,* **42** (2), 153-170.

Chang, Y.-J. and Chang, Y.-S. (in press) Aassessing reflection, peer support and usability of blogging in hybrid learning environments. *Interactive Learning Environments*.

Chang, Y.-J., Chang, Y.-S., and Chen, C.-H., 2008. Aassessing peer support and usability of blogging technology. *In: Third 2008 International Conference on Convergence and Hybrid Information Technology*, ICCIT 2008, 11-13 Nov. Busan, Korea., 184-189.

Cheng, J.M.-S., Sheen, G.-J., and Lou, G.-C., 2006. Consumer acceptance of the internet as a channel of distribution in Taiwan – a channel function perspective. *Technovation*, **26**, 856-864.

Churchill, D., 2009. Educational applications of Web 2.0: Using blogs to support teaching and learning. *British Journal of Educational Technology,* **40**, 179-183.

Condrey, S. E., 1998. *Hhandbook of human resource management*. Jossey Bass, San Francisco.

Daft, R. L. and Lengel, R. H., 1984. Information richness: a new approach to managerial behavior and organization design. *Research in Organizational Behavior,* **6**, 191-223.

Daft, R. L. and Lengel, R. H., 1986. A proposed integration among organizational information requirements, media richness, and structural design. *Management Science,* **32**, 554-571.

Daft, R. L., Lengel, R. H., and Trevino, L. K., 1987. Mmessage equivocality, media selection, and manager performance: iImplications for information systems. *MIS Quarterly,* **11**(3), 355-366.

Dailey, J., 2006. Blogging for learning: Now everyone has something to say. *Feedback*, Joe Misiewicz Editor. Broadcast Educators Association, Toronto Canada.

Davis, F. D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly,* **13** (3), 319-340.

Davis, F. D., Bagozzi, R.P., and Warshaw, P. R., 1989. User acceptance of computer technology: a comparison of two theoretical models, *Management Science,* **35** (8), 982-1003.

Dennis, A. R. and Kinney, S. T., 1998. Ttesting media richness theory in the new media: Tthe effects of cues, feedback, and task equivocality. *Information Systems Research*, **9** (3), 256-274.

Du, H. S. and Wagner, C., 2006. Weblog success: Exploring the role of technology. *International Journal of Human-Computer Studies,* **64** (9), 789-798.

Feldman, M. S. and March, J. G., 1981. Iinformation in organizations as signal and symbol. *Administrative Science Quarterly,* **26** (2), 171-186.

Fielding, J., 2008. Coding and mManaging dData' in G.N. Gilbert (ed.), *Researching social life* (3rd), pp. 323-352, Sage, London.

Fishbein, M. and Ajzen, I., 1975. *Bbelief, attitude, intention and behavior: Aan introduction to theory and research*. MA: Addison-Wesley Reading.

Fisher, B. A., 1978. *Perspectives on human communication*. New York: Macmillan.

Fornell, C. and Larcker, D. F., 1981. Eevaluating structural equations models with unobservable variables and measurement error. *Journal of Marketing Research,* **18** (1), 39-50.

Fulk, J., 1991. Eemerging theories of communication in organizations. *Journal of Management,* **17** (2), 407-446.

Fulk, J., 1993. Social construction of communication technology., *Academy of Management*

Journal, **36** (5), 921-950.

Fulk, J., Schmitz, J. and Ryu, D., 1995. Ccognitive elements in the social construction of communication technology. *Management Communication Quarterly*, **8** (3), 259-288.

Galbraith, J., 1977. Ddesigning complex organizations. Mass: Addison-Wesley,.

Gefen, D. and Straub, D. W., 1997. Gender differences in the perception and use of E-mail: An extension to the technology acceptance model. *MIS Quarterly,* **21** (4), 389-400.

Gefen, D., Karahanna, E., and Straub, D. W., 2003. Trust and TAM in online shopping: An integrated model. *MIS Quarterly,* **27**(1), 51-90.

Grudin, J, 1994. Groupware and social dynamics: eight challenges for developers. *Communications of the ACM,* **37** (1), 92-105.

Gu, R. and Higa, K., 2009. A study on communication media selection in IT and service work groups. *International Journal of Services Sciences,* **2**, 381-397.

