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College of Informatics
Graduate School of Information Management
Master

A Study on Users’ Acceptance of Computer-Mediated Communication in English Instructions in Nam Dinh

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A Study on Users’ Acceptance of Computer-Mediated Communication in English Instructions in Nam Dinh

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ABSTRACT

Language teachers who teach English as a second language (ESL) or teaching English as a foreign language (EFL) for students in colleges/universities in non-English speaking countries as Vietnam are often challenged to develop culturally appropriate curriculum for a diverse of learners. Prompted by educational policy in the electronic generation (e-generation) or digital life, the technological based-frame in most schools need changes and educators keep changing with flow of technology? The innovational tools for language learning have been developed for computer-supported instruction is computer-mediated communication (CMC applications). The aim of this research was to examine language teacher adoptions to use computer technology in English instruction that related factors impact on IS model; the theoretical Technology Acceptance Model (TAM) is constructivism core of accepter items. A quantitative method research design was used to collect data from one hundred and seventeen English language teachers from five young universities in Namdinh and Hanoi. Statically indicators were presented from teachers values of technology acceptance, perceived usefulness, perceived ease use, attitude toward use, and behavioral intention to use, system quality, and self-efficacy. The result suggest that English teachers pay a positive intention to use computer technology in their lesson with if adequate access to system, technical support, and computer experiences. In addition, research also provides some recommendation for language faculty in those schools tend to invest a technology system for language study field.

Key words: English, E-learning, L2, ELLs, CALL, ICT, CMC, EFL/ESL, IT, TAM, NUTE, Visual PLS
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Chapter 1 Introduction

1.1 Research background

*English learning*

Internationalization and globalization have changed the way of our living style. The communication is the direct channel for making the change. English is one of the most influence and powerful languages in the world. Hence, many non-English speaking countries regard English as the most important second language (L2). In Vietnam, we have the great increasing number of students to learn English as second language (ESL). To achieve the learning objective in English, the Ministry of Education and Training (MOET) in Vietnam has put a lot of efforts to lead the English learning policies in the countries. Many important notes on government documents for English learning and teaching in Vietnam can be seen through the web site “http://www.moet.gov.vn/?page=6.21”.

Over the past three centuries, most scientific, medical, industrial, and technological breakthroughs have come from the West. These days, with American technology being extremely influential, “80-85% of all the scientific and technical information available in the world today is either written in or abstracted in English.” (Ferguson & Kaplan, 1987). As a result, in an era of mass communications dominated by the West, where leading-edge information and communications technology is largely based in the U.S., countries in the expanding circle need to know English for international exposure: The fact that these innovations were pouring out of an English speaking country meant that those from abroad who wished to learn about them would need to learn English-and learn it well- if they wished to benefit (Crystal, 2003). Also, the influence of the Internet has played a tremendous role in spreading information and the English language: “Nine out of ten computers connected to the Internet are located in English-speaking countries and more than 80% of all homepages on the web are written in English,”
Therefore, modernization, despite possible resentment from non-Western people, is closely tied to Westernization and, by extension, to the availability of the English language.

Most countries also have little choice but to bring English terms into their own languages to express new technical terms. Nonetheless, no language, of course, can assure the development of a society without adequate political and economic policies drawn by the local governments.

*Computer-aided learners’ individual study (CALL)*

Traditionally, learning process is a typical face-to-face lecturing session. Things have been changed since a new era of technologies have invented and developed. We are not just teaching in typical classroom activities but also utilizing technologies to assist the learning progress of students. In the past decade, computers have made a great success as an assistant appliance in education (Geyser, n.d. at http://www.eslcafe.com). The computer programs that provide multimedia elements such as video, sound, graphics, and text allow learners to experience the learning process of targeted language and culture. This type of program is called Computer-Assisted Language Learning (CALL) (Mark Watschauer, 1996). The CALL materials are tools for assisting learning. It is based on a form of computer-based learning for learners who want to have bidirectional and individual learning. Learners explore the simulated environment with meaningful multimodal multimedia forms such as audio and visual inputs, which facilitates their comprehension in listening and reading (Chun, 1998; Plass, 1998; Verdugo & Belmonte, 2007; Crystal, 2003). Many research papers published in the proceedings of international symposiums on English teaching held by the English Teacher’s Association, the Republic of China illustrated the success of teachers utilized CALL in their teaching sessions (Shih, 2003; Lin, 2005).

*ICT vs. E-learning*
Training and education are connected to the processing of information and communication technologies (ICT). Electronic learning (E-learning) usage is increasing as well as revolution of technology development. Information communication technology in the form of E-learning platform suits particularly well to courses in teaching English for specific and academic purposes. E-learning provides advantages to the traditional classroom, whereas electronic venues can provide facilitation opportunities for students who will need English communication in a professional or academic field. E-learning is a learning method that uses ICT to support and enhance the teaching and learning process (Evelyn, 2008). To be successful to implement ICT in language learning instructions, it is important for teachers to realize how and why they use ICT in their language teaching sessions.

The digitized content of e-learning is dispatched through communication link from tutors to the learners. The platform of communication is the crucial operational environment for e-learning. “How can the learners access the e-learning content anywhere?” is the key question for deploying e-learning content over the communication platform. Therefore, the development of pervasive communication platform (such as World Wide Web and Internet) for the e-learning environment is very important as (R Pastor, R Pastor, S Ros, R Hernández, T Read, M Castro, 2008) defined. The dramatic growth rate of internet and information technologies provides the answer for question of the e-learning development. More and more people can now read, write, speak, and listen to English via computer system and over the Internet platform. Hence, the Internet and computer technologies have formed the communication platform for e-learning environment.

Online learning is generally acknowledged to refer to a learning experience or environment that relies on the Internet and World Wide Web (WWW) as the primary delivery platform of communication and presentation (Fowler, 2000). Learning content delivery refers to as “using a wide range of information technologies to provide learning
environment over the distance”. Hence, the advantage of ICT is to provide the institutions of higher education an opportunity to advance their communication and instructional delivery method (California State University Centre for Distributed Learning, 2003). To access authentic materials online can enhance a course curriculum also providing an opportunity for learners to engage in independent critical thinking.

**Computer-Mediated Communication system for English learning**

Computer-Mediated Communication (CMC) is defined as any communicative transaction that occurs through the use of two or more networked computers (McQuail, Denis, 2005). While the term has traditionally referred to those communications that occur via computer-mediated formats (e.g., instant messages, e-mails, chat rooms), it has also been applied to other forms of text-based interaction such as text messaging (Thurlow, C., Lengel, L. & Tomic, A. 2004). Research on CMC focuses largely on the social effects of different computer-supported communication technologies. Many recent studies involve Internet-based social networking supported by social software. The new technologies provide opportunities for learners to interact with native speakers at a distance through a variety of different online tools such as e-mail, chat, and discussion boards. The literature overall supports the use of CMC with language learners, an exception being a survey conducted by Corbel and Taylor (Corbel and Taylor, 2003), in which a majority (56%) of teachers of adult immigrants felt that e-mail had low educational cost effectiveness. However, in a non-directed self-access situation, adult immigrants themselves chose e-mail in preference to all other applications, but their choice of language was primarily their home language (Lever, 2002), including accessing news from their home country. Left to their own devices, these students did not choose educational packages to increase their English language learning. Their choice mirrors computer use in non-educational settings, where e-mail has become the "killer app" (application).
Since early 1990s, research studies in CMC have examined how electronic media can be employed to enhance second language teaching (Kern & Warschauer, 2000). Particularly, for English language learners (ELLs) the computer mediated communication (CMC) is an umbrella term that refers to human interaction via computers. CALL and CMC have launched out in a long with the growing up of E-learning and Internet in which the attention of language professional is unfolded. Especially, English communication skill has sought out innovative and alternative ways of using computer technologies to enhance students’ learning process and to improve their English proficiency.

**IT support for education and training English in Vietnam**

Information Technology (IT) in the context of education and training in Vietnam was recognized and stated in the Vietnam Education Development Strategic plan for 2001-2010 issued by Vietnam Ministry of Education and Training (MOET). In the document, “ICT applications for education to support scholar years program, 2008 ”, it specified as “…related stakeholders in Vietnam really get serious on how to create a strong foundation of the ICT infrastructure for education and future of education and to promote ICT development in the country…” by Dr. Quach Tuan Ngoc, director general of ICT department, MOET. The ICT applications developed by ICT Department to the national education network in the country is free of charge and full software packages such as meeting, teaching online by video, web and audio conference with the feature of teachers training online to be added in the near future, e-Learning applications, e-textbook library, portal for entrance of universities and colleges, school management and education information system, open source as Open Office. The Vietnamese Government has introduced a series of funding initiatives to encourage the use of information technology (IT) in schools. Early initiatives promoted the provision of equipment to support courses that would give students the skills for participating in an
increasingly technological workplace. Initial funding is provided to establish computer laboratories for teaching computer literacy, followed by a series of workshops for training teachers’ informational literacy, and support and reward for teachers designing Web-based course resources on various subjects. With the swift expansion of internet technology, the improvement of computer literacy is moved from labs into classrooms, shifting from using technology to thinking with technology.

Vietnam’s learning and teaching English is the one on way developing country where now has ever seen such many WWW (e.g. .com, .edu.vn, .com.vn…) offering for learning English online, English Language Learners (ELLs) can access everywhere, every time for English courses. Modern communication is advances in computer technology have greatly increased international connections, also effected on the academic and business communities. The computer mediated communication (CMC) system can via learners with materials online together narratively and orally in which blooming up ELLs’ practice for English courses. The use of computer technology, the creation of World Wide Web in teaching languages have been dramatically increasing worldwide over the past decade and become possible and feasible for language teachers to make effective use of instructional materials, especially in teaching language and culture (e.g., Pennington, 1999; Toyoda & Harrison, 2002; O’Dowd, 2003; Belz, 2003; Thorne, 2003).

With the government initiatives above, authority hope that teachers will rise to the pressing challenges of the rapid development of the Internet and put technology into a more central role of their instructions. Through the Internet, English learners and teachers can access useful language resources and communicate directly with native English speakers. According to ACTFL (The American Council on the Teaching of Foreign Languages) communication is at heart of second language study, the internet and computer technology offers prime resources and the opportunities to pour down the five Cs through multimodal channels for English skills (listening, speaking, writing,
reading, communicating). In the integrating internet and computer technology, trainers and trainees can apply information, while also depressurize the de-contextualized predicaments of second language learning. They can also expand the international viewpoint, learn diverse forms of knowledge, enjoy and accept different cultures in different countries as (Ganderton, 1998; Hellebrandt, 1999; Kelm, 1992; Lee, 1997; Sanaoui & Lapkin, 1992; Van Handle & Corl, 1998; Warschauer, 1996).

Many schools and universities in Vietnam, the success of students' result are now measured in term of their ability to communicate in L2 rather than on examining their accuracy in using certain grammatical features. Therefore, apart from experimenting new teaching methods for Vietnamese teachers of English, more and more universities have been applying modern technology to support language skills and English linguistic studies with a view to fostering better achievements. Among those, the researcher is the nurture of research the teachers’ concerns, who accept of CMC technology. There are a lot of definition for accepting the new technologies in education and training, the leading is an IS model which involved in many researches. The Technology Acceptance Model (TAM) proposed by David and David et al. (1989) as a tool to predict the tendency of a new technology being adopted within a group of businesses, a school, or an organization.

1.2 Research Problem

To specify what and why teachers accept the implement of the computer technology (CMC) into their English instruction and to discover the key factors, the facilitations and the backward impact that teacher's encountered when connect to modern technology. Change is not an actual event. It is a process (Hord, 1998). Therefore, in response to student/school – needs, technological generation – requirements, the study of the acceptance of users/teachers related to integrating technology in their teaching and their growth over time as they adopt to use technology is significant educational intervention.
1.3 Research Purposes and Research Questions

In this study, the researcher based on the Technology Acceptance Model (TAM) and the theory of reasoned action is founded upon the hypothesis that technology acceptance and use can be explained in terms of a user’s attitudes, intention to use, and behavior of using technology. As a result there should be foreseen future technology use at the time that technology is introduced by applying TAM (M. Fishbein and I. Ajzen, 1975). The four internal variables from original the TAM and in which the perceived ease of use, perceived usefulness, attitude toward use, and behavioral intend to use are being used as dependent variables to test external variables (development factors) on applying TAM 2 to get a research frame as following the thesis type:

“A Study on Users’ Acceptance of CMC in English Instructions in Nam Dinh”

The specifics are identified the objectives and their questions belong to the research purpose are:

**Objective 1**: Identifying what significant factors influence the teacher’s acceptance of technology/CMC in language education for some universities in Vietnam. The two corresponding research questions developed were:

1.1 What are the external factors influencing teachers’ intention of using computer technology in language teaching?

1.2 What are the internal factors influencing teachers’ intention of using computer technology in language teaching?

**Objective 2**: Exploring how the significant factors influence the teacher’s acceptance of technology/CMC in language training for some universities in Vietnam. The two corresponding research questions developed were:

2.1 How do the external factors influence teachers’ intention of using technology/CMC?

2.2 How do the internal factors influence teachers’ intention of using technology/CMC?
1.4 Research Hypotheses

In the thesis, a particular focus is placed on the role of Factors’ expectations of success and the influences of these expectations on the approach to technology use in teachers’ instructions process. The given following External variables and Internal variables are proposed hypotheses to discuss along with critical frame:

- **H**1A: Self Efficacy of using computer will affect Perceived ease of use computer
- **H**1B: Self Efficacy of using computer will affect Perceived usefulness of computer
- **H**1C: Self Efficacy of using computer will affect Attitude toward to use of technology
- **H**2A: System Quality of technology will affect Perceived Ease of use computer
- **H**2B: System Quality of technology will affect Perceived usefulness of use computer
- **H**2C: System Quality of technology will affect Attitude toward to use of technology
- **H**3: Perceived Ease of use computer will affect Perceived Usefulness of computer
- **H**4: Perceived Ease of use computer will affect Attitude toward to use of technology
- **H**5: Perceived Usefulness of computer will affect Attitude toward to use technology
- **H**6: Perceived Usefulness of computer will affect Behavioral Intention to use technology
- **H**7: Attitude toward to use of technology will affect Behavioral Intention to use computer

1.5 Limitations of Research

In this research, the data were collected from EFL/ESL teachers in Language Faculties of the universities in Namdinh and Hanoi. Therefore, the results of this study
can be generalized only the population of EFL/ESL teachers participating general subjects in their university.

