Shu-Te University
College of Informatics
Graduate School of Information Management

Master Thesis

The Impact of Users' Perceived Threats on ERP System Success

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June 2009

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A Thesis
Submitted to the
Graduate School of Information Management
College of Informatics
Shu-Te University

In Partial Fulfillment of the Requirements
For the Degree of
Master of Science
in
Information Management

June 2009

Yan Chao, Kaohsiung, Taiwan, Republic of China

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指導教授推薦書

本校資訊管理研究所 阮春芳君 所提之論文

The Impact of Users' Perceived Threats on ERP System Success

係由本人指導撰述，同意提付審查。

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98 年 06 月 09 日

樹德科技大學碩士班研究生

學位考試審定書

九十七學年度第二學期

資訊管理研究所 阮春芳君 所提之論文

題目：The Impact of Users' Perceived Threats on ERP System Success

經本學位考試委員會審議，認為符合碩士資格標準。

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中　華　民　國 98 年 06 月 09 日

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ABSTRACT

In the globalization competition, Enterprise Resource Planning (ERP) appears to be the base requirement for replacing legacy systems, simplifying and standardizing systems, improving interactions with suppliers and customers, gaining strategic advantage, or linking to global activities… However, bearing high failure rate, it is important to examine the failure factors. Users' perceived threats have long been recorded as a serious cause of Information Systems (IS) failures. The literature review proposed that user's perceived threats' impact on ERP systems success may even more severe. Using the famous DeLone and McLean Information System Success Model and questionnaire email survey, this paper intends to examine the effect of perceived threats on ERP systems success. The result supports the hypotheses that users' perceived threats may have negative effects quite equally on all the aspects of the success of ERP implementation projects, including system quality, information quality, service quality, user satisfaction and net benefits. Managers, implementers, consultants and all relevant parties may need to notice the fact and may have good prevention and solving methods.

Keywords: Enterprise Resource Planning (ERP), ERP success, perceived threats, D&M IS success model, user resistance.

ACKNOWLEDGEMENT

This thesis could not be finished without the help and support of many people who are gratefully acknowledged here.

At the very first, I'm honored to express my deepest gratitude to my dedicated supervisor, Prof. Ming-Hsiung Hsiao, with the guidance I could have worked out this thesis. With his profound knowledge in rich research experience, he has offered me valuable ideas, suggestions and criticisms. His patience and kindness are also greatly appreciated.

I'm also extremely grateful to my big friend, Dr. Chih-Hung Li, whose patient and meticulous guidance and invaluable suggestions are indispensable to the completion of this thesis. He even discussed with me when he was out of his professional job. I have learnt from him a lot not only about dissertation writing, but also the professional and social ethics. I cannot make everything possible like now without his support and encouragement.

What's more, I wish to extend my thanks to the Graduate School of Information Management and Shu-te University, Prof. Lin, Flora and all school staffs for their support of this study.

Thanks are also to my friends, who never failed to give me great encouragement and suggestions.

At last but not least, I would like to thank my family for their support all the way from the very beginning of my postgraduate study. I am thankful to all my family members for their thoughtfulness and encouragement.

Nguyen Xuan Phuong

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Chapter 1 Introduction

This chapter will provide the reader with an insight to the research area. We will begin by briefly discussing the background that will then followed by the problem discussion.

1.1. Research background

Project management had been seen as arcane by the reviewers at the New York Times in 1986. To be arcane is to "be beyond one's power to discover, understand or explain" (Harvey A. Levine, 2002). Even though it was said in the mid-1980s and might no longer quite be true nowadays for some kinds of project, still, research findings show that Information System (IS) projects have experienced dramatically high rates of failure. Case (2000) reports, for example, that only 25 percent of all IS projects are successful, 52 percent have major problems, and 23 percent are perceived as failures. Marchewka (2003) also states that in the 1990s over $250 billion was spent per year on IS projects in the USA with a reported only 9 percent success rate.

Among many different kinds of IS, Enterprise Resource Planning (ERP) system is a packaged, enterprise-wide IS that integrates all necessary business functions such as product planning, purchasing, inventory control, sales, financial and human resources

into a single system with a shared database (Al-Mudimigh et al., 2001; Soffee et al., 2003). Companies adopt ERP system with the motivations of replacing legacy systems, simplifying and standardizing systems, improving interactions with suppliers and customers, gaining strategic advantage, or linking to global activities… (Mabert et. al., 2000). ERP vendors typically also promise to gain 10 to 15 percent in revenue, customer satisfaction and other measures of value (Olson, 2004). For those reasons, enterprises are showing a strong demand for ERP over the next several years (Scheler, 1998).

However, ERP projects are considered to be one of the most challenging group of IS projects (Sjoa, 2004). Therefore, since IS implementations in general are described above as notoriously difficult; ERP implementations pose even more difficulties with technological and organizational challenges. A typical ERP contains 8000 to 10000 configuration tables and 800 to 1000 business processes. ERP systems require much tailoring or customization in order to configure the system to fit the organizations' requirements (Scott & Kaindl, 2000). It is estimated that the failure rate of ERP implementation ranges from 40 percent to 60 percent or higher (Umble et al., 2003, Jasperson, Carter & Zmud, 2005; Adam & O'Doherty, 2000) and around 90 percent in some developing countries like China (Zhang et al., 2003). Moreover, Martin (1998)

also states that approximately 90 percent of ERP implementations are late or over budget and 70 percent of ERP implementations fail to deliver anticipated benefits (Al-Mashari, 2000). In the worst cases, ERP projects have been identified as factors in organizational bankruptcy and collapse (Davenport, 1998).

Given the high stakes involved, it is imperative for organizations embarking on ERP projects to be aware of the success and failure factors, and understand how to address them. There is a growing consensus that organizational issues are more critical than technical considerations (Willcocks and Sykes, 1998; Markus et al., 2000; Davenport, 2000). Prior research has found that only 10 percent of new information systems failures can be attributed to technological problems (Bikson & Gutek, 1984). According to Martinsons and Chong (1999), the human element has become the critical determinant of IS success. In ERP context, Mahmood et al. (2000) also confirm that users play a pivotal role in achieving ERP system success and affecting the perceived benefits arising from its use. In practice, businesses implementing ERP systems are becoming more concerned with, and realizing the importance of, end-user acceptance, a key success factor of ERP implementations (Tchokogué, Bareil & Duguay, 2005; Calisir & Calisir, 2004). Moreover, the implementation of the ERP system may have been successful but end-users may only make use of a subset of the available features

(Boudreau, 2003; Ross & Weill, 2002; Jasperson et al., 2005; Yi, Wu & Tung, 2006). In short, the importance of user issues seems to be gaining more and more attention in IS and ERP implementation projects.

What is more, Aldwani (2001) even identifies end-user resistance as one of the main contributing factors towards the failure of ERP adoption. Researching through 43 articles published in the last 25 years in 20 IT and IT-related journal, Lapoint and Rivard (2005) also reveal that user resistance is treated as a key implementation issue. Furumo and Melcher (2006)'s research finds that management's failure to address problems with resistant team members contributed to the failure of ERP project of a mid-sized university.

All fields of inquiry share the idea that for resistance to occur, some threats have to be perceived (Lapointe and Rivard, 2005). Perceived threats are identified by expressions such as "overwhelming emotional pain" (Freud, 1919) or "the perception of a dangerous situation" (Marakas and Hornik, 1996). There are many famous traditional articles examined the resistance issue. According to Dent and Goldberg (1999), employees resist changes that they believe will cause either loss of status, loss of revenue, or loss of power. Individuals resist the implementation of a system when they perceive inequity (Joshi, 1991); groups resist it when they fear a potential loss of power

(Markus, 1983). There are many researchers examining the extent of the impact of perceived threats on IS successes (Lapointe and Rivard, 2005; Markus, 1983, Joshi, 1991; Marakas and Hornik, 1996). Even though ERP implementation projects are assumed to face the challenges as discussed above, it appears that the impacts of perceived threats on ERP success are even more serious. However, there is no related research in ERP context so far. Therefore, the goal of this paper is to examine the impact of perceived threats on ERP success.

For measuring ERP success, Bernroider (2008) believes that it should be measured through multidimensional covering aspects related to strategy and business. He further stated that this business perception of ERP differs from that of IS in general and proved difficult to measure.

Among IS research models, DeLone and McLean (D&M) IS Success Model is proposed as "framework for conceptualizing and operationalizing IS success". With nearly 300 articles in refereed journals have referred to, and made use of the IS success model, DeLone and McLean presents an updated model (DeLone and McLean, 2003). The model contents six IS success factors: (1) "information quality", (2) "system quality", (3) "service quality", (4) "intention to use" and "use", (5) "user satisfaction", and (6) "net benefits" which are believed that they present multidimensional and

interdependent nature of the model and most appropriate in using for examining ERP success (Bernroider, 2008).

This paper will use the popular IS success model to examine the impact of uses' perceived threats on ERP success through these six aspects: "information quality", "system quality", "service quality", "intention to use" and "use", "user satisfaction", and "net benefits".

1.2. Research purpose

The result will answer for the questions that how users' perceived threats effect on ERP system success and, in particularly, which aspects of the six IS success model variables. From that, related parties, including managers, implementers, consultants… may understand, recognize and have solutions before and when it happens

1.3. Structure of the study

This study contains five chapters, and the summary for each chapter is described as follows:

Chapter One (Introduction) outlines the research background, objectives, project, procedure and the structure of this study.

Chapter Two (Literature Review) discusses the previous literature related to ERP and ERP system, user resistance, perceived threats and IS success models. Finally, the

hypotheses of this study are developed and proposed to integrate the results of previous studies.

Chapter Three (Research Design and Methodology) presents the construct measurements and research design for this study. The research model of this study suggests the general relationships among key research constructs, including Perceived Threats and IS Success Model Variables. Next, the operationalization of research variables and the construct measurement of variables will be defined to design the questionnaire. This chapter also illustrates the sampling plan, data collection procedures, and data analysis techniques have also been discussed.

Chapter Four (Data Analysis) presents the descriptive results and purification outcomes of this study. It includes data collection, the basic characteristics of respondents, factor analysis and reliability test results of research items. This chapter also presents the research results to test the hypotheses.

Chapter Five (Conclusion and Suggestions) is a summary of the significant findings and conclusions of this study. Suggestions, research limitations and further researches will be discussed.

Chapter 2 Review of Literature

The previous chapter provided the background and problem discussion of the area of this study. This chapter then presents literature review. The aim of this chapter is to provide relevant literature review in the field we are doing study.

2.1. ERP and ERP system

2.1.1. Definitions

In ERP literature, there are many ERP definitions. They are, however, quite similar. We begin with those in The Eleventh Edition of the APICS Dictionary (Blackstone and Cox, 2005) in which ERP is defined as a ‘‘framework for organizing, defining, and standardizing the business processes necessary to effectively plan and control an organization so the organization can use its internal knowledge to seek external advantage’’ (page 38). This definition highlights the broad scope of applications that fit under the ERP framework.

As far as the hardware architecture is concerned, an ERP system has a shared database that all the different applications interact with so that the integrity and synchronization of data are guaranteed. Using a common database makes it easier to share information, and means that any decision or strategic action undertaken at any level of the organization reflects directly on the rest of the

company (Slack et al., 2001). In short, “one database, one application and a unified interface across the entire enterprise” (Tadjer, 1998).

The newest definitions are those that come from Alexis Leon (2008)’s “ERP demystified” (second edition), “ERP is an abbreviation for Enterprise Resource Planning and means, the techniques and concepts for integrated management of businesses as a whole from the viewpoints of the effective use of management resources to improve the efficiency of enterprise management.” “ERP packages are integrated (covering all business functions) software packages that support the ERP concepts.” “ERP software is a mirror image of the major business processes of an organization, such as customer order fulfillment and management.” These short, but complete, definitions give us the clear difference and relationship between ERP and ERP system and are means for a clear view on what an ERP system is in this thesis.

