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# Electronic Commerce Adoption Barriers in Indonesian Small Medium-sized Enterprises (SMEs): An Exploratory Study

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## ABSTRACT

This research seeks to explore and detect underlying relationships between identifiable barriers of electronic commerce (e-commerce) adoption in Indonesian small medium-sized enterprises (SMEs). A quantitative pilot study was conducted through a mail survey to collect the relevant data from several cities in three provinces in Indonesia, namely West Java, Bali and DKI Jakarta. The inter-correlations among the barriers influential to the e-commerce adoption decision demanded the application of principal component analysis to determine the factors perceived to dictate e-commerce adoption decision outcomes. The results of the analysis indicate that correlations between the barriers do exist and that the barriers can be grouped according to four distinct factors: the difficulty of implementing e-commerce, the unsuitability of e-commerce to the business, the uncomfotability in communicating and choosing standards in business online, as well as the inapplicability to the current business needs.

## Keywords

E-commerce, barriers, SMEs, developing countries.

## INTRODUCTION

Small and medium-sized enterprises (SMEs) have grown in importance in the global economy during the last couple of decades. This fact is not only measured by the number of SMEs (which represents nearly 90% of the total establishments across the world), but also their significant role in creating employment opportunities (Hall, 2002). The role of SMEs is further highlighted in the studies by (Abdullah and Bakar, 2000) and Urata (2000) that suggest that SMEs are vital to the emergence of healthy private sectors, especially in poorer countries.

Electronic commerce (e-commerce), on the other hand, is radically changing the dynamics of the business environment and the way in which people and organizations are conducting business with one another. E-commerce is also known for its aptitude to remove physical barriers in trading and communicating. There are a large number of well-documented benefits of e-commerce adoption for both large and small-medium enterprises (SMEs) (Bajaj and Nag, 1999; Scupola, 2003; Khiang and Chye, 2002). For example, e-commerce enables and facilitates firms to cut service cost while improving the speed of delivery and simplifying and streamlining business processes (Turban, 2000); it improves the delivery and exchange of information with customers and suppliers.

Despite these benefits, SMEs are not adopting the e-commerce with same speed as their larger counterparts. This slow growth of e-commerce adoption in SMEs has been attributed to various adoption barriers that are faced by SMEs. These barriers have been well documented in numerous research studies. However, the correlation between the barriers has not been examined, especially in countries like Indonesia. It is, therefore, the aim of this paper to analyse the correlation between various e-commerce adoption barriers in order to identify any underlying factors. The paper begins by examining the nature of SMEs and identifying features that are unique to SMEs. A discussion of barriers to e-commerce adoption based on

previous research is then presented. This is followed by a correlation and factor analysis of the non-adopter data and a discussion of the results. Finally, the limitations of the study are presented and conclusions drawn.

## LITERATURE REVIEW

### SMEs in Global Economy

A thriving small and medium-sized enterprises (SMEs) sector is widely touted by economists as one of the hallmarks of a healthy and growing economy (Abdullah and Bakar, 2000). Both theoretical and practical economic and business development literatures acknowledge the key contributions of SMEs to the development both national and international growth of economy. This fact is not only measured by the number of SMEs which represents nearly 90% of the total establishments across the world, but also their significant role in creating employment opportunities (Hall, 2002; Harvie and Lee, 2000). Moreover, in less developed countries, SMEs are also considered to be the only realistic employment opportunity for those in lower income brackets, especially women (Morison et al., 2003).

The importance of SMEs in the global economy is also demonstrated by the emergence of organisations around the world committed to helping them to thrive. The World Bank Group, for example, has contributed US\$1.3 billion in 2003 towards several projects in more than a dozen countries with the aim of improving the business environment for SMEs (World Bank Group., 2003). The Asian Development Bank (ADB), on the other hand, has contributed to the development of SMEs across Asia and Pacific region by encouraging reforms and policy environments that establish the right conditions for business to flourish, promoting public-private partnerships, and providing financial assistance to SMEs and financial institutions (Asian Development Bank., 2003).

### E-commerce and SMEs

Studies carried out at the onset of E-commerce (Noteboom, 1994; Acs et al., 1997; Gessin, 1996; Auger and Gallagher, 1997) predicted that, since SMEs had always operated in an externally uncertain environment, they were more likely to benefit from E-commerce.

