

Determinants of Internet Adoption by Indonesian Small Business Owners: Reliability and Validity of Research Instrument

Budi Hermana, Toto Sugiharto, E.S. Margianti
Gunadarma University
<http://www.gunadarma.ac.id>

Abstract

The adoption of information and communication technology (ICT) in small and medium enterprise in Indonesia as to compare with its counterparts, i.e., large scale enterprises, is left behind. This preliminary study reports on several predictors, which influence SME's owner's decision to adopt internet technology. A behavioral model was developed based on previous research on technology adoption in SME. The model for preliminary research consists of seven predictors, which include performance expectancy, effort expectancy, social influence, facilitating condition, self-efficacy, internet-anxiety, and perceived cost. ICT adoption level is measured as adopter, potential adopter and non-adopter. Results of the measurement show that the score of reliability ranges between 0.6318 and 0.9711 in Cronbach Alpha. Meanwhile, results of construct validity test that employed principal component analysis show that most of the items are convergent to their constructs.

1. Introduction

As reported by the *Ministry of Cooperatives and Small and Medium Enterprises (CSME)* in 2004 the number of small business was 43,158,468 units (99.85% of total businesses) involving 70,919,385 workers (89.24% of total workers in industry sector). However, its contributions to the nation's Gross Domestic Product (GDP) and export values has been minimal as to compare with its number of business units and workers involved. Contributions of small, medium, and large enterprises to GDP were, respectively, IDR820,491,528 millions (40.36%), IDR315,372,815 millions (15.51%), and IDR896,960,557 millions (44.12%). Small enterprises' contribution to export values was IDR23,775,942 millions (4.05%) which is smaller than those of medium enterprises (IDR67,904,169 millions or 11.57%) and large enterprises (IDR495,173,009 millions or 84.38 %).

The role of information technology in improving small businesses' contribution to the nation's economy is of importance. However, the use of information technology in Indonesia has generally been lower than those of most countries. Availability of information technology infrastructure, number of unit of computers owned by enterprises, and internet access indicate this. As reported by the World Bank (2002), Indonesia's profile in information and communication technology (ICT) application was as follows: computer ratio to population was 9.9 per 1,000 residents; telephone connection was 91 per 1,000 residents; internet hosts was 0.8 per 10,000 residents; and internet users was 2 millions. Investment in ICT, meanwhile, was USD3.54 billion (2.2% of GDP) which is equivalent to USD16.6 per capita.

A number of weaknesses of small businesses operators in Indonesia has been identified. The most significant weaknesses, according to Department of Trade and Industry (2002) include lack in (i) aggressiveness and capability in accessing market, and (ii) use of information technology in developing small businesses. In relation to these weaknesses, is relatively difficult. There are three main problems in encouraging small business operators to use information

technology. These include perception that information technology is expensive and, therefore, it could not be afforded by small business operators; limited technological resources and lack in information technology infrastructure; and both quantity and quality of human resources.

The profound research on the information technology in the small-scale is important to analyze the aspects of information technology application in Indonesia, particularly to identify how far the above problems become the determining factors in the application of information technology and what are their implications towards the performance of small businesses in Indonesia. The success of information technology application brings a wide range of dimensions which cover the parameters used to measure the effectiveness of the information technology functions and also parties or groups utilizing the applications of information technology. To the small-scale businesses, the major party that dominantly concerns with the decision making is the owner and the executives. They embrace important roles in the decision making which utilizing information technology in their companies. Besides, their involvement in the process of technology adoption holds important factors in improving the intensity of the use of information technology.

2. Theoretical Framework and Research Model

A number of behavioral theories has been applied to examine the process of information technology adoption by end-users. Some of which are *Theory of Reason Action (TRA)*, *Theory of Planned Behaviour (TOB)*, *Task-Technology Fit Theory (TTF)*, and *Technology Acceptance Model (TAM)*. Amongst these theories, *Technology Acceptance Model (TAM)* was found as a model that has been widely used in various studies on adoption process of information technology. Following these models, in 2003, Venkatesh and his colleagues developed a new model called *Unified Theory of Acceptance and Use of Technology (UTAUT)*.

This model (i.e., UTAUT) was developed based on previous models on adoption of information technology, which include TRA, *TPB*, *TTF*, and primarily *Technology Acceptance Model (TAM)*. TAM model, which was introduced by Fred D. Davis in 1986, is an adapted model from TRA and is specifically developed for modeling information technology adoption by users. According to Davis (1989), the primary objective of TAM is to provide foundation for determining impacts of external factors on trust, attitude, and objectives of information technology end-users. Relationships among variables within this model are depicted in figure, which follows.

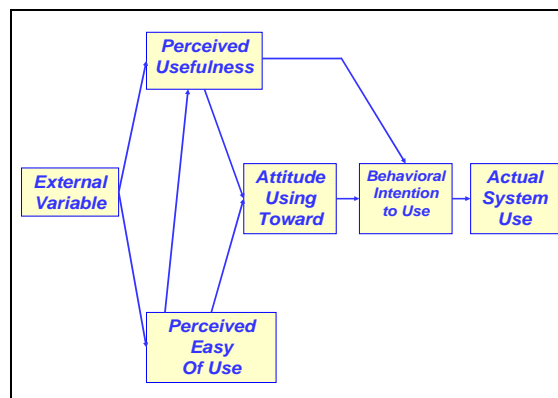


Figure 1. *Technology Acceptance Model*

In UTAUT theoretical model, according to Venkatesh *et al.* (2003), gender, age, experience, and characteristics of IT application related to their position in the firm (i.e., optional or compulsory) serve as moderating effect on the use of certain information system. Its predictor variables, meanwhile, include performance expectancy, effort expectancy, social influence, and facilitating condition. The details of UTAUT model are presented in figure below.