2.1.2. Modules and historical development

It is believed that ERP is an extension of Material Requirements Planning (MRP) and Manufacturing Resource Planning (MRPII) with enhanced and added functionality (Gumaer, 1996). MRP is the heart of an MRPII system (Parker, 1996). According to Orlicky (1975)’s definition, MRP consists of a set of logically related

procedures, decision rules, and records designed to translate Master Production Schedule (MPS) into time-phased requirements.

While providing significant improvements in customer service when comparing with old inventory management systems, MRP still face some problems for its processes-independent and deterministic finished goods (Chung and Snyder, 2000). To improve MRP systems, studies are recommended in three areas of lead time, safety stock for independent demand items and links between the MRP system and execution subsystems (Parker, 1996; Plossl, 1994).

Since 1975, MRP systems have been expanded to the standard MRPII (Gray and Landvater, 1989). In the 1980s, MRPII became the application of information and manufacturing technology, plans and resources to improve the efficiency of a manufacturing enterprise through integration effort (Chung and Snyder, 2000). MRPII is not only used for materials and parts to production, but also for manufacturing plans and schedules (Wallace, 1985). MRPII uses deterministic lead time elements, shop routing and process times to follow a simple backward scheduling logic with explosion of the BOM process (Hasin and Ashin, 1996).

While combining planning and scheduling, it assumes that the capacity is

infinite (Gumaer, 1996); therefore, does not provide functionality and integration to reflect the contemporary manufacturing reality (Darlington and Moar, 1996) and provides inadequate tool as a capacity planner (Darlington and Moar, 1996).

It is recommended that MRPII be enhanced in three ways (Yusuf and Little, 1998). The first is the improvement in existing MRPII functions by means of better software capable of resolving problems. The second is the hybrid use of MRPII and other manufacturing control systems to gain combined advantages. The third is integrating other functions with MRPII modules to bridge the islands of automation existing in the finance and management.

While the demands of the consumer market have grown more sophisticated in the 1990s, using the same basic model as MRPII for manufacturing portion (Gray and Landvater, 1989), ERP and ERP systems have been developed and selected worldwide because of its integration capability, reputation, standard software, three-tier client/server architecture, business engineering and migration tool from the mainframe (ComputerWorld, 1998).

ERP systems in concept cover all computing for an organization with the purpose of centralize data, so that data can be entered once and used by everyone on the organization or even outside business partners. However, in reality, ERP

vendors sell their software in modules. Table 2.1 presents modules offered by leading vendors.

Table 1. ERP modules offered by leading ERP vendors

SAP	Oracle	PeopleSoft	JDEdwards
• SD-sales and distribution	• Marketing sales supply chain	• Supply chain management	• Order management
• MM-materials management	• Procurement	• Supplier relationship management	• Inventory management procurement
• PP-production planning	• Manufacturing		• Manufacturing management
• QM-quality management		• Enterprise performance management	• Technical foundation
• PM–plant management	• Service	• Enterprise service automation	
• CO- controlling			• Time and expense management
• AM–asset management	• Asset management		• Enterprise asset management
• PS–project system	• Projects		• Project management
	• Contract		• Subcontract management
			• Real estate management
• WF– workflow			
• IS–industry solution			

Source: Olson (2004)

2.1.3. ERP implementation and maintenance

ERP systems are adopted in the hopes that they will improved the performance of an organization on a number of key performance indicators, such as profitability, efficiency, and accuracy in information system data and reports. However, the effort required to build these systems is significant with high risks and percentage of failure. Meta Group found that the average ERP implementation

takes 23 months with total ownership cost of $15 million (Wheatley, 2000). Meanwhile, the percentage of ERP system failures was rated ranging from 40 to 60 percent (Langenwalter, 2000).

Bearing that challenges, many studies have examined critical success factors in ERP implementation. Umble et al. (2003) integrated these findings into 10 categories:

(1) Clear understanding of strategic goals.

(2) Commitment by top management.

(3) Excellent implementation project management.

(4) Great implementation team.

(5) Successful coping with technical issues.

(6) Organizational commitment to change.

(7) Extensive education and training.

(8) Data accuracy.

(9) Focused performance measures.

(10) Multisite issues resolved.

According to Olson (2004)'s explanation, it seems that most of all factors above involve people issue, such as items (3) and (4) need good people, items (2), (6), (7), (8) involve to end-users' support.

To be clearer, we now check the report from Caldwell (1998) with three stages of change in ERP implementation projects. In the first stage, there is a productivity decline while jobs are redefined, new procedures established, the ERP systems is fine-tuned and the organization leans to process new stream of information. The second stage includes development of new skills, organizational changes, process integration and addition of bold-on technologies to expand the functionality of ERP systems. The third stage is where ERP pays off, with transformation of organizational operations to an efficient level.

Moreover, Light (2001) examining customization of ERP software also stated that there is a divergence of interest between users and information technology staff members. Users are interested in getting the information they need. Making the system more responsive to users would lead to fewer changes in how they do their work, but would also require more modifications of the vendor system. In early period of the ERP implementation, a number of requests for

changes in labels and terminology were received. These requests were denied, seeking to retain systematic terminology across all users.

In summary, ERP will usually involve significant changes in the way in which almost everyone in the organization works. This requires people to change, something that we all tend to resist. Employees are also often worried about eliminated jobs. Middle managers may also be concerned about the greater visibility of business operations the ERP provides to top managers. They may also worry if they are not explained how they will fit in the new system, are not told what training and skill development is required of them to continue to be productive.

2.2. User resistance and perceived threats

2.2.1. User resistance

A review of the literature yields several definitions for "end-user." Cotterman and Kumar (1989) narrowly define end-users as people who interact with computer-based information systems only as consumers of information. Turban's (1993) definition, on the other hand, is much broader and includes all managers and professionals using PCs, secretaries using word processing, and CEOs using e-mail. Turban (1993) suggests that the end-user can be at any level in

the organization or in any functional area. This research uses the broadest possible definition of end-user to include not only consumers of information, but anyone in the organization who directly uses a computer in the performance of his or her job. MIS professionals (i.e., systems analysts, programmer/analysts, and programmers) are excluded from this definition.

The rate of technological change is greater today than at any time in the past. Technology changes the nature of jobs performed at all levels (Handy, 1980). Most innovations within organizations are seldom confined to the technical aspects of production but also require alteration in the work and social satisfaction of employees to make the innovation accepted. This factor of "acceptance" makes the problem of introducing changes especially critical in today's world. ERP introduction has made this problem more acute.

Ever since the pioneering work of Cock and French (1948) it has been known that anxiety is an important consideration in implementing a new technology. It is this anxiety factor which has led an increasing number of behavioral scientists to research the nature of stress generated by the introduction of new technologies in the company (Cherns, 1978; Rousseau, 1978). Moreover, most people who have worked with information systems encounter at least mild resistance by those who

are designated to input data or use the output to improve the way they do their jobs (Markus, 1983). Markus (1983) defines user resistance as "behaviors intended to prevent the implementation or use of a system or to prevent system designers from achieving their objectives".

Behavior is the primary dimension of resistance, inasmuch as words like reaction (Ang and Pavri, 1994), behavior (Markus, 1983), and conduct (Zalman and Duncan, 1977). Resistance behaviors exist across a spectrum, from speaking resentfully of the system, continuing to follow former procedures (Markus, 1983), attempting to minimize their inputs and others' outcomes as well as attempting to increase others' input (Joshi, 1991, passive resistance misuse (Marakas and Hornik, 1996) or low level of use, lack of use or harmful use (Martinko et al. 1996).

Recently, research literature of user resistance to information systems presents new resistance behavior forms, called by Ferneley and Sobreperez (2006) as workaround. Workaround, which emerge following system rejection or resistance (Ferneley and Sobreperez (2006), in fact, has been denoted by many other researchers, for example, Button et al. (2003) and Lankshear and Mason (2001) highlighted that when having insufficient data, unsuitable access or enforced proceduralization, users may compensate by creating their own methods of data

collection, data management or working practice, in effect overcoming hindrances or ensuring essential task completion.

The literature seems to be dominated by negative connotations associated with resistance, often concluding that it is undesirable and detrimental to an implementation's success (Schein, 1988; Kossek et al., 1994). Besides affecting the success of system implementation, resistance may even grow up to be symptomatic of the culture and politics of the organization as a whole (Markus, 1983). However, recently resistance is emerging as a more complex phenomenon than previously thought and need not always be viewed negatively (Hirschheim and Newman, 1988; Lapointe and Rivard, 2005). In fact, there may be good organizational reasons for resisting poorly designed or implemented systems, and "positive resistance" can be used by developers or implementers to improve future versions (Mumford et al., 1978). Ferneley and Sobreperez (2006) also comply with this conclusion and add by clarified user resistance in to six forms: compliance, negative resistance and positive resistance, harmless workaround, hindrance workaround and essential workaround. In other words, user resistance can be a good source for implementers in improving the system design, process, configuration and the way it is implemented or the services, reports it is supported to provide or even the service,

training they are delivering to the users.

Why do people resist? Most of researches that study about resistance to Information Technology share the same idea that for resistance to occur, some threat has to be perceived (Lapointe and Rivard, 2005). Moreover, Piderit (2000) also noted, “Rarely do individuals form resistant attitudes, or express such attitudes in acts of dissent or protest, without considering the potential negative consequence for themselves”. In other words, people resist change if they expect it to threaten the status quo, such as potential loss of power and loss of control over critical organizational resources.

2.2.2. Perceived threats

The definition of threat as defined in Merriam-Webster (1994) is "an expression or warning of intent to inflict evil, injury, or damage; an indication of something pending" (p. 1228). The American Heritage College Dictionary (1994) defines threat as "a declaration of an intention to inflict pain, evil, or punishment; an indication of impending danger or damage; to menace" (p. 1070).

2.2.2.1. Defining attributes

Most authors define threat similarly. Pagana (1988) explicitly defines threat as "the potential for harm" (p. 418). Lazarus and Folkman

(1984) describe threat as concerning "losses that have not yet taken place but are anticipated. Even when harm/loss has occurred, it is always fused with threat because every loss is also pregnant with negative implications for the future" (p. 32**).** Monat and Lazarus (1991) compared threat to frustration in that both "involve a harm of some kind, only it [threat] is one that has not yet happened (p. *3).* The potential for loss, which is defined as "harm ... suffering ... destruction," is another integral part of threat (American Heritage, 1994, p. 801). Other terms used to describe loss are *failure* and *damage,* both of which have negative connotations (American Heritage). Monat and Lazarus refer to harm/loss as one entity in relation to threat appraisal.

2.2.2.2. Critical attributes

The overall review of the literature related to threat will help us to clarify the meaning of the concept. Critical attributes of threat are identified as potential, future-oriented, negative cognitive perception, and negative affective emotions.

Potential: In threat context, potential means “capable of being but not yet in existence” (American Heritage, 1994, p. 1070). Although there may be expectancy of harm/loss outcome for a given stimulus, the projected

outcome remains a possibility since it does not exist in reality (Lazarus & Folkman, 1984).

Future orientation: Another critical attribute of threat is orientation in the future. According to Pagana (1988), “threat appraisals are anticipatory and deal with an upcoming event” (p. 418). Coyne and Lazarus (1980) describe threat as future-oriented. Feelings of threat” incubate ... and may increase as a function of increased anticipation time” (p. 97). The anticipation of threat in the future can cause “detrimental emotional states such as worry, fear, or anxiety” to surface (Topp, Walsh, & Sanford, 1998, p. 851). ”Looming vulnerability is conceptualized as an important cognitive component of threat... that elicits anxiety, sensitizes the individual to signs of movement and threat, biases cognitive processing, and makes the anxiety more persistent and less likely to habituate” (Riskind, 1997, p. 685). Riskind’s model focuses on the role of time and anticipation. As threat” rushes” in on the person, anxiety heightens. Threat is existential and has the potential to exceed the individual’s power to cope (Lazarus, 1991). Threat tends to slow and expand time (Morse, 1997). The individual who is threatened has difficulty focusing on the moment; rather, the future becomes overwhelming.

Research has found that some individuals benefit from the fact that threat is future-oriented. Time affords the individual the opportunity to maintain status quo (Coyne & Lazarus, 1980). It protects the ego from harm by" heading it off" or"neutralizing it" (Coyne & Lazarus, p. 151). The individual capable of separating self from threat through denial, avoidance, or inattentiveness often is successful at minimizing feelings of impending harm from threat. Although the stimuli exist, the danger is not imminent.

