

Demand for Internet Access and Use of Small and Medium Enterprises (SMEs) in Thailand



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Chalita Srinuan, PhD.
KMITL, Thailand

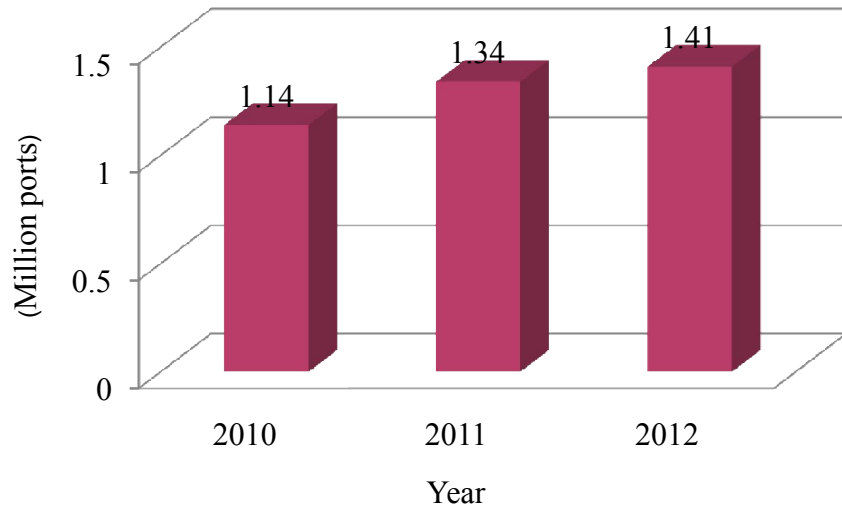
Background and motivation



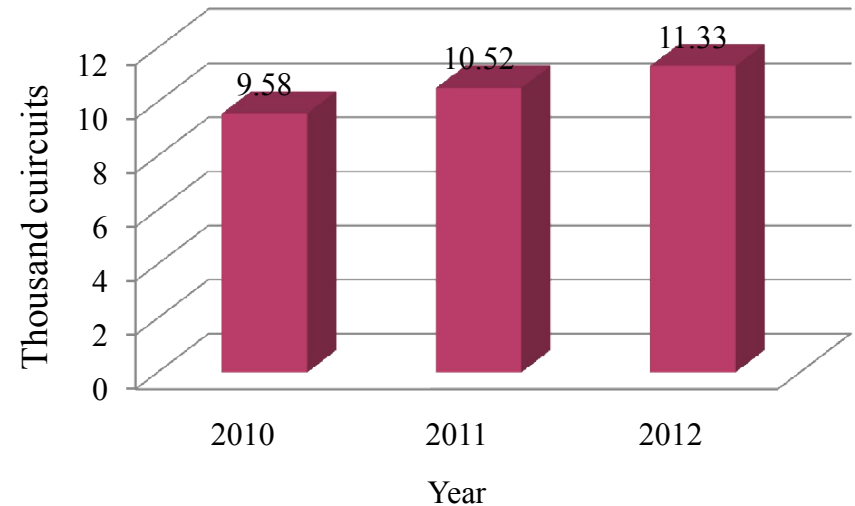
- Small and Medium Enterprises (SMEs) play a crucial role in furthering economic growth and innovation.
- SME is defined as enterprises with fewer than 200 persons.
- SMEs create jobs for more than 8.9 million people in Thailand, or 76% of the national workforce.
- They contribute about 37.8% of the GDP.
- SMEs in Thailand are in the transition stage for the upcoming ASEAN Economic Community (AEC) in 2015.