Data collection relied on teachers’ willingness to respond to the Questionnaires honestly. Participants voluntarily and independently completed the questionnaire; therefore, the results of this study were affected by whether the teachers’ responses represented true reflections of their present concerns. In addition, teachers’ responses might have been influenced by some external events and reasons, such as Day of King Hung Anniversary, some extra school activities, on going of Master course, and exam periods.

Finally, the researcher was restricted much about knowledge by himself, the theoretical and practical research and research-based model were still limited.

1.6 Assumptions of Research

1. It was assumed that the volunteer sample of teachers is a representative sample of the target of all EFL/ESL teachers in the language faculties in some universities.

2. It was assumed that teachers understood that their participation was voluntary and that all information they provided would be confidential.

3. It was assumed that teachers would complete the Questionnaires honestly.

4. It was assumed that the response rate to the Questionnaires would be at least 60%.

5. It was assumed that all EFL/ESL teachers involved are qualified in computer experience.

1.7 Structure of Research

In this chapter, to archive the objective was identified teachers’ acceptance toward the implementation of technology/CMC for language teaching in some universities in Namdinh. The study of problem, purpose, research questions, limitation, and assumption were developed in this chapter as well. Chapter 2 was one of the most important parts of the thesis. It provided the literature that builds a bridge of relationship
between this study and other studies in the area of teachers’ acceptance of technology for the research, on which the author can clearly identify the research objectives and research methodology to attain the achievement of these objectives. Chapter 3 presents the methods the author has used to do the research. This indicates the research philosophy, research design, research approach and research methods used in this study, including the methods used to collect secondary data and primary data. By the way, this chapter presents the reasons why these methods were applied. Chapter 4 includes the presentation and analysis of data with relation to the research questions. Chapter 5 is a discussion of the findings of this study and their potential contributions to change to use system and teacher’s acceptance.
Chapter 2 Literature Review

According to objectives of this study above, the research reveals that there are varieties of instructional challenges and applied technologies participating teachers in all fields enclose information technology integration in the language instruction on CMC applications. Language teachers have witnessed dramatic changes in the ways that languages are taught. The focus of instruction has broadened from the teaching of discrete grammatical structures to the fostering of communicative ability since early 1960s (Warschauer & Kern, 2000). On rising up together with the appearance of computer technology achievements in education, the emergence of CALL, ITC, and CMC applications in language teaching for ELL has jointed the attention of teachers, academicians, educationalists and technical experts. With the opinion of surveying (1) the user acceptance of technology system in English training, the participants of language training faculties in some universities that are conducted in the questionnaire, the critical success factors in CMC adoption, and (2) Technology Acceptance Model TAM with details in the original model (TAM), extended model (TAM2), and some potential external factors which might have significant influence on the intention of the use computer technology in language instruction.

2.1 English Language Learning in Globalization

Traditionally, teaching is often didactic in form and characteristically teacher-centered. As well, it is often formal, controlled, and autocratic enabling the teacher to direct how, what, and when the students learn (Byrom, 1997; Jonassen, Howland, Moore, & Marra, 2003). Frequently, didactic teaching involves a teacher at the front of a classroom telling students what to do and how to learn. By and large, Asian educational contexts seem to exemplify the traditional instructional style (Benson, Chik, & Lim, 2003; Kirkpatrick, 2002; Singh & Doherty, 2004). Alternatively, learner-centered learning is defined as responsive, collaborative, problem-centered, and democratic, with the student being an active agent in deciding how, what, and when
learning occurs. Such learner-centered teaching and learning is commonly known as constructivist (teaching and learning). However, it is more formally recognized as social constructivism which is a theory that knowledge is the result of social interaction and language usage (Wildner-Bassett, 2005). Hence, social constructivism, as introduced by Vygotsky (1934), plus Rogers’ (1995) conceptual model for adoption of technological innovations will provide the theoretical constructs for the study of teacher values and their integrated use of technology in the university EFL/ESL classroom.

Above traditional teaching and learning-centered necessitate not only knowing a language but also to knowing how to functionally use the language in its cultural context (Kirkpatrick, 2002; Lim, 2002). Larsen-Freeman and Long (1991) suggest that student ‘culture shock’ is the first step in foreign language learning. It is estimated that 60% of the world’s population currently speaks more than one language (Richards & Rodgers, 2001). For example, in Europe, with seven official languages, bilingualism and even multilingualism are commonplace (Ellis, 2001). English is well-established as the common language of communication for international business. According to Ellis, English is spoken by 1.5 billion speakers worldwide, 400 million of whom have English as a first language. At present, data identified by Ellis suggest that there are an estimated 125 million ESL speakers who live and work in English speaking countries. Over 1 billion people have learned English as a second language or English as a foreign language. EFL learners live in 70 non-English speaking countries and, according to Ellis (2001), many people learning English hope to work or study abroad. While many students who are learning English in foreign countries will use the language to interact in their own cultural contexts, research shows that learning any second language necessitates an understanding of the cultural metaphors embedded in the language (Lakoff, 1987; Littlemore, 2001).

The internationalization of English language teaching affects not only learners who go abroad, but also those who remain in their country of origin and learn English as
a foreign language. While Lakoff (1987) and Littlemore (2001) argue that teaching English language skills is, in a subtle way, also about teaching Western culture, Kirkpatrick (2002) contends that only a relatively small number of EFL students are learning English in order to “develop an understanding of any ‘Anglo’ culture” (p. 222). Kirkpatrick (2002) suggests that: English language teaching materials are therefore needed that promote the local or regional variety of English and that represent the cultural and pragmatic norms of the speakers of these new developing varieties. These materials also need to contrast regional cultures. The major focus of the curriculum becomes Asian cultures. The English standard becomes an Asian standard. (p. 215).

An increasing number of universities have a high percentage of international students who are enrolled and for whom English is the common language of instruction. This presents a number of challenges in both EFL and ESL contexts. For example, in Australian universities referred to in data presented by Singh and Doherty (2004). According to Benson et al. (2003) participation in the global community necessitates that teachers and learners move beyond accepting the constraints which come from having ingrained cultural filters.

2.2 Computer Mediated Communication (CMC)

Give a student a language course, and you teach the student for a semester. Teach a student to become an autonomous technology-assisted language learner, and you teach the student for a lifetime. (Gary Cziko, 2005)

English was the only language which can be presented and identified by the American Standard Code for Information Interchange (ASCII) without distortion on different computers in the world (Fishman, 1998). Most studies on computer-mediated discourse were base on English data (Herring, 1996) as many other languages were not yet properly represented by computers and investigated given the limitation of computer technology. It is only until the 1990s that the establishment of 'universal character encoding' (UNICODE) has enable computer encoding in different scripts and resulted in
a growth in research on bi/multilingual practice of Computer-Mediated Communication (e.g. Georgakopoulou, 1996; Lee, 2002; Warchauer et al., 2002; Durham, 2003; Axelsson et al., 2003; Peel, 2004; Ho, 2006; Haggan, 2007) and language contact between English as a global language and other national or local languages (Gao, 2006; Carter & Fung, 2007a). Computer-Mediated Communication (CMC) is defined as any communicative transaction that occurs through the use of two or more networked computers (Walther, J. B., & Burgoon, J. K, 1992). While the term has traditionally referred to those communications that occur via computer-mediated formats (e.g., instant messages, e-mails, chat rooms), it has also been applied to other forms of text-based interaction such as text messaging. Research on CMC focuses largely on the social effects of different computer-supported communication technologies. (Sun Zhuo, Yang Min, Song Yunxia, 2009) have suggested that many recent studies involve Internet-based social networking supported by social software. The possibility is to apply CMC as an instructional tool in studying English.

2.2.1 Perspective CMC in Education

Computer-Mediated Communication (CMC) is illustrated how computer and communication may reshape notions of learning and of pedagogy in domains like the teaching of writing, reading, listening and speaking like a sample of online negotiation. For instance, Marion Fey (1998) has noted how in the emerging pedagogical climate “computer networks are allowing students to transcend the boundaries of classroom walls and learn in new ways” (p. 86). As Richard Kern (1995) said, “Computer networks, both local and worldwide, provide possibilities for new interpersonal contacts and communicative engagement” among students (p. 457).

Computer-mediated exchanges among students and among students and teachers occur in either synchronous (real world, or immediate) or asynchronous (delayed response) formats in what Patrick Slattery and Rosemary Kowalski (1998) have called the “second wave” of the use of computers in writing instruction where the Internet has...
played a major role. (The first wave, in the 1980s and early 90s, was the word-processing era.) In this rapidly evolving ecology of electronic interaction where students are increasingly moving away from the four walls of the traditional classroom and face-to-face communication and instead are engaging each other in cyberspace, how they learn is being altered significantly, as are the conditions under which they compose as writers and readers. In effect, students play a greater role in their own, and their peers’, learning. In this increasingly computer-mediated environment, noted Mary Ellen Butler-Pascoe and Karin Wiburg (2003), “students are afforded opportunities to construct their own meaning through student-directed interaction with rich resources” provided by the computer network they operate within (p. 177). Fey (1998) made a similar point: “Computer networking encourages students to focus on ‘knowledge construction’ rather than traditional “‘knowledge transmission’” and so become active participants in meaning making while they compose (p. 87). Networking encourages students to focus on ‘knowledge construction’ rather than traditional “‘knowledge transmission’” and so become active participants in meaning making while they compose (p. 87).

2.2.2 Perspective CMC in Language Education

It is conventional to divide CMC into two basic modes including synchronous (SCMC) and asynchronous (ACMC) communication capacity with high and multiway interactivity (Levy & Stockwell, 2006; Luppicini, 2007; Pfaffman, 2008). CMC having already gained its place in both everyday communication and language education with a steady increase in formality, “using SCMC for learning and practising a target language now seems like the most natural thing in the world” (O'Rourke, 2008, p. 227). SCMC discussion not only allows learners to communicate similar to FTF discourse (Lee, 2001), but, at the same time, also increases learner monitoring of language usage (Sykes, 2005). Learners must however sign onto a computer system simultaneously to launch the network, which is considered the downside of this mode of communication with regard to different class times and time zones (Levy & Stockwell, 2006). It has
introduced us to the idea of new literacy and language genres, and has blurred the historical division between written and oral communication (Kasper, 2000), both of which have been merged into a single medium of text-based CMC, as previously discussed. Because of this, text-based CMC has been the subject of research in many disciplines from general education to language studies.

Since being applied to the educational environment, CMC is believed to offer a number of language teaching applications. Numerous primary and secondary studies on didactic characteristics of both SCMC and ACMC have been published, through which language teacher are gradually realizing their educational potential to the learning context. CMC is reported not only to support a range of learning activities such as discussions, role-play, and simultaneous games but also to serve different functions and learning goals. The applications of CMC, either intra-class or inter-class and with or without teachers are hardly limited to any particular topic or discipline. CMC is seen a dynamic and adoptable application for educators and teachers who need to be familiar with its strengths, limitations, and weaknesses in order to improve pedagogical sound/pronunciation activities.

Both written and spoken language skills are enhanced through various CMC in language learning projects (Table 1). In fact, there is a common tendency to associate CMC with the development of specific language skills (Levy & Stockwell, 2006).

Table 1. Benefits of CMC in language skills development

| Language skills | Sample research publications | Mode of CMC SCMC|ACMC |
|-----------------|-----------------------------|-----------------|
| **Writing**     |                             |                 |
| Li, 2000        | √                           |                 |
| Blake, 2000     | √                           | √               |
| Davis & Thiede, 2000; Meunier, 1998 | √ |                 |
| **Reading**     |                             |                 |
| Godwin-Jones, 2008; Greenfield, 2003 | √ |                 |
| Fotos, 2004; Gruber-Miller & Benton, 2001 | √ |                 |
| **Speaking**    |                             |                 |
| Stockwell, 2003 | √                           |                 |
| S. Chun, 2003; Jepson, 2005; Payne & Whitcher, 2002; Tudini, 2005 | √ | √ |
| Abrams, 2003; Dussias, 2006 | √ |                 |
| **Listening**   |                             |                 |
| Volle, 2005     | √                           |                 |
The authentic communication through CMC, especially ACMC, is reported to develop writing skill due to the fact various forms of text-based CMC resemble written language and allow more time, more autonomy, and more opportunity for learners to brainstorm and discuss the topic among groups, in comparison with in-class teacher-fronted writing classes (Davis & Thiede, 2000). Also, the teacher is able to participate in collaborative activities, thus models the writing process in real time and real situation, thereby creating the Vygotsky’s concept of zone of proximal development (ZPD), social interaction is the basis for cognitive growth. Improvement in reading abilities is also provided via CMC. Authentic interactions in ACMC, such as email, blog, and wikis, provide meaningful reading for learners (Levy & Stockwell, 2006). In addition, during text chat exchanges, learners are more adept at skimming and scanning at rapid speeds in order to follow and participate fully in the conversation thread (Godwin-Jones, 2008).