Recent studies have found that these predictions have not eventuated and that it has been the larger businesses that have been more active with respect to E-commerce (Barry and Milner, 2002; Riquelme, 2002). It is appropriate, then to examine some of the barriers to E-commerce adoption by SMEs.

### Barriers to E-commerce Adoption in SMEs

The development of e-commerce not only has had a high impact on large businesses, but also SMEs (Schneider, 2002). At the most basic level, SMEs can implement e-commerce by using simple applications such as email to communicate more effectively with their customers and suppliers (Daniel et al., 2002; Rao et al., 2003). Numerous studies – both academic and trade journals - have shed some lights on barriers that SMEs may experience by adopting e-commerce into their business activities. For summary purposes, barriers of e-commerce adoption in SMEs are listed in Table 1.

Barriers	
E-commerce doesn't fit with the way we do business	Poon and Swatman, 1999 MacGregor et al 2004
We don't see the advantages of using E-commerce	Vrazalic et al 2003
Lack of technical know how	Mirchandani and Motwani, 2001
Cost too high	MacGregor et al 2004
Not sure what hardware/software to choose	Vrazalic et al 2003
Security risks	MacGregor et al 2004
E-commerce doesn't fit with products/services	Kendall et.al, 2001
E-commerce too complex to implement	Quayle, 2002
Lack of critical mass among customers, suppliers and business partner to implement e-commerce	Vrazalic et al 2003
Lack of time to implement e-commerce	Walczuch et al., 2000

**Table 1. Benefits and Barriers of E-commerce adoption in SMEs  
(Adapted from MacGregor and Vrazalic, 2004)**

In addition, in developing countries like Indonesia, the language barrier is also known to be one of the major barriers inhibiting the diffusion of e-commerce (Astika, 2002; Asia Foundation, 2002). The limited number of published IT literature in Indonesian has also caused the slowness in knowledge distribution.

### SMEs in Indonesia

During the last twenty years, there has been a considerable growth in terms of the number of SMEs throughout Asian economies, and Indonesia in particular. Indonesian SMEs have proven to be the most dynamic and vibrant sector, especially during the time of financial crisis in 1997 (Urata, 2000).

There is no consensus on the definition of SMEs in Asia Pacific region. The definitions differ from country to country depending on the phase of economic development as well as their existing social conditions. As the focus of this study is on the Indonesian economic setting, the official definitions from two Indonesian government bodies The Central Bureau of Statistics (CBS, 2004) and the Ministry of Cooperatives and Small Medium Enterprises (DEPKOP, 2005a) will be adopted. The definitions are complementary and are described as follows (see Table2):

<b>Small Enterprise</b> (UU No. 9/1995):  Central Bureau Statistics (BPS):	<ul style="list-style-type: none"> <li>▪ Asset &lt; Rp. 200 million (excluding land and building)</li> <li>▪ Annual sales volume &lt; Rp. 1 Billion</li> </ul> <i>and/or</i> <ul style="list-style-type: none"> <li>▪ Employees: 5-19 people</li> </ul>
<b>Medium Enterprise</b> (Inpres 10/1999):  Central Bureau Statistics (BPS):	<ul style="list-style-type: none"> <li>▪ Asset Rp. 200 million - Rp. 10 Billion (excluding land and building)</li> <li>▪ Annual sales volume &gt; Rp. 1 Billion</li> </ul> <i>and/or</i> <ul style="list-style-type: none"> <li>▪ Employees: 20-99 people</li> </ul>

**Table 2. Definition of Small Medium Enterprises in Indonesia**

There are currently more than 40 million SME establishments in Indonesia. They account for 99.99% of the total number of business enterprises. Based on the latest data (DEPKOP, 2005b), the largest percentage is in the agriculture sector (58.9%), followed by trade (22%) and manufacturing (6.3%) sectors with transportation and services also significant (see Table 3). The significance of SMEs to the Indonesia economy is further highlighted by their contribution to national development and by the fact that, as a sector, they provide and create jobs especially during times of recession (Asian Development Bank., 2003; DEPKOP, 2005a).

