

Customer Perceptions with Technology Versus Human Services in Thai Stockbrokerage Industry

Rapeeporn Srijumpa*

Abstract

Stockbrokerage companies have capabilities to trade over technology-based services such as Internet and intranet. Nevertheless, the majority of regular traders in Thailand prefer to trade through human services. Satisfaction and dissatisfaction with service encounters, whether through technology or with humans, is influenced by customers' perceptions about technology. This paper proposed that customer satisfaction with both modes of service interaction have an impact on loyalty, but satisfaction with human service encounters plays a stronger role in loyalty than satisfaction with the technology interaction.

Introduction

Many industries, such as travel, health care, education, retail, and financial services, have traditionally provided service through human service encounters, but recent developments have introduced technology such as automated hotel check out and ATMs into service encounters. Recently, some industries have employed self-service technologies, SSTs, to provide a technology interface service for their customers (Bitner, Brown, and Meuter 2000). SSTs are the technological interfaces that customers can use to produce a service independently, without human interaction. Services via the internet, such as on-line brokerage

and on-line banking services, ATMs, or automated hotel check out are examples of SSTs.

In high level financial services in an Asian environment, human service encounters, the interaction of customers and employees of service provider firms, influence customer satisfaction substantially (Srijumpa 2003). Previous research found several sources of customer satisfaction with human service encounters, uncovered from the customers' viewpoint in the contexts of hotels, restaurants, and airlines (Bitner, Booms, and Tetreault 1990). On the other hand, some brokerage firms in Asian countries started providing on-line trading via

* Assistant Professor Dr., Director of M.B.A. Program, Graduate School, Sripatum University

either internet or mobile phones for gaining pioneer advantage. Nonetheless, these firms are offering technology-based self-services that do not contain the element of human interactions, without having carefully studied what are the true results of this technology interface service. Furthermore, there has been less research investigating customer satisfaction in interactions with technological interfaces than with interpersonal encounters (Filotto et al 1997, Meuter et al 2000), probably partly because service encounters without the interpersonal aspect have been far less common than those with interpersonal interaction. Moreover, previous research on technological interfaces has mainly investigated critical factors in the decision to use technology-based services.

For instance, Dabholkar (1996) found ease of use, reliability, expected speed of delivery, enjoyment and control to be important determinants for using technology-based services.

Although some customers have positive feelings about technology, since technology can facilitate feelings of more controllable over things or reducing waiting time of services (Dabholkar 1996), forcing customers in Asian context to use technology in the service encounter without other viable options is a risky strategy. Even if, the problems associated with dissatisfaction are mostly solved, not all customers will accept and appreciate SSTs without human interaction. On the contrary, it might be similarly harmful to

exclusively provide the human service encounters, as some customers perceive some advantages of technology, and many would like to use it sometimes (Bitner, Brown, and Meuter 2000).

In services, the customer experience depends strongly on a service encounter that can significantly affect the level of overall satisfaction. Therefore, it is necessary to understand what customers perceive when they encounter with service providers. Customer satisfaction with service encounters, particularly, in the financial services industries recently is more critical to either academics or practitioners. In addition, customer satisfaction affects loyalty, which in turn increases profitability (Reichheld 1996). Although, prior studies have demonstrated the importance of customer satisfaction and its impact on a firm's profitability and customer loyalty, much research has looked at overall customer satisfaction rather than focused on some of the specific attributes of services, such as interpersonal vs. technology-based service encounter (Meuter et al 2000, Srijumpa et al 2002).

Thus, our objective is, firstly, to identify customer satisfaction and dissatisfaction (hereafter stated as dis/satisfaction) drivers with either human service encounters or technology-based service encounters in the context of stockbrokerage services in Thailand. The second objective is to study the satisfaction and loyalty relationship.

Customer perceptions with technology versus human service encounters

Although there is a major consequence of technology's growing role in service industry, for instance a commensurate growth in SSTs, there is still some evidence of increasing customer frustration in dealing with technology-based services (Mick and Fournier 1998; Bitner 2001). Besides, new technologies have been penetrating the population at increasing rates, the growing rates of consumer dissatisfaction is still emerging. The plausible explanations for this inverse relationship between penetration and usage rates are that late adopters of new technologies may not be as technology-savvy as are early adopters and, thus, they may not be enthusiastic users (Parasuraman 2000). The complexities of technology-based service as well as lack of user-friendly instructions also cause customer disappointment.