Internet usage in Thailand

Broadband Internet (TOT Annual Report, 2012)



Leased line (TOT Annual Report, 2012)



Service	Value of using Internet service: Million Baht (%)			
	Total	Corporate	Government	Household
Internet	36,096 (100%)	8,519 (23.6%)	1,877 (5.2%)	25,700 (71.2%)

Source: NSTDA 2012

Prior studies



SMEs Motivation for Internet adoption

- Perceived benefit
- Organization readiness
- External pressure

Barrier for Internet adoption by SMEs

- Technological barriers
- Organization barrier
- Surrounding environment
- Individual barriers

Research question

What is the determining factor for demand of Internet access and use by SMEs In Thailand?

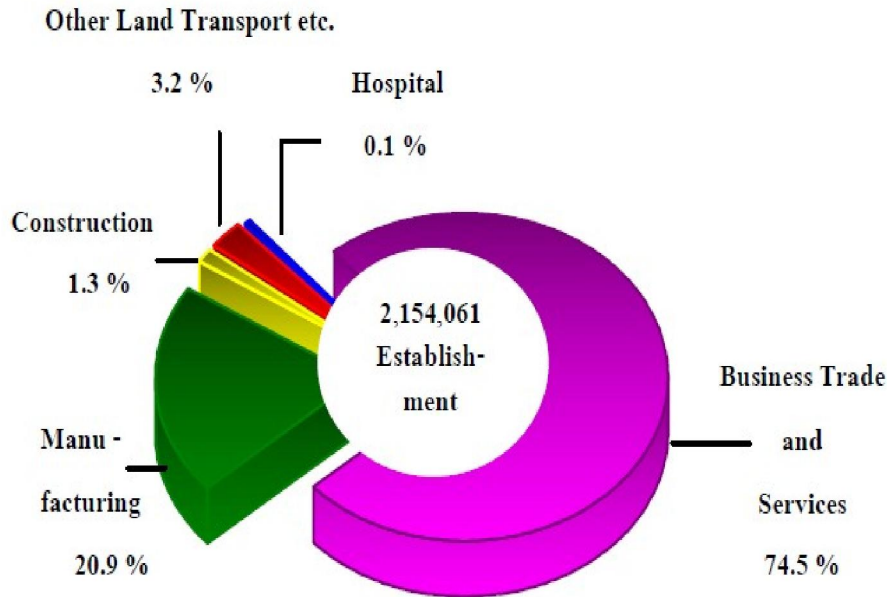
Contributions

Guidance in policy and plan formation, as well as promoting the use of Internet by SMEs effectively

Data



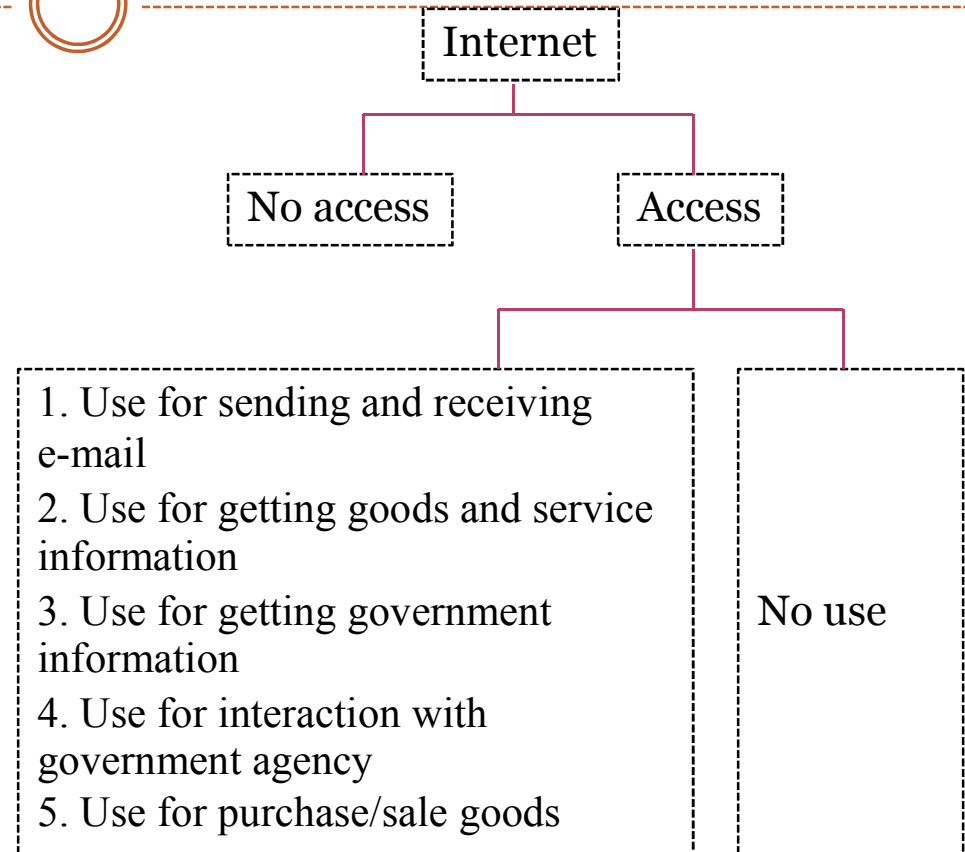
- Quantitative research in the form of organization surveys was done by Thailand's National Statistical Office in 2011 with the final report issued in 2012 (NSO, 2012).
- Owners or managers were asked to supply information about their organization's use of ICT, in particular, the Internet.
- These data were collected across each region of Thailand.




