베트남 이동 통신 서비스 품질이 고객충성도에 미치는 영향에 관한 연구 : 베트남 사용자를 중심으로

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A Study On The Effect of Mobile Communication Service Quality On Customers Loyalty in Vietnam

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■ Abstract ■

Mobile communication industry is attracting a lot of attention all over the world and is expected to continue developing endlessly with the current rapid development of IT industry. Nowadays, mobile communication companies of vietnam are competing about service quality in order to retain existing customers and improve customer satisfaction and customer loyalty. This study attempts to research about the effect of mobile communication service quality on customer satisfaction and affecting relationship between customers satisfaction and customer loyalty. In this research empirically examine how mobile communication service quality influence customer loyalty in Vietnam. To do this, after considering characteristics of mobile communication service quality, quality measurement instrument was designed including call quality, call charge, cellphone, added service quality, corporate image, employee's attitude, and behavior. The study finds that all factors of call quality, added servces quality, corporate image, employee's attitude and behavior have positive effect on customer satisfaction except call charge and customers satisfaction also effects customers loyalty positively. From these results, Vietnam domestic mobile communication companies and foreign companies can grasp the general information about Vietnam mobile communication industry, and then, establish customers satisfaction strategies more effectively.

Keyword : Vietnam Mobile Communication, Service Quality, Customer Satisfaction, Customer Loyalty

1. Introduction

Nowadays, mobile telecommunication has been more and more enhanced. The fact that the number of subscribers has increased shows mobile information is becoming an essential part in the daily life of our society. GSMA officially announced that the number of subscribers worldwide has its breakthrough of 4 billion (up to January 11th, 2008). According to the latest statistics of the International Communication Union, Vietnam's mobile subscriber density is 175% and was evaluated as having an impressive development. Besides, Vietnam's mobile subscriber density rose from 87% in 2008 to 175% in 2010, and ranked 8th allover the world.

However, since 2005, mobile communication network enterprises all over the world have fallen in the situation of their decrease or stagnant incomes from voice service; therefore, they had to supply additional services or data transmission services. In 2005, Korean mobile operators also fell in that situation. Korean market was predicted to step in its ripe stage and operators are trying to find their own new development direction. Vietnam mobile market is now in its maturity and it is predicted that it'll more or less under go Korean and worldwide trend, therefore making plans to satisfy customers' need is a matter of necessity.

This paper is to study the effect of mobile telecommunication service quality on customer satisfaction through empirical analysis. Because studying about Vietnam mobile telecommunication service quality not only helps improve service quality but also provides important basis for setting up operational strategies in mobile companies.

To conduct empirical analysis, investigated the effect of mobile telecommunication services quality on customers satisfaction with survey target on subscribers who are living in Hanoi, Vietnam. Then, used SPSS 12.0 statistics analysis programme in order to conduct frequency analysis, reliability analysis, factor analysis, multiple regression analysis.

2. Literature Review

2.1 The Characteristics of Vietnam Mobile Telecommunication Market

2.1.1 Situation of Vietnam Mobile Telecommunication Companies

There has been 7 registered mobile communication operators in Vietnam. We present here general information about those mobile communication operator.

Viettel Group is a Vietnamese major mobile network operator head quartered in Hanoi, Vietnam. It is a wholly state-owned enterprise and operated by the Ministry of Defense .Operated in 2004 as a GSM (Global System for Mobile Communications) launcher, Viettel Mobile is the fourth network in Vietnam (after Mobifone, Vinaphone and S-Fone) and currently the biggest telecommunications provider.

Vietnam Mobile Telecom Services (with the brand MobiFone) is a Vietnamese major mobile network operator headquartered in Trung Hoa Nhan Chinh, Hanoi, Vietnam. Founded on April 16, 1993, as a GSM launcher, MobiFone is the first and currently largest telecommunications provider in Vietnam.