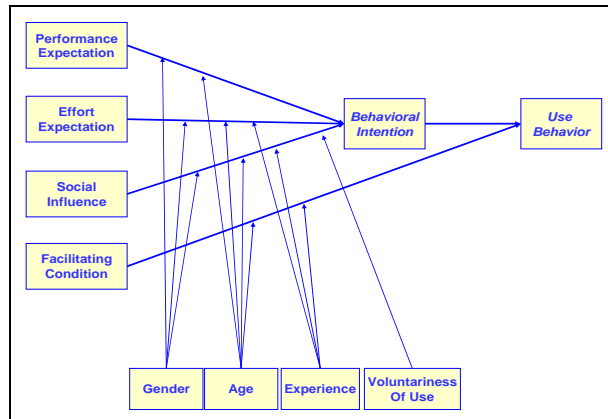


Figure 2. UTAUT Model (Venkatesh *et al.*, 2003)

Studies on the application of information technology within small and medium enterprises have been limited as to compare with the application of this technology within corporations or large enterprises. Small business operators or owners are individuals who play important roles in directing the business' policies and directions. Research results show that there is a strong relation between small business owners' perception toward information technology and computer system and its actual application within their business operations (Heilman, Finnel, and Glorfeld, 1999). The impact of characteristics of information technology users on adoption processes, meanwhile, was investigated by Igarria *et al.* (1997), Gefen and Straub (1997), Foong (1999), Hubona and Jones (2003), Venkatesh *et al.* (2003), and Kleijnen, Wetzels and Ruyter (2004). On theoretical model UTAUT (*Unified Theory of Acceptance and Use of Technology*) which was reported by Venkatesh *et al.* (2003), gender, age, experience, and characteristics use relating to user position within the firms (compulsory or optional), serve as moderating effect on use of information technology. Its predictor variables are performance expectancy, effort expectancy, social influence, and facilitating condition. Lee and Runge (2001) concluded that the company's innovation possessed actual influence toward the adoption of information system by SMEs; nonetheless in the case of internet adoption, those variables had no influences. Lee stated (2004) that the adoption of e-mail by SMEs owners or managers is influenced by their innovative ability.

According to Riemenschneider and Mykytyn (2000), characteristics of information technology application within small business are as follows: (1) financial and accounting activities are the major part of information technology application; (2) technological training programs are directed primarily to its managers; (3) top management's support and involvement play an important role in achievement of the implementation of information technology within the firms; and (4) in line with findings of most studies on information technology, the involvement of end-users is the key aspect when they are satisfied. On the other hand, OECD (2004), state that inhibiting factors for ICT application within small and medium businesses include: (a) business process incompatibility; (b) limited managerial and technical ICT application skills; (c) development and maintenance costs; (d) problems relating to computer

networks and telecommunication infrastructure; (e) problems with trust and security in ICT application; (f) law uncertainty; and (g) various challenges relating to electronic business process.

Riemenschneider and Mykytyn (2000) stated that key persons of small business as end user of information technology tend to take into account computer self-efficacy, i.e., training and computer system application skills. Beside self-efficacy, Brown (2002), in his research on web based technology adoption in developing countries includes computer anxiety as an additional variable. His research results show that there is a strong effect of computer anxiety on adoption of this type of technology. According to Wetzels and Ruyter (2004), computer skills serve as moderating variable to PEOU. Mirchandani and Motwani (2001) found that computer skills serve as predictor variable in e-commerce adoption by small-scale businesses, with positive correlation coefficient. Bresnahan, Brynjolfsson, and Hitt (2000), found that level of education and computer skills of end-user are weakly related to computerized work and intensity of use of technology by end-user.

Level of ICT adoption variable,s which are used in those studies, are mostly categorical, i.e. adopter and non adopter. In some publications, partial adopter and full adopter are used for these terms. Van Akkeren and Cavaye (1999) classify small businesses into 3 categories: *non-adopter*; *adopter*; and *full-adopter*. Referring to previous studies, variables that will be analyzed in this study are as follows.

Table 1
Research Variables

No.	Predictor	Number of item	References
1.	Performance Expectancy	4	Gefen and Straub (2000); Venkantesh <i>et al.</i> (2003), Gardner and Amoroso (2004)
2.	Effort Expectancy	4	Gefen and Straub (2000); Venkantesh <i>et al.</i> (2003); Gardner and Amoroso (2004)
3.	Facilitating Condition	4	Chau and Hu (2001); Venkantesh <i>et al.</i> (2003); Anderson and Schwager (2004); Klopping and McKinney (2004)
4.	Social Influence	4	Maholtra and Galletta (1999); Venkantesh <i>et al.</i> (2003)
5.	<i>Self Efficacy</i>	5	Eastin and LaRose (2000); Mirchandani and Motwani (2001), Kleijnen, Wetzels and Ruyter (2004); Riemenschneider and Mykytyn (2000)
6.	<i>Anxiety</i>	4	Compeau, Higgins and Huff (1999); Brown (2002); Lee (2004)
7.	<i>Perceived Cost</i>	4	Kleijnen, Wetzels, and Ruyter (2004), Mirchandani anf Motwani (2001); Lee (2004)

Response variable, on the other hand, is internet adoption level, which consists of 3 levels i.e., internet adopter, potential-adopter, and non-adopter. Based on the theoretical review and previous research's results, a set of hypotheses and research model for this preliminary study are developed and depicted in the following figure.