SSTs may cause negative outcomes thus, service providers should be able to motivate and educate their customers to understand and especially accept SST for rectifying service delivery failures without any interpersonal contacts. For instance, Cisco System's customers can even independently resolve common networking problems, thus customers could be pleasantly surprised or delighted by their own accomplishment (Meuter et al. 2000).

On the other hand, technology effectively improves customer satisfaction through satisfaction drivers (e.g., customization and flexibility, service recovery, and spontaneous delight) are presented

in Bitner, Brown, and Meuter (2000). SSTs (e.g., on-line brokerage services) can also enable customers themselves to enhance customization and flexibility. For example, Wells Fargo Bank utilizes SST for providing on-line services, particularly, stock trading through Wells-Trade. Wells Fargo Bank's customers can buy or sell stock via the company web site without any interpersonal contacts with employees. In addition, Hartness International employs SST, a Video Response System (VRS) to enable its customers to solve problems of service delivery independently and rapidly. As a result, customers can improve customer satisfaction through effective service recovery by themselves.

Recent research has explored customer experiences with SSTs through Critical Incident Technique, CIT and found that SSTs have both positive and negative impact on customer satisfaction (Meuter et al. 2000). With CIT, respondents are not asked to identify the cause of their dis/satisfaction directly, but rather to describe a specific incident in as much detail as possible. Analysis of such responses shows that sources of satisfaction with SSTs are (1) solved intensified need, ability to solve the immediate problem that customers face and provide service to satisfy urgent need, (2) better than the alternative, a better choice than an interpersonal service encounter, in terms of saved time, easy to use, when I want, saved money, where I want, and avoid service personnel and (3) did its job, customer satisfaction to the ability of technology if it simply able to work exactly what it was

intended to do. Bitner, Brown, and Meuter (2000) noted that not all customers would necessarily be enthused about the increasing role of technology in service encounters. Some perceive that technology affects customer privacy and the confidentiality of information. Therefore, researchers must also investigate sources of dissatisfaction with SSTs. Meuter et al. (2000) found four key drivers of customer dissatisfaction with SSTs as follows: (1) technology failure, the failures occurred when the technology did not work as intended, (2) process failure, the failures happened in the process after the customer-technology interaction (3) poor design, though the SST functioned as designed, it performed in such a way that the customers are dissatisfied with the service encounters, and (4) customer-driven failure, the failure sometimes occurs because of customer own actions.

Previous studies on customer satisfaction measurement intensively employed expectations as a comparison standard against customers' perceptions of actual performance; however recent literature tends to downplay the importance of expectation in forming satisfaction judgment (Patterson 2000, Giese and Cote 2000). Thus, in this research customer satisfaction is defined as a customer response pertaining to a particular focus determined at a particular time, following guideline of a context-relevant definition proposed by Giese and Cote (2000). The time we are particularly interested in is the service encounter, a period of time during which a consumer directly interacts with a service (Shostack, 1985, p. 243).

In order to create service encounter satisfaction, technology-based services alone cannot replace interpersonal services, especially critical in some developing countries where technology adoption is still taking place (Speece and Srijumpa 2002). In Thailand, investors do not want to rely wholly on online trading since they are not comfortable providing services themselves. They still want employees to serve their needs and requests (Srijumpa et al 2002).

In the afterward sections, results of the pilot study with both customers and service providers on how sources of customer dis/satisfaction with service encounters can be identified will be addressed. Results of the in-depth interviews with both service provider and brokerage customers also show the slightly difference of dis/satisfaction drivers in technology based and human service encounters. In addition, this article demonstrates some literature related to customer satisfaction-loyalty link, as well as presents an empirical study in Thailand. In discussions and conclusion sections, also provide some valuable implications for either academics or practitioners when dealing with technology-based service encounters.

