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ISPs' Service Quality and Customer Satisfaction in the Southern Region of Malaysia

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Abstract

The service industry is fast becoming a growth catalyst in most economies, driven by the strategic roles of information and communication technologies (ICTs). Accordingly, strong foundations for future prosperity in Malaysia may depend on the successful deployment of new technologies. A key challenge, of interest to practitioners and academics, therefore, is the assessment of customer satisfaction. What appears unavailable is documentation on critical issues involved and how to address them. This paper, therefore, examines the influence of Malaysian ISPs' service quality on customer satisfaction. We used survey questionnaire to collect data from 400 respondents. Analysis reveals that Tangibles, Empathy, Responsiveness and Assurance were all significant, but Reliability was insignificant. ISPs in Malaysia could use findings in this paper to assess and enhance their service quality provision. Related government agencies may also use the findings to develop policy directions on Internet infrastructure, which could enable overall better service provision for Malaysian residents.

Keywords

ISP, Service Quality, Customer Satisfaction, Malaysia

INTRODUCTION

It is apparent that the advanced economies depend heavily on communication technologies and the Internet industries. The GDP contributions of these industries to the economies of United Kingdom, United States, Canada, and Australia are well documented. In Asia, countries such as Korea and Singapore have had great successes in using advances in information and communication technologies [ICTs] to improve productivity and efficiency in employees and production processes. In addition, as the use of ICTs permeate key sectors in developing countries and as governments of these countries rely more on these technologies, the need for a sustained technology development and implementation becomes paramount.

Accordingly, strong foundations for future prosperity in Malaysia's economy are only possible when these industries are effective and successful. A key managerial challenge, of interest to academics and practitioners, therefore, is the assessment of customer satisfaction with Internet Service Providers' (ISP) service quality in Malaysia. Literature indicates that the customer satisfaction levels for ISPs are relatively low (Power and Associates Report 2006). What appears to be unavailable is a comprehensive documentation on the specific critical issues and how to resolve them. It is imperative for ISPs in Malaysia to continue to address core needs of existing and prospective customers in order to drive growth and build an outstanding reputation in the industry within the region. This research, therefore, examines the service quality of ISPs in Malaysia and the underlying factors influencing the dynamics in the industry. We adapted the instrument of Parasuraman, et al. (1991) to create a framework for this paper.

This research focuses home Internet users. A home user is defined as one who uses Internet services at his/her home. This person could be any member of the family able to navigate the World Wide Web, may be a working member of the family or a student. In this research, we covered two key states in the southern region of Malaysia, Johor and Melaka. The choice of these two states was informed by their growing status, particularly in the growing number of home ICT use among residents. The objective of this research, therefore, is to evaluate the impact of ISPs' service quality on customer satisfaction and to suggest possible industry, practice and policy implications to Malaysian government agencies and to the ISPs.

ISP Activities in Malaysia

The use of ICT services depends very much on the performance of the ICT industry. Malaysia's telecommunications network is relatively advanced compared with other countries in South-east Asia. In 2003, the number of telephone landlines per 100 populations in Malaysia stood at 18.3, giving the country about twice the teledensity of Thailand, six times that of the Philippines and five times that of Indonesia. As in most of Asia, the use of mobile phones in Malaysia has been growing steadily: at the end of September 2005, there were around 17.6m mobile accounts. Although telecoms services are excellent and readily available in urban centres, they are not as strong in rural locations. The monopoly of fixed-line and mobile services by Telekom Malaysia, ended in 1994 with the licensing of more firms. Telekom Malaysia, however, remains the dominant provider of fixed-line services, with more than 90% of the market. The new firms (Maxis, Digi, and Celcom) have tended to concentrate on mobile telephony. The increasing competition has ensured lower tariffs and improved service quality. In the Internet Service market, Time Company and Jaring are the other two telecommunication companies licensed as ISPs. With the advantage of fixed-line network, TMNET, Telekom Malaysia's subsidiary company, has the largest customer base in the Dial-up Internet and Broadband access category.