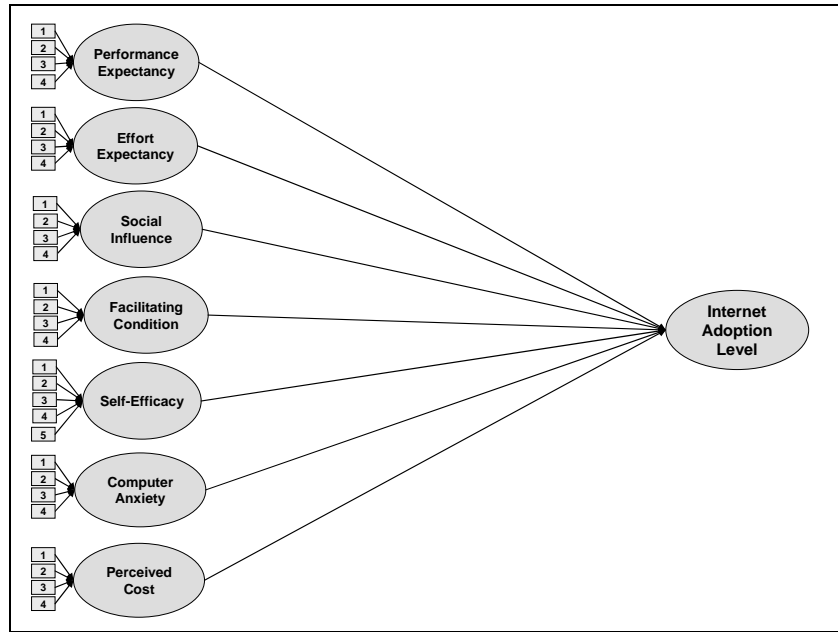


Figure 1 Research Model

3. Methodology

Subjects of the research are members of the Indonesia's Association of Small Business Operators (HIPKI), which has reached 10,500 small business operators locating in 51 regions. The investigated type of information technology is website or portal of the association (i.e., HIPKI) which the following characteristics: (i) business profile; (ii) product information; (iii) business and knowledge sharing; (iv) on line discussion forum; and (v) products order facilities for potential buyers. Research design is cross-sectional. Measurement instrument is in the form of questionnaires which uses 7 likert scales for individual behavior. For adoption level we adopt self-reported approach. To test the measurement instrument, we use *cronbach alpha*, including *item point biserial* (corrected item-total correlation) measures. For *construct validity* test we use *principal component analysis*, which include *Kaiser-Meyer-Olkin* (KMO) and Bartlett.

4. Results and Discussion

As mentioned previously, the present study is a preliminary study, which covers developing and, to some extent, testing drafts of research instruments, presenting and analyzing results of content validity, reliability testing and construct validity. Respondents, which are small business operators who attended training on electronic business technology, are 39. The prototype of information system which was accessed by end-user is e-business system. This system has several feature or services, such as (1) user authentication through exclusive user ID and password, (2) electronic product catalogue which can be updated by authorized SME owner, (3) official website for each company, (4) electronic product offering and, in other side, electronic ordering system which can be utilized by potential buyer, (5) electronic discussion forum, (6) e-magazine, and (7) web linking to relevant resources. The system will be accomplished by web statistics which shown user activity on the web. This web statistic will be

utilized for measuring actual usage. The front-page of prototype can be seen in the following figure.

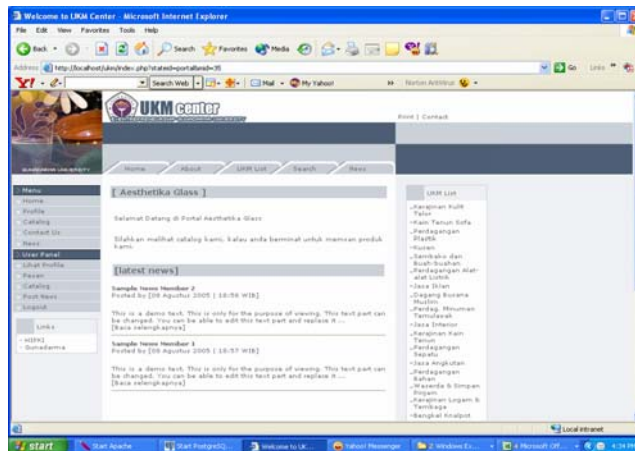


Figure 3 Prototype of E-Business System

The primary objective of this preliminary research is to observe a prediction model of internet use by small business operators. The research instrument frame consists of 3 parts, i.e., characteristics of small business operators, small business profile, and variables for research model. Prior to research variable measurements, the draft of measurement instrument was evaluated for content validity by requesting advice and recommendation from experts and/or small business practitioners.

Small business operators who attended training on electronic business technology were 39 persons. The training was held at Gunadarma University's campus in 2 working days. It was organized by the University in collaboration with the Indonesia's Small Business Operators Association (HIPKI). It was only 33 participants who fully attended the training sessions and they were selected as respondents in this study. From 33 respondents, there were 32 respondents (97%) who completely answered the questionnaires. It was found that 20 respondents (62.5%) are males and 12 (37.5%) are females. Most of respondents are married (i.e., 27 respondents or 84.4%). Based on respondents' level of education, the majority of respondents (11 or 34.4%) are senior high school graduates and 9 respondents (28.1%) are university graduates. The rest 12 respondents are either junior high school or elementary school graduates. From ownership viewpoints, most respondents, i.e. 31 (97%) respondents are owners where 7 (22.6%) of which are both owners and operators. It was also found that 19 (59.4%) respondents are pure small business operators and/or owners, the others 11 (34.4%) respondents hold additional professions and/or sources of income.

The age of respondents ranges from 22 to 55 years old, averaging at 39 years. Business experience of respondents ranges between 1 and 30 years with an average of 9 years. Other profiles of respondents, which include training experiences and levels of ICT adoption, are presented in figure below.