Negative cognitive perception: Cognitive perception also is a critical attribute of threat. Threat entails the perception and assignment of a negative meaning to stimuli and is unique to the individual. The cognitive process of threat appraisal begins with assessment of the stimuli (Murrow & Welch, 1997). Appraisal of the stimuli encompasses context of the situation, ego structure of the person, coping mechanisms, interpersonal relationships, and age of the person (Molassiotis, 1997; Qureshi, 1996). The individual's personality, sense of commitment, and personal beliefs interface with and affect the perception of threat.

Negative affective emotions: In addition, threat is affected by the person's beliefs about self and world, goals, and goal hierarchy (Lazarus,

1999). For example, two individuals may be faced with the same stimuli, yet each assigns different meanings to the stimuli. One may interpret the stimuli as taxing; however, positive gain may emerge from the experience. This perception of the potential for positive gain reflects challenge (Lazarus & Folkman, 1984). The other individual cognitively views the stimuli as threatening and experiences negative affective feelings. This scenario typifies the concept threat. Both appraisal processes are dependent on the cognitive and affective appraisal of the stimuli.

A negative affected emotion associated with "one's future state of well-being" is another critical attribute of threat. A negative appraisal of a stimulus increases negative emotional arousal leading to feelings of vulnerability (Taylor, 1996). Although the concepts of threat and challenge can be explicitly defined, they often are used interchangeably. This may occur because the processes occur simultaneously and are related constructs (Lazarus & Folkman, 1984). In order to synthesize the concept, a clear distinction must be made between threat and challenge through concept analysis. The two critical attributes that differentiate the concepts are cognitive perception and affective emotions. Threat is characterized by

perception of harm and negative affective emotions, whereas challenge affords the individual the opportunity for mastery with associated positive emotions (Lazarus & Folkman). Based on the critical attributes, threat is defined as the individual's perception that a stimulus has the potential for danger in the future, which evokes negative emotions.

2.2.2.3. Antecedents

In relation to antecedents of threat, the concept is used in situations where there is a sense of uncertainty about the unknown (Oermann, 1998). The individual anticipates threat through cognitive appraisal (Monat & Lazarus, 1991). Emotional arousal as a result of lack of adequate information related to the stimuli, incomplete understanding of the stimuli and uncertainty are antecedents of threat (Topp et al., 1998). It is critical to realize that antecedent status is very difficult to assign to different concepts related to threat, because it is dependent on the individual's appraisal as well as the observer's interpretation of the sequence of reactions (Kaplan, 1980). Life circumstances of the individual precipitate primary appraisal of threat and play a role in the individual's unique antecedents to threats'(Lazarus, 1999).

2.2.2.4. Consequences

Once threat has been appraised by the individual, different responses occur: negatively intoned emotional responses, threat to self-integrity, immobilized coping, and altered self-esteem.

Negatively intoned emotional responses: Threat appraisal triggers negatively toned emotional responses (Qureshi, 1996). Worry and concern related to the outcome of the stimuli are consequences of threat (Pagana, 1988). According to American Heritage (1994), worry is characterized by a feeling of uneasiness or discomfort, whereas concern means heightened awareness or interest.

Distress, which is manifested by emotional pain and suffering, can occur when the perception of threat is taxing or overwhelming to the psyche (Monat & Lazarus, 1991). The individual may believe that available personal resources are inadequate to deal with the threat and become overwhelmed by distress. Although the term stress is a collective term referring to many concepts, it is defined as" the reaction of the organism to some outside threat" (Monat & Lazarus, p. 37). Individuals who are vulnerable to threat experience emotional and physical responses to stress. Vulnerability means the individual

"is opened to attack or damage" (Merriam-Webster, 1994, p. 1326). Once stress occurs, the individual begins the secondary appraisal of the threat, and coping begins (Lazarus, 1999).

Anxiety and fear also are consequences of threat (Lazarus, 1999). "These emotional states are associated with increased sympathetic nervous discharge that contributes to feelings of apprehension, stress, and tension" (Topp et al., 1998, p. 8531. Anxiety and fear invoke defense mechanisms that deal either directly with the threat or with the cognitive and affective responses to the threat (Topp et al.). Riskind (1997) also identified threat as an antecedent of anxiety and fear. The looming vulnerability to threat model affirms that threat is analogous to a" body in motion" (Riskind, p. 686). As the perceived threat draws closer to the individual, consequences of threat such as fear and anxiety intensify.

Threat to self-integrity: Morse (1997) studied responses or consequences of threat to the integrity of self. She identified patterns of responses that included vigilance, disruption, enduring to live, suffering, and learning to live with the altered self. Responses or behaviors inherent within vigilance include suspicion, feeling overwhelmed, and attempting to maintain

control. Morse characterized disruption as" being in a shattered reality... experiencing a haze of disorientation" (p. 29). Living through the pain and recognizing the uncertainty of the threat and struggling are integral components of enduring to live and regain a sense of self (Morse & Carter, 1996).

Immobilized coping: Overall, the consequences related to threat have negative implications in both cognitive and affective domains. These reactions serve as a catalyst for coping mechanisms to become activated. According to Morse (1999, the individual's coping may be immobilized in the face of threat. The person "focuses inward, placing all attentions to maintaining control to preserve the self" (p. 30). Ideally, the person experiencing threat gains a sense of self by recognizing and accepting the consequences of the experience.

Altered self-esteem: Another consequence of threat is altered self-esteem. In this process, the person reevaluates life; sets new, attainable goals; and reorders priorities. The person may reinvest in commitment to goal attainment.

2.2.2.5. Coping strategies

Individuals may cope with the same stressor in vastly different ways. Researchers have looked at different methods that individuals employ to cope with situations, and although there has been some debate about the language used to define these coping strategies, similar themes are seen throughout the coping research. Lazarus and colleagues defined two forms of coping:

- Problem-focused coping – changing the environment to reduce the stress;
- Emotion-focused coping – changing our response to or interpretation of the situation (Lazarus & Folkman, 1984).

Billings and Moss (1981) proposed a three-factor model of conception of coping consisting of:

- Active coping (e.g. tried to see the positive side; considering several alternatives);
- Active behavioral (e.g. talked with a friend, tried to find out more about the situation); and
- Avoidance.

Amirkhan (1990) developed the "Coping Strategy Indicator" by

starting with 161 coping responses. Principal-factor analysis produced a three-factor solution of:

- Problem-solving;
- Seeking support; and
- Avoidance.

Higgins and Endler (1995) grouped coping strategies into three main classes:

- Task-oriented;
- Emotion-oriented; and
- Avoidance-oriented.

Although different researchers use slightly different terminology to define the major methods people use to cope with adversity, failure and stressful situations, there does appear to be a common thread in the research. Therefore, I feel it is appropriate to use a combination from Lazarus and Folkman

- Problem-focused coping – changing our environment to reduce the stress;
- Emotion-focused coping – changing our response to the stress; and
- Avoidance-focused coping – not exposing ourselves to stressful

situations; which could be positive or negative depending on whether the task is simply avoided (negative) or the task is performed in such a method that avoids the possibility of the negative stressor (positive).

2.2.3. Perceived threats in IT context

In IT research field, perceived threats are identified by expressions such as “overwhelming emotional pain” (Freud, 1919) or “the perception of a dangerous situation” (Marakas and Hornik, 1996). These threats are presented as “power loss for a group and gain for another” (Markus, 1983), “distress of inequity or loss of equity” (Joshi, 1991), or inability to adapt the new routines and mode of work and requirements the system brought (Marakas and Hornik, 1996). It "provides a warning that invites the person to take preventive steps in order to do what he or she can do to mitigate impending harm" (Monat & Lazarus, p. 4). According to Mclaughtin and Webster (1998), information systems greatly threatened knowledge claims and occupational boundaries. They found through qualitative interviews that because of the rules and recommendations built into the system, it was perceived by respondents as encroaching on their professional autonomy. Some respondents indicated that they believed that the system reduced their professional autonomy and others reported that they brought about changes to how the system interacted

with them.

A case in point is Markus' (1983) seminal study of accountants' resistance toward a new financial accounting system, caused by their expected loss of control over key accounting data and consequent loss of organizational power. Markus concluded that despite the best intentions, new IT implementations can fail unless managers can adequately address power imbalances engendered by the new system. For Joshi (1991), user's perceived threats suggest the greater the inequity or declined in the net gain, the greater the resulting distress. The notion of perceived threats is reiterated in Lapointe and Rivard's (2005) case study of physician resistance, "When a system is introduced, users in a group will first assess it in terms of the interplay between its features and individual and/or organizational-level initial conditions. They then make projections about the consequences of its user. If expected conditions are threatening, resistance behaviors will result."

Moreover, users may resist because of the threats of loss of status (Ginzberg, 1975), economic insecurity (Keen, 1981), interpersonal relationship altered (Hussain and Hussain, 1984), change in job content and change in decision making approaches (Smith and McKeen, 1992), loss of power (Janson, Woo and

Smith, 1993) or uncertainty, unfamiliarity and misinformation (De Jager, 1994).

Perceived threats from IT usage may vary across situational contexts. For instance, the perceived threat to professional autonomy is defined as "the degree to which a person believes that using a particular system would decrease his or her control over the conditions, processes, procedures, or content of his or her work" (Walter and Lopez, 2008). Moreover, the threats faced by financial accountants in Markus' (1983) study (i.e. loss of power) may be different from those faced in other contexts. In order to build a generalized model of ERP perceived threats, I am not providing a specific definition of perceived threat, but rather leaving it for researchers to define based on their empirical context.

2.3. Existing success models and the IS success model

Markus et al. (2000) argue that the definition and measurement of ERP success are thorny matters and success depends on the point of view from which you measure it. In literature, the measurement for ERP systems implementation success hasn't gotten consistent yet. White et al. (1982) defined successful ERP implementation along two dimensions: improved performance and user satisfaction. User satisfaction is playing more and more important role with many researchers suggested it as a surrogate for ERP implementation success (Al-Marshari et al., 2003; Ang et al., 1994, 1995, 2002;

Markus et al., 2000; White et al., 1982). Recently, predetermined corporate goals were used to measure ERP implementation results (Al-Mashari et al., 2003; Umble et al., 2003). Beside, many other measures are suggested to use as surrogates of ERP implementation success:

- Intended business performance improvements (Al-Mashari et al., 2003; Hong and Kim, 2002; Mandal and Gunasekaran, 2002; Markus et al., 2000; White et al., 1982).
- On time (Al-Mashari et al., 2003; Hong and Kim, 2002; Marbert et al., 2003);
- System acceptance and usage (Ang et al., 1994, 1995, 2002)

All factors and even others that haven't mentioned seem to be included in DeLone and McLean IS Success Model that has been considered a suitable foundation for further empirical and theoretical research and has met with general acceptance (Garrity and sanders, 1998).

Conducting an extensive literature review on 180 empirical studies, DeLone and McLean (1992) published in six top IS journals and one of the most important IS conference proceedings, a taxonomy and an interactive model as frameworks for conceptualizing and operationalizing IS success called DeLone and McLean

Information Systems Success. This model classified dimensions of ISs success into six categories, as shown in Figure 1:

"System Quality": measures the accuracy and efficiency of the system, sometimes measured by ease of use, ease of learning, convenience of access, realization of user requirements, usefulness of system features and functions, data and system accuracy.

"Information Quality": measures the success of information produced from the system, measured by importance, relevance, usefulness, timelines, readability and content.

"Use": measures the receipt consumption of the product of the system, some example measurements are amount/duration of use, actual vs. reported use, nature of use: use for intended purpose, appropriate use, type of information used, motivation to use.

"User Satisfaction": measures the receipt response to the use of the product of the system. Some examples of measurements are satisfaction with specifics, overall satisfaction, information satisfaction (difference between information needed and received) and enjoyment.