Vinaphone is a Vietnamese major mobile network operator head quartered in Hanoi, Viet-

nam. Founded on June 26, 1996, as a GSM laun-cher, Vinaphone is the second network (after MobiFone) and third largest telecommunica-tions provider in Vietnam. Vinaphone is consi-dered as an Operator of State Servants as most of its subscribers are civil service employees.

S-Fone is the fourth largest mobile communi-cation operator in Vietnam that uses the CDMA (Code Division Multiple Access) technology. Founded on July 1,2003, in Ho Chi Minh City, Vietnam, S-fone became the third network of Vietnam. It is the trademark of

S-Telecom (CDMA Mobile Phone Center) (a joint venture between Saigon Postel Corp .and Korea SK Telecom). S-Fone is the first and biggest national cellular mobile phone network using CDMA in Vietnam (followed by EVN Telecom and HT Mobile).

According to statistics of the Information and Communication Industry of Vietnam on market share proportions of the network operators in December 2010, the number of subscribers of Viettel is 40,967,382-which count for the highest of 36%. Nextare Mobifone and Vina Phone. Rank the 4this Vietnam Mobile with 3,545,028 subscribers. Currently, network operators conti-nue their marketing strategies actively so that they can expand the number of subscribers.

According to ITU, Measuring the Information Society 2011 Report, Vietnam's ICT index chan-ged from 91 (2008) to 81 (2010) and IDI index increased from 2,76% (2008) to 3,53% (2010).

2.1.2 Special Features of Vietnam Market

Firstly, the biggest character of Vietnam mo-bile market is that it has the main structure of national market. If summing the market shares of the national companies which supply GSM

service such as : Viettel, Mobilefone and Vina-phone we can see that they account for 92% -most of the mobile market, which shows they overwhelm enterprises supplying CDMA (Source : vnexpress.net).

Secondly, Vietnam mobile subscribers that mainly use SIM cards are rising quickly. It means that the increase in the number of subscribers is due to the strong advertising strategy and the fierce competition among operators in Vietnam market.

Thirdly, besides promoting telecommunica-tion infrastructure improvement and enhance-ment, Vietnam Government also broadens its co-operation with international mobile telecommu-nication companies so as to strengthen domestic market.

2.1.3 View of Vietnam Mobile Communication Market

Firstly, thanks to Vietnamese Party's sup-ports for the development of the active mobile telecommunication and the increase in people income, the number of subscribers rose in-credibly to 157,862,000 in 2011.
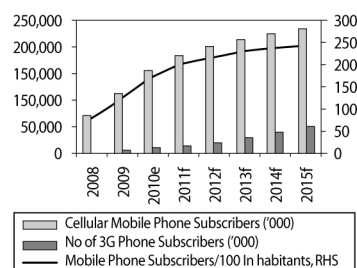
f = forecast Source : International Telecommunication Union (ITU), BMI

[Figure 1] Industry Trends-Mobile Forecast 2008~ 2015

Second, currently, the quality of mobile ser-vices has been improved much and the satisfac-

tion of the customers have been raised. Thanks to it, the number of rubbish SIM cards has been gradually decreased.

Thirdly, the domestic mobile market with 7 network operators compared to the population of 86 million is near to the saturated rate. Therefore, network operators have been forcing the inclination of investing in foreign countries.

Fourthly, according to the experts, 2006 and afterward are predicted to be a CDMA era in Vietnam. Good points of CDMA do not only lie in its 3G services but also in not-far future of its mobile communication markets.

2.1.4 Comparison between Vietnam and Korea

Firstly, the telecommunication in Vietnam initiated a sharp growth since 2005, the market increasingly opened under WTO agreements and the government's high priority for telecommunications development. But by 2011, the mobile market too is showing signs of saturation with subscriber density up to 183.5%.

Secondly, the rate of mobile users of each mobile company is as shown in the following diagrams.