Malaysia has seen an increase in Internet penetration rate. Total Internet penetration was 45.5% (globaltechforum.eiu.com). Dial-up Internet subscription increased dramatically from the year 1999 to the year 2000. The adoption of dial-up Internet slowed from the year 2005 and the year 2006, with an increase of 0.08%. In the fourth quarter of the year 2006, there were almost 900,000 broadband subscribers in Malaysia, which is equivalent to 3.3 percent of the total population in Malaysia. As of the fourth quarter in the year 2006, Pulau Pinang has the highest broadband penetration, followed by Selangor, Melaka and Johor (Malaysia Communications and Multimedia Commissions, 2006a). The penetration rate of broadband subscribers increased to five percent in the year 2007, which is an encouraging sign for the ICT development in Malaysia.

The Malaysian Communications and Multimedia Commission (MCMC) (MCMC, 2006b) conducted customer satisfaction survey on dial-up and broadband internet service providers (TMNET and Jaring) in the year 2006. In the dial-up internet service category, both ISPs scored below the industry benchmark of Customer Satisfaction Index (CSI). Key issues identified were the speed of Internet access and effectiveness of handling complaints. TMNET has a higher CSI (3.26) compared to Jaring (3.06) in the broadband service (see Table 2). Both companies, nonetheless, still score lower than the recommended CSI of 3.50. Speed of Internet access, network quality and ease of log in are the top issues rated by Malaysian Internet subscribers. According to Malaysia Communications and Multimedia Commissions (2006b), however, there were improvements on the CSI for the ISP compared to previous years.

Bilangan langganan jalur lebar mengikut teknologi
Number of broadband subscriptions by technology

Tahun	Suku	Bilangan langganan ('000)					Jumlah penembusan (per 100 penduduk)	Kadar langganan isirumah ('000)	Kadar penembusan (per 100 isirumah)		
		ADSL	SDSL	Wireless	Wireless Lan	Satelit					
2006	1	539.9	3.9	6.6	23.3	1.7	575.4	2.2	461.7	8.0	
	2	611.5	4.2	7.4	30.5	1.8	655.4	2.5	526.4	9.1	
	3	670.3	4.5	8.2	74.9	1.8	759.7	2.8	582.0	10.0	
	4	735.9	4.8	4.5	8.6	141.4	1.9	897.1	3.3	642.8	11.0
2007	1	784.3	5.2	11.4	9.0	180.1	1.9	991.9	3.7	690.8	11.8
	2	859.5	5.5	13.1	9.3	219.1	2.0	1,108.5	4.1	759.8	12.9
	3	932.2	6.1	26.3	9.2	257.6	2.0	1,233.4	4.5	835.0	14.1
	4	1,002.4	6.5	60.3	8.4	289.3	2.0	1,368.9	5.0	927.7	15.5

Year	Qtr	Number of subscriptions ('000)					Penetration rate (per 100 inhabitants)	Number of household subscriptions ('000)	Penetration rate (per 100 households)		
		ADSL	SDSL	Wireless	Wireless Lan	Satellite				Total	
2006	1	539.9	3.9	6.6	23.3	1.7	575.4	2.2	461.7	8.0	
	2	611.5	4.2	7.4	30.5	1.8	655.4	2.5	526.4	9.1	
	3	670.3	4.5	8.2	74.9	1.8	759.7	2.8	582.0	10.0	
	4	735.9	4.8	4.5	8.6	141.4	1.9	897.1	3.3	642.8	11.0
2007	1	784.3	5.2	11.4	9.0	180.1	1.9	991.9	3.7	690.8	11.8
	2	859.5	5.5	13.1	9.3	219.1	2.0	1,108.5	4.1	759.8	12.9
	3	932.2	6.1	26.3	9.2	257.6	2.0	1,233.4	4.5	835.0	14.1
	4	1,002.4	6.5	60.3	8.4	289.3	2.0	1,368.9	5.0	927.7	15.5