"Individual Impacts": measures the influence of the information on user, management decision… Some measurements are: learning, decision effectiveness,

decision quality, improved decision analysis, correctness, time to make decision, improved individual productivity…

"Organizational Impacts": measures the effect of the information on organizational performance, which can be measured as: operating cost reductions, staff reductions, overall productivity gains, increased revenues, sales, market share, profits, increased work volume, service effectiveness.

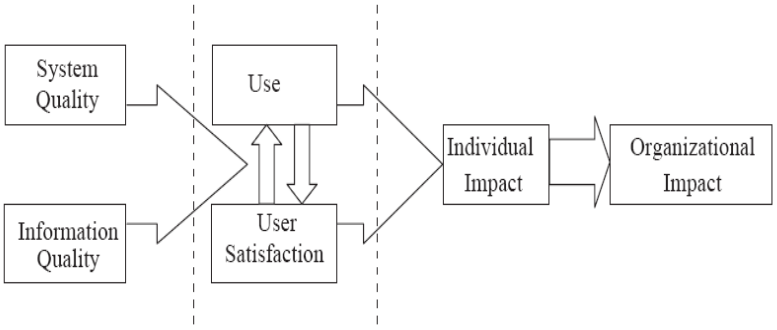

Figure 1. DeLone and McLean IS Success Model (DeLone and McLean, 1992)

This model have helped IS researchers in understanding different aspects of IS success. A citation search in the summer of 2002 yielded 285 refereed papers in journals and proceedings that have referenced the D&M IS model. However, the developers of the model also argue that "this model clearly needs further development and validation".

In 2003, based on literature review, DeLone and McLean (2003) proposed an updated model (fig. 2). They added "Service Quality" (e.g., IS support) as one of important dimension. In addition, they also added "Intention to Use" as an alternative measure because an attitude is worthwhile to measure in some context. Finally, they combined "Individual Impacts" and "Organizational Impacts" to one dimension, called "Net Benefits" with the argument that the impacts of IS are also on different groups, parties, industries, and nations depending on the context.

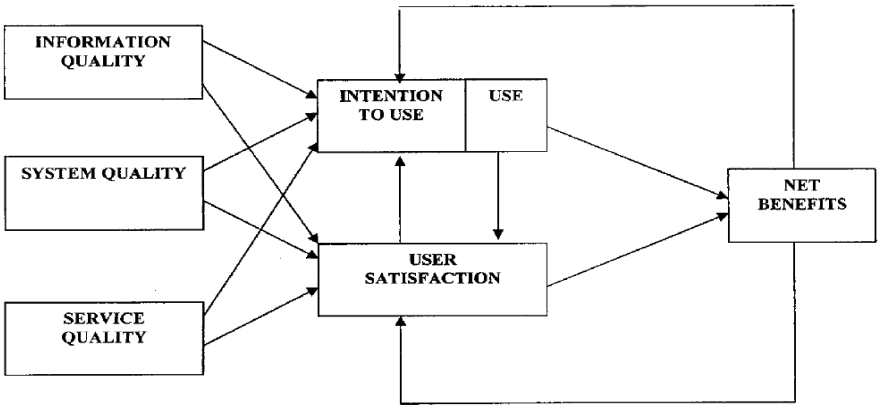

Figure 2. Updated D&M IS Model (DeLone and McLean, 2003)

Chapter 3 Research Design and Methodology

This chapter will first explain the research model and the construct measurements. Then, hypotheses to be tested, the research design, the sampling data, data collection and data analysis techniques are also described.

3.1. Research model

As we stated above, this paper tends to examine the effect of perceived threats on ERP systems success and the D&M IS success model seems to be the most appropriate one with the intention of the model's developers and contributors that using six aspects to multidimensionally and interdependently measure the IS success: "system quality" measures technical success; "information quality" measures semantic success and "use, user satisfaction, individual impacts," and "organizational impacts" measure effectiveness success.

In addition, as the suggestion from literature review, with the perceived threats of adequate training, job cutting, power losing, users may react to the implementation and affect the success of the implementation. However, researchers also noted that some of reactions are positive and help to improve information quality, system quality and service quality; and if the implementers take care of these positive actions, they may

increase user satisfaction, intention to use, use and finally net benefits of the whole system.

Moreover, it is argued that the D&M IS success model is based on both temporal, process and causal or variance considerations. The causal/variance model studies the covariance of the success dimensions to determine if there exists a causal relationship among them. This process model suggests three components: the creation of a system, the use of the system, and the consequences of this system use (DeLone and McLean. 2003)

However, the creators of the model and other researchers also admit that each of these steps is a necessary, but not sufficient, condition for the resultant outcome(s). As Whyte et al. (1997) found that "there are important differences from organizational, user, and systems variations which can modify the view as to which attributes (success measure) are important".

Sedera et al (2003) through an extensive research in survey design suggested removing the construct intention to use and use in ERP context, since as Delone and McLean (1992) pointed out "usage, either perceived or actual is only pertinent when such use is not mandatory" (p.69). So we remove the intention to use and use item in this study of ERP system success.

With the assumptions,

- for measurement point of view, that perceived threats can measure user perception about ERP implementation events;
- for process point of view, that there is another phase before the three proposed phases (creation of the system, use of the system and consequence of system), that is preparation of the system implementation

and the suggestion from literature about the effect of perceived threats on ERP system success, it seems to be appropriate to propose and examine the model illustrated in Figure 3.

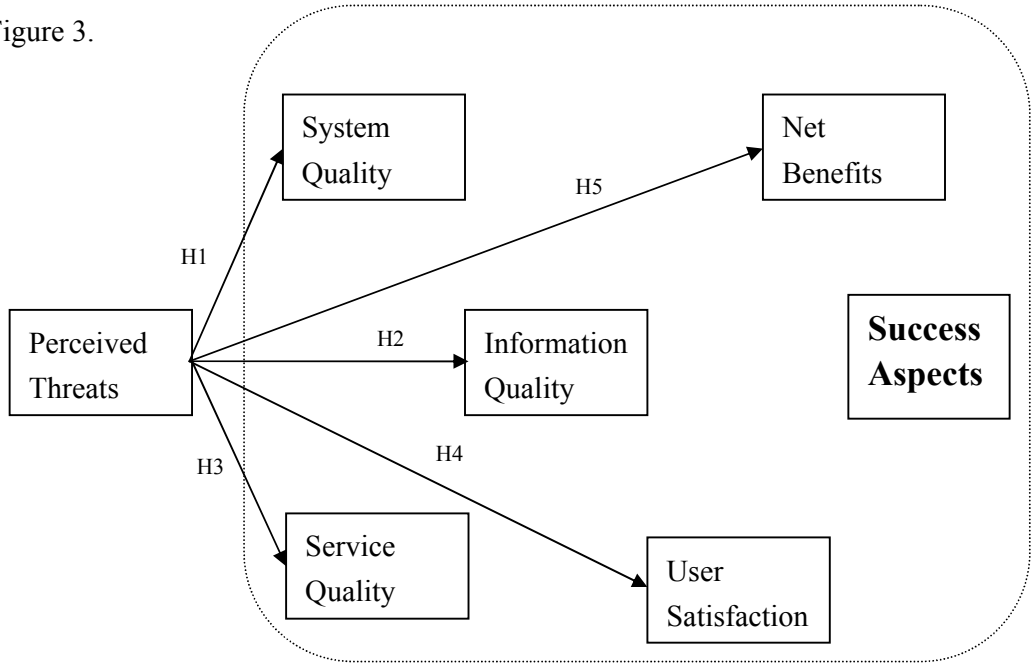

Figure 3. Research Framework

3.2. Hypotheses to be tested

Based on the literature review and the purpose of this study, research hypotheses are developed in this study for the following empirical validation:

H1. There is a negative relationship between users' perceived threats and system quality in ERP implementation.

H2. There is a negative relationship between users' perceived threats and information quality in ERP implementation.

H3. There is a negative relationship between users' perceived threats and service quality in ERP implementation.

H4. There is a negative relationship between users' perceived threats and user satisfaction in ERP implementation.

H5. There is a negative relationship between users' perceived threats and net benefits in ERP implementation.

3.3. Operationalization of research variables

For the purpose of this study, the following major research variables will be operationalized as follows:

Independent variables

Perceived threats

Dependent variables

- Information quality
- System quality
- Service quality
- Intention to use and use
- User satisfaction
- Net benefits

3.4. Construct measurement

The constructs of interest to this study were perceived threats, information quality, system quality, service quality, intention to use and use, user satisfaction and net benefits. The conceptual definitions of IS model variables (information quality, system quality, service quality, intention to use and use, user satisfaction and net benefits) are developed by the original authors (Delone and McLean) and their survey items are provided by Sedera et al (2003) through an extensive research in survey design.

However, with the lack of extensive researches about perceived threats, I created by myself the measures by combining the ten common occupational stresses Dolan (1985) uses to measure the perceived threats when introducing new technologies in the office and two non-occupational anxieties (attack and data integration) which are quite

appropriate to check in ERP context.

3.5. Questionnaire design and sample plan

The questionnaire was designed by using slightly modified versions of questions adapted from recognized scholars. As we have discussed above, a survey questionnaire with 43 items is developed and translated into Vietnamese and Chinese to obtain the responses from ERP users mostly in Vietnam, Taiwan and mainland China. This questionnaire is designed by collecting from the proved sources and discuss with the thesis advisor. Respondents are asked to view and rate based their opinions for all the five-point Likert scales questionnaire items. Five-point rating scales ranging from 1 (Not at all important) to 5 (Extremely important) asking respondents to indicate their perception of importance level with each item were used to measure each construct. Related variables include Perceived Threats (12 items), System Quality (10 items), Information Quality (7 items), Service Quality (5 items); User satisfaction (5 items), and Net Benefits (4 items).

A sample is defined as “A subset of the population. It comprises some members selected from the population” (Sekaran, 2000, p.226). There are two major types of sample selection: probability sampling and non-probability sampling. In probability sampling, the subset has some known chance or probability of being selected as sample

subjects. Whereas in non-probability sampling no such predetermined chance of being selected as subject is known to the subset. Two board categories of non-probability sampling are: convenience sampling and purposive sampling.

Convenient sampling: as the name implies, it involves collecting information from a sample which is conveniently available. Such a sample is convenient sample.

Purposive sampling: Instead of obtaining information from those who are the most conveniently available, it might sometimes become necessary to obtain information from specific target groups. Purposive sampling is confirmed to specific types of peoples or organizations who can provide the desired information, either because they are the only who posses it, or conform to some criteria set by the researcher.

Depending upon the extent of generalization ability desired, the availability of time and other resources, and the purposes of the study, different type of sampling strategies are used. Questionnaires of this study are sent to individual emails and organizational emails, which are taken from Vietnam government databases and professional forums of accountants. Important limitations of the study can be that the respondents were not selected to clarify which users and companies are using or have used ERP systems, the small amount of ERP users in Vietnam and the low respond rate of email surveys.

3.6. The information of the respondents

The questionnaire items that are related with the respondents are included at the last section of the entire questionnaires. The characteristics of the respondents are classified as:

- Gender: man users may perceive threats different from woman users
- Age: different age of user may perceive threats differently
- Education: users with higher level of education may perceive fewer threats than the ones with lower level of education.

These factors are selected to investigate since they are basic factors that often have a significant effect on researching variables.

3.7. Data analysis procedures

In order to achieve the purpose of the research and test the hypotheses, with the advantage of user friendliness and good enough for most of purpose of the SPSS software, we will use the SPSS 16.0 for analyzing the component and reliability of the factors and analyzing the model. This study will conduct the following data analysis.

3.7.1. Descriptive statistics analysis

First of all, in order to better understand the characteristics of each variable, descriptive statistic analysis will be used to illustrate the means, and standard

deviation of each research variable.

3.7.2. Purification and reliability of the measurement variables

To purify the measurement scales and to identify their dimensionality, principal components factor analysis with Varimax rotation will be applied to condense the controlled data into certain factors. After factor analysis has been done, the study will continue with the internal consistency analysis (Cronbach's alpha) to confirm reliability of each research factors.