Vietnamese telecommunication market subdivided into many small businesses and almost competing by decreasing rates and increasing promotional packages.
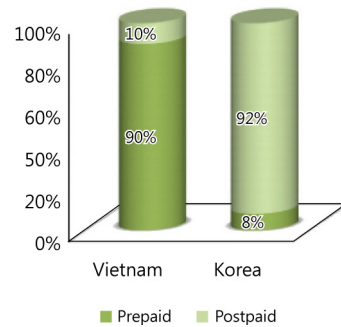
Thirdly, the comparison between prepaid and postpaid sim cards. In Korea, prepayment fee is more expensive and contents of prepayment
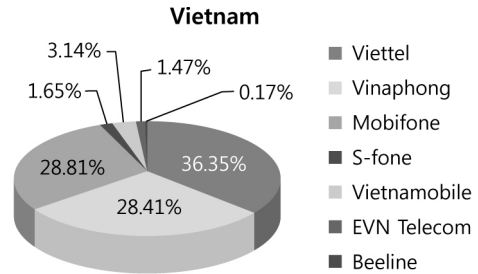
Source : Ministry of Information and Communication of Vietnam (2010)

[Figure 2] The Rate of Mobile Users of Vietnam

system are provided less easily than the post-paid system. On the contrary, in Vietnam, pre-payment fee is cheaper and is provided with a high discount benefit, because the customer centers are still not focused properly, if there are problems about fee or postpaid services, customers will not get solutions.
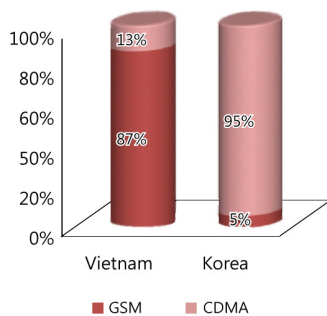

Source : Dantri news.

[Figure 3] Comparison between Prepaid and Postpaid.

Fourthly, the comparison between CDMA and GSM. Korea is called "the kingdom of CDMA" because all cell phones are provided with the

〈Table 1〉 The Number of Mobile Users in Vietnam and Korea (Source : BMI, Unit : 1,000 people)

	Content	2005	2007	2009	2010	2011
Vietnam	User number	7,300	45,024	110,347	139,285	157,862
	Penetration(%)	0.8	52.9	129.8	163.8	183.5
Korea	User number	38,342	43,498	47,944	50,400	51,750
	Penetration(%)	79.7	89.9	98.4	103.9	102.4

latest CDMA technology. On the other hand,, in Vietnam, because of weak infrastructures, CDMA and 3G services are limited. Most of services provided now are only 2~2.5G services. To explain this, we have to mention the strategy which choses low-cost GSM technology from the beginning of Vietnam mobile communications. Because CDMA is a new technology, infrastructure must be of a higher standard and consequently the cell phones are more expensive and it is inconvenient to change the cell phone without changing the phone number. According to the comparison of information above, Korea Mobile Telecommunications industry has developed more than 5 years ahead of Vietnam, thus Vietnam mobile market development trend will follow Korea's mobile communications structure, technology, services, et.

Source : Dantri News.

[Figure 4] Comparison between CDMA and GSM

2.2 Service Quality

The definitions of service quality vary only in wording but typically involve determining whether perceived service delivery meets, exceeds or fails to meet customer expectations [25, 28]. Previous studying suggests that service quality is an important indicator of customer satisfaction [32]. Based on their statement in 1985, they then suggested that service quality is determined by differences between customers' expectation of the service and their perceptions of the service experience [28] projected a service quality model that identified perceived service quality into five dimensions : tangibility, reliability, responsiveness, assurance, and empathy.

1. Tangibles involve the appearance of physical facilities, including the equipment, personnel, and communication materials.
2. Reliability involves the ability to perform the promised service dependably and accurately.
3. Responsiveness involves the willing ness to help customers.
4. Assurance involves the knowledge and courtesy of employees and their ability to convey trust and confidence. This assurance includes competence, courtesy, credibility and security.
5. Empathy involves the provision of caring, individualised attention to customers. This empathy includes access, communication, and understanding the customer. Most customers prefer good service to lower prices.