Figure 2. 2006-2007 Broadband Internet Penetration Rate in Malaysia
(Source: Malaysia Communications and Multimedia Commissions, www.mcmc.gov.my)

CONCEPTUAL FRAMEWORK

The transition from a manufacturing to a service-based economy is encouraging the intensive development in the services industry. Consequently, customer service has emerged as a key differentiator in highly competitive industries. Since service plays an important role in every organization, service quality takes on an immensely significant position in business performance in this 21st century. While literature on quality has been predominantly product oriented, several contributions have focused on service quality (e.g. Lewis & Booms, 1983). Zeitham et. al. (1990) indicates that the criteria customers use for evaluating service quality include comparing consumer expectations with the actual service performance. Thus, the perceived service quality is

based on a customer's judgment on overall service excellence or superiority. Perceived service quality is, therefore, different from the actual product quality because it involves a higher level of abstraction rather than a specific attribute of a product (Chen, Gupta & Rom, 1994). According to Parasuraman et al. (1985, p. 42), service quality is defined as "the comparison between customer expectations and perceptions of services". Customers compare their expectations on a number of attributes and the perceived outcome of this attributes towards services. Originally, Parasuraman (1985) identified ten attributes that are important to increase service quality. Subsequently, Parasuraman (1988) streamlined the attributes to five main dimensions, namely Tangibles, Reliability, Responsiveness, Assurance and Empathy, and called the model SERVQUAL. SERVQUAL is a very useful instrument in service quality research, which helps to adequately understand customers' expectations (Gupta et al., 2005).

Prior studies investigate the concept of satisfaction on service setting (e.g. Deruyter et al., 1997; Fornell, 1992). Satisfaction can be assessed based on the customer's satisfaction attitude on various attributes of the product or service (Churchill & Surprenant, 1982). Satisfaction, however, is a construct that requires input from experienced customers, a main departure from attitude, which is a pre-decision construct. Customer satisfaction is the feeling or attitude of a customer towards a product or service after use (Jamal & Kamal, 2002). It is the psychological process of evaluating perceived performance outcomes based on predetermined expectations (Egan, 2004). Based on the definition of service quality by Parasuraman (1985), smaller discrepancy between expected service quality and perceived service quality means customers are satisfied with the service quality provided by the service provider. A positive feeling of satisfaction could lead to customer retention and therefore to high profitability (Jamal & Kamal, 2002; Egan, 2004). Customer retention is important when there is more than one player in a market. In Malaysia, there are five ISPs, namely TMNET, MAXIS, DIGI, CELCOM and TIME. Malaysian customers can easily switch to another ISP if customers are not satisfied with the service quality provided by existing ISP. A number of studies in different field confirmed that service quality is the antecedent towards customer satisfaction. (Cronin & Taylor, 1992; Deryuter et al., 1997; Jayawardhena & Foley, 2000; Spreng & Mackoy, 1996). In this paper, customer satisfaction is defined using four variables: *pricing structure, convenience in procedures, value-added services and Internet service functionality*. Parasuraman, et al. (1991) argues that service quality can be enhanced by focusing on five dimensions depicted in the conceptual framework. These five dimensions measure customer expectations and perceptions of service quality and are discussed in the following passages.