3.7.2.1. Factor analysis

The purpose of factor analysis is to explore the underlying variance structure of a set of correlation coefficients. Factor analysis is used to not only summarize or reduce data but also exploratory or confirmatory purpose. Factor analysis assumes that a small number of unobserved constructs are responsible for the correlation among a large number of observed variables. Factor analysis will be used in this research to provide more understanding about data and measurements of both dependent and independent variables. It is also used to eliminate constructs if necessary. According to Hair, Anderson, Tatham and Black (1998), in this study, measurement items with factor loadings greater than 0.5 will be selected as the member of a specific factor.

Factor loading should be higher than 0.5 and Eigen value should be 1 or higher than 1.

3.7.2.2. Reliability analysis

Cronbach's alpha is a measured of squared correlation between observed scores and true scores. It is a part of the reliability analysis and it can test the internal consistency of variance to observed score variance. Cronbach's Alpha will be used in this research to test the internal consistency of all dependent and independent variables. According to Robinson & Shaver (1973), if alpha is greater than 0.7, it means that it has high reliability and if alpha is smaller than 0.3, then it implies that there is low reliability.

3.7.3. One-way ANOVA

An ANOVA (Analysis of Variance), sometimes called an F test, tests differences between groups that are only classified on one independent variable. It is closely related to the t test. The major difference is that, where the t test measures the difference between the means of two groups, an ANOVA tests the difference between the means of two or more groups. One way ANOVA is used in this study to test the difference of means of all variables between respondents of different department, which may have significant influence on threat perceptions.

3.7.4. Interrelationship between research variables

3.7.4.1. Pearson correlations analysis

The correlation analyses are used to measure the strength of the linear relationship and the character of the interdependence between the variables. The correlation analysis is also used to provide an understanding between items of the independence variable Perceived Threats in this study.

3.7.4.2. Multiple regression analysis

In multiple regression analysis, enter method are used to analysis to examine the relationship between Perceived Threats and each single dependent variable, including System Quality, Information Quality, Service Quality, User Satisfaction and Net Benefits. Thus, the main purpose of multiple regression analysis is to predict the dependent variables with Perceived Threats.

Chapter 4 Research Analysis and Results

4.1. Descriptive analysis

This section presents the characteristics of the research variables and first part of the empirical research. The first is the descriptive analysis of the respondents including the data collection, the attributes of the respondents, and the result of the measurement variables. The second section is the reliability tests of measurement scales that consist of principal components factor analysis, and coefficient alpha.

4.1.1. Data collection

The data were collected from ERP users in Vietnam, Taiwan and mainland China. The questionnaire was first sent and reminded one week later. (See Appendix A for items included in the questionnaire).

The data were gathered through questionnaire survey about a month from March 22nd, 2009 to April 22nd, 2009. Of the 8000 questionnaires delivered, after the second reminder emails, 70 were returned for a response rate 0.9%. Vietnam is major source of this sample. Moreover, "Vietnam's ERP market is still relatively small" and there are some ignorance and misunderstanding of ERP among users and managers in Vietnam (Nieuwoudt, 2009), the response rate was quite low.

4.1.2. Characteristics of respondents

The basic attributes of respondents, including three major items in present study: (1) gender, (2) age, (3) education level, they are showed in the table.

It is shown that about 60.9 % of the respondents were male, 39.1% were female. Among 70 respondents, 1.4% were below or equal 20, 59.4% were 21 to 30 years old, 30.4% were 31 to 40 years old, and 8.7% were more than 50 years old. About education level, 10.1% have got Colleague Degree, 72.5 % have got University Degree, and 17.4% have got Postgraduate.

Table 2. Characteristics of the Respondents in this study (N= 70)

Variable	**Frequency**	**Percentage (%)**
Gender		
Male	42	60.9%
Female	27	39.1%
Age		
Below or equal 20	1	1.4%
21-30 years old	41	59.4%
31-40 years old	21	30.4%
41-50	6	8.7%
Education level		
Colleague	7	10.1%
Bachelor	50	72.5%
Postgraduate	12	17.4%

As shown in the analysis, the age of respondents is majorly ranging from 21 to 41 and most of them have bachelor degree. The result of the research may be influenced since they are eager to learn new technologies and ready for change.

4.2. Reliability tests

Factor analysis is a technique that requires a large sample size. Factor analysis is based on the correlation matrix of the variables involved, and correlations usually need a large sample size before they stabilize. Tabachnick and Fidell (2001, page 588) cite Comrey and Lee's (1992) advice regarding sample size: 50 cases is very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good, and 1000 or more is excellent. As a rule of thumb, a bare minimum of 10 observations per variable is necessary to avoid computational difficulties. Because the sample size is only 70, so the result may imply some problems when carrying out factor loading analysis. Moreover, the IS success model used in this study is seriously researched and the small size of the sample may imply problems which may mislead the result, I will run factor analysis for each construct of IS success model rather than all constructs as dependent variable.

Table 3. Reliability and validity test for IS success constructs

IS Success constructs	Factor loading	Eigen value	% of variance	Cumulative % of variance	Cronbach's alpha
System quality					.837
System Quality 1		4.161	41.608	41.608	
Ease of use	.936				
Ease of learning	.912				
Convenience of	.644				

access					
System Quality 2		2.296	22.960	64.568	
Realization of user requirement	.793				
Usefulness of system features and functions	.921				
Data and system accuracy	.763				
Flexibility	.806				
Sophistication	.465				
Integration	.820				
Customization	.685				
Information Quality		4.963	70.905	70.905	.931
Importance	.741				
Availability	.713				
Usability	.800				
Understandability	.727				
Relevance	.759				
Format	.675				
Conciseness	.547				
Service Quality		2.629	52.588	52.588	.767
Tangible	.462				
Reliability	.636				
Responsiveness	.800				
Assurance	.867				
Empathy	.788				
User satisfaction		3.621	72.429	72.429	.902
Information satisfaction	.828				
System	.942				
Overall	.906				

Knowledge management	.803				
Enjoyment	.763				
Net benefits		2.734	68.339	68.339	.837
Task productivity	.835				
Task innovation	.755				
Customer satisfaction	.850				
Management control	.862				

Note: Extraction method: Principle Component Analysis.
Rotation method: Varimax with Kaiser Normalization.

As a result of the Principal Component Analysis of factor analysis with VARIMAX rotation, six factors were subsequently found according to the categorized variables, with factor loadings of 0.50 or higher. The factor System Quality is divided into two factors, however, the Cronbach's alpha of the original factor is still higher than 0.7 and because the small sample size of the study may lead to the difference, I keep it the same factor. The results of other factors are as predicted by literature with the factor loadings and Cronbach's alpha satisfied.

After the factor analysis, we have to undertake the reliability test for the further understanding of the accuracy and precision of the questionnaire. Cronbach α coefficient is the most popular reliability coefficient in social science research. Cronbach α must be greater than 0.7 at least, and it means the construct is reliable (De Vellis, 1991). All the Cronbach α coefficient for each constructs are all over 0.7, and it

means the reliability of this research is high.

Table 4. Reliability and validity test for perceived threats

	Factor loading	Eigen value	% of variance	Cumulative % of variance
Factor 1		2.471	22.466	22.466
Job security (PT6)	.511			
Wages (PT7)	.889			
Work and social relation (PT9)	.757			
Career path (PT10)	.818			
Factor 2		1.598	14.530	36.996
Training & info (PT1)	.829			
Task difficulty (PT2)	.751			
Factor 3		1.505	13.683	50.678
Attack from outsiders (PT11)	.833			
Data correction and integration (PT12)	.749			
Factor 4		1.293	11.755	62.433
Interest in task (PT3)	.869			
Factor 5		1.238	11.257	73.690
Work load (PT4)	.614			
Healthy and safety (PT8)	.686			

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

The result of the Principal Component Analysis of factor analysis with VARIMAX rotation for Perceived Threats construct showed five new factors. The factor analysis result shows the item “autonomy” (PT5) has not enough loading (<0.5), so I deleted it from the study. With the Cronbach’s alpha of .621, the construct is quite acceptable in exploration research. It is maybe because the construct is still rough, in exploration and

the data itself is not good enough, so I temporarily do not care for factor analysis for this construct.

Table 5. Construct validity and reliability and the values for composite measures

Constructs	No of items (Final)	Means	Standard deviations	Cronbach's alpha
Perceived Threats (PT)	11	2.649	0.585	0.621
System Quality (SQ)	10	3.325	0.748	0.837
Information Quality (IQ)	7	3.654	0.904	0.931
Service Quality (SeQ)	5	3.417	0.762	0.767
User Satisfaction (US)	5	3.383	0.892	0.902
Net Benefit (NB)	4	3.743	0.866	0.837

4.3. ANOVA analysis

The difference of the variables incorporated in this study based on the department of the respondents in the organization also tested. The test of difference is important because the subsequent relationship analyses were conducted using the whole sample irrespective to this situational variable. As such, any difference identified in this preliminary test would provide a limitation in generalizing the findings of the relationship analysis. The responses were classified into 5 categories: Sales and marketing, manufacturing, purchasing, R&D and others, (e.g. IT and accounting…). One-way ANOVA test was used to test the mean differences of the variables used in this study with respect to these three categories.

With the result of low F-value, we can see that there is no difference between groups. In other words, there is no difference of threats perception between different

groups of users through the whole organization. However, the p value is high, indicating that the result is not significant enough.

Table 6. ANOVA test for the composite variables based on the department of the respondents within organizations

Variables	Sales& Marketing (N=8)	Manufacturing (N=5)	Purchasing (N=3)	R&D (N=7)	Others (N=43)	F	p-value
Perceived Threats (PT)	2.739	2.709	3.091	3.078	2.514	2.129	0.088
System Quality (SQ)	3.389	3.220	3.433	3.150	3.334	0.337	0.852
Information Quality (IQ)	3.911	3.771	3.809	3.786	3.558	0.305	0.874
Service Quality (SeQ)	3.244	3.840	3.200	3.543	3.386	0.606	0.660
User Satisfaction (US)	3.556	3.200	3.600	3.143	3.413	0.131	0.971
Net Benefits (NB)	3.694	4.100	3.750	3.643	3.716	0.239	0.915

4.4. Correlation analysis

Table 7. Pearson correlations for perceived threats construct

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11
Training & info (V1)	1										
Task difficulty (V2)	**.347****	1									
Interest in task (V3)	.043	-.094	1								
Work load (V4)	.121	.155	.072	1							
Job security (V5)	-.111	-.160	.096	-.026	1						
Wages (V6)	.138	.127	-.036	.219	**.384****	1					
Healthy and safety (V7)	-.157	-.160	.113	.113	-.039	-.042	1				
Work and social relation (V8)	.235	.200	**.376****	.217	.207	**.570****	.223	1			
Career path (V9)	.145	.093	.231	.173	.209	**.625****	.155	**.767****	1		
Attack from outsiders (V10)	.065	-.129	-.025	.122	.150	-.086	.149	071	-.047	1	
Data correction and integration (V11)	.107	-.112	.196	.073	.264*	.112	.229	.264*	.271*	**.351****	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis is to measure the strength of the linear relationship and the character of the interdependence between the variables. It is used to measure the nature

and degree of association or covariation between variables (Churchill and Iacobucci, 2005). Pearson is suitable for both two variables are interval or rational scale. Therefore, we adopt Pearson correlation analysis to show the correlation between the research variables for this thesis. The results are presented in following tables.

All items of perceived threats construct are selected to measure all aspects of the construct so as suggested in the result of Pearson correlation analysis; they show low or no relationship to each others. However, some items also have slight significant effect on each other with most of correlations are lower than 0.7. Those relations may show some realities, for example a user may find that the task is difficult when he/she doesn't have adequate training.

Table 8. Pearson correlations for dependent and independent variables

Variables	PT	SQ	IQ	SeQ	US	NB
Independent						
PT	1					
Dependent						
System Quality	**-.367****	1				
Information Quality	**-.328****	**.824****	1			
Service Quality	**-.317****	**.694****	**.709****	1		
User Satisfaction	**-.346****	**.618****	**.739****	**.629****	1	
Net Benefit	**-.384****	**.534****	**.712****	**.650****	**.684****	1

**. Correlation is significant at the 0.01 level (2-tailed).

The relationships between the value of perceived threats and dependent variables are all significantly negative while positive among dependent variables. This result

provides a prediction of the final supported result of hypotheses.