However, some researchers have criticized the instrument because of "its use of gap scores", negative wording used, measurement of expectations, positively and negatively worded items, the generalizability of its dimensions, and the defining of a baseline standard for good quality [19] SERVQUAL primarily focuses on gap-based scale to measure services quality; whereas [10] emphasized to use performance only index (SERVPERF). The SERVPERF measure has found strong support in the other studies [3, 36, 34]. To improve reliability and validity of SERVQUAL, some researchers have merged expec-

tations and perceptions into a single measure and tested it with excellent results [2, 3, 11, 36] proposed factors associated with service quality (e.g.tangible, reliability, assurance, responsiveness and empathy) and have described as antecedents of customers'perceived service quality and validated and tested these factors. SERVQUAL has been widely used in telecommunication industries in different cultural context with high reliability and validity [15, 33, 35].

2.3 Customer Satisfaction

2.3.1 Customer Satisfaction Concept

Customer satisfaction is defined as the result of a cognitive and affective evaluation, where some comparison standard is compared to the actually perceived performance. In general, increased customer satisfaction leads to higher customer retention rate, increases customer repurchase behaviour, and ultimately drive higher firm profitability. Customer satisfaction with a company's products or services is often seen as the key to company's success and long-term competitiveness. Satisfaction is regarded as a short term emotional state that results from an intrapersonal comparison of the customer's expectations with the evaluation of a single product or service encounter. Oliver [27], Brady and Robertson [6], Lovelock et al. [23] conceptualize customer satisfaction as an individual's feeling of pleasure or disappointment resulting from comparing a product's perceived performance (or outcome) in relation to his or her expectations. Generally, there are two general conceptualisations of satisfaction, namely, transaction specific satisfaction and cumulative satisfaction [17, 37]. Transaction-specific satisfaction is a customer's

evaluation of his or her experience and reactions to a particular service encounter [5], and cumulative satisfaction refers to the customer's overall evaluation of the consumption experience to date. If performance matches expectations, customer is satisfied. If performance exceeds expectations, the customer is highly satisfied or delighted [18]. Outstanding marketing companies go out of their way to keep important customers satisfied. Highly satisfied customers makes repeat purchases and tell others about their good experiences with the product.

2.3.2 Relationship between Service Quality and Customer Satisfaction

Sureshchanndra et al. [33] identified that strong relationships exist between service quality and customer satisfaction while emphasizing that these two are conceptually distinct constructs from the customers' point of view [31]. also showed that service quality leads to customer satisfaction while working on the model developed by. In a recent study conducted by [30] revealed that this relationship also exists in the e-commerce industry.

2.4 Customer Loyalty

2.4.1 Customer Loyalty Concept

Loyalty of customers is considered to be a function of satisfaction and that loyal customers contribute to company profitability by spending more on company products and services, via repeat purchasing, and by recommending the organization to other consumers [7, 8]. Customer loyalty expresses an intended behavior related to the service or the company. If real alternatives exist or switching barriers are low,

management discovers the organization's inability to satisfy its customers via two feedback mechanisms : exit and voice [14]. Exit implies that the customers stop buying the company's services while voice is customer complaints expressing the consumers' dissatisfaction directly to the company. Three conceptual perspectives have been suggested to define customer loyalty : the behavioral perspective, the attitudinal perspective and the composite perspective [7, 36]. The behavioral perspective, "purchase loyalty", strictly looks at repeat purchase behavior and is based on the customer's purchase history. Moreover, no other loyal behavioral actions such as price tolerance, word of mouth, or complaint behavior can be interpreted [38]. Concentrating on the behavioral aspect of loyalty could overestimate true loyalty [38]. The attitudinal perspective, in contrast, allows gain in supplemental understanding of loyal behavior [38]. The customer loyalty is approached as an attitudinal construct. An attitude denotes the degree to which a consumer's disposition towards a service is favorably inclined. This inclination is reflected by activities such as the customers recommending service providers to other consumers or their commitment to repatronize a preferred service provider [13]. The composite perspective might be considered as an alternative to affective loyalty since using both attitude and behavior in a loyalty definition arguably increases the predictive power of loyalty [29]. Customer loyalty is a key component for a brand's long-term viability [20]. Oliva et al. [24] defines it as "a deeply held commitment to re-buy or repatronize a preferred product/service consistency in the future, thereby causing repetitive