Tangibles – refers to everything in a service provider that can be physically observed by customer, who is purchasing a service, including equipment, personnel, physical facilities, materials and appearance. These qualities provide concrete cues for customers to evaluate the capability of the service provider. Well-skilled first line personnel, the quality of products, brochures and cards, may represent ISP tangibles. Hence:

H1: Tangibles is positively related to Customer Satisfaction on Internet Service Provider

Reliability – refers to the trust to company's ability of performing service in a proper way, such as acting according to promises and declarations. A reliable ISP means the ISP is able to provide internet connection that is working at desired level of throughput, without significant failures, according to declarations and agreement between ISP and user. Hence the following hypothesis:

H2: Reliability is positively related to Customer Satisfaction on Internet Service Provider

Responsiveness – refers to service provider's willingness to help customers and provide prompt service. It can be measured by the amount of time needed to deal with customers' reported problems and the response duration once the customer filed a service request. For example, responsiveness of an ISP evaluates the time taken to response with customer's complaints on Internet connection disruptions, duration of problem solving and feedback to the customers. This leads to hypothesis 3:

H3: Responsiveness is positively related to Customer Satisfaction on Internet Service Provider

Assurance – is the knowledge and courtesy of employees and their ability to inspire trust and confidence. Since risk (such as money loss) is involved when customer decides to acquire service from a service provider, assurance is important to demonstrate cue to increase customer's trust and confidence. ISP may demonstrate assurance to customers by behaving courteously and by providing essential knowledge to guide customer's problems. Hence the next hypothesis

H4: Assurance is positively related to Customer Satisfaction on Internet Service Provider

Empathy – refers to the caring, individualized attention the service provider gives to its customers. There may be many services provided by ISP. Furthermore, customers who subscribe to an ISP come from different social background and hence ISP could emphasize personalised attention on customers and understand specific needs of customer based on their requirements. Hence the following hypothesis:

H5: Empathy is positively related to Customer Satisfaction on Internet Service Provider

The theoretical framework for this study is presented in Figure 3.

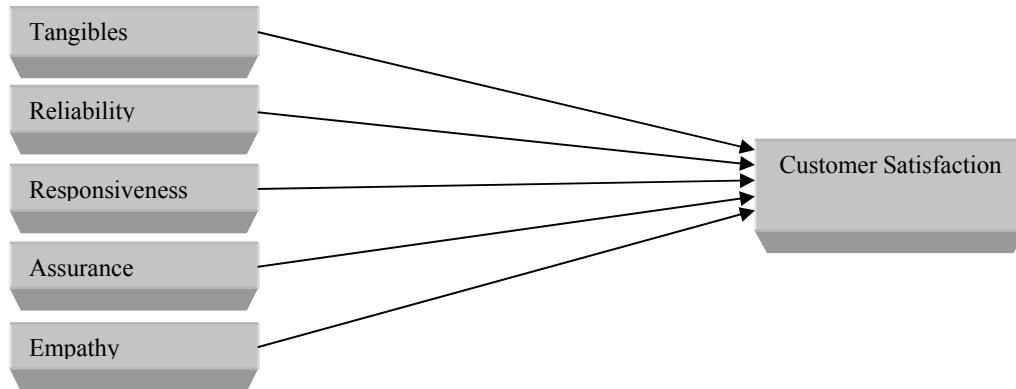


Figure 2: Conceptual Framework for Customer Satisfaction in ISP

METHODOLOGY

We adopted a non-probability sampling design (convenience sampling) in this research. This sampling design has no way of specifying the probability of each unit's inclusion in the sample. Convenience sampling method, nonetheless, is widely used in ICTs related researches. Most of the questions/statements, especially, those relating to the conceptual framework, were measured using Likert Scale Interval approach on a scale of "1" (very low) to "6" (very high). The questionnaire requested the participants to circle "0" for information they could not provide.

The primary data derive, mainly, from a survey questionnaire. In addition, we conducted informal interviews before and after the survey to capture the varied orientation and practical situations with respect to the nature of Internet services and customer feelings towards Internet services provided by ISPs and the constraints faced by consumers. The consumers that participated in the study include Internet subscribers residing in Malacca and Johor states in Malaysia. As noted earlier, the choice of the two locations was informed by their high ICT and ecommerce use. The target population groups in this study were those consumers who have subscribed Internet for at least one year one. This was to provide accurate, reliable and appropriate contextual inferences on the variables and arguments put forward in this research. In addition, it was important that the consumers exhibit considerable evidence of new information technology usage. The responses provided by the respective consumers formed the basis for analysis.

