

Techniques for Estimating Demand for Public Internet Service: An Empirical Study of CATNET Demand and Usage

By

Rattanawan Rattakul¹

Presented to the Global Indicators Workshop for ICT Community Access Points,
Mexico City, November 16-20, 2004

Background

The Communications Authority of Thailand (CAT) has demonstrated to the Thai citizens their commitment to the universal access of Internet with the provision of their CATNET Public Internet kiosks service nationwide. The agency has implemented the service in 761 offices across the nation in compliance with the Royal Thai Government's policy in 2000. The Service coverage area of 219,226 square kilometers includes 9.1 Million households and this equates to one CATNET outlet per 288 sq. km. (irrespective of TOT Internet Tambon, or private cybercafés).

After two years of service implementation, the CAT has commissioned a research study to be conducted on users' demand and expectations in order to gain customers' insight on the service. The author was assigned to undertake this in-house study to determine users' profile based on their service need and acquire information on their expected price on their service usage.

Research Objectives

The objectives of the study were to examine user demographics and their Internet usage in provincial areas through CATNET Internet kiosks; to identify key factors contributing to the digital divide in Thailand; to identify their extent of demand for community access to the Internet, and to promote awareness of, and identify, inhibitors to narrow the digital gap.

As this study intends to profile CATNET users and examine their usage demand, the survey has been conducted offline at CATNET outlets by distributing questionnaires to current CATNET users. The benefit of conducting an offline survey is to encourage CATNET users to spend their offline wait time to fill in the survey, as opposed to their valuable service time answering to our online survey. The survey was conducted in December 2002, and until the present date, no other study in Thailand has been conducted to target only public Internet users.

¹ Senior Business Analyst, Thailand Post Company Limited, Ministry of Information and Communication Technology, Thailand. The views expressed are those of the author and may not necessarily reflect the opinions of the MICT or Thailand Post. She can be reached at rattanawan@mict.go.th, or rattanawan@gmail.com.

Research Methodology

The questionnaire in this study (Attachment 1) was designed to capture the following constructs: user demographic data, Internet usage, CATNET service usage, purposes of Internet usage, perception on Internet benefits, and CATNET service satisfaction.

The survey methodology used was stratified sampling by identifying survey units from 761 CAT post/telecom outlets nationwide offering CATNET service. Based on their CATNET cards sold, post and telecom outlets were categorized into four groups as follows:

CATNET cards sold	No. of outlets	Survey sent (copies)
Over 100	20	1,000
41-100	30	600
21-40	70	700
11-20	50	250
Total Sent	170	2,550

1,200 questionnaires were distributed to telecom outlets whereas 1,350 were given to postal outlets. The total survey units of 170 outlets were randomly based on their strata out of the total 761 service outlets nationwide.

The survey was conducted in December 2002, by mailing out respective numbers of questionnaires to each of the selected post/telecom branches. 48% of the questionnaires, or 1,223 copies, were returned, but 2% or 49 copies were rejected on the basis of unqualified respondents. Therefore, this study was based on 1,174 complete questionnaires representing a 46% response rate.

To test the survey reliability, reliability analysis had been administered over 11 perception variables in the perception and satisfaction constructs. The analysis reveals an alpha value of 89.55%. The perception of public Internet service and Internet benefit included convenience of access, frequency, stickiness, service efficiency, cost reduction, productivity enhancement, and business opportunity.

Findings

1. Demographics

Table 1 Geographic dispersion of 1,173 CATNET respondents

BKK	North	Central	East	West	Northeast	South
14%	13%	16%	3%	3%	30%	21%

This cross-sectional study was quite equally represented by male and female respondents with 51:49 proportion with equally distributed geographic dispersion. (See Table 1). The questionnaires were returned by post and telecom offices at the 50:50 stake. (See Table 2)

Table 2 Questionnaires received by sampling units

Telecom Center	Post Office
49.8%	50.2%

Half of the respondents were employed full-time as shown in Figure 1 (employment status). In addition, Table 3 (Occupation) shows that major users of CATNET were employees of public sectors (33%) and students (32%) where 40% obtained bachelor degree and 24% vocational certificates (See Table 4).

More than 70% of CATNET respondents in this study were low-income earners. 47% were earning less than 6,000 Baht a month, while 26% were in the 6,001-12,000 Baht bracket (See Figure 2). Most of CATNET users at the time of the survey were aged between 20-40 years, representing 59% of the respondents (See Figure 3). Figure 4 illustrates that CATNET has been successful in reaching out to the underserved population as 45% and 31% of CATNET respondents resided in the municipality and the rural area respectively.