same- brand or same brand- set purchasing, despite situational influences and marketing efforts of having the potential to cause switching behavior." Though there are many more definitions of customer loyalty, it seems clear that there are two basic varieties : stochastic and deterministic. deterministic. Fournier and Yao [12] observe that there is a need for a complete definition of brand loyalty, identify six necessary conditions : a biased (i.e. random) behavioral response (i.e. purchase), expressed overtime by some decision- making unit, with respect to one or more alternative brands out of a set of such brands, as a function of psychological processes (such as decision making or evaluation. No matter how customer loyalty is defined, in order to gain it, any operator needs to increase subscriber satisfaction by raising offered service quality [6], [27], ensure subscribers' trust in the firm [12], and establish a cost penalty for changing to another service provider, making that a comparatively unattractive option and expand is application [21].

2.4.2 Relationship between Customer Satisfaction and Customer Loyalty

Several authors have found a positive correlation between customer satisfaction and loyalty [4]. Customers may be loyal because of high switching barriers or lack of real alternatives. Customers may also be loyal due to their satisfaction and thus want to continue the relationship. History has proven that most barriers to exit are limited with regard to durability; companies tend to consider customer satisfaction the only viable strategy in order to keep existing customers. Based on [9], there are two critical thresholds affecting the link

between satisfaction and loyalty. On the high side, when satisfaction reaches a certain level, loyalty increases dramatically; at the same time, when satisfaction declined to a certain point, loyalty dropped equally dramatically [24]. Managers of the company should realize that having satisfied customers is not good enough they must have extremely satisfied customers. Moreover, a small increase in customer satisfaction can results boosted customer loyalty dramatically.

3. Research Design

3.1 Research Model

This study research factors which have impact on customer satisfaction in mobile communication industry of Vietnam. Independent variables contain 6 variables of mobile service quality and the research model of this research is shown in [Figure 5].
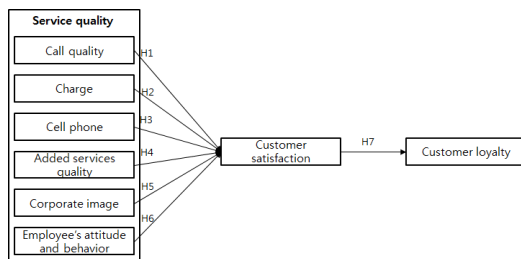
[Figure 5] Research Model

3.2 Hypotheses

This research applies the modified American Customer Satisfaction Model to study consumer satisfaction with the mobile services industry in Vietnam. Thus, we hypothesized :
1) The relationship between service quality and customer satisfaction

- H1 : Call quality has positive effect on customer satisfaction.
- H2 : Charge has negative effect on customer satisfaction.
- H3 : Cellphone has positive effect on customer satisfaction.
- H4 : Added services quality has positive effect on customer satisfaction.
- H5 : Corporate image has positive effect on customer satisfaction.
- H6 : Employee's attitude and behavior have positive effect on customer satisfaction.
2) The relationship between customer satisfaction and customer loyalty
- H7 : Customer satisfaction will positively affect customer loyalty of mobile services.

3.3 Research Methodology

In this study, call quality, service charge, cellphone, added service quality, corporate image and employees attitudes and behavior are set as independent variables, and customer satisfaction is set as parameter variable and customer loyalty is set as dependent variables. The structure of questionnaire is shown as below <Table 2>.

A sampling of 247 questionnaires was collected from 280 current mobile phone service users in Hanoi of Vietnam. We sent questionnaires by email and directly in 1st September of 2011. The rate of response for the questionnaire was 92.5%. Of the 259 basic questionnaires returned, we had to leave out 12 for which some questions had not been answered, thus leaving the number of valid questionnaires at 247.