Hair, J. F., Black W. C., Barin B. J., and Anderson, R. E., 2006. *Multivariate data analysis*. Sixth ed. NJ: Prentice Hall.

Hall, H. and Davison, B., 2007. Social software as support in hybrid learning environments: The value of the blog as a tool for reflective learning and peer support. *Library & Information Science Research*, **29** (2), 163-187.

Hall, H. and Davison, B., 2007. Social software as support in hybrid learning environments: The value of the blog as a tool for reflective learning and peer support. *Library & Information Science Research,* **29**, 163–187.

Hatcher, L., 1994. *A Step-by-Step Approach to Using the SAS System for Factor Analysis and Structure Equation Modeling*. SAS Institute Inc, Cary, NC.

Hernandez, B., Jimenez, J. and Martın, M. J., 2008. Eextending the technology acceptance model to include the it decision-maker: Aa study of business management software. *Technovation,* **28**, 112–121.

Herring, S. C., Scheidt, L. A., Wright, E., and Bonus, S., 2005. Weblogs as a bridging genre. *Information Technology & People,* **18**(2), 142-171.

Hinkin, T. R.,1998. A brief tutorial on the development of measure for use in survey questionnaires. *Organizational Research Methods,* **1**, 104-121.

Holton, G., 2004. Robert K. Merton: biographical memoirs. *Proceedings of the American Philosophical Society*, **148**, 506–517.

Hsu, C. L. and Lu, H. P., 2004. Why do people play on-line games? An extended TAM with social influences and flow experience. *Information & Management*, **41**, 853-868.

Java, A., Song, X., Finin, T., and Tseng, B., 2007. Why we twitter: understanding microblogging usage and communities. *Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 workshop on Web mining and social network analysis*, ACM.

Joreskog, K. G. and Sorbom, D., 1984. *LISREL VI users guide*. Mooresville, IN: Scientific Software Inc.

Kaplan, A.M. and Haenlein, M., 2010. Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, **53** (1), 59-68.

Karahanna, E. and Straub, D., 1999. The psychological origins of perceived usefulness and ease-of-use, *Information and Management,* **35** (4), 237-250.

Karahanna, E., Agarwal, R., and Angst, C. M., 2006. Reconceptualizing compatibility beliefs in technology acceptance research. *MIS Quarterly,* **30**, 781-804.

Kay, R., 2006. Developing a comprehensive metric for assessing discussion board effectiveness. *British Journal of Educational Technology,* **37**, 761-783.

Kerawalla, L., Minocha, S., Kirkup, G., and Conole, G., 2009. An empirically grounded framework to guide blogging in higher education. *Journal of Computer Assisted Learning,* **25**, 31-42.

Kim, H., 2005. Bblogs as the new media on the internet. *Review of Communication*, **5**(2),

100- 108.

King, R. C. and Xia, W., 1997. Mmedia appropriateness: Eeffects of experience on communication media choice. *Decision Sciences,* **28**, 877–910.

Koufaris, M., 2003. Applying the technology acceptance model and flow theory to online consumer behavior. *Information Systems Research*, **13** (2), 205-223.

Kraut, R. E., Rice, R. E., Cool, C., and Fish, R. S., 1998. Vvarieties of social influence: Tthe role of utility and norms in the success of a new communication medium. *Organization Science*, **9** (4), 437-453.

Kwon, O., Choi, K. and Kim, M., 2007. User acceptance of context-aware services: self-efficacy, user innovativeness and perceived sensitivity on contextual pressure. *Behaviour & Information Technology*, **26** (6), 483 - 498

Lascu, D.-N. and Zinkhan, G., 1999. Consumer conformity: review and applications for marketing theory and practice. *Journal of Marketing Theory and Practice,* **7** (3), 1-12.

Lederer, A. L., Maupin, D. J., Sena, M. P., and Zhuang, Y., 2000. The technology acceptance model and the World Wide Web. *Decision Support Systems,* **29** (3), 269–282.

Lee, M. K.O., Cheung, C. M.K., and Chen, Z., 2005. Acceptance of Internet-based learning medium: the role of extrinsic and intrinsic motivation. *Information & Management,* **42**, 1095-1104.