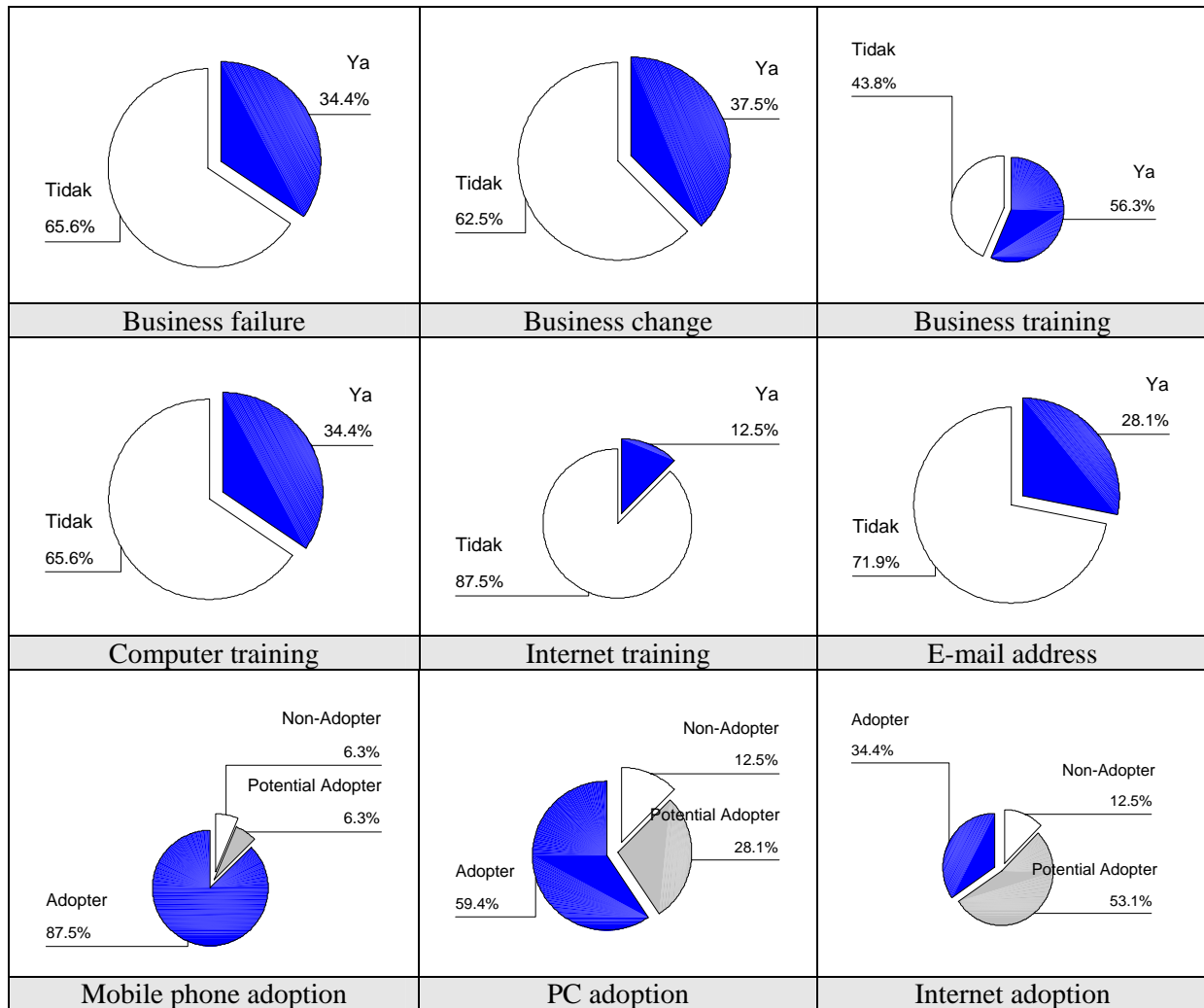


Figure 4 Respondents' Experiences Profiles

In general, small business operators have applied ICT in supporting their business operation, i.e., mobile phone, computer, and internet technology, as well as e-mail. Most respondents (87.5%) used mobile phones for their business communication. Level of adoption of other types of information technology, however, especially personal computer and internet facilities, is declining, i.e., 59.4% and 34.4%, respectively. An interesting finding regarding computer and internet technology adoption was that the majority of those small business operators who have not used these technologies are categorized as potential adopter, i.e. their willingness to use these technologies in next 6 month is high.

Legal status of the majority of respondents' small business is sole-proprietory firm (23 units or 71.9%). The other 9 units are, respectively, partnerships (5 units or 15.6%), corporation (2 units or 6.3%), and have no legal status (2 units or 6.3%). On average, the age of respondents' small business is 8 years, which ranges between 1 and 20 years. Based on its business core, respondents' are grouped into 5 groups namely trading (13 units or 40.6%), handicraft (6 or 18.8%), agribusiness (6 or 18.8%), manufacture (4 or 12.5%), and services 2 (6.3%). Twenty

(62.5%) respondents sell their product to local market, 7 (21.9%) to national market, and only one (3.1%) to international market (export).

In initiating their business, 28 (87.5%) respondents used personal equity (internal source), 4 (12.5%) respondents obtained their initial equity from various financial institutions (external source). Number employee ranges from 1 to 20 averaging at 6. Respondents who employ their family members are 20 (62.5%). The average sales revenue is IDR30 million. It ranges between IDR2 million to IDR150 million per month. Net profit ranges from IDR0.5 million to IDR24 million, averaging at IDR7 million per month. Details of other characteristics, including business management aspects, financial assistance, technical and managerial supervision, and computer application in business operations, are presented in Figure 6, which follows.