Satisfaction drivers of technology service in Thai stockbrokerage industry

Although, the results of this pilot study support that the whole concepts of customer dis/satisfaction drivers with technology-based service encounters are similar to the previous results from the western context in the US, some drivers from

the in-depth interview with 20 retail stock investors and 20 marketing officers of stock brokerage firms are scantily different in details as following. The respondents mostly address that interaction without human service encounters, technology-based self-service encounters, are better than human services in term of the provision of broader information coverage, real-time of stock quotations, save money of the marketing officer commissions, accessible wherever and whenever the customers want, and slightly of their human service avoidance. During the in-depth interviews, some retail stock investors expressed more satisfaction if they are able to execute an order independently when the marketing officer's phone lines are busy. However, very few respondents expressed any fascination with technological capabilities when they can execute an order independently via the Internet, for instance only three retail investors felt happy when they are able to execute an order by themselves through on-line brokerage service.

While, the satisfaction literature does not provide a clear conceptualization of dissatisfaction, customer dissatisfaction is alternately portrayed as the bipolar opposite of satisfaction or as a separate dimension, however, this research have focused on customer dissatisfaction drivers from the customer perspective incorporated with customers who have and who do not have on-line accounts. Results showed that there are three main sources of customer dissatisfaction with a technology-based service encounter, which follow

roughly within the categories proposed from previous research.

The mirror image of better than the alternative is worse than the alternative, which initially came out as a strong source of customer dissatisfaction. The majority of the 20 investors primarily stated that they view a technology-based self-service encounter is worse than the interpersonal one, particularly in terms of lack of human services, insecurity issues as well as poor design or even their driven failures. Some respondents encountered log-on problems, and others reported being unable to execute an order on-line because the broker's server was down. Consequently these failures, technology malfunction during the interactions, were a severe source of dissatisfaction. Some retail stock investors expressed mild dissatisfaction with loading times of stock quotations. Other customers complained of the very slow confirmation of orders. They could execute orders quickly, but confirmation took a very long time. These failures are process failure. Another process failure as no confirmation of the customer orders even caused more dissatisfaction since customers do not know about the failures until they are notified that they have not done something when they actually have done it.

Satisfaction drivers of human service in Thai stockbrokerage industry

Interpersonal service encounters influence customer satisfaction substantially. Bitner, Booms, and Tetreault (1990) found the following

sources of customer interpersonal service response to service unavailable service and other core service response to customer as the ability of an employee to respond to requests, how they handle problems (3) unprompted action meaning customer elements of a service employee pays special attention without having all these affect interpersonal service sources were of customers' view similar views on customer even from the Booms, and Mohr (1994). Though, even the customer's customer dissatisfaction (physical abuse policies, and unc

The quality of service provided by the brokerage service similarity source of satisfaction with western context

sources of customer dis/satisfaction with interpersonal service encounters: (1) employee response to service delivery failures, (e.g., unavailable service, unreasonably slow service, and other core service failures), (2) employee response to customer needs and requests such as the ability and willingness of a contact employee to respond to special needs and special requests, how they deal with customer error, and how they handle potentially disruptive others, and (3) unprompted and unsolicited employee actions meaning customers satisfaction with unexpected elements of a service encounter when the service employee pays special attention to the customer without having been requested. Therefore, all these affect customer satisfaction with interpersonal service encounters. However, these sources were originally uncovered from the customers' viewpoint. Later research found similar views on customer dis/satisfaction drivers even from the employees' viewpoint (Bitner, Booms, and Mohr 1994; Gremler, Bitner, and Evans 1994). Though, employees additionally identified the customer's own misbehavior as a source of dissatisfaction (e.g., drunkenness, verbal and physical abuse, breaking laws or company policies, and uncooperative customers).

The qualitative research of this pilot study, conducting in-depth interviews with 20 service providers and 20 customers of stock brokerage services in Thailand reveals the similarity sources of service encounter dis/satisfaction with the previous results from western contexts. However, all respondents

expressed that the ability and willingness of marketing officers to respond to their specific needs and requests are the most critical drivers to affect service encounter satisfaction. In contrast, the Thai stock investors indicated the employee response to service delivery failures as dis/satisfaction drivers only when we using probing questions. In addition, few respondents express that they regularly view the spontaneous delight and disappoint employee actions as dis/satisfaction drivers, whereas these sources are claimed very often from marketing officers' response.

