Web-Based Survey versus Conventional Survey:  
The Malaysian Experience in Conducting the Internet Subscriber Study

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Abstract:  
The aim of this paper is to discuss the issues and challenges in conducting the Internet Subscriber Study (ISS) at JARING Counters using both the traditional method of mail questionnaire and a web survey. The web survey was adopted in the second phase of implementation, when the traditional method encountered a fairly low response rate and poor administrative support from the JARING Service Outlets (JSOs). The JSOs regarded the ISS survey as an additional responsibility which was cumbersome and unrewarding in terms of monetary value. Moreover, in most cases the JSOs undertook the registration process on behalf of the actual applicant, resulting in the conventional methodology failing to capture the relevant social, economic and demographic information of the actual applicant. In contrast, the web survey method proved relatively successful since the online data system enabled the new JARING subscribers to directly link to the survey site without having to go through a third party. The success of the web survey approach can also be attributed to a number of strategies to increase the response rate, such as JARING’s welcoming email note, posters, letter of notification to JSOs and registrants, banner advertisement, etc. Each respondent was also awarded 500 minutes of free surf time as an incentive. The paper also describes the scope and coverage of information sought in the study.  

1.0 Introduction  

1.1 In the 1980s, the advent of PC-based computerization resulted in profound changes in methods of data collection and collation. In particular, traditional methods of data collection – such as personal interviews, self-administered mail questionnaires and data extraction from administrative records and secondary sources – were supplemented by methods such as telephony interviews, machine interviews, coding and validation. Likewise in the 1990s the advent of Internet technology has had a major impact on survey methodologies, with new techniques becoming feasible and growing rapidly. However, the fundamental question remains as to whether the new mode of data collection using the Internet is
superior to traditional methods. The experience of the National Information Technology Council (NITC) Directorate in conducting the Internet Subscriber Study (ISS) at JARING Counters, using both conventional mail questionnaire methods and web-based methods, is of interest in this respect. The paper will discuss on the objectives of the survey, study rationale, scope and coverage, and issues and challenges faced in conducting the study.

1.2 The objectives of the ISS were firstly, to study the profile of Internet applicants; secondly, to provide an analytical review on the inadequacies of the existing JARING Membership Application (JMA) Form from the point of view of information collection; thirdly, to make recommendations on expanding the scope of the JMA Form to canvass more information, especially on the Information and Communication Technology (ICT) sector; fourthly, to use the ISS to pre-test the proposed contents of the new JMA Form (through the ISS’s implementation as a ‘tag-on’ survey to the existing JMA Form); fifthly, to provide recommendations on how the other five licensed Internet Service Providers (ISP) in Malaysia could be utilized effectively to generate a complete set of data on Internet growth, trends, profiles and differentials; sixthly, to provide a framework for how Internet registration data could be fully utilized in the field of policy, market, technology and research activities; and lastly, to provide recommendations on the possibility of institutionalizing a systematic and on-going data collection mechanism by improving the effectiveness of existing modus operandi.

1.3 In implementing the study, NITC initially adopted the traditional method of self-administered mailing questionnaire. However, when this method failed to register the desired results, the web survey approach was adopted.

2.0 Rationale of Study

2.1 Two challenges prompted the NITC to develop the ISS. First, there is an urgent need to develop a comprehensive database on Information and Communication Technology (ICT) and knowledge society developments. The need to gauge the societal and technological changes in the Information Age has become particularly urgent in light of the aspirations of the National Information Technology Agenda (NITA), adopted by the Malaysian Government. In this respect, the ISS can be an immediate source of useful and relevant information for policy formulation and market research.