4.5. Regression analysis

Multiple regression is employed to account for (predict) the variance in an interval dependent, based on linear combinations of interval, dichotomous, or dummy independent variables.

Table 9. Regression analysis for all hypotheses

Independent variables	Dependent variables														
	System Quality			Information Quality			Service Quality			User Satisfaction			Net benefit		
	Beta	p value	t	Beta	p value	t	Beta	p value	t	Beta	p value	t	Beta	p value	t
Constant	4.295	.000	13.1	4.663	.000	11.8	4.261	.000	12.7	4.452	.000	11.6	4.909	.000	13.3
Perceived Threats	-.367	.003	-3.1	-.328	.008	-2.7	-.317	.009	-2.6	-.346	.004	-2.9	-.384	.001	-3.3
Sample size	65			64			66			67			66		
Adjusted R square	.121			.093			.087			.107			.134		

After conducting regression analysis of each regression model, the results for all models summarized in table 9 reveal the relationships between perceived threats and ERP system performance variables. As evident from table 9, Perceived Threats construct shows significant negative relationships with System Quality, Information Quality, Service Quality, User Satisfaction and Net Benefits.

We go further details with the hypothesis 1. The multiple regression equation of the first hypothesis is SQ = 4.296 - 0.367PT + e which mean that if there is no threat perceived by users, the system quality value may be at the level of 4.296; however, if

there is threat perceived by users, the system quality decreases by 0.367. In other words, system quality is predicted through that equation. For users who perceive no threats, the system quality is predicted at 4.296, and decreased by 0.367 for users who feel afraid.

Table 10. Detailed regression coefficients of all hypotheses

Model	Unstandardized coefficients		Standardized coefficients	t	Sig	95% confidence interval for B		Correlations			Collinearity statistics
	B	Std Error	Beta			Lower bound	Upper bound	Zero-order	Partial	Part	Tolerance/ VIF
1	-.398	.127	-.367	-3.1	.003	-.651	-.144	-.367	-.367	-.367	1.000
2	-.415	.152	-.328	-2.7	.008	-.719	-.112	-.328	-.328	-.328	1.000
3	-.344	.128	-.317	-2.7	.009	-.600	-.087	-.317	-.317	-.317	1.000
4	-.438	.147	-.346	-2.9	.004	-.732	-.144	-.346	-.346	-.346	1.000
5	-.469	141	-.384	-3.3	.001	-.750	-.187	-.384	-.384	-.384	1.000

As shown in the table 10, the Sig column tells us that perceived threats construct is significant as a predictor of system quality with the significance of 0.03. The ratio of the beta weights for the independent variables would tell us the relative importance of the independents, and here “Perceived Threats” has significantly negative effect with the beta of -.367. In the Confidence Intervals section we see that 0 is not within the upper and lower bounds for the b coefficient for perceived threats, meaning that the coefficient for perceived threats can be assumed at the 95% confidence level to be different from 0 (this is a different way of saying “Perceived Threats” is significant). Multicollinearity refers to excessive correlation of the predictor variables. Tolerance and VIF are tests for multicollinearity, which corresponds after rounding to tolerance and VIF both equaling 1, which of course means no multicollinearity problem by the common rule of thumb

that VIF>10.0 indicates a multicollinearity problem.

The Model Summary table in SPSS output, shown below, gives R, R^2, adjusted R^2, the standard error of estimate (SEE), R^2 and F change and the corresponding significance level. As shown above, System Quality is predicted from Perceived Threats. The result shows that Perceived Threats explains 12.1% of the variance in the System Quality. The SEE is 0.7, indicating that this is a good model based on the theory that in a good model, the mean of the dependent variable (3.3 for SQ) is greater than 1.96 times of the standard error of estimate.

Table 11. Detailed models summary for all hypotheses

				Std. Error	Change Statistics				
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.367[a]	.135	.121	.70124	.135	9.820	1	63	.003
2	.328[a]	.108	.093	.85395	.108	7.473	1	62	.008
3	.317[a]	.101	.087	.73111	.101	7.166	1	64	.009
4	.346[a]	.120	.107	.83779	.120	8.868	1	65	.004
5	.384[a]	.147	.134	.80322	.147	11.942	1	64	.001

a. Predictors: (Constant), PT

In the same manner, Perceived Threats construct affects all other dimensions of ERP system success significantly. Hypothesis 2 is also supported with the marginal contribution of the Perceived Threats to Information Quality at -0.328, significance at 0.008. We can see the effect through the equation: IQ = 4.663 -0.328PT + e. Moreover,

Perceived Threats construct may explain about 9.3% of the variance in the Information Quality.

In addition, Perceived Threats construct also has negative effect on Service Quality. The equation of this third hypothesis is SeQ = 4.261 – 0.317PT + e. The relationship is significant at 0.009. The Adjusted R Square of the model provides us with the ability of Perceived Threats construct to explain Service Quality at the level of 8.7%.

Other two dimensions are also significantly affected by Perceived Threats. The effects are quite equally in comparing with all other aspects at the betas of -0.346 and -0.384. The equations are US = 4.452 – 0.346PT + e and NB = 4.909 – 0.384PT + e sequentially. Moreover, Perceived Threats construct is able to explain about 10.7% of User Satisfaction and 13.4% of Net Benefits.

In conclusion, for the above analyses and explanations, Perceived Threats show significant negative effects on all aspects of IS success, including System Quality, Information Quality, Service Quality, User Satisfaction and Net Benefits, even though the Adjusted R Square values are quite low, indicating that the ability of Perceived Threats to explain the dependent variables is low. The results of hypotheses are summarized in the table 12.

Table 12. Results of hypotheses

Hypotheses	Equation	Sig value	Adjusted R Square	Results
H1	SQ = 4.296 - 0.367PT + e	0.003	0.121	Supported
H2	IQ = 4.663 - 0.328PT + e	0.008	0.093	Supported
H3	SeQ = 4.261 – 0.317PT + e	0.009	0.087	Supported
H4	US = 4.452 – 0.346PT + e	0.004	0.107	Supported
H5	NB = 4.909 – 0.384PT + e	0.001	0.134	Supported

Finally we have the results of hypothesized model as in the figure 4.

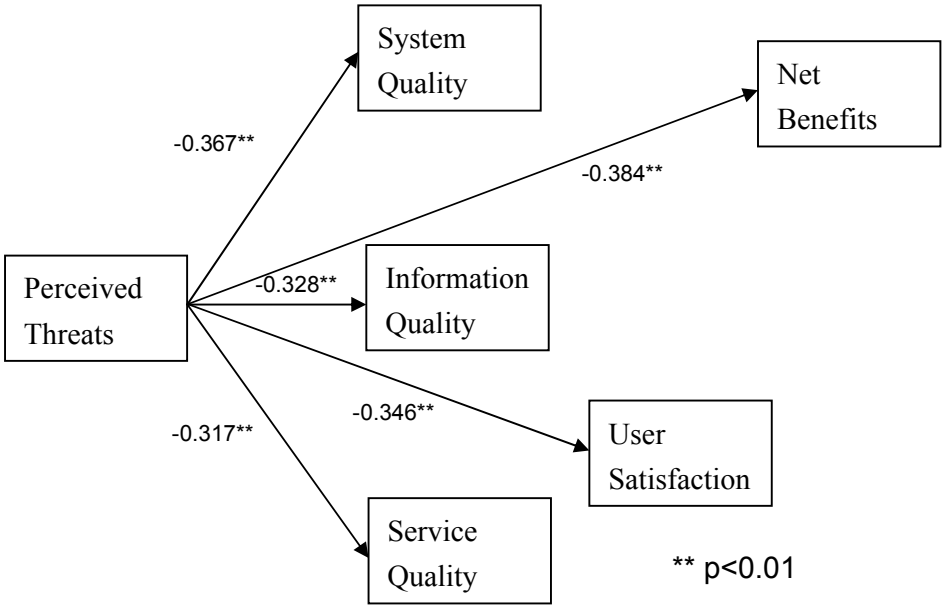

Figure 4. Path coefficients for each of the hypothesis

Chapter 5 Conclusions and Suggestions

5.1. Findings and implications

The research on perceived threats still remains much unexplored about its possible consequences. Notably, there is no any research of the effect of perceived threats in the information system, especially ERP system, fields. This study has begun to seek out the consequences of perceived threats in the field of ERP. In order to achieve the purpose of this study, the research model, based on the updated IS success model (DeLone and McLean, 2003), consisting of the five dimensions of information quality, system quality, service quality, user satisfaction and net benefits and including the hypotheses that perceived threats of users have an impact on those above factors as ERP system success variables was established and empirically tested.

The findings of the hypotheses testing of our model were as follows.

- All hypotheses are supported meaning that perceived threats have significant negative effects on information quality, system quality, service quality, user satisfaction and net benefits.
- The results indicate that ERP system success may be influenced by perceived threats through all aspects. This consolidates literature of negative effect of perceived threats on information system in general.

The results of the study suggest some guidelines for researchers and practitioners like mangers, implementers … When threats that directly involve to their occupations such as job security, wage, career path… or indirectly like attack of outsiders or data correction and integration of the system are perceived by users, all aspects of system success like system quality, information quality, service quality, user satisfaction and net benefit are all negatively affected. To improve the success of the system, involved parties should acknowledge the fact and have solution to prevent before it really happens, since according to Lapoint and Rivard (2005), once there are the threat perceptions, it will spread out through the whole organization and will not easy to control.

Moreover, the result of the study also implies that threats perception is only one of factors that have effect on aspects of system success. There may be some other factors that may influence on the success of the system.

5.2. Research limitations and further research

Although our findings provide meaningful implications for the successful operation of ERP systems, our study has some limitations. The findings of this study should be interpreted in light of its empirical limitations. First, our research model does not have a strong theoretical background. Although our research model and hypotheses were

established through logical reasoning on employees' behaviors associated with ERP system we did not provide certain theoretical background for our model in this study. Therefore, we need further research regarding the framework of our model. Second, the fact that the empirical literature of perceived threats is still rare and the small size of our samples lead to the incompletion of our self created measurement. Third, even though we were careful to avoid selection bias in the data collection process, there still exists the possibility of response biases occurring, including social desirability, acquiescence, and leniency effects.

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Appendix A. Questionnaire – English Version

SURVEY ON THE IMPACTS OF USERS' PERCEIVED THREATS ON ERP SYSTEM SUCCESS

Dear respondent,

I am a graduate student in the Department of Management of Information System in Shu-te University, in Taiwan. This academic questionnaire is to investigate ***the impacts of users' perceived threats on ERP system success***.

We sincerely invite you spend a few minutes to complete the questionnaire and return to us at your earliest convenience. No personal information will be made public. Please be assured that your answers will be kept in strict confidence and take the time to fill out this questionnaire as accurately as possible. Your help is crucial to our research. **We deeply appreciate your kind cooperation.**

After completing this form, please return it to [redacted] or [redacted]

(For each question, please choose only one option by clicking on the blank)

Section I. General Information

1. How many employees are there in your company?
   - ☐ (1)Less than 50 employees
   - ☐ (2)From 50 to 250 employees
   - ☐ (3)Over 250 employees

2. What industry does your company belong?
   - ☐ (1)Fashion, Apparel and Textile
   - ☐ (2)Food and Agriculture
   - ☐ (3)Biotechnology, Pharmacology and Health
   - ☐ (4)Culture, Education and Tourism
   - ☐ (5)Construction and Manufacturing
   - ☐ (6)Natural Resources, Energy and Environment
   - ☐ (7)Trade, Investment and Business

3. What department are you working in?

- ☐ (1)Sales and marketing
- ☐ (2)Manufacturing
- ☐ (3)Purchasing
- ☐ (4)R&D
- ☐ (5)Others (please specify) .....

4. How long has your company started implementing the ERP system?
   - ☐ (1)Still preparing
   - ☐ (2)Less than 3 months ago
   - ☐ (3)3- 6 months ago
   - ☐ (4)7- 11 months ago
   - ☐ (5)1- 2 years ago
   - ☐ (6)More than 2 years ago

5. What ERP system is your company using?
   - ☐ (1)SAP
   - ☐ (2)Oracle
   - ☐ (3)DataSystem
   - ☐ (4)Axapta
   - ☐ (5)Exact
   - ☐ (6)Infor
   - ☐ (7)Others (please specify).....