The satisfaction and loyalty relationships

Although some evidence of our industry showed that corporate image rather than customer satisfaction directly impacts on customer loyalty (Andreassen and Lindestad 1998), other results of financial services in banking industry revealed that customer satisfaction has the most significant impact on customer loyalty, followed by corporate image, switching cost and search costs (Methlie and Nysveen, 1999; Nguyen and LeBlanc 1998). Additionally Patterson et al (1997) found that client satisfaction has a strong relationship with intention to re-use a consultancy in management consultancy services. Furthermore, there have been several studies of satisfaction and the consequence, mostly customer loyalty (Fornell 1992; Gremler 1995; Gremler and Brown 1999). Customer loyalty in this study is defined as customers' positive response to repeat using the same service provider whenever possible,

modified from Singh and Sirdeshmukh's (2000) and Kandampully and Suhartanto's (2000) definitions.

Oliver (1999) analyzed the relationships between satisfaction and customer loyalty and consistently concluded that customer satisfaction is required in order to form loyalty. Recently some large-scale studies in automobile industry show that customer characteristics moderate the satisfaction, repurchase intent and repurchase behavior relationships. For instance, repurchase rates are systematically different among different

customer group even at the same satisfaction rates (Mittal and Kamakura 2001).

According to the extensive literature review, provides that there is a satisfaction-loyalty link in service encounters. In service literature, customer satisfaction with service encounters has positive relationship with customer loyalty (Methlie and Nysveen, 1999; Nguyen and LeBlanc 1998). Thus, this research proposes a conceptual framework explaining the impact of customer satisfaction with technology versus human service on customer loyalty (Figure 1).

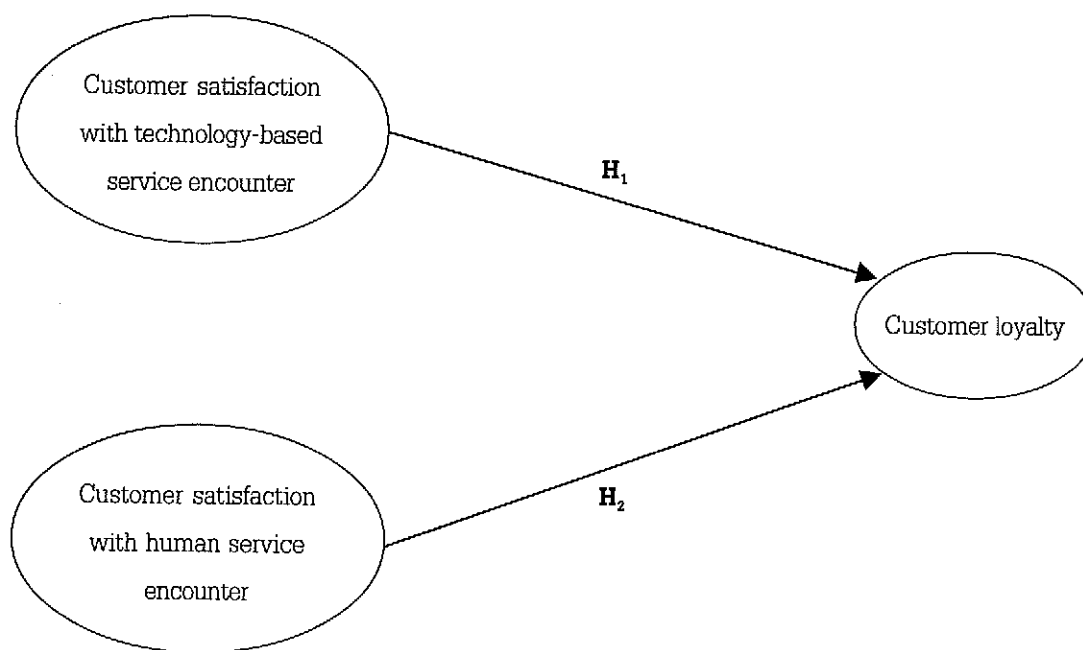


Figure 1. The impact of customer satisfaction with technology versus human services on customer loyalty

Methodology

Recently exploratory research in Thailand found that bank services like loan services, which is rarely providing online in this context, have been perceived as significantly high involvement services in terms of time and effort to decide, and amount of information needed (Pinkaeo, 2001). However, either deposit service in the banking industry or hotel and airline services have only been perceived as mid-level of involvement services among Thai customers. Furthermore, retail stock investors are more highly involvement attention when making decisions than other potential services' customers (e.g., bank customers and hotel or airline clients). In this research, a stock brokerage service was considered as a highly involvement service. Therefore, data were collected from retail stock traders from 13 brokerage firms that presently providing either conventional human services or online technology-based trading services in Thailand. These brokerage services have most potential to provide concurrently with interpersonal and technology-based self-service encounters.