2.2 Secondly, the JMA Form is in need of a review. The main purpose of the JMA Form is to register and build a database of new applicants of JARING Internet services. At present, JARING makes use of this database only in business communication and finance management. The NITC Directorate, however, feels that besides catering for market needs, JARING Internet registration records could be used for generating a basic statistical summary of the profile of JARING
customers. A preliminary investigation of the JMA Form (Appendix 1) revealed a number of inadequacies:

i) both individual and organization registrants use the same form, when in fact contents that are applicable to one group may not be applicable to the other and vice versa;

ii) the classification of ‘student’ and ‘personal’ are ambiguous in meaning;

iii) the terminology ‘organization’ is not specific enough to address the nature of registrants, i.e. whether they are private or government, and so on;

iv) the form is designed for market needs only, and lacks content on policy imperatives;

v) some of the contents are not in conformity with the standard statistical concepts, definitions and classifications that are currently in practice such as trade, industry, product and occupation classifications. For example, students are not classified under occupation group as the term applies to working members;

vi) some of the items can be in coded form, to help registrants tick the relevant answers. For instance, the ‘nationality’ item can be listed according to priority;

vii) some of the information solicited is not sufficient and comprehensive in content. For example, the item on ‘race’ fails to capture the major ethnic groups of the states of Sabah and Sarawak;

viii) the use of two languages (Malay and English) creates overcrowding of content on the Form.

2.3 To address all these issues, the NITC embarked on the ISS. Due to constraints on manpower, allocation and equipment, the NITC decided to outsource ISS to a private consultant. NITC continued to provide the requisite thought leadership, monitoring and evaluation throughout the implementation of the study.

3.0 Study Scope and Coverage

3.1 Basically, the study was designed to encompass all five licensed ISPs in the country. Considering various practical reasons and constraints on resource mobilization and institutional arrangements, the study was confined to JARING, the first ISP in the country under the administration of MIMOS Berhad. Since NITC Directorate is placed under MIMOS Berhad, institutional support was gained in conducting the ISS at JARING counters nationwide.

3.2 The suggestions to rectify the existing JMA Form are as follows:

i. It was proposed that Internet registration be carried out under two different forms: one for individuals (ISS-1) seeking dial-up JARING Internet Services,
and the other for organizations (ISS-2) seeking dial-up JARING Internet Services.

ii. The contents of the Individual Subscription (ISS-1) are as follows:

A. Demographic Particulars

i. Current Residence (Perlis, Kedah, Penang, Perak, Selangor, Kuala Lumpur, Negeri Sembilan, Melaka, Johor, Pahang, Terengganu, Kelantan, Sabah, Sarawak, WP Labuan)

ii. Age (years) (15 and below, 16-20, 21-25, 26-30, 31-35, 36-40, 41-45, 46-50, 51 & above)

iii. Sex (Male, Female)

iv. Race (Malay, Chinese, Indian, Iban, Kadazan, Dayak, Bajau, Dusun)

v. Religion (Islam, Buddhism, Hinduism, Christianity, None of the above)

vi. Marital Status (Single, Married, Separated/Divorced/Widowed)

vii. Number of Household Members (1 person, 2, 3, 4, 5 and more)

B. Social Particulars

i. Employment Status (Working, Unemployed/Seeking Job, Student, Housewife, Pensioner/Retired, Others)

ii. For Full Time Students Only (Primary/Lower Secondary, Middle & Upper Secondary – Arts & Commerce Stream, Middle & Upper Secondary – Science/Technical Stream, College/University – Academic Studies, College/University – Professional Studies, Others)

iii. For Part Time Students Only (Academic Studies, Professional Studies, Others)

iv. Highest Education Level Completed (No formal Schooling, Primary, LCE/PMR or equivalent, MCE/SPM or equivalent, HSC/STPM or equivalent, Diploma, Degree (Including post graduate)

v. Type of House Staying In (Detached bungalow, semi-detached, double storey terrace, single storey terrace, flats, apartments, condominiums, wooden house, shop house)

vi. Monthly Household Income (RM1,500 & below, RM1501-2,500, RM2,501-3,500, RM3,501-5,000, RM5,001-8,000, RM8,001-10,000, RM10,001 & above)