SPSS 12.0 was used for basic statistical analysis, factor analysis, reliability analysis and multiple regression analysis.

〈Table 2〉 Structure of Operationaliztion

Variables	Definition	Items
Call	Call quality is the subjective evaluation of telephonee about voice, signal passed through the voice communicator.	After dialing, all calls are connected immediately
		Calls are successfully connected any where
		During the calls, the sound is not noisy or the service is not interrupted
		The calls are not interrupted during the talk
Charge	Charges quality is suitability, discount rates.	Cheap service charge
		Service charges are affordable
		Various special offers on service charges
		Cheaper than other mobile phone network's service charges
Cell Phone	Cell Phone quality is the phone's functionality, quality and moderate prices.	Nice design
		Lost of functions
		Good quality
		Reasonable price
Added Services	Additional services quality is contain voice call service, wireless internet, email, mobile games, chatting, roaming services, caller service	Variety of services
		Service charges are affordable
		Easy and comfortable usage
		Regular special offers
Corporate Image	Corporate image is evaluated by the customer about the company's awareness or attitude.	Always provides newest technologies
		Always Provides plentiful information
		Provides friendly feelings
		Friendly advertisements
Employee's Attitude and Behavior	Employee's Attitude and Behavior is customer perceived Employees of service providers play the role of informing customers about its services quality	Employees are friendly and open-hearted
		Employees have quick solutions to customers' problems
		Employees Always keep their problems
Customer Satisfaction	The levels of service quality performances that meet user's expectations.	The network operator provides good service quality
		The network operator provides a variety of service
		You feel very satisfied with the network operator you chose
Customer Loyalty	A deeply held commitment to re-buy or re-patronize a preferred product/service consistency in the future,	You will continue using the current mobile phone network you chose
		You will use the current mobile phone network very long
		You will advise your friends and relatives to use the mobile phone network you chose

4. Analysis and Results

4.1 Structure of Sample

The demographic characteristics and general statistical characteristics areas following <Table 3>.

The table above shows the gender distribution of the respondent there searcher's questionnaires which indicates that male respondents were 71 persons (28.7%), while female respondent were 176 persons (71.3%). This implies that there are more female respondents than male respondents. The age distribution of the respondent is Under 20years old 38 (15.4%), 20~30years old 164 persons (66.4%), 30~40 years old 33 persons (13.4%), over 40 years old 12 persons (4.9%).

The education distribution of the respondent is Not graduated from highschool 6 persons (2.4%), Graduated from highschool 109 persons (44.1%), Have an university degree 122 persons (49.4%), Have master degree and higher qualifications 10 persons (4%). The monthly income distribution of the respondent is Less than 1million VND 81 persons (32.8%), 1million~million VND 63 persons (25.5%), 3million~5million VND 25 persons (10.1%), 5million~10million VND 56 persons (22.7%), More than 10million VND 22 persons (8.9%). The career distribution of the respondent is Pupil/Student 111persons (44.9%), Office workers 80 persons (32.4%), Trader 17 persons (6.9%), House husband/housewife 1persons (0.4%), Others 38 persons (15.4%).

<Table 3> Demographic Characteristics

Item		Frequency analysis	
		Frequency	Percent %
Gender	Male	71	28.7
	Female	176	71.3
Age	Under 20 yearsold	38	15.4
	20~30 yearsold	164	66.4
	30~40 yearsold	33	13.4
	Over 40 yearsold	12	4.9
Education	Not graduated from high school	6	2.4
	Graduated from high school	109	44.1
	Have an university degree	122	49.1
	Have master degree and higher qualifications	10	4
Monthly Income	Less than 1million VND	81	32.8
	1million~3million VND	63	25.5
	3million~5million VND	25	10.1
	5~10million VND	56	22.7
	More than 10million VND	22	8.9
Career	Pupil/Student	111	44.9
	Office worker	80	32.4
	Trade	17	6.9
	Househusband/housewife	1	0.4
	Others	38	15.4

4.2 Factor Analysis

Reliability and Validity were examined by computing Cronbach's alpha coefficient for the construct. Discriminant and convergent validity of the scales were initially examined using extraction method is principal acis factor analysis with varimax rotation. the items loaded significantly on their hypothesis factors. Detail of the factor analysis for each constructed are present in <Table 4>.