DATA ANALYSIS AND FINDING

Out of 550 survey questionnaires distributed, 436 copies were returned. We screened the copies returned for incomplete or missing data. Questionnaires with mostly unanswered questions were discarded (Biemer & Lyberg, 2003, p. 230). After which we had 400 useable survey forms, which is equivalent to 72.72% response rate. Statistical Package for the Social Sciences (SPSS) was used to summarize and analyze the data. Frequencies for each demographic variable were computed. Reliability of the data was assessed by using Cronbach's Alpha (Cronbach, 1951; Hayes, 1998). Higher Alpha coefficients indicate higher scale reliability (Santos, 1999). Specifically, Nunnally (1978) suggests that scales with 0.70 Alpha coefficients and above are considered acceptable. In addition, construct validity was assessed by using Factor Analysis to discover the underlying structure of variables.

Respondents Demographic Profile

Respondents for this study are typically students, have average income, ages between twenty to twenty five years old and are still single. Table 1 presents a demographic profile of the respondents.

Table 1: Respondent Demographic Profile

	Frequency	Percent	Cumulative (%)
Occupation			
Student	277	69.3	69.3
Public Servant	84	21.0	90.3
Self-employed	15	3.8	94.0
Retired	1	.3	94.3
Business Executive	23	5.8	100.0
Education			
Secondary School	2	.5	.5
Diploma/STPM	83	20.8	21.3
Bachelor Degree	198	49.5	70.8
Master Degree	117	29.3	100.0
Annual Household Income			
Below RM 2000	141	35.3	35.3
RM 2000-3999	111	27.8	63.0
RM 4000-5999	30	7.5	70.5
RM 6000-7999	37	9.3	79.8
RM 8000-9999	64	16.0	95.8
RM 10000 and above	17	4.3	100.0
Age Group			
Less than 20	28	7.0	7.0
20-25	265	66.3	73.3
26-35	100	25.0	98.3
36-45	6	1.5	99.8
46-55	1	.3	100.0
Marital Status			
Single	311	77.8	77.8
Married	89	22.3	100.0
Ethnic Group			
Chinese	29	7.3	7.3
Indian	38	9.5	9.5
Malay	114	28.5	28.5
Others	219	54.8	54.8
Family Size			
1-2 member family	22	5.5	5.5
3-5 member family	258	64.5	70.0
6 and above-member	120	30.0	100.0

Generally, the respondents are mature Internet users. As described in Table 2, majority (58.8%) of the respondents have had personal computers for 4 years and above. In term of Internet subscription, about 86% of them have Internet access for at least 5 years or more. In addition, they are active Internet users whereby 80% of them spend at least 5 hours on the Internet daily and 90% of them spend at least 61 hours monthly to search for information. Eighty three percent of the respondents subscribed to the Internet service provided by Streamyx Internet Service Provider (ISP). Streamyx is operated by Telekom Malaysia, which has the largest fixed line market in Malaysia. Fixed line is the common mode of broadband service delivery. A quarter of the respondents in Malaysia still use Dial-up Internet while 69% of them are already been using the broadband service.

Service Quality – Descriptive Analysis

SERVQUAL model defines five dimensions focusing on understanding customer expectations, and to determine the service quality level provided by ISPs (Gupta et al., 2005). The five dimensions include Tangibles, Reliability, Responsiveness, Assurance and Empathy.

Table 3 presents the mean and standard deviation for the responses on Tangibles dimension. In general, most of the respondents agreed that the service providers are within the agreement range on all the tangible items. The results further indicate that most respondents rated their ISP as having modern-looking equipments, suggesting Malaysian ISP has high quality appearance for the customers, while comparable responses are rated for physical facilities, employee appearance and material appearance.