C. ICT Particulars

i. ICT Usage (Radio, Television, Video Cassette (VCR/VCP), VCD/DVD, Video Camera, PC Internet Connected, PC Stand Alone, Wired Telephone, Wireless/Mobile Telephone, Fax (conventional & PC based), Pager, PC accessories (e.g. printer, scanner), ATM Teller Machine, Credit Card)

ii. Application Software Usage (Word Processing, Spreadsheet, Database/Filling Programs, Graphics & Presentation, Specialized Packages,
Browser, Search Engines, Writing Software Programs, Multimedia Application, Others

iii. Reasons for Subscribing to the Internet (Communication, Information, Research, Entertainment, Business Transactions, Others)

iv. ISPs Subscribed/Subscribing (TMNet, Maxis, TimeDot.Com, DIGI, None of the above)

v. Family/Household Expected to Use the Internet in the Next One Year (1 person, 2, 3, 4, 5 & above)

D. Economic Particulars

i. Occupational Status (Professional, Semi-professional, Clerical/Production & related)

ii. Employment Sector

iii. Employment Status (Employer, Employee, Self-employed)

The contents for Organizational Subscription (ISS-2) are as follows:

A. Company Profile

i. Legal Status of company (Individual, Partnership, Private Limited, Public Limited, Co-operative, Government & Public Corporation, Private non-profit/NGO)

ii. Principal Activity (One-digit classification code)

iii. Employment Size (below 5, 5-9, 10-19, 20-29, 30-49, 50 & above)


B. ICT Particulars

i. ICT Usage (Radio, television, video (conventional & digital), Work station/Mainframe, Enterprise servers, Email (Internet/Intranet), Email to FAX-PC Based, Pagers, Overhead projector (still/LCD Multimedia projection), Intranet (LAN, WAN), Electronic Funds Transfer, Multimedia/Computer-based training, Point of Sale terminals/Debit cards, Desktop publishing, Database Management)

ii. Work Functions Using Computerized Systems (Finance/Accounting, Sales & Marketing, Inventory Control, Order Entry, Operations & Productions, Human Resource, Research & Development)

iii. Application Software Usage (same as individual subscription)

iv. Reasons for Subscribing to the Internet (same as individual subscription)

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3.3 The ISS was designed to cover all JARING registration counters in the country including Sabah, Sarawak and Wilayah Labuan. Administratively, the JARING department in MIMOS Berhad had appointed 4 main JARING Access Service Providers (JASPs), comprising small medium industries (SMIs) and independent MIMOS Outlets, to market JARING Internet products and services in all states. These JASPs are then responsible for appointing Jaring Service Outlets (JSOs) to market JARING Internet services. Based on JARING registration records, a total of 179 active JARING Service Outlets (JSOs) were appointed to execute the ISS survey, as shown in Table 1 below.

<table>
<thead>
<tr>
<th>States in Malaysia</th>
<th>Number of Active Outlets Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johor</td>
<td>38</td>
</tr>
<tr>
<td>Selangor</td>
<td>28</td>
</tr>
<tr>
<td>Kuala Lumpur</td>
<td>26</td>
</tr>
<tr>
<td>Penang</td>
<td>17</td>
</tr>
<tr>
<td>Sarawak</td>
<td>15</td>
</tr>
<tr>
<td>Kedah</td>
<td>10</td>
</tr>
<tr>
<td>Melaka</td>
<td>9</td>
</tr>
<tr>
<td>Pahang</td>
<td>9</td>
</tr>
<tr>
<td>Perak</td>
<td>9</td>
</tr>
<tr>
<td>Negeri Sembilan</td>
<td>5</td>
</tr>
<tr>
<td>Kelantan</td>
<td>4</td>
</tr>
<tr>
<td>Terengganu</td>
<td>4</td>
</tr>
<tr>
<td>Perlis</td>
<td>3</td>
</tr>
<tr>
<td>Sabah</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>179</strong></td>
</tr>
</tbody>
</table>