Sector	Number of Establishment in 2004			Number of Employee in 2004		
	Small	Medium	Large	Small	Medium	Large
Agriculture	25,476,137	1,619	59	38,363,341	788,870	41,826
Mining	144,329	505	51	291,346	123,317	12,386
Manufacturing	2,732,977	10,881	719	6,973,326	3,463,997	228,943
Electricity, gas and water	3,725	386	36	5,161	70,864	7,766
Construction	153,488	8,871	192	332,360	301,192	6,546
Trade	9,820,980	24,702	471	17,128,000	1,539,102	29,319
Transportation	2,548,618	6,109	150	3,227,687	325,127	15,591
Financial Institution	30,470	6,715	328	139,028	326,145	15,946
Services	2,247,744	6,573	242	4,458,536	1,208,865	44,579
<b>Total</b>	<b>43,158,468</b>	<b>66,361</b>	<b>2,248</b>	<b>70,918,785</b>	<b>8,147,479</b>	<b>402,902</b>

**Table 3. Number of Small Medium Enterprises Establishment and Employee in Indonesia**  
(Adapted from DEPKOP 2005b)

As can be seen, SMEs play a significant role in the economic development of Indonesia. For this reason they have given greater attention by the government. With this crucial position in the economy, the development of SMEs should result in increased employment opportunities and new business start-ups. This would contribute to economic and social development through economic diversification and structural changes acceleration that promote stable and sustainable long-term economic growth.

Despite the long list of benefits that SMEs offer to the growth of Indonesian economy, SMEs are also known for their constraints that may inhibit their potential to expand. The fundamental problems being faced by Indonesian SMEs are the lack of funding and inaccessibility of financial institutions. Other constraints include the difficulties they experience in obtaining adequate staff with IT skills (DEPKOP, 2005a), lack of managerial skills as well as lack of production techniques and expertise. In addition, most of Indonesian SMEs are also known to encounter significant marketing constraints due to lack of information of the available marketing channels and network (ASEAN, 1997; Urata, 2000; DEPKOP, 2005a).

## METHODOLOGY

Ten barriers to e-commerce adoption were gathered from a survey done in Swedish SMEs by MacGregor and Vrazalic (2005). A series of 8 in-depth interviews with SMEs owner/manager and consultants was undertaken to determine whether the barriers were applicable and complete for Indonesian setting. All barriers were found to be applicable with the addition of one other barrier – that is language barrier- included in the survey.

During the data collection, the respondents who had not adopted e-commerce were asked to rate the importance of each of the barriers to their decision not to adopt e-commerce. A standard 5 point Likert scale was used to rate the importance with 1 meaning very important and 5 meaning very unimportant.

Seven locations were chosen across the three provinces in Indonesia, as they were deemed to have sufficient numbers of adopters as well as non-adopters. These were:

- West Java : Bandung, Sukabumi, Tasikmalaya
- Bali : Denpasar, Kuta, Gianyar
- DKI Jakarta

These locations are also chosen as those contained personnel who could assist with the distribution and re-gathering of the survey materials. A total 300 surveys were distributed by post.

## RESULTS

Responses were obtained from 79 SMEs organizations giving a response rate of 26.3%. The total number of non-adopters (i.e. SMEs not using e-commerce) was 43, representing 54.4% of the responses. The responses of these non-adopters were examined in detail and it was determined that all of them responded to every statement in the questionnaire regarding the barriers to e-commerce adoption. These responses formed the basis for the statistical analysis carried out using SPSS. An inspection of the frequencies indicated that full range of the scale was utilized by respondents.

The aim of the statistical analysis was to establish whether correlations existed between e-commerce adoption barriers in the data set. A Correlation Matrix is shown (see Table 4). The barriers have been abbreviated for readability. The correlations which were significant at the .001 level are shown in bold.

**Correlation Matrix**

	Not match prod/serv	Not fit our way of working	Not fit cust way of working	No advantage	No knowledge	Complicated techniques	Doubt security	Investment too high	No time	Many choices
Not fit our way of working	<b>.718*</b>									
Not fit cust way of working	<b>.657**</b>	<b>.736**</b>								
No advantages	.410**	.483**	.222							
No knowledge	.050	.161	.251	.060						
Complicated techniques	-.147	.029	.019	.005	<b>.570**</b>					
Doubt security	.289	.350*	.364*	.131	.370*	.426**				
Investment too high	.078	.074	.212	.090	.478**	<b>.680**</b>	<b>.704**</b>			
No time	.218	.493**	.229	.300	.287	<b>.659**</b>	.437**	<b>.534**</b>		
Many choices	.320*	.166	.347*	-.048	.332*	.415**	<b>.544**</b>	<b>.692**</b>	.455**	
Language barrier	-.043	-.232	-.209	.130	-.102	.270	.083	.462**	.219	.435**

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

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

**Table 4. Correlation Matrix of e-commerce adoption barriers in Indonesia**

The correlation matrix shows an interesting pattern of results. The first three barriers seem to all correlate with each other, but show weak or no correlations with the last set of barriers. Therefore, given the data above, four distinct groupings of results can be identified in the Correlation Matrix. In the first grouping, there is a strong positive correlation between the barriers “We do not have the technical knowledge in the organisation to implement e-commerce” and “E-commerce is too complicated to implement” (Pearson’s  $r = .570$ ,  $p < .000$ ). These two barriers also show strong positive correlations with the barriers relating to the investment, security and time of e-commerce adoption.