Another factor, PC ownership, reveals that CATNET has helped bridge the digital divide by providing Internet access to those 56% who did not own a PC (See Table 5). Thus the empirical analysis has confirmed that the disadvantaged groups: the low-income earners, the non-urbanites, and students were in reach of CATNET service. In addition, it is interesting to note that CATNET users are relatively well-educated with 45% holding a bachelor degree or higher.

Figure 1 EMPLOYMENT STATUS

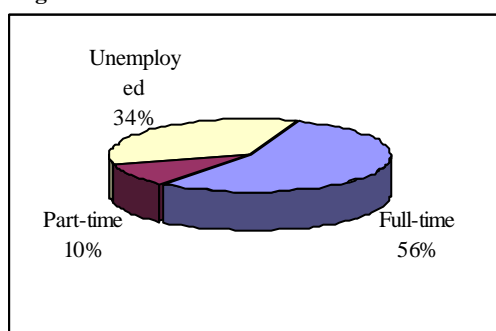


Figure 2 INCOME ('000 Bath)

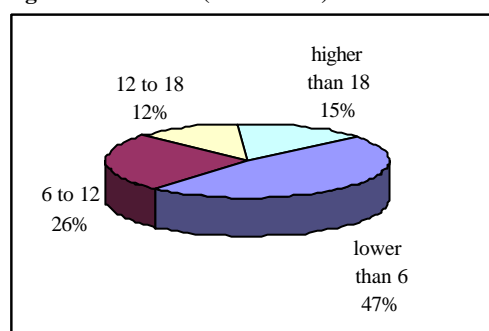


Figure 3 AGE

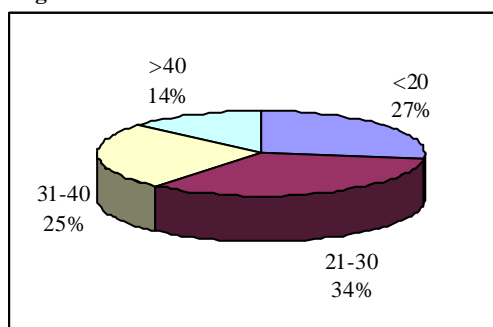


Figure 4 DOMICILE

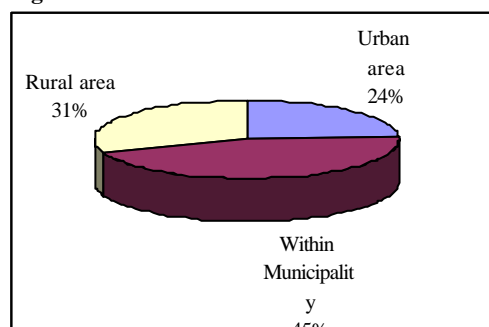


Table 3 Occupation

Public Sector Employees	32.6%
Private Sector Employees	16.3%
Self-employed	17.5%
Retirees	1.1%
Student	32.5%

Table 4 Education

Primary School	2.6%
Secondary/junior High School	8.2%
High School	20.1%
Vocational Student	23.7%
Bachelor Degree	40.4%
Graduate Degree	5.0%

Table 5 Computer Ownership

Yes	44.0%
No	56.0%

2. Internet Usage

Half of the survey respondents (54%) claimed Internet usage of upto five hours per week where 51% had been using the Internet for more than two years (See Tables 6 and 7). Most of them accessed the Internet once a day or once every two days at 23% and 41% respectively (See Figure 5). When asked about their CATNET usage frequency, only 11 and 34 % visited CATNET once a day or once every two days (See Figure 6). Most users, be it CATNET or other Internet services, spend upto an hour on the Internet (See Tables 8 and 9).