Furthermore, possibility for cross-modality transfer between real time, online conversational exchange text and oral language production has recently mentioned in various CMC projects (D. M. Chun, 2008; Lund, 2006; Thorne & Payne, 2005). The hypothesis that SCMC may improve speaking proficiency has been tested by Payne and Whitney (2002), who found that participants in a chat room have a significantly higher oral proficiency than those just spending time in traditional oral classes. This obvious benefit of CMC for speaking competence is confirmed by Dussias (2006), who suggested that the language competence mediated via CMC appeared to readily transfer to spontaneous oral language production. In general, as learners traverse the boundary zone, they introduce language elements from one modality to another (Lund, 2006).
2.2.3 Interaction of teacher-student and CMC

Since many study shown learning-centered, interactivity is a key factor in learning, vital interactions between the student and the teacher; the student and the content; the students with one another; and the student and the learning interface can usually be effectively achieved with CMC (Bialystok, 2002; Fahraeus, 2004; Huang, 2000; Thurmond & Wambach, 2004).

The advent of computer-mediated communication (CMC) offers important educational opportunities for students and teachers in the Information Age (Cassell & Tversky, 2005; Miltiadou & Savenye, 2003; Mitra, Willyard, Panyametheekul, & Herring, 2003; Platt & Parsons, 2005; Reiser & Dempsey, 2002; White, 2003). McLoughlin (2001) suggests that the Internet is a unique tool offering opportunities for immediacy of feedback and “networked learning” (p. 8). Specific to language learning, e-learning strategies are “the tools for active, self-directed involvement that is necessary for developing communicative ability”. Thurmond and Wambach (2004) studied interactivity in both face-to-face and online contexts. Their findings provide strong support for the idea that students using CMC online can perform better than those in traditional classroom settings. Thurmond and Wambach (2004) assert that learner-content, learner-learner, learner-instructor, and learner-interface interaction (where the student interacts with the computer program) are facilitated by CMC. In observing face-to-face lecture settings, Thurmond and Wambach found “no attempts at social interaction” (p. 16).

Using computers, high levels of interactivity between students and teachers were recorded by Thurmond and Wambach and “identified as a strong predictor for higher student grades” (p. 14). Maurer and Davidson (1998) noted that CMC facilitates skill development in idea generation, intellectual convergence, and lateral thinking. Maurer and Davidson hold the view that knowledge goes beyond a collection of bits of information and argue that new educational models should strive to foster creative
thinking and focus on communication. Muirhead (2004) describes successful online learners as usually being autonomous learners who exhibited good work ethics, the ability to both think reflectively, and work collaboratively. By increasing teacher and student strategic awareness, Pope and Golub (2000) commented that: No longer will the teacher be the dispenser of information; teachers and students will be learners together. This shift to a learning-centered classroom does not mean, however that the teacher is obsolete. Instead, it demands that the teacher's role change from that of an "information-giver" to one of "designer" and "director" of instruction. (p. 95).

With technology as the ‘backbone’ of the online teaching and learning environment, CMC is able to become the gateway to functional virtual communities where relevant, meaningful learning can be generated in dynamic, interactive contexts. According to White (2003): CMC provides the means to free students from centralized control of predetermined and constricted curricula as they develop their own learning opportunities through discussion online and collaborative learning experiences. (p. 51). Online teaching and learning environments can give students direct access to vast amounts of information as well as being a means of support and a way of learning from others’ inquiry which White (2003) suggests can reduce individual students’ sense of isolation. Hough, Smithey, and Everston (2004) assert that teachers’ sense of isolation is also usually reduced with CMC.

When working effectively, CMC is an excellent vehicle for discussion-based learning activities, often offering more reflection time for student responses than face-to-face communication in the classroom (Garrison, Anderson, & Archer, 2000). Rourke, Anderson, Garrison, and Archer (2001) highlight the view that online discussion forums can cultivate the development of critical thinking skills thus becoming functional environments for negotiation, social interaction and exchange of information. Collaborative learning in technology-mediated contexts can cultivate cognitive maturity, information production, and social interdependence (Rourke et al., 2001).
In summary, ensuring opportunities for high-level communication is of the most importance in the process of second language acquisition. If computers can facilitate communicative competence, those developing programs for second language learners may do well to consider CMC in program planning. When constructivist teaching and learning are already in place, computer-mediated communication can provide learners with additional resources for constructing knowledge.

2.3 Factors influence user acceptance of CMC in language education

Determinants of user acceptance were studied by Davis, Bagozzi and Warshaw (1989) in their technology acceptance model (TAM). Recognizing that computer systems cannot improve organizational performance if they are not used, the researchers set out to explain why people accept or reject computers. In a longitudinal study, Davis et al. showed that perceived usefulness strongly influenced peoples' intentions to use computer technology. Davis et al. (1989) found that perceived ease of use had a small but significant effect on the intention to use technology, although this effect subsided over time. Furthermore, ease of use was not as important a predictor of use of technology as the anticipated impact on job performance.

The development of TAM as core supported items has provided an opportunity to explore the factors that are important in adopting CMC into the training instructions. The factors with a potential influence on CMC using by teachers were examined, the author made an inventory of that external factors effect on perceived ease of use (PEU), perceived usefulness (PU), attitude toward use (ATU), and behavioral intention to use (BI): Self efficacy, system quality, the research frame and organizational constraints are identified and operationalized, the researcher's attempt was not only to describe such characteristics of structure, but also to predict user attitude to accept of CMC and to develop an extensional model of CMC user adoption. The nature of these characteristic factors relate to Technology Acceptance Model can be explained more detail in next chapters.
External Variables

Szajna (1996) suggested that the TAM predicts that external variables will influence technology adoption indirectly through perceived ease of use and perceived usefulness. Many preliminary studies have examined the consequences of the influences of external factors on perceived usefulness and perceived ease of use such as technology adoption, intranet usage (Ndubisi, 2004; Mike et al., 2007; Chang, 2004). Culp et al. (2003) defined the “technology needs to work in concert with other factors like effective leadership, instructional priorities, effective system, cooperation, self confident on technology and the day-to-day demands of classroom practice” (p. 22). A balance must be struck between the demand of improving educational practice over time and pressing public concerns for accountability and equity. Similarly, a balance is needed between the impetuses for change in the educational paradigm and for technology adoption. Therefore, the review above has led to the first research question:

**Q 1.1** What are the external factors influencing teachers’ intention of using computer technology in language teaching?

There some related reviews were referred. Truong (2008) emphasized the critical necessity of research on individual/user characteristics in not uniformed context of education and training in Vietnam, especially in IT field. Bichler & Robert (2007) regarded technological characteristics such as accessing to infrastructure and ICT equipment, low network connectivity speeds as one of the challenges facing educational ICT development in the developing countries. Wang (2004) defined computer-mediated communication (CMC) as "communications between human beings via a computer network" (p. 375). He added that as prevalent technology in language learning has matured, CMC has come to mean “Internet-based videoconferencing in fourth-generation distance language learning” (p. 392). Therefore, in studying of CMC acceptance, the research focuses on (1) system quality and (2) self-efficacy. Table 2 summarizes several related researches on the external variables which could produce the
answers for the above proposed research question and would be further tested for their appropriateness in this research.

Table 2. Definition of External Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual/user</td>
<td><strong>Self-Efficacy</strong>: measuring a user’s confidence in their ability to use technology; and beliefs in capabilities to mobilize the motivation, cognitive resources of technology adoption</td>
<td>(Taylor &amp; Todd, 1995); Brown (2002); (Simonson et al., 1987); Bandura (1986); Wood (1989)</td>
</tr>
<tr>
<td>Technological</td>
<td><strong>System quality</strong>: influence the accessing ICT, CALL, CMC, infrastructure and equipment, internet connectivity speeds, security, hardware and software Conditions, interactive abilities for learner, teacher, learning environment, didactical method, content, technology, educational system</td>
<td>S. Hamilton, N. Chervany, 1981; E.B. Swanson, 1974; Robert (2007), Mukkavilli (2005), Dillon and Morris (1996), Felix (2003), Garrison, Anderson, T.Archer (2000); A. Mahmoud,</td>
</tr>
</tbody>
</table>
System quality

System quality refers to the processing characteristics of an IS. Many studies thus have adopted system quality to measure IS performance (S. Hamilton, N. Chervany, 1981; E.B. Swanson, 1974). The support functions of an IS are measured as ‘‘system quality’’. Thus, we consider consumer perceptions of the general and common support functions of information searching provided by websites as a measurement of perceived system quality. Accordingly, this extended model assumes that the perceived system quality of websites affects PEU, PU, attitudes toward technology use and user acceptance of computer system. We considered information quality to be the output quality of IS, then used it to represent information characteristics. For example, Bailey and Pearson (1983) developed scales for measuring IS satisfaction, including accuracy, precision, currency, timeliness, etc., to evaluate information quality. Previous studies frequently used information quality to measure IS performance (A. Mahmood, 1987; J. Miller, B.A. Doyle, 1987; A. Srinivasan, 1985). Information quality is included in an assessment of the effect of Web use, especially on searching materials/services in e-information. During system transactions, both consumers and firms communicate and coordinate by exchanging and sharing information via the Internet. Thus, perceived information quality is assessed using consumer perceptions of the quality of information on the Web. Perceived information quality is assumed to affect PEU, PU, attitudes toward technology and user acceptance of computer system.
Self-efficacy

According to research of Bandura (1986), the study that influenced by Social Cognitive Theory (SCT) is a widely accepted and empirically validated theory of individual behavior, it incorporates two specific expectations: 1- outcome expectations; 2- expectations related to self-efficacy. Outcome expectations are similar to the perceived usefulness construct developed by Davis (1989) where individuals tend to undertake behaviors they believe will help them perform their job better. Wood and Bandura state that "self- efficacy refers to beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (p. 408). SCT claims that both expectations are basic determinants of user behavior. Bandura (1986;1989) suggests that perceived self-efficacy plays an important role in affecting motivation and behavior. The individuals' perceived abilities to attain the standards they have been pursuing have an impact on individual cognitive and behavioral reactions (i.e. motivation and performance). Those individuals who distrust their capabilities are easily discouraged by failure, whereas those who are highly assured of their efficacy for goal attainment will intensify their efforts when their performances fall short and persevere until they succeed. Bandura also identified several sources of information about self-efficacy expectations, among them are enactive mastery (personal experience) and verbal persuasion (e.g. perceived encouragement and support from others). Despite the acceptance of SCT within the psychological and organizational behavior literature, and given its importance for predicting and improving work performance and behavior (Bandura, 1986; Compeau and Higgins, 1991; Compeau and Higgins, 1996; Gist, 1992) it has rarely been used within the IS context. While outcome expectations have been researched by IS’ researchers, more research is needed to explore fully the role of self-efficacy in computing behavior.
Taylor & Todd (1995) affirmed that the development of an individual’s computer skills and their decision to use computers will lead to an improvement of training, education, implementation and acceptance of computers and Self-efficacy is one of the main variables that have been used to describe user characteristics and to be important for Information system usage. Also, Brown (2002) emphasized Self-efficacy as the individual variable having the greatest influence for students accepting Web CT. Self-efficacy has been shown in several studies to influence perceived ease of use of technology (Venkatesh & Davis, 1996; Agarwal et al., 2000). When users have enough experience of technology, they will have confidence in intention of use (Truong, 2008). Self-efficacy perceptions have been found to influence decisions about what behaviors to undertake (Barling & Beattie, 1983). The backward of technological knowledge and practice in Vietnam has constrained the capability of approaching new technology of users (Dung, 2007). In the context of unequally educated levels such as in Vietnam, especially in IT, the research of role of self Self-efficacy is important (Quach, 2005) and Brown (2002) found a relationship between Self-efficacy and perceived ease of use.

**Internal Variables**

The TAM is one of the most cited models in studying user acceptance and use of technology (Ahmad, 2005). According to TAM, perceived usefulness and perceived ease of use are main motivation factors for accepting and using new technologies. Other factors which is identified as a cause of adopted intention of new technology (Taylor & Todd, 1995). The internal variables in TAM model are defined in Table 3 which responds to the following research question:

**Q1.2:** What are the internal factors influencing teachers’ intention of using computer technology in language teaching?

<table>
<thead>
<tr>
<th>Variables</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived</td>
<td>Measuring the degree to which users</td>
<td>Davis</td>
</tr>
</tbody>
</table>

-27-
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Definition</th>
<th>Reference(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usefulness</td>
<td>believes that using a system would improve their performance and effectiveness.</td>
<td>(1989, 1993); David et al (1989)</td>
</tr>
<tr>
<td>Perceived Ease of Use</td>
<td>Measuring the degree to which users believe that using computer systems would be free and effort.</td>
<td>David et al (1989); Adams et al (1992)</td>
</tr>
<tr>
<td>Attitude Toward Using</td>
<td>Measuring the tendency to act in a positive or negative way toward using computer system</td>
<td>Ndubisi (2004); Tay &amp; Todd (1995)</td>
</tr>
<tr>
<td>Behavioral Intention of Use</td>
<td>Measuring user’s willingness of unemployed laborers to adopt technology in learning field</td>
<td>David et al., (1989)</td>
</tr>
</tbody>
</table>

Based on the TAM model, the relationship between perceived usefulness and perceived ease of use is that perceived usefulness mediates the effect of perceived ease of use on attitude and intended use (Moon & Kim, 2001). With the expectation of study, the users will adopt e-learning using if e-learning will help them to satisfy a desired performance.

