DETERMINANTS OF SMEs’ ADOPTION OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) AND THEIR IMPACT ON ORGANIZATIONAL PERFORMANCE IN INDONESIA

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Thesis submitted in fulfillment of the requirement for the degree of doctorate of business administration

FACULTY OF BUSINESS, GOVERNMENT & LAW

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Form B
Certificate of Authorship of Thesis

Except where clearly acknowledged in footnotes, quotations and the bibliography, I certify that I am the sole author of the thesis submitted today entitled –

Determinants of SMEs' adoption of Information Communication Technology (ICT) and their impact on organizational performance in Indonesia

I further certify that to the best of my knowledge the thesis contains no material previously published or written by another person except where due reference is made in the text of the thesis.

The material in the thesis has not been the basis of an award of any other degree or diploma except where due reference is made in the text of the thesis.

The thesis complies with University requirements for a thesis as set out in Gold Book Part 7: Examination of Higher Degree by Research Theses Policy, Schedule Two (S2). Refer to http://www.canberra.edu.au/research-students/goldbook

Signature of Candidate

Signature of chair of the supervisory panel

Date: 1 April 2014

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This research examines the adoption of information technology innovation in small and medium-sized enterprises (SMEs) and its impact on organizational performance in Indonesia. Despite extensive research undertaken in the area of adoption of innovation in business in general, little is known about its adoption of by employees. The purposes of this research are to: firstly, empirically investigate the determinants and their effects on the performance of SMEs in a developing country; and secondly, provide new theoretical directions addressing why employees adopt innovations in the workplace.

This thesis develops and tests a unified model of information communication technology (ICT) adoption taking into account the strength and limitations of existing models. The theoretical framework for this research is based on the Unified Theory of Acceptance and Use of Technology (UTAUT), theory of reasoned action (TRA), the technology acceptance model (TAM), and Frambach and Schillewaert’s (2002) conceptual framework. The unified model developed here includes several modifications of prior models. The UTAUT model combines multiple sets of factors existing in previous models and incorporates factors suggested in the extant literature. Furthermore, the model incorporates additional variables tested in other innovation acceptance-related studies, especially those dealing with SMEs’ adoption of ICT. It does this to create a coherent and novel model of innovation adoption.

Survey method using a structure study instrument was employed to create a dataset to analyze and test the validity of the proposed theoretical model. Multivariate analytical techniques including multiple regression analysis using SPSS were employed for this purpose. The results show that individuals’ adoption of innovation is influenced by: two organizational factors - training and incentives; two individual factors - personal innovativeness, prior experience; and one social factor - virtual networking. The results indicate that individual adoption of innovation is influenced by employee demographics. Thus the empirical findings that clearly support the proposed unified model make a solid contribution to knowledge by deepening and broadening
our understanding of the complexities associated with the adoption and implication of adoption of ICT by SMEs in Indonesia

The theoretical model validated in this study provides valuable insights into an alternative and comprehensive theoretical basis for updating our understanding of SMEs’ implementation of ICT innovation in Indonesia. The study aims to increase government knowledge of how to apply ICT to boost the performance of small and medium sized enterprises so that they profit well and contribute to Indonesia’s national economic objectives.
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The following papers have taken partial information/data from this thesis

PUBLICATIONS


CHAPTER ONE

INTRODUCTION

1.1. Research background

Information and communication technology (ICT) is widely-considered to be a key factor in improving organizational performance (Talukder, Harris, & Mapunda, 2008; Talukder, 2011). Prior studies proved that ICT has had a significant impact on the performance of organizations around the world (Koellinger, 2008; Brynjolfsson & Hitt, 2000; Levy & Powell, 2003). For many years, ICT has helped individuals and organizations benefit from new workplace technologies (Locke, 2004). Innovations have included fixed lane telephone, fax machines, personal computers. One of the most powerful ICT innovations is the Internet. Michael E. Porter (2001) states that the Internet is the most significant invention in the information and communication technology area. Its capabilities to help business activities have attracted considerable attention and support from entrepreneurs, executives and investors. Talukder and Yeow (2007) argued that the Internet enables organizations to transfer the skills, information and knowledge in an effective and efficient way (see also Messinger, Stroulia, Lyons, Bone, Run, Smirnov, Perelgut, 2009; Owyang, 2009).

The Internet has led to the advent of social media such as Facebook, Twitter, MySpace and LinkedIn. Kaplan, Johnson, Pearce, and George (1997) and Coccia (1997) argue that particularly for smaller organizations Internet innovations provide several advantages that are very important such as reaching new markets, promoting their businesses, releasing new products, increasing the quality of communications and social online networks, using data from other areas and building strong relationships with new business partners (Laudon & Traver, 2011). Currently, there are one billion active users of Facebook who regularly use Facebook accounts and so it is a potential tool for improving business performance (Laudon & Traver, 2011).
Established theories in ICT adoption have been extensively applied in Western economies. Prior studies found that adopting ICT and following this up with an integrated ICT system and business process re-engineering can significantly improve firm performance (Levy & Powell, 2003). However, many of these theories have not been widely applied to developing countries. Yet, Saarenketo, Puumalainen, Kylaheiko and Kuivalainen (2008) found that globalization of trade has contributed to both challenges and opportunities, specifically for smaller businesses in developing countries. It is therefore important to investigate the factors that influence SMEs in their implementation of ICT innovations and their impact on the organizational performance of SMEs.

Talukder, Harris and Mapunda (2008) argue that the performance improvement of organizations was strongly influenced by new technologies. Since the end of the 1990s the enormous growth in information communication technology (ICT), has forced many organizations and businesses to re-assess their existing practices and consider adopting new methods, both for their customers and business partners (Oh, Cruickshank, & Anderson, 2009). The rising importance and proliferation of ICT constitutes a significant improvement in the information system within an organization.

Many researchers have studied and developed theories and models to understand the benefits of ICT, particularly e-business or e-commerce (Tarafdar & Vaidya, 2006; Oh, Cruickshank, Anderson, 2009; Kula & Tatoglu, 2003; Ayanso, Lertwachara, and Thongpapanl, 2010, Badescu, and Garces-Ayerbe, 2009). However, most of the conceptual and empirical work on this issue has only focused on large Western organizations. Yet, ICT adoption by SMEs is a growing area of interest in developing Asian countries. With the emergence of small and medium enterprises as a powerful force in both developed and developing countries, the issue of how new technologies are accepted and practiced is an area that requires more analysis (Oh, Cruickshank, & Anderson, 2009). Indonesia is a developing country where technology plays an important role
in its economic growth. Therefore, this research is designed to fill that gap - to unveil the factors that influence SMEs in an emerging economy and its implementation of new technologies.

SMEs’ low rate of adopting technology innovation, particularly compared to large enterprises underlines the importance of this research. Research on individual technology acceptance and drivers of adoption in a small organizational framework is limited (Talukder, Harris & Mapunda, 2008). Due to the paucity of relevant studies, current study concerning adoption of ICT in SMEs is deemed suitable for examination (Shiels, McIvor & O’Reilly, 2003).

The recent adoption of ICT innovations has been noted in private sector businesses. Shiels, McIvor and O’Reilly (2003) found that small firm performance was strongly influenced by ICT investment, and ICT alignment is a key factor in understanding the correlation between ICT and firm performance. Harrington and Reed (1996) noted that that e-commerce includes electronic exchange of goods, services, information, and payments. Southern and Tilles (2002) revealed that ICT/e-commerce can contribute to the growth of SMEs (Morgan, Colebourne & Thomas, 2006). Many studies have recognized a variety of factors that affect ICT adoption by small businesses (Harker & Van Akkeren, 2002). Levy and Powell (2003) argue that SMEs through technology innovation will help them to exploit larger and wider markets and improve their customer base.

In Indonesia small and medium-size businesses face large constraints such as obtaining finance (Beck & Demirguc-Kunt, 2006). The way SMEs successfully penetrate formal financial requirements is analysed in this study, particularly how they can do this more easily. By conducting empirical research in Indonesia, this study proposes a new theoretical concept and introduces theoretical perspectives that did not exist in earlier models like the Theory of Reasoned Action (Ajzen & Fishbein, 1980), Technology Acceptance Model (Davis, 1989), and Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, Davis, and Davis, 2003). Published research on Indonesia concerning the adoption of ICT innovations is limited, especially in the context of social media that constitutes an important aspect of ICT innovation in business. This gap existing in the knowledge is therefore addressed in the thesis.
1.2. Study rationale

ICT adoption theories are well established in the literature. However, most of the conceptual and empirical work on this issue has focused mainly on ICT adoption and firm performance in Western organizations. Here major issue is to what extent new technologies are accepted and implemented in organisations. Small and medium enterprises (SMEs) dominate the Indonesia business sector and have a significant impact on the national economy. Furthermore, study on ICT adoption by SMEs in Indonesia is very limited. This study will specifically examine the drivers of technology adoption in SMEs in Indonesia and their impact on SMEs’ organizational performance, namely profit, business growth and market share.

1.3. Research questions

The main research question in this thesis is as follows:

“Does adoption of ICT affect organization performance of SMEs in Indonesia?”

The subsidiary but specific research questions are:

1. What is the effect of organizational factors on the adoption of ICT?
2. What is the effect of individual factors on the adoption of ICT?
3. What is the effect of social factors on the adoption of ICT?
4. What are the effects of using technology innovations on firm performance in terms of growth, profit and market share?

1.4. Research contribution

Theoretical contribution to knowledge

This research contributes to knowledge in two ways: by constructing a new model and by identifying those factors that influence individuals’ decisions to adopt ICT innovation, particularly Facebook as part of social media innovations. Studies on the Indonesian situation in the form of academic journals were very difficult to find. Facebook is being used by millions of
people around the world but rarely any researcher predicted that Facebook would become a significant tool in modern businesses activities. This study found that Facebook is a new strategy that involves key factors in the modern business world.

**Practical contribution for managers, organizations and government**

Managers should focus on their attention to how important ICT innovations are for individual and organizational performance. Organizations must maintain and combine potential resources that set them apart from their competitors. This study will guide managers to give more attention to effective adoption and usage of ICT innovations in SMEs in Indonesia. This study will also help managers of small and medium enterprises to cut their ICT innovation costs by using Facebook as the major tool used in their business activities. Facebook usage is free of cost and it has the ability to communicate all around the world.

**1.5. Structure of the thesis**

This thesis is organized into several chapters as follows.

**Chapter One - Introduction**

Chapter One introduces the research topic by outlining the research problem and the questions to be answered. This chapter reveals the problem with the usage or adoption of ICT innovations by individuals in SMEs and the three main factors that influence this situation: organizational factors, individual factors, and social factors.

**Chapter Two - Literature Review**

Chapter Two reports on prior studies releval to the research area. The chapter discusses the definition ICT innovation, ICT innovation adoption process, social media and SMEs in Indonesian context. The chapter explains the model from Roger (1995) about the innovation adoption process in organizations. It is followed by a review of the established theory such as the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Unified Theory of
Acceptance and Use of Technology (UTAUT), and the conceptual framework of Frambach and Schillewaert (2002).

**Chapter Three – Hypothesis Development**

Chapter Three develops hypotheses. The first section the chapter reviews the variables that are being deployed in this study, these are organizational factors, individual factors and social factors. Each factor consists of three sub-factors: firstly, training, managerial support, and incentives as sub-factors of organizational factors; secondly, individual factors consist of perceived usefulness, experience, and innovativeness; and thirdly, virtual networking, peers, and the government’s role are sub-factors of social factors. This chapter also looks at and explains demographic factors such as gender, age, and industry. The next section describes the research model of this study while the last one discusses organizational performance which is divided into three variables: growth, profit and market share.

**Chapter Four- Research Methodology**

Chapter Four discusses the research methods and research design that are deployed in this study. It provides an explanation and description of small and medium enterprises, the population chosen for this study, sampling technique, research instrument, definition and measurement of variables, data collection, and method of data analysis.

**Chapter Five - Data Analysis and Discussion**

Chapter Five focuses on the data analysis. This chapter includes a detailed explanation about analysis technique, procedures, and tools that are deployed in this study. In the introduction section, it is very important to emphasize the objectives or aim of this study. This is followed by a focus on the employment of SPSS to calculate and display the results of descriptive statistics, coefficient correlations, multiple regressions, and ANOVA (Analysis of Variance). The final section discusses in detail the interpretation of the results.
Chapter Six - Conclusion
Chapter Six summarizes the main points of this research. The conclusion and implications of the thesis are explained here, particularly in terms of the aim of the study, research questions, research gap, analysis techniques, and significant findings. Recommendations for both theoretical and practical contexts are outlined in this final chapter.

1.6. Summary of the chapter
This chapter has discussed the topic of information and communication technology (ICT) adoption in small and medium-sized enterprises (SMEs) in Indonesia. It is evident that older studies have mainly focused on developed countries’ organizations and businesses. Briefly, it was mentioned that Facebook is a potential medium for SMEs to improve their business performance and expansion plans. The contribution of this study is to provide evidence that the Internet and ICT will benefit SMEs. The next chapter will discuss the literature review, theoretical framework, and development of hypotheses.
CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter reviews theories on the importance of ICT and Internet usage particularly in the context of SME. Firstly, it looks at why the theory of innovation and theory of ICT adoption is considered significant to this research, and then the theoretical framework that supports the importance of ICT adoption is explored, as well as the importance of SMEs in developing countries. Furthermore, it discusses the determinants of SMEs’ adoption of ICT, and then the impact of this process on their organizational performance.

Adoption of ICT has been extensively being promoted by researchers such as Davis (1989), Venkatesh and Davis (2000), Levy and Owell (2003), Lawson, Alcock, and Cooper (2002), Bell and Abdullah (2002), Alam and Noor (2009), Oh, Cruickshank, and Anderson (2009), and Shiels, McIvor, and O’Reilly (2003). ICT and technological innovations have the capability to enhance the economic growth in most countries of the world (Baliamoune-Lutz, 2003). Furthermore, GDP growth can be significantly influenced by the diffusion of ICT. Nonetheless, according to Karahanna and Straub (1999), many studies are critical of information system usage. Opponents have argued that most studies on individual attitude and behavior are developed after the innovations have been executed. As a consequence the attitude and other determinants mostly fit into studying continued-adopton behavior (Lu, Yao, & Yu, 2005). Moreover one of the main focus and attention are in the area of research concerning management information systems in terms of perceived usefulness as important determinant of adoption intentions (Lu, Yao, & Yu, 2005).

This study will combine four theoretical frameworks that have been established in prior research. First of all, the Theory of Reasoned Action (TRA) that was originally introduced by Ajzen & Fishbein in 1980. Secondly, Theory about Technology Acceptance Model (TAM) that was developed by Davis (1989). Thirdly, the Unified Theory of Acceptance and Use of Technology
(UTAUT) that is built by Venkatesh, Morris, Davis & Davis (2003). The last concept that is adopted in this study is developed by Frambach & Schillewaert (2002). Based on the Theory of Reasoned Action, the Technology Acceptance Model, theory of Unified Theory of Acceptance and Use of Technology and the conceptual framework presented by Frambach & Schillewaert (2002).

This chapter starts with introduction as the first section and followed by theoretical framework, research model, in-depth literature review, and hypothesis development. The following section reviews the prior studies on ICT innovation, its definition, and in-depth discussion on the advent of the social networking. The third section is devoted to to small and medium enterprises and specifically SMEs in developing country, followed by the adoption of ICT innovations in SMEs in developing countries. Final section proposes research model and hypothesis development of determinant of adoption of ICT innovations and its impact on organizational performance.

2.2. Definition of ICT innovation

The end of the industrial era in early 1800s was significantly replaced by new era that marked by the advent of new innovations known as Information and Communication Technology (ICT). This new era widely marked as Information Age (Locke, 2004). The importance of ICT innovations toward individuals and organizational performance emerged as important topic amongst IT-expertise and governments around the world (Bozeman, 2000). There are at least three evidences that show how important ICT innovations are in this century (Bozeman, 2000):

a. At least eight policies related to ICT innovations have been approved by US Government (Fujisue, 1998);

b. Improving the concern on ICT innovation as new mission of organizations which has been introduced by some professional institutions;

c. Opening wide opportunities to become government employees as ICT innovations agent.

A number of definitions revealed in prior studies. While ICT innovations has been defined as the adoption of new and sophisticated ICT applications to an organization (Swanson & Ramiller,
2004, p.556), it has also been described as a source of competitive advantage and economic growth of raised world-wide emulation, technological transform, rapid-changing market conditions and contiguity customer/client requisition for quality service (Damanpour and Schneider, 2006). Furthermore, ICT innovation is considered as an intelligent database and an integrated application aimed at providing service (Oh, Cruickshank, and Anderson, 2009). ICT innovation has also been conceptualized as a process and an outcome. ICT innovations can also be defined as internet technology that primarily consist of some activities such as collecting, maintaining, organizing, processing, storing, and spreading the information both inside and outside the organization (Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, Meister, 2010). ICT innovations also can be defined as a system belonging to some new factors that enable work performance to improve and enhance organizational efficiency (Talukder and Quazi, 2010; Talukder, Quazi and Djatikusumo, 2013). Furthermore, Damanpour & Schneider (2006) noted that at the organizational level, innovation can be defined as the adoption of new product, process, technology, policy, service, structure or administrative systems. Essentially, the adoption of innovation also determined that innovation is novel to the adopting organization (Angle & Van de Van, 2000 in Damanpour & Schneider, 2006). Rogers (2003) defined innovations “as an idea, practice or object that is perceived as new by individual or other unit of adoption. That means an object or an idea would qualify to be an innovation if it is considered new. However, “newness” is a relative term which is not always easy to define (Damanpour & Schneider, 2006, p.216).

Two primary innovations in Information Age are combination of two new technologies which are Information Technology (IT) and Communication Technology (CT) (Locke, 2004, p.94). Technologies that are categorized into information technology include personal computers, notebooks, tablets and all electronic-based technologies. On the other hand, technologies that can be categorized as communication technology are hardware equipment, community values, organizational platforms, and internet that are widely exchangeable by individuals within and/or other organizations. Rashid, Khan and Wall (2002) argued that wireless communication systems such as bluetooth are growing rapidly and very important to support business communications. The synergy of these two new technologies led to a new innovation making significant contribution to the new era of innovation called Information and Communication Technology or
ICT (Locke, 2004, p.94). Moreover, the novelty of the ICT innovations can be perceived in terms of knowledge, persuasion or decision to adopt (Rogers, 2003, p.12)

Empirical research on adoption of ICT innovations found that adoption is instrumental for technology oriented firms to survive in the increasingly uncertain global environment, hence the success of profit-oriented organizations operating in dynamic markets is significantly influenced by innovation adaption (Baker & Sinkula, 2002; Jimenez-Jimenez & Sanz-Valle, 2011). The above findings are supported by prior research ((Robert, 1999); Schulz & Jobe, 2001) and Thornhill, 2006) arguing that ICT innovations have positive impact on organizational performance.

However, some studies reported contrary evidence that ICT adoption does not affect organizational successes (Jimenez-Jimenez & Sanz-Valle, 2011). Expensive investment and risky operations of ICT innovations lead many companies to experience negative rather than positive outcomes of ICT innovations (Simpson, Siguaw, & Enz, 2006). Wright, Palmer, Perkins (2005) found that SME adoption of ICT innovation does not affect organizational performance. However, ICT innovations can have a positive impact on organizational performance in a hostile business environment. At the organizational level, the adoption of new service, process, policy, product, structure or administrative system, and new technology such as internet can be described as the part of innovation (Damanpour & Schneider, 2006). Kula & Tatoglu (2003) mentioned that the internet is rapidly becoming recognized as a “global network of networks” or “global information infrastructure”. The rapid growth of internet as a new way of operation has opened a crucial new channel for business activities (Kula & Tatoglu, 2003).

Finally, research has shown that integration of internet technology into organizational operation results in increasing business performance in terms of profitability (Locke, 2004) and supply chain efficiency (Levy & Powell, 2003).
2.3. ICT Innovation adoption process

ICT innovation has become the most attractive subject for many researchers for over 20 years (Wang & Ramiller, 2009). ICT plays a pivotal role in marketing, advertising and direct distribution of goods and services (Shiels, McIvor, & O’Reilly, 2003). ICT adoption such as e-commerce or internet, also help strengthen businesses’s ability to survive in the challenging global market environment (Thong, 1999, p.188). The internet also helps businesses to reach new customer or offer new opportunities (Quaddus & Achjari, 2005).

Competitive advantage of an organization can also be achieved by adopting ICT innovations because ICT can build a unique positioning capability of an organization in the market. Furthermore, innovative ICT can be instrumental in encouraging employees to increase their effective participation in the organizational activities (Fernandez-Villavicencio, 2010). Referring to the limitation of diffusion of innovation, Peres, Muller and Mahajan (2010) argued for the revision of the traditional theory of diffusion and adoption of innovations. The traditional theory should be extended to accommodate other factors influencing the adoption of innovations. Peres, Muller, and Mahajan (2010), introduced new definition of diffusion of innovation as the condition in which new products and services are driven by social and peer influences.

ICT innovations enable individuals to make accurate decisions and solving the problems in an efficient and effective way (Fernandez-Villavicencio, 2010; Talukder, Quazi, and Djatikusumo, 2013). Individuals with knowledge of ICT innovations are able to access all features in online efficiently and effectively. Fernandez-Villavicencio (2010) also argued that communication can be generated effectively by individuals with excellent knowledge and skill of innovations. On the other hand, capital expenditure of an organization is substantially reflected in investment in innovation of technologies (Talukder & Quazi, 2011). This phenomenon leads businesseses to ensure innovation of technologies towards improving organizational performance.

Rogers (2003) defined innovation as the decision to create full use of innovation by the adopter as the best course of action. Adoption that occurs at the individual level within organizational can be assumed as intra-organizational adoption (Frambach & Schillewaert, 2002). Furthermore, various phases of the process of adoption of innovation have been introduced by prior studies,
for instance: evaluation, initiation, implementation and routinization (Hage & Aiken, 1970); awareness, selection, adoption, implementation, and routinization (Klein & Sorra, 1996); knowledge awareness, attitudes formation, decision, initial implementation and sustained implementation (Zaltman, Duncan & Holbek, 1973); and initiation, development, implementation and termination (Damanpour & Schneider, 2006). Rogers (2003) argued that decision processes have a significant contribution to innovation adoption and decision process is the third stage that initialized with knowledge of innovation as the first stage and persuasion as the second stage.

The last two stages are implementation as the fourth stage and confirmation of the decision as the last stage. Rogers’ model of innovation adoption process is showed in figure 2.1.

![Figure 2.1: Rogers’ Model of the Innovation Adoption Process](image)

*Source: Rogers (2003, p.170)*

A model of the Innovation-Decision Process introduced by Rogers (2003), was initially conceptualized by Ryan & Gross (1943). There are five sequential-stages of the model (Rogers, 2003):
1. Knowledge takes place when an individual is exposed to a technology innovation’s existence and achieve some deep understanding about the function of those innovations.
2. Persuasion occurs when individual forms a favorable or unfavorable attitude towards technology innovations.
3. Decision occurs when individual commit in activities that leads to choice to adopt or avoid the technology innovations.
4. Implementation takes place when individual realizing their ideas into usage of technology innovations.
5. Confirmation occurs when individuala seek enhancement of innovation-decision already made, however they may counter this prior decision if exposed to adverse messages about the technology innovations.

More comprehensive model on diffusion of innovation and user acceptance was introduced by Rogers (1995). In the model there are two steps that are crucial to explain the user acceptance comprehensively. These steps are implementation and confirmation (Schillewaert, Ahearne, Frambach, & Moenaert, 2005). Moreover, Rogers (1995) denoted that innovativeness can be assumed as the degree of earlier effort of individual within organization in accepting and executing ICT innovations compared to other persons. Therefore, one thing that absolutely must be done by individual to be categorized as a highly innovative person is to demonstrate innovative behavior in their activities (Steenkamp, 1999).

Thus, based on previous studies and concepts that already mentioned above, individual innovativeness can be denoted as open-minded attitude to encourage their own motivation to learn about new technological innovations (Schillewaert, Ahearne, Frambach, & Moenaert, 2005). Furthermore, there are also three broadly recognized stages of innovation adoption, which are initiation, adoption decision, and implementation, symbolizing sequentially pre-adoption activities, the managerial decision to adopt the innovation and post-adoption activities (Damanpour & Schneider, 2006). Rogers (2003) argued that at least there are four stages before innovation adoption can be implemented. Those stages are developing the ability to compose attitude, produce decisions, execute, and validate the feasibility of innovations before being
applied (Talukder & Quazi, 2011). However, in another point of view, Damanpour & Schneider (2006) mentioned that every phase of ICT innovations is influenced by organizational complexity and size.

Main concern of organization that needs to care about is how to encourage people to adopt an innovation. By adopting innovation into organization process there are some benefits that can be achieved by the adopters. Firstly, the work design of organization can be affected by innovation adoption through the structural changing to make a better work design. Secondly, behaviors of employees within businesses can be affected by adoption of innovation (Talukder & Quazi, 2011). Bhattacherjee (1998) also stated that increased organizational productivity of many businesses can be achieved by adopting ICT innovation. Social change influencing the behaviors of employees and structural change influenced the work platform within many businesses also caused by innovation adoption (Talukder & Quazi, 2011).

ICT Innovations such as the usage of e-commerce for business purpose has offered the diversity of advantages potency to organizations in adopting ICT innovations (Kartiwi, 2006). Those advantages are: reducing transaction costs, slashing advertising and promotion cost accelerate speed of communication between vendors, suppliers and customers, and reducing traditional supply chains. Research also revealed that adoption of ICT innovations provided other benefits for the organizations such as time reduction, enhancing communication, reducing cost of information transfer and reducing travel costs (Deng, Li, Tam, Shen & Love, 2001; Alshawi & Ingirige, 2003; Peansupap & Walker, 2005). However all of those benefits can be achieved perfectly with the condition that ICT innovations are fully adopted and integrated into the organizational activities (Peansupap & Walker, 2005). Thomas (1999) and Koskela & Kazi (2003) suggested that the extent of adoption of ICT innovations do not significantly affect the improvement of project productivity.

Further, by adopting ICT innovations an organization increases its ability to respond to environmental demand and constraint by taking an advantage of environmental opportunities (Damanpour & Schneider, 2006). The adoption of ICT innovation also creates direct contribution
to economic growth process (Badescu & Garces-Ayerbe, 2009). ICT innovation being considered as a powerful tool for strategy in which it enable many profit-oriented organizations to integrating their activities and providing broadly real time data such as customer relationship management and electronic data interchange (EDI) or internet (Hyvonen, 2007).

A deep knowledge on ICT innovation by an individual within organizational has been proved as the most valuable of organizational assets. Adoption of ICT innovations can only be considered as a success when the ICT innovations is adopted by individuals and integrated into the organizational systems followed by the commitment of individuals to continuously implementing the ICT innovation (Bhattacherjee, 1998). Research suggested and encouraged the adoption of ICT innovations not only for organizational-level communities but also for government-level commitment. Governments are required to more sharply focus their supports to efficiently utilization of the new ICT innovations by investing significant resources and develop major ICT-based program in all relevant sectors (Fernandez-Villavicencio, 2010).

One of the newest and most advanced stage of ICT-related technological innovations is the growing popularity of the usage of social networking around the world (Cheung, Chiu & Lee, 2011). New approach of collaboration and communication results from the growth of the virtual social networks. Facebook, Twitter, MySpace, LinkedIn and Google+ are some of the leading media of social networks that are currently attracting attention of researchers and practitionners internationally. Social network clearly represents the virtual impression of what humans should do: connect and share (Owyang, 2009). Social networking can be defined as virtual communities which allow individuals to connect and communicate with other individuals about a particular topic or about other purposes on an online platform (Cheung, Chiu & Lee, 2011).

### 2.4. Social media and social networking

In the last 5 years, the advent of the newest technological innovation in internet technology has been marked with the tremendous growth of the usage of social networking (Smith & Kidder, 2010), that exploded at an exponential rate (Cheung, Chiu & Lee, 2011) and have become the most effective ICT-mediated communication medium (Counts & Fisher, 2010). Prior studies in management and organizational behavior extensively focused on investigating the very dynamic
atmosphere of social networking phenomena (Sykes, Venkatesh, & Gosain, 2009). The rapid growth of Facebook, LinkedIn, MySpace and other social networking sites are significantly contributing to make social networking as one of the leading area in the information systems field (Liebowitz & Liebowitz, 2008).

Research indicates that social network sites (SNS) reflect sophisticated technology in information and communication context that are generating a huge attention, due to its successful stories in the enrolment of new members at a tremendous rate (Sledgianowski & Kulviwat, 2009). Communication, innovation and collaboration can be generated by implementing social networking in activities of most organizations specifically in the profit-oriented commercial organizations (Liebowitz & Liebowitz, 2008, Talukder, Quazi, and Djalikusumo, 2013). Uzzi and Dunlap (2005) noted three reasons why social network has became so crucial for organisations. These are improving organizational power, accessing specific information, and penetrating towards collect various skill sets for the organisations.

Popularity of social networking portal is attributed to the amount of users who spend their time to access the social networking portal (Cheung, Chiu, Lee, 2011). According to the overall web traffic ranks, the social networking site MySpace ranks sixth overall with more than 47 million visitors every month in US (Dwyer, Hiltz & Passerini, 2007). Furthermore, by the end of 2011, the most popular social networking site, Facebook, has grown to more than 1 billion visitors or members around the world (Laudon & Traver, 2012).

Moreover, social network can benefit individuals or organizations or communities. Research by Johnson & Keuhn (1987) revealed that commercial networks plays a crucial role in providing relevant information more effectively than government sources do. Such networks include vendors or suppliers, research and development based institutions industrial alliances, competitors and specialized agencies (Windrum & Berranger, 2002). Further, Cross and Parker (2004) reviewed social network literature and found invisible capability in social networks. Organisational performance is significantly influenced by network of informal connections and communications. Moreover, the study also revealed that performance, learning and innovation are substantially influenced by the appropriate connectivity in the networks inside the
organizations. For instance, informal communications among its employees can be monitored by IBM’s managers with the objective to generate new ideas (Liebowitz & Liebowitz, 2008). However, research also revealed the negative impact of social media on the legal and ethical issues, particularly individual’s right to privacy (Smith & Kidder, 2010) particularly if businesses try to put applicants’ status and information in Facebook page in consideration for employment decision (Smith & Kidder, 2010).

Ayanso, Lertwachara, and Thongpapanl (2010) argue that social networking sites also enable organizations to:

1. Offer their customers with innovative methods of purchasing such as virtual transactions through sophisticated communications devices,
2. Provides sophisticated medium that enable both parties to build excellent communications such as real time chat, discussion forum and e-mails,
3. Offering alternative transactions using secure and easy methods,
4. Provides after-sales service through the medium that allows their customers to send the feedbacks, suggestions, or even complaints about the products and services.

Sledgianowski and Kulviwat (2009) found that some SNS such as MySpace and Friendster have more than 200 million audiences. Much useful information can be exchanged and delivered instantly as internet has revolutionized the speed, scope and methods in the usage of ICT innovations (Valck, Bruggen, Wierenga, 2009). Most SNS providing fascinating features to help their audience to execute any command and exchange information such as text, photographs, videos, blogs and hyperlinks (Sledgianowski & Kulviwat, 2009). SNS’s tremendous growth is attributed largely to abolition of the membership fees (Sledgianowski & Kulviwat, 2009). Audience need to register and fill the membership forms and provide basic information to enable them to access full features of the SNS.

Moreover, to protect their audiences, SNS have been deploying privacy control setting that enables all members to choose in terms of who can read and respond to the statement made on the members’ wall (Sledgianowski & Kulviwat, 2009). The phenomenon of the explosive growth of virtual social networking such as Facebook, Twitter, MySpace, Youtube and LinkedIn has
also generated much expanded interest on the internet as a new medium (Duan, 2009). Expectations rise when people join social networking sites, in which they first creat a profile and then make connections to existing friends as well as those they meet through the site (Dwyer, Hiltz, & Passerini, 2007). Since the main purposes of virtual social networking is to assist social interactions and connection, the usage of virtual social network is assumed as collective social actions (Cheung & Lee, 2010).

The rapid growth of SNS with huge numbership base has made businesses interested in using SNS in promoting their businesses in terms of putting advertisement on SNS in order to reach potential customes as well as retaining their loyal customers (Sledgianowski & Kulviwat, 2009; Talukder, Quazi, and Djatikusumo, 2013). Furthermore, social signals can be connected to social information that individuals infer from adoption of an ICT innovations by others. For example, through their purchases, individuals may signal either social differences or group identity. Those signals are transmitted to other users, who follow the consumption behavior of people in their aspiration groups (Peres, Muller, & Mahajan, 2010).

Furthermore, prior studies also demonstrated the positive impact that can be provided by the social networking sites. Effectivet relationship and communication among profit-oriented organizations and its customers can be maintained by the social networking sites. Furthermore rapid growth of social networking sites enable organizations or virtual retailers to deliver outstanding and valuable products and services to their current and future customers (Ayanso, Lertwachara & Thongpapanl, 2010). Thus products and services can be delivered to all customers by the company through the innovative methods and sophisticated ICT innovations (Dhabolkar, Bobbitt, & Lee, 2003; Moiltra & Ganesh, 2005; Tarafdar & Zhang, 2005; Udo & Marquis, 2001; Wakefield, Stocks, & Wilder, 2004). The new ICT innovations has now generated expectations amongst organizations that the adoption of ICT innovations will lead to improvement in their performance in the dynamic global market (Ayanso, Lertwachara & Thongpapanl, 2010). Therefore, they transformed their expectation into real investment in ICT innovations.
The involvement of the technological innovations in the business process in order to help profit-oriented organizations achieving economic performance is known as “diffusion” (Peres, Muller, & Mahajan, 2010). One of the main points of view of such definition is the importance of social influence that significantly affect individual’s attitude and behavior toward innovations. For example, an individual within an organization can buy a smart phone to help him or her accessing online information wherever and whenever they want. While one individual derive benefits from the usage of smart phones, others try to imitate the behavior of their colleague. This illustrates how social influence is working to determine individuals’ attitude and behavior in the adoption and diffusion of technological innovations (Peres, Muller, & Mahajan, 2010). One central issue of this analysis is that growth of profit-oriented organizations can be determined by the social network platform (Peres, Muller, & Mahajan, 2010).

In order to build an understanding of technological innovations that would be useful for the businesses and economic growth, it is important to understand the evolution of social network based web that would significantly deliver benefits to organization (Raacke & Raacke, 2008; Smith & Deborah, 2010; Charnigo & Barnett Ellis, 2007; Ellison, Steinfield, & Lampe, 2007; Sledgianowski & Kulviwat, 2009). The evolution of the online social networking as noted by Owyang (2009) involves the following stages (figure 2.2):

1. **Social relationships** is the first stage in which individuals as user of the technological innovations are to learn to recognizing all features of an innovations and then use those features in their interaction and communication with other users.

2. **Social functionality** is the extension of the first stage in which social network sites are re-arranged and its functions re-oriented for building new purposes. Instead of keeping the traditional feature and purpose, social network become more interactive in its new orientation. This will enable most individuals to be closer to each other and improve their 2-ways communications.
Figure 2.2. The Five Eras of the Social Web
Source: Owyang (2009)

3. **Social colonization** is marked with the tremendous explosion of Facebook and mobile smartphone. In this stage, social network transforms all traditional methods of communications into sophisticated methods. Communities from different areas and platforms can help individual connected to each other.

4. **Social context** is the era in which social networking improves the quality of social interaction and communication. In this stage, individual identities such as electronic mail identities become very crucial due to its ability to avoid fraudulence identities.

5. **Social commerce** is the stage where social networking is recognized as having the ability to be better than generic business website and CRM (Customer Relationship Management) systems.
2.4.1. Facebook

Facebook itself being defined by its creator, Mark Zuckerberg, as the social utility with the ability and capability of linking and connecting people around the world with various background and has become a global community (Charnigo & Barnett-Ellis, 2007). Initially Facebook was built and developed to connect and accommodate the communication’s needs of university students. Students who have less time to go to campus and see their colleagues were able to use Facebook to interact with other students, colleagues and friends (Charnigo & Barnett-Ellis, 2007).

One of the main reasons why Facebook became very famous around the world and easily increased the number of users from 100 million to 200 million in just eight months (Smith &
Kidder, 2010) is because the users who had Facebook accounts were able to use many features of Facebook very easily and free of charge (Charnigo & Barnett-Ellis, 2007). Some benefits that can be achieved through Facebook are: uploading personal photos, contact information, photo, audio and video galleries, status updates, searching for other users, posting some messages and or comments on friends’ “walls”, and the ability to choose other registered users to be friends (Smith & Kidder, 2010; Charnigo & Barnett-Ellis, 2007).

Due to its dominance in the area, Facebook will be analyzed and explored in more detail in this chapter. However, other social networking will also be analyzed and discussed. Studies (Cheung, Chiu, & Lee, 2011; Owyang, 2009; Peres, Muller & Mahajan, 2010; Smith & Kidder, 2010; Fernandez Villavicencio, 2010; Valck, Bruggen & Wierenga, 2009; Duan, 2009) strongly argue that Facebook has been growing very fast and are dominating the members of social networking. Facebook is well-known as the largest online content network, the largest social search engine, and the largest social online advertising network (Laudon & Traver, 2012). Less than five years from its first appearance, Facebook has more than 1 billion members around the world (Laudon & Traver, 2012), and became the third largest website behind Google and Yahoo. Created in 2004 by Mark Zuckerberg, Facebook was reported to produce up to 1.6 billion hits per 24 hours cycle (Ellison, Steinfield, & Lampe (2007).

Furthermore, Waters, Burnett, Lamm, & Lucas (2009) argue that social media, including Facebook, offers various ways for many users and individuals to be more integrated with organizations. Moreover, Waters (2009) suggests that using Facebook can help many organizations and individuals to build a strong relationship with important communities, such as stakeholders, around the world. Moreover, being recognized as the largest and biggest social networking sites, Facebook never considered to apply membership fees to its audiences. Its excellent reputation attracted many companies to promote their products and services virtually using Facebook sites (Sledgianowski & Kulviwat, 2009). Therefore, Facebook can generate its income from online advertising. This is justification why Facebook is very useful for adoption by most small and medium enterprises around the world which have limitations in creating official website due to the expense of building official website. However, security and privacy settings
became the main concern and Facebook is considered to be among the worst internet companies (Laudon & Traver, 2012).

Moreover, the root motivation of people to use social networking sites such as Facebook is to create communication and maintain relationships. As argued by Burt (1992), individuals are more likely to prefer to build a relationship and interact with peers who live remotely from their location because useful information from the different perspectives can be obtained from colleagues who infrequently make interaction with other counterparts (Gray, Parise & Iyer, 2011). The popularity among internet users and support of technological abilities to accommodate online and offline connections have lead Facebook to became the most interesting social networking site (Ellison, Steinfield, & Lampe, 2007).

The phenomena triggered by Facebook led it to declare itself the innovator in the virtual commerce world and become a pioneer of the new concept of e-commerce being known as “social e-commerce” (Laudon & Traver, 2012). As a new face of e-commerce and being recognized as a form of social e-commerce, Facebook has a capacity to generate new methods of virtual commerce. Being well known globally as the innovation phenomenon in most aspects of technology, Facebook became the leader in virtual advertising, virtual content, and virtual search engines with more than 80% market share (Laudon & Traver, 2012). Therefore, with all those capabilities and strength, Facebook offered virtual communities the possibility to make transactions or any other businesses-related activities on Facebook accounts.

2.5. Small and medium enterprises

Prior studies provides some evidence showing how important small and medium enterprises (SMEs) are to the economic development of nations (Smallbone & Welter, 2001; Kartiwi, 2006; Kula & Tatoglu, 2003; Locke, 2004; Dholakia & Kshetri, 2004). SMEs are defined as profit-oriented organizations which have fewer than 250 employees (Lawson, Alcock, & Cooper, 2002; Beal & Asri, 2002; Ramsden & Bennet, 2005; Raju, Lonial, & Crum, 2011). Quaddus and Hofmeyer (2007) strongly argued that small businesses being recognized of having a great
influence in the business and economic activities, particularly in the aspects of employment and the share.