- This study discarded organizations which gave incomplete answers to the survey, were larger than 200 employees or had no Internet access.
- The final sample for further analysis was 18,755 SMEs.

Method

- Bivariate probit regression was employed.
- Two-stage estimation is adopted using Heckman's procedure in order to avoid the problem of sample selection bias.
- The factors examined included both technology attributes and organizational characteristics.
- Examples of these factors include computer availability, organizational size, organizational legal form, foreign investment and business sector.



Estimated results

Variable	First stage: Access	Second stage: Usage				
		E-mail (EMAIL)	Search (SEARCH)	Getting information from government agency(GOVIN)	Interacting with government agency (INTERACT)	Purchase/ Sale goods or services (BUYSALE)
COMP	3.4892*** (0.0724)	3.1991*** (0.0808)	3.2674*** (0.0861)	2.5143*** (0.1090)	2.2812*** (0.1428)	2.3415*** (0.1967)
TRADE	-0.7256*** (0.0957)	-0.2513*** (0.0624)	-0.2890*** (0.060)	-0.2334*** (0.0537)	-0.1499*** (0.0567)	0.1969 (0.0598)
MANU	-0.6828*** (0.0957)	-0.1437** (0.0631)	-0.1096* (0.0607)	-0.0954* (0.0538)	-0.0939* (0.0567)	-0.2031*** (0.0600)
CONS	-0.4213*** (0.1152)	-0.1117 (0.0808)	-0.1391* (0.0773)	0.1461** (0.0690)	0.1068 (0.0720)	-0.2875*** (0.0795)
TRANS	-0.8367*** (0.1194)	-0.3245*** (0.0884)	(-0.3746)*** (0.0841)	-0.2692*** (0.0779)	-0.2953*** (0.0821)	-0.4235*** (0.0909)
HOS	-0.5276*** (0.1822)	0.2556* (0.1520)	-0.1446 (0.1262)	0.6544*** (0.1177)	0.8586*** (0.1177)	-0.1098 (0.1258)
SIZE	0.0009*** (0.0001)					
IND	-0.2090* (0.1085)	-0.2593** (0.1071)	-0.0991 (0.1086)	-0.3669*** (0.1092)	-0.0287 (0.1389)	-0.5193*** (0 .1234)
PART	0.2606** (0.1116)	0.2535** (0.1088)	0.1095 (0.1102)	-0.0228 (0.1099)	0.4484*** (0.1384)	-0.0927 (0. 1231)
LIMITED	0.5204*** (0.1065)	0.1088*** (0.1051)	0.4141*** (0.1067)	0.1398 (0.1064)	0.7264*** (0.1352)	-0.0618 (0.1191)
STATE	0.3750* (0.2019)	0.5496*** (0.1865)	-0.0112 (0.1717)	0.8300*** (0.1750)	0.9608 (0.1890)	-0.5853*** (0.2175)
COOP	-0.6949 (0.2049)	-0.6319*** (0.2049)	-0.6053*** (0.2049)	-0.0511 (0.2064)	0.2153 (0.2458)	-0.4070 (0.2577)
FOREIGN	0.4420*** (0.0619)	0.4966*** (0.0508)	0.2488*** (0.4270)	0.4362*** (0.0356)	0.4443*** (0.0355)	0.4000*** (0.0371)
CONSTANT	-1.9579*** (0.1488)	-2.610*** (0.1357)	-2.6610*** (0.1380)	-2.7034 (0.1465)	-3.3030 (0.1969)	-2.9399 (0.2189)
		1	0.9940	0.9642	0.9605	0.9994
		(7.25e-09)	(0.0072)	(.0260)	(0.0740)	(0.1253)
		4474.13***	4163.06***	1347.6***	820.643***	562.071*
Observations	18755	18755	18755	18755	18755	18755