3.4 The ISS survey commenced in April 2001 through the traditional mail questionnaire. The private consultant with the consultation of NITC Directorate, prepared two sets of questionnaires based on the subscription type: ISS-1 (individual) and ISS-2 (organizational) and distributed them to the designated JSOs. The consultants also prepared instructions on filling up the questionnaires, and collected the completed forms from each outlet on scheduled dates. At the outlet, new JARING subscribers, based on their status of application, were given the appropriate questionnaire to fill up apart from the existing JMA Form. Upon completing the questionnaire, each respondent was given a pen as a token of appreciation. Subsequently, in order to increase the response rate, each staff at the JSOs was entitled to redeem 50 cents each for every respondent who was successfully encouraged to fill up the questionnaire.
4.0 Results of the Offline Method

4.1 Coverage

At the end of August 2001, only 1536 questionnaires were received in the 5 months that the survey had been conducted. 1480 comprised individual subscriptions, while 56 were organization subscriptions. The percentage of response received through the traditional offline method of data collection was only 25%. There was lack of consistency in the coverage area in comparison to the JSOs selected for the survey, as shown in Table 2. The responses indicated low incidence, especially for large cities such as Kuala Lumpur and states such as Selangor and Johor which had the highest number of outlets selected.

Table 2: State Distribution of ISS Responses

<table>
<thead>
<tr>
<th>States</th>
<th>Responses Offline (%)</th>
<th>Mails Distributed (%)</th>
<th>Responses Online (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johor</td>
<td>19</td>
<td>17.1</td>
<td>13</td>
</tr>
<tr>
<td>Selangor</td>
<td>8</td>
<td>20.6</td>
<td>21</td>
</tr>
<tr>
<td>Kuala Lumpur</td>
<td>10</td>
<td>16.2</td>
<td>19</td>
</tr>
<tr>
<td>Penang</td>
<td>11</td>
<td>8.4</td>
<td>12</td>
</tr>
<tr>
<td>Sarawak</td>
<td>21</td>
<td>7.5</td>
<td>10</td>
</tr>
<tr>
<td>Kedah</td>
<td>2</td>
<td>3.2</td>
<td>2</td>
</tr>
<tr>
<td>Melaka</td>
<td>6</td>
<td>11.3</td>
<td>6</td>
</tr>
<tr>
<td>Pahang</td>
<td>5</td>
<td>2.0</td>
<td>2</td>
</tr>
<tr>
<td>Perak</td>
<td>4</td>
<td>3.7</td>
<td>4</td>
</tr>
<tr>
<td>Negeri Sembilan</td>
<td>4</td>
<td>3.4</td>
<td>3</td>
</tr>
<tr>
<td>Kelantan</td>
<td>4</td>
<td>0.6</td>
<td>1</td>
</tr>
<tr>
<td>Terengganu</td>
<td>1</td>
<td>1.4</td>
<td>1</td>
</tr>
<tr>
<td>Perlis</td>
<td>0</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>Sabah</td>
<td>3</td>
<td>3.6</td>
<td>3</td>
</tr>
<tr>
<td>Refused</td>
<td>1</td>
<td>0.2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1480</strong></td>
<td><strong>10,447</strong></td>
<td><strong>4389</strong></td>
</tr>
</tbody>
</table>

4.2 The traditional offline method of data collection failed to achieve the desired response rate of 6,000. The problems cited are as follows:

- Lack of understanding of survey although given sufficient time and information.
- Some outlets were not motivated to carry out survey even though incentives were offered.
- Walk in customers consisted of JARING top-up accounts only, and not new registrants.
• Registrations were done online thorough Employee Provident Fund (EPF) scheme.
• Registrations for organizational subscription were done via phone and fax.
• JSOs represented the new subscribers in the JARING ISP registration process.
• Questionnaire was reported to be lengthy and consequently time-consuming.
• Staff forgot to give forms to registrants.
• The manager did not pass survey forms to their staff.
• Some outlets had misplaced the survey forms.

Due to the relatively low response rate and constraints of the offline method, the NITC Directorate switched to the web survey in August 2001, which differed significantly from the conventional method of data collection.