However, in some countries in the Asia-Pacific region, there is some difference in how SMEs are defined. In China, organizations are categorized into SME when such organizations have fewer than one hundred employees. In Thailand and Singapore, profit-oriented organizations are categorized into SMEs when those organizations have fewer than 200 employees. Moreover, in Indonesia, according to the rules issued by government (e.g. UU 9/1995 and Inpres 10/1999) SMEs are the businesses which have fewer than one hundred employees and less than 10 billion rupiah. (1US$=11,585 rupiah)

More SME definitions in the Asia-Pasific Region are given in Table 2.1:
Table 2.1. Sample of SMEs Definitions in the Asia-Pacific Region

<table>
<thead>
<tr>
<th>Country</th>
<th>Definition of SME</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Varies with industry, usually fewer than 100 employees</td>
<td>Employment</td>
</tr>
<tr>
<td>Hongkong</td>
<td>Manufacturing – 100 or 50 or fewer employees</td>
<td>Employment</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Small Enterprise: (UU No. 9/1995)</td>
<td>Employment, Assets, Sales volume</td>
</tr>
<tr>
<td></td>
<td>a. Asset &lt; Rp. 200 million (exc. land and building)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Annual sales volume &lt; Rp. 1 billion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Employees: 5-19 people</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medium Enterprise: (Inpres 10/1999)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Asset Rp. 200 million – Rp. 10 billion (exc. land and building)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Annual sales volume &gt; Rp. 1 billion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Employees: 20-99 people</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>Wholesale – fewer than 100 employees or JPY 100 million assets</td>
<td>Employment, Assets</td>
</tr>
<tr>
<td></td>
<td>Service – fewer than 100 employees or JPY 50 million assets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Retail – fewer than 50 employees or JPY 50 million assets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other – fewer than 300 employees or 300 million assets</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>Manufacturing – less than MYR 25 million or 150 employees</td>
<td>Shareholders, Funds</td>
</tr>
<tr>
<td></td>
<td>Service – less than MYR 5 million or 50 employees different for Bumiputra enterprises</td>
<td>Employment</td>
</tr>
<tr>
<td>Philippines</td>
<td>fewer than 200 employees or PHP 60 million assets</td>
<td>Employment, Assets</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>Manufacturing – fewer than 300 employees or KRW 8 billion assets</td>
<td>Employment, Assets</td>
</tr>
<tr>
<td></td>
<td>Wholesale – fewer than 100 employees or KRW 10 billion annual sales revenue</td>
<td>Sales revenue</td>
</tr>
<tr>
<td>Singapore</td>
<td>Manufacturing – fixed assets worth SGD 15 million or less</td>
<td>Employment, Assets</td>
</tr>
<tr>
<td></td>
<td>Service – fewer than 200 employees</td>
<td></td>
</tr>
<tr>
<td>Taiwan</td>
<td>Manufacturing – less than TWD 80 million of paid-in capital or fewer than 200 employees</td>
<td>Sales revenue, Employment</td>
</tr>
<tr>
<td></td>
<td>Other – less than TWD 100 million annual sales revenue or fewer than 50 employees</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>Manufacturing and services – fewer than 200 employees or THB 200 million assets</td>
<td>Employment, Assets</td>
</tr>
<tr>
<td></td>
<td>Wholesale – fewer than 50 employees or THB 100 million assets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Retail – fewer than 30 employees or THB 60 million assets</td>
<td></td>
</tr>
</tbody>
</table>

SMEs have a crucial role for the economic growth of the nation (Oh, Cruickshank, & Anderson, 2009). Significant contributions that can be provided by SMEs (Smallbone & Welter, 2001) are:

a. Participating in modified economic structure development;
b. Developing a strong inventory and supply system for the large firms;
c. Absorbing work force across the countries;
d. Being an agent of technology innovations

Moreover, SMEs can also play an important role in the social transition process from socialist to market-based system (Smallbone & Welter, 2001). Hence, the significant contributions and participation from the government to support SMEs are very important. It is well recognized around the world that SMEs play an important role and have a strong position in every country globally (Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, & Mesiter, 2010). The macroeconomic environment can be a good area to be supported by government. However, there are two different attitudes of the SMEs managers addressing the policies that may be performed by government (Smallbone & Welter, 2001).

In the developed countries with a well-established economy, SME managers assume that the key factors of their organizations’ success are the level of aggregate demand, interest rates, and tax policies. Another study developed by Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, & Mesiter (2010) argues that SMEs have an ability to manage relationships and excellent communications with their customers. This ability significantly assists SMEs to compete against larger rivals. However, in some cases, SME managers in the developing countries face some difficulties that are influenced by the unstable economic conditions of their countries. Moreover, another study conducted by Howard (1997), found empirical evidence that SMEs in her research had negative connection with external resources and SMEs still have problems in accessing expertise consultation (Windrum & Berranger, 2002).
2.6. Innovation adoption in small to medium enterprises (SMEs)

The process of international trade and trade processes has been changed by the development and adoption of ICT innovation, especially in the context of SMEs (Oh, Cruickshank, and Anderson, 2009). Prior studies widely mention that ICT innovation, such as internet technology, is being widely adopted by small and medium enterprises (Kula & Tatoglu, 2003; Locke, 2004; Levy & Powell, 2003; Mehtrens, Cragg & Mills, Cragg, Mills, 2001; Shiels, McIvor & O’Reilly, 2003; Kartiwi, 2006). The impact of technological innovations on small businesses became a very fascinating topic for many researchers in the information system since the advent of microcomputers between the 1970s and 1980s (Southern & Tilley, 2000). SMEs are known as important businesses which form a strong constituent part of the global economy, such as the US economy (Dholakia & Kshetri, 2004). SMEs also have a contribution to make in the development of both national and international economy (Kartiwi, 2006). More than half of all employment and over half of all businesses in developed countries are dominated by small and medium enterprises (Shah Alam & Noor, 2009).

By adopting ICT innovations, most SMEs around the world have the opportunity to achieve some benefits. Those benefits are (Windrum & Berranger, 2002):

1. Opportunity to break the boundaries which means that SMEs have the benefit of expanding their business and going global to the international market,
2. Some major business activities such as the efficiency of procurement, production and logistics can be improved significantly,
3. Having excellent relationship with customers through the improvement of management and communication,
4. Ability to penetrate into the global market, getting new customers, and to create excellent communication with the strategic counterparts in order to improve the supply chain connectivity. SMEs with excellent ICT innovations will be recognized by the international market and automatically their reputation will be improved. Moreover, SMEs will have a good bargaining position in the global market,
5. ICT innovations enable most SMEs to create unique products and services and to generate business concepts for improving the profit and productivity of the firms,
6. SMEs will have the chance to improve their reputation by switching into information-driven organization

It can be concluded that a better economic level can be enhanced by the adoption of ICT innovations (Baliamoune-Lutz, 2003). Nonetheless, there are limited studies in developing countries that focus on in-depth analysis (Baliamoune-Lutz, 2003). Moreover, some studies find that in developing countries ICT innovations did not make a large contribution to the nation’s economic growth (Avgerou, 1998; Morales-Gomez & Melesse, 1998).

In most emerging countries, the growth of the economy and employment were dominated by SMEs (Kula & Tatoglu, 2003). However, their knowledge of the adoption of ICT is very limited (Shiels, McIvor, & O’Reilly, 2003). Resource constraints also push SMEs to struggle with transacting business (Levy & Powell, 2003). This phenomenon leads SMEs to seriously adopt ICT innovations that enable them to survive in a tight competition. The ability to compete against larger businesses will also be improved by adopting ICT innovations (Alberto & Fernando, 2007). ICT innovations enable SMEs to expand their business and reach global markets (Kaplan, Johnson, Pearce, & George, 1997; Coccia, 1997).

However, major SMEs have a weakness in that they are not supported by internal and external expertise responsible for organizing and managing their information technologies (Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, & Mesiter, 2010). Three major problems of most SMEs that are recognized widely are: access to the financial institutions, managerial resources, and time (Windrum & Berranger, 2002). A common constraint for most SMEs is difficulty in accessing financial resources because they cannot provide good organizational governance and have weak information systems. Therefore, most financial institutions or banks do not expect too much from smaller businesses. The financial resources are paying more attentions and alternative negotiation to the larger companies. This is the main reason most SMEs are more sensitive to cost and have no ability to provide dedicated applications due to the expensive price of such applications (Windrum & Berranger, 2002).
Furthermore, managerial aspects also became a major problem that put SMEs into a difficult situation. Lack of knowledge and specific skills are dominantly influencing SMEs’ managers to optimize their effort to organize and manage their organizations (Windrum & Berranger, 2002). Further, it is hard for SME managers to improve their knowledge and skills due to the limited time they have. As a critical factor, ICT innovations such as internet services enable SMEs to enhance a business’s market reach and operational efficiency (Dholakia & Kshetri, 2004). Therefore, SMEs’ constraints such as financial difficulties and managerial problems can be eliminated by those networks. International opportunities for SEMs can be improved by adopting ICT innovations (Lituchy & Rail, 2000). Adopting ICT innovations can help SMEs to get closer to their customers and suppliers (Alam & Noor, 2009), provides direct link to distributors and facilitates transactions, process and information exchange (Kula & Tatoglu, 2003), create new products and services for their new and loyal customers (Walters & Lancaster, 1999), creating virtual communication with customers or advertising in global market (Tiessen, Wright, & Turner, 2001) and improving the profitability (Locke, 2004).

ICT innovations also enable SMEs to keep excellent communication with customers, improve personalization and market awareness, increase customer loyalty, reduce advertising and marketing costs, improve sales volume and generate profitability (Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, & Mesiter, 2010). SMEs’ decisions to adopt ICT innovations are influenced by three main factors; perceived benefits, organizational readiness and external pressure (Mehrtens, Cragg & Mills, 2001). SMEs’ decisions are also influenced by characteristics of the firm and the industry sector that become a key factor in the adoption and exploitation of ICT innovation to support their business process (Shiels, McIvor, & O’Reilly, 2003).

However, a prior study found that most SMEs did not fully adopt ICT innovations to support their communication and relationship with their customers (Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, & Mesiter, 2010). This condition is generated by the fact that access to the financial institution is quite difficult for SMEs. Therefore, major SMEs do not have capability to adopt ICT innovations such as dedicated customer relationship management (CRM) applications (Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, & Mesiter, 2010). Due to financial
difficulties, conditions that have been revealed by prior studies, it is reasonable for SMEs to use generic information technologies that are based on the web platform such as social networking, e-mail, internet websites and non-complicated database (Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, & Mesiter, 2010). Further, Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, and Mesiter (2010) argue that all tools already mentioned are free of charge, less complicated, easy to be implemented, and affordable.

2.7. Adoption practice of ICT innovations in SMEs in Indonesia

Despite the widespread thoughtfulness has been given by both government and academics to motivate SMEs to adopt ICT innovations, very limited research has been developed to investigate the adoption of ICT innovations by SMEs in developing countries (Kula & Tatoglu, 2003; Berry, Rodriguez & Sandee, 2001; Kartiwi, 2006). Though SMEs have some important contributions to the acceleration of the national economy growth, only few researchers are interested in the small and medium businesses (Berry, Rodriguez & Sandee, 2001; Sadowski, Maitland, van Dongen, 2002). Few years later, some researchers began examined the early stage of ICT innovations adoption by SMEs in developing countries (Berry, Rodriguez & Sandee, 2001; Kartiwi, 2006).

Direct contributions are coming from the IT-producing industries while the indirect endowments are generated from the efficient effect of the adoption of ICT innovations (Hernando & Nunez, 2004). ICT innovations is important for organization because the adoption of ICT innovations can create new processing system reducing cost and improving quality as well as customer services. Secondly the adoption of ICT innovations enabling organizations to create new channels for delivery of products and services by changing the competitive conditions and market structures (Badescu & Garces-Ayerbe, 2009). However, Wang and Chien (2007) explain that each country has a different degree and form of ICT innovations development.

In the Indonesian context, SMEs dominantly play an important role in helping the nation improve its economic growth (Hayashi, 2002). SMEs in Indonesia have proven capable enough to survive the financial crisis (Kartiwi, 2006) and are very responsive to the sudden shocks (Berry, Rodriguez & Sandee, 2001). The process of economic growth of developing countries
such as Indonesia can be accelerated by the adoption of ICT innovations which make both direct and indirect contributions. Padmadinata (2007) argues that ICT innovations play an important role to improve SMEs’ capacity to survive global competition. One of the best solutions that was offered was the development of an SME innovation centre.

Empirical evidence shows the abilities of SMEs in Indonesia that made them become very important (Berry, Rodriguez & Sandee, 2001; Hayashi, 2002). Such abilities are: ability to implement ICT innovations, ability to survive in the global dynamic market, ability to improve into larger organization, the contribution to the nation’s economy in terms of number of employees, ability to manage the production factors such as labor and capital, become the pioneer of foundation for industrialization, and ability to distribute fair income to its employees. There is limited research that focusses on the adoption of innovations particularly in the context of the use of Facebook, therefore one of the purposes of this present research is to investigate the impact of Facebook on individual and organizational performance.

However, there is ironical evidence that some indicators to measure degree of innovation or technology reveals that Indonesia is in a low position among other countries. Moreover, in the context of innovation aspect, Indonesia only ranks 51st (Porter & Stern, 2001). Padmadinata (2007) argues that there is a weak relationship between three parties of innovation in Indonesia; industries, government and research institutes.

A significant impact of adoption of ICT innovations on organizational performance has been found in the most recent studies; not only profitability, market value and market share, but also intermediate performance indicators (Bayo-Moriones & Lera Lopez, 2007; Kohli & Devaraj, 2003; Melville, Kraemer, & Gurbaxani, 2004). Significantly, ICT innovations have improved the methods of communication, sales and information exchange in the business processes (Lapierre & Denier, 2005), therefore assisting profit-oriented organizations to improve the competition and survival power in both production and other areas such as promotion and sales (Bayo-Moriones & Lera Lopez, 2007).
2.8. Theoretical framework

The theoretical framework that is developed for this thesis is based on three well established theories which are the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), and on the conceptual framework built by Talukder, Harris and Mapunda (2008). This chapter exposes how the models, developed to examine ICT innovation adoption, have improved over time. The foundation of the model of this research is the Unified Theory of Acceptance and Use of Technology that were initially introduced by Venkatesh, Morris, Davis and Davis’s (2003).

2.8.1. Theory of Reasoned Action (TRA)

Being introduced and proposed by Ajzen & Fishbein in 1975 and 1980, the theory of reasoned action (TRA) was formed from the social psychology setting which is concerned with the factors of consciously intended behaviors (Talukder, Harris & Mapunda, 2008; Al-Gahtani & King, 1999). TRA has been developed and refined continuously for social study purpose (Lam, Cho & Qu, 2007). The TRA conceptual framework is based on a divergence among constructs such as beliefs, attitudes, intentions, and behaviors (Al-Gahtani & King, 1999). In the disciplines of social psychology, TRA also has been applied by researchers to examine human behavior (Lam, Cho & Qu, 2007). Liao and Landry (2000) suggest that individual’s attitudes towards the acceptance of IT have significantly influenced the intention to adopt IT. The usage of information system (IS) can be explained by behavioral intention models or behavioral decision theories (Lam, Cho & Qu, 2007). The study by Lam, Cho, and Qu (2007) found that an effective adoption of IT depends on positive intention towards IT adoption. However, the often paradoxical relationship in IT studies has mostly been influenced by the lack of user acceptance of IT innovations (Agarwal & Prasad, 1998).

Al-Gahtani and King (1999) argue that TRA was developed by distinction among beliefs, attitudes, intentions, and behaviors. Miller (2005) defines all three components of the theory as follows:

1. Attitudes: the aggregate of belief about a particular behavior weighted by evaluations of these beliefs.
2. Subjective norms: the beliefs of people weighted by the importance one attributes to each of their opinion will affect one’s behavior intention.

3. Behavior intention: a function of both attitudes toward a behavior and subjective norms toward that behavior.

According to Ajzen and Fishbein (1980), behavior belief is defined as positive or negative assessment of an individual’s evaluation of performing a certain behavior. Behavior beliefs are described as an individual’s subjective possibility that performing the target behavior will result in consequences and the evaluation term refers to an implicit evaluative response to the consequence (Talukder, Harris & Mapunda, 2008). On the other hand, normative belief is defined as an individual’s opinion of the social pressures to perform or not perform the behavior (Ajzen & Fishbein, 1980). TRA propose that a person’s behavioral intention is strongly influenced by the subjective norms and the person’s attitude about the behavior (Lam, Cho & Qu, 2007). Behavior that developed from an individual’s relative strength of intention is measured by behavior intention.

Belief about the aftermath of performing the behavior accumulated by her or his valuation of these aftermaths are the part of attitude variables. Attitude is described as a person’s perception that implementing the behavior is bad or good, that they are in favor of, or against, implementing the behavior (Talukder, Harris & Mapunda, 2008). Furthermore, individual’s attitudes are described as individual’s feeling of the favorableness or un-favorableness of her/his performance of the behavior. Attitude is the function of evaluation outcomes and behavioral beliefs (Lam, Cho & Qu, 2007). The intention of IT adoption would be affected by employee’s attitude towards the acceptance of IT (Liao & Landry, 2000).

Moreover, Lam, Cho and Qu (2007) also suggested that attitude towards information system is a cumulative belief along with other factors such as self-efficacy, TTF (task-technology fit), and IT beliefs. Moreover, prior study assumed that subjective norms is contemplating the normative belief and motivate individuals to adopt technology innovations. The mechanism of internationalization and compliance can lead subjective norms to directly affect individuals’ usage behavior (Schillewaert, Ahearne, Frambach & Moenaert, 2005). Fusion of perceived
expectations from relevant individual or groups along with intention to comply with these expectations are measured by subjective norm. Taylor and Todd (1995) argue that the subjective norm is a key factor in an organizational setting.

The subjective norm is a function of an individual’s belief that groups or individuals assume that individual should or should not execute the behavior and the individual’s motivation to accord with the referents (Belleau, Summers, Xu & Pinel, 2007). Furthermore, another study also assumed that subjective norms contemplate the normative belief motivating an individual to adopt technology. Therefore, the mechanism of internalization and compliance can lead subjective norms to directly affect individual’s usage behavior (Schillewaert, Ahearne, Frambach & Moenaert, 2005). The original model that was built by Ajzen and Fishbein in 1980 in figure 2.4:

![Figure 2.4. Theory of Reasoned Action (Ajzen & Fishbein, 1980)](image)

Based on their point of view from that model, an individual’s belief might be strongly affected by external factors. However, they did not involve external variables into their model (Igbaria, Zinatelli, Cragg & Cavaye., 1997). Some studies based on TRA showed some weaknesses of the model; such as subjective norms that was found non-significant (Al-Gahtani & King, 1999; Talukder & Quazi, 2011), the low explanatory power of the model, and the contrary relationships among constructs (Sun & Zhang, 2006). Training and support were also recommended by the prior study to be included as a new variable (Lam, Cho & Qu, 2007).
Ironically, the TRA model has been found unable to answer certain research questions and in a current condition the TRA model does not seem sophisticated enough to organize and coordinate much contemporary research (Liska, 1984). Therefore, in order to develop the better research model, this study put some external factors, such as social factors and demographic factors, into the proposed model to improve it over the original model of TRA.

2.8.2. Technology Acceptance Model (TAM)
Firstly proposed by Davis in 1986, the Technology Acceptance Model (TAM) has been dominating the area of IT/IS adoption studies. Originally, TAM was developed with the intention of examining IT adoption at an individual level (Oh, Cruickshank, & Anderson, 2009). Better measures for predicting and explaining IT use is the main objective of the introduction of the TAM, in which the main focus was to examine the new theoretical constructs, perceived usefulness and perceived ease of use (Davis, 1989). This model was modified and developed from the Theory of Reasoned Action (TRA), importantly addressed for describing user acceptance of information technology (Talukder, Harris & Mapunda, 2008, p.465; Kim, Chun & Song, 2009). Previously, a study conducted by Venkatesh and Morris (2000) explained that in the study that focused on the individual diversity and social influence, the TAM model is relevant to predict the relationship between individual behaviour and technology usage.

The model has been introduced to have better predictive validity for both initial adoption as well as continued usage for a variety of information technologies (Karahanna, Agarwal & Angst, 2006). The TAM model proposes that some determinants will significantly influence the decision of each individual about how and when they will use a new technology (Davis, 1989). TAM can be described as a theory that focuses on information systems theory that investigates the relationship between the attitude of individuals to accept and use the technology (Bruner & Kumar, 2005). The major objective of TAM is to measure the impact of two strategic variables dealing with cognitive and affective determinants of technology acceptance (Al-Gahtani & King, 1999).
Two specific variables, perceived usefulness and perceived ease of use, which are hypothesized as significant factors of user acceptance, have been examined using correlation and regression analyses to reveal the empirical relationship with another constructs (Davis, 1989). Perceived usefulness is described as whether the prospective individual user tends to adopt or not to adopt an application to the extent that they admit it will assist them perform their tasks better (Talukder, Harris & Mapunda, 2008). Perceived usefulness was originally described by Davis (1989) as the degree to which the user admits that adopting a particular system would elevate their job performance. On the other hand, perceived ease of use has been defined as the degree to which the user admits that implementing a particular system would be free of effort (Davis, 1989).

TAM believes that actual technology adoption is determined by intention to use, which is viewed as being jointly determined by the person’s attitude toward adopting new technology innovation and perceived usefulness (Nan, Xun-hua & Guo-qing, 2007). Therefore, perceived usefulness and perceived ease of use are those two determinants that importantly have relevance for acceptance of information technology behaviours (Talukder, Harris & Mapunda, 2008; Bruner & Kumar, 2005; Davis, 1989). User intentions are introduced as the direct determinant of usage. Furthermore, as a mediating variable in the model, intentions are having a crucial role for not only indubitable reasons but also rational reasons (Taylor & Todd, 1995).
The structure and core concepts of TAM are shown in figure 2.5:

![Technology Acceptance Model (Davis, 1989)](image)

**Figure 2.5.** Technology Acceptance Model (Davis, 1989).

Usage behavior in this model is developed as a direct function of behavior intention. Furthermore, attitude towards usage is directly influencing behavior intention. Finally, perceived usefulness and perceived ease of use jointly affect attitude towards usage. The most important contribution of this concept is the relative strength of the usefulness-usage relationship compared to the ease of use-usage relationship (Davis, 1989). Moreover, Davis, Bagozzi, and Warshaw (1989) argue that research models ideally are categorized as good, helpful and strong if it has the ability not only to predict but also able to give clear explanation that is useful for researchers and practitioners to identify why a particular system may be acceptable or not acceptable. Therefore, appropriate corrective stages can be provided.

Following the concept established by the theory of reasoned action, TAM proposes that computer usage is significantly influenced by behavioral intentions. However, there is a slight difference between TRA and TAM. TRA proposes that behavioral intention is influenced by an individual’s attitude toward technology adoption and its subjective norms (Davis, Bagozzi & Warshaw, 1989). On the other hand, TAM postulates that an individual’s attitude toward technology adoption is influenced by perceived usefulness and ease of use. A subjective norms construct in the TRA model has been eliminated in TAM since the result of some research that used TRA showed that this construct is not significant as a predictor (Davis, Bagozzi, Warshaw, 1989).
Some studies also reveal the limitations and weaknesses of this model (Sun & Zhang, 2006). The ability to be generalized into other research is debatable due to the lack of consistency in the relationships between constructs, specifically the mediating role of attitude (Lee, Kim, Rhee and Trimi, 2003; Kim, Chun & Song, 2009). The weakness of the explanatory power of the model is the second limitation of TAM (Sun & Zhang, 2006). Furthermore, other studies also reveal the weaknesses of TAM that was developed by Davis (1989). The main critical feedback on TAM comes from Schillewaert, Ahearne, Frambach, and Moenaert (2005) who empirically demonstrate the evidence that TAM is lacking reference from sales and marketing perspectives.

Another weakness of TAM is due to the absence of the concepts about the role of management efforts, such as internal training and management support, for the usage of information technology innovations. Lu, Yao, and Yu (2005) also found that not only TAM, but also the successor, TAM2, failed to involve the crucial determinant, personal innovativeness, in the models. To accommodate the construct, Agarwal & Prasad (1998) conducted research that consists of a new construct which is personal innovativeness in information technology (Lu, Yao, & Yu, 2005).

Future research is recommended to explore how other constructs relate to usefulness, ease of use and acceptance (Davis, 1989). It is suggested that moderating factors be examined to solve the problems of explanatory power and the inconsistencies of the TAM (Sun & Zhang, 2006). Another recommendation also came from Davis (1989) who recommended that future research apply other variables, such as intrinsic motivation to the model already introduced in TAM. This thesis formulates an improved technology adoption model combining various sets of constructs found in prior studies in order to investigate a wider perspective which will be useful to assist future research to learn and understand individual’s adoption of ICT innovations and level of technology usage. With the main objective to refine the predecessor theory, TAM2 (as new model of TAM) was built to accommodate subjective norms as an important construct of perception of usefulness (Venkatesh & Davis, 2000). Therefore, TAM2 consists of three interrelated social factors which are subjective norm, voluntariness, and image (Lu, Yao, & Yu, 2005). However, both TAM and TAM2 fail to be dominant predictors and yield only 40% of predictor value to explain a system’s usage (Lu, Yao, & Yu, 2005). Regarding the weaknesses
of TAM, this present study puts both internal factors and external factors into the proposed model in order to find the better and more comprehensive result.

2.8.3. A Conceptual framework of individual innovation acceptance in organizations

Comprehensive investigations have been conducted to identify factors influencing technology acceptance. However, most of these studies focus just on an individual’s technology acceptance (Frambach & Schillewaert, 2002). Therefore, Frambach and Schillewaert (2002) conducted research that focussed on adoption of technology innovation by organizations. Identification and integration of constructs that impact on the organizations’ decisions of adoption are further steps conducted by Frambach & Schillewaert that followed the development of a research model that accommodates adoption decisions made by individuals together with organizations’ decisions of adoption. The following figure is the conceptual framework of organizational innovation adoption introduced by Frambach and Schillewaert (2002):

![Diagram](image)

**Figure 2.6.:** A conceptual framework of organizational innovation adoption

**Source:** Frambach & Schillewaert (2002)
Systematically, Frambach and Schillewaert (2002) began explaining the determinants of the organizational level adoption, and followed with the model’s development of the individual level of innovation adoption. According to Frambach and Schillewaert (2002), most prior studies examined the dichotomous decision between adoption and not adoption.

Due to its relevance toward theory of technological innovation adoption, some variables of the model that are mentioned above are used in this thesis. Such variables are social networking and size as part of the adopter characteristics variables.

**Figure 2.7.:** A conceptual framework of individual innovation acceptance in organizational

*Source: Frambach & Schillewaert (2002)*

Furthermore, this research also took some variables and made some modification to the model above introduced by Frambach and Schillewaert (2002). Variables that were taken and then
modified were: organizational facilitator, personal characteristics, social usage, and attitude toward innovation.

### 2.8.4. Unified Theory of Acceptance and Use of Technology (UTAUT)

User acceptance of new technology is known as one of the most comprehensive, robust, powerful and influential research topics in the latest information systems literature and has generated some new theoretical models (Venkatesh, Morris, Davis, & Davis, 2003; Yeow, Yuen, & Tong, 2008). Generally, there are two basic motivations - extrinsic and intrinsic motivation - that are extensively investigated and considered as the key factors influencing user acceptance of technology innovations (Davis, Bagozzi, & Warshaw, 1992; Fagan, Neill, & Wooldridge, 2008; Heijden, 2003). Specifically, extrinsic motivation is defined as motivation that is coming or is generated from the external environment – they include rewards or recognition. On the other hand, intrinsic motivation is defined as motivation that comes, or is generated, from the inside of each individual (such as feeling interested, engaged, and satisfied (Lee, Cheung, Chen, 2005)).

Further, Kim, Shim, and Ahn (2011) argue that extrinsic motivation is more likely to have significant influence on adoption of traditional technology. However, since ICT innovations significantly influencing individuals’ lives, both extrinsic and intrinsic motivation also have a crucial impact on adoption of sophisticated technology innovations by individuals (Heijden, 2003; Lee, Cheung, & Chen, 2005; Teo, Lim, & Lai, 1999). Generally, there are two basic motivations, which are extrinsic and intrinsic motivation that have been extensively examined and considered to be the key factors that influence the user acceptance of technological innovations (Davis, Bargozi & Warshaw, 1992; Fagan, Neill, & Wooldrige, 2008; Heijden, 2004). Furthermore, extrinsic motivation is defined as attitude and/or behavior that comes or is generated from the external environment, and intrinsic motivation which is defined as attitude and/or behavior that is triggered by the inner desire to adopt technological innovations (Kim, Shin, & Ahn, 2011).

Furthermore, the Unified Theory of Acceptance and Use of Technology (UTAUT) was initially introduced by Venkatesh, Morris, Davis & Davis (2003) to consolidate prior TAM-related
studies (Marchewka, Liu & Kostiwa, 2007) and they integrated constructs of eight prominent models (Hennington & Janz, 2007). Based on in-depth review of eight highly reputable models, UTAUT became a more powerful predictor of the probability of technology innovations success (Lu, Yao & Yu, 2005). UTAUT is also able to assist in the understanding of the determinant of technology acceptance in order to create management interventions. The four objectives of UTAUT are: to examine the extant user acceptance models; to empirically confront the eight models; to formulate the Unified Theory of Acceptance and Use of Technology (UTAUT); and finally to validate UTAUT. Eight different models from previous studies have been provided to be reviewed in order to get an integrated view of user acceptance and to reveal how the usage of technology is strongly influenced by individual differences (Marchewka, Liu & Kostiwa, 2007).

Previously, many researchers were confronted with the situation where there were various models and theories about user acceptance of new technology areas, and they needed to choose one of them (Venkatesh, Morris, Davis, and Davis, 2003). The diverse models of IT acceptance were completely unified by Venkatesh, Morris, Davis, and Davis (2003) wherein they incorporated the foundations of eight prominent models - TRA, TAM, Motivational Model, Theory of Planned Behavior (TPB), Combined TAM-TPB, Model of PC Utilization, Innovation Diffusion Theory, and Social Cognitive Theory - into a Unified Theory of Acceptance and Use of Technology (UTAUT) (Gupta Dasgupta & Gupta., 2008; Marchewka, Liu & Kostiwa, 2007; Hennington & Janz, 2007). Therefore, review and synthesis are strongly needed to consolidate previous user acceptance studies toward a unified view of user acceptance (Venkatesh, Morris, Davis, & Davis, 2003).

Some recommendations, such as including other constructs and moderating factors that are suggested by previous studies are also accommodated in this model. As suggested by Adam et al. (1992), moderating factors have been applied to UTAUT to examine the relationship between perceived usefulness, ease of use, and intention to use that are moderated by gender, age, gender, experience, and voluntariness of use (Marchewka, Liu & Kostiwa, 2007). Being examined on a large real world data set and due to its objective to integrate and confront eight major theories, the UTAUT model is widely recognized as an important concept, though it does not include cultural factors (Im, Hong & Kang, 2011). The result revealed that intention is significantly
influenced by performance expectancy (Sledgianowski & Kulviwat, 2009). Figure 2.8 shows the UTAUT model.

Figure 2.8. Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, Davis and Davis (2003)

Summary of the finding show that performance expectancy and effort expectancy are statistically significant determinants of intention in most occasions and are moderated by gender and age. Furthermore, the impact of social influence on intention is contingent on all moderating factors while the result is non-significant when the data is analyzed without moderating factors included (Venkatesh, Morris, Davis & Davis, 2003). Based on the model developed in UTAUT, this present study introduced the expanded model that examined the impact of technology adoption behavior on organizational performance in terms of growth, profit and market share.
2.9. Research model

The research model that developed in this thesis is basically modified and adapted from two main theories about an individual’s adoption of technological innovation; firstly, The Unified Theory of Acceptance and Use of Technology Model that have been explored in some prior research by Venkatesh (2003), Hennington and Janz (2007), Marchewka, Liu, and Kostiwa (2007), Talukder, Harris and Mapunda (2008), Gupta, Dasgupta and Gupta (2008), Im, Hong and Kang (2011), and Zhou (2011). This research also adopts the conceptual framework of individual innovation acceptance in organizations that was developed by Frambach & Schillewaert (2002). To accommodate the recommendation from Adam et al. (1992) and Sun & Zhang (2006), this research examined motivational factors and its effect toward ICT innovation adoption.

Moreover, one of the weaknesses of the prior studies of user acceptance is that most of the research was only concerned with one key aspect; the direct impact of determinants (Frambach & Schillewaert, 2002). Previously, there is a lack of clarity in defining the user acceptance in the literature of the research in the information systems area (Davis, Bagozzi, & Warshaw, 1989). Therefore, both direct and indirect impacts of determinants are investigated in this study. All variables as motivational factors are grouped into three main factors which are named as organizational factors, individual factors and social factors.

Detail of the research model of this study shown in figure 2.9:
Furthermore, organizational factors consist of three variables: training, managerial support, and incentives. As mentioned in Frambach and Schillewaert (2002), training, social persuasion and organizational/management support can be categorized into one group. Individual factors consist of perceived usefulness, experience, and innovativeness. Prior studies argue that individually perceived usefulness, innovativeness and prior experience have a significant impact on user’s adoption of technology innovations (Al-Gahtani & King, 1999; Venkatesh & Davis, 2000).

The last motivational factors are social factors which consist of virtual networking, peers, and government’s role. Based on a conceptual framework of organization innovation adoption that was introduced by Frambach and Schillewaert (2002), this present study took out and modified social network and network externality factors and put them as driver factors. Prior studies (Reich & Benbasat, 2000; Ro{u00e0}thaer{u00e9}mel & Sugiyama, 2001; Dwyer, Hiltz & Passerini, 2007; Bruque, Moyano & Eisenberg, 2008-2009; Duan, 2009; Mayer, 2009; Valck, Bruggen &
argue that social network constructs can shed light on the individual’s decision about technology innovation adoption. Similarly, most recent studies (Peres et al. 2010; Smith & Kidder, 2010; Ryymin, Palonen & Hakkarainen, 2010; Fernandez-Villavicencio, 2010; Counts & Fisher, 2010; Wasko & Faraj, 2005; Gray & Iyer, 2011; Goyal & Redondo, 2005; Thomas & Boström, 2011; Berente, Hansen, Pike, & Bateman, 2011; Talukder & Quazi, 2011) empirically suggested that extensive communication between members within social network communities enable organizations and individuals to improve the acceleration and level of adoption of technology innovations. Therefore social networks are significantly influencing an individual’s decision to adopt technology innovations.

Following the definition introduced by Lewis, Agarwal, and Sambamurthy (2003), Talukder and Quazi used “social factors” that developed and derived from social norms (Talukder & Quazi, 2011). Furthermore, Quaddus and Xu (2005) argued that perception of innovation also affected by the external factors such as virtual networking. This thesis makes social factors the main variables, especially the inclusion of two new variables, virtual networking and government’s role, and this makes the research different from previous studies. Virtual networking such as Facebook, Twitter, MySpace, Google Plus, and Blackberry Messenger are parts of the newest ICT innovations that have been famously adopted around the world. However the studies in this area are very limited, especially studies that focus on virtual networking used by small to medium enterprises; for example, studies on the benefit of the usage of virtual networking by SMEs to improve their performance. Government’s roles to encourage and assist SMEs to adopt ICT innovation also receive inadequate attention in MIS theories. Hence, this thesis put these two factors into the original UTAUT model. This research also uses industrial characteristics as moderating variables. Furthermore, another new concept in this research is the introduction of the measurement of the impact of technology adoption behavior on organizational performance in terms of profit, growth, and market share.

The introduction and the induction of these new variables in this research model are triggered by the facts that some factors of the UTAUT model are non-significant when adopted and used by
another research. Effort expectancy that represented perceived ease of use had non-significant effect on usage (Zhou, 2011). Moreover, the influence of ease of use on behavior intention becomes insignificant when the usage experience is increased (Venkatesh & Davis, 2000). Social influence has no significant effect on user acceptance in studies in some countries (Im, Hong & Kang, 2011).
CHAPTER THREE

HYPOTHESIS DEVELOPMENT

This following section is divided into several part based on the model that was developed for the research. The first part describes and explores the variables and analyzes factors that affect individual’s adoption of ICT innovations. Regarding the purpose to explore attitudes of individual toward ICT innovations and subsequent adoption, it is very important to strengthen the knowledge about factors that alter individual attitude and adoption in ICT innovation. There are three main categories of factors or variables: organizational factors, individual factors and social factors. These can be sub-categorized into nine sub-factors with each factor consist of three sub-factors. Those sub-categorized factors are training, managerial support, and incentive that are grouped under organizational factors. A second factor comprises perception of usefulness, innovativeness and experience. Lastly, peers, social-virtual networking and government’s role are grouped under social factor.

Regarding prior studies, all factors that are developed in this research affect and influence individual’s acceptance and use of technology innovations. Moreover, there are some demographic characteristic variables that are involved in the model as moderating factors. Those variables are important in terms of the usage and continuous adoption of ICT innovations.

3.1. Organizational factors

This section will consider factors affecting the adoption of ICT that have been highlighted widely in the information system literature. Taking TRA, TAM, and UTAUT as the core, organizational factors are the first factors in the model and play an important role in the adoption of ICT innovations. Organizational policies, approaches, and actions together with an individual’s attitude are significant in having an influence on adoption of ICT innovations (Peansupap & Walker, 2005). Organizational factors are the result of the development of the prior theory that built by Venkatesh, Morris, Davis and Davis (2003) that well-known as
UTAUT. Originally UTAUT introduced facilitating conditions that are believed to include the availability of training and provision of support (Talukder, Harris & Mapunda, 2008). Furthermore, another study suggests that adoption of new information technology innovations is influenced by facilitating condition factors (Lu, Yu & Liu, 2005). Prior studies included some variables, such as training (Al-Gahtani & King, 1999), managerial support (Ahuja & Thatcher, 2005), and incentive (Bhattacherjee, 1998), under organizational factors.

**Training**

Individuals within organizations are not equally supported by the same capabilities and resources to adopt new ICT innovations (Tarafdar & Vaidya, 2006). Prior studies suggest that training is one of the most important factors that enable individuals within organizations, which have difficulty in adopting new innovations, to improve confidence during the process of adopting new innovations. Training can be defined as activities to improve the technical skill and knowledge of individual employee in an organization (Quazi & Talukder, 2011). Training is also defined as “the degree to which organizations has commanded individuals within the structure in adopting technological innovations both in the context of quantity and quality” (Schillewaert, Ahearne, Frambach, and Moenaert, 2005, p. 327). Therefore, effective adoption of technological innovations and knowledge improvement are the result of the training program that is developed by CEO or the owner of the organization.

Further, an individuals’ confidence to learn and adopt new innovations will be significantly increased with adequate training programs provided by management of the organizations (Quazi & Talukder, 2011). Some cases in Europe show that lack of training became the major factor that stops SMEs adopting internet technology (Lawson, Alcock, & Cooper, 2003). Training plays a crucial role in improving individual capability to learn and adopt new technological innovations (Lee, Kim, Rhee and Trimi, 2006). It can be interpreted that optimum results of the technological innovations adoption yields from the optimum combination of the training and support from the top level management (Schillewaert, Ahearne, Frambach & Moenaert, 2005).

Moreover, Igbaria, Zinatelli, Cragg, and Cavaye (1997) argue that creating useful training about personal computing for a firm’s staffs is a key factor that has a positive impact on increasing
personal computing acceptance, not only in small firms but also in large firms. Potential constraints to adopting ICT innovations can be eliminated or removed by providing education and training (Quazi & Talukder, 2011; Burgess, Jackson & Edwards, 2005). Previous research by Martin & Matlay (2001) also argues that good training that is followed by in-depth analysis will increase the quality of the decisions made by CEOs or owners of smaller firms. Understanding, favorable attitudes, increasing the usage frequency and a variety of applications that can be used in small firms are also the benefits that can be achieved by providing training (Igbaria, Zinatelli, Cragg, and Cavaye, 1997). The individual ability to adopt ICT innovations is significantly affected by the training that is provided by organizations to its employees (Quazi & Talukder, 2011).

Organizational capabilities and their competitive advantages can be generated through the excellent assembling of their resources such as technical know-how and employee training (Bharadwaj, 2000). Individual belief, skill and understanding of new technology innovations will significantly improve when organizations are able to provide good quality training (Ligon, Abdullah & Talukder, 2007). Further, in a knowledge-based economy, some advantages such as improving performance and productivity, improved attitudes, an educated understanding and tolerance, and accelerated competitive development of profit-oriented organizations can be achieved with the empowerment of well trained and educated employees. Moreover, the successful adoption of ICT innovations by organizations is significantly influenced by command/instruction, coaching, and guidance of individuals within organization (Quazi & Talukder, 2011; Yuan, Fulk, Shumate, Monge, Bryant, and Matsaganis, 2005).

Investigations by Lawson et al. (2003) focused on the impact of internal and external support toward SMEs in Australia. The study found that in-house training that is conducted by an internal person is the crucial factor that helps individuals meet the organizations’ strategic plan. Positive achievement on ICT innovations adoption could be generated by providing well-developed training. As a result of this theory, the following hypotheses are proposed:

*Hypothesis 1: There is an impact of internal computing training on attitude toward technology adoption*
Managerial Support

Igbaria, Zinatelli, Cragg, and Cavaye (1997) stated that the main benefit of management support is its ability to promote greater allocation of resources and IS success can be achieved by creating a more conducive environment when management can act as a change agent. Miller and Toulouse (1986) (cited in Igbaria, Zinatelli, Cragg & Cavaye, 1997) argue that, in small businesses, compared to large businesses, company performance was strongly influenced by the attitude of their chief executive officer (CEO). Usually, small firm’s CEOs have a greater influence on employees to make a decision or to create a firms’ strategies. It can be assumed that in small firms, management support is much more important because most key decisions and corporate objectives and strategies are strongly influenced by the involvement of the owner or CEO.

Managerial support plays an important role in assisting an organization’s employees to adopt ICT innovations (Davis, Bagozzi, Warshaw, 1989). An energetic approach by top level management helps individuals within organizations be confident in the process of adoption of ICT innovations (Beatty et al., 2001). In-depth understanding and support from a key person at the top level managerial is needed by employees to maximize the result of the adoption (Chapman et al., 2000; Martin & Matlay, 2001). Previously, Poon and Swatsan (1997) argued that it is important for SMEs to focus on inter-organizational aspects that combine with the usage of the internet to achieve the optimum benefit.

Furthermore, recent studies support those finding in the SME environment. In SME culture, CEOs have a wide range of tasks and are responsible for the organizations’ progression (Windrum & Berranger, 2002). Moreover, it is very common that SMEs’ owners have double roles both as owner and CEO. Many tasks are under their responsibility; such as receiving reports, running daily activities, making strategic decisions, and monitoring company resources. Due to those responsibilities, support of the CEO for adoption of ICT innovations becomes vital, specifically to encourage all employees to adopt ICT innovations (Igbaria, Zinatelli & Cavaye, 1998).
In prior studies Boone (1998) and Campbell, (1998) argue that adoption of technological innovations became very fascinating for employees and improving employees’ motivation to learning new technological innovations if managers of the organizations involving the new technology in the major activities within the organization (Schillewaert, Ahearne, Frambach, and Moenaert, 2005). Individuals within organization who have difficulty adopting ICT innovations can get significant assistance from a person who has power, excellent skills and knowledge, and access to external resources (Sykes, Venkatesh, & Gosain, 2009).