After analyzing the data with principal axis factor analysis with varimax rotation, 27 variables with a factor loading of 0.50 or greater were retained and it grouped the 27 variables into 8 groups.

The reliability analysis of each factor, performed after eliminating measurement items that lower the overall reliability, produced the following results : call quality : 0.828, charge : 0.693, cell phone : 0.779, additional services : 0.798, corporate image : 0.739, employee's atti-

<Table 4> Factor Analysis

Variables		Factor								Cronbach's Alpha
Employee's Attitude and Behavior	EAB3	**.827**	.075	.121	.140	.011	.181	.178	.045	.853
	EAB2	**.821**	.030	.155	.186	−.060	−.027	.015	.095	
	EAB4	**.751**	.132	−.044	.223	.026	.091	.266	.095	
	EAB1	**.731**	.063	.287	.038	.053	.218	.034	−.056	
Call Quality	CQ3	.258	**.803**	.020	.113	−.045	.134	.058	.106	.828
	CQ1	−.057	**.796**	.107	.042	.022	−.058	.187	.072	
	CQ2	.061	**.775**	.164	.044	.071	.149	.084	.135	
	CQ4	.047	**.757**	−.043	.238	.014	.150	−.050	.113	
Added Services Quality	ASQ3	.132	.039	**.836**	.031	.056	.084	.072	−.016	.798
	ASQ2	.050	.063	**.745**	.127	.110	.198	.062	.240	
	ASQ4	.208	.127	**.687**	.082	.106	.044	.095	.264	
	ASQ1	.133	.027	**.569**	.221	.230	.102	.342	.053	
Customer Loyalty	CL1	.164	.072	.151	**.891**	.025	.031	.080	.085	.856
	CL2	.171	.165	.076	**.876**	−.029	.042	.116	.085	
	CL3	.198	.176	.128	**.694**	.025	.272	.117	.088	
Cell Phone Quality	CP2	.024	.077	.087	.029	**.883**	.133	−.003	.024	.779
	CP1	−.087	−.018	.114	.069	**.853**	.028	.027	−.032	
	CP3	.077	.001	.123	−.082	**.693**	−.150	.132	.178	
Corporate Image	CI4	.100	.158	.117	.123	.035	**.810**	.091	.134	.736
	CI3	.229	.114	.153	.140	.001	**.769**	.238	.169	
	CI2	.166	.108	.267	.006	−.169	**.412**	.387	−.032	
Customer Satisfaction	CS2	.231	.060	.204	.075	.102	.186	**.775**	.069	.766
	CS3	.175	.259	.031	.370	.124	.211	**.574**	.067	
	CS1	.135	.147	.357	.185	.207	.415	**.451**	.057	
Charge Quality	C2	.096	.207	.103	.028	.130	.155	−.002	**.798**	.693
	C1	.056	.174	.333	.110	.142	.238	−.144	**.672**	
	C3	.009	.094	.101	.186	−.084	−.046	.380	**.664**	

tude and behaviour : 0.853, customer satisfaction : 0.766, customer loyalty : 0.856. Cronbach's alpha value for all factors was over 0.6, indicating a reliability level.

4.3 Regression Analysis and Testing the Hypothesis

From H1 to H6, the factors of mobile telecommunication services'quality include call quality, cell phone, added services quality, corporate image, employee's attitude and behavior are positive effect on customer satisfaction. but charge is not any effect on customer satisfaction. Detail of the Regression analysis are present in <Table 5>.