Whereas either researchers or researcher assistants were able to directly interview potential respondents who usually trade from trading room of brokerage firms, the marketing officers of each broker helped us to collect data from remote places (e.g., home and workplaces) since they have longer relationships with their customers, even the online traders, than us. The assigned marketing officers also got some incentives like souvenirs such as ball pens and business card holders. The third

data collection channel was to directly distribute a return mail questionnaire to each potential respondent who participating in the seminar of Investor Fair, which is organized by Stock Exchange of Thailand in June 2001. The final channel aims to distribute the questionnaire to several potential investors, however, only ten percents of 350 questionnaires were mailed back and completely indicated as of online retail stock traders.

Measure Development and Assessment

This research followed well-accepted psychometric scale-development procedure (e.g., Churchill 1979; Gerbing and Anderson 1988; Nicholls, Gilbert, and Roslow 1998). Initially on the a basis of a review of the extensive literature (e.g. Bitner, Booms, and Tetreault 1990; Meuter et al. 2000; Parasuraman 2000; Zeithaml, Berry, and Parasuraman 1996) incorporate with the in-depth interviews of 20 service providers, 20 retail stock traders and 5 Thai professors in marketing, generate an initial pool of 85 items for service encounter satisfaction, and 5 items for customer loyalty respectively. For customer satisfaction of service encounter, the respondents were asked to identify sources of customer dis/satisfaction with service encounters and classify dis/satisfaction drivers into several dimensions, which have been identified in the literatures. The main reason of including the marketing professors in the interviews is not only to systematically investigate and interpret how Thai customers perceive with the three main concepts but also

to review and reword the existing items (developed in western context) those were translated into Thai language since the borrowing measures could not be used directly, thus, context-relevant measure of customer loyalty was adapted and validated by both typical customers and academic experts in the next step of the pilot works.

The second round of qualitative work (expert opinions of the other selected 20 retail stock traders and 20 marketing officers) for developing the measurement was to select the three best represents items of each construct of service encounter satisfaction, resulted in 39 items. For customer loyalty concept, the aforementioned experts also classified customer loyalty into 3 sub concepts (recommend, repurchase, and retention) followed by selecting the three best items representing each sub concept resulted in 3 items.

However, some questions developed from literature review and some demographic questions as well as trader information based on the in-depth interviews were added. The total questions for the pretest questionnaire is 53 (41 for concepts and 12 for trader information). The pretest questionnaire was designed in Thai, however, it was validated the translation of some borrowing items such as customer loyalty by doing double back translation (Douglas and Craig 1983).

The questionnaire employed a five-point Likert-scaled (point 1 being strongly disagree and point 5 being strongly agree) to measure the

sample's perception toward the two main concepts. Statistic procedures were used to validate the reflective measures (e.g., item and scale reliability and unidimensionality) of the pretest questionnaire. Consequently, the pretest questionnaire was also sent to some retail stock investors and some academics to elicit opinion on the content and wording of this instrument as well as to assess face validity. However, the after- pretest questionnaire is needed to review, reword, and rewritten some items that had alpha slightly less than 0.7 more clearly and concisely. The result was a final group of 29 items to measure the 2 concepts in the model (Appendix I). All 41 items including descriptive questions are distributed.

Furthermore, cronbach alpha coefficient was used to assess reliability of the final measures. Reliability coefficients were acceptable for all well-defined constructs like customer satisfaction and customer loyalty, ranging from 0.85 to 0.78, excepted for customer dissatisfaction of technology-based self-service encounter (Cronbrach alpha < 0.7).