To answer the research question Q 1.2, five hypotheses (from H3 to H7) concerning the effects of the internal variables of TAM model were developed below:

**Q 2.1:** How do the external factors influence teachers’ intention of using CMC?

*Perceived Ease of Use*

According to the TAM, perceived ease of use is related to perceived usefulness. Two factors have been studied as key determinants of technology acceptance and usage (Davis, 2000; Venkatesh & Morris, 2000). Perceived ease of use explains the user's perception of the amount of effort required to utilize the system or the extent to which a user believes that using a particular technology will be effortless (Davis et al., 1989).
Masrom (2007) hypothesized that behavioral intention to use a technology system is dependent on the two variables which are perceived usefulness and perceived ease of use, they were found to have a significant effect on attitude towards using the technology. Davis (1986) affirmed that Perceived Ease of Use has a causal effect on Perceived Useful. There are many previous studies have report results including the positive relationship such as Venkatesh & Davis (2000), Truong (2008), Brown, (2002), Masrom (2007). Information systems in which the users perceive Perceived Usefulness and fewer complexes will increase the potential of its acceptance and usage (Teo, Lim & Lai, 1999). According to many research papers use TAM model on studying (Davis et al., 1989; Venkatesh & Davis, 1996; Ahmad, 2005; Truong, 2007), Perceived Ease of Use and Perceived Usefulness has been shown to influence attitude toward using through causal ways and has a direct effect on Attitude Toward Using. Thus, hypotheses H7 and H8 are proposed as follows to test in this case study:

**H3**: Perceived Ease of Use computer integration will affect Perceived Usefulness of computer technology in language training.

**H4**: Perceived Ease of Use computer integration will affect Attitude toward Use technology in language training.

*Perceived Usefulness*

Perceived usefulness explains the user's perception to the extent that the technology will improve the user's workplace performance (Davis et al., 1989). Anandarajan, Igbaria & Anakwe (2002) proved that Perceived usefulness is main predictor of acceptance has also been challenged in the developing countries. Thomas (2006) modified the TAM model of Davis (1992) and Van der Heijden (2004) to develop utilization of the information system model and explore user acceptance of Information system, the empirical findings supported his hypothesized relationships between perceived usefulness and behavior intention to use. Masrom, (2007) also proved that perceived ease of use influences perceived usefulness of technology. Shih
(2004) showed that perceived usefulness has the greatest impact on the individual behavior intention to use. This research indicates that perceived usefulness is a major determinant and predictor of behavioral intentions to use the e-learning. Therefore hypotheses H₉ and H₁₀ are proposed as following:

**H₅:** Perceived Usefulness of computer integration will affect Attitude toward Use technology in language training.

**H₆:** Perceived Usefulness of computer integration will affect Behavioral Intention to Use technology in language training.

*Attitude toward Use and Behavioral Intentions of Use CMC*

Attitude has long been identified as a cause of intention. And Attitude toward Use in the TAM model is defined as a mediating affective response between usefulness and ease of use beliefs and intentions to use a technology system (Dulyalak & Settapong, 2005). Chang believed that a user’s attitudes towards using a system are derived from a user’s beliefs. Several literatures argued that there were positive significant relationships existing between the attitude toward and behavioral intention such as Davis (1989, 1993), Davis et al., (2000), Ahmad (2005), Moon & Kim (2001), and Masrom (2007). The relevant hypothesis, H₁₁, examining this relationship between the attitudes toward the technology integration in language teaching and behavioral intention was developed as following:

**H₇:** Attitude toward Use technology will affect Behavioral Intention of Use computer in language training.

2.3.1 Critical factors of technology in language education

There are so many factors that can influence the success technology in language education. The factors have been put forward by many different researches and from different perspectives. A synthesis of critical factors in CMC settings based on series of mentioned literatures were presented in Table 4.
Table 4. Critical factors in CMC settings based on literatures

<table>
<thead>
<tr>
<th>Perceived factors of CMC</th>
<th>Sample research publications</th>
<th>Mode of CMC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motivation, Self efficacy</strong></td>
<td>Lee, 2004; Schwienhorst, 2004; Smith, 2003; Phelps et al. 2004; Kirkpatrick 2002; Sotillo, 2000</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Weasenforth, Biesenbach-Lucas, &amp; Meloni, 2002</td>
<td>√</td>
</tr>
<tr>
<td><strong>System quality, active learning</strong></td>
<td>Warschauer, 1996</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Lee, 2005</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Bikowski &amp; Kessler, 2002</td>
<td>√</td>
</tr>
<tr>
<td><strong>Promote reflective learning</strong></td>
<td>Swaffar, Romano, Markley, &amp; Arens, 1998</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Jonassen, 2004; Weasenforth, Biesenbach-Lucas, &amp; Meloni, 2002</td>
<td>√</td>
</tr>
<tr>
<td><strong>Enhance learner autonomy</strong></td>
<td>Arnold, 2002; Payne &amp; Whitney, 2002; Warschauer, 1996</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Beauvois, 1995; Schwienhorst, 2004</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Chiu, 2008</td>
<td>√</td>
</tr>
<tr>
<td><strong>Foster collaborative learning</strong></td>
<td>Darhower, 2002; Leahy, 2008; Warschauer, 1997</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Abrams, 2005; Savignon &amp; Roithmeier, 2004; Weasenforth et al., 2002</td>
<td>√</td>
</tr>
</tbody>
</table>

2.4 User Behavior in Acceptance of Technology

TRA, developed by Fishbein and Ajzen in 1975, is a model that finds its origin in the field of social psychology. This model defines the links between beliefs, attitudes, norms, intentions, and behaviors of individuals. According to this model, a person’s behavior is determined by its behavioral intention to perform it. This intention is itself
determined by the person’s attitudes and his subjective norms towards the behavior. 
Fishbein and Ajzen (1975) define the subjective norms as “the person’s perception that most people who are important to him think he should or should not perform the behavior in question” (Fishbein & Ajzen, 1975).

This theory can be summarized by the following equation:

\[
\text{Behavioral Intention} \approx \text{Attitude} + \text{Personal perception}
\]

Figure 1. Theory of Reasoned Action from Davis, Bagozzi et Warshaw (1989)
(Source: Davis, 1986, 1989, 1993; Ahmad, 2005)

Fishbein and Ajzen, also proposed the theory of reasoned action (TRA) is a well-established model that has been used broadly to predict and explain people behavior in various domains (Chen & Gillenson & Sherrell, 2002). A TAM derived from TRA proposed by Davis (1989); it has been tested and extended in (M. Igbaria, N. Zinatelli, P. Cragg, A. Cavaye. 1997 & V. Venkatesh, M.G. Morris. 2000). The original TAM consisted of perceived ease of use (PEOU), perceived usefulness (PU), attitude toward using (ATU), behavioral intention to use (BI), and actual system use (AU). PU and PEOU are the two most important determinants for system use. The ATU directly predicts users’ BI which determines AU.

TRA also claims that all other factors which influence the behavior only do so in an indirect way by influencing the attitude or subjective norms. Fishbein and Ajzen (1975) refer to these factors as being external variables. These variables can be for example, the characteristics of the tasks, of the interface or of the user, the type of development implementation, the political influences, the organizational structure, etc. (Davis, Bagozzi & Warshaw, 1989). A meta-analysis on the application of the theory of reasoned action showed that the model can produce good predictions of
choices made by an individual when facing several alternatives.

The limitation of TRA model is the external variables such as the characteristics of the behavioral target influence behavioral intentions only indirectly by influencing the individuals’ beliefs, Evaluations, Normative beliefs, Motivation to Comply. Other external variables such as demographic, personality characteristics of the users, the nature of the particular behavior under consideration, characteristics of referents, and persuasive communication are not explicitly represented in the model (David, 1986). Meanwhile, TAM proposes that attitude toward using, in turn, is a function of two major beliefs: Perceived Usefulness and Perceived ease of use. And Perceives ease of use has a causal effect on perceived usefulness. Figure 2 depicts TAM.

Design feature are the category of external variables within the TRA model, they are not theorized to affect directly attitude or behavior, instead affecting these variables only indirectly through perceived usefulness and perceived ease of use (Davis, 1986). Davis (1986) added external variables in TAM basing on the Theory of Reasoned Action (TRA), and these external variables were limited within TRA. The aim of TAM is to provide an explanation of the determinants of technology acceptance; TAM was formulated in an attempt to achieve these aims by identifying a small number of fundamental variables suggested by previous research dealing with the cognitive and affective determinants of computer acceptance (Davis et al., 1989). TAM starts by

![Technology Acceptance Model](image-url)

**Figure 2. Technology Acceptance Model**

(Source: Davis, 1986)

Design feature are the category of external variables within the TRA model, they are not theorized to affect directly attitude or behavior, instead affecting these variables only indirectly through perceived usefulness and perceived ease of use (Davis, 1986). Davis (1986) added external variables in TAM basing on the Theory of Reasoned Action (TRA), and these external variables were limited within TRA. The aim of TAM is to provide an explanation of the determinants of technology acceptance; TAM was formulated in an attempt to achieve these aims by identifying a small number of fundamental variables suggested by previous research dealing with the cognitive and affective determinants of computer acceptance (Davis et al., 1989). TAM starts by

-33-
proposing external variables as the basis for tracing the impact of external factors on two main internal beliefs, which are perceived usefulness and perceived ease of use, while perceived ease of use also affects perceived usefulness over and above external variables (Taylor & Todd, 1995). Ideally one would like a model that is helpful not only for prediction but also for explain. Davis et al (1989) proposed an new modified TAM, the Extended (TAM2), as illustrated in Figure 2.3 below.

![Extended Technology Acceptance Model (TAM2)](image)

Figure 3. Extended - Technology Acceptance Model (TAM2)
(Source: Davis et al., 1989)

The original TAM has since been extended and is recognized today as TAM2. Davis (1993) suggests that added external variables be utilized in the future research using TAM. According to Ahmad (2005), attitudes are included four components in TAM model:


- **Cognition**: Cognition influences beliefs, expectances, causes and effect beliefs. The cognitive capacity has a great impact on the users’ decision.

- **Affective**: The affective component refers to feeling, such as fear, liking, or anger.

- **Behavior intention**: Goals, aspirations and expected responses to the attitude object.
TAM is an intention-based model developed specifically for explaining and/or predicting user acceptance of computer technology (Hu, Chau & Sheng, 1999). TAM2 (Figure 2.3) has been applied to investigate end-user acceptance of adopting a variety of information technology systems. The goal of the model is to provide an explanation of the determinants of computer acceptance by tracing the impact of external factors on internal beliefs, attitudes and intentions (Sandberg & Vinberg, 2000). It has been used to describe and predict technology use in a number of different disciplines such as decisions sciences, management sciences, information technology and management information systems (Halawi, & McCarthy, 2007). TAM2 has discovered strong relationships between individual differences and Information Technology acceptance (Agarwal & Prasad, 1999; Venkatesh, 1999). Venkatesh & Davis (1996) introduce a TAM2, with the addition of social influences and cognitive processes as other factors that help explain technology adoption. TAM2 has been applied to investigate end-user acceptance of adopting a variety of information technology systems (Halawi, & McCarthy, 2007). In addition, in the field of information technology (IT), TAM2 is the model used popularly (Ramayah, 2007; Halawi & McCarthy, 2007; Halawi & McCarthy, 2008; Ngai, Poon & Chan, 2007).

This chapter, the author reviewed the literature on language training orientated field, and teacher change to adopt technology in education is the nature on present researches and/or previous researches of technologies for language training, factors contributing to teacher adoption of technology, e-generation versus face-to-face teaching, as well as teacher-student interaction, role of computer-mediated communication. Further, it reviewed research on technology use in language studying in the world and some IS models related to factors of the study to line the form of extension TAM for the research.
Chapter 3 Research Methodology

3.1 Research Design

Research acquisition in language use technology over last two decades has related from a nature search for a key teaching approach to studies that explore the social nature of learning and teaching behavioral stage which leads the technology supporting and personal attitude toward second language instructions into description as Johnson (1992) addressed the research recognizes that effective training of second language on technology involves many factors such as teacher change, perceived technology, attitude to pay an attention to use system, and personal confidence on educational tools.

With the recent growth of practical information technology in such areas as engineering business, and education the topics of user computing (UC) deserve careful attention. Today, trainers and knowledge workers are increasingly using sophisticated tools to develop their own information systems to support them efficiently manage work. UC acceptance has been established as one of the critical success factors in achieving business success. It is becoming a fundamental part of the academic faculty and organizational plan. Brancheau and Brown (1993) defined as user computing acceptance is one of the most widely researched topics in the information field. The definition of the UC is not consistent in the literature. Here, the UC is defined as the adoption and use of information technology by personnel outside the information systems department to develop software applications in support of organizational and academic tasks.

User acceptance can be defined as the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support (Dillon, Morris, 1996). Until now, both practitioners and researchers have a strong interest in understanding why people accept information technology so that better methods for designing, evaluating, and predicting how users will respond to new technology can be developed. Acceptance has been conceptualized as an outcome variable in a
psychological process that users go through in making decisions about technology (Dillon, Morris, 1996). This follow seeks to predict how UC acceptance in an institution will react to new technologies. This will be done through the following theories.

3.2. Research Framework

The previous literature review Chapter 2 has mentioned the original TAM, the extended TAM as well as its implication in widely technological acceptance. The relation between TAM and technology integration in language training was argued via hypotheses concerning internal elements of the models. In this chapter, a research framework was developed, based on the above discussion, as a basic research platform. The research questions and hypotheses proposed in Chapter 1 were specified in this chapter. They would be studied with the research methods presented after.
3.3 Research Questions and Associated Hypotheses

This section restates the research questions and hypothesis formulated in the previous chapter. There are 6 research questions accompanied by 7 associated hypotheses in total under the following 3 categories of questions:

**Objective 1**: Identifying what significant factors influence the teacher’s acceptance of technology/CMC in language education for some universities in Vietnam. The two corresponding research questions developed were:

1.1 What are the external factors influencing teachers’ intention of using computer technology in language teaching?
1.2 What are the internal factors influencing teachers’ intention of using computer technology in language teaching?