In the second grouping, the barriers relating to suitability of e-commerce to product/services, way of doing business and way of customer/supplier perform businesses generally show a strong positive correlation with each other. While the third group shows a strong positive correlation between the barriers “It is difficult to choose the most suitable e-commerce standard with so many different options available” and “Language barrier”. Finally, the Correlation Matrix above indicates a fourth group with only one barrier included that is “E-commerce does not offer any advantages to our organization” which appear to be unrelated to the barriers in the other group.

These findings suggested the use of Factor Analysis to investigate any separate underlying factors and to reduce the redundancy of certain barriers indicated in the Correlation Matrix. The results of Kaiser-Meyer-Olkin MSA (.633) and Bartlett’s Test of Sphericity ( $\chi^2 = 285$ ,  $p = .000$ ) indicated that the data set satisfied the assumptions for factorability. Principle Components Analysis was chosen as the method of extraction in order to account for maximum variance in the data using a minimum number of factors. A four-factor solution was extracted with Eigenvalues of 4.132, 2.486, 1.257 and 1.042, and was supported by an inspection of the Scree Plot. These four factors accounted for 81.065% of the total variance as shown in Table 5.

Rotation Sums of Squared Loadings			
Component	Eigenvalue	% of Variance	Cumulative %
1	4.132	37.561	37.561
2	2.486	22.603	60.165
3	1.257	11.425	71.590
4	1.042	9.476	81.065

**Table 5. Total Variance Explained**

The four resulting components were rotated using the Varimax procedure and a simple structure was achieved as shown in the Rotated Component Matrix in Table 6. Five barriers loaded highly on the first component. These barriers are related to the complexity of implementation techniques, high investments, the lack of technical knowledge, doubt on security and time. This component has been termed the “Too Difficult” factor. The barriers highly loaded on the second component are termed the “Unsuitable” factor and are related to the suitability of e-commerce to the respondent’s business, including the extent e-commerce matched the SME’s products/services, the organisation’s way of doing business and their client’s way of doing business. The barriers loaded on the third components are termed the “Uncomfortable” factor and are related to the range of e-commerce option and the language barrier. The last barrier left had been loaded on the fourth component, which are termed “Inapplicable” factor and is related to the lack of advantages offered by e-commerce. These four factors are independent and uncorrelated, as an orthogonal rotation procedure was used.

## DISCUSSION

The results of the study indicate that correlations between barriers to e-commerce adoption exist and enable the grouping of barriers according to four factors. These factors have been termed “Too Difficult”, “Unsuitable”, “Uncomfortable” and “Inapplicable”.

The “Too Difficult” factor is related to the barriers which make e-commerce complicated to implement, including barriers such as the complexity of e-commerce implementation techniques, the difficulty obtaining funds to implement e-commerce, the lack of technical knowledge and difficulty in finding time to implement e-commerce. The “Unsuitable” factor is related to the perceived unsuitability of e-commerce to SMEs. These barriers include the unsuitability of e-commerce to the SME’s products/services, way of doing business, and client’s way of doing business. The “Uncomfortable” factor is related to the perceived of uncomfortability of conducting business in e-commerce, which includes the language barrier and deciding what standard to implement. This is due to the fact that most of SMEs entrepreneurs found it difficult to deal with documentation written in English, as this is not the first language for Indonesians. Finally, “Inapplicable” factor is related to inapplicability of e-commerce to SMEs. This includes the lack of perceived advantages of e-commerce implementation.