In addition, the unidimensionality of other constructs was assessed by separate principal components factor analysis (with varimax rotation). The results confirm that, for all constructs, discriminant validity is present since the alpha coefficients are systematically higher than correlation between one composite scale and another. Appendix II presents the results of the reliability and unidimensionality tests. Then,

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regression analysis was used to estimate the associations between service encounter satisfaction and customer loyalty.

Data collections

According to official reports of the Stock Exchange of Thailand (SET) show that only about 3,600 investors of 6,000 have opened online trading accounts in 2000, the first full year after internet trading was introduced (Speece and Srijumpa 2002). Thus this field survey collected data from the total sample of 1000 retail stock investors of the 13 brokerage firms, including 50 potential respondents from each broker and the participants of the seminar who have experiences on online trading, have been contacted and interviewed in 2001. However, altogether 460 completed questionnaires were returned, in which 229 respondents from trading room (70% response rate), 196 questionnaires from remote place (60% response rate), and only 35 return mail questionnaires (10% response rate). The average response rate are 46% with acceptable for testing our hypotheses since these respondents did represent the target population of retail stock investors who potentially trading online. In this empirical study, the main reason of no response from some samples is that they do not have any ideas about the other option of trading, online trading, thus they, as non-potential online traders, are uncomfortable to completed our questionnaires.

Results

The qualitative research explored customer satisfaction with service encounters, either technology-based or interpersonal, and their impact on customer loyalty. Initially, the results of in-depth interviews identified drivers of customer satisfaction and dissatisfaction with service encounters in Thai stockbrokerage firms. Results show that customers and service providers determine sources of customer dis/satisfaction differently, depending on whether the service encounter is technology-based or interpersonal.

The drivers of customer satisfaction with interpersonal service encounters found in this study are mostly consistent with previous results. They include (1) response to customer needs and requests, (2) response to service delivery failures, and (3) employees spontaneously delight customers. The qualitative results also generally supported the previous results that the topics of customer dissatisfaction with interpersonal service encounters are largely the opposite side of those about satisfaction. Thus, sources of dissatisfaction with interpersonal services fall into three categories which are the failure of customer satisfaction drivers with human interaction services.

Although most of the qualitative findings are consistent with previous results, some aspects of customer dis/satisfaction with technology-based service encounters are different than previously reported. Lack of human interaction

is a significant driver of customer dissatisfaction with SSTs. Sources of customer dissatisfaction are worse than the alternative, where lack of human interaction is an important part of what makes it worse, technology failure, and process failure. On the other hand, customer satisfaction drivers are better than the alternative, solved intensified need, and did its job.

In this empirical study, 60% of the subjects were men and 40% were women. The majority of respondents are young (42% were 26-35 years), welleducated (60% had a undergraduate degree and 30% held a graduate/postgraduate degree), and financially well off (70% had monthly income above 30,000 Baht, about US\$ 698 at a rate of Baht 43 per US\$). Sample characteristics appear to be representative of potential retail online stock traders in Thailand. The respondents tend to have long experience in stock trading (45% had trading experience more than 5 years) however, these respondents had about two years experience in on line trading. Only 15% of the respondents had less than one year experience in stock trading. The frequency of their trade is more than twice a month (53%). Few respondents (15%) did not trade during the past 6 months. The average trade volume for each time is about 100,000 Baht (60% of the returned questionnaires). The respondents tend to have negative attitude toward technology-based service encounters (57%) however, some of these respondents (37 %) have a plan to use the technology-based service in the next 6 months.

The service encounter dis/satisfaction average means for human services of the brokerage firms which are ranging from 2.79 (for dissatisfaction) to 3.60 (for satisfaction) resulted from the ending point of 1 to 5 of strongly disagreement to strongly agreement. The overall satisfaction mean that was directly measured from one single item is 3.65. Comparing to the means of dis/satisfaction in the interpersonal service encounter, the means of technology-based self-service encounter satisfaction and dissatisfaction are relatively higher, 3.80 and 3.27 respectively. However, the overall satisfaction of technology-based service encounter that was directly measured from a single item is 3.38, relatively lower than the former service encounter. The respondents expressed the relatively high means of either satisfaction or dissatisfaction in the technology interface service though the mean of overall satisfaction is relatively lower than the interpersonal service.