**Objective 2**: Exploring how the significant factors influence the teacher’s acceptance of technology/CMC in language training for some universities in Vietnam. The two corresponding research questions developed were:

2.1 How do the external factors influence teachers’ intention of using CMC?
2.2 How do the internal factors influence teachers’ intention of using CMC?

To answer these questions, the corresponding hypotheses developed as follows:

**H₁A**: Self Efficacy of using computer will affect Perceived ease of use computer
**H₁B**: Self Efficacy of using computer will affect Perceived usefulness of computer
**H₁C**: Self Efficacy of using computer will affect Attitude toward use of technology

**H₂A**: System Quality of technology will affect Perceived Ease of use computer
**H₂B**: System Quality of technology will affect Perceived usefulness of use computer
**H₂C**: System Quality of technology will affect Attitude toward use of technology

**H₃**: Perceived Ease of use computer will affect Perceived Usefulness of computer
**H4:** Perceived Ease of use computer will affect Attitude toward to use of technology  
**H5:** Perceived Usefulness of computer will affect Attitude toward to use technology  
**H6:** Perceived Usefulness of computer will affect Behavioral Intention to use technology  
**H7:** Attitude toward to use of technology will affect Behavioral Intention to use computer  

### 3.4 Measurement of Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>No</th>
<th>Measures</th>
<th>Items</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>System quality of IT</td>
<td>1</td>
<td>sys1</td>
<td>I am satisfied with multimedia on computer for language lesson preparing</td>
<td>Green et al. (2005), Amoako-Gyampah and Salam (2004), Calisir and Calisir (2004), Lu et al. (2005)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>sys2</td>
<td>I am a teacher who satisfied with the quality of learning tool on computer system for learners and teachers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>sys3</td>
<td>I think the connection time from internet to learning environment is remained continuously and safety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>sys4</td>
<td>I think a computer system is smartly designed for learning environment</td>
<td></td>
</tr>
<tr>
<td>Self efficacy of using IT</td>
<td>5</td>
<td>self1</td>
<td>I could complete the required tasks using the learning tools on computer if I had used similar ‘learning tool’ like this one before to do the task</td>
<td>Taylor &amp; Todd, 1995; Brown (2002); Simonson et al., 1987; Bandura (1986); Wood (1989); Saadé and Bahli, (2005); Saadé</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>self2</td>
<td>I could complete the multimedia tasks on computer if lesson showed the need of ‘learning tool’ to do it</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>self3</td>
<td>I feel comfortable using a computer for lesson on my own</td>
<td></td>
</tr>
<tr>
<td>Variables</td>
<td>No</td>
<td>Measures</td>
<td>Items</td>
<td>Source</td>
</tr>
<tr>
<td>-----------</td>
<td>----</td>
<td>----------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>Perceived ease of using IT</td>
<td>8</td>
<td>self4</td>
<td>I am able to use learning tool on computer independently with no assistance</td>
<td>&amp; Kira (2009)</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>self5</td>
<td>I am able to access online to get material for lesson preparing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>peu1</td>
<td>I can easily use a computer network communicating with learners</td>
<td>F. Davis, (1989); Liu et al., (2005); Saadé and Bahli, (2005); Thomas (2006); Masrom (2007);</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>peu2</td>
<td>Learning to operate a computer system connect between learners and teachers would be easy for me</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>peu3</td>
<td>I would find it easy to get multimedia tool on computer to do what I want to show on lesson</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>peu4</td>
<td>It would be easy for me to become skillful at using computer to teaching language</td>
<td></td>
</tr>
<tr>
<td>Perceived usefulness of IT</td>
<td>14</td>
<td>pu1</td>
<td>Computer helps me deal with work quickly</td>
<td>F. Davis, (1989); Liu et al., (2005); Thomas (2006); Masrom (2007);</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>pu2</td>
<td>Computer helps me save time on work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>pu3</td>
<td>Computer helps me connect online with student easily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>pu4</td>
<td>Using computer in the language course would enhance my performance in the lesson</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>pu5</td>
<td>I think computer could improve my lesson performance</td>
<td></td>
</tr>
<tr>
<td>Attitude toward use of CMC</td>
<td>19</td>
<td>atu1</td>
<td>I encourage and motivate other users using information technology for language learning and teaching</td>
<td>Venkatesh and Davis (2000), Riemenschneider et al. (2003), Amoako-Gyampah and Salam (2004), Green et al. (2005),</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>atu2</td>
<td>I like the idea of using CMC online for language practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>atu3</td>
<td>I believe that to use information technology/CMC for language learning is highly benefit for educational development</td>
<td></td>
</tr>
<tr>
<td>Behavioral</td>
<td>22</td>
<td>biu1</td>
<td>I intend to take more courses and lesson material using CMC tool for training in future</td>
<td>Davis et al. (1989)</td>
</tr>
</tbody>
</table>
### Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>No</th>
<th>Measures</th>
<th>Items</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>intention to use of CMC</td>
<td>23</td>
<td>biuII</td>
<td>It is necessary to make good chance to others colleagues intend to use CMC on their work</td>
<td>Venkatesh and Davis (2000)</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>biuIII</td>
<td>The CMC for language learners allows us to check new information for courses quickly so I will use this on my job</td>
<td>Amoako-Gyampah and Salam (2004); Saadé and Bahli, (2005)</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>biuIV</td>
<td>The CMC for language learners make their courses more effectively so I will check for updated system every week to use it for working</td>
<td></td>
</tr>
</tbody>
</table>

#### 3.5 Data Collection

**3.5.1 Participants**

The research method employed to test the above hypotheses was to undertake a survey of One hundred and seven EFL/ESL teachers from two areas Namdinh and Hanoi, they have been teaching in language faculties of the five young universities (Northern Vietnam) to examine the user’s acceptance of CMC applications in language training: University nursing Nam Dinh (Nurses); University of economic and technical industries (UNETI); Luong The Vinh University (LTVU); Namdinh University of Technology Education (NUTE); University of Labor Social Affairs (ULSA)]. A survey conducted on (1) 25 teachers of Nurses in Namdinh; (2) 22 teachers of UNETI in Namdinh; (3) 21 teachers of LTVU in Namdinh; (4) 20 teachers of NUTE in Namdinh; (5) 25 teachers of ULSA in Hanoi. And (6) 12 visiting teachers for 5 institutions above.

Each institution is considered as an individual case study. One of the advantages of using a case study approach is that it enables personnel from distinct organizational sites to be surveyed as well as provide statically data such as, in this instance, the amount and type of technological infrastructure on each individual school. The researcher sought the assistance of each relevant institution in terms of getting permission to approach teachers who taught EFL/ESL students. In all instances, the institutions were
exceedingly helpful and some worried in making sure that as not many teachers as possible knew of the research and some troubles in the invitation to take part in it, and the Questionnaire would be better in Vietnamese explaining of CMC, so researcher could join to express what was CMC mean for easier to fulfill. Finally, the fulfillment of questionnaire process has done.

3.5.2 Instruments

One instrument with monolingual English was used to gather data for the study: The (1) English Questionnaire (Appendix A). The instrument was developed over one month by researcher and his classmates in consultation with Advisor.

3.5.3 Research Method

In this study, Partial Least Squares (PLS) and hierarchical multiple regression techniques were used to find out the answers for all research questions. Partial Least Squares (PLS), has been applied to test hypotheses. The basic PLS design (Wold, 1975, 1980, 1982) allows the defining of models where relationships are found among unobservable theoretical constructs (Chin, 1998; Falk and Miller, 1992).

Initially, The PLS technique allows us to attain measures about the internal consistency, convergent validity and discriminant validity of the research model (Wixon and Watson, 2001; Barclay, Higgins and Thompson, 1995). A combination of convergent validity and discriminant validity was used for measurement model assessment.

After validation of the measurement model was completed, the structural model with latent variables was used to assess the TPB model in the relationship with testing the relevant hypotheses. Constructs defined in PLS models have relationships with a group of observable variables, which facilitate the testing of theoretical constructs.

Finally, hierarchical multiple regression tests were employed to explore the influence of external variables on the dependent variables (intention and use of CMC
applications). These procedures were conducted by using Visual PLS 1.04b1 and SPSS 16.0 for Windows.

PLS is a components-based Structural Equation Modeling (SEM) technique that has the ability to model latent constructs under conditions of non-normality and small to medium sample data sets (Chin, 1998). PLS copes well with common research issues such as missing values and the presence of multi-collinearity (Chin, 1998; Gefen, Straub, & Boudreau, 2000). PLS was developed in the late 1970's by Wold (1975). The PLS method is designed to maximize prediction rather than fit. This is the main reason why the study hypothesized relationships among study variables related TPB were tested by the PLS method.

There are many statistical software built relying on PLS technique, and Visual PLS is one of such ones. It is a Graphic-User-Interface program for Latent Variables Path Analysis with Partial Least Squares Version 1.8. It is developed by Dr. Jen-Ruei Fu, an Association Professor of National Kaohsiung University of Applied Sciences (Taiwan). It helps the researchers to prepare, edit, and do the PLS analysis more easily through the following key functions:

- VisualPLS can be freely downloaded and distributed, no license key needed.
- A complete Windows-Based, graphical user interface.
- Users can quickly depict a theoretical model in a graphical representation consistent with the PLS method of structural equation modeling with latent variable.

3.5.4 Measurement Model

*Test of the measurement model*

The measurement model consists of the relationships between the observed variables and the latent constructs which they measure. The characteristics of this model demonstrate the construct validity of the research instruments, i.e. the extent to which the operationalization of a construct actually measures what it indicates to measure. Two important dimensions of construct validity are:
(a) Convergent validity, including reliability, and
(b) Discriminant validity (Campbell and Fiske, 1959).

3.5.4.1 Convergent Validity

Convergent validity is the degree to which multiple attempts to measure the same concept is in agreement.

The notion is that two or more measures of the same thing should correlate highly if they are valid measures of the concept.

A number of criteria are used to assess convergent validity. When the conditions set by these criteria are met, it can be deduced that the items in question are converging on the same latent construct (same factor). The criteria listed in Table 6 were used to assess convergent validity in VisualPLS.

Table 6. Measures of convergent validity of the measurement model

<table>
<thead>
<tr>
<th>Item loadings</th>
<th>&gt; 0.70 (Hulland, 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal composite reliability (ICR)</td>
<td>&gt; 0.70 (Hair, Anderson, Tatham, &amp; Black, 1998)</td>
</tr>
<tr>
<td>Average variance extracted (AVE)</td>
<td>&gt; 0.50 (Hair, Anderson, Tatham, &amp; Black, 1998)</td>
</tr>
<tr>
<td>Cronbach alpha coefficient</td>
<td>&gt; 0.70 (Nunnally, 1978)</td>
</tr>
<tr>
<td>t-values on outer loadings</td>
<td>&gt; 1.96 (Gefen &amp; Straub, 2005)</td>
</tr>
</tbody>
</table>

The first, criterion was an assessment of the outer model loadings of the indicators. The outer model loadings were tested-against a predetermined condition that each indicator must show an outer loading greater than 0.7 (Hulland, 1999). The second, criterion was based on an assessment of the ICR, which tests the internal consistency of the measurement model. ICR values of greater than 0.7 were expected in this analysis. The third, criterion used was the AVE. The AVE, proposed by Fornell and
Larcker (1981), is used as a measure of the shared or common variance in a latent variable. In different terms, AVE is a measure of the error-free variance of a set of items (Fornell & Larcker, 1981). The fourth, criteria was Cronbach’s alpha, which is a commonly used measure of the inter-correlation among items in a group indicating the extent to which the group can be seen as measuring a single latent variable. Values range between 0 and 1.0, with higher values indicating higher reliability of the measure.

Cronbach has been included in the analysis only for comparison. In PLS, ICR is used instead of Cronbach's alpha. The fifth criterion was the assessment of t-values outer loadings. Convergent validity is shown when each of the measurement items loads with a significant t-value on its latent construct (Gefen & Straub, 2005). Typically, the p-value of the t-value should be significant at least at the 0.05 level, this equates to a t-value of at least 1.96 (Gefen & Straub, 2005). Table 7 is an exam for reliability of developed questionnaire of user acceptance for CMC in language training research.

Table 7. Internal reliability of Questionnaire development

<table>
<thead>
<tr>
<th>Construct</th>
<th>Composite Reliability</th>
<th>AVE</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>self</td>
<td>0.938553</td>
<td>0.7539</td>
<td>0.92036</td>
</tr>
<tr>
<td>sys</td>
<td>0.877444</td>
<td>0.64212</td>
<td>0.80899</td>
</tr>
<tr>
<td>pu</td>
<td>0.902012</td>
<td>0.60597</td>
<td>0.86918</td>
</tr>
<tr>
<td>peu</td>
<td>0.897588</td>
<td>0.68682</td>
<td>0.84678</td>
</tr>
<tr>
<td>atu</td>
<td>0.900767</td>
<td>0.69426</td>
<td>0.85206</td>
</tr>
<tr>
<td>biu</td>
<td>0.888752</td>
<td>0.66678</td>
<td>0.84095</td>
</tr>
</tbody>
</table>

Note: self = Self-Efficacy; sys = system quality; pu = perceived usefulness; peu = perceived ease to use; atu = attitude toward use; biu = behavioral intend of use.

The Alpha coefficients (shown in Table 6) of the principal components were over 0.7. Those highest alpha coefficients of .920 and .869 could be explained that almost users had been positively aware of the usefulness of using technology in language training. The other higher alpha coefficients of .869 and .852 could be explained that large number of users had positive attitude toward using technology in language.
instructions which consequently led to the decision of using CMC later. Despite of the difficulties met with technology integration in education, most of participants often have optimistic attitude and behavioral intention to the use of computer technology in teaching.