Table 2: Respondents Technology Profile

	Frequency	Percent	Cumulative (%)
PC Ownership			
Do not have	2	.5	.5
For less than 1 yr	16	4.0	4.5
For 1-3 yrs	147	36.8	41.3
For 4-6 yrs	202	50.5	91.8
For 7-9 years	26	6.5	98.3
For 10 yrs and above	7	1.8	100.0
Internet Subscription			
Less than 1 year			
1-2 years	24	6.0	6.0
3-4 years	28	7.0	13.0
5-6 years	246	61.5	74.5
7-8 years	71	17.8	92.3
9 years and above	26	6.5	98.8
	5	1.3	100.0
Internet Time Spent (daily)			
Less than 1 hour			
1-2 hours	7	1.8	1.8
3-4 hours	14	3.5	5.3
5-6 hours	59	14.8	20.0
7 hours and above	235	58.8	78.8
	85	21.3	100.0
Internet Time Spent (monthly)			
Less than 20 hours			
21-40 hours	16	3.8	3.8
41-60 hours	12	3.0	6.8
61-80 hours	12	3.0	9.8
81 hours and above	160	40.0	49.8
	201	50.3	100.0

Table 3: Mean Values for Tangibles

Item ID	Item Description	Mean (n=400)	Std Dev
tangib1	My ISP will have modern-looking equipments.	3.9375	.94648
tangib2	The physical facilities at my ISP are usually appealing.	3.7225	.80754
tangib3	Employees at my ISP will be neat-appearing	3.6500	.77718
tangib4	Materials associated with my ISP [such as pamphlets or statements, website] are usually appealing.	3.6025	.84634

Ratings pertaining to ISP Reliability are generally similar to those for Tangibles. Respondents rate the ISPs' to be reliable in solving customers' problems and keeping their promises with a mean value of 3.500 as indicated in Table 4. Further analysis reveals that the respondents perceived that their ISPs are reliable in terms of promises made, showing keen interest in solving customer problems and providing the right service.

Table 4: Mean Analysis for Reliability Scale

Item ID	Item Description	Mean (n=400)	Std Dev
reliab01	When my ISP promises to do something by a certain time, they do so.	3.6050	.86652
reliab02	When customers have a problem, my ISP does show a sincere interest in solving it.	3.7200	.87951
reliab03	My ISP does provide their services at time they promise.	3.7250	.86095
reliab04	My ISP performs the service right the first time.	3.7125	.77223
reliab05	My ISP normally insists on error-free records.	3.6025	.81002

There are disagreements on the ratings for ISP's responsiveness. Details in Table 5 reveal that ISP employees do not provide timely information on the services to be performed to the customers (respon01), as the item mean value is emerged the lowest mean value at 3.2600. In addition, the result indicates that there are only slight differences between respondents who agree and disagree with item four (respon04), with the mean value of 3.4675. The results also indicate that ISP employees are generally not too busy to respond to customer's request.

This inevitably affects customers' perceptions towards ISP responsiveness. On the other hand, respondents felt that ISPs provide prompt services and are willing to assist customers.

Table 5: Mean Analysis for Responsiveness Scale

Item ID	Item Description	Mean (n=400)	Std Dev
respon01	My ISP employees tell customers exactly when services will be performed.	3.2600	.97713
respon02	Employees at my ISP give prompt service to customers.	3.5175	.92565
respon03	Employees at my ISP are always willing to help customers.	3.5300	.89784
respon04	Employees of my ISP are never too busy to respond to customers' request.	3.4675	.84601

Assurance is the knowledge and courtesy of employees and their ability to inspire trust and confidence. Overall, respondents seem to be comfortable with the level assurance ISPs provide for customers, in terms of confidence, courteousness and product knowledge as evident in Table 6. Furthermore, the analysis also indicates that the ISP employees are able to instill the confidence in customers with a mean value of 3.9250.