Furthermore, several researchers in the area of management policies suggest that policies and actions that are generated by active management together with beliefs play an important role in individual acceptance of technology innovations (Leonard-Barton & Deschamps, 1988; Schillewaert, Ahearne, Frambach, and Moenaert, 2005). DeLone’s study (1988) (cited in Igbaria, Zinatelli, Zinatelli, Cragg & Cavaye, 1997) found that a CEO’s computer intelligence and active involvement in the computerization efforts strongly influenced the successfully use of computers in small firms. Moreover, the combination of training and management support have been seen as important factors for individuals to achieve good results in the adoption of technological innovations (Schillewaert, Ahearne, Frambach, and Moenaert, 2005).

The following hypothesis is proposed:

**Hypothesis 2:** There is an impact of management support on attitude toward technology adoption

**Incentives**

Prior studies indicate that key factors of the adoption of technological innovations are not only influenced by individual beliefs, attitudes or intentions. Beyond those factors, innovation adoption is significantly influenced by management’s policies, decisions, actions and strategies (Leonard-Barton & Deschamps, 1988; Bhattacherjee, 1998). Nonetheless, some evidence shows that most studies of users’ acceptance and technology adoption focused on an examination of the impact of individual factors, such as attitude and beliefs, and managerial factors, such as support and incentives separately. There is limited study that focuses on the connection between those factors (Bhattacherjee, 1998).
On the other hand, some studies have empirically explained that “incentives” is one of the most influencing determinants of an individuals’ behavior within organizations (Bhattacherjee, 1998). Incentives are part of rewards and punishment systems within organizations. Further, Currid (1995) posited that money is not the only type of incentive. There are some other types of incentive such as promotion, and national and international acknowledgement. Moreover, there are two forms of incentive that are usually distributed by management to their employees (Bhattacherjee, 1998). Those forms are level-based and type-based incentives. Specifically, level-based incentives refer to high and low incentive, while type-based incentive refer to behavior-based and outcome-based incentive (Nilakant & Rao, 1994).

The forms of incentive that are mentioned above are described in more detail in other studies. As part of level-based incentives, the high-levels incentives enable individuals to improve their motivation to maximize technological innovations in their own approach in order to meet with the management’s requirement (Bhattacherjee, 1998). Previously, Howard and Mendelow (1991) conducted research on faculty members of a business school to determine the impact of incentive on the adoption of technological innovations. The findings of the research pointed out that adoption of technological innovations was significantly determined by incentives (Bhattacherjee, 1998).

Incentives such as commissions and recognition were given to the potential employees who showed the good performance while punishment or penalties such as threats and demotion were given to employees who showed low performance. Managers typically demand their employees to demonstrate their performance, and managers will usually present the employees with good rewards. To achieve the organization’s goal, such as productivity gains and improved profits, managers typically give incentives to motivate their employees to improve their performance (Bhattacherjee, 1998).

Talukder, Harris & Mapunda (2008) suggest that incentives are often a powerful trigger for employee behavior in adopting a technological innovation. The individuals’ motivation to adopt ICT innovations will significantly improve when high levels of incentives are presented to them.
(Bhattacherjee, 1998). However, the incentives that have been given to employees must not be financial only (Currid, 1995). Other forms of incentives, such as public recognition and activities agenda, can be as equally effective over the long run as bonuses or income raises (Bhattacherjee, 1998).

Traditionally, incentives occur due to the lack of interest between management and employees during the period of adoption of technological innovations. Management typically assume that organizational benefits can be achieved by adopting information technology and require all employees to appropriately utilize those technological innovations (Leonard-Barton & Deschamps, 1988; Bhattacherjee, 1998). On the other hand, employees as individuals, have their own values and interests, such as holiday and career advancement. Therefore, there can be a conflict of interest between management and employees. In this situation, incentives are very crucial to accommodate both interests.

There are some types of incentive that can be provided by management. Individual behavior may be the basis for determining incentives, for example hourly wages, for technological innovations usage. Another type of incentives is an incentive, such as commissions, that is based on the outcomes of individual behavior (Bhattacherjee, 1998). Sappington (1991) identified the benefits of each type of incentive from both management and employee perspectives. According to Sappington (1991), management prefers to implement outcome-based incentive due to the ability to transfer the risks of irrelevant behavior to employees and make them accountable for the realized outcomes.

Moreover, incentives that are based on individual behavior guarantee individuals from damaging outcomes due to non-use of technological innovations. Hence, may induce them to avoid from innovations usage (Sappington, 1991). Furthermore, the earlier study by Eisenhardt (1985) in a survey of sales persons, suggests that commissions as part of outcome-based incentives are significantly more effective than salaries (behavior-based incentives). Another method of providing incentives can be implemented by organizations which have limited resources (Sappington, 1991). Such a method is a simple approach called “tournament” or promotion in
which incentive are given to employee who have the best performance among other employees within a group of employees (Sappington, 1991).

_Hypothesis 3: There is an impact of incentive on attitude toward technology adoption_

**3.2. Individual Factors**

Lewis, Agarwal, Sambamurthy (2003) argue that one of the most important factors that influence the adoption of technology innovation are individual factors. Moreover, prior studies argue that personal innovativeness, prior experience, and perception of usefulness are part of individual factors that play an important role (Davis, 1989). Those factors significantly influence an individual’s adoption of technological innovations (Al-Gahtani & King, 1999; Venkatesh & Davis, 2000; Lewis, Agarwal & Sambamurthy, 2003; Talukder, Harris & Mapunda, 2008). Furthermore, some recent studies also suggest that individual factors such as personal innovativeness, perceived usefulness, image, prior experience, and enjoyment of innovation have a significant contribution to an individual’s adoption of technological innovation (Lewis, Agarwal, Sambamurthy, 2003).

Innovation is more likely to be adopted if an individual thinks that the use of a new system will enhance the effectiveness and efficiency or offer a greater control over the task (Lee, 2004). A more recent study by Lee, Kim, Rhee and Trimi (2006) suggest that an individual’s characteristics are an important determinant in managing information system success. The determinants that will be used in this study are mentioned below.

*Perceived Usefulness*

The acceptance or rejection of adoption of technological innovations by individuals within organizations is strongly influenced by their understanding of the usefulness of the new technology. Individuals tend to adopt or reject new innovations depend on their assumption about whether the new innovations bring benefits or not to their work performance (Talukder, Harris, & Mapunda, 2008). It means that individuals have an opinion or perception that can be identified as perception toward usefulness of the new innovations. Perceived usefulness can be
defined as “the degree to which an individual considers that adopting particular technological innovations would improve his or her working performance” (Davis, 1989, p. 320)

Moreover, in recent studies, Sun & Zhang (2006) cite that usefulness is defined as the degree to which a person believes that using a sophisticated technology will improve his performance. Has been believed as of a key factors, perceived usefulness factors has a significant influences toward user technology adoption and therefore has received a big attention from prior researchers. Most studies show that perceived usefulness has a significant contribution to attitude, behavior, or usage (Sun & Zhang, 2006). Kim, Chan and Gupta (2007) argue that usefulness is the total value an individual as user perceives will be gained by adopting technological innovations.

Originally, Davis (1989) argued that a system is considered very useful by individual as users if they believe that the system can provide a positive impact on the individual’s performance. Davis (1989) significantly demonstrated that perceived usefulness has a strong and consistent correlation with system use. This finding is supported by other studies such as that by Al-Gahtani and King (1999) and Igbaria (1993). Both studies similarly argue that perceived usefulness significantly influences system usage.

More recent studies identified the importance of perceived usefulness as one of the most powerful predictors and significant determinants at all points of measurement (Venkatesh & Davis, 2000, Venkatesh, Morris, Davis & Davis, 2003). Technological innovations are more likely to be adopted and implemented when they are perceived to offer benefits to individuals (Talukder, Harris & Mapunda, 2008). Moreover, if technological innovations offer efficiency and effectiveness to the job within organizations, then such innovations are more likely to be adopted by individual within the organization (Lee, 2004).

**Hypothesis 4:** There is an impact of perceived usefulness on attitude toward technology adoption
Experience

Initially introduced by DeLone (1988) in the research that took small businesses in the US as the sample, individual experience was identified as a factor that was very important for management and all employees within organizations. DeLone (1988) argued that the knowledge of owners and CEOs of small businesses can be upgraded by their experience with using computers. Then, based on such knowledge that already improved, owners and CEOs are able to manage and maintain the technological innovations that adopted by their organizations. As a result, excellent treatment and management of technological innovations that was based on prior experience in using computers led the small businesses to achieve excellent results from the adoption of technological innovations.

Furthermore, experience is measured by the number of years a user has with computers in general (Venkatesh & Morris, 2000) and a dummy variable that deploys ordinal values to catch the developing levels of user experience with the technology (Venkatesh, Morris, Davis & Davis, 2003). Several studies argue that experience influences the correlation between (1) behavior intention and usage; (2) perceived usefulness and behavior intention; (3) perception of ease of use and attitude; and (4) subjective norms and perceived usefulness (Venkatesh & Davis, 2000; Venkatesh, Morris, Davis & Davis, 2003). Moreover, experience referred to an individual’s experience with innovation and overall skills of adopting technological innovations (Talukder, Harris & Mapunda, 2008). Similar definitions of user’s experience in adopting technological innovations or systems have been used and investigated in other studies (Igbaria, Guimaraes & Davis, 1995; Igbaria, Parasuraman, & Baroudi, 1996).

Individuals within an organization with prior experience in adopting innovations are likely to improve in confidence during the process of adopting technological innovations (Igbaria, Parasuraman, & Baroudi, 1996; Talukder, Harris, & Mapunda, 2008). However, unsuccessful experiences of adopting technological innovations may amplify an individual’s beliefs that they have learned from those experiences and try not to fail in the future (Farr & Ford, 1990, cited in Talukder, Harris, & Mapunda, 2008). Reducing anxiety and building confidence are generated from the prior experiences and familiarity with adoption of technological innovations (Fuller,
Vician, & Brown, 2006). Furthermore, system usage is positively impacted by prior experience of individual (Lee, Kim, Rhee, and Trimi, 2006).

In-depth investigation conducted by DeLone (1988) yielded a strong recommendation for future research. DeLone (1988) suggests that the biggest contribution of the research is the conclusion that individuals with strong computer literacy within organizations will significantly help small businesses gain excellent achievement in technological innovations adoption. Technological innovations will be adopted successfully by SMEs when CEOs and the owners have excellent experience with such innovations. Therefore, individual experience significantly influences the result of the adoption of technological innovations (DeLone, 1988, p.57). Further, DeLone argues that individual experience is the key factor for the long-term operation of small businesses but not only for organizations at the beginning level but also for higher level organizations (1988, p. 57)

Hypothesis 5:  There is an impact of individual experience on attitude toward technology adoption

Innovativeness

Personal innovativeness is defined as the willingness of an individual to learn and adopt any technological innovations (Agarwal & Prasad, 1998; Lewis, Agarwal, & Sambamurthy, 2003; Thatcher, Stepina, Srite, & Liu, 2003). According to Agarwal and Prasad (1998), in the context of technological innovations, individual innovativeness can be defined as personal ability that is related to positive attitudes toward adoption of technological innovations and usage. Researchers of innovation diffusion have long recognized that highly innovative individuals actively pursue information about new concepts. Individuals with higher personal innovativeness are expected to build more positive beliefs about the target technology. They are also expected to develop more positive perceptions about the innovation in terms of advantage, ease of use, and compatibility (Lu, 2005).

Agarwal & Karahana (2000) have developed a multidimensional construct called cognitive absorption and suggested this construct to be an antecedent of the two commonly recognized
behavioral beliefs about technology use: perceived usefulness and perceived ease of use. Furthermore, a recent study by Yi, Jackson, Park and Probst (2006, p. 356) posited that “some individuals are more willing to take a risk by adopting technological innovations, while others are hesitant to change their practice”. Moreover, most organizations seriously focus on encouraging their employees to improve their motivation on adoption of technological innovations (Talukder, Harris, & Mapunda, 2008). However, some individuals are more ready to adopt such innovations while others are not. Individuals who are ready to adopt technological innovations will develop their beliefs about such innovations by harmonizing information that they collected from various sources (Rogers, 2003).

Agarwal and Prasad (1998) clearly explain that the ability of individuals to adopt technological innovations within their organization is significantly determined by each individual’s personal innovativeness. Innovativeness may determine perception of individual toward technological innovations (Yi, Wu & Tung, 2006). Another study (Frambach & Schillewaert, 2002), focusing on an individual’s behavior toward technological innovations, mentioned that individual innovativeness is the congenital habit of an employee to adopt technological innovations. Moreover, Rogers (2003) also posited his argument that innovativeness is the time at which individuals adopt such innovations during the diffusion practice. In an earlier study Leonard-Barton and Deschamps (1988) argue that the achievement of technology implementation within organizations is strongly influenced by the innovativeness level of individuals (Lee, Kim, Rhee and Trimi, 2006). Further, Zmud (1984) argues that the satisfactory innovations are significantly influenced by the level of innovativeness of organization members (Lee, Kim, Rhee and Trimi, 2006).

Individuals who adopt technological innovations at the beginning stage of the diffusion practice can be categorized as innovative individuals. Therefore, it can be expected that a more positive attitude toward adoption of technological innovations can be generated by individuals with higher personal innovativeness (Agarwal & Prasad, 1998; Lewis, Agarwal & Sambamurthy, 2003). Further, Lee, Kim, Rhee and Trimi (2006) conclude that the key to success of adoption of technological innovations within organizations is determined by the innovativeness level of their employees. Therefore, individuals with a high level of innovativeness within organizations will
demonstrate more enthusiasm towards adoption of technology innovations (Frambach & Schillewaert, 2002).

Moreover, it has been recognized for a long time that extreme desire to find unique and sophisticated ideas is a characteristic of the highly innovative person (Lu, Yao, and Yu, 2005). They have excellent ability and capability to deal with any turbulent environment, and are therefore able to generate more constructive intentions toward acceptance (Rogers, 1995). Agarwal and Prasad (1998) introduced new a construct, personal innovativeness, into Davis’s original TAM. They pioneered the use of specific measurement for the innovativeness construct. Further, innovativeness has been defined as a unique character that does not belong to every single individual. It just belongs to individuals who are categorized as risk-takers in the adoption of technological innovations (Lu, Yao, and Yu, 2005).

Hypothesis 6: There is an impact of individual innovativeness on attitude toward technology adoption

3.3. Social factors

Venkatesh & Brown (2001) argue that social factor is defined as the extent to which members of social society influence one another’s behavior in technology adoption. Individual adoption of technological innovations is triggered by the social environment (Talukder, Harris and Mapunda, 2008). Social influence is defined as the degree to which members of a social group determine one another’s behavior in adoption of innovations (Venkatesh & Brown, 2001; Konana & Balasubramanian, 2005). Social influence is perceived as insistence and encouragement that makes peers feel some pressure and influence to adopt a technology innovation and this effect is applied through messages and signals that support the building of perceptions of the value of a technology (Fulk & Boyd, 1991).

Based on this argument, perceived social pressure is assumed to have a bigger effect on new technology adoption by employees than does its usefulness. Prior studies from Lucas and Spitler (1999) and Venkatesh and Davis (2000) mentioned that organizational variables, such as social norms, are more important than an individual’s perception of the ICT innovations for estimation
of systems usage and acceptance (Lam, Cho, and Qu, 2007). Such influence was initially derived from a previous concept that was introduced by Ajzen and Fishbein (1980) as normative belief about the relevance of adoption of technological innovations. The main point of this concept is that perceived social pressure is considered more important than innovation usefulness as the key factor in the adoption of technological innovations by employees within organizations.

Hossain and Silva (2009) also argue that previous studies of social information processing models (SIPM) show that socially informed beliefs and perceptions have an impact on ICT usage behavior. Moreover, Windrum and Berranger (2002) argue that excellent external advice provided by consulting agencies to SMEs significantly influences the satisfaction level of the adoption of ICT innovations. This happens in the SMEs which already have external consultant agencies. Empirical evidence from several studies shows that social factors are significantly more important than economic factors as a key driver in adoption of technological innovations by individuals within organizations (Peansupap & Walker, 2005).

Furthermore, by involvement within virtual networking, individuals are able to share information and the sustainable communications within society are able to generate trust (Rothaermel & Sugiyama, 2001). Further, Lu, Yao, and Yu (2005) posited pressure from social networks that influences an individual’s decision to adopt or reject technological innovations can be categorized as social influence. Moreover, Cooper and Zmud (1990) argue that in the areas of innovation diffusion studies, social influence plays an important role. Basically, as individuals need communication and interaction with other persons, they are naturally willing to live and work with their community. Moreover, they also need to communicate, socialize, and have some interactions with others. When they are faced with critical decisions in the context of adoption of new technological innovations in their work place, then they tend to reduce risk and discomfort (Lu, Yao, and Yu, 2005).

Some empirical evidence in the previous studies found that social influence has similar characteristics to subjective norms in TRA (Agarwal & Karahanna, 2000; Green, 1998; Karahanna & Straub, 1999; Lewis, Agarwal, Sambamurthy, 2003; Taylor & Todd, 1995; Lu, Yu, Liu, Yao, 2003; Lucas & Spitler, 2000, Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, and
Davis, 2003). Moreover, Taylor and Todd (1995) clearly describe social influence or social network as colleagues’ opinions, superior influences, and other individual’s influence. Further, this constructs was enlarged by Karahanna and Straub (1999) into three main components which are subjective norm, image, and voluntariness.

Virtual Social Network
Initially, a social network was defined as the degree to which individual employees are affected by individuals within groups of other organizations (Lewis, Agarwal & Sambamurthy, 2003). Virtual networks can be mentioned as virtual communities and are defined as accumulations of internet users who develop websites of personal interactions (Spaulding, 2010). Social network is also defined as the extent to which individuals are influenced by other individuals of other organizations (Lewis, Agarwal, Sambamurthy, 2003). Further, prior studies also suggest that adoption of technological innovations is significantly affected by external counterparts (Standen & Sinclair-Jones, 2004; Khoumbati, Themistocleous, & Irani, 2006). Some pressure on individuals within companies to adopt technological innovations could be perceived as coming from people in social networks, which include virtual networks (Talukder, Harris & Mapunda, 2008).

Virtual networking also offers the chance for all individual to penetrate into the future of website technology that provides various benefits for the users (such as real-time format of social and economic communications). Another benefit that can be achieved by individuals within virtual networking is the chance for individuals to provide fascinating profiles that consist of assorted information about individuals (Messinger, Stroulia, Lyons, Bone, Niu Run, Smirnov, & Perelgut, 2009). Moreover, in the virtual social networking context, individuals who are involved in high technology-based networking are required to provide high quality information for their colleagues. Such information is crucial as guidance for other individuals in the process of adoption of technological innovations (Brown & Venkatesh, 2005).

Moreover, virtual social networking as the newest development of the internet technology represents the sophisticated information and communication technology that accommodates communication between individuals virtually (Zhou, 2011). The acceleration of the adoption of
technological innovations can be achieved by communication sustainability between members within social networks. Moreover, world-wide communities that are virtually connected by the internet have been generating virtual economies (Shin, 2008; Spaulding, 2010). Millions of people involve in the virtual environment have a new interest in it for business purpose (Shin, 2008). Many activities, such as messaging, object and money exchange, and payment of bills, can be done by members of the virtual world (Messinger, Stroulia, Lyons, Bone, Niu Run, Smirnov, & Perelgut, 2009).

Moreover, millions of individual within virtual networking are able to exchange information and generate economic activities (Rothaermel & Sugiyama, 2001). Societies such as Facebook members, develop graphical interfaces for business purposes in order to provide appropriate devices for potential advertising (Spaulding, 2010). New trends in the dynamic atmosphere of the virtual world have significantly shifted the individual’s orientation to utilizing the virtual world for real economic purposes (Shin, 2008). Being recognized as a “information superhighway” (Messinger, Stroulia, Lyons, Bone, Niu Run, Smirnov, & Perelgut, 2009), virtual networking rapidly became very interesting for most organizations and individuals to involve within sophisticated high technology innovations (Wasko & Faraj, 2005).

A most recent study also supports findings provided by prior studies. Sarker, Ahuja, Sarker, and Kirkeby (2011) argue that networks that are adopted by individuals within organizations can improve an individual’s performance. Appropriate networks have also become crucial resources that provide social support to all individuals within organizations. To maximize the knowledge improvement about technology innovations, and in order to generate attitude, individuals within organization can be assisted by excellent social encouragement and society communication (Kraut, Rice, Cool, & Fish, 1998). The spread of information about the benefit of adoption of technological innovations is significantly facilitated by participation of individuals within organization in informal communication within their social networks (Talukder, Harris, & Mapunda, 2008).

Adoption of innovations on information and communication technology can be accelerated by the usage of virtual social network as a media to communicate with other members within
organizations and other members from other organizations (Talukder & Quazi, 2011). There is a significant relationship between social networks and individual’s use of technology (Skykes, Venkatesh, and Gossain, 2009). Social influence and intention to use mobile technology innovations also has a strong relationship (Lu, Yao & Chun-Shen, 2005). Informal individual networks have a crucial impact on the transfer of knowledge process within organizations (Reagans & McEvily, 2003). Moreover, those informal social networks connect most members within the same organization or organizations in different industries (Frambach & Schillewaert, 2002).

In virtual networking, individuals are able to learn about various innovations and practices that are useful to them (Messinger, Stroulia, Lyons, Bone, Niu Run, Smirnov, and Perelgut, 2009). Therefore, various information and communication technologies are significantly useful for individuals and save the energy they use to seek information from various sources within organization.

**Hypothesis 7: There is an impact of virtual networks on attitude toward technology adoption**

**Peers**

Peers can have an important role within organizations. They can contribute useful activities such as providing significant advice about individual performance and also discuss mutual; connection (Kohli & Jaworski, 1994; Fine & Bolman Pullins, 1998; Schillewaert, Ahearne, Frambach, and Moenaert, 2005). Perception of value of technology can be formed through signals and messages that are delivered by peers (Talukder, Harris & Mapunda, 2008). Some previous studies, implicitly define social influence as a subjective norm (Lam, Cho, and Qu, 2007). In an organizational structure or platform, subjective norms have an important role (Taylor & Todd, 1995).

Social influence is defined as pressure on an individual’s to perform a given behavior and the individual’s motivation to comply with those pressures (Lam, Cho, and Qu, 2007). Moreover, normative beliefs introduced by Ajzen and Fishbein (1980) in the TRA model, are also defined by Lam, Cho, and Qu (2007) as an individual’s ability to comply with the expectation of other
persons such as family or friends, managers, or the broader society. Moreover, another study defines normative beliefs as “peer usage” (Talukder & Quazi, 2011).

Employees within organizations are significantly impacted by their counterpart’s encouragement, and motivation, and moral support from peers. Basically, as social human beings, individuals within organizations also need communications and interactions with others. Specifically, they want to get advice from their colleagues when they have problems in their workplace (Lewis, Agarwal, & Sambamurthy, 2003; Yuan, Fulk, Shumate, Monge, Bryant, & Matsaganis, 2005). The importance and benefits of adoption of technological innovations within organizations reflects on the behavior of peers who enthusiastically involved in the process of adoption of technological innovations. That is why most employees within organizations are interested to observe their counterparts’ activities and then to try to replicate what is done by their colleagues (Frambach & Schillewaert, 2002).

Further, adoption of ICT innovations can be well-executed through excellent communication between individuals within organizations that generate powerful synergies (Sykes, Venkatesh, & Gosain, 2009). Key persons within organizations have a significant role in influencing the performance of their colleagues through their ability to influence other members within the organization (Sarker, Ahuja, Sarker, & Kirkeby, 2011). Moreover, external pressure created by colleagues can be categorized and assumed as social influences that influence individuals’ decisions to adopt ICT innovations (Sykes, Venkatesh, & Gosain, 2009). Some earlier studies suggest that the key to success of technological innovations within organizations is significantly determined by quality of the communication and interaction between employees and their peers (Davis, Bagozzi & Warshaw, 1989; Sykes, Venkatesh, & Gosain, 2009). Brancheau and Wetherbe (1990) demonstrate with the empirical evidence that both management and peers are share the contribution towards decisions to adopt technological innovations.

*Hypothesis 8: There is an impact of peers on attitude toward technology adoption*
**Government’s Role**

Thong (1999) found that public and private SMEs in Singapore were significantly supported by the government to adopt ICT innovation. Governments are expected to be active in supporting innovation transfer (Fujisue, 1998; Crow and Nath, 1990, 1992). Political decisions have become a fascinating issue and attract the attention of academia (Bozeman, 2000; Djiatikusumo, Talukder, and Quazi, 2012). ICT usage and improvement of the organizational performance and productivity can be stimulated by providing accurate policies to promote ICT innovations adoption (Bayo-Moriones & Lera-Lopez, 2007). Interaction with the global community is enabled for many businesses by the support of its agencies and government (Beal & Abdullah, 2002).

Some studies show some evidence of the contributions and significant efforts of governments to support the adoption of ICT innovations. The role of government is more important in the profit-oriented organizations which have limited access to financial resources, such as SMEs which absorb a significant number of the workforce around the country (Baum & Szivas, 2008). Furthermore, some relevant support from government for SMEs can vary from creating policies and operational direction, and encouraging skill improvement to providing access to the high-end expertise (Baum & Szivas, 2008). The government’s biggest project in the US from the year 1980 to 1989 was to improve the domestic adoption of ICT innovations (Bozeman, 2000). Surprisingly, the trend to a more active contribution from governments in providing significant assistance also happened in other countries (Fujisue, 1998).

Moreover, Bozeman (2000) suggests some contributions that can be generated by governments to encourage the successful adoption of ICT innovations. Firstly, governments can involve university research and development departments in the program of encouraging individuals and organizations to adopt ICT innovations. Secondly, governments can organize and create good plans to support the development of civilian technology innovations. Thirdly, action is needed by government to synergize the government and university laboratories in generating technology innovations to be used by private sectors. Fourthly, Bozeman (2000) recommends intensive and continuous programs from both federal and university laboratories to develop technology-based economics.
Furthermore, technology development and transfer has to be supported by the active role of government actors and universities. Research performance, supplying applied research and technology to industry and developing policies, are activities that can be generated by government to support small and medium enterprises (Bozeman, 2000). By developing strong and adequate knowledge of the determinants of ICT innovations adoption, governments are also expected to make appropriate decisions that enable profit-oriented organizations to adopt ICT innovations (Bayo-Moriones & Lera Lopez, 2007; Djatikusumo, Talukder, and Quazi, 2012). It has prompted governments to take some significant actions that could potentially accelerate the improvement of business performance and growth (Locke, 2004). In addition, the current governments can take a crucial position in assisting SMEs to improve their growth and bargaining position in a global market by providing ICT innovations across all sectors of the community and the economy (Southern & Tilles, 2000).

Due to the ability of small profit-oriented organizations to generate job opportunities and contribute to the national economic growth, government must play an important role in supporting SMEs across the nation (Baum & Szivas, 2008). Furthermore, government should be active to introduce the cooperative technology policies that are useful to industries, especially to low resources access industries (Bozeman, 2000). Specifically, in developing countries, the role of government is considered the main factor for support of smaller enterprises in their utilisation of ICT innovations (Kraemer, Gurbanxani, & King, 1992; King et al., 1994; Thong, 1999). Moreover, to support the improvement and development of small and medium enterprises (SMEs) across the countries, governments can deploy their influence at the macroeconomic level in which businesses operate (Smallbone & Welter, 2001). Governments can play a key part in assisting SMEs improve the economic growth and development of the country (Baum & Szivas, 2008). Policies that are introduced by government have to accommodate the interests of two parties, SMEs and large companies, equally.

Policies that are neutral in all aspects seem to be unfair due to the different circumstances of large companies and SMEs (Bolton Committee 1971 cited in Smallbone & Welter, 2001). It means that because SMEs have limited resources governments have to pay more attention to
SMEs. A study by Baliamoune-Lutz (2003) found that ICT innovations adoption is significantly determined by the policies that are introduced by government. However, low commitment and unlawful attitude of some people inside government push SMEs into a deep valley. SMEs are quite often assumed to be revenue centres for state authorities instead of a potential part of economic growth of the country (Smallbone & Welter, 2001).

Some policies that are relevant to the SMEs condition, such as direct support policies and programmes, are urged to be generated by government to support small size organizations solve the size-related problems and weaknesses (Smallbone & Welter, 2001). For instance, in Europe, in this case Hungary and Poland, policies such as administrative reforms and approval for SMEs to set up on a large scale, are generated by the government as a part of the programme to assist SMEs across the countries. Additional policies that relate to the size-related weaknesses are increasing individual capability and capacity inside the society and, specifically, among people of productive age. These policies are important for the whole activities and therefore giving some advantages for the profit-oriented organizations (Baum & Szivas, 2008). Further, Smallbone and Welter (2001) argue that the justification of this argumentation is the fact that though SMEs able to provide potential economic benefits and, significantly, have an ability to contribute to the economic growth, most SMEs lack the ability to execute and achieve due to the size-related weaknesses.

Due to the importance of ICT innovations in the current era, all governments around the world should be more active in their encouragement of SMEs and adoption of ICT innovations to generate new and innovative ICT-based projects (Fernandez-Villavicencio, 2010). Therefore, the current priorities to support SMEs such as developing relevant institutions (Smallbone & Welter, 2001) and inducing adoption of ICT innovations (Oh, Cruickshank, and Anderson, 2009) have to be implemented immediately. Moreover, selective interference to motivate and assist SMEs to adopt ICT innovations and to assist SMEs to achieve excellent performances is also urged (Smallbone & Welter, 2001).

**Hypothesis 9: There is an impact of government’s role on attitude toward technology innovation adoption**
3.4. Demographics factors

Previous literature shows that gender is regarded as one of the most influential factors in area of individual acceptance of technology innovations research (Gefen & Straub, 1997; Venkatesh & Morris, 2000; Venkatesh, Morris, Davis & Davis, 2003; Bhatnagar & Ghose, 2004; Lerouge, Newton, & Blanton, 2005; Sanchez-Franco, 2006; Yi, Wu, & Tung, 2006; Talukder & Quazi, 2011). However some empirical results surprisingly show a contradictory yield. Venkatesh, Morris, Davis, and Davis (2003) show contradictory results in their research, specifically in the factors of performance expectancy, effort expectancy, and social influence. In the performance expectancy factor, the effect of performance expectancy toward behavior intention was significantly higher for men than for women (Venkatesh, Morris, Davis, & Davis, 2003). However, in effort expectancy and social influence factors of behavior intention, women are significantly higher than men.

Furthermore, an investigation conducted by Lerouge, Newton and Blanton (2005) suggests that in the adoption of technological innovations, men do better than women. Similarly, Sanchez-Franco (2006) suggests that men are more open-minded toward the advantages than can be provided by the adoption of technological innovations than are women. However, contradictory results were obtained by Bhatnagar and Ghose (2004) who found that women are more likely than men to adopt technological innovations (Talukder, Harris, & Mapunda, 2008). Moreover, another study suggests that gender does not have any significant impact on social network and peer influence (Talukder & Quazi, 2011) or perception of usefulness and perceived ease of use (Yi, Wu, & Tung, 2006; Choudrie & Dwivedi, 2005).

Moreover, in the context of demographic factors, age seems to be the key variable in the adoption of technological innovations (Venkatesh, Morris, Davis, and Davis, 2003; Bayo-Moriones & Lera-Lopez, 2007; Talukder & Quazi, 2011; Quazi & Talukder, 2011). Moreover, age is perceived as the most important determinant in the prediction of employees attitude toward the introduction of innovative working process (Bayo-Moriones & Lera-Lopez, 2007). Prior studies found that the euphoria in the adoption of technological innovations was significantly dominated by younger generations (Talukder, Harris & Mapunda, 2008; Talukder & Quazi, 2011). Another study also argues that the advent of new technological innovations
generates enthusiasm of younger generations to learn and adopt such innovations. The younger individuals are significantly more responsive to utilization of new innovations than are older people (Lerouge, Newton & Blanton, 2005).

However, earlier studies that were developed by Venkatesh, Morris, Davis, and Davis (2003) in their famous UTAUT model yielded various findings. Younger employees have a significantly moderating effect on the relationship between performance expectancy and behavior intention. On the other hand, older employees significantly moderate the relationship between social influence and behavior intention (Venkatesh, Morris, Davis, & Davis, 2003). Moreover, Talukder and Quazi (2011) did not find any impact of gender on the adoption of technological innovations by employees within organizations. Similarly, Quazi and Talukder (2011) suggest that the relationship between employees’ attitude and behavior and technological innovations is not influenced by age. Moreover, Yi, Wu, and Tung (2006) found that age differences do not affect perceived ease of use; however perceived usefulness is significantly influenced by age differences.

Furthermore, another demographic factor that is considered as a crucial determinant in the adoption process of technological innovations is education (Quazi & Talukder, 2011) or qualification (Bayo-Moriones & Lera-Lopez, 2007). Education level of employees within profit-oriented organizations is very crucial to organizational feasibility and readiness to adopt new innovations (Bayo- Bayesian & Lera-Lopez, 2007). Porter and Donthu (2006) show that individual decisions to use a new technology are significantly influenced by the amount of knowledge one has regarding the effort to maximize the usage of technology.

More sophisticated and complex knowledge in technological innovations and problem solving skills are achieved by employees who graduated from higher education institution and enable such employees to be more innovative in solving organizational problem (Bayo-Moriones & Lera-Lopez, 2007). Moreover, Lee (2001) found that successful ICT diffusion is strongly affected by the education level of the users. This is the main reason why education level of employees is an important variable in the technology innovation literature. However,
Baliamoune-Lutz (2003) suggests that the utilization of innovations such as computers is not influenced by education level of the users.

Prior studies argue that individuals with less knowledge and skills achieved from education institution find it difficult to adapt in the dynamic organizations that require employees to be actively involved in every stage of the business process within the organization (Porter & Donthue, 2006; Quazi & Talukder, 2011). On the other hand, the highly-skilled employees have the ability and capability to adapt to the dynamic environment of profit-oriented organizations. Therefore, any requirements for technological innovations adoption can be easily met by such employees (Arvanitis, 2005; Bresnahan, Brynjolfsson, & Hitt, 2002; Fabiani, Schivardi, & Trento, 2005; Bayo-Moriones & Lera-Lopez, 2007; Morgan et al., 2008).

3.5. Attitude toward adoption
Attitude can be defined as a personal feeling about how favourable or unfavourable is their performance of the behavior (Lam, Cho, & Qu, 2007). Attitude to technology adoption has been approached from two points of view. Firstly, scales can traditionally be used to measure attitude toward objects were adapted. On the other hand, scales have been specifically developed for the construct (Castaneda, 2007). The original definition introduced by Fishbein and Ajzen (1975) clearly explained that attitude is the function of behavioral belief and evaluation of outcomes. Another definition of attitude is proposed by Bhattacherjee (1998), who defined attitude as a function of an individual’s perception and belief regarding ease of use and usefulness of the ICT.

Prior studies, such as Liao and Landry (2000), show that an individual’s attitude toward the acceptance of ICT innovations may have an impact on the intention to adopt ICT innovations (Talukder & Quazi, 2011). Before coming popular and well established as a centre of attention for most researchers in the information systems area, user attitude and perceptions were initially introduced by Henry Lucas in 1975 (Walstrom, Thomas & Weber, 2010). Since then extensive studies that put attitude and perceptions as the main topic grew quickly (Walstrom, Thomas & Weber, 2010).
This thesis has developed an attitude scale, with reference to the studies by Ajzen and Fishbein (1980) and Davis (1993). To reveal the individual’s feeling about the usage of ICT innovations, an instrument with a five-point scale has been developed. Changing employees’ attitudes toward certain type of behavior might be influencing employees’ behavior in a different way (Talukder & Quazi, 2011).

3.6. Technological adoption behavior
Technical advances have not been limited to the ICT sector. The increasing computing, storing and communication potentials of ICT have also facilitated a variety of innovations in products and services in other sectors of the economy. For example, cars are increasingly equipped with microcomputers that operate navigation systems and monitor operations of car components. Similarly, computers also facilitated new kinds of services. Cash machine tellers, online banking, e-commerce, and web-based after sales services are only some examples of how ICT has changed the character of services. Most importantly perhaps, ICT is used to improve the quality of existing products and services, in particular customer service, timeliness and convenience (Brynjolfsson & Hitt, 1995; Licht & Moch, 1999).

ICT applications also have an influence on processes and organization inside firms and administrations (Bresnahan & Greenstein, 1996). Firms employ more flexible and more easily programmable manufacturing tools that incorporate ICT (Milgrom & Roberts, 1990), supply chain management tools increasingly link the production processes of suppliers and clients, and new tools for customer care, such as customer relationship management, help to recognize changes in demand more quickly (Hammer, 1990; Rigby & Zook, 2002). In various cases, these developments are associated with substantial organizational changes prompting prolonged implementation periods and often new skill requirements for workers (Brynjolfsson & Hitt, 2000).

Advances in ICT facilitate new economic activities which, in turn, demand more powerful computers to support their innovations. For example, ICT and the Internet have facilitated e-commerce, while the demand for digitised products, such as software, music and films, has been an important driver to foster the further development and diffusion of broadband access. ICTs
have a wide range of use since they are employed in all sectors of the economy. For example, at the end of 2002, more than every second employee in manufacturing and selected service industries in Germany worked mainly with the help of computers. With the Internet continuing to gain in importance, firms increasingly have to resort to computers and the Internet to communicate with clients and suppliers.

**Hypothesis 10:** There is an impact of attitude toward technology innovation adoption on technology adoption behavior

### 3.7. Organizational Performance

Currently, ICT usage and the impact of adoption of ICT innovations on organizational performance is a fascinating issue (Bayo-Moriones & Lera Lopez, 2007). There is a difference between productivity and performance. Brynjolfsson and Hitt (2003) explain that productivity is more closely grounded in the theory of production while performance refers to the theories of competitive strategy. However, there are some conflicting results from the studies of the impact of ICT innovations on firm performance (Sircar, Turnbow & Bordoloi, 2000). Prior studies found that there is a significant relationship between information technology, ICT innovations and organizational performance (Mahmood & Mann, 1993 cited in Hyvonen, 2007).

Improvement of organizational performance can be achieved by adopting technological or ICT innovation (Talukder and Quazi, 2010). Moreover, combining ICT innovations and traditional or physical methods in business transactions is one of the best solutions for organizations (Ayanso, Lertwachara, & Thongpapanl, 2010). Combining methods became very crucial for improving organizational performance (Balasubramanian, Raghunathan, & Mahajan, 2005; Sousa & Voss, 2006) and significantly enable organizations to generate new business opportunities (Otto & Chung, 2000).

Moreover, most researchers in the area of information systems and technology acceptance agree that organizational performance of profit-oriented institution around the world is significantly influenced by the adoption of technology innovations (Frambach & Schillewaert, 2002).
Relationships and excellent communication between organizations and customers through high standard information circulation can be achieved by adopting ICT innovations (Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, & Mesiter, 2010). Furthermore, many profit-oriented organizations assume that by applying customer-focused strategies, they can gain some competitive advantages. The ability to maintain excellent communication with loyal and potential customers is the most critical factor to help the profit-oriented organizations survive in the dynamic market (Harrigan, Schroeder, Qureshi, Fang, Ibbotson, Ramsey, & Mesiter, 2010). Therefore, adoption of ICT innovations is the best way to help SMEs be profitable. To achieve an excellent reputation, it is also crucial for SMEs to strengthen their knowledge of their future customers and the determinants that impact on the adoption or acceptance policy (Frambach & Schillewaert, 2002). It is argued that better organizational performance can be achieved when customers are satisfied (Hyvonen, 2007).

Enhanced reputation for a firm, lower cost of attracting new customers, lower costs of future transactions, and the growth of customer loyalty for current customers are the benefits for the profit-oriented organizations when their customers feel satisfied (Anderson et al., 1994). Greater advantages and benefits that are generated by adoption ICT innovations can be achieved by continuously improving knowledge about the usefulness of, and relationship between, ICT innovations, firm characteristics and the competitive environment (Bayo-Moriones & Lera Lopez, 2007). Furthermore, Forsyth (2007) argues that the wide range and type of information can easily be managed and distributed effectively through different mediums by most profit-oriented organizations through the synergy of ICT innovations and business processes.

Adoption of ICT innovations that focus on customer satisfaction enable the organizations to gain some benefits such as purchase intentions, broad recommendations, and market value (Ayanso, Lertwachara, & Thongpapanl, 2010). Moreover, excellent communications with customers should be maintained at a high standard. In order to achieve that objective, adoption of ICT innovations is the best solution.
Moreover, Locke’s study (2004) found that 45% of all small businesses that adopt selected ICT have profit growth. Furthermore, Hyvonen (2007) indicate that information technology adoption has a significant positive correlation with performance. There is a relatively higher rate of adoption amongst businesses that have grown. Innovative strategies lead organizations to achieve high organizational performance (Ittner & Larcker, 2001). However, Perera, Harrison, and Poole (1997) argue that they found that organizational performance has insignificant relationship with customer-focus strategy and the use of non-financial performance measures. Hence, the present study is developed to respond the argumentation being put forward by Hyvonen (2007) that there is a weak correlation between organizational performance and customer-focused strategy.

Most studies have partially investigated the links between strategy and information technology and between performance measures and strategy (Hyvonen, 2007). Few studies have investigated the impact of the combination of strategy, information technology and performance measures. Further research is needed to explore the relationship between strategy, information technology and performance measures.

The theory developed by Porter (1980), Hyvonen (2007) argues that differentiation, cost, and leadership or focus strategies enable organizations to strengthen their competitive advantages and compete effectively in very dynamic market. Adopting ICT innovations can be perceived as a unique strategy to achieve organization’s objectives and to improve organizational performance in terms of profit, growth and market share. The interaction of pro-active business strategies and advanced ICT innovations within an organization’s systems significantly affects organizational performance (Chan, Huff, Barclay, & Copeland, 1997). Higher growth, profitability and market share can be easily achieved by SMEs that effectively adopt ICT innovations (Locke, 2004).