Lee, Y., Kozar, K. A., and Larsen, K. R.T., 2003. Tthe technology acceptance model: Ppast, present, and future. *Communications of the Association for Information System,* **12**, 752-780.

Lim, B.-L., Choi, M., and Park, M.-C., 2003. The late take-off phenomenon in the diffusion of telecommunication services: network effect and the critical mass. *Information Economics and Policy*, **15**, 537-557.

Lim, K. H. and Benbasat, I., 2000. Tthe effect of multimedia on perceived equivocality and

perceived usefulness of information systems. *MIS Quarterly,* **24** (3), 449-471.

Liu Z. F. and Chang Y. F., (2010). Gender differences in usage, satisfaction, self-efficacy andperformance of blogging. *British Journal of Education Technology,* **41**, 39-43.

Luo, W. and Strong, D., 2000. Perceived critical mass effect on groupware acceptance. *European Journal of Information Systems,* **9** (2), 91-103.

Makri, K. and Kynigos, C., 2007. tThe role of blogs in studying the discourse and social practices of mathematics teachers. *Educational Technology & Society,* **10**, 73-84.

Markus, M. L. and Connolly, T., 1990. Why CSCW applications fail: Problems in the adoption of interdependent work tools. *In: Proceeding CSCW '90 Proceedings of the 1990 ACM conference on Computer-supported cooperative work*. New York, 371–380.

Markus, M. L., 1987. Toward a "critical mass" theory of interactive media: Universal access, interdependence and diffusion. *Communication Research*, **14**, 491–511.

Mazer, J., Murphy, R. and Simonds, C., 2007. Ii'll see you on "Ffacebook": Tthe effects of computer-mediated teacher self-disclosure on student motivation, affective learning, and classroom climate. *Communication Education,* **56**, 1, 1-17.

Mezirow, J. and Associates, 1990. *Fostering Critical Reflection in Adulthood*. Jossey-Bass, San Francisco.

MIC (Market Intelligence & Consulting Institute), 2009. *Taiwanese Internet Users' Blog Usage Behavior Survey in 2008*. Taiwan: MIC.

Miura, A. and Yamashita, K., 2007. Ppsychological and social influences on blog writing: Aan online survey of blog authors in japan. *Journal of Computer-Mediated Communication,* **12**, 1452-1471.

Moon, J. and Kim, Y., 2001. Extending the TAM for a world-wide-web context. *Information and Management,* **38** (4), 217-230.

Nault, B. and Dexter, A., 1994. Adoption, transfers, and incentives in a franchise network with

positive externalities. *Marketing Science,* **13** (4), 412-423.

Oliver, P. E. and Marwell,G., 1988. Tthe paradox of group size in collective action: Aa theory of the critical mass. II. *American Sociological Review,* **53** (1), 1-8.

Oliver, P., Marwell, G., and Teixeira, R., 1985 . Aa theory of the critical mass. i:. Iinterdependence, group heterogeneity, and the production of collective action. *American Journal of Sociology*, **91** (3), 522-556.

Oravec, J. A., 2002. Bbookmarking the world: Wweblog applications in education. *Journal of Adolescent & Adult Literacy,* **45**, 616-621.

Palmquist, J. and Stueve, A., 1996. Stay plugged into new opportunities. *Market Research,* **8** (1), 13-15.

Pavlou, P. A., 2003. Cconsumer acceptance of electronic commerce: Iintegrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce,* **7**(3), 101-134.

Piaget, J., 1926. *The language and thought of the child*. Harcourt Brace, New York.

Rao, P. S., 2000. *Personnel and Human Resource Management: Text and cases*. Himalaya Publishing House, Mumbai, India.

Rice, R. E. and Aydin, C., 1991. Attitudes toward new organizational technology: Nnetwork proximity as a mechanism for social information processing. *Administrative Science Quarterly*, **36** (2), 219-244.

Rice, R. E., 1992. Ttask analyzability, use of new media, and effectiveness: Aa multi-site exploration of media richness. *Organization Science,* **3** (4), 475-500.

Richardson, W., 2006. *Blogs, wikis, podcasts, and other powerful webtools for classrooms.* Corwin Press, Thousand Oaks, CA.