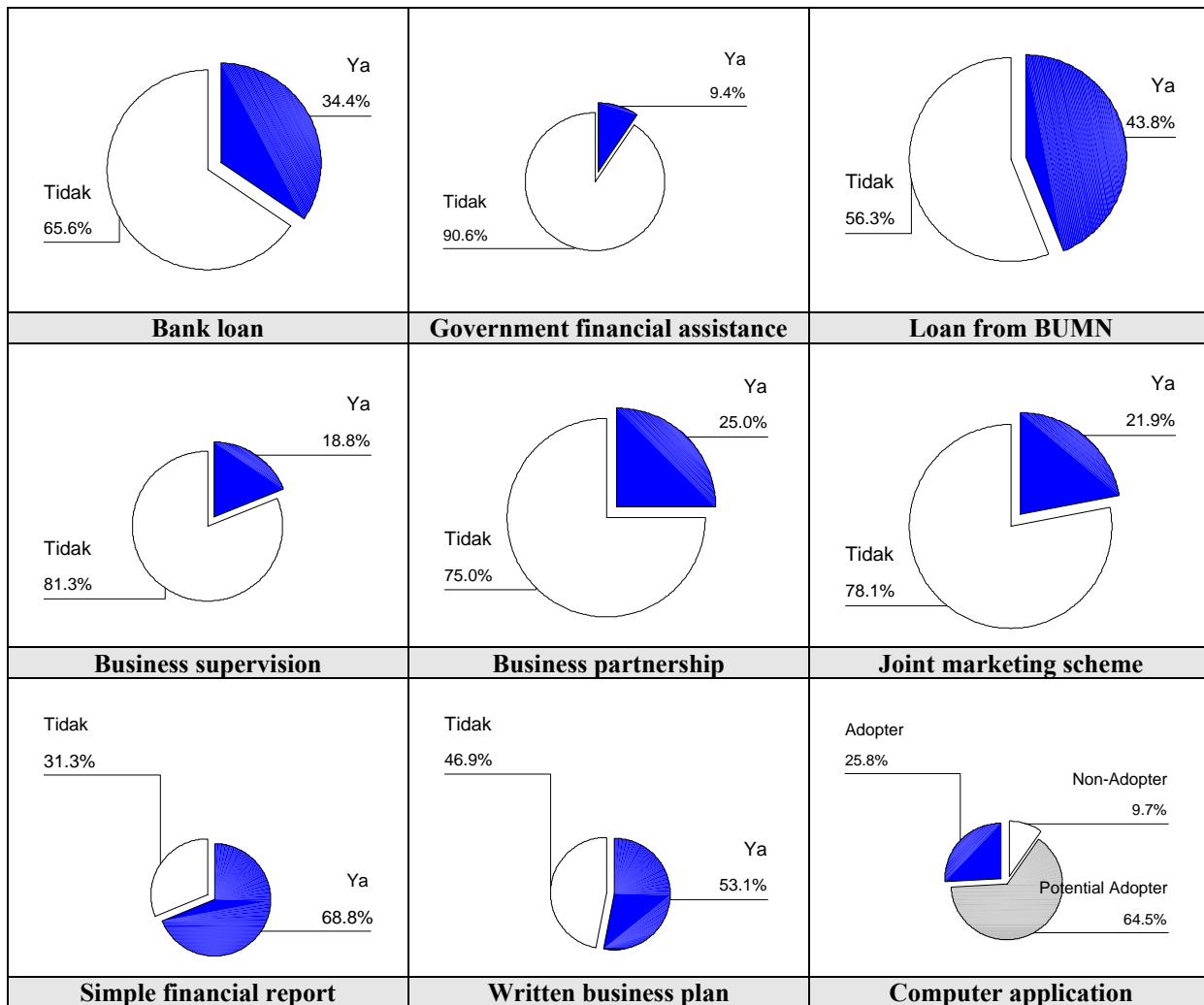


Figure 5 Business Experience

The above-mentioned profiles indicate that the majority of small business operators did not use bank loan or financial assistance (soft loan) provided by either bank or BUMN (Government Owned Firms) through its special scheme or program. Additionally, they also did not make use of partnership, neither business partnership nor marketing partnership. There is an

interesting finding where the majority of respondents have provided simple financial report and have produced a written business plan. It important to note that both financial report and written business plan, with regard to their contents, scopes, and structures, have been further observed. Regarding computer use for business operation, it was found that most respondent have not used. However, 64.5% of those who have not used computer for business operation are categorized as potential-adopter, i.e. respondents who, in the next 6 months, plan to use computer in their business operation.

Regarding internet technology use to support business operation, the majority of respondents identified internet technology knowledge and skills as the most important inhibiting factors. Other factors include costs (installation, maintenance, and operating) which is considered to be expensive and inappropriateness with their business core. These factors are identified by respondents who have not used both computer and internet technology in their business operation. For those who have already used these technologies, the most important factors that affect the intensity of computer and internet technology use are security risks (viruses and plagiarism or breach of copy right) and internet connection systems which, according to these respondents, is considerably slow.

Eight variables were used for internet model adoption by small business operators which consists of 7 predictors or independent variable and dependent variable, in this case level of internet adoption. Results of reliability and validity testing are presented in the table below.