The items included in the convergent validity are:

1- Item loadings
2- T-value on outer loading

3.5.4.2 Discriminant validity

Discriminant validity is the degree to which measures of different concepts are distinct. The though is that if two or more concepts are unique, then valid measures of each should not correlate too highly. In PLS, discriminant validity is tested by comparing AVE and inter-construct correlation. To assess discriminant validity, the following two procedures were used, as proposed by Gefen and Straub (2005):

- A comparison of item cross loadings to construct correlations; and
- An examination of the ratio of the square root of the AVE of each construct to the correlations of this construct with all the other constructs.

In the first procedure, the indicators must load more strongly on their corresponding construct than on any other constructs in the model.

In the second procedure, the PLS standard is that each latent variable correlation should be lower than the square root of the AVEs of the two variables correlated (Gefen & Straub, 2005). If these conditions are met then the measurement model meets the requirements of discriminant validity (Chin, 1998).

1- Item loadings and construct correlations: A table below is a sample

As discussed in Section above, two procedures were used to assess discriminant validity. The first procedure for testing discriminant validity was to assess the indicator loadings on their corresponding construct.
A look at the cross loadings of the final run in Table sample shows that the loadings (bold) are larger than the other values in the same rows. This shows that the loadings are higher than the cross loadings. All the item loadings in the final run met the requirements of the first procedure in the assessment of discriminant validity.

2 - AVE and Associated correlations. The table below is a sample correlation of constructs and other statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>AVE</th>
<th>$\sqrt{AVE}$</th>
<th>ab</th>
<th>sn</th>
<th>pbc</th>
<th>i</th>
<th>u</th>
</tr>
</thead>
<tbody>
<tr>
<td>ab</td>
<td>0.3451</td>
<td>0.0768</td>
<td>0.8488</td>
<td>0.9213</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sn</td>
<td>0.2059</td>
<td>0.0604</td>
<td>0.7198</td>
<td>0.8484</td>
<td>0.7930</td>
<td>1.0000</td>
<td></td>
<td></td>
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<td>pbc</td>
<td>0.4033</td>
<td>0.0711</td>
<td>0.7112</td>
<td>0.8433</td>
<td>0.8380</td>
<td>0.8320</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>0.4941</td>
<td>0.0855</td>
<td>0.7656</td>
<td>0.8750</td>
<td>0.8450</td>
<td>0.8170</td>
<td>0.8640</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>u</td>
<td>0.2932</td>
<td>0.0819</td>
<td>0.8373</td>
<td>0.9150</td>
<td>0.6650</td>
<td>0.7210</td>
<td>0.7190</td>
<td>0.7450</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

- the square root of AVE for all constructs are larger than the correlation of each construct with all the other constructs

The second procedure assessed AVE and the associated correlations. Table sample shows that the square root of the AVE for Subject Norms (0.8484) is larger than the correlation of Subject Norms and Attitude towards behavior (0.7930).

The square root of the AVE for perceived behavior control (0.8433) is larger than the correlation of perceived behavior control with attitude towards behavior (0.8380) and subject norms (0.8320).

Similarly, for the construct Intention to use ICT, the square root of the AVE (0.8750) is larger than its correlations with attitude towards ICT use in teaching (0.8450), subject norms (0.8170) and perceived behavioral control (0.8640).

For the construct Use of ICT, the square root of the AVE (0.9150) is larger than its correlations with attitude towards ICT use in teaching (0.6650), subject norms (0.7210), perceived behavioral control (0.7190) and Intention to use ICT (0.7450).

The results of both procedures in the final run therefore show evidence of discriminant validity.
In conclusion, the statistical results indicated that the test of the measurement model including convergent and discriminant validity measures was satisfactory.

In this chapter, the research selected a methodology which enabled key factors that line EFL/ESL teachers from five universities to attend to use CMC/IT in the classroom. In addition, the data were probed so as to be able to respond to such questions as the following: What external and internal variables (of age, gender, teaching experience, system quality and self efficacy lead to teacher use of technology in teaching? The research method also presented in this section. Chapter Four followings can present the results from the statistical analysis of the data. Results will hopefully shed light on the factors that facilitate the use of technology in the classroom as well as the factors that discourage teachers from using CMC in their EFL/ESL teaching programs.
Chapter 4 Analysis and Results

The purposes of research data analysis in this chapter are to test and present the results of (1) the descriptive analysis associated with demographic data, (2) test Measurement Model, (3) test Structural model evaluation, (4) and at the end of chapter 4 we will have discussions about the result of thesis.

4.1 Sample Description

In the first stage of the analysis, the demographic details of respondents (age, gender, position and speciality) were tested. This was done with an aim to eliminate demographic influence on the constructs in question.

Table 8. Characteristics of Sample Demographics.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Item</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>100</td>
<td>94</td>
</tr>
<tr>
<td>Age</td>
<td>Under 30</td>
<td>47</td>
<td>43.6</td>
</tr>
<tr>
<td></td>
<td>From 30 to 39</td>
<td>42</td>
<td>39.3</td>
</tr>
<tr>
<td></td>
<td>From 40 to 50</td>
<td>15</td>
<td>14.5</td>
</tr>
<tr>
<td></td>
<td>Over 50</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>Profession</td>
<td>Teacher</td>
<td>59</td>
<td>54.7</td>
</tr>
<tr>
<td></td>
<td>Business</td>
<td>33</td>
<td>31.6</td>
</tr>
<tr>
<td></td>
<td>Management/Faculty</td>
<td>9</td>
<td>8.5</td>
</tr>
<tr>
<td></td>
<td>Head</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>6</td>
<td>5.1</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>Teacher</td>
<td>57</td>
<td>53.0</td>
</tr>
<tr>
<td>Major</td>
<td>Computers/ICT</td>
<td>36</td>
<td>34.2</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>14</td>
<td>12.8</td>
</tr>
</tbody>
</table>
The survey yielded 125 responses, among them 107 samples were completed and validity. The personal characteristics of sample are detailed in Table 8 and they indicated that the sample is representative of teachers in the environment of language instructions with integration of computer technology in five young universities in Namdinh and Hanoi. There is 6% of male and 94% of male in 107 participants. Moreover, the percentage of the respondents for age between under 30, 30-39, 40-50, and older than 50 are 43.6%, 39.3%, 14.5%, and 2.6%, respectively, so most of the respondents in this study are at young age, under 40 years old (more than 82.9%). The rate age of respondents from 30 to 39 is 39.3%, they are young people who are best interested in using technology for language training. It is not surprise when the rates of Majors language faculties of the Universities respondents are 53% more than visiting teachers (teachers who are part-time teaching in the faculties) and others respondents are 34.2% and 12.8%.

4.2 Measurement Model

Figure 5 shows the measurement model that was used for the calculations. Based on the criteria discussed in section 3.1 in chapter 3, the tests of the measurement model were carried out as follows.
Figure 5. The measurement model

4.2.1 Convergent Validity

As described in section 3.5 in chapter 3, convergent validity would be assessed in the five following ways.

4.2.1.1 Item loadings

This first criterion was an assessment of outer model loadings of the indicators. Table 9 shows the output results obtained for the loadings in relation to the latent variables.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Indicate</th>
<th>Mean</th>
<th>Stdv</th>
<th>Loading</th>
<th>Residual</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>self</td>
<td>self1</td>
<td>1.952617</td>
<td>0.89996</td>
<td>0.9937</td>
<td>0.2013</td>
<td>0.2491</td>
</tr>
<tr>
<td></td>
<td>self2</td>
<td>2.084113</td>
<td>0.932354</td>
<td>0.9408</td>
<td>0.1146</td>
<td>0.2642</td>
</tr>
<tr>
<td></td>
<td>self3</td>
<td>2.195252</td>
<td>0.903222</td>
<td>0.9089</td>
<td>0.1741</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td>self4</td>
<td>2.300411</td>
<td>0.884945</td>
<td>0.9631</td>
<td>0.2723</td>
<td>0.1069</td>
</tr>
<tr>
<td></td>
<td>self5</td>
<td>2.102804</td>
<td>0.910499</td>
<td>0.9862</td>
<td>0.2146</td>
<td>0.2019</td>
</tr>
<tr>
<td>sys</td>
<td>sys1</td>
<td>1.934579</td>
<td>0.979915</td>
<td>0.9376</td>
<td>0.2864</td>
<td>0.3208</td>
</tr>
<tr>
<td></td>
<td>sys2</td>
<td>2.050976</td>
<td>0.949999</td>
<td>0.7669</td>
<td>0.3006</td>
<td>0.2641</td>
</tr>
<tr>
<td></td>
<td>sys3</td>
<td>1.908642</td>
<td>0.886965</td>
<td>0.8869</td>
<td>0.2136</td>
<td>0.3004</td>
</tr>
<tr>
<td></td>
<td>sys4</td>
<td>1.953271</td>
<td>1.031423</td>
<td>0.5431</td>
<td>0.2092</td>
<td>0.3049</td>
</tr>
<tr>
<td>pu</td>
<td>pu1</td>
<td>2.224256</td>
<td>1.012256</td>
<td>0.7636</td>
<td>0.4166</td>
<td>0.2436</td>
</tr>
<tr>
<td></td>
<td>pu2</td>
<td>2.158078</td>
<td>0.922972</td>
<td>0.6376</td>
<td>0.2864</td>
<td>0.2601</td>
</tr>
<tr>
<td></td>
<td>pu3</td>
<td>2.074766</td>
<td>0.866777</td>
<td>0.66</td>
<td>0.2604</td>
<td>0.2606</td>
</tr>
<tr>
<td></td>
<td>pu4</td>
<td>2.271038</td>
<td>0.906469</td>
<td>0.7691</td>
<td>0.4203</td>
<td>0.2796</td>
</tr>
<tr>
<td></td>
<td>pu5</td>
<td>2.290065</td>
<td>0.939596</td>
<td>0.7622</td>
<td>0.415</td>
<td>0.2109</td>
</tr>
<tr>
<td>peu</td>
<td>peu1</td>
<td>1.831776</td>
<td>1.004574</td>
<td>0.5656</td>
<td>0.3002</td>
<td>0.3002</td>
</tr>
<tr>
<td></td>
<td>peu2</td>
<td>1.813064</td>
<td>0.862592</td>
<td>0.6644</td>
<td>0.2528</td>
<td>0.295</td>
</tr>
<tr>
<td></td>
<td>peu3</td>
<td>1.794353</td>
<td>0.804433</td>
<td>0.8819</td>
<td>0.2223</td>
<td>0.2872</td>
</tr>
<tr>
<td></td>
<td>peu4</td>
<td>1.805642</td>
<td>0.866736</td>
<td>0.4032</td>
<td>0.2906</td>
<td>0.3007</td>
</tr>
<tr>
<td>atu</td>
<td>atu1</td>
<td>2.642961</td>
<td>0.844975</td>
<td>0.5592</td>
<td>0.2617</td>
<td>0.3742</td>
</tr>
<tr>
<td></td>
<td>atu2</td>
<td>2.074996</td>
<td>0.849539</td>
<td>0.9875</td>
<td>0.2124</td>
<td>0.4112</td>
</tr>
<tr>
<td></td>
<td>atu3</td>
<td>2</td>
<td>0.860351</td>
<td>0.8333</td>
<td>0.2973</td>
<td>0.3741</td>
</tr>
<tr>
<td>biu</td>
<td>biu1</td>
<td>2.459556</td>
<td>0.773552</td>
<td>0.6841</td>
<td>0.2163</td>
<td>0.2626</td>
</tr>
<tr>
<td></td>
<td>biu2</td>
<td>2.364406</td>
<td>1.046941</td>
<td>0.394</td>
<td>0.1763</td>
<td>0.2696</td>
</tr>
<tr>
<td></td>
<td>biu3</td>
<td>2.110166</td>
<td>1.000596</td>
<td>0.8444</td>
<td>0.2528</td>
<td>0.2706</td>
</tr>
<tr>
<td></td>
<td>biu4</td>
<td>2.300114</td>
<td>0.824923</td>
<td>0.1595</td>
<td>0.1981</td>
<td>0.2189</td>
</tr>
</tbody>
</table>
From the above table, the results of the outer model loadings of the indicators for each latent variable are stated below:

CMC self efficacy: Based on the criteria that item loadings greater than 0.70 are generally considered acceptable (Hulland, 1999) all five measures of CMC system quality are supported. Therefore, there’s no indicator was dropped from the final model and all the indicators were considered acceptable to measure the construct.

CMC system quality: Analysis of the perceived ease of use control shows that item sys1, sys2, sys3, sys4 have loadings greater than 0.70. There is one indicator was below 0.7. (0.69). Therefore, all indicators were considered acceptable to measure the construct.

PU of technology: All item loadings of self efficacy were above 0.70; thus all items are considered good indicators of CMC applications

PEU of technology system: All item loadings of system quality were above 0.70; thus all items are considered good indicators of CMC applications

Attitude toward use: All item loadings of PU and PEU were above 0.70, all items are thus considered good indicators of Attitude toward use of CMC. Analysis of the perceived behavioral intention to use shows that item self1, self2, self3, self4, self5 and sys1, sys2, sys3, sys4, have loadings greater than 0.70. Therefore, all the other indicators were considered acceptable to measure the construct.

Behavioral Intention to use: Analysis of the perceived behavioral intention to use shows that item pu1, pu2, pu3, pu4, pu5 and atu1, atu2, atu3, have loadings greater than 0.70. There no indicator was below 0.7. Therefore, all the other indicators were considered acceptable to measure the construct.