Rosenthal, R. and Rosnow, R. L., 1991. *Essentials of behavioral research: Methods and data analysis*. McGraw Hill, Boston, MA.

Schmitz, J. and Fulk, J., 1991. Qorganizational colleagues, media richness, and electronic mail: a A test of the social influence model of technology use. *Communication Research*, **18** (4), 487-523.

Shin, D. H., 2009. An empirical investigation of a modified technology acceptance model of IPTV. *Behaviour & Information Technology*, 28 (4), 361 - 372

Sitkin, S. B., Sutcliffe, K. M., and Barrios-Cholin, J. R., 1992. Aa dual-capacity model of communication media choice in organization. *Human Communication Research*, **18** (4), 563-598.

Slyke, C. V., Ilie, V., Lou, H., and Stafford, T., 2007. Perceived critical mass and the adoption of a communication technology. *European Journal of Information Systems,* **16** (3), 270–283.

Straub, D. W., 1989. Validating iInstruments in MIS rResearch, *MIS Quarterly,* **13** (2), 147-169.

Straub, D., Keil, M., and Brenner, W., 1997. Testing the technology acceptance model across cultures: A three country study. *Information & Management,* **33**(1), 1-11.

Taylor, S. and Todd, P. A., 1995. Understanding information technology usage: a test of competing models. *Information Systems Research,* **6** (2), 144-174.

Tikkanen, H., Hietanen, J., Henttonen, T., and Rokka, J., 2009. Exploring virtual worlds: success factors in virtual world marketing. *Management Decision*, **27**(8), 1357-1381.

Trevino, L. K., Daft, R. L., and Lengel, R. H., 1990. *Understanding Media Choices: A Symbolic Interactionist Perspective*. Newbury Park, CA: Sage Publications,71-94.

Trevino, L. K., Lengel, R. H., and Daft, R. L., 1987. Mmedia symbolism, media richness, and media choice in organizations. *Communication Research,* **14**, 553-574.

Trevino, L. K., Webster, J. E., and Stein, W., 2000. Making connections: Complementary influences on communication media choices, attitudes, and use. *Organization Science,* **11**

(2), 163-182.

Valente, T. W., 1996. Social network thresholds in the diffusion of innovations. *Social Networks,* **18** (1), 69-89.

Vance, A., Elie-Dit-Cosaque, C., and Straub, D. W., 2008. Eexamining trust in information technology artifacts: tThe effects of system quality and culture. *Journal of Management Information Systems,* **24** (4), 73-100.

Venkatesh, V. and Bala, H., 2008. tTechnology acceptance model 3 and a research agenda on interventions. *Decision Sciences,* **39** (2), 273-315.

Venkatesh, V. and Davis, F. D., 2000. A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, **46** (2), 186-204.

Venkatesh, V. and Morris. M. G., 2000. Wwhy don't men ever stop to ask for directions? Ggender, ssocial influence, and their role in technology acceptance and usage behavior. *MIS Quarterly,* **24** (1), 115-139.

Venkatesh, V., 2000. Determinants of perceived ease of use: integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research,* **11** (4) 342-365.

Wang, E. and Seidmann, G., 1995. Electronic data interchange: Competitive externalities and strategic implementation policies. *Management Science,* **41** (3), 401-418.

Webster, J., 1998. Desktop videoconferencing: Experiences of complete users, wary users, and non-users. *MIS Quarterly,* **22**(3), 257-286.

Weick, K. E., 1976. Eeducational organizations as loosely coupled sysyems. *Administrative science quarterly,* **21**, 1-19.

Williams, F., Phillips, A. F., and Lum, P., 1985. *Gratifications associated with new communication technologies.* Beverly Hills, CA: Sage, 241-252.

Williams, J. and Jacobs, J., 2004. Exploring the use of blogs as learning spaces in the higher education sector. *Australasian Journal of Educational Technology*, **20**, 232-247.

Winn, P., 2009. *State of the Blogosphere 2008* [online]. Technorati. Available from: http://technorati.com/blogging/article/state-of-the-blogosphere-introduction [Accessed August 2009].

Wright, J., 2006. *Blog Marketing*. New York: McGraw-Hill.