Table 3
Results of realibility and Construct validity

No.	Variables	Items	Cronbach α	Loading Factor	KMO	Bartlett Test		Details
						X	Sign.	
1.	Performance Expectancy	1	0.9491	0.936	0.819	124.96	0.000	All items are valid and reliable
		2		0.918				
		3		0.960				
		4		0.914				
2.	Effort Expectancy	1	0.8767	0.807	0.642	72.63	0.000	All items are valid and reliable
		2		0.821				
		3		0.878				
		4		0.907				
3.	Facilitating Condition	1	0.6454	0.835	0.582	24.92	0.000	Item 3 is not convergent. If it's dropped, $\alpha=0.7534$
		2		0.789				
		3		0.295				
		4		0.812				
4.	Social Influence	1	0.7939	0.886	0.626	56.32	0.000	All items are valid and reliable
		2		0.816				
		3		0.810				
		4		0.623				
5.	Self Efficacy	1	0.8710	0.823	0.630	100.54	0.000	All items are valid and reliable
		2		0.873				
		3		0.873				
		4		0.815				
		5		0.667				
6.	Anxiety	1	0.8552	0.827	0.737	66.09	0.000	All items are valid and reliable
		2		0.936				
		3		0.873				
		4		0.722				
7.	Perceived Cost	1	0.6318	0.772	0.494	51.62	0.000	Items 3 and 4 are not convergent. If they're dropped, $\alpha=0.8801$ and valid
		2		0.771				
		3		0.525				
		4		0.670				

Results of reliability tests show that Cronbach-alpha of research variables ranges between 0.6318 and 0.9711. This indicates, referring to Morris and Dillon (1997) as cited by Zettel (2001), variables used in this research are reliable. Results of construct validity test show that 7 out of 9 variables have high construct validity value. The following indicators indicate these, such as (1) loading factor, which is convergent toward one component, (2) KMO larger than 0.5, and (3) significant Bartlett test results. Two variables, which are not convergent, include supporting facilities and cost perception. The third item is found as a cause supporting facilities variables not to be convergent. This item is about compatibility of the existing systems, which is used to support business operation, and the existence of internet technology. Removing this item increases the reliability of variables, which is indicated by cronbach-alpha of 0.7534. Based on this validity test, the research will further use 3 items for supporting facilities variables. It is necessary to note that the third item removal is based on reason that the existing systems used by respondents are generally unavailable or incomprehensible to these respondents.

Other variable, which is also not convergent, is cost perception. It clustered in 2 components. By removing the third and fourth items, this variable will become convergent with increased cronbach-alpha from 0.6318 to 0.8801. Previously, this variable was developed based on 2 references, i.e. the first two items were adopted from Kleijnen, Wetzels, and Ruyter (2004), Mirchandani and Motwani (2001), and the last two items were adopted from Lee (2004). Results of these analyses indicate that the underpinning concepts of these two groups of references are different. The first two items are perception on costs of internet connection and on increased cost due to internet use. The other two items, meanwhile, deal with source of financial that can be assessed and allocated for internet use. Referring to both test results and the above-mentioned reason, the present research will further use cost perception variable with only the first two 2 items.

5. Summary

Results of reliability test for model in this preliminary study show that items of questions are reliable, which are indicated by cronbach-alpha value between 0.6318 and 0.9711. Construct validity test's results show that 7 research variables are convergent and valid accordingly. These variables include performance expectancy, business expectancy, social impact, internet-self efficacy, internet-anxiety, attitude towards internet technology, and willingness to use internet to support business operation. Two variables, which are not convergent, are supporting facilities (i.e., internet compatibility with the existing systems used) and cost perception (i.e., internal and external sources of fund). Referring to these results of analyses, the next stage of this research will use convergent items of question for these variables.

References

- [1] Rencana Induk Pengembangan Industri Kecil Menengah 2002 – 2004: Kebijakan dan Strategi Umum Pengembangan Industri Kecil Menengah. Deperindag, 2002
- [2] Information and Communication Technology at a Glance, Worldbank Report, 2002.
- [3] Information and Communication Technology Development Indices, UNCTAD-UN, New York, 2003.

- [4] Anderson, John E. and Paul H. Schwager, SME Adoption Of Wireless Lan Technology: Applying The Utaut Model, Proceedings of the 7th Annual Conference of the Southern Association for Information Systems, 2004.
- [5] Barki, Henri and J. Hartwick. 1994., Measuring user participation, user involvement, and user attitude. *MIS Quarterly*; 18, 1; pg. 59.
- [6] Bitler, Marianne P., Small businesses and computers: Adoption and performance1, Bitler@rand.org, 2001.
- [7] Brandt, Loren and S. C. Zhu. 2002. Technology Adoption and Absorption: The Case of China. University of Toronto, Michigan State University.
- [8] Brandyberry, Alan A. 2003. Determinants of adoption for organisational innovations approaching saturation. *European Journal of Innovation Management*; 2003; 6, 3; ABI/INFORM Global, pg. 150.
- [9] Bresnahan, Timothy F., Erik Brynjolfsson, and Lorin M. Hitt. 2000. Information Technology, Workplace Organization, and the Demand for Skilled Labor: Firm Level Evidence. *Quarterly Journal of Economics*.
- [10] Brown, Irwin T.J. 2002. Individual and Technological Factors Affecting Perceived Ease of Use of Web-based Learning Technologies in Developing Country. *The Electronic Journal on Information Systems in Developing Countries*; 9, 5, hal 1-15.
- [11] Brynjolfsson, Erik and L. M. Hitt. 1998. Beyond the productivity paradox, Association for Computing Machinery. *Communications of the ACM*; Aug 1998; 41, 8; ABI/INFORM Global, pg. 49.
- [12] Chambers, Todd A. and Craig M. Parker, Factors Motivating and Inhibiting the Use of Web Commerce by Rural Small Bussiness, School of Management System, Deakin University, 2000.
- [13] Chau, Patrick Y K and P. J. H. Hu. 2001. Information technology acceptance by individual professionals: A model comparation approach. *Decision Sciences*; Fall 2001; 32, 4; pg. 699.
- [14] Cloete, Eric, Steven Courtney, and Julia Fintz, Small Businesses' Acceptance and Adoption of e-Commerce in the Western-Cape Province of South-Africa, *The Electronic Journal on Information Systems in Developing Countries*, 10, 4, 1-13, 2002.
- [15] Compeau, Deborah , C.A. Higgins and S. Huff. 1999. Social cognitive theory and individual reactions to computing technology: A Longitudinal Study. *MIS Quarterly*; Jun 1999; 23, 2; ABI/INFORM Global, pg. 145.
- [16] Davis, Fred D., Perceived Usefulness, Perceived Ease Of Use, And User Acceptance of Information Technology, *MIS Quarterly*; 13, 3; pg. 319, 1989.
- [17] Dulipovici, Andrea, The Impact of Internet Use on Small and Medium-Sized, Canadian Businesses during a Recession, The 6th International Francophone Congress on SME, Montreal, 2002.
- [18] Eastin, Matthew S. and R. LaRose. 2000. Internet Self-Efficacy and the Psychology of the Digital Divide. *Journal of Computer-Mediated Communication*
- [19] Emory, C. William and Donald R. Cooper, *Business Research Methods*, Richard D Irwin, Inc, 1991.
- [20] Fichman, Robert G. 2004. Going Beyond the Dominant Paradigm for Information Technology Innovation Research: Emerging Concepts and Methods. *Journal of the Association for Information Systems Vol. 5 No. 8, pp.314-355/August*.