In the complex and dynamic environment that is also known as the Information Age, profit-oriented organizations are challenged to integrate ICT innovations into accounting practices (Olsen & Cooney, 2000). Prior studies reveal that there is a significant relationship between management accounting systems within organizations and ICT innovations (Ittner & Larcker, 2001; Chapman & Chua, 2000; Chenhall, 2003). ICT innovations such as e-commerce, use of the
internet, virtual social networking, EDI, and customer relationship management, have been applied and accommodate large amounts of information for management accounting systems. However, extensive studies to investigate the relationship between management accounting systems and ICT innovations is very limited (Hyvonen, 2007).

**Profit**

Locke (2004) argued that ICT usage makes a significant contribution toward improvement of a firm’s profitability, as a proxy for growth. Moreover, profitability can be significantly accelerated by the adoption of ICT innovations (Hyvonen, 2007). Organizational performance, such as the increase of business value, can be improved by adopting an excellent ICT innovation (Santhanam & Hartono, 2003). Improving market share, improved selling price, and cost reduction can be achieved when profit-oriented organizations decide to adopt and extend ICT innovations usage (Battisti, Canepa, and Stoneman, 2009). Profit and market share of the adopters of technological innovations will significantly improve and outperform the organizations that do not adopt technological innovations (Koellinger, 2008). The adoption of ICT innovations help profit-oriented organizations to boost their exports rate and reach the global market and therefore provide an improved chance for businesses to sell more products and services and then gain a good profit (Baliamoune-Lutz, 2003).

Maximizing the usage of ICT innovations such as personal computers, mobile phones and mobile computer or laptops, and internet use, is significantly useful for improving organizational performance of the businesses in the global market (Baliamoune-Lutz, 2003). Moreover, Koellinger (2008) argue that profitability can be utilized as the proxy in organizational performance measurement. Moreover, sophisticated technological innovations that are difficult to be imitated by competitors enable the adopters to survive, achieve competitive advantage, and gain more benefits in the global market (p.1318). However, Koellinger (2008) argue that measuring the connection and the degree of relationship between adoption of technological innovations and profitability or performance is more complicated. Further, the study suggests that the complexity of the measurement of such relationships is triggered by the dependency on the response by the rivals in the market.

*Hypothesis 11: There is an impact of technology adoption behavior on profits of firms*
**Growth**

Productivity growth and a firm’s output are strongly influenced by the contribution of IT (Hernando & Nunez, 2004). Penrose (1959) in her theory of firm’s growth refines these ideas by conceptualizing the firm as a bundle of resources within an administrative framework (Melville, 2004). The term IT business value is commonly used to refer to the organizational performance, including productivity enhancement, profitability improvement, cost reduction, competitive advantage, and inventory reduction, which is due to the impact of IT (Devaraj & Kohli, 2003). Higher levels of organizational performance can be achieved by simultaneously encouraging and supporting SMEs to adopt ICT innovations (Locke, 2004).

By adopting technological innovations small and medium businesses are able to penetrate the global market, to find niche of international markets, and introduce new products (Miles & Snow, 1978 in Bayo-Moriones & Lera-Lopez, 2007). Prior studies empirically confirm that an organization’s activities to expand their business to global markets are strongly supported by the implementation of technological innovations within the organizations (Braga & Willmore, 1991; Kumar & Saqib, 1996; Kumar & Aggarwal, 2005). Once profit-oriented organizations decided to penetrate international markets with total support from technological innovations then market size, sales volume and global rivalry will significantly increase (Bayo-Moriones & Lera-Lopez, 2007).

**Hypothesis 12**: There is a direct impact of technology adoption behavior on growth of firms

**Market Share**

IT may enable a firm to improve efficiency regardless of whether is mimicked by competitors, or may yield performance impacts unique to a particular firm relative to its competitors (i.e., competitive impacts). Miller and Friesen (1982) suggest that market share of conservative firms can be improved by the adoption of ICT innovations. Without the involvement of ICT innovations, it is difficult for profit oriented organizations to develop new products, provide excellent services, or locate market opportunities (Hyvonen, 2007). Researchers have also employed growth accounting (Brynjolfsson & Hitt, 2003). The construct developed by Hyvönen (2007) consists of market share, sales volume, market growth, and development of new products. Adopting ICT innovations helps firms to improve their market share in a dynamic market (Li &
Ye, 1999). There are two explanations (proposed by Bouwens and Abernethy 2000) why ICT innovations are particularly relevant to customer-focused strategies. The main reason is that business parties are encouraged to be responsive and innovative and to respond to customer requirements and, secondly, the workflows within organizations become interdependent through the adoption of ICT innovations.

*Hypothesis 13: There is a direct impact of technology adoption behavior on market share of firms*
### Table 3.2.: A summary of the hypothesis and references

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: There is an impact of internal computing training on attitude toward technology adoption</td>
<td>Venkatesh, Morris, Davis and Davis (2003); (Talukder, Harris &amp; Mapunda, 2008); (Quazi &amp; Talukder, 2011); (Schillewaert, Ahearne, Frambach &amp; Moenaert, 2005); (Bharadwaj, 2000)</td>
</tr>
<tr>
<td>H2: There is an impact of management support on attitude toward technology adoption</td>
<td>(Sykes, Venkatesh, &amp; Gosain, 2009); (Schillewaert, Ahearne, Frambach, and Moenaert, 2005)</td>
</tr>
<tr>
<td>H3: There is an impact of incentive on attitude toward technology adoption</td>
<td>(Leonard-Barton &amp; Deschamps, 1988; Bhattacherjee, 1998)</td>
</tr>
<tr>
<td>H4: There is an impact of perceived usefulness on attitude toward technology adoption</td>
<td>(Talukder, Harris, &amp; Mapunda, 2008); (Venkatesh &amp; Davis, 2000, Venkatesh, Morris, Davis &amp; Davis, 2003)</td>
</tr>
<tr>
<td>H5: There is an impact of individual experience on attitude toward technology adoption</td>
<td>(Lee, Kim, Rhee, and Trimi, 2006); (Fuller, Vician, &amp; Brown, 2006)</td>
</tr>
<tr>
<td>H6: There is an impact of individual innovativeness on attitude toward technology adoption</td>
<td>(Agarwal &amp; Prasad, 1998; Lewis, Agarwal &amp; Sambamurthy, 2003); (Lu, Yao, and Yu, 2005)</td>
</tr>
<tr>
<td>H7: There is an impact of virtual networks on attitude toward technology adoption</td>
<td>(Lam, Cho, and Qu, 2007); (Standen &amp; Sinclair-Jones, 2004; Khoubati, Themistocleous, &amp; Irani, 2006)</td>
</tr>
<tr>
<td>H8: There is an impact of peers on attitude toward technology adoption</td>
<td>(Lewis, Agarwal, &amp; Sambamurthy, 2003; Yuan, Fulk, Shumate, Monge, Bryant, &amp; Matsaganis, 2005)</td>
</tr>
<tr>
<td>H9: There is an impact of government’s role on attitude toward technology innovation adoption</td>
<td>(Bozeman, 2000; Djatikusumo, Talukder, and Quazi, 2012); (Oh, Cruickshank, and Anderson, 2009)</td>
</tr>
<tr>
<td>H10: There is an impact of attitude toward technology innovation adoption on technology adoption behavior</td>
<td>(Venkatesh, Morris, Davis, and Davis, 2003; Bayo-Moriones &amp; Lera-Lopez, 2007; Talukder &amp; Quazi, 2011; Quazi &amp; Talukder, 2011)</td>
</tr>
<tr>
<td>H11: There is an impact of technology adoption behavior on profits of firms</td>
<td>(Ittner &amp; Larcker, 2001; Chapman &amp; Chua, 2000; Chenhall, 2003); (Santhanam &amp; Hartono, 2003)</td>
</tr>
<tr>
<td>H12: There is a direct impact of technology adoption behavior on growth of firms</td>
<td>(Hernando &amp; Núñez, 2004); (Devaraj &amp; Kohli, 2003)</td>
</tr>
<tr>
<td>H13: There is a direct impact of technology adoption behavior on market share of firms</td>
<td>(Brynjolfsson &amp; Hitt, 2003); (Hyvonen, 2007)</td>
</tr>
<tr>
<td>Authors (year)</td>
<td>Scope/Objectives of the Study</td>
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<tr>
<td>Al-Gahtani and King (1999)</td>
<td>Introducing external variables in TAM</td>
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<tr>
<td>Agarwal &amp; Karahana (2000)</td>
<td>New ideas or concepts of innovativeness that relate to ICT area; innovation adoption process in organizational setting</td>
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<tr>
<td>Bozeman (2000)</td>
<td>Government’s contributions, incentives, rules, protection</td>
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<tr>
<td>Beal &amp; Abdullah (2002)</td>
<td>Government’s contributions, incentives, rules, protection</td>
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<td>Brynjolfsson &amp; Hitt (2000)</td>
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<td>Devaraj &amp; Kohli, (2003)</td>
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<td>Igbaria, Zinatelli, Craig &amp; Cavaye (1997)</td>
<td>Transfer of knowledge about PC Promote greater allocation of resources</td>
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<td>Levy &amp; Powell (2000)</td>
<td>Internet adoption strategies by SMEs; business growth</td>
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<td>Levy &amp; Powell (2010)</td>
<td>Reviewing existing approaches to information system strategy for SMEs</td>
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<td>Locke (2004)</td>
<td>Ability to generating profit by using ICT</td>
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<td>Messinger, Stroulia, Lyons, Bone, Niu, Smirnov, Perelgut (2009)</td>
<td>Connection and communication with people; Peers’ signals and messages to adopt technology innovation</td>
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<td>Melville, Kraemer, Gurbaxani (2004)</td>
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<td>Sun &amp; Zhang (2006)</td>
<td>Perceived usefulness, Sophisticated technology will improve performance</td>
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<td>Shin (2008)</td>
<td>Virtual networking, Connection and communication with people</td>
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<td>Spaulding (2009)</td>
<td>Virtual networking, Connection and communication with people</td>
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<td>Reward to employees who use ICT</td>
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<td>Tarafdar &amp; Vaidya (2006)</td>
<td>Managerial support, Promote greater allocation of resources</td>
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<tr>
<td>Talukder &amp; Quazi (2010)</td>
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<td>Social influence of adoption of innovation by individual</td>
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<td>Thong (1999)</td>
<td>Government’s contribution, incentives, rules, protection, policy</td>
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<td>Schillewaert, Aheame, Frambach, and Moenaert (2005)</td>
<td>Adoption of IT in sales force</td>
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<td>Market orientation in SMEs</td>
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<td>2011</td>
<td>Quazi and Talukder</td>
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<td>Morgan, Colebourne and Thomas</td>
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<td>Welter (2001)</td>
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<td>Lawson, Alcock, Cooper and Burgess (2003)</td>
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<td>Boter and Lundstrom (2005)</td>
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<td>Unified theory of consumer acceptance technology</td>
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<td>Damanpour and Schneider (2006)</td>
<td>Impact of organization and top managers and environment toward adoption of innovations</td>
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<td>Shiels, McIvor and O’Relly (2003)</td>
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<td>TAM with external factors toward IT use intention</td>
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<td>Kim, Chun, and Song (2009)</td>
<td>Role of attitude in IT acceptance</td>
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<td>King and He (2006)</td>
<td>Meta-analysis of TAM</td>
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<td>Porter and Donthu (2006)</td>
<td>Role of access barriers and demographics in the using of internet: TAM Model</td>
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<td>Slade and Van Akkeren (2002)</td>
<td>Factors that influencing the business online adoption</td>
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<td>Hennington and Janz (2007)</td>
<td>UTAUT model in health context</td>
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<td>Kartiwi (2006)</td>
<td>e-commerce by SMEs</td>
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<td>Sircar, Turnbow and Bordoloi (2000)</td>
<td>IT investment and firm performance</td>
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<tr>
<td>Battisti, Canepa and Stoneman (2009)</td>
<td>Profitability, externalities and policy in e-business usage</td>
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<td>Lam, Cho, Qu (2007)</td>
<td>Behavior intention toward adoption</td>
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<td>Berry, Rodriguez and Sandee (2001)</td>
<td>SMEs dynamics</td>
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<td>Bayo-Moriones and Lera-Lopez (2007)</td>
<td>Determinants of ICT adoption</td>
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<td>Chan (2000)</td>
<td>IT value from different perspectives: qualitative versus quantitative and individual versus organizational measures</td>
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<td>Im, Hong and Kang (2011)</td>
<td>International comparison of IT adoption: UTAUT model</td>
</tr>
<tr>
<td>Zhou (2011)</td>
<td>Mobile internet and UTAUT perspective</td>
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</table>
3.8. Summary of the chapter

This chapter has reviewed relevant literature in the research area of adoption of ICT innovations and technology acceptance by individuals and organizations; particularly small and medium enterprises (SMEs). In the section on literature review, it is clearly mentioned that ICT innovations have some meaning that one of them is defined as ideas or systems to be new that having a new useful value. As the main focus of this study, it can be defined as creating added value or improving individual or organizational performance. Social network, that recently became very popular as the form of the latest innovation of ICT was investigated in this study.

The particular social network investigated in the present study was the Facebook sites; the most popular social network in the world with more than 1 billion users around the world. Initially Facebook was built to accommodate the communication need of university students. Some experts argue Facebook can be used as a powerful tool for business purposes. Some features in the Facebook sites can be used by its members to support their business activities. Small and medium enterprises, particularly SMEs in Indonesia, were discussed in the next section of this chapter. In this section, it was shown that Indonesian’s SMEs lacked financial access and their employees have poor skills and lack of knowledge. They also have lack of support from government. Furthermore, this section also revealed comparisons between SMEs in Asia. By comparing SMEs in Asia, some similarity and differences between SME characteristics can be observed. This section also discussed the adoption of ICT innovation in Indonesia. This section demonstrated that the attention of government to SMEs and ICT innovation is quite low.

The next section in this chapter shows the importance of the Theory of Reasoned Action, the Technology Acceptance Model, and the Unified Theory of Acceptance and Use of Technology as key concepts to develop the hypothesis of the present research. Variables for this study are developed based on prior studies on technology adoption and SMEs. This section argues that the weaknesses of previous models would be improved by the present study. The next chapter will explore the methodology that was used to examine the research questions and hypotheses. The next chapter also discusses research methodology.
CHAPTER FOUR

RESEARCH METHODOLOGY

4.1. Introduction

The aim of this study is to investigate the determinants of information and communication technology adoption and their impact on the organizational performance of small and medium enterprises in Indonesia. The study used survey questionnaire to collect data and Statistical Package for Social Sciences (SPSS) was used to analyse the data. Multivariate statistical analyses were employed to find out the relationship between the independent and dependent variables. The study used descriptive statistics, correlations and multiple regression analysis to analyse the data.

This chapter describes the methodology used in this research. Specifically, this chapter consists of sections that discuss the definition of SMEs, research design, the population studied, sampling, the research instrument, variables in the study, data collection, data analysis, and definition and measurement of the variables. The last section is the conclusion.

4.2. Definition of SMEs

The main purpose of this section is to explain and identify the definition of SMEs. There are various definitions of SMEs. Some definitions are similar in some countries around the world. However, there is no specific definition that is considered as the best for describing the particular SMEs. For example, in Malaysia, Thailand, the Philippines and the Republic of Korea in which the characteristics of SMEs are quite similar to those of SMEs in Indonesia. According to Hak-Su and Kim (2007) SMEs are defined based on the criterion of shareholders, assets, funds, and employment.

In Indonesia, the definitions of SMEs are officially defined by two government agents. These agents are The Ministry of Cooperatives and Small and Medium Enterprises and The Central Bureau of Statistics. The Ministry of Cooperative and Small and Medium
Enterprises defines small enterprises as the profit-oriented organizations that having assets less than 200 million of rupiah (1 AU$=10,500 Indonesian Rupiah), having less than 1 million of annual sales volume and having five to nineteen employees. Moreover, the Central Bureau of Statistics defines medium enterprises as the profit-oriented organizations which have 200 million to 10 billion rupiah of assets, have less than 1 billion rupiah of annual sales volume and having twenty to ninety nine employees.

Moreover, to meet the statistical requirement, the number of workers is used by numerous countries to describe the SMEs. However, due to the differences of the population in each country, the number of workers being used varies with country. For example, China, Hong Kong and Japan define SMEs as organizations which have fewer than one hundred employees, while the Philippines, Singapore and Thailand consider SMEs to be organizations with fewer than 200 employees (Hak-Su & Kim, 2007).

In Indonesia, Small and Medium Enterprises (SMEs) have a strategic role in national economic development, due to their role in economic growth and employment. SMEs play a viral role in the distribution of development outcomes across the country. During the economic crisis in 1997-1998, which most large-scale companies stagnated or stopped in their activities, the Small and Medium Enterprises (SMEs) proved more resilient to the crisis. The development of SMEs needs to receive the most attention from both government and non-governmental organizations in order to assist them to grow and be more competitive with other economic actors. Future government policies that are more conducive to the growth and development of SMEs need to be pursued. The government needs to increase its role in empowering SMEs in addition to developing mutually beneficial business partnership among big business and small and medium businesses.

SMEs’ development in the future needs to combine the advantages of local (internal environment) and global market opportunities, and synergized with an era of regional autonomy and the non-barrier market entry. Small and Medium Enterprises (SMEs) have a
remarkable role in national economic development as can be seen from its contribution to the Gross Domestic Product (GDP) of Indonesia which continues to increase every year. According to the survey results and the measurement by the Central Bureau of Statistics, the SMEs’ contribution to Indonesia’s GDP in Indonesia in 1997 was 62.71% while its contribution in 2002 increased to 63.89%.

4.3. Research Design

According to Creswell (1994) quantitative research is a technique that leads to the systematic investigation of a phenomenon using statistical, mathematical or computational techniques. Quantitative research is applied to develop or to prove mathematical models, theories and hypotheses pertaining to the phenomena (Neuman, 2000). The methodology of this research was developed following the review of literature that are well established in the area of innovation adoption, technology management and information systems research. Data were collected using the survey method. Conventional postal mail and electronic mail were used to help the researcher to collect the data from the field. Specifically, the questionnaires were sent to owners of SMEs, CEOs, and managers of SMEs in the cities of Java Island, such as Malang, Batu, Surabaya, Kediri, Jember, Solo, Madiun and Mojokerto.

Pilot tests were conducted to find out any problems in the survey questionnaire. During the questionnaire development, the researcher had in-depth discussion with ICT experts to ensure that survey instruments are appropriate and well-developed. The grammar and the clarity of the sentences to be understood by the respondents was the main focus of the review. In the next step, the researcher contacted relevant authorities to get permission to conduct the research within their member organizations. Association of SMEs was contacted to get their approval to conduct the research. After receiving the official letter of approval to conduct the research, the questionnaire was sent to respondents by postal mail and e-mail. Moreover, in order to the response rate of this research, a follow-up reminder mail was sent to them. The Researcher also visited their sites and asked whether they were having difficulties in answering the questionnaire.
Thesis Research Map

- Background
  And
  Research Questions

- Literature Review
  exploring the
  relationship and
  analysis primary data

- Institution:
  Small and Medium
  Enterprises

- Adoption of
  Information and
  communication
  technology

- Context of Indonesia
  as a developing
  country

- Driver Factors

- Attitude toward
  Adoption

- Technology Adoption
  Behavior

- Organizational
  Performance

Figure 4.1. Thesis Research Map
**Research Process Map**

- **Background And Research Questions**
- **Research Methodology: Quantitative**
- **Survey**
- **Population: Indonesia**
- **Questionnaires**
- **By E-mail, and followed by reminders**
- **SMEs’ owners, CEOs, and managers**
- **Data analysis, Findings and Implications**

Figure 4.2. Research Process Map
4.4. Population of the study

The population of this study is top level management personnel of small and medium enterprises in Java Island, Indonesia. Java Island is one of the highly populated islands in Indonesia and concentration of SMEs. There are a large number of SMEs in some provinces such as East Java and Central Java. SMEs in each area have some unique and different products that support the economic growth of Indonesia. SMEs in the food, garments, agriculture, telecommunications, commodities and processing sectors were selected as samples for this research.

There are some reasons for the decision to choose The Java Island as the location of this research;

a. Java Island is the main Island with the largest population,
b. Most of the SMEs, estimated at 66.67% (BPS 2004), are located on Java Island,
c. Java has concentration of SME industries in agribusiness, garment, processing, automotive, IT/communications, food trading and souvenirs,
d. Java is the highest internet users in Indonesia,
e. ICT infrastructure in Java Island is very sophisticated compared to the infrastructures in other islands.

4.5. Sample of the study

This research used simple random sampling that is part of probability sampling. Probability sampling is used in this research because it has a significant advantage compared to non-probability sampling. Probability sampling is the only method that provides estimates of precision. Precision of estimate is a second criterion of a good sample design (Cooper & Emory, 1995).
The sample of the study were taken from the owners, CEOs and management personnel of the SMEs from various sectors including- garment, food, processing, telecommunications, and agribusiness.

In choosing the sample size, the study used suggestion from Hair, Anderson, Tatham and Black (1998) who mentioned that at least twenty observations for the analysis of variances test is recommended in a cell, although a larger size may be required for acceptable and more emphatic statistical power. For the regression analysis, Hair, Anderson, Tatham and Black (1998) suggest that for each independent variable, there should be five observations. Although the minimum ratio is 5 to 1, the desired level is between fifteen to twenty observations for each dependent and independent variable. When this level is reached, the results should be generalized if the sample meets the criteria. Based on their suggestion that fifteen to twenty observations for each dependent and independent variable should be used to determine the sample size, a sample of 300 to 350 respondents was needed because this study uses seventeen variables - five dependent and twelve independent.

A random sample was drawn based on the population. Association of Small and Medium Enterprises provided the permission to conduct the research within their member organizations and provided the details of the respondents. This sample included 350 SMEs taken from the main areas of Java Island of Indonesia. The reason behind of random sampling is to make the sample representative of the population. Survey questionnaire were then was sent to the 1650 targeted respondents by postal mail with reply envelop. A reminder was send after two weeks of the initial mail. The Questionnaire included an information sheet which explained the purpose of the survey. A total of 367 completed questionnaires were received out of which 350 were deemed usable.
4.6. Research instrument

The research instrument in this research was developed with a focus on the usage of Facebook. Survey questionnaires were used to collect primary data from the SMEs in Indonesia. Although the questionnaires were adopted from the previous related studies in the context of ICT adoption, the researcher discussed with IT experts in designing and modifying the survey questionnaire. The study used 7-point Likert scale to investigate the perception of SME managers on the adoption of ICT innovations (Dawes, 2008). Recent studies by Dawes (2008) found that higher mean of the variables could be produced by the usage of a 7-point Likert scale. The questionnaire was pilot tested to find any issues and modified accordingly. The research instruments basically asked about respondents’ perception on the adoption of ICT innovation regarding the drivers of adoption, benefits and potential impact of the use of Facebook in their organizations.

Following are the partinening reasons why Facebook was selected as a tool to test the research model and the reasons why study sample were taken from SMEs:

The reason to select Facebook:

1. Facebook is the biggest social media in the world, with the latest update revealed that more than 1.1 billion active users are using Facebook each month.
2. Facebook is growing very fast, with 23 per cent growth comparing to previous year.
3. Facebook can reach people from around the world very quickly.
4. Facebook, being widely-recognised as a very effective tool for businesses and marketing activities.
5. Facebook still allows its member to use all of its features for free, it means that for small and medium businesses which lack financial support can explore and maximize their marketing activities using Facebook without any charge.
6. Banking institutions are now also using Facebook as a platform in their banking activities, such as Commonwealth Bank of Australia which already have and introduced “Kaching” as the banking system using Facebook as a platform. It means that nowadays banking institutions
already recognise that Facebook is quite secure in supporting their traditional/classic banking systems.

7. Facebook can meet SMEs need as a platform or system that can support SMEs with the lowest cost or even free of charges.

8. Indonesian SMEs are also using Facebook as a free medium to communicate with potential customers and expend the market not only nationally but also globally.

The reason to focus on SMEs in Indonesia:

1. Indonesia is a rapidly growing developing country and SMEs are important factors for Indonesia’s economic growth.
2. SMEs have the dominating business activities in Indonesia.
3. SMEs are having more than 80% of total employees in the business in Indonesia.
4. SMEs are having classic problems, lack of financial support that still didn’t find any best solution and this research may support in this regard.
5. SMEs are dominated by young entrepreneurs who are enthusiast with the new technology usage for their business expansion.

4.7. Variable of the study

The variables of the study were developed from the theoretical foundation of TRA, TAM, and UTAUT. Three main categories of the variables were used in this study: organizational factors, individual factors, and social factors. There are three sub-factors in organizational factors: training, managerial support and incentives. There are also three sub-factors in individual factors: perceived usefulness, experience and innovativeness. Furthermore, social factors also consist of three sub-factors: virtual networking, peers, and government’s role.

The other variables in this research were: attitude toward adoption of ICT, technology adoption behavior, and firm performance that consists of the sub-factors which are: growth, profit, and market share. This study is developed to investigate the impact of organizational
factors on the adoption of ICT, the impact of individual factors on the adoption of ICT, and the impact of social factors on the adoption of ICT. Then finally, this research also investigated the impact of adoption of ICT by SMEs on the SME’s performance. This is a novel and original analysis of the impact of adoption of ICT, particularly the usage of Facebook for business, on the performance of SMEs because there have been no previous studies that focused on investigation of such relationship in the context of Indonesian SMEs.

Table 4.1
Variables of the Study

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Independent variables</th>
<th>Dependent variables</th>
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<tbody>
<tr>
<td><strong>Research Question no 1</strong></td>
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<tr>
<td>Does adoption of ICT affect organization performance of SMEs in Indonesia?</td>
<td>1. Technology adoption</td>
<td>1. Profit</td>
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<td>2. Growth</td>
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<td>3. Market share</td>
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<td><strong>Research Question no 2</strong></td>
<td>2. Training</td>
<td>4. Attitude toward adoption</td>
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<tr>
<td>What is the effect of organizational factors on the adoption of ICT?</td>
<td>3. Managerial support</td>
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<td>4. Incentives</td>
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<td><strong>Research Question no 3</strong></td>
<td>5. Perceived usefulness</td>
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<tr>
<td>What is the effect of individual factors on the adoption of ICT?</td>
<td>6. Experience</td>
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<td>7. Innovativeness</td>
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<td><strong>Research Question no 4</strong></td>
<td>8. Virtual networking</td>
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<tr>
<td>What is the effect of social factors on the adoption of ICT?</td>
<td>9. Peers</td>
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<td>10. Government’s role</td>
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<td><strong>Research Question no 5</strong></td>
<td>11. Gender</td>
<td>5. Attitude toward adoption</td>
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<tr>
<td>What are the effects of a firm’s characteristics as moderating variable on attitude toward adoption?</td>
<td>12. Industry</td>
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<td></td>
<td>13. Age</td>
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4.8. Definition and measurement of constructs

Variables in this research are defined and measured appropriately to get valid and reliable information.

4.8.1. Organizational factors

Training

Training is defined by some prior studies as the number of activities that are provided by other computer users or computer specialists in the company to improve ICT skills of the employees (Igbaria, Zinatelli, Craig & Cavaye, 1997; Fabiani, Schivardi, Trento, 2005). This variable is developed from previous studies by Igbaria, Zinatelli, Craig, and Cavaye (1997) and Mehr tens, Cragg and Mills (2001). They argued that creating useful training about personal computing for the firm’s staffs is a key factor that has a positive impact on increasing personal computing acceptance, not only in small firms but also in large firms. Ease of use, enjoyment, and relative advantage are significantly influenced by training and support (Al-Gahtani, 1999). To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was generated for this research. Training items are developed from work done by Igbaria, Zinatelli, Craig and Cavaye (1997).

Five items were developed as follow:
1. Training in Facebook access is useful for employees
2. Training to get new friends in Facebook is useful for employees
3. Training to send and to reply to the messages in Facebook is useful for employees
4. Training to upload some pictures of the products in Facebook is useful for employees
5. Training to promote and sell products using Facebook is useful for employees

Managerial Support

Managerial support was defined in some previous research as the level of general support offered by top management in small firms (Igbaria, Zinatelli, Craig, & Cavaye, 1997; Tarafdar & Vaidya, 2006; Hoffman & Klepper, 2000). This variable was developed using theories from Igbaria, Zinatelli, Craig, and Cavaye (1997), Tarafdar and Vaidya (2006) and
Hoffman and Klepper (2000). They argue that the main benefit of management support is its ability to promote greater allocation of resources and IS success and can be achieved by creating a more conducive environment when management can act as a change agent. To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was used in this research.

With minor modification of Igbaria, Zinatelli, Craig and Cavaye (1997), items of the questionnaire for this instrument were:
1. Management is aware of the benefits that can be achieved with the use of Facebook
2. Management always supports and encourages the use of Facebook for job-related work
3. Management provides most of the necessary help and resources to enable people to use Facebook
4. Management is really keen to see that people are happy using Facebook
5. Management provides good access to hardware resources when people need it

Incentives
Incentive is defined as “reward that has been given by management to the employees who intensively use ICT in their activities within company” (Talukder, Harris & Mapunda, 2008). The instrument was developed based on studies by Bhattacherjee (1998); Talukder, Harris and Mapunda (2008). They argue that incentives are often believed to be powerful triggers of employee behaviour in adopting a technology innovation. To measure this variable, a 7 point Likert-scale from 1= (strongly disagree) to 7= (strongly agree) was used in this research. Based on the construct measurements in Talukder, Harris, and Mapunda (2008) and Bhattacherjee (1998), incentives were measured by five items:
1. Incentive that are given by organization will increase employee’s motivation to use Facebook
2. Usually employees will increase their effort to use Facebook after they receive incentives
3. Incentives need to be given to employees to improve their performance
4. Employee will be enthusiastic in using Facebook when they receive some incentives
5. Incentives will spark employees’ motivation to use Facebook
4.8.2. Individual factors

Lewis, Agarwal, Sambamurthy (2003) argue that the most important factors that influence the adoption of technology innovation are individual factors. Furthermore, some recent studies also found that individual factors such as personal innovativeness, perceived usefulness, image, prior experience, and enjoyment of innovation have a significant contribution to an individual’s adoption of technological innovation (Lewis, Agarwal, Sambamurthy, 2003). Innovation is more likely to be adopted if an individual thinks that the new system will enhance effectiveness and efficiency or offer greater control over the task (Lee, 2004). The determinants that were used in this study are mentioned below.

Perceived Usefulness

Perceived usefulness factors have a significant influence on user technology adoption and therefore has received significant attention from prior researchers. This variable is developed based on studies by Lam, Cho, and Qu (2007), Kim, Chan and Gupta (2007), Castaneda, Munoz-Leiva, Luque (2007), Oh, Cruickshank, Anderson (2009), Sun and Zhang (2006), and Talukder and Quazi (2010). To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was adapted for this research. Based on Lam, Cho, and Qu (2007), Kim, Chan and Gupta (2007), Castaneda, Munoz-Leiva, Luque (2007), Oh, Cruickshank, Anderson (2009), Sun and Zhang (2006), and Talukder and Quazi (2010), five indicators were developed to measure perceived usefulness. These are:

1. Using Facebook will improve my job performance in promoting and selling products
2. Using computers for Facebook will increases my job productivity
3. Using Facebook will help me to get new potential customers
4. Using Facebook will enhances my job’s effectiveness
5. Using Facebook will help me to have better communication with suppliers and government.
Experience

Experience is determined by the users’ prior experience with innovation and overall skills in using innovation (Talukder, 2011). To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was used. Based on Venkatesh and Morris (2000), Venkatesh and Davis (2000), Venkatesh, Morris, Davis and Davis (2003), five indicators were used to measure experience.

The five indicators that were used are:
1. I will be enthusiastic about using Facebook because I have much experience with Facebook
2. My previous experience in using Facebook will mean I have no difficulty in using Facebook in the future
3. My previous experience tells me that Facebook is very useful in improving my performance
4. Prior training courses help me to use Facebook and other virtual networks
5. My previous experience with Facebook is very useful

Innovativeness

Innovativeness is defined as willineness of individuals to try a new technology (Talukder, Harris & Mapunda, 2008). This variable was developed from Lu (2005), and Agarwal and Karahanna (2000). Individuals with higher personal innovativeness are expected to build more positive beliefs about the target technology. They are also expected to develop more positive perceptions about the innovation in terms of advantage, ease of use, and compatibility (Lu, 2005). To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was used in this research.

These items were developed based on studies by Lu (2005), Agarwal and Karahanna (2000). Items in the questionnaire of this variable are:
1. Facebook as a part of new technology is a very interesting thing to be adopted
2. I always want to try to use every new Facebook innovation
3. I am always enthusiastic to learn about Facebook to make it more powerful and useful
4. I think Facebook is an excellent innovative concept for promoting products
5. I am always enthusiastic to experiment with the newest Facebook applications

4.8.3. Social factors
Social factor is defined as the extent to which members of social society influence one another’s behaviour in technology adoption (Venkatesh & Brown, 2001). Peers feel some pressure and are influenced to adopt a technology innovation and this effect is applied through messages and signals that build perceptions of the value of a technology. Based on this argument, perceived social pressure is assumed to have a bigger effect on new technology adoption by employees than does its usefulness. Hossain and Silva (2009) also argue that previous studies on the social information processing model (SIPM) suggest that socially informed beliefs and perceptions have an impact on ICT usage behavior.

Virtual Network
Virtual network is defined as interaction or communication among people around the world using computer and internet as a media (Shin, 2008; Spaulding, 2009; Messinger, Stroulia, Lyons, Bone, Niu, Smirnov, Perelgut, 2009). To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was adopted for this research. The instrument was adopted from previous studies by Talukder, Harris and Mapunda (2008), Shin (2008), Spaulding (2009), Messinger, Stroulia, Lyons, Bone, Niu, Smirnov & Perelgut (2009).

Items of the measurement are:
1. Using a virtual social network such as Facebook improves my job performance
2. Using a virtual social network such as Facebook increases my job productivity
3. I know about virtual social networks such as Facebook, twitter, and mySpace
4. Using a virtual social network such as Facebook enhances effectiveness in promoting and selling products
5. Virtual network usage will help my company get new customers around the world

**Peers**

The measurement of peers was provided by the influence, motivation and encouragement given to individuals by colleagues in adopting innovation (Talukder, Harris & Mapunda, 2008; Stratopoulos & Dehning, 2000; Cross & Baird, 2000; Dewett & Jones, 2001). This variable was developed based on studies from Talukder, Harris and Mapunda (2008), Stratopoulos and Dehning (2000), Cross and Baird (2000), Dewett and Jones (2001). Based on Talukder, Harris and Mapunda (2008), Stratopoulos and Dehning (2000), Cross and Baird (2000), Dewett and Jones (2001), to measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was used in this research.

Items of the questionnaire for this variable are:

1. People who influence my behavior think that I should use Facebook to improve the firm’s performance
2. People who are important to me think that I should use Facebook to improve my performance
3. People who are familiar with Facebook suggest that using Facebook can help them get new customers around the world
4. Discussing with friends who are very familiar with Facebook will help me in using a Facebook and get new customer around the world
5. I’ve learned from my friends about using Facebook for business or selling products

**Government’s Role**

This variable is defined as contribution of government to motivate SMEs to adopt ICT innovation (Thong, 1999; Bozeman, 2000; Beal & Abdullah, 2002). This variable was developed using theories from Thong (1999), Bozeman (2000), Beal & Abdullah (2002). To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly
agree) was used in this research. The instruments were adopted from previous studies by Thong (1999), Bozeman (2000), Beal & Abdullah (2002).

Items of the questionnaire for this variable are:
1. The government has been helpful in the use of Facebook in the business process
2. Government gave incentives to businesses that use Facebook
3. Government has produced a rule that helps SMEs to improve their performance
4. Government has approved of the rules on Facebook in Indonesia
5. Government has a program involving researchers and university lecturers to support SMEs

4.8.4. *Attitude toward adoption*
Attitude is viewed as a function of potential users’ perceptual beliefs regarding usefulness and ease of use of the IT (Bhattacherjee, 1998). Wu, Cheng, Yen and Huang (2011) argue that attitude has an important role in mediating perception and behavior intention. To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was created. Adapted from Taylor and Todd (1995) and Lam, Cho, and Qu (2007), the instrument measured attitude by five items.

Items of the measurement are:
1. In my opinion, using Facebook on my job would be important
2. In my opinion, using Facebook on my job would be relevant
3. In my opinion, using Facebook on my job would be attractive
4. In my opinion, using Facebook on my job would be very beneficial
5. In my opinion, using Facebook on my job would be positive

4.8.5. *Usage behaviour*
Based on Igbaria, Zinatelli, Cragg and Cavaye (1997); Karahanna (1999); Al-Gahtani and King (1999), usage behavior can be measured by several indicators which are: the frequency of use the system, amount of time used per day, number of different software applications used. This variable was developed using theories from Igbaria, Zinatelli, Cragg and Cavaye
(1997); Karahanna (1999), and Al-Gahtani and King (1999). To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was used in this research.

Based on Igbaria, Zinatelli, Cragg and Cavaye (1997); Karahanna (1999), and Al-Gahtani and King (1999), Brynjolfsson and Hitt (1995), Licht and Moch (1999), Hammer (1990), Rigby and Zook (2002), five indicators were used to measure usage behavior:

1. **Frequency of use**

   Frequency of use was measured by how frequently a system was used by an individual user. Frequency of use was measured on a five point scale ranging from less than once a month to several times a day. Following are items adapted from Al-Gahtani and King (1999):
   
   On average, based on frequency of use, how frequently do you use Facebook for job-related work?
   (a) less than once a month, (b) once a month, (c) a few times a month, (d) once a day, (e) several times a day

2. **Actual amount of time spent**

   This instrument asked individuals to indicate the amount of time spent on using Facebook per day, creating a five point scale ranging from less than half an hour to more than three hours. Following are items adapted from Al-Gahtani and King (1999):
   
   On average, based on actual amount of time spent, how much time do you spend per day using Facebook for job-related work?
   (a) Less than half an hour, (b) from half an hour to 1 hour, (c) 1-2 hours, (d) 2-3 hours, (e) More than 3 hours

3. **Level of usage**

   Individual users were asked to indicate the level of usage of building a network (adding and confirming new friend as a new potential customer) using a five point scale ranging
from not used at all to used extensively. Following are items adapted from Al-Gahtani and King (1999):

Please indicate your level of usage of building a network (adding and confirming new friend as a new potential customer)
(a) not used at all, (b) used rarely, (c) used quite often, (d) used frequently, (e) used extensively

4. **Advanced features**

Participants were asked to indicate whether they are using advanced features of Facebook such as uploading company profiles and pictures. A five point scale ranging from not used at all to used extensively was developed for this item. Following are items adapted from Al-Gahtani and King (1999):

Do you use advanced features of Facebook, such as uploading company profiles and pictures?
(a) not used at all, (b) used rarely, (c) used quite often, (d) used frequently, (e) used extensively

5. **Sophisticated features of Facebook**

Participants were asked to indicate whether they are using sophisticated features of Facebook (sending messages and electronic communications/chatting). A five point scale ranging from not used at all to use extensively was developed for this item. Following are items adopted from Al-Gahtani and King (1999):

Do you use sophisticated features of Facebook (sending messages and electronic communications/chatting)?
(a) not used at all, (b) used rarely, (c) used quite often, (d) used frequently, (e) used extensively

4.8.6. **Organizational performance**

Three variables are used to measure the SMEs performance which is profits, growth and market share. Measures of the variables are explained as follows:
**Profit**

Profit is defined as any earning or financial gain by any organization (Locke, 2004). Santhanam and Hartono (2003) suggest that companies which are adopting ICT will achieve economic returns higher than the firms which does not adopt. Love, Roper and Du (2009) also suggest that companies that had adopted ICT gained more profits than the rivals who had not adopted ICT. This variable was developed using theories from Locke (2004), Santhanam and Hartono (2003), Duliba (2001) and Love, Roper and Du (2009). To measure this variable, a 7 point scale from 1=(strongly disagree) to 7=(strongly agree) was used in this research.

Based on Locke (2004), Santhanam and Hartono (2003), Duliba (2001) and Love, Roper and Du (2009) five indicators were developed. Items of the measurement are:

1. Using Facebook can reduce transaction costs, because most transaction will be based on mobile phone and internet platforms
2. Using Facebook can reduce costs for accessing the current market
3. Using Facebook can reduce costs for finding new products
4. Using Facebook enables SMEs to reduce costs of sourcing new markets
5. Using Facebook enables SMEs to reduce after sales service costs

**Growth**

The meaning of this variable is the process of increasing in company size, company’s employees, and company’s branches (Hernando & Nunez, 2004). Growth variable was developed based on studies by Hernando and Nunez, (2004), Melville, (2004), and Devaraj and Kohli, (2003). To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was used in this research. Based on Hernando and Nunez, (2004); Melville, (2004); Devaraj and Kohli (2003), five items as indicators were deployed for this variable.

Items of the measurement of this variable are:

1. Using Facebook can increase the opportunity to garner new customer and expand the company
2. Using Facebook enables SMEs to communicate with new branches in new locations
3. Company’s employees will increase when SMEs decide to open a new branch
4. Using Facebook enables SMEs to increase their output
5. Using Facebook enables SMEs to increase their productivity

Market Share

The meaning of this variable is the portion of a larger amount of market which is divided among companies or businesses (Hyvonen, 2007). This variable is developed based on research by Brynjolfsson and Hitt (2003), and Hyvonen (2007). To measure this variable, a 7 point Likert-scale from 1=(strongly disagree) to 7=(strongly agree) was used in this research. With little modification, this study replicated and modified the items from Brynjolfsson and Hitt (2003) and Hyvonen (2007).