Table 6: Mean Analysis for Assurance Scale

Item ID	Item Description	Mean (n=400)	Std Dev
assur01	The behaviors of my ISP employees instill confidence in customers.	3.9250	.98834
assur02	Customers of my ISP feel safe in their transactions.	3.6750	.89799
assur03	Employees of my ISP are consistently courteous with customers.	3.7425	.79862
assur04	Employees at my ISP have the knowledge to answer customers' questions.	3.6475	.82762

Majority of the respondents agree that their ISP's operating hours are convenient; employees gave personal attention, sensitive to customer's interest and needs with the mean values of between 3.5325 and 3.6700. However, the analysis also shows that ISPs are weak in giving customers individual attention, as the item, empathy1, indicates with mean value of 3.4125, which is slightly lower than the cut-off point for agreement level of 3.5000. This is an important indicator towards better service quality as different customers expect their ISPs to attend to them individually. ISPs may need to train more employees to fulfill this requirement.

Table 7: Mean Analysis for Empathy Scale

Item ID	Item Description	Mean (n=400)	Std Dev
empathy1	My ISP gives customers individual attention.	3.4125	.94582
empathy2	My ISP has operating hours convenient to all their customers.	3.5325	.92254
empathy3	My ISP has employees who give customers personal attention.	3.6250	.80685
empathy4	My ISP has customers' best interest at heart.	3.6700	.80792
empathy5	My ISP understands the specific needs of their customers.	3.5875	.83911

Construct Reliability and Validity

We assessed construct reliability using Cronbach's alpha. Nunnally (1978) suggests that the minimum acceptable alpha for scale reliability is 0.60 and the results are within range. Scale reliability of tangibles is 0.614, reliability is 0.814, responsiveness is 0.731, assurance is 0.790, and empathy is 0.858. Pricing satisfaction and convenience satisfaction score an alpha coefficient of 0.701 and 0.619 respectively. Finally, alpha for value satisfaction is 0.704 and functionality is 0.722. All the alphas exceed the minimum accepted limit of 0.60. In addition, we assessed construct validity using Factor Analysis (FA). FA is "a statistical technique for classifying a large number of interrelated variables into a limited number of dimensions or factors" (Nachmias & Nachmias 1996). In essence, FA groups related items into a factor (variable). This study adopts a more stringent threshold of acceptable factor loadings of at least 0.50. Blaikie (2003) suggests that Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is carried out before conducting FA to ensure that selected items is suitable for further analysis. KMO values over 0.70 are considered sufficiently high and values over 0.90 are considered impressive for further analysis. Items in this study achieve KMO of 0.801, suitable for further analysis. Next, we conducted FA using Principal Component Analysis (PCA) with Maximum Variance extraction (VARIMAX) rotation

method from the variables (Pavlou, 2003). The result indicates that there are five factors extracted with eigenvalues greater than 1. Total variances explained by these five factors are 58.869%. The analysis shows no-cross construct loadings above 0.50. This indicates good discriminant validity (Klopping & McKinney, 2004). Each item loads to its designated factor (variable). FA shows items' consistency with the instrument's underlying structure and reflects the factors identified from the previous literature (Klopping & McKinney, 2004; Lee, Park & Ahn, 2001).

Multiple Regression Analysis

We conducted multiple regression analysis to examine how well the SERVQUAL dimensions predict customers' total satisfaction towards their ISPs. Total satisfaction is an aggregation of pricing satisfaction, convenience satisfaction, value satisfaction and function satisfaction. Table 8 presents the multiple regression analysis between the SERVQUAL dimensions and total satisfaction.