5.0 The Web Survey

5.1 Study Scope and Strategy

The content of the web survey was similar to the offline method as it was aimed at capturing responses of both individuals as well as organization subscribers of JARING Internet services. The questions were hosted on the. Not much lead-time was required and all changes were done virtually. Respondents were notified of the ISS using various strategies such as:

• JARING’s welcoming email note:
  This welcoming note contained a URL address that directly linked to the site where the questions were posted.

• Letter of Notification to JSOs
  Letters were sent to 179 JSOs informing them that new JARING dial-up subscribers could participate in the survey via the Internet.

• Posters at JSOs
  Posters were sent to the JSOs to encourage online responses


• Postal Mails
  Mails to notify new subscribers of the ISS online survey were sent to 10,447 new JARING subscribers by post.
5.2 Respondents were required to key-in their membership number for security reasons. Subsequently, this led to the next question, where the respondent was required to tick the relevant subscription, i.e. individual or organization. Respondents were then taken through a series of questions based on the type of subscription selected.

5.3 Upon completing the survey, respondents were entitled to redeem 500 minutes of free surf time. As soon as the respondent clicked the submit button at the end of the survey, the respondent was directed to JARING’s redemption site. Again, the respondent was required to key in his membership number for security reasons and in order to redeem his free 500 minutes instantly. This was followed by verifying the individual account to ensure that the free surf time had been credited. Generally, the whole process took about 5-10 minutes.

5.4 The essential feature of the web survey was that the structure of questions and answers could be controlled from the start of the survey. Colours, animations were added to the visual presentation of the survey online. There was also a dynamic interaction between respondent and questionnaire. There was a tendency for respondent to make mistakes (e.g. skipping to the wrong question) when using advanced skip patterns. Fortunately, the web questionnaire could be constructed in a screen-by-screen manner so that the respondent was transported automatically to the relevant next question. The web survey also offered administrators the option of requiring a respondent to provide an answer to each question before being allowed to answer any subsequent ones. This would surely reduce item non-response. The system also disallowed duplication of responses and “uninvited guest” as every respondent was required to key-in their membership number in order to participate in the survey.

6.0 Results of the Web Survey

In February 2002, the survey ended when the desired response rate of 4389 was achieved within 6 months. There was a consistent pattern in the coverage as the large cities such as Kuala Lumpur, Selangor, Johor, Penang, Malacca and Sarawak had high incidences in comparison with the selected JSOs (refer to Table 1), as shown in Table 2. The responses registered almost 75% of the total 6000 respondents. Postal mails sent to 10,447 new JARING registrants proved to be the most effective strategy for increasing the response rate on the ISS.
7.0 Conclusion

The results from conducting the ISS using both the conventional mail questionnaire and web survey suggest that the online methodology and incentives to new subscribers proved to be considerably more effective than traditional methods in collecting profile information on new registrants. With these findings, the NITC Directorate will make recommendations to JARING to review the contents of the JMA Form to expand the scope of information solicited from new registrants. The study recommendations also include improving the registration mechanism to generate profile information regularly as a by-product of the registration system. Subsequently, this study will be replicated with other licensed ISPs in the country.

References


Shao, Allan T. (2000). Marketing Research: An Aid to Decision Making. South-Western; USA


National Information Technology Council. Draft Report on Internet Subscriber Study


Appendix 1

Please complete all the details in this form. Once you are done filling up the form, print the form and send us the form together with the payment.

<table>
<thead>
<tr>
<th>JARING MEMBERSHIP APPLICATION</th>
<th>Borang/Form</th>
<th>DIAL - UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Pelajar/Student</td>
<td>☐ Peribadi/Personal</td>
<td>☐ Organisasi/Organisation</td>
</tr>
</tbody>
</table>

Nama/ Nama Organisasi / Name/Organisation Name

Alamat/Address

No. Pend. Sykt/Co. Regn. No
(Untuk PO sahaja / For PO only)

Poskod/Post Code

Bandar/Town

No. Telefon/Telephone No.

No. Faksimili/Facsimile No.

Pegawai Berhubung/Contact Person
(Untuk Organisasi sahaja/For Organisation Only)

No. KP/I.C No/NO.Pasport/Passport No.