Items of the measurement of this variable are:
1. Using Facebook enables SMEs to get new customers from different markets
2. Using Facebook enables SMEs to reach global markets
3. Using Facebook enables SMEs to increase their market share
4. Using Facebook enables SMEs to expanded product range and customize products
5. Using Facebook enables SMEs to connect to many networks or to society

4.9. Data collection

The primary procedure of the data collection was through survey questionnaire. The researcher first obtained permission from the Association of the SMEs to conduct the research within their member organizations. Association provided contact details of all potential respondents. Questionnaire were then posted by postal mail to the respondents. The questionnaire was sent to top level managers of SMEs on three main islands, Java, Bali, and Kalimantan Island. Information sheet describing the research aim was attached with the questionnaire. A stamped envelop was also included in the post. The respondents were given 2 weeks time to return the completed questionnaire. After two weeks a reminder letter was sent to them if they have not completed the questionnaire yet. All these activities took place from January 2012 to May 2012. A total of 1650 questionnaire were sent to the respondents. After reminder a total of 367
completed questionnaires were received. Some questionnaires were incomplete. Finally 350 completed questionnaire were taken for analysis. The next step was to prepare for data analysis.

4.10. Data analysis

In order to analyze the data, the study used SPSS. The data were analyzed using multivariate data analysis technique. The researcher conducted frequency analysis, correlation and regression analysis. Descriptive analysis was used for frequency and percentages which described general information about the respondents. The study examined the validity and the reliability of the instruments. Confirmatory Factor Analysis (CFA) was used to demonstrate the discriminant validity of the measurement scale. Cronbach’s Alpha was used to assess the internal consistency and reliability of the scale.

The main analysis in this study was multiple regression analysis to examine all hypotheses. Multiple regressions are used in order to examine the relationship between two or more independent variables, or predictors, and the dependent variable. Multiple regression analysis (MRA) was also used in this study because this study had three moderating variables. Before running the regression analysis, it is important to meet the assumptions of regression analysis in order to ensure that the analysis can generate valid and reliable results. The data that had already been collected was tested to investigate whether there were any violations of the regression assumptions that should be detected and revised. Assumptions in multiple regressions are normality, multicollinearity, homoscedasticity/heteroscedasticity, linearity, and independence of residuals.

4.11. Summary of the chapter

This chapter discussed the research methods, population, sampling, the research instrument, data collection, and data analysis. The first part of this chapter is an introduction which is then followed by a short explanation of the definition of small and medium enterprises (SMEs).
The main part of this chapter is the section that consists of the explanation about the research design, the population of the study, the sample used in the study and the research instrument. In this chapter there is detailed information about the design of the research, the population of SMEs in Indonesia, and detail about the sample used in the study (such as location of the sample, type of industry, and position of persons). The other important information in this chapter is about detail of the instrument and measurements that were used in this study.

The last section of this chapter describes variable of the study, data collection, data analysis, and definition and measurement of variables. Multiple regressions were used to examine the relationship between the independent and dependent variables. The statistical techniques that were used in this study are descriptive analysis, frequencies, correlations and multiple regression. The next chapter (Chapter four) will provide details of data analysis and discussion of the results.
CHAPTER FIVE

DATA ANALYSIS AND DISCUSSION

5.1. Introduction

The aim of this study is to investigate the determinants of information and communication technology adoption and its impact on the organizational performance of small and medium enterprises, specifically in Indonesia as one of the developing countries. The appropriate method of data analysis for this research is a quantitative method. Quantitative methods were utilized in this research due to its ability to accurately quantify data, measures factors and produce results that can be generalized to other research in the same area (Neuman, 2000). This study is important because of its ability to predict more precisely the adoption of ICT innovations by individuals within SMEs in developing country. This chapter describes the statistical and analytical methods that were deployed in this research to test the hypotheses.

The chapter is arranged into thirteen sections. These sections are: descriptive statistics, analysis of demographic data, individual levels of use of ICT innovations within SMEs, cross-tabulations for usage level towards participants’ demographic characteristics, the impact of respondents’ demographic characteristics on attitude, factor analysis, reliability and validity, inter-correlations among variables, multiple regressions, hierarchical regression model, regression analysis for attitude and usage as dependent variables, discussions, implications, and conclusion.

The data recognized as demographic data in this study are gender, age, and industry. The next section of this chapter is about level of usage and inter-correlation of variables. After that, one way ANOVA (Analysis of Variance) was used to detect any significant differences between variables that relate to the adoption of innovation. Then, those sections are followed by reliability and validity analysis in the next sections. Such analysis is used to measure the validity of the instrument that was used in this study.
5.2. Analysis descriptive statistics

The main purpose of this section is to describe the general information related to the characteristics of the respondents of this research. It helps all readers to understand who the participants of the study are, what their educational background is, which industries the participants are from, and the age and the gender of participants. In this section, frequency tables are used to show information about the population and the sample used in the study.

5.3. Analysis of demographic data

5.3.1. Demographic profile of respondents

This section is designed to explain and identify the demographic data. Demographic data plays an important role due to its ability to reveal the specific characteristics of respondents such as gender, age, industry, academic qualification, and position. Such characteristics are very important in order to assess whether the research was appropriately conducted.

The aim of this analysis is to document and indentify the essential profiles of the SMEs in the sample and their adoption of ICT innovations. A questionnaire consisting of information about individual characteristics is the source of the demographic data and descriptive analysis. A range of variables including gender, age, and education are provided in Table 4.1.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>182</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>168</td>
<td>48</td>
</tr>
<tr>
<td>Age</td>
<td>208</td>
<td>59.4</td>
</tr>
<tr>
<td>20-29</td>
<td>123</td>
<td>35.1</td>
</tr>
<tr>
<td>30-39</td>
<td>12</td>
<td>3.4</td>
</tr>
<tr>
<td>40-49</td>
<td>6</td>
<td>1.7</td>
</tr>
<tr>
<td>50-59</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>60 and above</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>140</td>
<td>40</td>
</tr>
<tr>
<td>Higher secondary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor</td>
<td>198</td>
<td>56.6</td>
</tr>
<tr>
<td>Masters</td>
<td>12</td>
<td>3.4</td>
</tr>
<tr>
<td>Position</td>
<td>101</td>
<td>28.9</td>
</tr>
<tr>
<td>Mid-level</td>
<td>97</td>
<td>27.7</td>
</tr>
<tr>
<td>Top-level</td>
<td>43</td>
<td>12.3</td>
</tr>
<tr>
<td>CEO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner</td>
<td>109</td>
<td>31.1</td>
</tr>
<tr>
<td>Industry</td>
<td>73</td>
<td>20.9</td>
</tr>
<tr>
<td>Food</td>
<td>167</td>
<td>47.7</td>
</tr>
<tr>
<td>Garment and clothing</td>
<td>18</td>
<td>5.1</td>
</tr>
<tr>
<td>Processing</td>
<td>5</td>
<td>1.4</td>
</tr>
<tr>
<td>Agriculture/agribusiness</td>
<td>7</td>
<td>2.0</td>
</tr>
<tr>
<td>Telecommunication</td>
<td>80</td>
<td>22.9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>350</td>
<td>100%</td>
</tr>
</tbody>
</table>

The participants in this research were virtually equal in terms of gender representation; 52% for males and 48% for females. It can be assumed that SMEs in Indonesia are being managed/owned relatively equally by men and women. Most participants were younger in age and more than half of them (59.4%) were in the 20-29 year age group. This is followed by 35.1% for the 30-39 year age group. It means that more than 94% of participants who managed SMEs and are familiar with ICT innovations are fairly young i.e. less than 40 years old. This shows a growing trend of adoption of ICT innovations by SMEs in Indonesia in general and young people in particular.

According to the variables of education and position, most participants (56.6%) had a bachelor level degree (40% graduated from senior high school). Slightly, more than one third (31.1%) of all participants were owners of SMEs, followed by mid-level managers (28.9%) and top level managers (27.7%). Only 12.3% of participants were CEOs of SMEs.
The last demographic characteristic concerns the type of industry that SMEs were engaged in. Nearly half of participants (47.7%) worked in the garment and clothing industry.

5.4. Employees’ level of using ICT innovations

The results of the analysis of employees’ level of using virtual social network are provided in this section. It began with time used in virtual social networking followed by level of usage, advanced features, and sophisticated features. The data that were collected from the participants is summarized into the separated tables Table 4.2 through Table 4.10.

The respondents’ level of use of ICT innovations is reported in this section in order to get a clear picture of respondents’ familiarity with ICT innovations. All items that are grouped as usage are amount of time, level of usage, advanced features, and sophisticated features. The responses range from less than half an hour and not used at all to more than three hours and used extensively. The tables from 4.2 to 4.10 reveal that the selection of ICT innovations was justified.

5.4.1. Frequency of use of ICT innovations

Table 4.2 below shows that most respondents, more than 26.6% or equal to one-fourth of all participants, used ICT innovations more than three hours in one day. However, with a percentage that is similar, 26.3% of respondents spent from ½ hour to 1 hour to use ICT innovations. Overall, more than 50% of all respondents spent more than one hour of their time daily to use ICT innovations. This confirms that most respondents are quite familiar with ICT innovations.
Table 5.2 Amount of time accessing social media Facebook

<table>
<thead>
<tr>
<th>Amount of Time</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than ½ hour</td>
<td>70</td>
<td>20.0</td>
</tr>
<tr>
<td>½ hour to 1 hour</td>
<td>92</td>
<td>26.3</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>43</td>
<td>12.3</td>
</tr>
<tr>
<td>2-3 hours</td>
<td>52</td>
<td>14.9</td>
</tr>
<tr>
<td>More than 3 hours</td>
<td>93</td>
<td>26.6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>350</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The following graphic is presented to show comparisons related to the amount of time subjects used ICT innovations in a day.

![Bar chart showing the amount of time accessing social media Facebook]

**Figure 5.1.** Amount of time accessing social media Facebook

It can be seen that the number of participants who used ICT innovations for less than one hour is slightly higher than respondents who used ICT innovations for more than 2 hours. Interestingly, there is similarity between the users of technology innovations for more than 3 hours and those who used technology innovation between half and one hour; both account for about 90 users each.
5.4.2. Level of usage of ICT innovations

According to the level of usage of ICT innovations, the table shows that nearly 40%, used ICT innovations quite often to support their business activities. 24.6% of all respondents use ICT innovations frequently, and 21.4% respondents used ICT innovations extensively. It can be assumed that more than 80% of respondents had wide experience in using ICT innovations to support their business activities.

Table 5.3 Level of usage of social media Facebook

<table>
<thead>
<tr>
<th>Level of Usage</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not used at all</td>
<td>6</td>
<td>1.7</td>
</tr>
<tr>
<td>Used rarely</td>
<td>47</td>
<td>13.4</td>
</tr>
<tr>
<td>Used quite often</td>
<td>136</td>
<td>38.9</td>
</tr>
<tr>
<td>Used frequently</td>
<td>86</td>
<td>24.6</td>
</tr>
<tr>
<td>Used extensively</td>
<td>75</td>
<td>21.4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>350</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

The graph below distinguishes the trend in the level of use of the respondents. It means that there were more respondents who are very familiar with ICT innovations and regularly use it.
Figure 5.2. Level of usage of social media Facebook

If the graph above is divided into two parts with the point “used quite often” as an axis, then it can be argued that most users were very familiar with and consistently used technology innovations in their daily activities.

5.4.3. The usage of advanced features of ICT innovations

table 5.4 show that more than 30%, used advanced features of ICT innovations quite often to support their business activities. Then 24.6% of all respondents used advanced features frequently, and 17.1% respondents used advanced features extensively. It can be assumed that more than 70% respondents had wide experiences in using advanced features of ICT innovations to support their business activities. Therefore, it can be confirmed that most respondents within small and medium enterprises in Indonesia are familiar with advanced features of ICT innovations. Advanced features, means that ICT innovations that are being explored more deeply.
Table 5.4 The usage of advanced features in Facebook

<table>
<thead>
<tr>
<th>Advanced Features</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not used at all</td>
<td>39</td>
<td>11.1</td>
</tr>
<tr>
<td>Used rarely</td>
<td>57</td>
<td>16.3</td>
</tr>
<tr>
<td>Used quite often</td>
<td>108</td>
<td>30.9</td>
</tr>
<tr>
<td>Used frequently</td>
<td>86</td>
<td>24.6</td>
</tr>
<tr>
<td>Used extensively</td>
<td>60</td>
<td>17.1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>350</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The graph below distinguishes the trend in the level of use of the respondents is dominantly skewed to the right side.

Figure 5.3 The usage of advanced features in Facebook

According to figure 4.3, more than half of SME staff spent their time using technology innovations to access advanced features of such technology innovations. The group of users that did not use advanced features at all is the lowest among five categories of use of advanced features.
5.4.4. The usage of sophisticated features of ICT innovations

Table 5.5 show that 28.6% respondents did not use sophisticated features of ICT innovations to support their business activities while 26.9% of all respondents used sophisticated features of ICT innovations quite often. Furthermore, 18.3% of users used sophisticated features frequently, and 14.9% respondents used sophisticated features of ICT innovations extensively. Thus 60% of respondents have wide experience in the use of sophisticated features of ICT innovations to support their business activities. Therefore, it can be confirmed that most respondents within small and medium enterprises in Indonesia are familiar with sophisticated features of ICT innovations. Features in ICT innovations that can be categorized as sophisticated features are: add photo and/or video, photo tagging many friends, access many applications, uploading company profiles, and make a links to other website addresses.

<table>
<thead>
<tr>
<th>Sophisticated Features</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not used at all</td>
<td>100</td>
<td>28.6</td>
</tr>
<tr>
<td>Used rarely</td>
<td>40</td>
<td>11.4</td>
</tr>
<tr>
<td>Used quite often</td>
<td>94</td>
<td>26.9</td>
</tr>
<tr>
<td>Used frequently</td>
<td>64</td>
<td>18.3</td>
</tr>
<tr>
<td>Used extensively</td>
<td>52</td>
<td>14.9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>350</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

The graph below distinguishes the trend of the level of sophisticated features that were used by respondents is dominantly skewed to the left hand side.
Figure 5.4 indicates that the number of users who used sophisticated features of technology innovations was higher than users who did not use sophisticated features of technology innovations. However, the users who did not use sophisticated features at all is the highest group among five categories. About one-third (33%) of individuals within SMEs did not use sophisticated features at all. This is followed by the group of individuals who used sophisticated features. The group of individuals who used sophisticated features of technology innovations rarely is the lowest group among five groups.

5.4.5. The industry

Less than half of the respondents (47.7%) represented the garment or clothing industry while 20.9% respondents represented the food industry. Furthermore, 5.1% are owners or managers of processing companies, followed by users from the telecommunication sector (about 2.0%), About 23% of respondents represented other sectors.
Table 5.6 Industry background of respondents

<table>
<thead>
<tr>
<th>Industry</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>73</td>
<td>20.9</td>
</tr>
<tr>
<td>Garment/clothing</td>
<td>167</td>
<td>47.7</td>
</tr>
<tr>
<td>Processing</td>
<td>18</td>
<td>5.1</td>
</tr>
<tr>
<td>Agriculture/agribusiness</td>
<td>5</td>
<td>1.4</td>
</tr>
<tr>
<td>Telecommunication</td>
<td>7</td>
<td>2.0</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>80</td>
<td>22.9</td>
</tr>
</tbody>
</table>

TOTAL                      | 350       | 100.0      

5.4.6. Managerial position

According to their managerial position in SMEs table 4.7 shows that more than 31%, of respondents were owners of the SEMs whereas about 29 percent of respondents came from mid-level managers. Furthermore, 27.7% participants were top level managers, while 12.3% respondents were CEOs of the SMEs.

Table 5.7 Managerial position of respondents

<table>
<thead>
<tr>
<th>Position</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid level</td>
<td>101</td>
<td>28.9</td>
</tr>
<tr>
<td>Top level</td>
<td>97</td>
<td>27.7</td>
</tr>
<tr>
<td>CEO</td>
<td>43</td>
<td>12.3</td>
</tr>
<tr>
<td>Owner</td>
<td>109</td>
<td>31.1</td>
</tr>
</tbody>
</table>

TOTAL       | 350       | 100.0      |
The graph below shows the reader that most respondents were owners of the SMEs, followed by mid-level manager and then top-level managers.

![Bar chart showing managerial positions of respondents]

**Figure 5.5.** Managerial position of respondents

### 5.4.7. Education background

According to the educational background of respondents, the table shows that most of respondents (more than 56%) were university graduates at undergraduate level. Then 40% of all respondents held a higher secondary certificate. Furthermore, only 3.4% of users came from postgraduate programs and held a Master title.
Table 5.8 Education background of respondents

<table>
<thead>
<tr>
<th>Education Background</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher secondary</td>
<td>140</td>
<td>40.0</td>
</tr>
<tr>
<td>Bachelor</td>
<td>198</td>
<td>56.6</td>
</tr>
<tr>
<td>Master</td>
<td>12</td>
<td>3.4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>350</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

The graph (Figure 4.6) shows that the distribution of respondent was mainly from undergraduate programs and the higher secondary level. Respondents with bachelor degrees were the dominant group in this study, followed by respondents with a high school background. Respondents with master degree were the smallest group in this study.

![Education Background of Respondents](image)

**Figure 5.6.** Education background of respondents

### 5.4.8. Age of respondents

Table 4.9 show that majority of the respondents (over 59%), were in the ages group (20-29 years). More than 35% of all respondents were in the 30-39 years age group. Furthermore,
3.4% of participants were in the 40-49 years range, while just 1.0% respondents were categorized as being part of the older generation.

**Table 5.9 Age of respondents**

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>208</td>
<td>59.4</td>
</tr>
<tr>
<td>30-39</td>
<td>123</td>
<td>35.1</td>
</tr>
<tr>
<td>40-49</td>
<td>12</td>
<td>3.4</td>
</tr>
<tr>
<td>50-59</td>
<td>6</td>
<td>1.7</td>
</tr>
<tr>
<td>60 and above</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>350</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Figure 4.7 below reveals that respondents were mostly from the young generations. The largest group was aged between 20 and 29 years which was followed by the 30-39 year old group, the group of 40-49 years, and the group of 50-59 years old.

**Figure 5.7 Age of respondents**
5.4.9. Gender

Table 4.10 show that the gender distribution of respondents was relatively equal. The gap between male and female was less than 5% (52% male and 48% female (Table 4.10 and Figure 4.8).

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>182</td>
<td>52.0</td>
</tr>
<tr>
<td>Female</td>
<td>168</td>
<td>48.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>350</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Figure 5.8 Gender of respondents
5.5. Inter-correlation among study variables

The aim of the correlation analysis in this section as shown in table 4.11 is to show the status of relationships among variables. The correlations are deemed statistically significant if correlation coefficient ($r$) is significant at 1 and 5 percent levels. A review of the correlation matrix presented in Table 4.11 reveals that there are significant relationship between a range of dependent and independent variables. The Table indicates that the use of ICT innovations organizational factors, individual factors, and social factors are positively related.

The usage of ICT innovation is significantly related to organizational factors such as training ($r= 0.337$, $p< 0.01$), managerial support ($r= 0.296$, $p< 0.01$), and incentive ($r= 0.199$, $p< 0.01$). Furthermore, the usage also has a significant relationship with individual factors such as perceived usefulness ($r= 0.443$, $p< 0.01$), experience ($r= 0.337$, $p< 0.01$), and innovativeness ($r= 0.261$, $p< 0.01$). Next, the analysis also reveals that usage also has a significant relationship with two variables of social factors; peers ($r= 0.185$, $p< 0.01$) and virtual network ($r= 0.233$, $p< 0.01$). However there is a negative relationship between usage and government’s role ($r= -0.040$).

Usage also has a significant and positive relationship with SME’s organizational performance in terms of profit, growth, and market share. It means that using ICT innovations is strongly influenced by Indonesian SME’s embrace of virtual social networking. Such thorough virtual social networking as used by SMEs significantly improves the usage and extent of ICT innovations.
Table 5.11. Means, standard deviation and correlations

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std Dev</th>
<th>TRA</th>
<th>SUP</th>
<th>INC</th>
<th>USE</th>
<th>EXP</th>
<th>INN</th>
<th>PEE</th>
<th>VIR</th>
<th>GOV</th>
<th>ATT</th>
<th>USA</th>
<th>PRO</th>
<th>GRW</th>
<th>MKT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRA</td>
<td>21.2000</td>
<td>5.10</td>
<td>1</td>
<td></td>
<td>0.576</td>
<td>0.318</td>
<td>0.749</td>
<td>0.589</td>
<td>0.632</td>
<td>0.542</td>
<td>0.475</td>
<td>0.048</td>
<td>0.667</td>
<td>0.337</td>
<td>0.322</td>
<td>0.528</td>
</tr>
<tr>
<td>SUP</td>
<td>18.1857</td>
<td>6.09</td>
<td></td>
<td>1</td>
<td>0.298</td>
<td>0.647</td>
<td>0.677</td>
<td>0.385</td>
<td>0.686</td>
<td>0.534</td>
<td>0.167</td>
<td>0.579</td>
<td>0.296</td>
<td>0.236</td>
<td>0.446</td>
<td>0.551</td>
</tr>
<tr>
<td>INC</td>
<td>17.3429</td>
<td>7.22</td>
<td>0.318</td>
<td>0.298</td>
<td>1</td>
<td>0.327</td>
<td>0.231</td>
<td>0.215</td>
<td>0.277</td>
<td>0.137</td>
<td>0.145</td>
<td>0.281</td>
<td>0.199</td>
<td>0.067</td>
<td>0.175</td>
<td>0.008</td>
</tr>
<tr>
<td>USE</td>
<td>20.5886</td>
<td>5.76</td>
<td>0.749</td>
<td>0.647</td>
<td>0.327</td>
<td>1</td>
<td>0.792</td>
<td>0.729</td>
<td>0.674</td>
<td>0.718</td>
<td>0.117</td>
<td>0.730</td>
<td>0.443</td>
<td>0.398</td>
<td>0.611</td>
<td>0.712</td>
</tr>
<tr>
<td>EXP</td>
<td>19.9000</td>
<td>5.20</td>
<td>0.589</td>
<td>0.677</td>
<td>0.231</td>
<td>0.792</td>
<td>1</td>
<td>0.688</td>
<td>0.687</td>
<td>0.737</td>
<td>0.159</td>
<td>0.740</td>
<td>0.377</td>
<td>0.483</td>
<td>0.699</td>
<td>0.772</td>
</tr>
<tr>
<td>INN</td>
<td>16.7571</td>
<td>3.49</td>
<td>0.632</td>
<td>0.385</td>
<td>0.215</td>
<td>0.729</td>
<td>0.688</td>
<td>1</td>
<td>0.579</td>
<td>0.768</td>
<td>0.082</td>
<td>0.732</td>
<td>0.261</td>
<td>0.658</td>
<td>0.741</td>
<td>0.667</td>
</tr>
<tr>
<td>PEE</td>
<td>19.8143</td>
<td>5.69</td>
<td>0.542</td>
<td>0.686</td>
<td>0.277</td>
<td>0.674</td>
<td>0.687</td>
<td>0.579</td>
<td>1</td>
<td>0.668</td>
<td>0.321</td>
<td>0.621</td>
<td>0.185</td>
<td>0.318</td>
<td>0.631</td>
<td>0.621</td>
</tr>
<tr>
<td>VIR</td>
<td>22.0429</td>
<td>4.66</td>
<td>0.475</td>
<td>0.534</td>
<td>0.137</td>
<td>0.718</td>
<td>0.737</td>
<td>0.768</td>
<td>0.668</td>
<td>1</td>
<td>0.304</td>
<td>0.740</td>
<td>0.232</td>
<td>0.640</td>
<td>0.755</td>
<td>0.703</td>
</tr>
<tr>
<td>GOV</td>
<td>16.2771</td>
<td>6.36</td>
<td>0.048</td>
<td>0.167</td>
<td>0.145</td>
<td>0.117</td>
<td>0.159</td>
<td>0.082</td>
<td>0.321</td>
<td>0.304</td>
<td>1</td>
<td>0.118</td>
<td>-0.040</td>
<td>0.103</td>
<td>0.263</td>
<td>0.081</td>
</tr>
<tr>
<td>ATT</td>
<td>15.8400</td>
<td>3.84</td>
<td>0.667</td>
<td>0.579</td>
<td>0.281</td>
<td>0.730</td>
<td>0.740</td>
<td>0.732</td>
<td>0.621</td>
<td>0.740</td>
<td>0.118</td>
<td>1</td>
<td>0.309</td>
<td>0.531</td>
<td>0.751</td>
<td>0.724</td>
</tr>
<tr>
<td>USA</td>
<td>12.5200</td>
<td>4.34</td>
<td>0.337</td>
<td>0.296</td>
<td>0.199</td>
<td>0.443</td>
<td>0.377</td>
<td>0.261</td>
<td>0.185</td>
<td>0.232</td>
<td>-0.040</td>
<td>0.309</td>
<td>1</td>
<td>0.209</td>
<td>0.158</td>
<td>0.350</td>
</tr>
<tr>
<td>PRO</td>
<td>22.5086</td>
<td>4.85</td>
<td>0.322</td>
<td>0.236</td>
<td>0.067</td>
<td>0.398</td>
<td>0.438</td>
<td>0.658</td>
<td>0.318</td>
<td>0.640</td>
<td>0.103</td>
<td>0.531</td>
<td>0.209</td>
<td>1</td>
<td>0.736</td>
<td>0.618</td>
</tr>
<tr>
<td>GRW</td>
<td>21.4571</td>
<td>4.85</td>
<td>0.528</td>
<td>0.446</td>
<td>0.175</td>
<td>0.611</td>
<td>0.699</td>
<td>0.741</td>
<td>0.631</td>
<td>0.755</td>
<td>0.263</td>
<td>0.751</td>
<td>0.158</td>
<td>0.736</td>
<td>1</td>
<td>0.768</td>
</tr>
<tr>
<td>MKT</td>
<td>21.9600</td>
<td>5.20</td>
<td>0.534</td>
<td>0.551</td>
<td>0.008</td>
<td>0.712</td>
<td>0.772</td>
<td>0.667</td>
<td>0.621</td>
<td>0.703</td>
<td>0.081</td>
<td>0.724</td>
<td>0.350</td>
<td>0.618</td>
<td>0.768</td>
<td>1</td>
</tr>
</tbody>
</table>

**Legend:** TRA=training, SUP=management support, INC=incentive, USE=perceived usefulness, EXP=experience, INN=innovativeness, PEE=peers, VIR=virtual network, GOV=government’s role, ATT=attitude, USA=usage, PRO=profit, GRW=growth, MKT=market share

a = correlation is significant at the 0.01 level
b = correlation is significant at the 0.05 level
5.6. Reliability and convergent validity of the instruments

The purpose of the reliability test was to determine the consistency of the instruments that were used in this study. The indicators to understand the reliability coefficient for dependent and independent variables are in Cronbach’s Alpha value. The instrument can be categorized as a good instrument when its Cronbach’s Alpha value is not less than 0.6. The higher the Cronbach Alpha value, the higher the internal consistency of the instruments used in the study.

Table 4.12 shows factor loading, AVE (Average Variance Extracted), and Cronbach’s Alpha that represents the coefficient of reliability of all independent and dependent variables. To calculate AVE, firstly we have to compute and then square the sum of squares for the indicators loading. After that, followed by sum the variances of the measurement errors. Next step is calculate the denominator for the Average Variance Extracted. After that, compute the numerator for the Average Variance Extracted. Finally, calculate the Average Variance Extracted and the result would be the number between zero and one.

The Table shows that the reliability value ranges from 0.851 to 0.935. Based on this range of values of the reliability coefficient, it can be assumed that the instruments show good reliability because Cronbach’s Alpha values are above 0.70. It means that the higher the coefficient of reliability the higher internal consistency of the instruments. It is argued by Hair, Anderson, Tatham, and Black (1998) that the consistency of the entire scale is assessed by the reliability coefficient and that the tool that is widely used to measure is Cronbach’s Alpha. Furthermore, Hair et al. (1998) also argue that even a 0.60 reliability coefficient in exploratory research can be assessed as a good score, however a 0.70 reliability coefficient is the value that is generally accepted as the limit for Cronbach’s Alpha.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor loading</th>
<th>AVE</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td></td>
<td>.844</td>
<td>.864</td>
</tr>
<tr>
<td>Train1</td>
<td>.663</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train2</td>
<td>.784</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train3</td>
<td>.771</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train4</td>
<td>.636</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mgt support:</td>
<td></td>
<td>.876</td>
<td>.897</td>
</tr>
<tr>
<td>Support1</td>
<td>.763</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support2</td>
<td>.857</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support3</td>
<td>.768</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support4</td>
<td>.688</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentives:</td>
<td></td>
<td>.914</td>
<td>.935</td>
</tr>
<tr>
<td>Incent1</td>
<td>.849</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incent2</td>
<td>.818</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incent3</td>
<td>.811</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incent4</td>
<td>.869</td>
<td></td>
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</tr>
<tr>
<td>Usefulness:</td>
<td></td>
<td>.898</td>
<td>.919</td>
</tr>
<tr>
<td>Usefulness1</td>
<td>.813</td>
<td></td>
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</tr>
<tr>
<td>Usefulness2</td>
<td>.881</td>
<td></td>
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</tr>
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<td>Usefulness3</td>
<td>.742</td>
<td></td>
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<tr>
<td>Usefulness4</td>
<td>.797</td>
<td></td>
<td></td>
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<tr>
<td>Experience:</td>
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<td>.861</td>
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<tr>
<td>Exp1</td>
<td>.627</td>
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<td></td>
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<tr>
<td>Exp2</td>
<td>.590</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exp3</td>
<td>.767</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exp4</td>
<td>.850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovativeness:</td>
<td></td>
<td>.909</td>
<td>.895</td>
</tr>
<tr>
<td>Innova2</td>
<td>.799</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innova3</td>
<td>.843</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innova4</td>
<td>.843</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peers:</td>
<td></td>
<td>.887</td>
<td>.907</td>
</tr>
<tr>
<td>Peers1</td>
<td>.825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peers2</td>
<td>.837</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peers3</td>
<td>.770</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peers4</td>
<td>.716</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual network:</td>
<td></td>
<td>.836</td>
<td>.855</td>
</tr>
<tr>
<td>Virtual1</td>
<td>.657</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual2</td>
<td>.830</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual3</td>
<td>.619</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual4</td>
<td>.693</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government’s role:</td>
<td></td>
<td>.880</td>
<td>.903</td>
</tr>
<tr>
<td>Govt1</td>
<td>.844</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govt2</td>
<td>.729</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govt3</td>
<td>.792</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govt4</td>
<td>.738</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude:</td>
<td></td>
<td>.907</td>
<td>.890</td>
</tr>
<tr>
<td>Attitude2</td>
<td>.762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude3</td>
<td>.921</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude4</td>
<td>.788</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usage:</td>
<td></td>
<td>.840</td>
<td>.851</td>
</tr>
<tr>
<td>Usage1</td>
<td>.658</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Furthermore, Hair, Anderson, Tatham and Black (1998) suggest that Cronbach’s Alpha value is considered the well-known indicator to measure the reliability of the instruments. Most studies adopt the use of Cronbach’s Alpha to obtain the reliability coefficient. Moreover Hair et al. (1998) also mention that a particular instrument can be categorized as reliable if they have a Cronbach’s Alpha value not less than 0.70, with some exceptions for exploratory research which allow for Cronbach’s Alpha value to be 0.60 or above.

The recent study by DeVellis (2003) explicitly mentions that Cronbach’s Alpha values can be grouped into two categories. First, an instrument can be categorized as an instrument with “respectable” value if their reliability values are between 0.70 and 0.80, while instruments with “very good” value are the instruments which have reliability values between 0.80 and 0.90.

5.7. Multiple regressions

The ICT adoption by individuals who are working in small and medium organizations is significantly growing and is considered to be the most interesting issue; especially in developed countries. However, there is limited interest and study in this research area in most developing countries. Therefore, this researcher investigates the SMEs’ staff perceptions of adoption of
ICT innovation and its impact on organizational performance in terms of profit, growth and market share.

The following sections consist of the results of regression analysis using PASW Statistics 18. Some tables are provided to show the results of this research.

**Table 5.13 Summary of results of regression analysis**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Unstand. Coef. B</th>
<th>Standard coef. β</th>
<th>t</th>
<th>R Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.296E-16</td>
<td></td>
<td>0.000</td>
<td>0.717</td>
<td>95.523</td>
<td>1.000</td>
</tr>
<tr>
<td>Training*</td>
<td>0.268</td>
<td>0.268</td>
<td>5.483</td>
<td>0.000</td>
<td>95.523</td>
<td>0.000</td>
</tr>
<tr>
<td>Managerial support</td>
<td>0.053</td>
<td>0.053</td>
<td>1.069</td>
<td>0.286</td>
<td>0.286</td>
<td>0.286</td>
</tr>
<tr>
<td>Incentives*</td>
<td>0.079</td>
<td>0.079</td>
<td>2.457</td>
<td>0.015</td>
<td>0.015</td>
<td>0.015</td>
</tr>
<tr>
<td>Usefulness</td>
<td>-0.071</td>
<td>-0.071</td>
<td>-1.117</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience*</td>
<td>0.219</td>
<td>0.219</td>
<td>3.890</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Innovativeness*</td>
<td>0.146</td>
<td>0.146</td>
<td>2.501</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
</tr>
<tr>
<td>Virtual Network*</td>
<td>0.367</td>
<td>0.367</td>
<td>6.159</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Peers</td>
<td>0.007</td>
<td>0.007</td>
<td>0.149</td>
<td>0.882</td>
<td>0.882</td>
<td>0.882</td>
</tr>
<tr>
<td>Government’s role</td>
<td>-0.068</td>
<td>-0.068</td>
<td>-2.050</td>
<td>0.041</td>
<td>0.041</td>
<td>0.041</td>
</tr>
</tbody>
</table>

Note: Attitude as a dependent variable

Table 5.13 above, shows the results of the overall model and provides crucial information that explains the value of R square. R square is defined as the coefficient of determination which indicates the percentage of total variation of the dependent variable (Y) that is explained by predictor variables or independent variables. In this study, 71.7% of the variance in individual acceptance of technology innovations can be explained by the predictor variables of training, managerial support, incentives, perceived usefulness, experience, innovativeness, virtual network, peers, and government’s role. Furthermore, it can be seen that the variables which are significantly impacting on attitude toward technology adoption are training, incentive, experience, innovativeness, and virtual network.

Training has a standardized coefficient β of 0.268 with a t value of 5.483 and a significance level of 0.000. These indicate that as training increases by one unit, individual adoption is positively influenced by 0.268 units.
Incentive has a standardized coefficient $\beta$ of 0.079 with a t value of 2.457 and a significance level of 0.015. These indicate that as incentive increases by one unit, individual adoption is positively influenced by 0.079 units.

Furthermore, experience has a standardized coefficient $\beta$ of 0.219 with a t value of 3.890 and a significance level of 0.000. These indicate that as experience increases by one unit, then individual adoption is positively influenced by 0.219 units.

Innovativeness has a standardized coefficient $\beta$ of 0.146 with a t value of 2.501 and a significance level of 0.013. These indicate that as innovativeness increases by one unit, individual adoption is positively influenced by 0.146 units.

Finally, virtual networking has the highest value with a standardized coefficient $\beta$ of 0.367 with a t value of 6.159 and a significance level of 0.000. This value indicates that as virtual networking increases by one unit, then individual adoption positively influenced by 0.367 units.

Moreover, at this stage, managerial support, usefulness, peers, and government’s role are not significant. There were some stages of analysis used in this research. It started with analysis of descriptive statistics that are important to summarize the data both numerically and graphically in order to explain characteristics and features of the sample.

**5.8. Regression analysis for attitude and usage as independent variables**

The table 4.14 shows that the usage of ICT innovation or adoption of ICT innovations in SMEs was strongly influenced by attitude of the SMEs’ employees.
Table 5.14 Regression analysis of usage as dependent variable with attitude as an independent variable

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Unstand. Coef. B</th>
<th>Standard coef. $\beta$</th>
<th>t</th>
<th>$R$ Square</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-7.274E-17</td>
<td>0.309</td>
<td>0.000</td>
<td>0.096</td>
<td>36.839</td>
<td>0.000</td>
</tr>
<tr>
<td>Attitude</td>
<td>0.309</td>
<td>0.309</td>
<td>6.070</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: usage as a dependent variable

Attitude toward adoption has a standardized coefficient $\beta$ of 0.309 with a t value of 6.070 and significance level of 0.000. The result indicates that as innovativeness increases by one unit, individual adoption is influenced positively by 0.309 units. Moreover, in multiple regression analysis, the t-test indicates whether the predictor is making a significant contribution to the research model. The larger the value of the t-test combined with the smaller the value of significance (sig.), the greater the contribution of the predictor.

Table 5.15 Regression analysis; profit as dependent variable with usage as an independent variable

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>6.263E-17</td>
<td>0.209</td>
<td>0.000</td>
<td>0.043</td>
<td>15.826</td>
<td>0.000</td>
</tr>
<tr>
<td>usage</td>
<td>0.209</td>
<td>0.209</td>
<td>3.978</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: profit as a dependent variable

The results indicate that organizational performance in terms of profit of SMEs in Indonesia is significantly influenced by the adoption of ICT innovations. Usage or technology adoption behavior has a standardized coefficient $\beta$ of 0.209 with t value of 3.978 and a significance level of 0.000. The result indicates that as usage increases by one unit, then profit is influenced by 0.309 units. By adopting ICT innovations, SMEs can improve their sales volume from the new
markets and new customers that they can get by using ICT innovations; profits can be increased by adopting technology innovations.

**Table 5.16** Regression analysis; growth as dependent variable with usage as an independent variable

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>2.860E-16</td>
<td>0.158</td>
<td>000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>usage</td>
<td>0.158</td>
<td>0.158</td>
<td>2.993</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: growth as a dependent variable

The results indicate that organizational performance in terms of growth of SMEs in Indonesia is significantly influenced by the adoption of ICT innovations. Usage or technology adoption behavior has a standardized coefficient β of 0.158 with t value of 2.993 and significance level of 0.003. The results indicate that as usage increases by one unit, then growth is influenced by 0.158 units. By adopting ICT innovations, SMEs can expand their business. For instance, they can cross all boundaries to find new potential markets and customers. Then, they also can build branches there and reduce the operational costs and can adopt ICT innovations such as social networking.

**Table 5.17** Regression analysis; market share as dependent variable with usage as an independent variable

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.998E-16</td>
<td>0.350</td>
<td>000</td>
<td></td>
<td>48.439</td>
<td>0.000</td>
</tr>
<tr>
<td>usage</td>
<td>0.350</td>
<td>0.350</td>
<td>6.960</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: market share as a dependent variable

The results indicate that organizational performance in terms of market share of SMEs in Indonesia is significantly influenced by the adoption of ICT innovations. Usage or technology...
adoption behavior has a standardized coefficient $\beta$ of 0.350 with a $t$ value of 6.960 and a significance level of 0.000. The results indicate that as usage increases by one unit, market share is influenced by 0.350 units.

5.9. Discussions

This study was developed based on three well-established theories which are the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). However, both TRA and TAM failed to comprehensively explain and predict the factors that influence personal behavior. This is because TRA and TAM failed to include external factors in their model. For this reason, this study has included external factors in the research model in order to determine the impact of driver factors on adoption and usage of ICT innovations.

This study revealed some determinants of adoption of ICT innovation that significantly predict the adoption of ICT innovations in organizations, particularly the small and medium enterprises. In order to make this section well-organized, the discussions is categorized into three broad factors and then divided down into sub-factors. The findings are compared to previous studies that relate to the topic.

5.9.1. Organizational factors

According to the core theories of innovation adoption such as TRA, TAM, and UTAUT, organizational factors play significant role in the adoption of ICT innovations within organizations. Organizational policies, approaches and actions together with individual attitudes
have a significantly influence to individual’s adoption of ICT innovations (Peansupap & Walker, 2005). There are three determinants which prior studies included in organizational factors as sub-factors. These are training (Al-Gahtani & King, 1999), managerial support (Ahuja & Thatcher, 2005), and incentive (Bhattacherjee, 1998).

Training

Tarafdar and Vaidya (2006) argue that there are different levels of support (in terms of capabilities and resources) to adopt new ICT innovations that are provided to individuals within organizations. Prior studies argue that training is one of the most significant determinants enabling individuals within organizations to adopt new innovations, to improve confidence during the process of adopting new innovations. Training can be defined as activities to improve the technical skill and knowledge of individual employee in an organization (Quazi & Talukder, 2011). Training is also defined as the degree to which organizations has commanded individuals within the structure in adopting technological innovations both in the context of quantity and quality (Schillewaert, Ahearne, Frambach, & Moenaert, 2005). Therefore, effective adoption of technological innovations and knowledge improvement are the result of the training program that is developed by the CEO or the owner of the organization.

Furthermore, Quazi and Talukder (2011) argue that an individuals’ confidence to learn and adopt new innovations will significantly increase when adequate training is imparted ogram are by management of the organizations. According to Lawson et al. (2003), some cases in Europe suggest that lack of training is the major reason why SMEs fail to adopt internet technology. Furthermore, Lee et al. (2006) argue that training plays a crucial role in improving individual
capacity to learn and adopt new technological innovations. It can be assumed that the best result of technological innovations adoption is produced from the optimum combination of training and support of top level management (Schileewaert et al., 2005).

Moreover, Igbaria, Zinatelli, Cragg, and Cavaye (1997) argue that developing useful training on personal computers is an important factor that has a positive impact on increasing personal computing acceptance, not only in large firms but also in SMEs. Potential constraints to the adoption of ICT innovations can be eliminated or removed by providing education, and training (Quazi & Talukder, 2011; Burgess, Jackson & Edwards, 2005). Research by Martin & Matlay (2001) also argues that good training that is followed by in-depth analysis will increase the quality of the decisions that are made by CEOs or owners of smaller firms. Understanding, favorable attitudes, increasing the usage frequency of a wide variety of applications in small firms are also the benefits that can be achieved by providing training (Igbaria, Zinatelli, Cragg, and Cavaye, 1997). The individual ability to adopt ICT innovations is significantly affected by the training that is provided by organizations to its employees (Quazi & Talukder, 2011).