Determinant factors of demand for *Internet access*



- The results suggested that there is a high probability of an SME's Internet access at work if the SME has made computers available in the organization to the staff.
- Organizational size also revealed that the larger the number of employees, the more probable that an SME will use the Internet.
- SMEs in the ICT sector having the highest possibility of access to the Internet compared to other surveyed business sectors.
- Legal form of an SME has a significant effect on Internet access with individual proprietors and cooperatives having the greatest probability of no Internet access. At the same time, SMEs which are operating as a limited company or public company limited tended to have a higher potential for Internet access.
- SMEs which have foreign shareholders are more likely to have access to the Internet with a greater percentage of foreign investment or shareholders affecting the probability of Internet access.

Determinant factors of demand for *Internet Usage*



- Probability of using any application is more likely to increase as the number of computers becomes more available to the organization.
- Usage is significantly greater for foreign shareholding organizations in every application
- SMEs in the manufacturing and land transportation and storage sector use every application less than SMEs in the ICT sector.
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- SMEs in the construction sector group uses the Internet for getting information from government organizations more frequently than SMEs in ICT sector.
- SMEs in the private hospital sector tend to use the Internet more than other sectors for e-mail, getting information from government organizations and interacting with government agencies (e.g. downloading and submitting tax forms and requesting online forms such as insurance).
- SME which is formed as an individual proprietorship is the least likely form of company to use e-mail, get information from government organizations or purchase or sell goods or service via the Internet.

Conclusion



- **Insufficient infrastructure is the important barrier.**
 - The findings indicated that number of computers available within an SME will encourage SMEs access and use the Internet more.
 - However, the number of computers and networks is also related to the size of SMEs, organization structure and ownership.
- **Organization readiness**
 - SMEs in the ICT sector access and use the Internet more compared to other forms of SMEs.
 - SMEs in land transport, the business trade and service and manufacturing viewed the Internet as a key strategy to improve SME efficiency
- **Organizational barrier**
 - SMEs operating as individual proprietors and cooperatives are less likely to access and use the Internet.

Policy implication



- Policy makers and government officials are needed to facilitate the process of Internet access. The first priority should be the development of Internet infrastructure including subsidies for the first installation of ICT by SMEs, in particular micro and small enterprises.
- Policy makers and government officials may also need to consider whether wireless technologies, e.g., mobile broadband and hotspots could be another alternative to solve the lack of fixed infrastructure.
- This could provide an opportunity for SMEs to access Internet services, in especially smaller SMEs owned by individual proprietors and entrepreneurs.



Q&A