Yang, S. H., 2009. Uusing blogs to enhance critical reflection and community of practice. *Educational Technology & Society*, **12**, 11-21.

Yates, J. and Orlikowski, W. J., 1992. Ggenres of organizational communication: Aa structurational approach to studying communication and media. *Academy of Management Review*, **17** (2), 299-326.

Yates, J., Orlikowski, W. J., and Jackson, A., 2008. Tthe six key dimensions of understanding media. *MIT Sloan Management Review*, **49** (2), 63-69.

Yu, T. K., Lu, L. C. and Liu, T. F., 2010. Exploring factors that influence knowledge sharing behavior via weblogs. *Computers in Human Behavior*, **26**, 32-41.

Appendix

Appendix A. Question constructs and items used in the first study

Construct and Items	Measure
Perceived media richness (PMR)(Carlson and Zmud 1999)	
PMR1	Blog allows poster and replier to give and receive timely feedback.
PMR2	Blog allows poster and replier to tailor their messages to their own personal requirements.
PMR3	Blog allows poster and replier to communicate a variety of different cues (such as emotional tone, attitude, or formality) in their messages.
PMR4	Blog allows poster and replier to use rich and varied language in their messages.
Perceived critical mass (PCM) (Louet *et al.* 2000)	
PCM1	Most people in my group used blog frequently.
PCM2	Most people in my community used blog frequently.
PCM3	Most people in my class/office used blog frequently
Media experience (ME) (King and Xia 1997)	
ME1	I use blog frequently.
ME2*	I feel competent using blog.
ME3	I feel comfortable when using blog.
Social Influence (SI) (Venkatesh and Morris 2000)	
SI1	People who influence my behavior think that I should use blog.
SI2	People who are important to me think that I should use blog.
Perceived usefulness (PU) (Davis 1989)	
PU1	Using blog enables me to receive\share information more quickly.
PU2	Using blog improve my performance on receiving\sharing information.
PU3	Using blog increase my productivity of receiving\sharing information.
PU4	Using blog enhance my effectiveness on receiving\sharing information.
PU5	Using blog make receiving\sharing information easier.
PU6*	Overall, I find blog is useful.*
Perceived ease-of-use (PEOU) (Davis 1989, Gefen 2003)	
PEOU1	Learning to use blog is easy for me.
PEOU2	I find it easy to get blog to do what I want it to do.
PEOU3	My interaction with blog is clear and understandable.
PEOU4*	I find blog to be flexible to interact with.*
PEOU5	It is easy for me to become skillful at using blog.
PEOU6	Overall, I find blog easy to use.
Attitude toward using blog (ATT) (Ajzen and Fishbein 1980)	
	All things considered, I feel using a blog is :
AT1	Bad - Good
AT2	Foolish - Wise
AT3	Unfavorable - Favorable
AT4	Harmful - Beneficial
AT5*	Negative - Positive

Behavioral intentions to use blog (BI) (Agarwal and Karahannal 2000)		
	BI1	I plan to use blog in the future.
	BI2	I intend to continue using blog in the future.
	BI3	I expect my use of blog to continue in the future.

Note: 1. All constructs except ATT have seven-points scales ranging from 1 (disagree strongly) to 7 (agree strongly). ATT is measured using five standard 7-point semantic differential rating scales.
2. * Denotes that items were dropped from data analysis.

Appendix B. Questionnaire in the second study

Construct	Measure
Online peer interaction	
	1. The use of blogs increases the frequency of interaction with my classmates.
	2. The use of blogs improves my understanding of classmates' communication style.
	3. With blogs, I am more willing to offer my opinion regarding how a course topic differs from other topics.
Motivation	
	4. The use of blogs increases the frequency of interaction with my classmates.
	5. The use of blogs improves my understanding of classmates' communication style.
	6. With blogs, I am more willing to offer my opinion regarding how a course topic differs from other topics.
Learning effectiveness	
	7. Blogs are an effective tool for peer learning.
	8. The use of blogs improves my understanding of course materials.
	9. I would recommend the course to my friends because the use of blogs improves my academic performance.

Note: All constructs have five-points scales ranging from 1 (disagree strongly) to 5 (agree strongly).