Organizational capabilities and their competitive advantages can be generated through effective assembling of resources such as technical know-how and employee training (Bharadwaj, 2000). Individual belief, skill and understanding of new technology innovations will significantly improve when organizations provide good quality training to employees (Ligon, Abdullah & Talukder, 2007). Further, in a knowledge-based economy, some advantages such as improving performance and productivity, improving attitude, education, understanding and tolerance, and accelerate competitive development of profit-oriented organizations, can be achieved through
empowerment of well trained and educated employees. Moreover, the success of the adoption of ICT innovations by organizations is significantly influenced by command/instruction, coaching, and guidance to individuals within organizations (Quazi & Talukder, 2011; Yuan et al., 2005).

Furthermore, Lawson et al. (2003) focused their investigation on the impact of internal and external support toward SMEs in Australia. The study found that in-house training conducted by an internal person is a crucial factor that can help individuals meet the organizations’ strategic plan. Positive achievement on ICT innovations adoption could be generated by providing well-developed training. Therefore, the following hypotheses are presented for testing:

**Hypothesis 1: There is a direct impact of internal computing training on technology adoption**

The results relating to H1 show that adoption of ICT innovations is directly influenced by internal computing training. Therefore the above hypothesis is supported. Specifically, according to the instrument that was used in this research, the internal computing training was focused on the use of social media which this study specified as the use of Facebook because Facebook is very popular, well-established, widely used technological innovation at the global level, and the use of the technology is relatively free of charge. The survey also reveals that most respondents believe that the training on Facebook that focusses on the usage of Facebook for business purposes will significantly improved the individual and organizational performance generating benefits to the organization.
The results provide strong evidence that in order to maximize the usage of the newest ICT innovations, such as the usage of social media for business purposes, it is very important to develop adequate training for employees to learn and understand about the innovation of ICT.

Managerial Support

Igbaria, Zinatelli, Cragg, and Cavaye (1997) argue that the main benefit of management support is its ability to promote greater allocation of resources, and IS success can be achieved by creating a more conductive environment when management can act as a change agent. Miller and Toulouse (1986 cited in Igbaria, Zinatelli, Cragg & Cavaye 1997) argue that, in small businesses, compared to large businesses, a company’s performance is strongly influenced by the attitude of their chief executive officer (CEO). Usually small firms’ CEOs have a greater power over their employees to make decisions or to develop a firm’s strategies. It can be assumed that in small firms, management support is much more important, because most key decisions and corporate objectives and strategies are strongly influenced by the involvement of the owner or CEO.

Managerial support plays an important role in assisting an organization’s employees adopt ICT innovations (Davis, Bagozzi, Warshaw, 1989). An energetic approach by top level management helps individuals within organizations becoming confident in the process of adoption of ICT innovations (Beatty et al., 2001). In-depth understanding and support from key persons at the top level of management is significantly needed by employees to maximize the result of the adoption (Chapman et al., 2000; Martin & Matlay, 2001). Previously, Poon and Swatsan (1997) argued that it is important for SMEs to focus on inter-organizational aspects that combine with the usage of the internet to achieve the optimum benefits.
Furthermore, recent studies support those finding in the SME environment. In SME culture, CEOs have a wide range of tasks and responsibilities for the organizations’ progression (Windrum & Berranger, 2002). Moreover, it is very common that SME owners have double roles; both as a owner and as a CEO. The perform a variety of tasks and undertake responsibility; such as receiving organizations’ report, running daily activities, making strategic decisions and monitoring all companies’ resources. Due to those responsibilities, support of the CEO for adoption of ICT innovations is crucial; specifically in terms of encouraging all employees to adopt ICT innovations (Igbaria, Zinatelli & Cavaye, 1998).

Prior studies (Boone, 1998; Campbell, 1998) argue that adoption of technological innovations became attractive to employees as this contribute to improving employees’ motivation to try learning new technological innovations if managers decide to use the new technology in the major activities within the organization (Schillewaert et al., 2005). Individuals within organizations who have difficulties in adopting ICT innovations can receive significant assistance from a person who has power, skills and knowledge, and access to external resources (Sykes, Venkatesh, & Gosain, 2009).

Furthermore, research in the area of management policies suggests that policies and actions that are generated by active management, together with beliefs, playe an important role in individual acceptance of technology innovations (Leonard-Barton & Deschamps, 1988; Schillewaert et al., 2005). DeLone’s study (1988 cited in Igbaria, Zinatelli, Zinatelli, Cragg & Cavaye 1997) found that CEO’s computer intelligence and active involvement in the computerization efforts strongly
influenced by the successful use of computers by small firms. Moreover, the combination of training and management support has been seen as important factors for individuals to achieve good results in the adoption of technological innovations (Schillewaert et al., 2005).

Hypothesis 2: There is a direct impact of management support on technology adoption

H2 in this study proposed that adoption of ICT innovations is directly influenced by management support. The results do not support the hypothesis. The results show that management support has a weak relationship with attitude toward adoption of ICT innovations ($r = 0.053, p = 0.286$). This result might be influenced by the fact that most of a board member may have little experience in social media usage for business purposes as social media and Facebook in particular is relatively new to management and as such its usage is relatively limited.

Incentives

Prior studies suggest that key factors behind the adoption of technological innovations are not only influenced by individual beliefs, attitudes or intentions. Innovations adoption is also significantly influenced by management’s policies, decisions, actions and strategies (Leonard-Barton & Deschamps, 1988; Bhattacherjee, 1998). Nonetheless, some evidence shows that most studies on users’ acceptance and technology adoption just focused on examining the impact of individual factors, such as attitude and beliefs, and managerial factors, such as support and incentives, separately. There has been limited study t focusing on the relationships between those factors (Bhattacherjee, 1998).
On the other hand some empirical studies found that “incentives” is one of the most influencing determinants of an individuals’ behavior within organizations (Bhattacherjee, 1998). Incentives are part of rewards and punishment systems within organizations. Further, Currid (1995) posited that finance is not the only type of incentive. There are some other types of incentive, such as promotion, and national and international acknowledgement. Moreover, there are two forms of incentive that are usually distributed by management to their employees (Bhattacherjee, 1998). Those forms are level-based and type-based incentives. Level-based incentives refer to high and low incentives, while type-based incentive is referred to as behavior-based and outcome-based incentives (Nilakant & Rao, 1994).

The forms of incentive that are mentioned above are described in more detail by other studies. As part of level-based incentives, the high-level incentives enable individuals to improve their motivation to maximize use of technological innovations in their own approach in order to meet with the management’s requirement (Bhattacherjee, 1998). Howard and Mendelow (1991) have conducted research on faculty members of a business school to determine the impact of incentives on adoption of technological innovations. The finding of the research pointed out that adoption of technological innovations was significantly determined by incentive which was considered as one of the key factors for improving individual performance (Bhattacherjee, 1998).

Incentives such as commissions and recognition are given to employees who perform well while punishment or penalties, such as threats and demotion, are given to employees who show low performance. Managers typically demand their employees to demonstrate their performance, and managers usually present the employees with good rewards. To achieve the organizational goals,
such as productivity gains and improved profits, managers typically give incentives to motivate their employees to improve their performance (Bhattacherjee, 1998).

Talukder, Harris & Mapunda (2008) suggest that incentives are often believed to be powerful triggers of employee behavior in adopting technology innovation. The individuals’ motivation to adopt ICT innovations will significantly improve when high levels of incentives are presented to them (Bhattacherjee, 1998). However, the incentives that have been given to employees must not be financial only (Currid, 1995). However, public recognition, bonuses or long term salary increase are equally attractive to employees (Bhattacherjee, 1998).

Traditionally, incentives are used due to the lack of cooperation between management and employees during the period of adoption of technological innovations. The management side typically assumes that organizational benefits can be achieved by adopting information technology and management requires all employees to appropriately utilize the technological innovations (Leonard-Barton & Deschamps, 1988; Bhattacherjee, 1998). On the other hand, employees are individuals who also have their own values and interests; such as a holiday and career advancement. Therefore, a conflict of interest between management and employees may occur. In this situation, incentives are very crucial to resolve these issues.

There are some types of incentive that can be provided by management. An individual’s behavior may be the basis for determining incentives, for example hourly wages, for using technological innovations. Another type of incentives is based on the outcomes of an individual’s behavior; such as commissions (Bhattacherjee, 1998). Sappington (1991) identified the benefits
of each type of incentive from both management and employees perspectives. According to Sappington (1991), management prefers to implement outcome-based incentives due to the ability to transfer the risks of irrelevant behavior to employees and makes them accountable for the realized outcomes.

Moreover, incentives that are based on an individual’s behavior guarantee individuals against damaging outcomes due to non use of technological innovations. Hence, this may induce them to avoid use of innovations (Sappington, 1991). Furthermore, the earlier study by Eisenhardt (1985) in a survey of sales persons, empirically argued that commissions as part of outcome-based incentives were significantly more effective than salaries (behavior-based incentives). There is another simple approach called “tournament” or promotion in which incentive are given to employee who have the best performance among other employees within a group of employees (Sappington, 1991).

**Hypothesis 3: There is a direct impact of incentive toward technology adoption**

The data analysis of the present study suggests that incentives given to individuals within organizations significantly improve their attitude to learning, understanding, and implementing the ICT innovations in their daily business activities. These findings are in line with the findings of previous studies such as Bhattacherjee (1998), and Talukder, Harris, and Mapunda (2008).

**5.9.2. Individual factors**

Lewis, Agarwal, and Sambamurthy (2003) argue that one of the most important factors that influence the adoption of technology innovation is individual factors. Moreover, prior studies
empirically argue that personal innovativeness, prior experience, and perceived usefulness are part of the individual factors that play an important role (Davis, 1989). Those factors significantly influence an individual’s adoption of technological innovations (Al-Gahtani & King, 1999; Venkatesh & Davis, 2000; Lewis, Agarwal & Sambamurthy, 2003; Talukder, Harris & Mapunda, 2008). Furthermore, some recent studies also found that individual factors such as personal innovativeness, perceived usefulness, image, prior experience, and enjoyment of innovation have significant contributions to an individual’s adoption of technological innovation (Lewis, Agarwal, Sambamurthy, 2003).

Innovation is more likely to be adopted if an individual thinks that use of the new system will enhance the effectiveness and efficiency, or offer a greater control over the task (Lee, 2004). A more recent study by Lee, Kim, Rhee and Trimi (2006) suggests that individual characteristics are an important determinant of management information system success, (p.472). The determinants used in this study are mentioned below.

**Perceived Usefulness**

The acceptance or rejecting of adoption of technological innovations by individuals within organizations is strongly influenced by perceived usefulness. Individuals tend to adopt or reject new innovations depending on their assumption about whether the new innovations will bring some benefits to their work performance (Talukder, Harris, & Mapunda, 2008). It means that individuals have opinions or perceptions that can be identified as perceptions of usefulness of the innovations. According to Davis (1989) perceived usefulness were referred to users’ belief that adoption of an innovation would contributed to improvement of an employee’s performance.
Most studies reveal that perceived usefulness has a significant impact on attitude, behavior, and usage (Sun & Zhang, 2006). Kim, Chan and Gupta (2007) define usefulness as the total value an individual user anticipates from adopting technological innovations.

Davis (1989) showed that perceived usefulness has a strong and consistent correlation with system use. This finding is supported by other studies such as Al-Gahtani & King (1999) and Igbaria (1993). Both studies similarly argue that perceived usefulness significantly influences system usage.

More recent studies have identified the importance of perceived usefulness as one of the most powerful predictors and significant determinants at all points of measurement (Venkatesh & Davis, 2000, Venkatesh, Morris, Davis & Davis, 2003). Technological innovations are more likely to be adopted and implemented when they are perceived to offer benefits to individuals (Talukder, Harris & Mapunda, 2008). Moreover, if technological innovations offer efficiency and effectiveness to the work within organizations, the innovations are more likely to be adopted by individual within the organization (Lee, 2004).

**Hypothesis 4: There is a direct impact of perceived usefulness on technology adoption**

Perceived usefulness is widely recognized as an important factor that plays a pivotal role in the acceptance of a new technology. In this study, respondents were asked whether ICT innovations, particularly Facebook as the most popular social media, enable them to improve individual performance. Another question that was asked was if ICT innovations are useful and effective in
obtaining new markets and customers and whether ICT innovations enable strengthening of the communications between organizations, vendors, and government. The results indicate that perceived usefulness did not significantly affect attitude toward adoption of ICT innovations.

Experience

DeLone (1988) argues that the knowledge of owners and CEOs of small businesses can be enhanced by experience in using computer systems. Then, based on this knowledge, owners and CEOs manage and maintain the technological innovations that are adopted by their organizations. As a result, adequate treatment and management of technological innovations that is based on prior experience in using computers leads the small businesses to achieve superior results from the adoption of technological innovations (1988).

Experience is measured by the number of years a user uses computers in general (Venkatesh & Morris, 2000) and a dummy variable that deploys ordinal values to catch the different levels of user experience with the technology (Venkatesh, Morris, Davis & Davis, 2003). Other studies argue that experience influences correlation between (1) behavior intention and usage; (2) perceived usefulness and behavior intention; (3) perceived ease of use and attitude; and (4) subjective norms and perceived usefulness (Venkatesh & Davis, 2000; Venkatesh, Morris, Davis & Davis 2003). Moreover, experience refers to an individual’s experience with innovation and overall skills of adopting technological innovations (Talukder, Harris & Mapunda, 2008). Similar definition of user’s experience in adopting technological innovations or systems hav
been investigated by another studies (Igbaria, Guimaraes & Davis, 1995; Igbaria, Parasuraman, & Baroudi, 1996).

Individual within an organization with prior experience in adopting innovations is likely to improve the individual’s confidence during the process of adopting technological innovations (Igbaria, Parasuraman, & Baroudi, 1996; Talukder, Harris, & Mapunda, 2008). However, unsuccessful experiences of adopting technological innovations may amplify an individual’s belief that they have learned from those experiences and try not to fail in the future (Farr & Ford, 1990 cited in Talukder, Harris, & Mapunda, 2008). Reducing anxiety and building confidence are generated from prior experience and familiarity with adoption of technological innovations (Fuller, Vician, & Brown, 2006). Furthermore, system usage is positively impacted by prior experience of individuals (Lee, Kim, Rhee, & Trimi, 2006).

In-depth investigation conducted by DeLone (1988) led to a strong recommendation for future research. DeLone suggested that the biggest contribution of the research was the conclusion that individuals with strong computer literacy will significantly contribute to help small businesses successfully achieve technological innovations adoption (1988). Technological innovations will be adopted successfully by SMEs when CEOs and the owners have adequate experience in such innovation adoption. Therefore, individual experience significantly influences the result of adoption of technological innovations (DeLone, 1988). Further, DeLone (1988) argues that individual experience is the key factor for the long-term operation of small businesses which is not only crucial for organizations at the lower level but individual experience is also important for higher level organizations.
**Hypothesis 5: There is a direct impact of individual experience on technology adoption**

The results of data analysis show that experience significantly affects attitude toward adoption of ICT innovations. Therefore this result is in line with the previous findings of Venkatesh and Davis (2000), Venkatesh, Morris, Davis and Davis (2003), and Talukder, Harris and Mapunda (2008). It means that in order to maximize the benefit of the usage of ICT innovations, it is very important to have relevant experience and expertise or knowledge in ICT innovations.

**Innovativeness**

Personal innovativeness is defined as the willingness of an individual to learn about and adopt any technological innovations (Agarwal & Prasad, 1998; Lewis, Agarwal, & Sambamurthy, 2003; Thatcher, Stepina, Srite, & Liu, 2003). According to Agarwal and Prasad (1998), in the context of technological innovations, individual innovativeness can be defined as personal ability that is related to a positive attitude toward adoption of technological innovations and usage. Researchers in innovation diffusion have long recognized that highly innovative individuals actively pursue information about new concepts. Individuals with higher personal innovativeness are expected to have more positive beliefs about the target technology. They are also expected to develop more positive perceptions about the innovation in terms of advantage, ease of use, and compatibility (Lu, 2005).

Agarwal & Karahana (2000) have developed a multidimensional construct called cognitive absorption and suggest this construct to be an antecedent of the two commonly recognized behavioral beliefs about technology use; perceived usefulness and perceived ease of use.
Furthermore, a recent study by Yi, Jackson, Park and Probst (2006) posited that “some individuals are more willing to take a risk by adopting technological innovations, while others are hesitant to change their practice” (p. 356). Moreover, most organizations seriously focus on encouraging their employees to improve their motivation on adoption of technological innovations (Talukder, Harris, & Mapunda, 2008). However, some individuals more readily adopt such innovations while others do not. Individuals who are ready to adopt technological innovations will develop their beliefs about such innovations by harmonizing information that is collected from various sources (Rogers, 2003).

Agarwal and Prasad (1998) explain that the ability of individuals to adopt technological innovations within their organization is significantly determined by each individual’s personal innovativeness. Innovativeness may determine perception of individual toward technological innovations (Yi, Wu & Tung, 2006). Another study (Frambach & Schillewaert, 2002) focusing on individual’s behavior toward technological innovations noted that individual innovativeness is the congenital habit of an employee to adopt technological innovations. Moreover, Rogers (2003) also posits his argument that innovativeness is the time at which individual adopt such innovations during the diffusion practice. Leonard-Barton and Deschamps (1988) argue that the excellent achievement of technology implementation within organizations is strongly influenced by the innovativeness level of individuals (Lee, Kim, Rhee, & Trimi, 2006). Further, Zmud (1984) argues that the satisfactory innovations are significantly influenced by the level of innovativeness of an organization’s members (Lee, Kim, Rhee, & Trimi, 2006).
Individuals who adopt technological innovations at the beginning stage of the diffusion practice can be categorized as innovative individuals. Therefore, it can be expected that a more positive attitude toward adoption of technological innovations can be generated by individuals with higher personal innovativeness (Agarwal & Prasad, 1998; Lewis, Agarwal & Sambamurthy, 2003). Further, Lee, Kim, Rhee, and Trimi (2006) conclude that the key success of adoption of technological innovations within organizations is determined by the innovativeness level of their employees. Therefore, individuals within organizations who have high levels of innovativeness will demonstrate more enthusiasm towards adoption of technology innovations (Frambach & Schillewaert, 2002).

Moreover, it has been recognized for a long time that extreme desire to find unique and sophisticated ideas is a characteristic of the highly innovative person (Lu, Yu, & Liu, 2005). They have excellent ability and the capacity to deal with any turbulent environment and, therefore, are able to generate more constructive intentions toward acceptance (Rogers, 1995). Agarwal and Prasad (1998) introduced a new construct, personal innovativeness, into Davis’s original TAM. They pioneered use of a specific measurement for the innovativeness construct. Further, innovativeness has been defined as a unique character that does not belongs to every single individual. It just belongs to individuals who are categorized as risk-takers in the adoption of technological innovations (Lu, Yu, & Liu, 2005).

**Hypothesis 6: There is a direct impact of individual innovativeness on technology adoption**

The results show that individual innovativeness significantly impacts on an individual’s attitude to adoption. It means that individuals who are motivated to be more innovative are usually
motivated to be familiar with new technology or with an innovation. According to the results, it can be said that individuals within small and medium enterprises will be very enthusiastic about adoption of new technology innovation if they have a strong motivation to be more innovative. The results of this study are similar to and support previous findings (Lu, 2005, Yi, Wu, and Tung’ 2006, Lee, Kim, Rhee, and Trimi, 2006).

5.9.3. Social factors

Venkatesh & Brown (2001) argue that a social factor is defined as the extent to which members of social society influence one another’s behavior in technology adoption. An individual’s adoption of technological innovations is triggered by the social environment (Talukder, Harris and Mapunda, 2008). Social influence is defined as the degree to which members of a social group determine one another’s behavior in adoption of innovations (Venkatesh & Brown, 2001; Konana & Balasubramanian, 2005). Social influence is perceived insistence and encouragement that peers feel and be influenced to adopt a technology innovation. This effect is applied through messages and signals that support perceptions of the value of a technology (Fulk & Boyd, 1991).

Based on the above argument, perceived social pressure was assumed to have a stronger impact on new technology adoption by employees. Prior studies undertaken by Lucas and Spitler (1999) and Venkatesh and Davis (2000) mentioned that organizational variables, such as social norms, are more important than an individual’s perception of the ICT innovations in estimating system usage and acceptance (Lam, Cho, & Qu, 2007). Such influence initially derived from previous concepts that were introduced by Ajzen and Fishbein (1980) as normative beliefs about the relevance of adoption of technological innovations. The main point of this concept is that
perceived social pressure is considered more important than the usefulness of an innovation as the key factor in the adoption of technological innovations by employees within organizations.

Hossain and Silva (2009) also argue that previous studies of the social information processing model (SIPM) suggests that socially informed beliefs and perceptions have an impact on ICT usage behavior. Moreover, Windrum and Berranger (2002) argue that excellent external advice provided by consulting agencies to SMEs significantly influences the level of satisfaction of the adoption of ICT innovations. This happens in the SMEs which already have external consultant agencies. Empirical evidence from several studies shows that social factors are significantly more important than economic factors as a key driver in adoption of technological innovations by individual within organizations (Peansupap & Walker, 2005)

Furthermore, by involvement in virtual networking, individuals are able to share information and sustainable communications within society generate trust (Rothaermel & Sugiyama, 2001). Further, Lu et al., (2005) posited that pressure from social networks that influence individual decisions to adopt or reject technological innovations can be categorized as social influence. Moreover, Cooper and Zmud (1990) argue that in the areas of innovation diffusion studies, social influence plays an important role. Since individual need communication and interaction with other person, they are naturally willing to live and work with their community. Moreover, they also need to communicate, socialize, and interact with others. When they face critical decisions in the context of adoption of new technological innovations in their work place, they tend to reduce the risk and discomfort (Lu et al., 2005).
Some empirical evidence suggests that social influence has similar characteristics to subjective norms in TRA (Agarwal & Karahanna, 2000; Green, 1998; Karahanna & Straub, 1999; Lewis et al., 2003; Taylor & Todd, 1995; Lu, Yu, Liu, Yao, 2003; Lucas & Spitler, 2000; Venkatesh & Davis, 2000; Venkatesh et al., 2003). Moreover, Taylor and Todd (1995) describe social influence or social network as colleagues’ opinions, superior influences, and other individual’s influence. Further, this construct was enlarged by Karahanna and Straub (1999) into three main components which are subjective norm, image, and voluntariness.

**Virtual Social Network**

Virtual networking also offers the chance for all individuals to penetrate into the future of website technology that provides various benefits for the users such as real-time formatting of social and economic communications. Another benefit that can be achieved by individuals within virtual networking is the chance for individuals to provide profiles that consist of information about those individuals (Messinger, Stroulia, Lyons, Bone, Niu Run, Smirnov, & Perelgut, 2009). Moreover, in the virtual social networking context, individuals who are involved inside high technology-based networking are required to provide high quality information for their colleagues. Such information provides guidance for other individuals in the process of adoption of technological innovations (Kraut, Rice, Cool, & Fish, 1998; Brown & Venkatesh, 2005).

Moreover, virtual social networking as the newest development in internet technology, represents the sophisticated information and communication technology that accommodates virtual communication between individuals (Zhou, 2011). The acceleration of the adoption of technological innovations can be achieved by the sustainable communication between members.
within social networks. Moreover, world-wide communities that are virtually connected by the internet have been generating virtual economies (Shin, 2008; Spaulding, 2010). Millions of people are involved in the virtual environment because of increasing importance of virtual systems in business operations and management. (Shin, 2008). Many activities such as messaging, objects and money exchange, and paying bills can be carried out by members of the virtual world (Messinger, Stroulia, Lyons, Bone, Niu Run, Smirnov, & Perelgut, 2009).

Moreover, millions of individuals within virtual networking are able to exchange information and generate economic activities (Rothaermel & Sugiyama, 2001). Systems such as s Facebook develops graphical interfaces for business operations in order to provide appropriate devices for potential marketing function such as advertising (Spaulding, 2010). New trends in the dynamic atmosphere of the virtual world have significantly shifted the individual’s orientation to utilizing the virtual world for real economic purposes (Shin, 2008). Being recognized as “information superhighway” (Messinger, Stroulia, Lyons, Bone, Niu Run, Smirnov, & Perelgut, 2009), virtual networking is rapidly becoming an interesting issue in most organizations and individuals involved with sophisticated high technology innovations (Wasko & Faraj, 2011).

A more recent study supports the findings of prior studies. Sarker, Ahuja, Sarker, and Kirkeby (2011) argue that types of networks that are adopted by individuals within an organization can improve performance beyond that of their counterparts. Appropriate networks also became crucial resources that provide social support to all individuals within organizations. To maximize the knowledge about technology innovations and in order to generate positive attitudes, individual within organization can be assisted by excellent social encouragement and
societal communication (Kraut et al., 1998). The spreading of information about the benefits of adoption of technological innovations is significantly facilitated by participation of individuals within organizations in informal communication within their social networks (Talukder, Harris, & Mapunda, 2008).

Adoption of information and communication technology can be accelerated by the use of virtual social networks as a media to communicate with members within organizations and members from other organizations (Talukder & Quazi, 2011). There is a significant relationship between social networks and individual’s use of technology (Sykes et al., 2009). Social influence and intention to use mobile technology innovations also have a strong relationship (Lu, Yao & Chun-Shen, 2005). Informal individual networks have a crucial impact on the transfer of knowledge within organizations (Reagans & McEvily, 2003).

Moreover, those informal social networks connect most members within organizations in different industries (Frambach & Schillewaert, 2002). In virtual networking individuals are able to learn about various innovations and practices that are useful to them (Messinger et al., 2009). Therefore, various information and communication technologies are significantly useful for individuals who save energy by seeking information from various sources within their organization.

Hypothesis 7: There is a direct impact of virtual network on technology adoption

As a new variable that was introduced in this study, surprisingly, virtual networking yielded good results. All measurements and statistical tests show that virtual networking significantly
affects individual attitudes toward ICT innovation adoption. With the rapid grow of social media such as Facebook and Twitter, most individual nowadays decide to develop connection and communications with others using social media. Therefore, it is clear that virtual networking significantly affects an individual’s attitude toward ICT innovation adoption.

Studies about the virtual world have already been conducted by Messinger, Stroulia, Lyons, Bone, Niu Run, Smirnov, and Perelgut (2009), however they did not clearly analyze the virtual world as a media to build networking among individuals within organizations. In their survey, named Survey A, over 70% of respondents did not actively use or access online social networks such as Facebook or MySpace. The use of the virtual world for business purposes was not included for investigation in this prior study. The study only mentioned briefly that economic interaction would increase with the growth of the virtual world.

Therefore, in order to fill this research gap, this present study investigated the use of social media such as Facebook for business purposes, particularly for developing virtual networking between individuals and organizations. The results show that virtual networking yielded the strongest values among the variables used in this study. The coefficient value of $\beta = 0.367$ with significance $p = 0.000$ means that, statistically, virtual networking has a significant impact on the attitude of individuals toward adoption of technology. This result is in line with the findings of prior studies conducted by Zhou (2011), Shin (2008), Cheung, Chiu, and Lee (2011).
Peers

Peers can have an important role within organizations. They can contribute useful activities such as providing significant advice about individual performance and discussing mutual connection (Kohli & Jaworski, 1994; Fine & Bolman Pullins, 1998; Schillewaert, Ahearne, Frambach, & Moenaert, 2005). Perception of the value of technology can be formed through signals and messages that are delivered by peers (Talukder, Harris & Mapunda, 2008). Some studies, define social influence as a subjective norm (Lam, Cho, & Qu, 2007). In an organizational structure or platform, subjective norms have an important role to play(Taylor & Todd, 1995).

Social influence is defined as a pressure on an individual to perform a given behavior and the individual’s motivation to comply with the pressures (Lam, Cho, & Qu, 2007). Normative beliefs introduced by Ajzen and Fishbein (1980) in the TRA model, and also defined by Lam, Cho and Qu (2007) as an individual’s ability to comply with the expectation from other persons, such as family or friends, managers or society. Moreover, other studies, such as from Frambach and Schillewaert (2000), defined normative beliefs as “peer usage” (Talukder & Quazi, 2011).

Employees within organizations are significantly impacted by the encouragement, motivation and moral support of peers. Basically, as social human beings, individuals within organizations also need communications and interactions with others. Specifically, they want to receive review and advice from their colleagues when they have problems in their workplace (Lewis, Agarwal, & Sambamurthy, 2003; Yuan, Fulk, Shumate, Monge, Bryant, & Matsaganis, 2005). The importance and benefits of adoption of technological innovations within organizations is reflected in the behavior of peers who are enthusiastically involved in the process of adoption of
technological innovations. That is why most employees within organizations are interested in looking at their counterpart’s activities and then try to replicate them (Frambach & Schillewaert, 2002).

Further, adoption of ICT innovations can be executed through effective communication between individuals within organizations that generates powerful synergies (Sykes, Venkatesh, & Gosain, 2009). A key person within an organization can have a significant role in influencing the whole performance of his or her colleagues due to his or her ability to influence other members within their organization (Sarker, Ahuja, Sarker, & Kirkeby, 2011). Moreover, external pressures created by colleagues can be categorized and assumed to be social influences that impacts on an individual’s decision to adopt ICT innovations (Sykes, Venkatesh, & Gosain, 2009). Some studies suggest that the success of technological innovations within organizations is significantly determined by the quality of the communication and interaction between employees and their peers (Davis, Bagozzi & Warshaw, 1989; Sykes, Venkatesh, & Gosain, 2009). Branchaud and Wetherbe (1990) demonstrate with empirical evidence that both management and peers share the contribution in the decision to adopt technological innovations. Therefore, van Everdingen and Wierenga (2002) conclude that the propensity to adopt a technological innovation by employees of an organization is associated with the level of communication between the employees of that organization.

**Government’s Role**

The role of the government in the adoption of technological innovation is currently attracting a great deal of attention in the current literature. Thong (1999) found that public and private SMEs
in Singapore were significantly supported by the government to adopt ICT innovations. Governments are expected to actively supporting innovation transfer (Fujisue, 1998; Crow and Nath, 1990, 1992). Political decisions have become an important issue in alluring academia into research on this topic (Bozeman, 2000). ICT use and improvement in organizational performance and productivity could be stimulated by formulating accurate policies towards promoting ICT innovation adoption (Bayo-Moriones & Lera-Lopez, 2007). Interaction with the global community can be achieved by many businesses with the support of its agencies and government (Beal & Abdullah, 2002).

Some studies provide some evidence of the contributions and significant efforts of governments to support the adoption of ICT innovations. The role of government has become more important in the profit-oriented organizations, such as SMEs, which have limited access to financial resource but which significantly absorb a large number of the work force (Baum & Szivas, 2008). Furthermore, relevant support from government that is useful for SMEs can include creating policies and operational directions, encouraging skill improvement and providing access to high skill expertise (Baum & Szivas, 2008). The biggest government project in the US between the years 1980 to 1989 was on improving the domestic adoption of ICT innovations (Bozeman, 2000). Surprisingly, the trend for a more active contribution from governments in providing significant assistance can also be seen in other countries (Fujisue, 1998).

Bozeman (2000) suggests some contributions that can be made by the government for the success of adoption of ICT innovations. Firstly, an effort by governments to involve university research and development centres to encourage individuals and organizations adopt ICT
innovations. Secondly, governments have to organize and create good plans and pay attention to the support and development of civilian technology innovations. Thirdly, action is needed to create synergies between governments and university laboratories to generate technology innovations for use in the private sector. The fourth and last suggestion is the recommendation of Bozeman (2000) for intensive and continuous programs form both federal government and universities to develop technology-based economies.

Furthermore, technology development and transfer has to be supported by the active role of government actors and universities. Supplying applied research and technology to industry and developing policies are activities that can be generated by government to support small and medium enterprises (Bozeman, 2000). By developing strong and adequate knowledge of the determinants of ICT innovations adoption, Government is also expected to introduce appropriate decisions that enable profit-oriented organizations to adopt ICT innovations (Bayo-Moriones & Lera Lopez, 2007). It has prompted governments to take some significant actions that could accelerate the improvement of business performance and growth (Locke, 2004). In addition, the current governments take a crucial position in assisting SMEs improve their growth and bargaining position in a global market by providing ICT innovations across all sectors of the community and the economy (Southern & Tilles, 2000).

Due to the ability of small size profit-oriented organizations to generate job opportunities and contribute to the national economic growth, government has an important role to play in supporting SMEs across the nation (Baum & Szivas, 2008). Furthermore, government should be more active in introducing the cooperative technology policies that are useful for industries,
especially low resources access industries (Bozeman, 2000). Specifically, in developing countries, the role of government is considered to be the main factor in supporting smaller enterprises to utilize ICT innovations continuously (Kraemer, Gurbanxani, & King, 1992; King et al., 1994; Thong, 1999). Moreover, to support the improvement and development of small and medium enterprises (SMEs) across countries, governments can deploy their influence at the macroeconomic level in which businesses operate (Smallbone & Welter, 2001). Government can play a key part in helping SMEs in adopting technological innovation in order to improving economic growth and development (Baum & Szivas, 2008).

A neutral government policy for large organizations and for SMEs would help enhancement of adoption of SMEs adoption of technological innovation at work. (Bolton Committee, 1971 cited in Smallbone & Welter, 2001). It means that because SMEs have limited resources government has to pay more attention to SMEs. A study by Baliamoune-Lutz (2003) found that ICT innovation adoption was significantly determined by the policies that were introduced by government. However, low commitment and unlawful attitude of some people inside the government raise barrier for SMEs to adopt technological innovation. SMEs are often assumed to be a revenue generating centre for state authorities (Smallbone & Welter, 2001)

Some policies that are relevant and fit to SMEs’s conditions, such as direct support policies and programs are urged to be generated by government to help small size organizations solve their size-related problems (Smallbone & Welter, 2001). For instance, in Hungary and Poland, policies such as administrative reforms and approval for SMEs to set up a large scale program are generated by the government as a part of a programme to assist SMEs across the countries.
Additional policies that are associated with the size-retailed weaknesses are to increase individual capability and capacity inside the society and, specifically, among those of productive age. These policies are important for all activities and therefore provide some advantages for profit-oriented organizations (Baum & Szivas, 2008). Further, Smallbone and Welter (2001) argue that SMEs are able to provide potential economic benefits and have an ability to contribute to economic growth but they can not do so for lack of resource which is tied to their smaller in suize.

Due to the importance of ICT innovations in today’s world all government around the world should be more active in their support by encouraging SMEs to adopting ICT innovations to generate new and innovative ICT-based projects (Fernandez-Villavicencio, 2010). Therefore, the current priorities to support SMEs, such as developing relevant facilitating institutions (Smallbone & Welter, 2001) and to induce adoption of ICT innovations (Oh et al., 2009). Moreover, selective interference to motivate and assist SMEs adopt ICT innovations and to assist SMEs achieve excellence is also urged (Smallbone & Welter, 2001).

**Hypothesis 8: There is an impact of peers on attitude toward technology adoption**

The results of the study show that peer influence on attitude to adoption of technology was not statistically significant. Therefore, H8 which stated that there is an impact of peers on attitude toward technology adoption was not supported. This result is in line with the result of Talukder and Quazi (2011). Other studies (Lewis, 2003; Ajzen and Fishbein, 1980) also show that there is no significant impact of peers on attitude toward adoption. Those results are inconsistent with the previous study by Yuan, Fulk, Shumate, Monge, Bryant, and Matsaganis (2005) and Sykes, Venkatesh, and Gosain (2009).
However, correlation analysis revealed that peers have a positive and significant relationship with attitude towards a technological innovation. A possible reason why peers do not have a significant impact on attitude is that most individuals within SMEs in Indonesia do not have adequate experience in using and adopting social media for business purposes. Therefore, they cannot build good communication and knowledge sharing using social media and ICT innovation adoption. All they need is the involvement of experts in ICT innovations and social media that could be provided by higher education institutions and the government in Indonesia.

Hypothesis 9: There is a direct impact of government’s role on attitude towards technological innovation

The regression analysis employed to test the above hypothesis revealed government’s role in supporting ICT innovation adoption in Indonesia is not statistically significant. Therefore, H9 is not supported. These results are inconsistent with the results of prior studies conducted by Bozeman (2000), Thong (1999), Beal and Abdullah (2002), and Baum and Szivas (2008). A possible explanation why government’s role does not have a significant impact on attitude can be attributed to the fact that, most individuals within SMEs in Indonesia recognize that there is very low attention by government to support SMEs in Indonesia. Government does not do their best to help SMEs. Therefore, most SMEs cannot maximize the benefit of the usage of social media and ICT innovation adoption. Lack of knowledge and experience in using ICT innovations are the main constraints for SMEs for adoption of ICT innovation. All they need is the government’s support such as providing experts in social media and ICT innovations from highly qualified academics and consultants, developing appropriate and relevant rules in e-commerce
and electronic-based transaction, providing rewards for SMEs that are very active in developing social media-based businesses, and developing a cyber security centre.

5.9.4. Attitude toward adoption and technological adoption behavior (usage)

The relationship between attitude and technology adoption behavior is one of the very popular topics among researchers in the area of acceptance of technological innovations. The results of most previous studies found that attitude is an important factor that influences adoption behavior. Liao and Landry (2000), Talukder and Quazi (2011), Al-Gahtani and King (1999) and Lam, Cho, and Qu (2007) found a significant effect of attitude on behavior.

\[ H10: \text{There is an impact of attitude toward technology innovation adoption on technology adoption behavior} \]

The aim of this hypothesis was to investigate and examine the impact of attitude of individuals in SMEs toward technology adoption behavior. The analysis revealed that statistically, attitude toward technology innovation adoption significantly impacted technology adoption behavior. The findings show that, coefficient β of attitude is 0.309 with the p = 0.000, which means that there is a positive and significant impact of attitude on technology adoption behavior. Therefore, these result are consistent with the prior studies conducted by Ajzen and Fishbein (1980), Davis (1989), Al-Gahtani and King (1999), Lam, Cho and Qu (2007) and Talukder and Quazi (2011).

5.9.5. Usage of ICT innovations and firm performance

Profits

\[ H11: \text{There is an impact of technology adoption behavior on profits of firms} \]

This hypothesis was developed to examine the impact of technology adoption behavior of SMEs on profits. The analysis revealed that, statistically, technology adoption behavior significantly impacted on firm performance in terms of profit (β coefficient= 0.209, p = 0.000). Based on this result it can be concluded that there is a positive and significant impact of technology adoption
behavior on firm profitability. Those findings are consistent with those of prior studies (Locke, 2004), Hyvonen, 2007, and Battisti, Canepa, and Stoneman, 2009).

By maximizing the usage of technology innovations and ensuring sustainability of the usage of social media such as Facebook, Twitter, LinkedIn, or blogging, organizations will be able to improve their performance in terms of profits. Cost reduction in communication, accessing new markets around the world, improving after sales services, low-cost promotion and marketing, are some of the benefits that can be derived by adopting technology innovations such as social media.

**Growth**

*H12: There is a direct impact of technology adoption behavior toward growth of firms*

This hypothesis was developed to investigate the impact of technology adoption behavior of SMEs on growth of the firms. The analysis showed that, statistically, technology adoption behavior significantly impacted on firm performance in terms of growth of firms. The results show that there is a positive and significant impact of technology adoption behavior on growth of firms (β coefficient of attitude is 0.158 and p = 0.003). These results corroborate previous findings (Hernando and Nunez, 2004, Devaraj and Kohli, 2003, and Bayo-Moriones and Lera-Lopez, 2007).

Adoption of technology innovations is considered instrumental for most organizations to improve their performance. Both large and small organizations can achieve excellent outcomes immediately after they decide to increase the level of usage of technology innovations. The various achievements, such as increasing market size, sales volume, and cost reduction in communication with customers and business partners leads to an organization’s growth.
Market Share

H13: There is a direct impact of technology adoption behavior on market share of firms

This hypothesis was developed to investigate and examine the impact of technology adoption behavior of SMEs on market share of the firms. The analysis found that, statistically, technology adoption behavior has significant impact on firm performance in terms of their market shares.

The findings showed that, the coefficient $\beta$ of attitude is 0.350 with the $p = 0.000$, which means that there is a positive and significant impact of technology adoption behavior on growth of firms. These results are consistent with the prior studies that were undertaken by Hyvonen (2007), and Li and Ye (1999).

The involvement of technology innovations helps organizations, particularly profit-oriented organizations, undertake good research and development and then develop good products and services, provide excellent after sales services, and maintain good communications with all relevant parties. The use of technology innovations, particularly use of social media such as Facebook, can significantly help organizations expand their business and market shares.