6. What modules are covered in the ERP system?
   - ☐ (1)Sales and Marketing
   - ☐ (2)CRM
   - ☐ (3)Purchasing
   - ☐ (4)SCM
   - ☐ (5)Manufacturing, Inventory and Production Planning
   - ☐ (6)Quality Management
   - ☐ (7)Finance and Accounting
   - ☐ (8)Project Management
   - ☐ (9)Human Resources
   - ☐ (10)Reports
   - ☐ (11)Others (please specify)……

Section II. Main Content

Please read the following statements carefully and decide the extent to which you agree with each one. There are 5 degrees from "not at all agree" to extremely agree" and you should choose **only one degree** to describe best your answer.

1. Perceived Threats

Items	*Not at all Agree*	*Somewhat Agree*	*Agree*	*Quite Agree*	*Extremely Agree*
(1) The organization's authorities informs adequately before implementing the ERP system	☐	☐	☐	☐	☐
(2) All in all I do not foresee any difficulties in adapting to the ERP system	☐	☐	☐	☐	☐
(3) With the ERP system in place, my work will become more routine and monotonous	☐	☐	☐	☐	☐
(4) The ERP system will require higher volume of input	☐	☐	☐	☐	☐
(5) The ERP system will control the management of me about time, working…	☐	☐	☐	☐	☐
(6) The organization will take advantage of the new ERP system in order to reduce personnel	☐	☐	☐	☐	☐
(7) The ERP will lead to employee's underpayment in relation to work accomplishments	☐	☐	☐	☐	☐
(8) Research has demonstrated that working with computers affect the health of their users	☐	☐	☐	☐	☐
(9) With the introduction of the ERP system, I will be more isolated in my work	☐	☐	☐	☐	☐

(10) The implementation of the ERP system will reduce possibilities for promotion	☐	☐	☐	☐	☐
(11) I am afraid of the fact that virus or hackers or any outsiders will attack and destroy the ERP system, including my valuable data	☐	☐	☐	☐	☐
(12) I am afraid of the problems of data correction and integration caused by incorrect ERP system processing or other users' input	☐	☐	☐	☐	☐

2. System Quality

Items	*Not at all Agree*	*Somewhat Agree*	*Agree*	*Quite Agree*	*Extremely Agree*
(1) The ERP system is easy to use	☐	☐	☐	☐	☐
(2) The ERP system is easy to learn	☐	☐	☐	☐	☐
(3) It is convenient to access to the ERP system	☐	☐	☐	☐	☐
(4) The ERP system realizes user requirements	☐	☐	☐	☐	☐
(5) The ERP system features and functions are useful	☐	☐	☐	☐	☐
(6) Data and the ERP system are accurate	☐	☐	☐	☐	☐
(7) The ERP system is flexible	☐	☐	☐	☐	☐
(8) The ERP system is sophisticated	☐	☐	☐	☐	☐
(9) The ERP system is integrated	☐	☐	☐	☐	☐
(10) The customization of the ERP system is good	☐	☐	☐	☐	☐

3. Information Quality

Items	*Not at all Agree*	*Somewhat Agree*	*Agree*	*Quite Agree*	*Extremely Agree*
(1) The information from the ERP system is important	☐	☐	☐	☐	☐
(2) The information from the ERP system is always available	☐	☐	☐	☐	☐

(3) The information from the ERP system is useful	☐	☐	☐	☐	☐
(4) The information from the ERP system is understandable	☐	☐	☐	☐	☐
(5) The information from the ERP system is relevant	☐	☐	☐	☐	☐
(6) The format of the information from the ERP system is good	☐	☐	☐	☐	☐
(7) The information from the ERP system is concise	☐	☐	☐	☐	☐

4. User Satisfaction

Items	*Not at all Agree*	*Somewhat Agree*	*Agree*	*Quite Agree*	*Extremely Agree*
(1) The information from the ERP system meets the needs well	☐	☐	☐	☐	☐
(2) Users are satisfied with the ERP system efficiency and effectiveness	☐	☐	☐	☐	☐
(3) Overall speaking, user are satisfied with the ERP system	☐	☐	☐	☐	☐
(4) The ERP system meets user's knowledge management needs	☐	☐	☐	☐	☐
(5) Users enjoy the ERP system	☐	☐	☐	☐	☐

5. Service Quality

Items	*Not at all Agree*	*Somewhat Agree*	*Agree*	*Quite Agree*	*Extremely Agree*
(1) The ERP system has up-to-date hardware and software	☐	☐	☐	☐	☐
(2) The ERP system is dependable	☐	☐	☐	☐	☐
(3) Implementation staffs of the ERP system give prompt service to users	☐	☐	☐	☐	☐
(4) Implementation staffs of the ERP system have the knowledge to do their job well	☐	☐	☐	☐	☐
(5) The ERP system has users' best interests at heart	☐	☐	☐	☐	☐

6. Net Benefits

Items	*Not at all Agree*	*Somewhat Agree*	*Agree*	*Quite Agree*	*Extremely Agree*
(1) The ERP system improves the user's output	☐	☐	☐	☐	☐
(2) The ERP system helps users create and try out new ideas in their work	☐	☐	☐	☐	☐
(3) The ERP system helps the user create value for the firm's internal or external customers	☐	☐	☐	☐	☐
(4) The ERP system helps to regulate work processes and performance	☐	☐	☐	☐	☐

Personal Information

For purposes of classification, I would be grateful if you could complete the following questions about yourself

1. Gender ☐ (1)Male ☐ (2)Female

2. Age ☐ (1)Less than 20 ☐ (4)41-50
☐ (2)21-30 ☐ (5)Over 50
☐ (3)31-40

3. Education ☐ (1)High school ☐ (4)Postgraduate
☐ (2)Colleague ☐ (5)Others
☐ (3)University

Thank you for your cooperation!

Appendix B. Questionnaire – Chinese Version

使用者觀感對 ERP 系統成功之影響問卷

親愛的填答者,

我是樹德科技大學資訊管理所的研究生.這份問卷是針對使用者觀感對 ERP 系統成功之影響.

我誠心的邀請您利用少許的時間來完成這份問卷,且儘可能的回覆給我.沒有任何的個人資料會被公佈出來.你的回答將會視為機密而妥善保存,且只做為研究之用,請儘可能的精確做答.你的填答對我的研究是非常重要的,我們非常謝謝您的合作.

每一個問題請選擇一個合適的答案

第一部份 一般資料

(11) 在您的公司有多少員工?

☐ (1)少於 50 人

☐ (2)在 50 到 250 人之間

☐ (3)超過 250 人

(12) 您的公司屬於那一種產業?

☐ (1)服裝業

☐ (2)食品農產業

☐ (3)生化科技,醫藥,健康產業

☐ (4)文化,教育,旅遊

☐ (5)建築,製造業

☐ (6)自然資源,能源,環境產業

☐ (7)貿易,投資,商業

☐ (8)服務業

☐ (9)運輸業

☐ (10)資訊,高科技產業

☐ (11)其他(請說明) .....

(13) 您在那一個部門工作?

☐ (1)業務部門

☐ (2)製造部門

☐ (3)採購部門

☐ (4)研發部門

☐ (5) 其他(請說明).....

(14) 貴公司開始導入ERP的時間?

- ☐ (1)還在計劃中
- ☐ (2)少於 3 個月
- ☐ (3) 3-6 個月
- ☐ (4) 7-11 個月前
- ☐ (5) 1-2 年前
- ☐ (6)超過兩年

(15) 貴公司使用那一套ERP系統?

- ☐ (1)SAP
- ☐ (2)Oracle
- ☐ (3) 鼎新
- ☐ (4)Axapta
- ☐ (5)Exact
- ☐ (6)Infor
- ☐ (7) 其他(請說明).....

(16) 貴公司的ERP系統包含了那些模組?

☐ (1)業務

☐ (2) 客戶關係管理模組

☐ (3)採購

☐ (4) 供應鏈模組

☐ (5)製造,庫存,生產管理模組

☐ (6)品質管理模組

☐ (7)財務和會計模組

☐ (8)專案管理模組

☐ (9)人力資源管理模組

☐ (10)報表模組

☐ (11)其他模組(請說明) .....

第二部份 主要內容

請詳細閱讀下列的敘述,每個敘述有 5 個程度,包含'一點都不同意','有一點同意','同意','有一點同意','相當同意',請依您同意的程度選出你的答案

1. 感知威脅

項目	*完全不同意*	*不同意*	*沒意見*	*同意*	*完全同意*
(1) 在導入ERP系統之前,公司的主管有充分的告知					
(2) 總体來說我不預期在導入ERP系統時會有任何困難					
(3) 導入ERP系統之後我的工作會變得規律單調					
(4) ERP系統需要較大量的資料輸入					
(5) ERP系統會控制我在時間,工作上的管理					
(6) 公司會因為ERP系統的好處而減少人力					
(7) ERP系統會導致員工薪資相對於工作成果的降低嗎					
(8) 研究顯示使用電腦工作會影響使用者的身體健康					
(9) 導入ERP系統使我在工作上更孤立					
(10)導入ERP系統會解低我的昇遷機會					
(11)我害怕電腦病毒或是害客或是外來的人會攻擊和摧毀ERP系統和我的寶貴資料					

(12)我害怕資料的相關性和正確性會因不正確的ERP系統和其他使用者的錯誤輸入而出現問題	□	□	□	□	□

2. ERP系統的品質

項目	*完全不同意*	*不同意*	*沒意見*	*同意*	*完全同意*
(1) ERP系統是容易使用的	□	□	□	□	□
(2) ERP系統是容易學習的	□	□	□	□	□
(3) 進入ERP系統是方便的	□	□	□	□	□
(4) ERP系統知道使用者的需求	□	□	□	□	□
(5) ERP系統的特點及功能是有用的	□	□	□	□	□
(6) 資料和ERP系統是正確的	□	□	□	□	□
(7) ERP系統是有彈性的	□	□	□	□	□
(8) ERP系統是精緻的	□	□	□	□	□
(9) ERP系統是整合的	□	□	□	□	□
(10) ERP系統的客製化是好的	□	□	□	□	□

3. 資訊品質

項目	*完全不同意*	*不同意*	*沒意見*	*同意*	*完全同意*
(1) 從ERP系統來的資訊是重要的	□	□	□	□	□
(2) 從ERP系統來的資訊都是可用的	□	□	□	□	□
(3) 從ERP系統來的資訊是有用的	□	□	□	□	□
(4) 從ERP系統來的資訊是可理解的	□	□	□	□	□
(5) 從ERP系統來的資訊是相關的	□	□	□	□	□
(6) 從ERP系統來的資訊格式是好的	□	□	□	□	□
(7) 從ERP系統來的資訊格式是簡明的	□	□	□	□	□

4. 使用者滿意度

項目	*完全不同意*	*不同意*	*沒意見*	*同意*	*完全同意*
(1) 從ERP系統來的資訊是符合需要的	□	□	□	□	□
(2) 使用者滿意ERP系統的效率性及有效性	□	□	□	□	□
(3) 大體來說使用者對ERP系統是滿意的	□	□	□	□	□

(4) ERP系統滿足使用者知識管理的需求	□	□	□	□	□
(5) 使用者享受ERP系統	□	□	□	□	□

5. 服務品質

項目	*完全不同意*	*不同意*	*沒意見*	*同意*	*完全同意*
1. ERP系統有最先進的軟體及硬體	□	□	□	□	□
2. ERP系統是可靠的	□	□	□	□	□
3. 導入ERP系統的人員對使用者給予提示的服務	□	□	□	□	□
4. 導入ERP系統的人員有足夠的知識來做好他們的工作	□	□	□	□	□
5. ERP系統有使用者最想要的核心功能	□	□	□	□	□

6. 總的益處

項目	*完全不同意*	*不同意*	*沒意見*	*同意*	*完全同意*
6. ERP系統增進了使用者的產出	□	□	□	□	□
7. ERP系統幫助使用者創造及測試工作上的新點子	□	□	□	□	□

8. ERP系統幫助使用者為公司內部及外部的客戶創造價值	□	□	□	□	□
9. ERP系統幫助公司調節工作流程和表現	□	□	□	□	□

個人資訊

為了做為分類之用,請提供下列關於個人的資訊

1.性別 □ (1)男 □ (2)女

2. 年齡 □ (1)小於 20 歲 □ (4)41-50 歲

□ (2)21-30 歲 □ (5)超過 50 歲

□ (3)31-40 歲

3. 教育程度 □ (1)高中 □ (4)研究所

□ (2)專科 □ (5)其他

□ (3)大學

謝謝您的合作!