	Component			
	Too Difficult	Unsuitable	Uncomfortable	Inapplicable
E-commerce is not suited to our products/ services.		.865		
E-commerce is not suited to our way of doing business.		.797		
E-commerce is not suited to the ways our clients (customers and/or suppliers) do business.		.885		
E-commerce does not offer any advantages to our organisation.				.859
We do not have the technical knowledge in the organisation to implement e-commerce.	.810			
E-commerce is too complicated to implement.	.878			
E-commerce is not secure.	.594	.440		
The financial investment required to implement e-commerce is too high for us.	.718		.579	
We do not have time to implement e-commerce.	.627			.509
It is difficult to choose the most suitable e-commerce standard with so many different options available.			.676	
Language barrier			.892	

**Table 6. Rotated Component Matrix**

From the results indicated above it is interesting to note there are several barriers that are related to two of the four factors. First, the security barrier was found to be loaded onto both the “Too difficult” and “Unsuitable” factors, although the factor loading of this barrier was higher in relation to the “Too Difficult” factor (.594). While time barrier appear to be loaded onto both the “Too difficult” and “Inapplicable” factors, although the factor loading was higher in relation to “Too difficult” factor. The correlation of barriers and how it is grouped into four factors is also an interesting phenomenon to observe. By introducing an additional barrier – that is the language barrier – into the study, the relationship of barriers has changed dramatically compared to earlier studies. In contrast with the result of Swedish study by MacGregor and Vrazalic (2005), which found the ten first barriers (without the language barrier) had grouped into two factors only, that is “Too difficult” and “Unsuitable”, this study found that with the addition of the language barrier, a four factor solution was extracted.

Given the results above, the study are significant in several ways. The analysis has shown that eleven of the most common barriers to e-commerce adoption can be grouped in relation to four main factors. This gives researchers a powerful explanatory tool because it reduces the “noise” in the data. Instead of accounting for eleven different barriers, the inhibitors to e-commerce adoption can be explained as a result of four factors: e-commerce is too difficult, unsuitable, uncomfortable, or inapplicable to the business. The Rotated Component Matrix also enables the prediction of the scores of each individual barrier based on the score of the four factors, and vice versa, for an SME. This has implications for research into e-commerce barriers. This makes it simpler not only to explain, but also predict barriers to e-commerce adoption in SMEs.

#### **Limitation of the study**

It should be noted that this study has several limitations. The data for the study was collected from three provinces of Indonesia with small number of respondents. Therefore, although conclusions can be drawn, the results may not be generalisable to SMEs in other countries or, indeed, to the wider Indonesian situation and can only be treated as a pilot study. Also, the data for the study was collected from various industry sectors and it is not possible to make sector specific conclusions. Further research is therefore needed to assess the barriers with larger quantitative data by replicating the study in other provinces of Indonesia to better understand of the key issues.

## CONCLUSION

This research seeks to explore and detect underlying relationships between identifiable barriers of electronic commerce (e-commerce) adoption in Indonesian small medium-sized enterprises (SMEs). The findings suggested that the barriers of e-commerce adoption in Indonesian SMEs can be grouped into four main factors, which is the difficulty of implementing e-commerce, the unsuitability of e-commerce to the business, the uncomfotability in communicating and choosing standards in business online, as well as the inapplicability to the current business needs. The results of this study are a significant contribution to the research of e-commerce barriers because they can be used as explanatory and prediction tools by researchers.