This study also confirmed that customer satisfaction with service encounters, both technology-based and interpersonal, has significant positive impact on customer loyalty (Table 1).

Results of the relationship investigated in this study show that the first and second hypotheses were fully supported. Overall customer satisfactions with both technology-based and with interpersonal service encounters and customer loyalty were positive (Table 1). Reviewing H₁:

dependent variable: customer

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Table 1 The service encounter satisfaction-loyalty relationships

dependent variable: customer loyalty	R square	adjusted R square	F	significance	
	0.205	0.201	52.974	.000	
	Unstandardize d coefficients (B)	standard errors	standardize d coefficients (Beta)	t	significance
(constant)	-2.101	.219		-9.575	.000
overall satisfaction with technology-based service encounter	0.174	.053	0.150	3.283	.001
overall satisfaction with interpersonal service encounter	0.415	.049	0.388	8.493	.000

H₁: The impact of technology-based service encounter satisfaction on customer loyalty will be positive.

Respondents, who perceived more satisfaction with overall performance in technology-based service encounters with service providers have more intention to loyal to the service firms (Beta = 0.174, p = .001). They are likely to reuse the service firms for few years and to recommend the services of the service firms to other customers. Similarly, reviewing H₂:

H₂: The impact of interpersonal service encounter satisfaction on customer loyalty will be positive.

Customer satisfaction with interpersonal service encounters also positively affects on customer loyalty (Beta = 0.415, p = .000). Respondents who expressed higher satisfaction with interpersonal service encounters are likely to have more loyalty to the service firm.

As shown in Table 1, the impact on customer loyalty of customer satisfaction with human interface services is stronger than that of satisfaction with technology-based services (Beta = 0.415 versus Beta = 0.174 at standardized coefficient of .388 versus .150 respectively). This implies that customers tend to have more loyalty to service providers if the firms provide good

human services than when they implement good technology-based services. Probably, this is particularly the case in contexts where customers have long experience with human services. For instance, the Thai retail stock traders who are familiar with human services of their marketing officers for many years show their loyalty to the brokerage firms because they still prefer human services. Even when the firms provide technology-based services, the impact on customer loyalty of satisfaction with human services is still stronger than the impact of satisfaction with technology-based service encounters. Another reason may be that customer orientations toward human services are stronger than toward technology services. Thus, the next section presents the results of customer orientation toward technology; technology readiness of customers and its moderating impact on the relationships between service encounter satisfaction and customer loyalty.

Discussions and Conclusion

In Asian context, satisfaction and dissatisfaction with service encounters, whether through technology or not, is impacted on customer loyalty. According to Parasuraman's (2000) terminology of technology readiness of customers, customers who have more technology readiness, for instance, optimism, tend to have higher satisfaction with technology-based encounters. The respondents who are ready to use technology particularly technology leader tend to have positive evaluations of technology-based service encounter

and tend to have negative evaluations of interpersonal service one. In contrast, the respondents who are distrust in ability of technology tend to only have negative evaluations with technology-based service encounter but tend to have positive evaluations with interpersonal service one.

Customer loyalty is generated by satisfaction with technology and interpersonal service encounter. Customer satisfaction with interpersonal service encounters more strongly impacts on loyalty than satisfaction with the technology interaction. Particularly in developing countries, for instance, customers have been familiar with human services for a long time and they are not well comfortable with technology-based services. Thus, they are not comfortable providing services themselves since they are used to a very high level of human services, and many companies compete on the basis of providing high service levels, inducing customers to be more human oriented. Customers still want employees to serve their needs and requests, even in the digital economy era. In general, this study confirms that some service providers in Thailand, such as brokerage firms, are building online strategies, following developed countries, but that most customers still prefer to have human services, even if only to support the technology when they encounter technological or service problems.

The results suggest that companies, particularly in countries where technology adoption is starting to rise, should better

understand customer attitudes toward technology if they want to provide technology-based service for their customers. Different customer profiles, especially psychological evaluations toward technology, give rise to different segmentation in response to the use of technology-based services.

Customers, who are technology prone and just like to interact with technology-based services may be fascinated with technology's ability to satisfy their needs, but this satisfaction driver probably only happens for a short time after introduction. Thus, service providers should broaden customer satisfaction with technology-based service encounters through human service interactions in order to further delight customers who are currently already familiar with the ability of technology services.