- [21] Foong, Soon Yau, Effect of End User Personal and System Attributes on Computer Based Information System Success in Malaysian SMEs. *Journal of Small Business Management*; 37, 3, hal 81, 1999.
- [22] Gardner, Christina and D.L. Amoroso. 2004. Development of an Instrument to Measure the Acceptance of Internet Technology by Consumers. *Proceedings of the 37th Hawaii International Conference on System Science*.
- [23] Gefen, David and Detmar Straub, The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of E-Commerce Adoption, *Journal of The Association for Information System: Volume 1, Article 8, Oktober 2000*.
- [24] Gera Surendra and W. Gu. 2004. The Effect Of Organizational Innovation And Information Technology On Firm Performance. *International Productivity Monitor, No. 9, Fall 2004*.
- [25] Grandon, Elizabeth E and Peter P Mykytyn, Theory-Based Instrumentation To Measure The Intention To Use Electronic Commerce In Small And Medium Sized Business, *The Journal of Computer Information Systems*; 44, 3; pg. 44, 2004.
- [26] Hadjimanolis, Athanasios. 2000. A resource-based view of innovativeness in small firms. *Technology Analysis & Strategic Management*; Jun 2000; 12, 2; *ABI/INFORM Global*, pg. 263.
- [27] Heilman, George E., Charles A. Finnel, and Louis W. Glorfeld. Validating The Technology Acceptance Model with Small Business Owners. *Proceedings of Decision Science Institute*, page 649-651, 1999.
- [28] Hollenstein, Heinz, Determinants Of The Adoption Of Information And Communication Technologies (ICT): An Empirical Analysis Based on Firm-level Data for the Swiss Business Sector, *DRUID Summer Conference on "Industrial Dynamics of the New and Old Economy - who is embracing whom?"*, Copenhagen/Elsinore 6-8 June 2002.
- [29] Hubona, Geoffrey S. and A.B. Jones. 2003. Modeling the User Acceptance of E-Mail. *Proceedings of the 36th Hawaii International Conference on System Sciences (HICSS'03)*.
- [30] Igbaria, Magid, Nancy Zinatelli; Paul Cragg; Angele L M Cavaye, Personal computing acceptance factors in small firms: A structural equation Model, *MIS Quarterly*, 21, 3, pg. 279, 1997.
- [31] Jones, Colin, Rob Hecker, dan Peter Holland, Small firm Internet adoption: opportunities forgone, a journey not begun, *Journal of Small Business and Enterprise Development*; 10, 3; pg. 287, 2003.
- [32] Jones, Nory B and Thomas R Kochtanek, Success Factors in the Implementation of a Collaborative Technology and Resulting Productivity Improvement in a small business: An Exploratory Study, *Journal of Organizational and End User Computing*; Jan-Mar 2004; 16, 1; *ABI/INFORM Global*, pg. 1, 2004.
- [33] Kassim, Norizan M and M. Zain. 2004. Assessing the Measurement of Organizational Agility. *Journal of American Academy of Business, Cambridge*; Mar 2004; 4, 1/2; *ABI/INFORM Global*, pg. 174.
- [34] King, Ruth C. and M.L. Gribbins. 2003. Adoption of Organizational Internet Technology: Can Current Technology Adoption Models Explain Web Adoption Strategies in Small & Mid-Sized Organizations? *Department of Business Administration College of Business, University of Illinois at Urbana-Champaign*.
- [35] Kleijnen, Mirella, M. Wetzels, K.D. Ruyter. 2004. Consumer acceptance of wireless finance. *Journal of Financial Services Marketing*; 8, 3; *ABI/INFORM Global*, pg. 206.