## REFERENCES

1. Abdullah, M. A. and Bakar, M. I. H. (2000) Small and medium enterprises in Asian Pacific countries, Nova Science Publishers, Huntington, NY.
2. Abell, W. and Lim, L. (1996), *Business use of the internet in New Zealand*, August, <http://ausweb.scu.edu.au/aw96/business/abell/index.htm>.
3. Acs, Z. J., Morck, R., Shaver, J. M. and Yeung, B. (1997), The Internationalization of Small and Medium-Sized Enterprises: A Policy Perspective, *Small Business Economics*, 9, 1, 7-20.
4. ASEAN (1997), *Small and Medium Enterprises in Indonesia*, Association of South East Asian Nations, 16 March, <http://aeup.brel.com/sme/sme1.html>.
5. Asia Foundation (2002) SMEs and E-commerce, Castle Asia.
6. Asian Development Bank. (2003), *Private sector development and finance*, Asian Development Bank, March 2004, <http://www.adb.org>.
7. Astika, F. (2002) *Internet development in Indonesia: A preview and perception*, Electronic Engineering Polytechnic Institute Surabaya, Surabaya.
8. Auger, P. and Gallagher, J. M. (1997), Factors affecting adoption of an Internet-based sales presence for small businesses, *The Information Society*, 13, 1, 55-74.
9. Bajaj, K. K. and Nag, D. (1999) E-commerce : the cutting edge of business, Tata McGraw-Hill, New Delhi.
10. Barry, H. and Milner, B. (2002), SMEs and electronic commerce: a departure from the traditional prioritisation of training?, *Journal of European Industrial Training*, 26, 7, 316-326.
11. CBS (2004) *Survey usaha terintegrasi 2004*, Central Bureau of Statistics (CBS), Jakarta.
12. Daniel, E., Wilson, H. and Myers, A. (2002), Adoption of e-commerce by SMEs in the UK, *International Small Business Journal*, 20, 3, 253.
13. DEPKOP (2005a), *Peran Koperasi dan Usaha Kecil Menengah Dalam Pembangunan Nasional*, Kementerian Koperasi dan Usaha Kecil Menengah, November, [www.depkop.go.id](http://www.depkop.go.id).
14. DEPKOP (2005b), *Statistik Usaha Kecil Menengah*, Kementerian Koperasi dan Usaha Kecil Menengah, November, [www.depkop.go.id](http://www.depkop.go.id).
15. Gessin, J. (1996), Impact of electronic commerce on small and medium sized enterprises, *Management*, 11-12.
16. Hall, C. (2002) Profile of SMEs and SME issues 1990-2000, Asia-Pacific Economic Cooperation, Singapore.
17. Harvie, C. and Lee, B. C. (2000) Proceedings : SMEs in East Asia in the aftermath of the Asian financial crisis, 16-17 June 2000, Wollongong, Australia, International Business Research Institute, Wollongong, Australia.
18. Kendall, J. D., Tung, L. L., Chua, K. H. and Hong, C. (2001), Receptivity of Singapore's SMEs to electronic commerce adoption, *Journal of Strategic Information Systems*, 10, 223-242.
19. Khiang, A. L. B. and Chye, G. N. K. (2002), Information technology and e-commerce for successful SMEs, *Malaysian Management Review*, 37, 2.
20. MacGregor, R. C. and Vrazalic, L. (2005), A basic model of electronic commerce adoption barriers: A study of regional small businesses in Sweden and Australia, *Journal of Small Business and Enterprise Development*, 12, 4, 510-527.
21. Mirchandani, D. A. and Motwani, J. (2001), Understanding small business electronic commerce adoption: An empirical analysis, *The Journal of Computer Information Systems*, 41, 3, 70.
22. Morison, A., Breen, J. and Ali, S. (2003), Small business growth: Intention, ability, and opportunity, *Journal of Small Business Management*, 41, 4, 417-425.
23. Noteboom, B. (1994), Innovation and diffusion in small firms: theory and evidence, *Small Business Economics*, 6, 5, 327-347.



24. Poon, S. and Swatman, P. M. C. (1999), An exploratory study of small business Internet commerce issues, *Information & Management*, 35, 1, 9-18.
25. Purao, S. and Campbell, B. (1998) In *Proceedings of Americas Conference on Information Systems* Baltimore, MD, pp. 325-327.
26. Quayle, M. (2002), E-commerce: The challenge for UK SMEs in the twenty-first century, *International Journal of Operations & Production Management*, 22, 9/10, 1148.
27. Rao, S. S., Metts, G. and Monge, C. A. M. (2003), Electronic commerce development in small and medium sized enterprises: A stage model and its implications, *Business Process Management Journal*, 9, 1, 11-32.
28. Riquelme, H. (2002), Commercial internet adoption in China: Comparing the experiences of small, medium and large businesses, *Internet Research: Electronic Networking Applications and Policy*, 12, 3, 276-286.
29. Schneider, G. P. (2002) Electronic commerce, Course Technology, Australia.
30. Scupola, A. (2003), The adoption of Internet commerce by SMEs in the south of Italy: An environmental, technological and organizational perspective, *Journal of Global Information Technology Management*, 6, 1, 52.
31. Turban, E. (2000) Electronic commerce : a managerial perspective, Prentice-Hall International, London.
32. Urata, S. (2000), *Outline of Tentative Policy Recommendation for SME Promotion in Indonesia*, JICA, November, [http://www.jica.or.id/FOCI\\_urata.html](http://www.jica.or.id/FOCI_urata.html).
33. Walczuch, R., Van Braven, G. and Lundgren, H. (2000), Internet adoption barriers for small firms in The Netherlands, *European Management Journal*, 18, 5, 561-572.
34. World Bank Group. (2003) *2003 Annual Review Small Business Activities*, World Bank Group, Washington.