Appendix C. Questionnaire – Vietnamese Version

Bản câu hỏi nghiên cứu về tầm ảnh hưởng của những nỗi lo lắng của người dùng đến độ thành công của hệ thống ERP

Chào bạn,

Chúng tôi là những sinh viên thạc sỹ của khoa Quản lý Thông tin, trường Đai học Shute, Đài Loan, hiện đang làm nghiên cứu khoa học về sự ảnh hưởng của những vấn đề người dùng thường lo lắng lên độ thành công của hệ thống quản lý lập kế hoạch doanh nghiệp (ERP).

Chúng tôi chân thành mong bạn giúp chúng tôi điền bản câu hỏi này. Sự giúp đỡ của bạn có ý nghĩa rất quan trọng đối với nghiên cứu này. Chúng tôi xin đảm bảo rằng mọi thông tin bạn cung cấp sẽ được giữ bí mật và chỉ sự dụng cho mục đích của bài nghiên cứu này.

Một lần nữa xin chân thành cảm ơn sự giúp đỡ và cộng tác của bạn!

Sau khi điền xong, xin gửi lại cho người có trách nhiệm hoặc qua địa chỉ email [redacted] hoặc [redacted]

(Với mỗi câu hỏi, xin chỉ chọn 1 câu trả lời bằng cách click chọn vào ô trống)

Phần I.Thông tin chung

7. Công ty bạn có tổng cộng bao nhiêu công nhân viên?

☐ (1)Ít hơn 50 người

☐ (2)Từ 50 đến 250 người

☐ (3)Hơn 250 người

8. Công ty bạn hoạt động trong ngành công nghiệp nào?

☐ (1)Thời trang, vải vóc và may mặc

☐ (2)Thực phẩm và nông nghiệp

☐ (3)Công nghệ sinh học, dược phẩm và sức khỏe

☐ (4)Văn hóa, giáo dục và du lịch

☐ (5)Xây dựng và sản xuất

☐ (6)Tài nguyên thiên nhiên, năng ượng và môi trường

☐ (7)Thương mại, đầu tư và kinh doanh

☐ (8)Dịch vụ

☐ (9)Vận chuyển

☐ (10)Công nghệ thông tin liên lạc và các ngành công nghệ cao

☐(11) Khác (xin chỉ rõ) …….....

9. Bạn đang làm việc trong bộ phận nào của công ty?

☐ (1)Kinh doanh và tiếp thị

☐ (2)Sản xuất

☐ (3)Mua hang

☐ (4)Nghiên cứu và phát triển

☐ (5)Khác (xin chỉ rõ) .....

10. Công ty bạn thực hiện cài đặt và chạy hệ thống ERP bao lâu rồi?

☐ (1)Vẫn đang chuẩn bị

☐ (2)Ít hơn 3 tháng trước

☐ (3)Từ 3- 6 tháng trước

☐ (4)7- 11 tháng trước

☐ (5)1- 2 năm trước

☐ (6)Hơn 2 năm trước

11. Công ty bạn đang dùng hệ thống ERP nào?

☐ (1)SAP

☐ (2)Oracle

☐ (3)DataSystem

☐ (4)Axapta

☐ (5)Exact

☐ (6)Infor

☐ (7)Khác (xin chỉ rõ).....

12. Hệ thống ERP công ty bạn đang dùng bao gồm những mô đun nào?

☐ (1)Kinh doanh và tiếp thị

☐ (2)CRM

☐ (3)Mua hang

☐ (4)CM

☐ (5)Sản xuất, tồn kho và lập kế hoạch sản xuất

☐ (6)Quản lý chất lượng

☐ (7)Tài chính và kế toán

☐ (8)Quản lý dự án

☐ (9)Nhân sự

☐ (10)Báo cáo

☐ (11)Khác (xin chỉ rõ)……

Phần II. Nội dung chính

Bạn vui long đọc kỹ mỗi câu phát biểu dưới đây và quyết định mức độ đồng ý hay không đồng ý cho mỗi câu phát biểu đó. Có 5 mức độ mô tả từ "hoàn toàn không đồng ý" đến "hoàn toàn đồng ý" và bạn **chỉ được chọn 1 lựa chọn duy nhất**

1. Những nỗi lo lắng

Mục	*Hoàn toàn không đồng ý*	*Hơi không đồng ý*	*Không ý kiến*	*Hơi đồng ý*	*Hoàn toàn đồng ý*
1. Các chủ quản trong công ty có thông báo rõ ràng về việc dẫn nhập sử dụng hệ thống ERP	☐	☐	☐	☐	☐
2. Về tất cả mọi mặt, tôi cảm thấy không có khó khăn nào trong việc thích ứng với hệ thống ERP	☐	☐	☐	☐	☐
3. Khi hệ thống ERP đi vào hoạt động, công việc của tôi sẽ trở nên đều đều và đơn điệu	☐	☐	☐	☐	☐
4. Hệ thống ERP sẽ đòi hỏi lượng công việc nhiều hơn	☐	☐	☐	☐	☐
5. Hệ thống ERP sẽ kiểm soát việc tự quản lý của tôi về mặt thời gian, công việc…	☐	☐	☐	☐	☐
6. Khi hệ thống ERP đi vào hoạt động, công ty sẽ sa thai bớt nhân viên	☐	☐	☐	☐	☐
7. Hệ thống ERP sẽ làm cho nhân viên bị trả lương thấp đi	☐	☐	☐	☐	☐

8. Các nghiên cứu khoa học đã chứng minh làm việc với máy vi tính nhiều là không tốt cho sức khỏe	☐	☐	☐	☐	☐
9. Với sự có mặt của hệ thống ERP, tôi sẽ bị cô lập hơn trong công việc	☐	☐	☐	☐	☐
10. Việc sử dụng hệ thống ERP sẽ giảm khả năng thăng cấp của nhân viên	☐	☐	☐	☐	☐
11. Tôi sợ rằng vi rút hoặc hacker sẽ tấn công và phá hủy hệ thống ERP và các dữ liệu rất quan trọng của tôi	☐	☐	☐	☐	☐
12. Tôi sợ rằng những vấn đề sai sót về hợp nhất và độ chính xác dữ liệu của hệ thống ERP sẽ ảnh hưởng đến công việc của tôi	☐	☐	☐	☐	☐

2. Chất lượng hệ thống

Mục	***Hoàn toàn không đồng ý***	***Hơi không đồng ý***	***Không ý kiến***	***Hơi đồng ý***	***Hoàn toàn đồng ý***
1. Hệ thống ERP dễ dùng	☐	☐	☐	☐	☐
2. Hệ thống ERP dễ học	☐	☐	☐	☐	☐
3. Dễ dàng đăng nhập vô hệ thống ERP	☐	☐	☐	☐	☐
4. Hệ thống ERP đáp ứng yêu cầu của người dùng	☐	☐	☐	☐	☐
5. Các tính năng và chức năng của hệ thống ERP đều rất hữu dụng	☐	☐	☐	☐	☐
6. Dữ liệu và hệ thống ERP đều chính xác	☐	☐	☐	☐	☐
7. Hệ thống ERP rất kinh hoạt	☐	☐	☐	☐	☐
8. Hệ thống ERP rất phức tạp	☐	☐	☐	☐	☐
9. Hệ thống ERP rất hợp nhất	☐	☐	☐	☐	☐
10. Tính năng tùy biến của hệ thống ERP rất tốt	☐	☐	☐	☐	☐

3. Chất lượng thông tin

Mục	*Hoàn toàn không đồng ý*	*Hơi không đồng ý*	*Không ý kiến*	*Hơi đồng ý*	*Hoàn toàn đồng ý*
1. Thong tin từ hệ thống ERP rất quan trọng	☐	☐	☐	☐	☐
2. Thong tin từ hệ thống ERP lúc nào cũng sẵn sàng phục vụ	☐	☐	☐	☐	☐
3. Thông tin từ hệ thống ERP rất hữu dụng	☐	☐	☐	☐	☐
4. Thông tin từ hệ thống ERP dễ hiểu	☐	☐	☐	☐	☐
5. Thông tin từ hệ thống ERP thích hợp	☐	☐	☐	☐	☐
6. Bản mẫu của thông tin từ hệ thống ERP tốt	☐	☐	☐	☐	☐
7. Thông tin từ hệ thống ERP ngắn gọn, súc tích	☐	☐	☐	☐	☐

4. Sự thỏa mãn người dùng

Mục	*Hoàn toàn không đồng ý*	*Hơi không đồng ý*	*Không ý kiến*	*Hơi đồng ý*	*Hoàn toàn đồng ý*
1. Thong tin từ hệ thống đáp ứng tốt yêu cầu	☐	☐	☐	☐	☐
2. Người dùng thỏa mãn với hiệu suất và hiệu quả của hệ thống ERP	☐	☐	☐	☐	☐
3. Nói chung, người dùng thỏa mãn với hệ thống ERP	☐	☐	☐	☐	☐
4. Hệ thống ERP đáp ứng nhu cầu quản lý tri thức của người dùng	☐	☐	☐	☐	☐
5. Người dùng vui thích sử dụng hệ thống ERP	☐	☐	☐	☐	☐

5. Chất lượng dịch vụ

Mục	*Hoàn toàn không đồng ý*	*Hơi không đồng ý*	*Không ý kiến*	*Hơi đồng ý*	*Hoàn toàn đồng ý*
1. Phần cứng và phần mềm của hệ thống ERP đều rất cập nhật	☐	☐	☐	☐	☐
2. Hệ thống ERP có thể tin tưởng được	☐	☐	☐	☐	☐
3. Nhân viên cài đặt hướng dẫn hệ thống ERP cung cấp dich vụ rất kịp thời	☐	☐	☐	☐	☐
4. Nhân viên cài đặt hướng dẫn hệ thống có đủ kiến thức để hoàn thành tốt công việc của họ	☐	☐	☐	☐	☐
5. Hệ thống ERP nhận được sự ủng hộ nhiệt tình từ người dùng	☐	☐	☐	☐	☐

6. Lợi ích thực

Mục	*Hoàn toàn không đồng ý*	*Hơi không đồng ý*	*Không ý kiến*	*Hơi đồng ý*	*Hoàn toàn đồng ý*
(5) Hệ thống ERP nâng cao năng suất làm việc của người dùng	☐	☐	☐	☐	☐
(6) Hệ thống ERP giúp người dùng nghĩ ra và thử những ý tưởng mới trong công việc	☐	☐	☐	☐	☐
(7) Hệ thống ERP giúp người dùng tạo them giá trị cho khách hang trong và ngoài công ty	☐	☐	☐	☐	☐
(8) Hệ thống ERP giúp điều phối lưu trình và hiệu suất công việc	☐	☐	☐	☐	☐

Thong tin cá nhân

Nhằm mục đích phân loại, chúng tôi cũng mong muốn bạn hoàn tất phần câu hỏi dưới đây về chính bản than

1. Giới tính ☐ (1)Nam ☐ (2)Nữ

2. Tuổi

☐ (1)Dưới 20
☐ (2)21-30
☐ (3)31-40
☐ (4)41-50
☐ (5)Trên 50

3. Học vấn

☐ (1)Cấp 3 trung hoc phổ thông
☐ (2)Trung cấp, Cao đẳng
☐ (3)Đại học
☐ (4)Sau đại học
☐ (5)Khác

Xin chân thành cảm ơn sự giúp đỡ và hợp tác của bạn!