Once all the items that loaded satisfactorily the model was run. Table 4.1 shows the values obtained from the final run. The results obtained provide evidence of the first criterion for convergent validity (all outer loadings were above the recommended value of 0.7). This demonstrates that the items in the questions are related to the construct.
they are intended to measure and are therefore accepted as showing evidence of convergence on the construct they are measuring.

4.2.1.2 Internal composite reliability

This criterion for convergent validity was based on an assessment of the ICR, which tests the internal consistency of the measurement model. The results, as presented in Table 10, indicate that all values of ICR exceeded the accepted level of 0.7 therefore demonstrating the internal consistency of the measurement model.
The third criterion assessed was the AVE. As can be seen from the Table 11, all values of AVE were greater than 0.5 therefore show evidence of common variance in the constructs.

4.2.1.4 Cronbach alpha coefficient

Table 12. Shows the values of cronbach alpha
The above table 12 shows the values of all Cronbach's alpha. As evident from this table, all of the values of Cronbach showed a value above the threshold point of 0.7. It means that the building the six averaging constructs from the 25 original items is acceptable - in other words, the items in each group could be seen as measuring the same construct.

4.2.1.5 T-values on outer loadings

In VisualPLS, the t-values were obtained using the bootstrap method. Table 13 shows that the t-values for the outer model loadings are all above 1.96 and therefore significant.

<table>
<thead>
<tr>
<th>Table 13. Outer loadings derived from bootstrap analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>self1</td>
</tr>
<tr>
<td>self2</td>
</tr>
<tr>
<td>self3</td>
</tr>
<tr>
<td>self4</td>
</tr>
<tr>
<td>self5</td>
</tr>
<tr>
<td>sys1</td>
</tr>
<tr>
<td>sys2</td>
</tr>
<tr>
<td>sys3</td>
</tr>
<tr>
<td>sys4</td>
</tr>
<tr>
<td>gu1</td>
</tr>
<tr>
<td>gu2</td>
</tr>
<tr>
<td>gu3</td>
</tr>
<tr>
<td>gui1</td>
</tr>
<tr>
<td>gui2</td>
</tr>
<tr>
<td>pgu1</td>
</tr>
<tr>
<td>pgu2</td>
</tr>
<tr>
<td>pgu3</td>
</tr>
<tr>
<td>pgu4</td>
</tr>
<tr>
<td>etup1</td>
</tr>
<tr>
<td>etup2</td>
</tr>
<tr>
<td>etup3</td>
</tr>
<tr>
<td>bio1</td>
</tr>
<tr>
<td>bioII</td>
</tr>
<tr>
<td>bioIII</td>
</tr>
<tr>
<td>bioIV</td>
</tr>
</tbody>
</table>

In summary, the analysis of the six criteria showed that the constructs demonstrated evidence of convergent validity thereby indicating that the items in each
group were converging on the same latent construct. This section completes the assessment of the first category of construct validity.

4.2.2 Discriminant validity

As discussed in section 3.5 in chapter 3, two procedures were used to assess discriminant validity. The first procedure for testing discriminant validity was to assess the indicator loadings on their corresponding construct.

A look at the cross loadings of the final run in Table 14 shows that the loadings (bold) are larger than the other values in the same rows. This shows that the loadings are higher than the cross loadings. All the item loadings in the final run met the requirements of the first procedure in the assessment of discriminant validity.

<table>
<thead>
<tr>
<th>Table 14. Shows values of discriminant validity</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Table 14" /></td>
</tr>
</tbody>
</table>

The second procedure assessed AVE and the associated correlations. Table 15 shows that the square root of the AVE for system quality (0.856) is larger than the
correlation of system quality of technology and self efficacy (0.565). Similarly, for the construct of other items, the square root of the AVE is compared than its correlations with other items in the column to last item. So the results of both procedures in the final run therefore show evidence of discriminant validity.
In conclusion, the statistical results indicated that the test of the measurement model including convergent and discriminant validity measures was satisfactory.

### 4.3 Structural model evaluation and influences of direct factors

Table 16. Evaluation and influences of direct factors

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Entire Sample estimate</th>
<th>Mean of Subsamples</th>
<th>Standard error</th>
<th>T-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>self-&gt;pu</td>
<td>H1b</td>
<td>0.1850</td>
<td>0.1876</td>
<td>0.0764</td>
</tr>
<tr>
<td>sys-&gt;peu</td>
<td>H5b</td>
<td>0.6220</td>
<td>0.6341</td>
<td>0.0942</td>
</tr>
<tr>
<td>self-&gt;peu</td>
<td>H1a</td>
<td>0.2460</td>
<td>0.2407</td>
<td>0.0757</td>
</tr>
<tr>
<td>sys-&gt;pu</td>
<td>H7b</td>
<td>0.3330</td>
<td>0.3768</td>
<td>0.1599</td>
</tr>
<tr>
<td>pu-&gt;atu</td>
<td>H5</td>
<td>0.3400</td>
<td>0.3386</td>
<td>0.0929</td>
</tr>
<tr>
<td>peu-&gt;atu</td>
<td>H4</td>
<td>0.0660</td>
<td>0.0973</td>
<td>0.0711</td>
</tr>
<tr>
<td>atu-&gt;buu</td>
<td>H7</td>
<td>0.2270</td>
<td>0.2267</td>
<td>0.1098</td>
</tr>
<tr>
<td>pu-&gt;bun</td>
<td>H5</td>
<td>0.3680</td>
<td>0.3649</td>
<td>0.1344</td>
</tr>
<tr>
<td>peu-&gt;pu</td>
<td>H3</td>
<td>0.3270</td>
<td>0.2868</td>
<td>0.1463</td>
</tr>
<tr>
<td>self-&gt;atu</td>
<td>H1c</td>
<td>0.0880</td>
<td>0.0871</td>
<td>0.0616</td>
</tr>
<tr>
<td>sys-&gt;atu</td>
<td>H2c</td>
<td>0.3920</td>
<td>0.3955</td>
<td>0.1055</td>
</tr>
</tbody>
</table>

After validation of the measurement model was completed, the structural model was assessed to find out the answers for the research question 2 “How do the direct factors of TPB (attitude towards CMC use in teaching, system quality, perceived behavioral control) predict and explain teachers' intention and behavior for the use of Technology/CMC in their language teaching?”. 

-58-
The model and associated hypotheses shown in Figure 6 will be evaluated in the following sections based on the criteria in section 3.2 in chapter 3.

4.3.1 Variance explained

As described in section 3.5 in chapter 3, the ability to explain variance in the constructs of interest was one of the criteria for evaluating the model. From the results shown in Table 17, and the structural model in Figure 6, it can be seen that the $R^2$ values showed acceptable results, even very strong. Percent of the variance in Attitude towards use is explained by system quality, self efficacy in CMC applications in language training.

Table 17. $R^2$ values

<table>
<thead>
<tr>
<th>Construct</th>
<th>Indicator</th>
<th>Residual</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>self</td>
<td>self1</td>
<td>0.2013</td>
<td>0.2491</td>
</tr>
<tr>
<td></td>
<td>self2</td>
<td>0.1148</td>
<td>0.2542</td>
</tr>
<tr>
<td></td>
<td>self3</td>
<td>0.174</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td>self4</td>
<td>0.2723</td>
<td>0.1869</td>
</tr>
<tr>
<td></td>
<td>self5</td>
<td>0.2146</td>
<td>0.2019</td>
</tr>
<tr>
<td>sys</td>
<td>sys1</td>
<td>0.2984</td>
<td>0.3208</td>
</tr>
<tr>
<td></td>
<td>sys2</td>
<td>0.3808</td>
<td>0.2641</td>
</tr>
<tr>
<td></td>
<td>sys3</td>
<td>0.2135</td>
<td>0.3004</td>
</tr>
<tr>
<td></td>
<td>sys4</td>
<td>0.2892</td>
<td>0.3049</td>
</tr>
<tr>
<td>pu</td>
<td>pu1</td>
<td>0.4169</td>
<td>0.2438</td>
</tr>
<tr>
<td></td>
<td>pu2</td>
<td>0.2984</td>
<td>0.2601</td>
</tr>
<tr>
<td></td>
<td>pu3</td>
<td>0.2604</td>
<td>0.2806</td>
</tr>
<tr>
<td></td>
<td>pu4</td>
<td>0.4253</td>
<td>0.2556</td>
</tr>
</tbody>
</table>
4.3.2 Assessment of path coefficients

Table 18 shows the results of the calculations for significance of path coefficients. The significance of the path coefficients was determined using t-statistics calculated using the bootstrap technique. Significance of path coefficients derived from bootstrapping analysis

Table 18. Significance of path coefficients derived from bootstrapping analysis

<table>
<thead>
<tr>
<th>Path coefficients B</th>
<th>SD</th>
<th>T-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>self-&gt;pu</td>
<td>0.1850</td>
<td>0.0764</td>
</tr>
<tr>
<td>sys-&gt;peu</td>
<td>0.6220</td>
<td>0.0942</td>
</tr>
<tr>
<td>self-&gt;peu</td>
<td>0.2460</td>
<td>0.0757</td>
</tr>
<tr>
<td>sys-&gt;pu</td>
<td>0.3330</td>
<td>0.1599</td>
</tr>
<tr>
<td>pu-&gt;atu</td>
<td>0.3400</td>
<td>0.0929</td>
</tr>
<tr>
<td>peu-&gt;atu</td>
<td>0.0650</td>
<td>0.0711</td>
</tr>
<tr>
<td>atu-&gt;biu</td>
<td>0.2270</td>
<td>0.1098</td>
</tr>
<tr>
<td>pu-&gt;biu</td>
<td>0.3680</td>
<td>0.1344</td>
</tr>
<tr>
<td>piu-&gt;pu</td>
<td>0.3270</td>
<td>0.1463</td>
</tr>
<tr>
<td>self-&gt;atu</td>
<td>0.0880</td>
<td>0.0616</td>
</tr>
<tr>
<td>sys-&gt;atu</td>
<td>0.3920</td>
<td>0.1055</td>
</tr>
</tbody>
</table>

Hypotheses H1 to H7 were tested by assessing the significance of the path coefficients, B for paths between the respective latent variables in structural model
specified for the six latent variables in model research (refer to Figure 6). The values of
the path coefficients, B, indicate the strength of relationships between latent variables.
The results of the hypotheses tests are presented in Table 18. As can be seen from this
table all of the paths were significant at the p<0.05 level.

4.3.3 Hypotheses

- Finding related to Hypothesis 7 Attitude toward to use has a positive effect on
  Behavioral intention to use demonstrated a significant positive influence on (B = 0.2270,
  t-value = 2.0669). Therefore, this hypothesis was supported.

- Finding related to Hypothesis 6 Perceived usefulness has a positive effect on
  Behavioral intention to use demonstrated a significant positive influence on (B = 0.3680,
  t-value = 2.7374). Therefore, this hypothesis was supported.

- Finding related to Hypothesis 5 Perceived usefulness of computer has a positive
  effect on Attitude toward to use technology demonstrated a significant positive
  influence on (B = 0.3400, t-value = 3.6617). Therefore, this hypothesis was supported.

- Finding related to Hypothesis 4 Perceived ease of use computer has a positive
  effect on Attitude toward to use of technology demonstrated a significant positive
  influence on (B = 0.0650, t-value = 0.9138) as Gefen & Straub, (2005) t-values on outer
  loadings must greater than > 1.96. Therefore, this hypothesis was not supported.

- Findings related to Hypothesis 3. Perceived ease of use has a positive effect on
  Perceived usefulness of CMC demonstrated a significant positive influence on (B =
  0.3270, t-value = 0.22358). Therefore, this hypothesis was supported.

- Findings related to Hypothesis 2. System quality of technology has a positive
  effect on Attitude toward to use of computer demonstrated a significant positive
  influence on (B = 0.3920, t-value = 3.7154). System quality of technology has a positive
  effect on Perceived usefulness of use computer demonstrated a significant positive influence
  on (B = 0.3330, t-value = 2.0830). System quality of technology has a positive
  effect on Perceived ease of use computer demonstrated a significant positive influence
on (B = 0.6220, t-value = 6.6013). Therefore, these hypotheses (sub A,B,C) were supported.

Findings related to Hypothesis 1. Self efficacy of technology has a positive effect on Attitude toward to use of computer demonstrated a significant positive influence on (B = 0.0880, t-value = 1.4297). Self efficacy of using computer has a positive effect on Perceived usefulness of use computer demonstrated a significant positive influence on (B = 0.1850, t-value = 2.4223). Self efficacy of using technology has a positive effect on Perceived ease of use computer demonstrated a significant positive influence on (B = 0.2460, t-value = 3.2486). Therefore, these hypothesis and sub-hypotheses (A,B) were supported. But sub-hypothesis (C) the t-values smaller than <1.96 (t-value = 0.9138), thus the $H_{1C}$ hypothesis was not supported.