The results of the study are presented in terms of the outcome of the hypothesis testing in Table 5.18.
Table 5.18 the Results of hypothesis testing (at a glance)

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<th>Hypothesis</th>
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<td>H1: There is an impact of internal computing training on attitude toward technology adoption</td>
<td>Significant relationship established</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: There is an impact of management support on attitude toward technology adoption</td>
<td>No significant relationship is established</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H3: There is an impact of incentive on attitude toward technology adoption</td>
<td>Significant relationship established</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: There is an impact of perceived usefulness on attitude toward technology adoption</td>
<td>No significant relationship is established</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H5: There is an impact of individual experience on attitude toward technology adoption</td>
<td>Significant relationship established</td>
<td>Supported</td>
</tr>
<tr>
<td>H6: There is an impact of individual innovativeness on attitude toward technology adoption</td>
<td>Significant relationship established</td>
<td>Supported</td>
</tr>
<tr>
<td>H7: There is an impact of virtual networks on attitude toward technology adoption</td>
<td>Significant relationship established</td>
<td>Supported</td>
</tr>
<tr>
<td>H8: There is an impact of peers on attitude toward technology adoption</td>
<td>No significant relationship is established</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H9: There is an impact of government’s role on attitude toward technology innovation adoption</td>
<td>No significant relationship is established</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H10: There is an impact of attitude toward technology innovation adoption on technology adoption behavior</td>
<td>Significant relationship is established</td>
<td>Supported</td>
</tr>
<tr>
<td>H11: There is an impact of technology adoption behavior on profits of firms</td>
<td>Significant relationship is established</td>
<td>Supported</td>
</tr>
<tr>
<td>H12: There is a direct impact of technology adoption behavior on growth of firms</td>
<td>Significant relationship established</td>
<td>Supported</td>
</tr>
<tr>
<td>H13: There is a direct impact of technology adoption behavior on market share of firms</td>
<td>Significant relationship established</td>
<td>Supported</td>
</tr>
</tbody>
</table>

5.10. Summary of the chapter

This chapter discussed data analysis, analysis techniques, results, findings, and provides a discussion of the results of data analysis in particular. Chapter three provided important explanations about research methods, population, sample, research instrument, data collection, and data analysis. The methodology that was appropriate for use in this research was unveiled in the previous chapter. The first part of this Chapter four is an introduction to this chapter which is
followed by description of statistical analysis, analysis of demographic data, and examination of employee’s level of ICT innovation.

The main part of this chapter consists of explanation about inter-correlation between study variables, reliability and convergent validity, multiple regressions, and regression analysis for attitude and usage as independent variables and its impact on organization performance in terms of growth, profit, and market share. This section also provides detailed information about research design, population of SMEs in Indonesia, sample of the study such as location of the sample, type of industry, and position of respondents chosen as representatives of the sample. This section also provides information about the study instrument and measurements of variables used in this study.

The last section of this chapter consists of variables used in the study, data collection method, data analysis, and definitions and measurement of variables. Multiple regressions were deployed to test the hypotheses. Data were collected from Indonesia, in particular from the main island of Indonesia, Java Island. SPSS was used to analyse the data. The statistical techniques included descriptive analysis, frequencies, correlation and regression analyses. Chapter five consists of a summary of the data analysis, the results of the data analysis, recommendations for the relevant institutions based on the findings of this study and implications of the findings. Chapter five also reports on the limitations of this study and identifies the areas of future research.
CHAPTER SIX

CONCLUSION

6.1. Introduction

This research examined adoption of information and communication technology (ICT) in small and medium-sized enterprises (SMEs). Numerous prior studies have been devoted to theory development towards understanding the driving forces influencing adoption of technological innovation particularly for e-business and e-commerce. However, most of the conceptual and empirical work on this topic has focussed on developed countries and large organizations. This study offers a new theoretical concept and builds an enhanced model of adoption of ICT innovation through an in-depth investigation of various variables that affect an individual’s adoption of ICT innovation in the context of the organizational situation. This research is designed to fill that gap - to unveil the factors that influence SMEs in an emerging economy to adopt technology innovation. A questionnaire survey was used as a method of examining the enhanced model. A review and assessment of the research process was also conducted in conjunction with the findings. This chapter has a number of sub-chapters that consists of an introduction followed by a summary of the research, conclusion and implications, the contribution to knowledge, research limitations and some ideas for future research.

6.2. Summary of Research

This section focusses on summarizing an empirically examinationing the proposed model of adoption of ICT innovation within small and medium enterprises. Levy and Powell (2003) argue that adoption of ICT, followed by the integration of ICT system and business process re-engineering, can significantly improving a firm’s performance. While extensive research has been undertaken on adoption of ICT innovation in the context of developed countries, there has been very limited research in developing-country setting (Talukder, Harris and Mapunda, 2008). Some adjustment regarding research variables that were not previously presented were introduced in the enhanced model used in the current study. The major contribution of this
research is that the present study developed and tested a novel coherent model of ICT adoption in the SMEs sector in a developing country, Indonesia.

This study examined the impact of organizational, individual and social factors on the adoption of ICT innovation, particularly—the virtual social networks, role of government, and organizational outcome such as profit, growth and market share— to document factors that comprehensively influence the adoption of ICT innovations and their impact on organizational performance in Indonesian SMEs. Moreover, three organizational factors included in the research model are training, managerial support and incentives. The second factor, individual factors, consists of users perceptions of usefulness, experience, and innovativeness. The last factor used in the model for this research is social factors that consist of virtual networks, peers, and government’s role.

Three research questions were developed for the study: (1) What is the effect of organizational factors on the adoption of ICT? (2) What is the effect of individual factors on the adoption of ICT? (3) What is the effect of social factors on the adoption of ICT? The next important step in this study was to conduct a review of the literature and then develop an enhanced model for ICT innovation adoption.

Furthermore, to fill in the research gap, a literature review was undertaken focusing on a review of three well-established models; the theory of reasoned action (TRA), the technology acceptance model (TAM), and the Unified Theory of Acceptance and Use of technology (UTAUT). The conceptual framework of Frambach and Schillewaert (2002) was also used in developing the enhanced model used in this study. The purpose of the literature review was to identify the factors that already exist so as to be able to combine and modify them to suit the needs of this research. One of the new factors added in this study was the government’s role which is believed to have particular relevance to adoption of ICT in Indonesia.

Quantitative methods were utilized in collecting data for this research. The main argument for the use of quantitative methods is that it has the ability to accurately execute activities such as
quantifying data, measuring factors and producing results that can be generalized to other research in the same area (Neuman, 2000). To collect the primary data from respondents the survey method was deployed. A questionnaire was distributed to respondents by mail. A random sampling technique was used to collect a sample from the population. The population of this study consisted of top level managers of small and medium sized businesses in Indonesia that are widely spread over Java Island. The SPSS package was used to analyze the raw data. Statistical tests used included correlation matrix, reliability and validity tests, ANOVA and regression analysis.

6.3. Policy recommendations

Factors that affect adoption of ICT innovation was the main focus of this study. The major conceptual contribution of this study is the development of a comprehensive model of adoption of ICT innovation by individuals within organizations in which major theories such as TRA, TAM, UTAUT, and Frambach and Schillewaert’s (2002) model have been integrated. The theory of reasoned action (TRA) was developed from the social psychology setting which is concerned with the factors of conscious intended behaviors (Talukder, Harris & Mapunda, 2008; Al-Gahtani & King, 1999). This model was introduced and proposed in 1967 by Ajzen & Fishbein (1980). The TRA was developed by distinguishing between beliefs, attitudes, intentions, and behaviors. Ajzen and Fishbein (1980) defined behavior beliefs as positive or negative assessments of an individual’s evaluation of performing a certain behavior. Moreover, Ajzen and Fishbein define normative belief as an individual’s opinion of the social pressures to perform or not to perform a behavior. Lam, Cho and Qu (2007), suggest that TRA proposes that a person’s behavioral intention is strongly influenced by subjective norms and the person’s attitude towards the behavior.

Ajzen and Fishbein (1980) argue that external factors played an important role. According to the TRA model, an individual’s belief might be strongly affected by external factors. However, Ajzen and Fishbein did not involve external factors in their research model (Igbaria et.al., 1997). Al-Gahtani & King (1999) and Talukder & Quazi (2011) found some weaknesses in the model in terms of nonsignificance of subjective norms. Furthermore, research by Sun and Zhang (2006)
suggests that there is low explanatory power of the model and the contrary relationships among constructs. As a recommendation, Lam, Cho and Qu (2007) suggested the use of training and managerial support as new variables in the model.

Another well-established theory that used in this study is TAM that was originally constructed with the purpose of investigating IT adoption at the individual level (Oh, Cruickshank, & Anderson, 2009).

The development of this theory was modified and developed from the Theory of Reasoned Action (TRA) that importantly addressed user acceptance of information technology (Talukder, Harris & Mapunda, 2008; Kim, Chun & Song, 2009). Another empirical study explained that TAM is a close and robust model of technology acceptance behavior (Gefen, Karahanna, Straub, 2003). Moreover, the major objective of TAM is to provide the impact of two strategic variables dealing with cognitive and affective determinants of technology acceptance (Al-Gahtani & King, 1999).

Furthermore, the most recent theory used in this study is the Unified Theory of Acceptance and Use of Technology UTAUT. Marchewka, Liu & Kostiwa (2007) mentioned that the UTAUT was initially introduced by Venkatesh, Morris, Davis & Davis (2003) to consolidate prior TAM-related studies. The UTAUT also integrated constructs of eight prominent models (Hennington & Janz, 2007). There are four objectives of the UTAUT (Venkatesh, Morris, Davis & Davis, 2003), which are: to examine the extant user acceptance models, to empirically confront the eight models, to formulate the Unified Theory of Acceptance and Use of Technology (UTAUT), and, finally, to validate UTAUT. The construct ‘social influence’ was recommended by UTAUT to be accommodated into the model by defining it as ‘social expectancy’ as the form of communications and interactions among management, supervisors and peers employees. This facilitate review of the employees’ decision to accept and implement the technological innovations (Lu, Yao, & Yu, 2005).

Several recommendations, such as adding other constructs and moderating factors suggested by previous studies were also accommodated into the model used in this research. The inclusion of
additional variables including the moderating ones into the model seemed justified as previous research summarized (see Adam et al., 1992) the objectives of inclusion of the moderating factors into UTAUT which were to investigate the relationship between perceived usefulness, ease of use, and intention to use that are moderated by gender, age, experience, and voluntariness of use (Marchewka, Liu & Kostiwa, 2007).

Moreover, there are two main reasons that support the assumption that adoption of ICT innovations is very important to the process of the economic growth of countries. A significant impact of the adoption of ICT innovations on organizational performance has been found by the most recent studies. The impact is not only on profitability, market value and market share, but also on intermediate performance indicators (Bayo-Moriones & Lera Lopez, 2007; Kohli & Devaraj, 2003; Melville et al., 2004). However, one of the weaknesses of the prior studies of user acceptance is that most were concerned with one key aspect; the direct impact of determinants (Frambach & Shiltewaert, 2002). Davis, Bagozzi and Warshaw (1989) argue that user acceptance is not fully comprehensively defined in the literature. Therefore, the current study was designed to investigate both direct and indirect impacts of determinants in order to develop a revised model in the area of user acceptance and adoption of ICT innovations in line with the advancement of relevant literature.

The current study model included three main factors into it which include organizational dimension, individual dimension and social dimensions. Training, managerial support, and incentives are grouped into organizational factors. Individual factors consist of three sub-factors which are perceived usefulness, experience, and innovativeness. The social factors, consisted of virtual social networks, peers, and government’s role. Social network was modified from Frambach and Shiltewaert (2002) and was used as a predicting variable in the current model. Social networks play an important role as guidance for individuals to make decision relating to adoption of ICT innovation (Dwyer, Hiltz & Passerini, 2007; Valck, Bruggen & Wierenga, 2009; Messinger, Stroulia, Lyons, Bone, Niu Run, Smirnov, & Perelgut, 2009; Sykes, Venkatesh & Gosain, 2009; and Reich & Benbasat, 2000).
The research methodology of the present study was developed following the review of articles in the area of information systems research. Primary data were collected using a survey method. Conventional postal mail and electronic mail were used to collect the data. SME owners, CEOs, and management staff of small and medium enterprises were the participants in this research. The populations for this research comprised top level managers of small and medium enterprises in Indonesia spreading over Java Island having the concentration of largest population in Indonesia. Also a large numbers of SMEs operate East and Central Java. SMEs in each area have some unique and different products and services supporting the economic growth of Indonesia. As mentioned earlier the samples for this study were drawn from the food, garment, agriculture, telecommunications, commodities and processing sectors.

The main findings of this study were that virtual social networking is the most important variable that significantly and positively affects all other variables. It means that virtual social networks encourage the adoption of ICT innovations. Moreover, indirectly, virtual social networks also exert a strong influence on organizational performance. Viewed from the theoretical perspective, this study provides an understanding of the new variables that influence employees in organizations to take up ICT innovations. The study also found that virtual social networking sites such as Facebook are becoming an effective tool to improve the adoption of ICT innovations in various organizations in Indonesia especially in its SMEs sector.

Furthermore, the study revealed that a better understanding of the variables influencing the individual acceptance of adoption of ICT innovation within SMEs can be developed if an appropriate model is set to test. Table 4.13 showed that 71.7% of the variance can be explained by the model used in this study. The results of multiple regressions analysis confirmed that that the nine independent variables examined in this study account for 71.7% of the variance in the individual acceptance of ICT innovation.

Table 5.11 shows the coefficients and constant for the regression equation and the significance of each independent variable in the model predicting the variance of dependent variables. Furthermore, Table 5.11 shows that dependent variable usage is positively and significantly influenced by independent variables. The results of this research reveal the importance of
external factors in explaining individual attitude towards adoption of ICT innovation within Indonesian SMEs.

Moreover, the results of regression analysis indicate that training and incentives as parts of internal factors are positive and significant, meaning that training that is provided and supervised by managerial staff has a significant impact on the usage of ICT innovation. This means that increasing training within organization will significantly increase the level of usage of ICT innovations. It also means that training is widely considered within organizations as the factor that plays an important role in individual learning and adoption of ICT innovations. Training is very useful in assisting individuals to learn and understand ICT innovations and its features.

The results reveal that incentives play a significant role in making the adoption process of ICT innovation. Bhattacherjee (1998) proved that an individual’s motivation could be maximized by high-levels incentives and to maximize technological innovations in order to meet the management’s requirement. Another study by Talukder, Harris & Mapunda (2008) also suggests that incentives are often perceived as powerful triggers of employee behavior in adopting a technology innovation. However, Currid (1995) argues that the incentives that are provided to employees may not only be financial as there are other forms of incentives such as public recognition bonuses or income rises (Bhattacherjee, 1998).

The study also reveals that the attitude of individuals within organizations toward the adoption of ICT innovations is positively and significantly affected by factors that come from their personal perceptions, such as personal experience and innovativeness. The results from statistical analysis presented in Table 4.11 reveals that experience and innovativeness are positive and significant. It means that, statistically, individual’s adoption of ICT innovations within organizations is positively and significantly influenced by experience and innovativeness. Talukder, Harris & Mapunda (2008) argue that experience refers to an individual’s experience with innovation and overall skills of adopting technological innovations. DeLone (1988) suggests that the knowledge of owners and CEOs of small businesses can be upgraded by experience in using computers. Igbaria, Parasuraman, & Baroudi (1996) and Talukder, Harris, & Mapunda (2008) argue that individuals within organization that have prior experience in adopting innovations are likely to
improve their confidence during the adoption process of technological innovations. Furthermore, the result also indicates that an individual’s adoption of ICT innovation behavior is positively and significantly influenced by personal innovativeness. It means that organizations and individuals need to find new ways or methods to replace the traditional innovation adoption strategies.

The most fascinating result came from the analysis of virtual social networks as part of the social factors. Or the purpose of this thesis virtual networking is defined as networking among individuals who use Facebook as the main social media in their interaction. This study found that, as a new variable introduced in this study to modify the established studies,, virtual networks have a positive and significant affect on the attitude of individuals toward adoption of ICT innovations within organizations. The coefficient value of virtual network is the highest among the variables that positively and significantly affect the individual’s attitude toward adoption of ICT innovations.

The positive and significant influence of virtual networking on individual attitude within organizations brings a strong message; that by maximizing virtual social networks in communication, many advantages can be achieved by individuals within organizations in terms of adoption of ICT innovations. Some advantages that can be achieved are time saving, cost saving, increasing area of coverage, enabling the finding of new opportunities, opening of new market, and leaving geographical constraint behind. Moreover, Zhou (2011) suggests that virtual social networking is the newest development of the internet technology and represents the sophisticated information and communication technology that accommodates the communication among individuals virtually. A prior study by Rothaermel & Sugiyama (2001) suggested that large numbers of individuals within virtual networking are able to exchange information and helps generate economic activities.

In the context of Indonesia as a developing country, by adopting ICT innovations such as Facebook, most SMEs in Indonesia now have the opportunity to earn money and generate profit through using Facebook. They can expand their business from the local to the international market. Activities such as procurement, production and logistics can be significantly improved or
made more efficient. SMEs can develop close and high level relationships with their customers by refining and fine tuning their management and communication practices. In short, adopting new technology can create unique products and services and generate better profits and productivity for Indonesian SMEs.

Furthermore, ICT adoption will be instrumental in improving the organizational performance of SMEs. Sound research devoted to identification of drives of ICT adoption will significantly contribute to improvement of an organization’s attitude, and the attitude of its employees’ toward using ICT innovation at work. People’s behavior concerning ICT adoption will significantly determine how well an organization performs in terms of profit, growth, and market share especially for Indonesian SMEs. This research will benefit Indonesia SMEs by providing guidelines to improve their financial targets improved business performance will significantly contribute to the country’s economic growth in the long term. ICT innovations, particularly Facebook used for business purposes and economic activities, would be very useful for individuals and their organizations because Facebook does not apply membership fees to its audiences. Sledgianowski & Kulviwat (2009) argue that the reputation of Facebook as an effective communication device is currently attracting many companies to promote their products and services virtually using Facebook sites.

6.4. Theoretical Contribution: (Contribution to Knowledge)

This research has contributed to knowledge in two ways: by constructing a new model and by examining the factors that influence individual decision about adoption of ICT innovation. Currently, the articles and academic journals that focus on adoption of ICT innovation by SMEs were very difficult to find in Indonesia. In particular this thesis makes contribution to literature by proposing, constructing and empirically testing an enhanced model of ICT innovations integrating virtual networking, particularly Facebook, as a new variable in the study framework. No prior research has considered Facebook as a key variable in business activities. Being considered as a phenomenon not many prior studies predicted that Facebook would emerge as a significant tool that would be used by businesses to boost their business performance through interacting with their stakeholders including customers and suppliers. Finally this research
confirms the powerful role of Facebook as a social media in enhancing positive attitudes of users leading to improved financial performance of Indonesian SMEs. The established theories and models in the field of technology acceptance research have already made significant contributions to the advancement of knowledge in this dynamic area of significance. Given the unprecedented growth of the ICT and its impact on the growth and development of modern business at the global level, there is a necessity to continuously improve the theories and thoughts concerning the operation and management of modern technology. The current research has made some contributions in upgrading the research framework which would advance further through the efforts of committed researchers. It is worth noting that currently about one billion people around the world have been actively using Facebook as a vehicle of communication at the individual and business level. This massive membership to face book would further advance its appeal to individuals and businesses which would call for research as to how to use this media more effectively in business operations especially in the SMEs sector which is increasingly making significant contribution to national economic growth especially in the emerging economies. This study, as expected, found that virtual networking, such as with Facebook, is empirically proven to be able to be the key to improvement of organizational performance.

6.5. Practical Contribution of the study

Managers should focus their attention on important ICT innovations for individual and organizational performance. For organizations, it is important to maintain and combine potential resources that are able to bring the unique characteristic that make it unique from competitors. This study will encourage managers to pay more attention to effective and efficient adoption and utilization of ICT innovations in small and medium enterprises in Indonesia. This study will also help management of small and medium enterprises to control ICT innovation costs by encouraging organizations to use Facebook as the major tool in their business operations. Since Facebook is free of cost and has the ability to easily and quickly reach all over the world, the future prospect of this media in advancing business causes is well understood.

The current study made significant contributions by providing valuable information as to the perception and practice of Facebook by Indonesial SMEs. Indonesian government can capitalize
on the findings of this research and help SMEs to use this media in their favour in boosting their economic performance which would make contributions to national economic growth.

It is important for practitioners to note the key factors driving the perception of ICT users in order to ensure optimizing of the usage of ICT innovations. These key factors are training, incentive, experience, innovativeness, and virtual networking. Managers responsible for implementing of an innovation in an organization especially in SMEs’ should ensure that supportive policies are in place to expedite the process of implementation of ICT innovation at the organization level. In the end, by optimizing the adoption of ICT innovations, organizational performance in terms of profit, growth, and market share will improve significantly. The contribution of this study has now been clearly delineated and the findings would provide guidelines for practitioners not only for successfully implement of an innovation but also to ensure that the implementation of the new technology is sustainable down the track.

6.6 Implications of the study

The implications of the findings of the current study are diverse and would involve the following:

**Implications for Managers**

This research is the first to test the usage of social media, in terms of Facebook, as a tool for business adoption of technological innovation in that prior studies investigated the usage of Facebook for library purposes and for non-profit activities. The results suggest that managers should focus their attention on the importance of ICT innovations for individual and organizational performance. Therefore, they should provide required support, particularly by providing continuous training and appropriate incentives for actively participating ion the ICT adoption process in general and Face book in particular. The training should be extensive and the nature and extent of training are to be determined through extensive consultation with the
management, experts, academic researchers and ICT based government agencies. The incentives should not be only in the form of financial benefits but also in the form of promotion, personal improvement.

**Implications for Organizations**
Since the small and medium sized organization would benefit from implementation of ICT innovation such as Facebook, the management should develop a clear policy on integrating ICT innovation into their business strategy. The policy should pay greater attention to differentiate SMEs usage record of ICT adoption from the competitors in order to uniquely position firms’ commitment to embrace new technology in its operation. Organisations can also take the advantage of new ICT technology such as Facebook to minimize cost of communication as Facebook does not cost any money to the organisation. Furthermore, Facebook has the potential of reaching customers, suppliers and stakeholders across borders. Thus, Facebook can play a pivotal role in the effective communication of day to day affairs of SMEs to the target market virtually without any cost to the organization and help an organization increase its performance.

**Implications for Governments**
Since adoption of ICT innovations that are widely considered as one of the key factors for improving an organization’s performance, governments in general and Indonesian government in particular can learn from the findings of this research and design programs to help SMEs to implement ICT innovations into practice. ICT innovation and its usage in SMEs are strategically important for Indonesia as SMEs make significant contributions to the economic development of the country in terms of income generation and job creation. Historically Indonesian SMEs are not financially capable of driving and implementing the growing and dynamic ICT innovation. Hence governmental involvement is considered crucial for the survival and growth of the struggling medium and small sized organization. Government can facilitate the adoption process directly through offering financial assistance as well as involving universities and other research organizations to provide infrastructural help for the overall development of ICT implementation.
More specifically, government can involve its science and technology in providing technical support along with employee training facilities to motivate SMEs to continuously adopt an updated version of social media.

6.7. Study Limitations

The main limitation of this study is that the research used only a sample from the population of a small area of Indonesia that is known as a country with a thousand islands. There are at least six big islands, Java, Sumatera, Kalimantan, Sulawesi, Papua, and Bali that having the potential for small and medium enterprises. However, this study only took the sample from one island, which is Java Island. It is very important and useful for the sample to be taken from other major islands because this would generate findings and recommendation that are more comprehensive, and could capture more accurately the circumstance of SMEs in Indonesia. The other limitations of this research are due to practical constraints; this research was cross-sectional and was done and completed at a single point of time.

6.8. Future Research

While conclusive and convincing results have been generated from this in-depth analysis, this study does have some limitations. This study collected data from one single island in Indonesia, yet ignored Sumatera, Kalimantan, Bali, Lombok, Sulawesi, Papua and Nusa Tenggara. A future study should include these islands so that a more general comparison can be made. There are thousands of SMEs throughout Indonesia and an effort should be made to investigate them all. Another limitation is that this study took the data only from one single point in time. Future research that takes into account longer timeframes can be developed to find more sophisticated results and to determine what occurs in the long-term and in an historical context. Longitudinal studies on this topic should therefore be pursued in the future. Furthermore, future studies on SMEs in Indonesia should involve a comparison with those in other emerging economies, particularly in the Asia-Pacific region. Future research also needs to be focused on the role of governments in helping SMEs in developing countries, particularly Indonesia. It is important to
investigate what government should do in the future and what actual contributions have already been made and what assistance has already been given by government to help SMEs improve their performance.
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Appendix 1: Information Sheet

Information Sheet
Faculty of Business and Government, University of Canberra

Determinants of SMEs’ Adoption on Information and Communication Technology (ICT) and Their Impact on Organizational Performance in Indonesia

Dear Sir/Madam,

The issue of adoption of information and communication technology (ICT) is attracting attention of researchers in the area of the technology usage by small and medium enterprises. While ICT adoption has been extensively applied to developed countries and large companies, Indonesia is a developing country where technology plays an important role in its economic growth. This study will specifically examine the drivers of technology adoption in SMEs in Indonesia and their impact on SMEs’ organizational performance—profit, growth and market share.

Please be informed that the individual responses to this study are strictly protected and confidential. This study will not reveal the identity of those who have responded. The survey questionnaire should take about 10 to 15 minutes to complete. Please note that you are under no obligation to participate in this research and you are free to withdraw at any stage without prejudice.

We guarantee confidentiality and will ensure there is no access to your data. We will store only aggregate data on a computer and all surveys notes and data will be kept in a locked office in the University of Canberra Australia. The data will be a password protected file only accessible by the researcher. It will stored for 5 years, and after that will be destroyed.

If you would like to receive a copy of a summary of the research findings please contact me via email. If you have any question or concern please contact me via email at: dede.canberra.aussie@gmail.com or via phone on +61402120578.

Thank you very much for your kind cooperation.
Yours sincerely,

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Chair, Supervisory Panel
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Assistant Professor
Faculty of Business and Government
University of Canberra
ACT 2601, Australia
Appendix 2: Survey Questionnaire

SURVEY QUESTIONNAIRE
Faculty of Business and Government, University of Canberra

Determinants of SMEs’ Adoption on Information and Communication Technology (ICT) and Their Impact on Organizational Performance in Indonesia

Demographics (please tick the appropriate choice)

1. Your gender? □ Male ■ Female
2. To which are group do you belong? □ 20-29 □ 30-39 □ 40-49 □ 50-59 □ 60 and above
3. What is your academic qualification?
   □ Primary □ HSC □ Bachelor □ Master degree □ PhD
4. Your position? □ Mid level manager □ Top level manager
5. What is your category of industry?
   □ Food □ Garment □ Agricultural □ Processing

Usage
1. On average, based on frequency of use, how frequently do you use Facebook for job-related work?
   (a) less than once a month, (b) once a month, (c) a few times a month, (d) once a day,
   (e) several times a day
2. On average, based on actual amount of time spent, how much time do you spend per day using Facebook for job-related work?
   (a) Less than 1/2 hour, (b) from 1/2 to 1 hour, (c) 1-2 hours, (d) 2-3 hours,
   (e) More than 3 hours
3. Please indicate your level of usage of building a network (adding and confirming new friend as a new potential customer):
   (a) not used at all, (b) used rarely, (c) used quite often, (d) used frequently,
   (e) used extensively
4. Do you use advanced features of Facebook, such as uploading company profile and pictures?
   (a) not used at all, (b) used rarely, (c) used quite often, (d) used frequently,
   (e) used extensively
5. Do you use sophisticated features of Facebook (sending messages and electronic communications/chatting)?

(a) not used at all, (b) used rarely, (c) used quite often, (d) used frequently, (e) used extensively

This instruments are developed from Igbaria, Zinatelli, Cragg, and Cavaye (1997). This instrument using a 7 likert-scale, from 1= strongly disagree (SD) to 7=strongly agree (SA)

<table>
<thead>
<tr>
<th>Training</th>
<th>SD</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td>Training in Facebook access is useful for employees</td>
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<tr>
<td>Training to get new friends in Facebook is useful for employees</td>
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<td>Training to use the messages in Facebook is useful for employees</td>
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<td>Training to use Facebook for business is useful for employees</td>
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<tr>
<td>Training to promoting and selling products using Facebook is useful for employees</td>
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Management support

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<tr>
<td>Management is aware of the benefits with the use of Facebook</td>
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<td>Management always supports and encourages the use of Facebook for job-related work</td>
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<tr>
<td>Management provides help and resources to enable people to use Facebook</td>
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<td>Management is really keen to see that people are happy using Facebook</td>
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<tr>
<td>Management provides good access to hardware resources when people need it</td>
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Incentives

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<tr>
<td>Incentive will increasing employee’s motivation to use Facebook</td>
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<tr>
<td>Employees will increasing their effort to use Facebook after get some incentives</td>
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<tr>
<td>Incentives need to be given to employees to improve their performance</td>
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<tr>
<td>Employee will enthusiastic in using Facebook when get some incentives</td>
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<tr>
<td>Incentives will spark employees’ motivation to use Facebook</td>
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Perceived of usefulness

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<tbody>
<tr>
<td>Using Facebook will improves my job performance in promoting and selling products</td>
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<td>6</td>
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<tr>
<td>Using computers for Facebook will increases my job productivity</td>
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<tr>
<td>Using Facebook will help me to get new potential customers</td>
<td>1</td>
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<tr>
<td>Using Facebook will enhances my job’s effectiveness</td>
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<tr>
<td>Using Facebook will help me to make a better communication with supplier and government</td>
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Experience

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<th>Training</th>
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<tbody>
<tr>
<td>I will enthusiastic using Facebook because I have much experience with Facebook</td>
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<tr>
<td>My previous experience in using Facebook will make me have no difficulties in using Facebook in the future</td>
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<tr>
<td>My previous experience tells that Facebook very useful to improve my performance</td>
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<tr>
<td>Prior training courses help me to use Facebook and another virtual</td>
<td>1</td>
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</tbody>
</table>
networking

My previous experience with Facebook is very useful | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Innovativeness**

Facebook as a part of new technology is a very interesting thing to be adopted | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
I always want to try to use every new Facebook innovations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
I always enthusiastic to learning Facebook to make it more powerful and useful | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
I think Facebook is an excellent innovative concept to promoting the products | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
I always enthusiastic to experiment with the newest Facebook applications | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

This instruments are developed from Igbaria, Zinatelli, Cragg, and Cavaye (1997). This instrument using 5 likert-scale, which are: 1= strongly disagree, 2= disagree to some extent, 3=uncertain, 4=agree to some extent, 5=strongly agree

**Peers**

People who influence my behavior think that I should use Facebook to improve firm’s performance | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
People who are important to me think that I should use Facebook to improve my performance | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
People who are familiar with Facebook suggest that using a Facebook can help them get potential customer around the world | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
Discussing with friends who are very familiar with Facebook will help me in using a Facebook and get new customer around the world | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
I’ve learned from my friends about using Facebook for business or selling products | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Virtual networking**

Using virtual social network such as Facebook improves my job performance | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
Using virtual social network such as Facebook increases my job productivity | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
I know about virtual social network such as Facebook, twitter, mySpace | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
Using virtual social network such as Facebook enhances effectiveness in promoting and selling products | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
Virtual network usage will help company get new potential customer around the world | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Government’s role**

The government has been helpful in the use of Facebook in business process | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
Government give incentives to the business that using Facebook | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
Government has been produced a rule that help SMEs to improve the performance | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
Government has been approved the rules on Facebook in Indonesia | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
Government have a program by involving researchers and university lecturer to support SMEs | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Attitude**

In my opinion, using Facebook on my job would be important | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
In my opinion, using Facebook on my job would be relevant | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
In my opinion, using Facebook on my job would be helpful | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
In my opinion, using Facebook on my job would be practical | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
I like the idea of using Facebook for business purposes | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
<table>
<thead>
<tr>
<th><strong>Profit</strong></th>
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<tr>
<td>Using Facebook can reduce transaction costs, because most transaction will</td>
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<td>based on mobile phone and internet platforms</td>
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<td>Using Facebook can reduce costs for accessing current market</td>
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<td>Using Facebook can reduce costs for finding new products</td>
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<td>Using Facebook enables SMEs to reduce costs for sourcing new market</td>
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<td>Using Facebook enables SMEs to reduce after sales service costs</td>
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<td><strong>Growth</strong></td>
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<tr>
<td>Using Facebook can increasing the opportunity to get new customer and</td>
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<td>expand the company</td>
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<td>Using Facebook enables SMEs to communicate with new branches in new</td>
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<td>Company’s employees will increasing when SMEs decide to open a new branch</td>
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<td>Using Facebook enables SMEs to increasing their output growth</td>
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<td>Using Facebook enables SMEs to increasing their productivity growth</td>
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<td><strong>Market Share</strong></td>
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<tr>
<td>Using Facebook enables SMEs to get new customer from different market</td>
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<td>Using Facebook enables SMEs to reach global market</td>
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<tr>
<td>Using Facebook enables SMEs to increasing their market share</td>
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<td>Using Facebook enables SMEs to expanded product range and customized</td>
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<td>Using Facebook enables SMEs connecting to many network or society</td>
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Thank You
Appendix 3: Ethics Approval

8th July 2011

Mr Dede Djatokusumo
Faculty of Business & Government
University of Canberra
BRUCE ACT 2617

Dear Dede,

The Committee for Ethics in Human Research has considered your application to conduct research with human subjects for the project entitled Determinants of SMEs' Adoption of Information and Communication Technology (ICT) and Their Impact on Organisational Performance in Indonesia.

Approval is granted until 30/06/12, the anticipated completion date stated in the application.

The following general conditions apply to your approval.

These requirements are determined by University policy and the National Statement on Ethical Conduct in Research Involving Humans (National Health and Medical Research Council, 2007).

<table>
<thead>
<tr>
<th>Monitoring:</th>
<th>You, in conjunction with your supervisor, must assist the Committee to monitor the conduct of approved research by completing and promptly returning project review forms, which will be sent to you at the end of your project and, in the case of extended research, at least annually during the approval period.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discontinuation of research:</td>
<td>You, in conjunction with your supervisor, must inform the Committee, giving reasons, if the research is not conducted or is discontinued before the expected date of completion.</td>
</tr>
<tr>
<td>Extension of approval:</td>
<td>If your project will not be complete by the expiry date stated above, you must apply in writing for extension of approval. Application should be made before current approval expires; specify a new completion date; should include reasons for your request.</td>
</tr>
<tr>
<td>Retention and storage of data:</td>
<td>University policy states that all research data must be stored securely, on University premises, for a minimum of five years. You and your supervisor must ensure that all records are transferred to the University when the project is complete.</td>
</tr>
<tr>
<td>Changes in contact details:</td>
<td>You should advise the Committee of any change of address or new email address.</td>
</tr>
</tbody>
</table>

Please add the Contact Compliants form (attached) for distribution with your project.

Yours sincerely,

Committee for Ethics in Human Research

Michaela Dalgleish
Ethics & Compliance Officer
Research Services Office
T (02) 6201 5876 F (02) 6201 5466
E Michaela.Dalgleish@canberra.edu.au

www.canberra.edu.au
Postal Address:
University of Canberra ACT 2601 Australia
Location:
University Drive Bruce ACT
Australian Government Higher Education Provider Number CRICOS #00250C
Appendix 4: SMEs Permission Letter 1

To Whom It May Concern

I, [Name], the coordinator of the tempeh crackers organization (Koperasi Keripik Tempe) is stating that we are give permission for:

Name: Dede Sadewo Djatikusumo
Address: 16/2 Antis St, Phillip ACT Australia 2606
Education: PhD Candidate in Management at University of Canberra Australia
Research title: Determinants of SMEs’ Adoption of Information and Communication Technology (ICT) and Their Impact on Organizational Performance in Indonesia

To doing a field work and data collection at our community started from April 2011 to August 2012. Basically we are allowing him to distribute the questionnaires that related to his research in our community or organization members.

Malang, 3rd March 2011

Kind Regards,

[Signature]
Appendix 5: SMEs Permission Letter 2

Translation of the original letters

To Whom It May Concern

I, H. Syamsul Arifin, the owner of Cendera Mata Ceramics at Jl. MT. Haryono XIB/474, and the coordinator of the ceramics organization is stating that we are give permission for:

Name: Dede Sadewo Djatikusumo
Address: 16/2 Antis St, Phillip ACT Australia 2606
Education: PhD Candidate in Management at University of Canberra Australia
Research title: Determinants of SMEs’ Adoption of Information and Communication Technology (ICT) and Their Impact on Organizational Performance in Indonesia

To doing a field work and data collection at our community started from April 2011 to August 2012. Basically we are allowing him to distribute the questionnaires that related to his research in our community or organization members.

Malang, 3rd March 2011

Kind Regards,

Cendera Mata

Juwadi.
Appendix 6:

PUBLICATIONS

The following papers have taken partial information/data from this thesis
IMPACT OF SOCIAL INFLUENCE ON INDIVIDUALS’ ADOPTION OF SOCIAL NETWORKS IN SMES

Majharul Talukder, Ali Quazi and Dede Djatikusumo

School of Management, Faculty of Business, Government and Law University of Canberra, ACT 2617, Australia

ABSTRACT

While prior studies focused on the determinants of adoption of technological innovation in large scale businesses, there is a lack of empirical research on this issue of acceptance of social networks in SMEs in emerging economies. This study addresses this lacuna by focusing on the social factors driving Indonesian SMEs’ adoption of technological innovation. A theoretical model based on the extant literature and established theories in the relevant field is empirically tested in this study. Data were collected through a structured questionnaire and analyzed using correlation matrices and multiple regressions. The most striking finding of this study is that social factors which has been rarely explored in prior research in SMEs’ context is instrumental in broadening our understanding SMEs’ practice of technological innovation in an emerging economy. This finding has implications for SMEs and the government in designing an appropriate strategy for the implementation of technological innovation that are highlighted in the study.

Keywords: Innovation Adoption, Social Networks, Peers, Attitude, Usage Behavior, Indonesia, Facebook

1. INTRODUCTION

The Internet is the most significant invention in the information and communication technology area. Its capabilities to help business activities have attracted considerable attention and support from entrepreneurs, executives and investors. Talukder and Yeow (2007) argued that the Internet enables organizations to transfer the skills, information and knowledge in an effective and efficient way. The Internet has led to the advent of social media such as Facebook, Twitter, MySpace and LinkedIn. For smaller organizations Internet innovations provide several advantages that are very important such as reaching new markets, promoting their businesses, releasing new products, increasing the quality of communications and social online networks, using data from other areas and building strong relationships with new business partners (Coccia, 1997; Kaplan et al., 1997). Currently, there are one billions active users of Facebook who regularly use Facebook accounts and so it is a potential tool for improving business performance (Laudon and Traver, 2011).

Established theories in ICT adoption have been extensively applied in Western economies. However, many of these theories have not been widely applied to developing countries. Saarekento et al. (2008) found that globalization of trade has contributed to both challenges and opportunities, specifically for smaller businesses in developing countries. It is therefore important to investigate the factors that influence SMEs in their implementation of ICT innovations and their impact on the organizational performance of SMEs. Talukder et al. (2008) argue that the performance improvement of organizations was strongly influenced by new technologies. Since the end of the 1990s the enormous growth in Information Communication Technology (ICT) has forced many organizations and businesses to re-assess their existing practices and consider adopting new methods, both for their customers and business partners (Oh et al., 2009). The rising importance and proliferation of ICT constitutes a significant improvement in the information system within the organizations. Levy and Powell (2003) argue
that SMEs through technology innovation will help them to exploit larger and wider markets and improve their customer base.

ICT adoption by SMEs is a growing area of interest in developing Asian countries. With the emergence of small and medium enterprises as a powerful force in both developed and developing countries, the issue of how new technologies are accepted and practiced is an area that requires more analysis (Oh et al., 2009). Indonesia is a developing country where technology plays an important role in its economic growth. Therefore, this research is designed to fill that gap- to unveil the factors that influence SMEs in an emerging economy and its implementation of new technologies. SMEs’ low rate of adopting technology innovation, particularly compared to large enterprises underlines the importance of this research. Due to the paucity of relevant studies, current study concerning adoption of ICT in SMEs is deemed suitable for examination (Shiels et al., 2003). Research on ICT adoption in SMEs context in Indonesia is limited, especially in the context of social media that constitutes an important aspect of ICT innovation in business. This study is aimed to fill that gap.

1.1. Theoretical Framework

The study used the unified theory of acceptance and use of technology (UTAUT) as the basis of theoretical framework. The UTAUT was initially introduced by Venkatesh et al. (2003) to consolidate prior TAM-related studies (Marchewka et al., 2007) and they integrated constructs of eight prominent models which are Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), Technology Acceptance Model (TAM) (Davis, 1989), Motivational Model (MM) (Davis et al., 1989), Theory of Planned Behavior (TPB) (Ajzen, 1991), Combined TAM-TPB (C-TAM-TPB) (Taylor and Todd, 1995), Model of PC Utilization (MPCU) (Varela et al., 1991), Innovation Diffusion Theory (IDT) (Rogers, 2003) and Social Cognitive Theory (SCT) (Compeau and Higgins, 1995).

The theory posits that the behavioral intention to use technological innovation is determined by performance expectancy, effort expectancy and social influence. The theory is well known for testing the moderating effects of users’ demographics on the relationship between determinants of ICT and users’ behavioral intention. Based on in-depth review of eight highly reputable models, UTAUT became a more powerful predictor of the probability of technology innovations success (Lu et al., 2005).

UTAUT is also able to assist in the understanding of the determinant of technology acceptance in order to create management interventions. There are four objectives of UTAUT are: to examine the extant user acceptance models; to empirically confront the eight models; to formulate the Unified Theory of Acceptance and Use of Technology (UTAUT); and finally to validate UTAUT. Eight different models from previous studies have been provided to be reviewed in order to get an integrated view of user acceptance and to reveal how the usage of technology is strongly influenced by individual differences (Marchewka et al., 2007).

1.2. Research Model

The research model is developed based on the theoretical underpinnings of the above. Three categories of dimensions have been developed and applied to SMEs in Indonesia. These are: Social factors, social network perception and social network adoption. A total of five boxes are developed to reflect these dimensions. Three of the boxes represent the determinants of social media adoption. The fourth box is concerned with employees’ perceptions of social media innovation as a dependent variable in relation to determinants. At the same time this box also serves as an independent variable to the fifth box which is concerned with the dependent variable representing social media adoption behavior. The proposed relationships of all the variables in the theoretical model are shown in Fig. 1.