Table 6 Internet access hour / week

0-5	53.5%
5-10	28.3%
10-15	10.2%
15-20	8.1%

Table 7 First usage of the Internet

In 2002	17.9%
In 2001	31.5%
In 2000	17.5%
In 1999	12.9%
Prior to 1999	20.3%

Figure 5 Frequency of the Internet usage

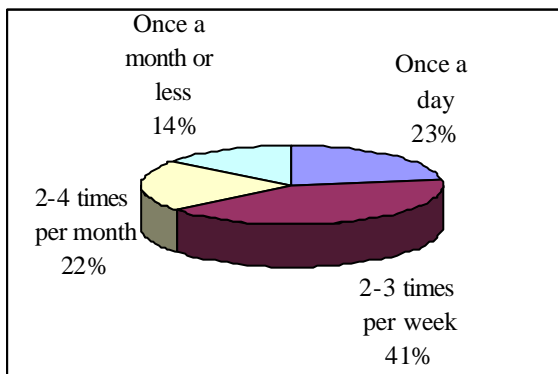


Figure 6 Frequency of CATNET usage

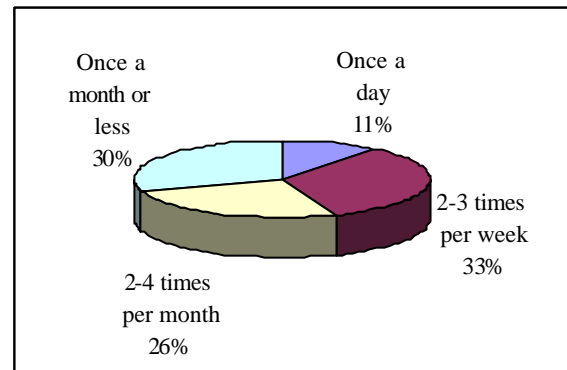


Table 8 Duration of each Internet session

< 30 Min.	15.1%
30-60 Min.	53.4%
61-90 Min.	16.7%
91-120 Min.	8.6%
> 2 Hrs.	5.9%
Always logged on	0.3%

Table 9 Duration of each CATNET session

< 30 Min.	27.4%
30-60 Min.	50.7%
61-90 Min.	13.4%
91-120 Min.	5.5%
> 2 Hrs.	3.0%

Table 10 Do you use Internet at the following places?

From 1,172 questionnaires, CATNET users access Internet		
At home	371	31.7%
At work	334	28.5%
At school	308	26.3%
At public booth	<u>985</u>	84.0%

Among 985 respondents who checked for Internet usage at public booth, 379 have entirely relied upon public Internet as their sole access to the Internet or 38% of the respondents. 47% of the respondents who checked for Internet usage at public booth or 466 respondents have spent 80% or more of their Internet time at public booth.

3. Purpose of Usage

In contrast to conventional wisdom, the survey revealed that most respondents representing 63% and 53% used CATNET for communications and research respectively (See Table 11). When asked about applications they intended to use on the Internet, more than 90% of them used the Internet for web surfing, and 83% used it for communications by e-mail (See Table 12).

Table 11 Purpose of Usage

Communications	62.6%
Entertainment	38.4%
Research	52.7%
Commerce	13.4%

Table 12 Application used on the Internet

	Never	Sometimes	Most often
E-mail	16.8%	38.6%	44.6%
File Download	29.4%	51.2%	19.4%
File Upload	47.7%	43.3%	9.0%
Chat	36.1%	43.7%	20.2%
Playing Game	33.2%	47.3%	19.5%
Web browsing	7.5%	35.9%	56.6%

Table 13 reveals that their purpose of web surfing were mainly to browse new websites recommended by others (88%), to research information regarding firms or institutes of their interests (87%), and to research information on products/ or services (82%).

Table 13 Reason for Research Usage

	Ever Used	Never
Product Info Search	82%	18%
Corporate Info search	87%	13%
Search Product before purchase	70%	30%
Browse new web site	88%	12%
Order product via Internet	41%	59%

Half of the 1,173 respondents confirmed that they used public Internet because they considered the service cheaper than other Internet access means. The binomial test analysis based on Z approximation revealed that the finding was significant on those who opted for the following reasons (see Table 14).

Table 14 Why do respondents use public Internet?

	Category	N	Obsd. Prop.	Test Prop.	One-tailed
Never Used Public Internet	Not Use	1065	0.908	0.3	0.00
	Use	108	0.092		
No I Access at home	Not Use	648	0.552	0.3	0.00
	Use	525	0.448		
No I Access at work	Not Use	1050	0.895	0.3	0.00
	Use	123	0.105		
No I Access at school	Not Use	1120	0.955	0.3	0.00
	Use	53	0.045		
Pub. I service is cheap	Not Use	589	0.502	0.3	0.00
	Use	584	0.498		
Want to meet people at the I booth	Not Use	1090	0.929	0.3	0.00
	Use	83	0.071		

a Based on Z Approximation.