Warganegara/Nationality

Pekerjaan/Occupation
☐ Profesional/Professional ☐ Pelajar/Student
☐ Peniaga/Businessman
☐ Lain-lain/Others ...............................................

Jantina/Sex
☐ Lelaki / Male ☐ Perempuan / Female

Bangsa/Race
☐ Melayu/Malay ☐ Cina/Chinese ☐ India/Indian
☐ Lain-lain / Others ...............................................

Umur/Age

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BUTIR-BUTIR PERKHIDMATAN / SERVICES DÉTAILS

Saya/Kami ingin memohon untuk menjadi ahli JARING bagi perkhidmatan yang bertanda (X) di bawah ini:
I/We wish to be a member of JARING for the service as marked (X) below:
Sila pilih satu / Please select one

TYPE OF SERVICES

☐ PSTN  ☐ ISDN

INDIVIDU

☐ Home Surf  ☐ Eazy Surf  ☐ Leisure Surf

BUSINESS

☐ Cyber Office  ☐ Cyber Executive  ☐ Cyber Business

Nama Login / Login Name  
(minimum 3 huruf - maksimum 7 huruf / Minimum 3 characters maximum 7 characters)

Katalaluan / Password  
(minimum 5 huruf - maksimum 8 huruf / Minimum 5 characters maximum 8 characters)

Jenis Akaun / Type of Account

☐ UUCP  EmailID @ Name login <Login-ID>.po.my

☐ POP  EmailID @ Domain

Minimum 3 huruf - maksimum 15 huruf / Minimum 3 characters maximum 15 characters

Domain (sila pilih satu / Please select one)

Untuk Akaun Peribadi / For Personal account only

☐ pd.jaring.my (Percuma/Free of Charge)

☐ first.net.my (RM2.00 sebulan/month)

☐ the.net.my (RM5.00 sebulan/month)

Untuk akaun Organisasi sahaja / For Organisation account only

☐ po.jaring.my (Percuma/Free of Charge)

☐ top.net.my (RM2.00 sebulan/month)

☐ the.net.my (RM5.00 sebulan/month)

BAYARAN / PAYMENT

Bayaran/Payment : Cek/Kiriman Wang berpalang

No : Amaun/Amount (RM)
Bayar kepada: MIMOS Berhad  
(Crossed Cheque/Money Order No: Payable to: MIMOS Berhad)

<table>
<thead>
<tr>
<th>Saya bilkan ke kredit kad saya</th>
<th>Please debit to my credit card</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Kad Kredit / Credit Card No</td>
<td></td>
</tr>
<tr>
<td>Tarikh Tamat / Expiry Date</td>
<td></td>
</tr>
</tbody>
</table>

Mastercard  
Visa

**AKUAN / DECLARATION**

Saya/ Kami mengakui bahawa segala maklumat adalah benar semata-mata. MIMOS Berhad berhak menamatkan perkhidmatan pada bila-bila masa tanpa apa-apa pulangan atau bayaran balik, sekiranya didapati meklumat adalah palsu, salah atau tidak sah. Saya/Kami mengakui dengan menggunakan perkhidmatan tersebut, saya/kami adalah terikat dengan terma-terma dan syarat-syarat perkhidmatan yang telah ditetapkan oleh MIMOS Berhad.

I/We represent and warrant that the above information given are true, correct and valid. MIMOS Berhad reserves the right to reject this application and/or terminate the service at any time without making any refund or payment should any of above information is found to be false, incorrect or invalid. By using this services, I/We hereby agree to be bound by all terms and conditions of the service as imposed by MIMOS Berhad.

**NOTA / NOTE**

Sila lampirkan / Kindly Enclose:
1. Salinan KP/Paspot DAN / A copy of IC AND
2. Kebenaran ibubapa (bagi pemohon berumur 18 tahun ke bawah) ATAU Parent Consent (for applicants below 18 years of age) OR

Cop Organisasi/Syarikat (jika memohon dibawah syarikat) Organisation/Company Stamp (if the application is for an organisation)