Providing services only with human interactions even for customers who are human oriented is also not a very good long-term competitive strategy. When service providers are very busy, they may not respond to service failures or may not respond to customer needs and requests, even sometimes spontaneously disappointing customers. Thus companies should integrate technology services to rectify these sources of dissatisfaction with interpersonal service encounters. For instance, brokerage services should provide self-service technology such as automatic voice lines to answer and recommend that their customers to retrieve market information via the internet when their brokers' lines are very busy.

On the other hand, technology-based service dissatisfaction drivers also need human interaction to solve or acknowledge the failures of technology-based services. Therefore, the integration of human service interaction is absolutely needed. Although some customers recently have developed positive perceptions toward technology, they still prefer human service options at least part of the time, especially when they face technology problems. Human interaction service must be thoroughly integrated at the earliest stage of technology adoption to develop customer satisfaction, or customers will not stay with the technology and will never learn to use it more extensively.

Some service firms have rushed to embrace many self-service technologies, introducing non-human service encounters, even to the extent of trying to force customers into using them. Customers in most developing countries, particularly Thailand, are very familiar with interpersonal services, and may not be satisfied with purely technology-based services. The lack of human contact is one important determinant that drives customer dissatisfaction of technology-based services. For instance, even many Thai retail stock traders who like on-line trading still prefer human services, at least sometimes. They recognize some advantages in technology-based self-services, and find some satisfaction in such encounters, but still want the option to revert to interpersonal service whenever they wish. No matter how much they like the technology, a strategy that relies on it

alone without strong integration of interpersonal services makes them dissatisfied.

It is clear that technology alone cannot generate high levels of satisfaction among most customers, particularly in the financial industry, at least with the current level of technology employed in Thai brokerages. Therefore, even if the trend toward technology-based service encounters is accelerating in some developing countries, lack of deep understanding about customer perceptions toward emerging technology services could cause failure. This issue is particularly acute in financial services, which are among the most advanced in implementing technology-based services for retail customers.

Further issues are that the technology infrastructure of developing countries is still quite poor for implementing technology-based services. Poor technology infrastructure, for instance, low fixed-line telephone penetration and low personal computer penetration, inhibits growth in internet access. In addition, internet penetration is low even among consumers who have fixed line telephones and computers, but an internet-based service requires customers to have internet access to effectively trade online. The Thai stock market is still in the early stages of internet use, thus, many investors are still unfamiliar with technology-based service, and investors were also concerned about security and settlement issues. Consequently, Thai customers do not want to rely wholly on the internet, even if they use it and like to use it.

In addition, relying on only technology interface services, especially with technology levels which seem highly sophisticated to customers, is questionable in emerging markets, even if the human element is better integrated. Many customers are not only familiar with human services, but also lack experience in using sophisticated technology services. For example, Thai investors are looking for simple technology that allows stock trading without the expense and learning curve involved with buying a personal computer. Simple technology-based service which is very user-friendly and very easy to understand and adopt even among users with no technology experience (Dabholkar 1996), has been increasingly crucial in emerging technology markets like Thailand.

Therefore, service providers should select an appropriate technology, simple and very user-friendly, and employ integration strategies, both technology-based and interpersonal services, to strengthen customer satisfaction with service encounters.

According to the empirical study, most respondents were very familiar with interpersonal brokerage services, and would not be satisfied with purely technology-based services. However, many respondents recognize some advantages in technology-based services, and find some elements for satisfaction in such encounters. Besides, some respondents even prefer technology-based services to interpersonal ones, but they all

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still want the option to revert to the interpersonal encounter when they wish. All this suggests that technology prone and human oriented is certainly not opposite sides of the same dimension. Therefore, there are some issues needed to encounter in future research since technology proneness (technology readiness in the terminology of Parasuraman 2000) and human oriented are two distinct dimensions, both of which must be

accounted for in analyzing customer response to new technology-based service encounters. At least among Thai stock investors, strong liking of technology does not necessarily imply dislike of interpersonal service encounters, and neither does strong preference for interpersonal service encounters always imply unwillingness to use SSTs.

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