4. Perception of Internet Benefits

Table 15 Perception of Internet Services: Internet helps in the following topics

	Disagree	Neutral	Agree
Reduce costs	9.4%	15.6%	75.0%
Increase productivity	14.3%	31.9%	53.9%
Reduce communication costs	14.3%	14.2%	78.5%
Increase business	10.1%	20.6%	69.2%
Ease purchase via credit card	15.1%	26.7%	58.3%
Ease purchase via COD	14.0%	29.5%	56.5%

CATNET respondents positively agreed with the view that the Internet helped reduce communications costs and their search costs, enhanced their productivity via bringing in new business opportunities such as job vacancies, suppliers, and bidding information (See Table 15). Additionally, 68% and 67% of respondents satisfactorily reported that CATNET helped lengthen their Internet duration and increase their Internet usage (See Table 16). This confirmed that the CATNET service not only offered Internet access and access convenience to the remote population, but also helps stimulate their web usage.

Table 16 CATNET service satisfaction

	Disagree	Neutral	Agree
Access convenience	12.5%	17.6%	69.9%
Service hour convenience	16.8%	18.9%	64.3%
CATNET help increase Internet usage	9.7%	23.6%	66.7%
CATNET increase I usage duration	11.9%	20.2%	68.0%
CATNET is faster than other I service	17.2%	24.8%	58.1%

The bivariate correlation analysis revealed that the frequency of CATNET usage and the duration of CATNET usage explained the positive relationship with the satisfactory opinion that CATNET helped increase Internet usage and lengthen Internet session with 90% confidence (See Table 17).

Table 17 Correlation between CATNET usage and perception

Correlation		Usage of CATNET	
		Frequency	Duration
Perception	Location of CATNET service facilitate Internet access	0.130	0.157
	CATNET increases Internet usage	0.195	0.213
	CATNET prolongs Internet session	0.157	0.268

5. Pricing

The study has posed a question to CATNET users of how much they want to pay for each time slot spent on the Internet. 73% of CATNET respondents (852 users) suggested 60 minutes of CATNET should cost them 10.85 Baht with the standard deviation of 2.77, or the price range they want to afford is 8.07 to 13.62 Baht per hour.

Table 18 Pricing Suggestion

Duration	No of Respondents	% of opted R	Average Price (THB)	SD	Range (THB)	
15 Min.	233	0.19864	4.909	2.31	2.599	7.219
30 Min.	209	0.17818	7.650	2.51	5.143	10.157
45 Min.	136	0.11594	10.096	2.83	7.263	12.929
60 Min.	852	0.72634	10.844	2.77	8.072	13.617

The most popular duration after 60 minutes was 15 minutes opted by 20% of the CATNET respondents (233 users), where the average charge is suggested at 4.91 Baht with the standard deviation of 2.31. Therefore, the price range of 15 minutes service they are willing to pay is 2.6 to 7.2 Baht. This price point suggests that the 0.5 Baht per minute charged to users prior to the survey was higher than they are willing to pay. After the outcome of the study, the CAT has reduced the price down to 0.12 Baht per minute. This has made the one-hour service 10.20 Baht with three baht fixed dial fees.

6. Conclusion

The CATNET study, though cross-sectional, has provided the CAT with information on many aspects of CATNET users: their purchase behavior, their profile, their price elasticity, applications used on the Internet, and their service satisfaction. At its implementation, the service was initiated to comply with the government's universal service policy. Need assessment came later in this scenario, two years after having implemented CATNET in all 761 outlets. Nevertheless, the survey is an effective tool for service planning and expansion.

The then CAT, now known as CAT Telecom Plc, has expanded its CATNET service into 1,100 access points nationwide, thanks to the findings of the survey. It has helped the CAT to better target their service to the locations where there are potential users and to understand that key potential users are students on-the-move, tourists, and low-income public sector employees.

The research has provided valuable data to assist future forecasting of demand. The initial locations and numbers for the CATNET service were determined based on the best data available at the time. The survey conducted after the service was introduced has studied and identified the value users place on the service, who the primary users are, the time they spend using the service and their expectations of price. This information has already been used to adjust pricing and identify the locations for the expanded service and in the future the data will be used to assist the preparation of new forecasts of demand and thus continues the continuing cycle of forecasting, implementing, reviewing, adjusting and refining the forecast.

Acknowledgements

The author would like to thank the Communications Authority of Thailand for their cooperative effort in the survey logistics and permission to publish the findings, and to the post offices, in particular, which have served as the most efficient survey units in following up questionnaires from target respondents, a promising business potential for the postal sector after privatization. Special thanks are to the ITU and the Mexican Ministry of Transport and Communications for their invitation extended and travel grant awarded to the author to present this study.