- [36] Klopping, Inge M. and E. McKinney. 2004. Extending The Technology Acceptance Model and The Task-Technology Fit Model to Consumer E-Commerce. *Information Technology, Learning, and Performance Journal*, Spring, 22; 1, pg. 35.
- [37] Kohli, Rajiv and S. Devaraj, Measuring Information Technology Payoff: A Meta-Analysis of Structural Variables in Firm-Level Empirical Research, *Information Systems Research*, 14, 2, ABI/INFORM Global, pg.127, Jun 2003
- [38] Koufaris, Marios. 2002. Applying the Technology Acceptance Model and Flow Theory to Online Consumer Behavior. *Information System Research*; Jun,13, 2, hal 205.
- [39] Kraemer, Kenneth L., J. Gibbs and J. Dedrick. 2002. Impacts of Globalization on E-Commerce Adoption and Firm Performance: A Cross-Country Investigation. Center for Research on Information Technology and Organizations, University of California.
- [40] Kula, Veysel and Ekrem Tatoglu, An exploratory study of Internet adoption by SMEs in an emerging market economy, *European Business Review*; 15, 5; ABI/INFORM Global, pg. 324, 2003.
- [41] Lee, Younghwa, K.A. Kozar, and K. R.T. Larsen. 2003. The Technology Acceptance Model: Past, Present, and Future. *Communication of The Association for Information System*, 12, 50, hal 752-780.
- [42] Lee, Jungwoo, Discriminant Analysis Of Technology Adoption Behavior: A Case Of Internet Technology In Small Business, *The Journal of Computer Information Systems*; 44, 4; pg. 57, 2004.
- [43] Lee, Jungwoo and Janet Runge, Adoption of information technology in small business: Testing drivers of Adoption for entrepreneurs, *The Journal of Computer Information Systems*; 42, 1; pg. 44, 2001.
- [44] Lertwongsatien, Chalerm Sak and Nitaya Wongpinunwatana, E-commerce adoption in Thailand: An empirical study of Small and Medium Enterprise (SMEs), *Journal of Global Information Technology Management*; 6, 3; ABI/INFORM Global, pg. 67, 2003.
- [45] Lim, Jee Hae, V.J. Richardson, and T.L. Roberts. 2004. Information Technology Investment and Firm Performance: A Meta-Analysis. *Proceedings of the 37th Hawaii International Conference on System Sciences*.
- [46] Lin, Fen-Hui and Jen-Her Wu, An Empirical Study Of End-User Computing Acceptance Factors In Small And Medium Enterprises In Taiwan: Analyzed By Structural Equation Modeling, *The Journal of Computer Information Systems*, Stillwater: Spring Vol.44, Iss. 3; pg. 98, 2004.
- [47] Locke, Stuart, ICT Adoption and SME Growth in New Zealand, *Journal of American Academy of Business, Cambridge*; Mar; 4, 1/2; ABI/INFORM Global, pg. 93, 2004
- [48] MacGregor, Robert and Lejla Vrazalic, A Comparative Study of SMEs in Wollongong (Australia) and Karlstad (Sweden), School of Economics and Information Systems University of Wollongong, 2004.
- [49] Malhotra, Yogesh and D.F. Galletta. 1999. Extending the Technology Acceptance Model to Account for Social Influence: Theoretical Bases and Empirical Validation. *Proceedings of the 32nd Hawaii International Conference on System Sciences*
- [50] Mirchandani, Dinesh A and Jaideep Motwani, Understanding small business electronic commerce adoption: An empirical analysis, *The Journal of Computer Information systems*; 41, 3; pg. 70, 2001.
- [51] Pflughoeft, Kurt A., K. Ramamurthy, E.S. Soofi, M.Y. Ardekani, and F. Zahedi, Multiple Conceptualizations of Small Business Web Use and Benefits, *Decision Sciences*, Vol. 34, 3, 2003.

- [52] Puerto, Henrik Barth och Luis. 1999. Strategy, Structure and Technology as Influential Factors on Performance in SME's1. 29th European Small Business Seminar, 15-17 September, Lisbon.
- [53] Riemenschneider and Mykytyn, 2002, "What Small Business Executives Have Learned about Managing Information Technology", *Information & Management* 37, page 257-269
- [54] Riquelme, Hernan, Commercial Internet adoption in China: Comparing the experience of small, medium and Large Business, *Internet Research*; 12, 3; ABI/INFORM Global, pg. 276, 2002.
- [55] Rosen, Peter A. 2004. The Effect Of Personal Innovativeness In The Domain Of Information Technology On The Acceptance And Use Of Technology: A Working Paper. Oklahoma State University.
- [56] Scupola, A., Adoption Issues of Business-to-Business Internet Commerce in European SMEs, Proceedings of the 35th Hawaii International Conference on System Sciences, 2002.
- [57] Segars, Albert H and Grover, Varun, Re-examining perceived ease of use and usefulness: A confirmatory factor analysis, *MIS Quarterly*; Dec; 17, 4; ABI/INFORM Global pg. 517, 1993.
- [58] Straub, Detmar; Marie-Claude Boudreau, and David Gefen. "Validation Guidelines For Is Positivist Research". *Communications of the Association for Information Systems* (Volume 13, 2004)380-427.
- [59] Van Akkeren, Jeanette and Angèle L.M. Cavaye, Factors Affecting Entry-Level Internet Technology Adoption by Small Business In Australia: An Empirical Study, Proc. 10th Australasian Conference on Information Systems, 1999.
- [60] Venkatesh, Viswanath, Michael G. Morris, Gordon B. Davis, Fred D. Davis, User Acceptance of Information Technology: Toward A Unified View, *MIS Quarterly* Vol. 27 No. 3, pp. 425-478, 2003.
- [61] Winston, Elaine R and Dorothy Dologite, How does attitude impact IT implementation: A study of small business owners, *Journal of Organizational and End User Computing*, 14, 2; ABI/INFORM Global, pg. 16, 2002.
- [62] Zettel, Jorge, Methodological Constraints, Critics, and Technology Acceptance: An Experiment, IESE-Report No. 074.01/E, Fraunhofer IESE, 2001.