1.3. Hypothesis Development

1.3.1. Virtual Social Network

Social network is defined as the extent to which individuals are influenced by other individuals of other organizations (Lewis et al., 2003). Prior studies also suggest that adoption of technological innovations is significantly affected by external counterparts (Khoumbati et al., 2006). Some pressure on individuals within companies to adopt technological innovations could be perceived as coming from people in social networks, which include virtual networks (Talukder et al., 2008). Virtual social networking is the newest development of the internet technology represents the sophisticated information and communication technology that accommodates communication between individuals virtually (Tao, 2011). The acceleration of the adoption of technological innovations can be achieved by communication sustainability between members within social networks.
Sarker et al. (2011) argue that networks that are adopted by individuals within organizations can improve an individual’s performance. Appropriate networks have also become crucial resources that provide social support to all individuals within organizations. To maximize the knowledge improvement about technology innovations and in order to generate attitude, individuals within organization can be assisted by excellent social encouragement and society communication (Kraut et al., 1998). The spread of information about the benefit of adoption of technological innovations is significantly facilitated by participation of individuals within organization in informal communication within their social networks (Talukder et al., 2008).

Adoption of innovations on information and communication technology can be accelerated by the usage of virtual social network as a media to communicate with other members within organizations and other members from other organizations (Talukder and Quazi, 2011). There is a significant relationship between interaction with social networks and individual’s use of technology (Sykes et al., 2009). Informal individual networks have a crucial impact on the transfer of knowledge process within organizations (Reagans and McEvily, 2003). Moreover, those informal social networks connect most members within the same organization or organizations in different industries (Frambach and Schillewaert, 2002). In virtual networking, individuals are able to learn about various innovations and practices that are useful to them (Messinger et al., 2009). Therefore, various information and communication technologies are significantly useful for individuals and save the energy they use to seek information from various sources within organization. Thus, the following hypothesis was proposed.

**Hypothesis 1**

There is an impact of virtual networks on attitude toward technology adoption.

1.4. Peers

Peers can have an important role within organizations (Talukder and Quazi, 2010). They can contribute useful activities such as providing significant advice about individual performance and also discuss mutual; connection (Schillewaert et al., 2005). Perception of value of technology can be formed through signals and messages that are delivered by peers (Talukder et al., 2008). Employees within organizations are significantly impacted by their counterpart’s encouragement and motivation and moral support from peers. Basically, as social human beings, individuals within organizations also need communications and interactions with others. Specifically, they want to get advice from their colleagues when they have problems in their workplace (Lewis et al., 2003; Yuan et al., 2005). The importance and benefits of adoption of technological innovations within organizations reflects on the behavior of peers who enthusiastically involved in the process of adoption of technological innovations. That is why most employees within organizations are interested to observe their counterpart’s activities and then to try to replicate what is done by their colleagues (Frambach and Schillewaert, 2002).

Further, adoption of ICT innovations can be well-executed through excellent communication between individuals within organizations that generate powerful synergies (Sykes et al., 2009). Key persons within organizations have a significant role in influencing the
Hypothesis 2

There is an impact of peers on attitude toward technology adoption.

1.5. Government’s Role

The role of government is more important in the profit-oriented organizations that have limited access to financial resources, such as SMEs, which absorb a significant number of the workforce around the country (Baum and Szivas, 2008). Furthermore, some relevant support from government for SMEs can vary from creating policies and operational direction and encouraging skill improvement to providing access to the high-end expertise (Baum and Szivas, 2008). Bozeman (2000) suggested some contributions that can be generated by governments to encourage the successful adoption of ICT innovations. Firstly, governments can involve university research and development departments in the program of encouraging individuals and organizations to adopt ICT innovations. Secondly, governments can organize and create good plans to support the development of civilian technology innovations. Thirdly, action is needed by government to encourage the successful adoption of ICT innovations (Smallbone and Welter, 2001). Due to the importance of ICT innovations in the current era, all governments around the world should be more active in their encouragement of SMEs and adoption of ICT innovations to generate new and innovative ICT-based projects (Fernandez-Villavicencio, 2010). Therefore, the current priorities to support SMEs such as developing relevant institutions (Smallbone and Welter, 2001) and inducing adoption of ICT innovations (Oh et al., 2009) have to be implemented immediately. Moreover, selective interference to motivate and assist SMEs to adopt ICT innovations and to assist SMEs to achieve excellent performances is also urged (Smallbone and Welter, 2001). We, therefore, proposed the following hypothesis.

Hypothesis 3

There is an impact of government’s role on attitude toward technology innovation adoption.

1.6. Perception Toward Social Network

Attitude can be defined as a personal feeling about how favorable or unfavorable is their performance of the behavior (Lam et al., 2007). Attitude to technology adoption has been approached from two points of view. Firstly, scales can traditionally be used to measure attitude toward objects were adapted. On the other hand, scales have been specifically developed for the construct (Castaneda et al., 2007). The original definition introduced by Fishbein and Ajzen (1975) clearly explained that attitude is the function of behavioral belief and evaluation of outcomes. Another definition of attitude is proposed by Bhattacharjee (1998), who defined attitude as a function of an individual’s perception and belief regarding ease of use and usefulness of the ICT. Studies, such as Liao and Landry (2000) show that an individual’s attitude toward the
acceptance of ICT innovations may have an impact on the intention to adopt ICT innovations (Talukder and Quazi, 2011). Therefore, the following hypothesis is proposed.

**Hypothesis 4**

There is an impact of attitude toward technology innovation adoption on technology adoption behavior.

2. MATERIALS AND METHODS

Data were collected from Indonesian SMEs including food, garments, agriculture, telecommunications, processing and commodities. The population of the study was taken from east and central Java where SMEs are particularly concentrated. The data for this study was collected from the senior managers of SMEs in Indonesia. The study considered Facebook as an innovative technology for SMEs to adopt in their business operations. The data for the study were obtained using a structured survey questionnaire. The samples were drawn from the list of SMEs appearing in the SMEs Association databases. A total of 1450 participants were selected using random tables. Questionnaires were then mailed to the target participants along with a reply paid envelope. After two follow-ups the total completed questionnaires stood at 363 of which 350 were deemed usable. The statistical techniques used to analyze the data included correlation matrices and multiple regression analyses.

3. RESULTS AND DISCUSSION

3.1. Demographic Information about Respondents

Table 1 summarizes the respondents’ demographic characteristics. The participants are virtually equal in terms of gender representation—52% for males and 48% for females. It can be assumed that SMEs in Indonesia are being managed and owned relatively equally by men and women. Most participants were fairly young in that nearly 60% are in the 20-29 age bracket. This is followed by 35% for the 30-39 age group. This means that more than 94% of participants who managed SMEs and are familiar with innovations are fairly young, i.e., less than 40 years old. Most participants (56.6%) have a Bachelor degree and 40% graduated from senior high school. About one third (30%) of all participants own SMEs, followed by a mid-level manager at 28% and those at senior management level constituting 27.7%. Only 12.3% of participants are CEOs.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>182</td>
<td>52.0</td>
</tr>
<tr>
<td>Female</td>
<td>168</td>
<td>48.0</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>208</td>
<td>59.4</td>
</tr>
<tr>
<td>30-39</td>
<td>123</td>
<td>35.1</td>
</tr>
<tr>
<td>40-49</td>
<td>12</td>
<td>3.4</td>
</tr>
<tr>
<td>50-59</td>
<td>6</td>
<td>1.7</td>
</tr>
<tr>
<td>60 and above</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher secondary</td>
<td>140</td>
<td>40.0</td>
</tr>
<tr>
<td>Bachelor</td>
<td>198</td>
<td>56.6</td>
</tr>
<tr>
<td>Masters</td>
<td>12</td>
<td>3.4</td>
</tr>
<tr>
<td>Owner</td>
<td>109</td>
<td>31.1</td>
</tr>
<tr>
<td>Position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-level</td>
<td>101</td>
<td>28.9</td>
</tr>
<tr>
<td>Top-level</td>
<td>97</td>
<td>27.7</td>
</tr>
<tr>
<td>CEO</td>
<td>43</td>
<td>12.3</td>
</tr>
<tr>
<td>Owner</td>
<td>109</td>
<td>31.1</td>
</tr>
<tr>
<td>Industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>73</td>
<td>20.9</td>
</tr>
<tr>
<td>Garment and clothing</td>
<td>167</td>
<td>47.7</td>
</tr>
<tr>
<td>Processing</td>
<td>18</td>
<td>5.1</td>
</tr>
<tr>
<td>Agriculture/agribusiness</td>
<td>5</td>
<td>1.4</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>7</td>
<td>2.0</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>80</td>
<td>22.9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>350</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Nearly half of the participants (47.7%) work in the garment and clothing industry, followed by food-related industry (20.9%), processing (5.1), telecommunications (2%), agribusiness (1.4) and others (22.9%).

3.2. Correlation Matrix

Table 2 indicates that the perception concerning SMEs’ adoption of social media is significant for virtual social network (r = 0.740, p< 0.01), peer support (r = 0.621, p< 0.01) and government role (r = 0.118, p<0.05). The analysis also revealed that SME’s attitude toward technological innovation adoption is significant (r = 0.333, p<0.01). All factor loadings are significant at an alpha level .01 and the factor loadings are fairly high. This also confirmed the convergent validity of the measurements.

3.3. Regression Analysis

Multiple regression analysis was carried out to test the proposed model. The result of this testing is shown in Table 3. In the case of attitude, it explained 59.7% of the variance in attitude and its associated F statistics (170.85) indicated it was significant at the p<0.001 level. Virtual social network, peer support and government role are significant at the p<0.01 level. Regression analysis was also carried out using attitude as the independent variable and usage as the dependent variable (Table 4).
Table 2. Correlations among study variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. VIR</td>
<td>1.000</td>
<td>0.668**</td>
<td>0.304**</td>
<td>0.740**</td>
<td>0.232**</td>
<td>0.640**</td>
<td>0.755**</td>
<td>0.703**</td>
</tr>
<tr>
<td>2. PEE</td>
<td>0.668**</td>
<td>1.000</td>
<td>0.321**</td>
<td>0.621**</td>
<td>0.185**</td>
<td>0.318**</td>
<td>0.631**</td>
<td>0.621**</td>
</tr>
<tr>
<td>3. GOV</td>
<td>0.304**</td>
<td>0.321**</td>
<td>1.000</td>
<td>0.118*</td>
<td>-0.040</td>
<td>0.103</td>
<td>0.263**</td>
<td>0.081</td>
</tr>
<tr>
<td>4. ATT</td>
<td>0.740**</td>
<td>0.621**</td>
<td>0.118*</td>
<td>1.000</td>
<td>0.309**</td>
<td>0.531**</td>
<td>0.751**</td>
<td>0.724**</td>
</tr>
<tr>
<td>5. USA</td>
<td>0.232**</td>
<td>0.185**</td>
<td>-0.040</td>
<td>0.309**</td>
<td>1.000</td>
<td>0.209**</td>
<td>0.158**</td>
<td>0.350**</td>
</tr>
</tbody>
</table>

Legend: VIR = Virtual network, PEE = Peers, GOV = Government’s role, ATT = Attitude, USA = Usage behavior, PRO = Profits, GRO = Growth, MAR = Market share
**. Correlation is significant at the 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed)

Table 3. Results of regression analysis with attitude as dependent variable

<table>
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<tr>
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<th></th>
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<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Virtual network</td>
<td>0.612</td>
<td>0.612</td>
<td>13.228</td>
<td>0.597</td>
<td>170.853</td>
<td>0.000</td>
</tr>
<tr>
<td>Peer support</td>
<td>0.261</td>
<td>0.261</td>
<td>5.610</td>
<td>0.070</td>
<td>6.096</td>
<td>0.000</td>
</tr>
<tr>
<td>Government’s role</td>
<td>-0.152</td>
<td>-0.152</td>
<td>-4.189</td>
<td>-0.152</td>
<td>-4.189</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Dependent variable: Attitude toward social networking

Table 4. Results of regression analysis with usage as dependent variable

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward</td>
<td>0.309</td>
<td>0.309</td>
<td>0.070</td>
<td>0.070</td>
<td>6.096</td>
<td>0.000</td>
</tr>
<tr>
<td>Innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: Usage behavior

The results show 9.6% of the variance and its associated F statistics indicating attitude had a statistically significant impact on the social media adoption behaviour of employees at the p<0.001 level.

4. CONCLUSION

The main findings of this study were that virtual social networking is the most important variable that significantly and positively affects all other variables. It means that virtual social networks encourage the adoption of ICT innovations. The study also found that virtual social networking sites such as Facebook are becoming an effective tool to improve the adoption of ICT innovations in various organizations in Indonesia especially in its SMEs sector. The most fascinating result came from the analysis of virtual social networks as part of the social factors. The study found that virtual networks have a positive and significant impact on the attitude of individuals toward adoption of ICT innovations within organizations.

The positive and significant influence of virtual networking on individual attitude within organizations brings a strong message; that by maximizing virtual social networks in communication, many advantages can be achieved by individuals within organizations in terms of adoption of ICT innovations. Some advantages that can be achieved are time saving, cost saving, increasing area of coverage, enabling the finding of new opportunities, opening of new market and leaving geographical constraint behind. Virtual social networking is the newest development of the internet technology and represents the sophisticated information and communication technology that accommodates the communication among individuals virtually. Individuals within virtual networking are able to exchange information and helps generate economic activities.

ICT adoption will be instrumental in improving the organizational performance of SMEs. Sound research devoted to identification of drives of ICT adoption will significantly contribute to improvement of an organization’s attitude and the attitude of its employees’ toward using ICT innovation at work. This research will benefit Indonesia SMEs by providing guidelines to improve their financial targets and improved business performance will significantly contribute to the country’s economic growth in the long term. ICT innovations, particularly Facebook used for business purposes and economic activities, would be very useful for individuals and their organizations because Facebook does not apply membership fees to its audiences. This virtual network technology is an effective tool for communication and...
currently attracting many companies to promote their products and services virtually using Facebook sites.

4.1. Implications for Managers

The results provide important implication for managers. The results suggest that managers should focus their attention on the importance of technological innovations for individual employees. They should provide required support, particularly by providing continuous training and appropriate incentives for actively participating on the ICT adoption process in general and Facebook in particular. The training should be extensive and the nature and extent of training are to be determined through extensive consultation with the management, experts, academic researchers and ICT based government agencies.

4.2. Implications for Organizations

As SMEs are benefited from implementation of technological innovation such as Face book, the organization should develop a clear policy on integrating ICT innovation into their business strategy. The policy should pay greater attention to differentiate SMEs usage record of ICT adoption from the competitors in order to uniquely position firms’ commitment to embrace new technology in their operation. Organizations can also take the advantage of new ICT technology such as Face book to minimize cost of communication as Face book does not cost any money to the organization. Furthermore, Facebook has the potential of reaching customers, suppliers and stakeholders across borders. Thus, Facebook can play a pivotal role in the effective communication of day to day affairs of SMEs to the target market virtually without any cost to the organization and help an organization increase its performance.

4.3. Implications for Governments

As the adoption of ICT innovations are considered one of the key factors for improving an organization’s performance, governments in general and Indonesian government in particular can learn from the findings of this research and design programs to help SMEs to implement ICT innovations into practice. ICT innovation and its usage in SMEs are strategically important for Indonesia as SMEs make significant contributions to the economic development of the country in terms of income generation and job creation. Historically Indonesian SMEs are not financially capable of driving and implementing the growing and dynamic ICT innovation. Hence governmental involvement is considered crucial for the survival and growth of the struggling medium and small sized organizations. Government can facilitate the adoption process directly through offering financial assistance as well as involving universities and other research organizations to provide infrastructural help for the overall development of ICT implementation. More specifically, government can involve its science and technology in providing technical support along with employee training facilities to motivate SMEs to continuously adopt an updated version of social media.

4.4. Limitations and Future Research

While conclusive and convincing results have been generated by the in-depth analysis of the data, this study like any other research does have some limitations that are to be worth noting. This study collected data from one single island in Indonesia, yet ignored others such as Sumatera, Kalimantan, Bali, Lombok, Sulawesi and Nusa Tenggara. A future study on this topic should include them in the sample frame so that a general comparison can be made. There are thousands of SMEs throughout Indonesia and future research can use a broad based sample drawn from all the islands in Indonesia to increase the generalizability of the findings at the national level. Another limitation is that this study collected data from one single point in time. Future research can use a longitudinal approach to capture the changes that would occur in the long-term in terms of integration of ICT innovation into organizational setting. Toward making the findings generalized at the international level, future research can be based on data collected from other emerging economies in the region such as Malaysia.

5. REFERENCES


The impact of social networking and role of government on adoption of innovation and its impact on organizational performance of SMEs

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The impact of social networking and role of government on adoption of innovation and their impact on organizational performance of SMEs

Abstract
This research examines technology innovation adoption in small and medium-sized enterprises (SMEs) and its impacts on organization performance in an Indonesian context. The study uses the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). Data will be collected using survey method. SEM approach using AMOS will be used as statistical techniques to validate constructs and to test the proposed theoretical model. Face book will used as the focus of the research. The research is expected to contribute towards broadening and deepening our understanding of the factors that drive adoption of new technology and its impact on business performance in the developing countries with particular emphasis on SMEs in Indonesia.

Keywords: Organizational factors, individual factors, social factors, Small and medium enterprises, ICT adoption, organizational performance

1. Introduction
Many researchers have been studying and developing theories and models to reveal and understanding the benefit of ICT for organizations, particularly e-business or e-commerce. However, most of the conceptual and empirical work on this issue has only focus on developed countries and large organizational. On the other hand, ICT adoption in SMEs context is a growing area of interest in developing countries. With the emergence of small and medium enterprises as a powerful force in both developed and developing countries, the issue of how new technologies are accepted and practiced require more investigation and analysis.
Indonesia is a developing country where technology plays an important role in its economic growth. This research is designed to fill that gap in our knowledge on those factors that influence SMEs to adopt and implement technological innovation. SMEs’ lack of implementation of technological innovations, particularly when compared to large enterprises, emphasizes the importance of this research. While many researchers have studied in detail the topic of technology adoption, research on individual technology acceptance and its drivers in a small organizational framework is muted (Talukder, Harris & Mapunda, 2008). Due to the paucity of relevant studies, empirical data and focused study, the adoption of ICT in SMEs is suitable for analysis (Shiels, McIvor & O’Reilly, 2003).

Recently, not only large enterprises, but also small and medium enterprises (SMEs) around the world want to use ICT in their business processes. Technological adoptions are also crucial for the growth of the business in the private sector. Shiels, McIvor & O’Reilly (2003) found that small firm performance was strongly influenced by ICT investment, and ICT alignment is a key factor in understanding the correlation between ICT and firm performance. Furthermore, Harrington & Reed (1996) demonstrated that e-commerce has been defined as the electronic exchanged of goods, services, information, and payments. Southern & Tilles (2002) reveal that ICT/e-commerce has the potential to contribute to the growth and competitiveness of SMEs (Morgan, Colebourne & Thomas, 2006). Many studies have recognized a range of factors that affect ICT adoption/e-commerce in small businesses (Harker & Van Akkeren, 2002). Levy & Powell (2003) argued that SMEs recognize that technological innovation will have a positive outcome by enabling them to achieve more market share and increase their customer base.
Studies on ICT adoption by SMEs in Indonesia are very few. Not much is known about ICT adoption and its impact on SMEs in Indonesia. This study will fill this gap in the literature by specifically examine the drivers of technology adoption and their impact on SMEs’ organizational performance in terms of profit, growth and market share. This study will also investigate the impact of firm’s characteristics when they embrace ICT. The objectives of this research are:

(a) To measure the impact of drivers of ICT adoption on managerial attitude.
(b) To assess the impact of social networking on ICT adoption behaviour.
(c) To measure the impact of role of government on ICT adoption concerning business organizations’ performance.

Research Questions

This study will attempt to answer the following over-arching research questions: “Does adoption of ICT affect organization performance of SMEs in Indonesia?” The more specific research questions are:

1. What is the effect of social networking on the adoption of ICT?
2. What is the effect of role of government on the adoption of ICT?

Significance of the study:

ICT adoption theories are well established in the literature. However, most of the conceptual and empirical work on this issue have focused mainly on ICT adoption and firm performance in large organizational in developed countries. With the emergence of small and medium enterprises as a powerful force in developing countries, for example Indonesia, the issue of how new technologies are accepted and practiced should be examined. Small and medium enterprises (SMEs) dominate Indonesia’s business sector and have significant impact on national economy. This study will
specifically examine the drivers of technology adoption in SMEs in Indonesia and their impact on SMEs’ organizational performance: profit, growth and market share.

Research Contribution:

Theoretical Contribution: Currently it is difficult to find articles or empirical studies on the relationship between internet usage and SMEs. This study contributes by finding evidence that increasing internet use and ICT will theoretically benefit SMEs.

Practical Contribution: The aim of this study is expected to motivate and encourage SMEs in Indonesia to learn and use the internet so that their businesses prosper.

2. Literature Review and theoretical framework

The theoretical framework that is developed for this thesis is based on three well established theories which are; Theory of Reasoned Action (TRA), The Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). The basis of the TRA conceptual framework is founded on a divergence among constructs such as beliefs, attitudes, intentions, and behaviors (Al-Gahtani & King, 1999). The use of an information system (IS) can be explained by behavioral intention models or behavioral decision theories (Lam, Cho & Qu, 2007). Lam, Cho and Qu (2007) found that an effective adoption of IT depends on positive intention to adopt IT. However, the often paradoxical relationship in IT studies has mostly been influenced by the lack of user acceptance of IT innovations (Agarwal & Prasad, 1997). Based on their point of view from that model, individual’s belief might be strongly affected by external factors. Some studies that are based on TRA showed some weaknesses in their models, such as subjective norms that was found non-significant (Al-Gahtani & King, 1999; Talukder & Quazi, 2011), the low explanatory power of the model and the contrary relationships among constructs (Sun & Zhang, 2006).
According to Ajzen and Fishbein (1980), behavior beliefs defined as positive or negative assessment of an individual’s evaluation of performing a certain behavior. TRA propose that person’s behavioral intention is strongly influenced by the subjective norms and attitude about the behavior (Lam, Cho and Qu, 2007, p.51). Behavior that developed from an individual’s relative strength of intention to use IT was measured by behavior intention.

TAM was introduced because it was perceived to have a better predictive validity for both initial adoption as well as continued usage of a variety of information technologies (Karahanna, Agarwal, & Angst, 2006). The TAM model proposes that some determinants will significantly influence each individual’s decision about how and when they will use a new technology (Davis, 1989). TAM can be described as a theory that focuses on information systems theory, which investigates the relationship between the attitude of individuals in accepting and using the technology (Bruner & Kumar, 2005, p.553). The major objective of TAM is to establish the impact of two strategic variables dealing with cognitive and affective determinants of technology acceptance (Al-Gahtani & King, 1999). Two specific variables, perceived usefulness and perceived ease of use, which are hypothesized as significant factors of user acceptance, have been examined using correlation and regression analyses to reveal the empirical relationship with other constructs (Davis, 1989). Perceived usefulness is described as whether prospective individual users tend to adopt or not adopt an application to the extent that they admit it will assist them perform their tasks better (Talukder, Harris & Mapunda, 2008, p. 465). Perceived usefulness was originally described by Davis (1989) as the degree to which a user admits that adopting a particular system would improve job performance. On the other hand, perceived ease of use has been defined as the degree to which user admits that implementing a particular system would be free of effort (Davis, 1989).

The Unified Theory of Acceptance and Use of Technology (UTAUT) model was introduced by Venkatesh, Morris, Davis & Davis (2003) to consolidate prior TAM-related studies (Marchewka, Liu & Kostiwa, 2007) and they integrated constructs of eight prominent models (Hennington & Janz, 2007). Based on an in-depth review of eight highly reputable models,
UTAUT was better able to predict the probability of success in technology innovations (Lu et al, 2005). UTAUT is also able to understand the determinants of technology acceptance in order to facilitate managerial interventions. The four objectives of UTAUT-related research (Venkatesh, Morris, Davis & Davis, 2003): to examine the extant user acceptance models; to empirically confront the eight models; to formulate the Unified Theory of Acceptance and Use of Technology (UTAUT); and finally to validate UTAUT. Eight different models from previous studies are reviewed in order to obtain an integrated picture of user acceptance and to reveal how using technology is strongly influenced by individual differences (Marchewka, Liu & Kostiwa, 2007). UTAUT also accommodates social influences in its model and being redefined as social expectancy as the form of communications and interactions among management bodies, supervisors and peers employees. This is done in order to review the employees’ decision to choose and implement the technological innovations (Lu et al, 2005).

Research model

The research model has been developed keeping in mind the relevant literature and the theoretical frameworks discussed in this study. The research model that is developed here is basically a modification of two major theories concerning individual’s adoption of technology innovation. Firstly, The Unified Theory of Acceptance and Use of Technology Model has been explored in previous studies by Venkatesh (2003), Hennington and Janz (2007), Marchewka, Liu, and Kostiwa (2007), Talukder, Harris and Mapunda (2008), Gupta, Dasgupta and Gupta (2008), Im, Hong and Kang (2011), and Zhou (2011). This research also adopts the conceptual framework of individual innovation acceptance in organizations that was developed by Frambach & Schillewaert (2002). To accommodate the recommendation of Sun & Zhang (2006), this study will examine moderating factors and their influence on the relationship of organizational factors and attitude toward adoption.
This model has two independent variables – social networking and the role of government. Technological adoption works as a dependent variable in relation to two independent variables. Profit, growth and market share are outcome variables. Figure 1 shows the research model for ICT adoption and how it is influenced by social network and role of government and their causal relationship.

Figure 1: conceptual framework

*Social Networking*

In the last 5 years, the advent of the newest technological innovation concerning the internet was marked with the tremendous growth of the usage of social networking (Smith & Kidder, 2010). Prior studies in management and organizational behavior mainly investigated the dynamics of the social networking phenomenon (Sykes, Venkatesh, & Gosain, 2009). The rapid growth of Facebook, LinkedIn, MySpace and other social networking sites have contributed to making social networking one of the largest topics in the information systems area (Liebowitz & Liebowitz, 2008). Reviews of social networking are derived from the disciplines of education, sociology and anthropology.
One study clearly describes that social network sites (SNS) are represent sophisticated technology in information and communication where the enrolment of new members at a tremendous rate has proved to be successful (Sledgianowski & Kulviwat, 2009). Communication, innovation and collaboration can be generated by implementing social networking in most organizations’ activities, specifically in the profit-oriented organizations (Liebowitz & Liebowitz, 2008). According to the ranking of web traffic sites, the social networking site MySpace ranks sixth in overall with more than 47 million visitors every month in US (Dwyer, Hiltz & Passerini, 2007). The most popular social networking site, Facebook, by 2010, has grown to 500 million visitors or members around the world (Laudon & Traver, 2011).

A social network can be identified as providing a benefit for individuals or organizations or communities. Such networks can include of vendors or suppliers, research and development institutions and other public or private counterparts, industrial alliances, competitors and expertise agencies (Windrum & Berranger, 2002). Moreover, they also revealed that performance, learning and innovation are substantially influenced by the appropriate connectivity inside such organizations. For instance, employees’ informal communications were monitored by IBM’s managers with the objective of generating new ideas (Liebowitz & Liebowitz, 2008).

Meanwhile, another report revealed that some other SNS such as MySpace and Friendster already have more than 200 million members (Sledgianowski & Kulviwat, 2009). Most SNS provide excellent and fascinating features that help their audiences to execute any command and exchange information such as text, photographs, videos, blogs and hyperlinks (Sledgianowski & Kulviwat, 2009). The most reasonable justification why SNS are growing
at a tremendous rate is the excellent decision to abolish membership fees (Sledgianowski & Kulviwat, 2009). Audiences only need to register and fill in membership forms online and provide basic information so that they can obtain full access to all SNS features and services.

To protect their audiences, SNS have been deploying privacy control settings that enable all members to choose, for example, who can read and respond to statements appearing on the members’ wall (Sledgianowski & Kulviwat, 2009). The explosive growth Facebook, Twitter, MySpace, Youtube and LinkedIn has also generated much interest in the internet as a new medium of communication (Duan, 2009). People have high expectations when they join social networking sites, where they can create a profile, make connections to existing friends and new ones that they meet through the site (Dwyer, Hiltz, Passerini, 2007).

The rapid growth of SNS has attracted businesses who want to increase their avenues of promotion and advertising in order to reach new potential customers and maintain their loyal customers (Sledgianowski & Kulviwat, 2009). Furthermore, social signals can be connected to the social information that individuals receive when other parties have adopted ICT. For example, through their purchases, individuals may signal either social differences or group identity. Those signals are transmitted to other users, who follow the consumption behavior of people in their aspiration groups (Peres, Muller, Mahajan, 2010).

Previous studies also demonstrated the positive impact that can be provided by the social networking sites. Excellent relationships and communications among profit-oriented organizations and its customers can be maintained through social networking sites. These sites’ rapid growth enables businesses or virtual retailers to deliver what are perceived to be valuable products and services to their current and future customers (Ayanso, Lertwachara &
These valuable products and services are delivered through innovative strategies and sophisticated ICT innovations (Dhabolkar, Bobbitt, & Lee, 2003). The advent of new ICT innovations has generated the great expectation that most organizations will embrace such innovations and in turn this will lead to marked improvement in their performance in the dynamic globalized economy (Ayanso, Lertwachara & Thongpapanl, 2010). They have in fact transformed their expectations into real investment in ICT innovations.

One of the main points to emerge in this scenario is the importance of social influence which significantly affects individual’s attitudes and behavior toward innovations. For example, one person in an organization has decided to buy a smart phone to help him or her accessing online information. Knowing that such an individual receives many benefits from using a smart phone leads others to do the same. This situation is the illustration of how social influence determines individuals’ attitude and behavior in the adoption and diffusion of technological innovations (Peres, Muller, & Mahajan, 2010). One central issue in this topic is how product growth for profit-oriented organizations is determined by the social network platform (Pere, Muller, & Mahajan, 2010). Therefore, the following hypothesis is proposed:

H1: Social virtual networks have a direct impact on the adoption of ICT technology.

Role of Government

Thong (1999) found that public and private SMEs in Singapore received significant supported government support when they adopted ICT innovation. Governments are expected to be more active in supporting innovation transfer (Fujisue, 1998; Crow and Nath, 1990, 1992). Political decisions regarding information technology have become a fascinating issue and garnered academic or scholarly attention (Bozeman, 2000). ICT usage and how it improves
organizational performance and productivity is seen to be stimulated by providing sensible policies that promote the acceptance of ICT innovations (Bayo-Moriones & Lera-Lopez, 2007). Many businesses can now interact with the global community with the support of government and their agencies (Beal & Abdullah, 2002).

Some studies have provided evidences for the contributions that governments make in supporting the adoption of ICT innovations. The role of government has become more important for private sector organizations such as SMEs, which have had limited access to financial resources but can now significantly absorb a huge number of potential employees in any given country (Baum & Szivas, 2008). Furthermore, relevant government supports that is useful for SMEs can vary from: firstly, creating policies and operational direction; secondly, encouraging skill improvement; and thirdly, providing access to the high skill expertise (Baum & Szivas, 2008). From year 1980 to 1989 the US Federal Government set out to improve the domestic adoption of ICT innovations (Bozeman, 2000). Unsurprisingly, governments in other Western countries have followed this lead and made more active contributions to providing significant technology-related assistance (Fujisue, 1998).

Bozeman (2000) has suggested some contributions that government can make in order for the adoption of ICT innovations to succeed. The first strategy is for governments to fund university research and development departments, and the second it to develop and implement sensible plans in the realm of civilian technological innovations. The third strategy that governments should undertake involves establishing a synergy between governments and university laboratories regarding technology innovations so that the private sector can use them. The fourth and lastly, Bozeman (2000) recommended intensive and continuous
programs constituting both federal programs and universities laboratory work together to produce technology-based economics. Therefore, we propose the following hypothesis:

H2: The role of government has a direct impact on the adoption of technological innovation

**Organizational Performance**

*Profit*

Locke (2004) argued that ICT usage significantly contributed to improving business profitability, and serve as a proxy for growth. Moreover, profitability can be significantly increased by employing of ICT innovations (Hyvonen, 2007). Organizational performance such as the increase in business value can be improved by implementing an excellent ICT innovation (Santhanam & Hartono, 2003). Improving market share, improved selling price, overheads and costs reduction can be achieved when businesses decide to adopt and extend their use of ICT innovations (Battisti et al., 2009). Profit and market share will significantly improve and such firms will outperform those organizations that do not consider technological innovations (Koellinger, 2008). The adoption of ICT innovations would help profit-oriented organizations boost their exports and reach the global market and therefore give them the opportunity to sell more products and services (Baliamoune-Lutz, 2003). Therefore, the following hypothesis is worth testing:

H3: Technology adoption has a direct impact toward business profits

*Growth*

Productivity growth and a firm’s output are currently and strongly influenced by IT (Hernando & Nunez, 2004). Penrose (1959) in her theory of a firm’s growth refines these ideas by conceptualizing the firm as a bundle of resources within an administrative framework (Melville, 2004). The term “IT business value” is commonly used to refer to how
IT impacts on organizational performance, including enhanced productivity, better profits, cost reduction, competitive advantage, inventory reduction, etc. (Devaraj & Kohli, 2003). A higher level of organizational performance can be achieved by simultaneously encouraging and supporting SMEs to adopt ICT innovations (Locke, 2004). Therefore, the following hypothesis is proposed:

H4: Technology adoption has a direct impact on businesses’ growth

Market Share

IT may enable a firm to improve its efficiency regardless of whether it is mimicked by competitors, or may result in performance that is unique to a particular firm relative to its competitors. Implicitly, Miller and Friesen (1982) suggested that of conservative firms’ market share can be improved by the adoption of ICT innovations. Without them, it is difficult for businesses to develop new products, provide high level services, or to locate market opportunities (Hyvonen, 2007). Therefore, we propose the following hypothesis:

H5: Technology adoption has a direct impact on businesses’ market share

3. Methodology

Data was collected using the survey method. Those being surveyed consisted of top level managers of small and medium enterprises in Indonesia, specifically on the Island of Java. There are many SMEs in some provinces such as East Java and Central Java. SMEs in each area sell a wide range of services and products that support the economic growth of Indonesia. SMEs in food, garments, agriculture, telecommunications, commodities and processing sector will be selected as samples. Questionnaires were distributed to respondents by postal mail. The study examined how SMEs in Indonesia use Facebook. There is a large variation in the usage of this new social media and business organizations are anxious to increase it to facilitate business. A total of 350 completed responses were received. Data was analyzed using SPSS. To test the proposed model, multiple
correlation analysis was performed on the collected data. Descriptive statistics and frequency analysis were also done.

4. Results

Demographic analysis

The aim of this analysis is to document and indentify the essential profiles of the SMEs sample and their adoption of ICT innovations. A questionnaire consisting of information about individual characteristics is the source of these demographic data and descriptive analysis. A range of variables including gender, age, and education are provided in table 1.

Table 1: Demographic Profile of Participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>182</td>
<td>52</td>
</tr>
<tr>
<td>Female</td>
<td>168</td>
<td>48</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>208</td>
<td>59.4</td>
</tr>
<tr>
<td>30-39</td>
<td>123</td>
<td>35.1</td>
</tr>
<tr>
<td>40-49</td>
<td>12</td>
<td>3.4</td>
</tr>
<tr>
<td>50-59</td>
<td>6</td>
<td>1.7</td>
</tr>
<tr>
<td>60 and above</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior HS</td>
<td>140</td>
<td>40</td>
</tr>
<tr>
<td>Bachelor</td>
<td>198</td>
<td>56.6</td>
</tr>
<tr>
<td>Masters</td>
<td>12</td>
<td>3.4</td>
</tr>
<tr>
<td>Position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-level</td>
<td>101</td>
<td>28.9</td>
</tr>
<tr>
<td>Top-level</td>
<td>97</td>
<td>27.7</td>
</tr>
<tr>
<td>CEO</td>
<td>43</td>
<td>12.3</td>
</tr>
<tr>
<td>Owner</td>
<td>109</td>
<td>31.1</td>
</tr>
<tr>
<td>Industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>73</td>
<td>20.9</td>
</tr>
<tr>
<td>Garment and clothing</td>
<td>167</td>
<td>47.7</td>
</tr>
<tr>
<td>Processing</td>
<td>18</td>
<td>5.1</td>
</tr>
<tr>
<td>Agriculture/agribusiness</td>
<td>5</td>
<td>1.4</td>
</tr>
<tr>
<td>Telecommunication</td>
<td>7</td>
<td>2.0</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>80</td>
<td>22.9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>350</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The participants in this research are virtually equal in terms of gender representation: 52% for males and 48% for females. It can be assumed that SMEs in Indonesia are being managed/owned relatively equally by men and women. Most participants were younger people in that more than half of them (59.4%) are in the 20-29 year age group. This is followed by 35.1% for the 30-39 year age group. It means that more than 94% of participants
who managed SMEs and are familiar with ICT innovations are fairly young i.e. less than 40 years old. This shows a growing trend of adoption of ICT innovations by SMEs in Indonesia. According to variables of education and position, most participants (56.6%) have a bachelor and 40% graduated from senior high school. Slightly, more than one third (31.1%) of all participants are owners of SMEs, followed by mid-level manager at 28.9% and top level are 27.7%. Only 12.3% of participants are CEO of SMEs. The last demographic characteristic concerns the type of industry that SMEs are engaged in. Nearly half of participants (47.7%) work in the garment and clothing industry.

*Inter-correlation among research variables*

The aim of the correlation analysis in this section as showed in table 2 is to reveal the relationship among variables. The correlations are significant if Pearson’s correlation coefficient (r) is significant at .01. By reviewing correlation matrix table below, it emerges that between the dependent and independent variables there is a positive and significant relationship. Table 2 indicates that the use of ICT innovations is positively and significantly related to the virtual social network. The usage also has a significant and positive relationship with SME’s organizational performance in terms of profit, growth and market share. It means that using ICT innovations is strongly influenced by Indonesian SME’s embrace of virtual social networking. Such thorough virtual social networking as used by SMEs will significantly improve the usage and extent of ICT innovations.
Table 2: Inter-correlations among variables

<table>
<thead>
<tr>
<th></th>
<th>Usage</th>
<th>Network</th>
<th>GovtRole</th>
<th>Profit</th>
<th>Growth</th>
<th>MktShare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td>1</td>
<td>.238**</td>
<td>-.053</td>
<td>.225**</td>
<td>.204**</td>
<td>.293**</td>
</tr>
<tr>
<td>Network</td>
<td>.238**</td>
<td>1</td>
<td>.264**</td>
<td>.686**</td>
<td>.776**</td>
<td>.752**</td>
</tr>
<tr>
<td>GovtRole</td>
<td>-.053</td>
<td>.264**</td>
<td>1</td>
<td>.086</td>
<td>.203**</td>
<td>.087</td>
</tr>
<tr>
<td>Profit</td>
<td>.225**</td>
<td>.686**</td>
<td>.086</td>
<td>1</td>
<td>.771**</td>
<td>.651**</td>
</tr>
<tr>
<td>Growth</td>
<td>.204**</td>
<td>.776**</td>
<td>.203**</td>
<td>.771**</td>
<td>1</td>
<td>.821**</td>
</tr>
<tr>
<td>MktShare</td>
<td>.293**</td>
<td>.752**</td>
<td>.087</td>
<td>.651**</td>
<td>.821**</td>
<td>1</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level.

Moreover, it is evidence that employing ICT innovations has a significant and positive relationship with SMEs’ organizational performance. It means that using such ICT innovations will significantly improve how well SMEs do business and improve their profits, growth and market share. In this way SMEs will have the ability to penetrate new markets and improve their volume of sales, build their organizations and get new customers.

5. Discussion and Conclusion

This study examined certain variables - virtual social network, role of government, and organizational outcomes such as profit, growth and market share - to document factors that are comprehensively influencing the adoption of ICT innovations and their impact on organizational performance in Indonesian SMEs. The study found that virtual social networking is the most important variable that significantly and positively affects all other variables. It means that virtual social networks encourage the adoption of ICT innovations. Moreover, indirectly, virtual social network also exert a strong influence on organizational performance. Viewed from the theoretical perspective, this study provides an understanding of the new variables that influence people in organizations to take up ICT innovations. It is clearly understood that virtual social networking sites such as Facebook are becoming an effective tool to improve the adoption of ICT innovations in various organizations.
By adopting ICT innovations such as Facebook, most SMEs in Indonesia now have the opportunity to profit by them. They can expand their business from the local to the international market. Activities such as procurement, production and logistics can be significantly improved or made more efficient. SMEs can develop close and high level relationship with their customers by refining their management and communication practices. In short, adopting new technology can create unique products and services and generate better profits and productivity.

ICT adoption will be instrumental in improving the organizational performance of SMEs. Research on what drives ICT adoption will significantly improve an organization’s and its employees’ attitude toward using ICT. People’s behavior concerning ICT adoption will significantly improve how well an organization performs in terms of profit, growth, and market share, and especially so far in Indonesian SMEs. This research will benefit Indonesia SMEs by providing guidelines that improve their financial targets or what they want to achieve. Ultimately, improved business performance will significantly contribute to the country’s economic growth.

6. Limitation and future research

While conclusive and convincing results have been generated from this in-depth analysis, this study does have some limitations. This study collected data from one single island in Indonesia, yet ignored Sumatera, Kalimantan, Bali, Lombok, Sulawesi, and Nusa Tenggara. A future study on this topic should include them so that a general comparison can be made. There are thousands of SMEs throughout Indonesia and an effort should be made to investigate them. Another limitation is that this study only took the data from one single point in time. Future research that takes into account longer timeframes can be developed to find
more sophisticated results and what is occurring in the long-term and in a historical context. Longitudinal studies therefore should be pursued in the future on this topic. Furthermore, future studies on SMEs in Indonesia should involve a comparison with those in other emerging economies, particularly in the Asia-Pacific region.

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