Table 8: SERVQUAL and Total Satisfaction Regression Analysis

No	Hypotheses	β	Sig.	R^2
H1	Tangibles and Customer Satisfaction	.163	.000	0.368
H2	Reliability and Customer Satisfaction	.044	.344	
H3	Responsiveness and Customer Satisfaction	.353	.000	
H4	Assurance and Customer Satisfaction	.104	.018	
H5	Empathy and Customer Satisfaction	.231	.000	

Table 8 demonstrates the results of multiple linear regression between SERVQUAL and Total Customer Satisfaction. The results indicate that about 36.8 percent ($R^2=0.368$) of the variance in total satisfaction is explained by the SERVQUAL dimensions. The strongest predictor for total satisfaction is responsiveness, achieving a β of 0.353, followed by empathy ($\beta=0.231$) and tangibles ($\beta=0.163$). The last factor influencing customers' total satisfaction towards their ISPs is assurance ($\beta=0.104$). Results imply that increasing the quality of responsiveness, empathy, tangibles and assurance will inherently increase customers' total satisfaction towards ISP service quality. However, Reliability dimension appears to be statistically insignificant in this test. Next section provides further insights on the result findings.

DISCUSSION AND IMPLICATION

The implementation and usage of enabling systems for social and business use is growing in the states as the data illustrate. Residents have been using PCs as home for at least 4 years and more than 80% of the participants have had home Internet access for over 5 years, which we could consider good. This result indicates that Malaysian households are becoming increasingly aware of the value of home Internet deployment, particularly as family sizes continue to grow. This is supported by the result on family size, which portrays that more than 90% of families who participated in this survey have 3 or more members in their families. The main uses of Internet facility among the participants are information search and entertainment. This may explain why more than 66% of the participants are of the 20-25 age range, and would support the findings that most of the respondents are heavy Internet users.

The mean values for all the independent constructs were moderately high. This result is of interest because it indicates the gaps that still exist in the Internet Service market. Internet service consumers in the two states would appreciate considerable enhancement from ISPs within the five variables. The result clearly shows that ISPs in Malaysia needs to invest more efforts and resources to improve the quality of services they offer to the public. Unsatisfied customers may be inhibited to spend more on Internet services if ISPs' services continue to remain unattractive. A very good quality services, would encourage more customers to spend more time online and may even lure skeptics to deploy and use the services. This result provides some support for the motivation for this research. We embarked on this research not knowing what to expect. We had questioned the level of Internet service provision for residents in Malaysia in comparison to the quality of Internet service provision to residents in other Asian countries. We feel that the government agencies in Malaysia such as Ministry of Communication and Multimedia Commission [MCMC] and the respective ISPs operating in Malaysia, should seriously consider a strong solution to making sure the quality of service as pointed out in this research are improved. Malaysia has so much to gain when these services improve both in terms of increased number of subscribers in the market and the externalities growth potential including the development of knowledge services in the country, e-business activities, e-learning and other educational services.

Suggestions for Further Research

In this research, we used convenience-sampling method, which is limited in the type of analytical tools that are applicable. We, therefore, suggest that future studies consider using a different sampling method, particularly a probability sampling method such as simple random or systematic sampling method. We also collected data from two key states in Malaysia, therefore, we would suggest that future studies consider data collection from more states or, if possible, from all states in Malaysia to provide a national perspective of Internet service quality and customer satisfaction. We would also suggest that future studies consider collecting data from 3 or more countries within the Association of South East Asian [ASEAN] countries to enable a possible comparative analysis. This would be very useful in providing concrete customer perceptions on how satisfaction levels with ISPs in the respective countries. In this research, we used the classical service quality dimensions for the framework. Future studies may consider using revised frameworks to expand the number of constructs for the independent variables.

CONCLUSION

ISPs in Malaysia should improve their service reliability and improve their overall service offerings. Business environment that fosters competition and allows market forces to determine the directions of demand and supply, creates a formidable landscape for businesses to strive and grow, and consequently enable consumers to enjoy the best prices and benefits. This in turn enables a country to develop a solid and healthy economy based on the needs and requirements of the public. It is important for Malaysian government and relevant agencies to continue providing the needed knowledge and communication infrastructure required to make government agencies and industries work effectively in delivering services to customers. Government agencies and ISPs' in Malaysia should work closely to ensure strong competition among ISPs, which could help enhance service quality and customer satisfaction.

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