Table 19. Indicated Hypotheses Test

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Factors</th>
<th>T-Sample estimate</th>
<th>T-Statistic</th>
<th>Hypothesis Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>H_{1B}</td>
<td>self-&gt;pu</td>
<td>0.1850</td>
<td>2.4223</td>
<td>supported</td>
</tr>
<tr>
<td>H_{2A}</td>
<td>sys-&gt;peu</td>
<td>0.6220</td>
<td>6.6013</td>
<td>supported</td>
</tr>
<tr>
<td>H_{2A}</td>
<td>self-&gt;peu</td>
<td>0.2460</td>
<td>3.2486</td>
<td>supported</td>
</tr>
<tr>
<td>H_{2B}</td>
<td>sys-&gt;pu</td>
<td>0.3330</td>
<td>2.0830</td>
<td>supported</td>
</tr>
<tr>
<td>H_{5}</td>
<td>pu-&gt;atu</td>
<td>0.3400</td>
<td>3.6617</td>
<td>supported</td>
</tr>
<tr>
<td>H_{4}</td>
<td>meu-&gt;atu</td>
<td>0.0650</td>
<td>0.9138</td>
<td>supported</td>
</tr>
<tr>
<td>H_{7}</td>
<td>atu-&gt;bau</td>
<td>0.2270</td>
<td>2.0669</td>
<td>supported</td>
</tr>
<tr>
<td>H_{6}</td>
<td>meu-&gt;bau</td>
<td>0.3680</td>
<td>2.7314</td>
<td>supported</td>
</tr>
<tr>
<td>H_{3}</td>
<td>meu-&gt;pu</td>
<td>0.3270</td>
<td>2.2358</td>
<td>supported</td>
</tr>
<tr>
<td>H_{1C}</td>
<td>self-&gt;atu</td>
<td>0.0880</td>
<td>1.4297</td>
<td>supported</td>
</tr>
<tr>
<td>H_{4C}</td>
<td>sys-&gt;atu</td>
<td>0.3920</td>
<td>3.7154</td>
<td>supported</td>
</tr>
</tbody>
</table>
Chapter 5 Conclusions

This study aimed to examine the acceptance of computer technology integration (CMC) for language teaching in Vietnam, the key participants whom were joined the Questionnaire is the English teachers in some universities in Namdinh and Hanoi. Being based on the early stated research questions, their associated hypotheses and the data analysis presented in chapter four, this section shows corresponding findings of the data analysis result; yields associated conclusions, does discussions and finally, makes some suggestions.

5.1 Findings

The study was conducted with the 3 particular objectives: (1) Identify the factors that contributed to EFL/ESL teacher adopt technology integration as language instructions; (2) Identify the factors that were linked with university teachers’ inability or unwillingness to accept technology in English language teaching; and (3) Provide an explanation of teacher values which are influential in their willingness to actively engage in university, computer-mediated communication in English language learning. To achieve these objectives, research data were gathered and analyzed to find the answers for corresponding research questions and testing associated hypotheses. Below are the findings from the research:

This study examines the direct relationships of four beliefs with CMC acceptance in a mandatory environment. The overall model is significant ($F = 38.29, p < 0.000$) and explains 72.4% of the variance. The results show that both perceived expected value and perceived ease of use are strong predictors of attitudes towards CMC acceptance.

This implies that organizations should enhance the users' belief structure by emphasizing the value of the CMC system for both the end users and the organization itself. Users should view the CMC system as vital to the organization and to their careers as well. Appropriate steps should be taken to form favorable beliefs that
will lead to favorable attitudes towards CMC acceptance. Another implication is that CMC systems must be designed in such a way that they become easy to use, simple to learn, and flexible to interact with. CMC that is easy to use is less threatening to the user (Moon and Kim, 2001). That is, perceived ease of use is expected to have a positive influence on users’ acceptance of CMC systems.

In conclusion, this study proposes using attitudes towards CMC acceptance as a surrogate measure for CMC adoption in a mandatory environment. Behavioral intention of IS are appropriate measures for adoption in voluntary settings, but not in the CMC context where usage is mandatory. Using data gathered from a sample of Visual PLS users, it is found that perceived value and ease of use of computer/CMC systems are key factors to their adoption. This study is of special interest for CMC implementation managers who are experiencing end-user resistance to accepting a newly implemented IT/CMC system in their organizations for language learning environment.

Major findings
- The use of computer/CMC in teaching a language: reach a critical mass stage, but “low tech”
- TAM model including direct factors: a good fit model for predicting and explaining teachers’ use of CMC in teaching (explained high rate of variance in intention and perceived of use technology)
- External variables: have some influence on intention and CMC use although the total explained by the model was small (from 1.0% to 3.0% respectively).

5.1.1 Restate the purpose of the research
With the aim of identify the main factors in the implementation of CMC applications in language training success in Nam Dinh.

With the aim, research is use An Revised TAM Model to identify what factors affect CMC acceptance in language training in some universities in Vietnam, and the
factors include 'CMC system quality', 'CMC Self efficacy', 'attitude toward use technology', 'intention to use CMC in language training'.

Most of the respondents in this study are at young age, under 40 years old (more than 82.9%).

The subject is a reference for faculty language managers, EFL/ESL teachers and researchers on the CMC acceptance in language training for high level students in Namdinh, Vietnam.

5.1.2 Limitation

In this paper, the use of questionnaires for the measurement of model variables may have introduced common-method variance. For the CMC acceptance, the data were sent to large participants by email, EMS, and hand in hand, but the people who responded are very busy. Therefore, they did not have enough time to answer most of questionnaire, so the collection of data is not much. We also did not examine all elements, such as service, actual use and user satisfaction to use relationships represented in the updated TAM model (Davis, 1993).

This study has several limitations. First, it was conducted in a single organization (only some universities in Namdinh and Hanoi) with a limited sample size. Therefore, the results may not be generalizable to other organizations in many schools in Vietnam. Second, the online survey was sent to an email group that contained all the email addresses of one department’s employees without prior consent, except from the department manager, where some users consider this survey as unsolicited. Third, end users' beliefs were assessed at one point in time. A longitudinal study is very much needed to assess the belief change over time.

5.1.3 Suggestions for Future Study

This research has served as an explorative research. The author has found that the Technology Acceptance Model is a valid means of evaluating software
acceptability. However, further study needs to be carried out. The research with a large sample size should be conducted. A large size of sample will allow the more accuracy of the research results and perhaps more variety. There might be other factors that can contribute of the usage of technology. This research only used the Technology Acceptance Model. Davis (1993) suggested additional factors to be include in the original TAM such as prior usage, user experiences, and user characteristics. Accordingly, for future research towards the TAM for CMC using in language training, the researcher would like to advice to add these factors based on literature review and the interpretation of the researcher of this review. Other models and or adding or reducing other constructs might give another insight.

5.2 Conclusion

In order to investigate the usefulness of the Technology Acceptance Model for understanding teacher’s acceptance of technology integration/CMC in language training environment, a validation of the original model was sought. All the hypotheses proposed in this study, based on the relationships in the original TAM model and data collected from 107 participants, were supported strongly. Several important finding emerge from this study. Results showed that perceived ease of use have a slightly effect on perceived usefulness. An explanation might be that participants are willing to focus on both usefulness and computer's ease of use at an equally important. In the current study, most of the participants were very unfamiliar with the CMC applications and most of them spent a little of time using computer for language instructions.

The simple, user-friendly interface and benefit of CMC significantly diminished the direct impact of ease of use and usefulness on user attitude. Thus, in agreement with what TAM presupposes, perceived usefulness and perceived ease of use were found to have a significant influence on attitude towards using the technology in language teaching.
Furthermore, Pearson correlation coefficients showed that critical positive linear associations existed between perceived usefulness and behavioral intention as well as attitude towards using and behavioral intention for future usage.

Based on this research, user perceptions of usefulness had even stronger influences on general than user perceptions of the CMC’s ease of use. Thus, TAM recognizes the importance of ease of use in user decisions to use or reject technology; however, it also suggests that usefulness may be more decisive factor.

Overall, the results of this study show that TAM offers a useful tool to teachers who aim to evaluate the usage of CMC applications available on internet in Vietnam.

The data analysis has shown that the sample was often too small to produce robust and reliable statistical results. Therefore it is suggested that future studies facilitate a larger dataset. For this study not all hypotheses were accepted, nevertheless, the personality characteristics of the sample on the one hand and the findings of the questionnaire on the other, demonstrates the need for further reflection and discussion.
REFERENCES


-68-


APPENDIX I - English Questionnaire

“A study on users’ acceptance of CMC in English instructions in Nam Dinh”

Oct, 2010

Dear Sir/Madam

I am a 2nd-year graduate student of training cooperation program between Institute of Information Management, Shu-Te University, Kaohsiung, Taiwan (STU Taiwan) and University of Education, Vietnam National University, Vietnam (VNU Vietnam). I am conducting the research “User’s Acceptance of CMC in English instructions in Nam Dinh” as a partial fulfillment of the graduation requirements for the Master of MIS program.

The purpose of this research is to identify what factors significantly influence on the behavioral intention toward the use of CMC in language practice lesson of English instructors, and examine how Vietnamese users are willing to accept computer technology utilized in the program. I am highly appreciated your precious energy and time spent on completing this survey questionnaires. Your time, answers and experiences are greatly valuable contribution to the outcomes of the research. All information provided will be treated as confidential. It is so grateful to receive your response with completely filled to me before the end of the Oct 18th, 2010.

For further information, please feel free to contact me via my email address: tranvietduc6903@gmail.com; tranvietduc6903@yahoo.com

Thank you very much for your attention and help!

Sincerely Yours,

Tran Viet Duc

2nd-year graduate student, Graduate Department of Information Management, Shu-Te University, Taiwan (R.O.C)

Hsiao, Kuo-Lun, PhD

Advisor

Professor, Graduate Department of Management, Shu-Te University, Taiwan (R.O.C)

(1) Computer-Mediated Communication (CMC) is defined as any communicative transaction that occurs through the use of two or more networked computers, such as on-line discussions between groups of students and tutors, using e-mail, bulletin boards, and multimedia and video conferencing systems. This system which is often, credited with advances in addressing equity issues, for example, between native
speakers and non-native speakers on teacher education courses (Egbert and Hanson-Smith, 1999; Kamhi-Stein, 2000). Another technological affordance of CMC is that it enables multi-dimensional communication including one-alone, one-to-one, one-to-many, and many-to-many. Regarding language learning, the electronic nature of CMC “makes language manipulable” (O'Rourke, 2008, p. 232).
PART I: GENERAL INFORMATION

This section covers personal information. Please tick the corresponding squares.

1. Gender
   □ Male  □ Female

2. Age
   □ Under 30  □ From 30 to 39  □ From 40 to 50  □ Over 50

3. Profession
   □ Teacher  □ Business  □ Management/Faculty Head  □ Other __

4. Employment position
   □ Staff/Employee  □ Manager  □ Employer  □ Other __

5. Undergraduate Major
   □ Teacher  □ Computers/ICT  □ Other __

6. How long have you been using the computer?
   □ Less than 1 year  □ From 1 to 3  □ Over 3 to 5  □ More than 5

7. Had you ever approached computer technology for language teaching or a system like this before?
   □ Never  □ A few times  □ Often  □ Quite a lot

PART II: ABOUT CMC

This section includes items concerning your behavioral intention toward the use of CMC and how you are willing to accept CMC (Computer Mediated Communication) in the English instructions. Items are assumed statements of your intention and willingness. Please circle the numbers corresponding with your degree of agreement to each item with the denoted scale: “1”= Strongly agree; “2”= Agree; “3”= Neutral; “4”= Disagree; “5” = Strongly disagree. The term in this study means using internet and multimedia on computer to guide the learners practice English.

Self efficacy of using IT

<table>
<thead>
<tr>
<th>1. I could complete the required tasks using the learning tools on computer if I had used similar ‘learning tool’ like this one before to do the task</th>
<th>Strong agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strong disagree</th>
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<tbody>
<tr>
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<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
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</table>
1. Computer helps me save time on work. | 1 | 2 | 3 | 4 | 5 |
2. I could complete the multimedia tasks on computer if lesson showed the need of ‘learning tool’ to do it | 1 | 2 | 3 | 4 | 5 |
3. I feel comfortable using a computer for lesson on my own | 1 | 2 | 3 | 4 | 5 |
4. I am able to use learning tool on computer independently with no assistance | 1 | 2 | 3 | 4 | 5 |
5. I am able to access online to get material for lesson preparing | 1 | 2 | 3 | 4 | 5 |

**System quality of CMC**

6. I am satisfied with multimedia on computer for language lesson preparing | 1 | 2 | 3 | 4 | 5 |
7. I am a teacher who satisfied with the quality of learning tool on computer system for learners and teachers | 1 | 2 | 3 | 4 | 5 |
8. I think the connection time from internet to learning environment is remained continuously and safety | 1 | 2 | 3 | 4 | 5 |
9. I think a computer system is smartly designed for learning environment | 1 | 2 | 3 | 4 | 5 |

**Perceived usefulness of IT**

10. Computer helps me deal with work quickly | 1 | 2 | 3 | 4 | 5 |
11. Computer helps me save time on work | 1 | 2 | 3 | 4 | 5 |
12. Computer helps me connect online with students easily | 1 | 2 | 3 | 4 | 5 |
13. Using computer in the language course would enhance my performance in the lesson | 1 | 2 | 3 | 4 | 5 |
14. I think computer could improve my lesson performance | 1 | 2 | 3 | 4 | 5 |

**Perceived ease of using IT**
15. I can easily use a computer network communicating with learners

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16. learning to operate a computer system connect between learners and teachers would be easy for me

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17. I would find it easy to get multimedia tool on computer to do what I want to show on lesson

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18. It would be easy for me to become skillful at using computer to teaching language

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**Attitude toward to use of CMC**

19. I encourage and motivate other users using information technology for language learning and teaching

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20. I like the idea of using CMC online for language practice

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21. I believe that to use information technology/CMC for language learning is highly benefit for educational development

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**Behavioral intention to use of CMC**

22. I intend to take more courses and lesson material using CMC tool for training in future

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23. It is necessary to make good chance to others colleagues intend to use CMC on their work

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24. The CMC for language learners allows us to check new information for courses quickly so I will use this on my job

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25. The CMC for language learners make their courses more effectively so I will check for updated system every week to use it for working

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**PART III: COMMENTS & SUGGESTIONS**

This section is administered for your comments on current applications of CMC as well as your any suggestions to its improvement. Moreover, please feel free let me know
your thoughts and ideas concerning your intentions for using CMC and how you are willing to accept CMC beyond the above mentioned items.

Thank you very much for your help!