This study analyzed empirically in order to examine the effect of mobile communication service quality such as call quality, charge, cell phone, added services, company image, employee's attitude and behavior on customers satisfaction and the relationship between customers satisfaction and customers loyalty.

First, the result of testing hypotheses through multiple regression analysis to confirm effect relationship between call quality and customers

satisfaction was that call quality had a positive effect on customers satisfaction. It means that when customers use mobile telecommunication services, call quality will affect positively customers satisfaction. Therefore, mobile telecommunication companies should strengthen infrastructure construction and enhanced competitiveness to rise call quality even in rural areas.

Second, statistical tests made it clear that the charge did not affect customers satisfaction. In spite of the continuous rate-cutting war of call charge, the save benefits, the basic charge getting lower, the rationalization of rate system, and free call-messages, the charge which customers perceived could not affect customers satisfaction.

Third, the result of testing hypotheses through multiple regression analysis to confirm effect relationship between cell phone and customers satisfaction was that cell phone had a positive effect on customers satisfaction. It means when customers want to get a new cell-phone, they have to consider its function, design and price.

Because now, customers not only make a call but also play games, listen to music, take pic-

<Table 5> Regression Analysis and Hypothesis Results

Dependent variable	Independent variable	Std. Error	Beta	t	Sig	Tolerance
Customer Satisfaction	Constant	.215	.646	3.011	.003	
	H1	.039	.093	2.403	.017	.797
	H2	.049	.024	.494	.622	.707
	H3	.040	.093	2.305	.022	.901
	H4	.056	.198	3.516	.001	.631
	H5	.049	.261	5.295	.000	.682
	H6	.045	.173	3.887	.000	.770
	R = .672, R^2 = .452, Adjusted R Square = .439, F = 33.020, P = .000					
Customer Loyalty	Constant	.264	1.440	5.458	0.000	
	H7	.077	.635	8.230	.000	1.000
	R = .456, R^2 = .217, Adjusted R Square = .213, F = 67.726, P = .000					

tures, chat online, access to the Internet, study online, make financial business services using their cell-phone.

Fourth, the result of testing hypotheses through multiple regression analysis to confirm effect relationship between additional services and customers satisfaction was that additional services have positive effect on customers satisfaction. It means that when a variety of additional services have been developed recently, it is inevitable for mobile customers to use additional mobile telecommunication services.

Therefore, mobile companies will have to spread marketing strategies which can present the diversity of additional services in order to rise customers satisfaction.

Fifth, the result of testing hypotheses through multiple regression analysis to confirm effect relationship between company image and customers satisfaction was that company image and positive effect on customers satisfaction. It means mobile telecommunication companies have to strive to strengthen competitiveness. If the confidence in mobile companies is high, customers will have good feelings and will be satisfied.

Sixth, the result of testing hypotheses through multiple regression analysis to confirm effect relationship between employee's attitude and behavior and customers satisfaction was that employee's attitude and behavior had a positive effect on customers satisfaction. It means that when customers wonder about something or have any problems, if a mobile communication company's employees solve these problems with a friendly attitude and provide necessary informations about mobile communication, that company will satisfy customers because of con-

venient use.

Seventh, the result of testing hypotheses through multiple regression analysis to confirm effect relationship between customer satisfaction and customer loyalty was that customer satisfaction had a positive effect on customers loyalty. It means that the more customers feel satisfied, the more loyal they will be. This result we got from the customer's position shows that customers satisfaction, as a decisive factor on customers loyalty, should be sought for.
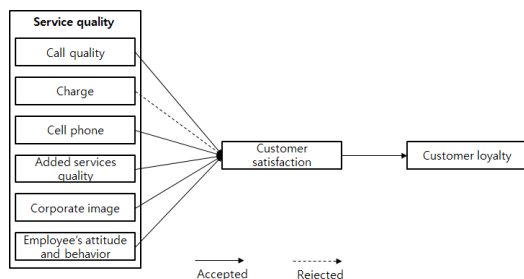
5. Conclusions and Future Research

5.1 Research Summary

According to analysis from factor analysis and multiple regression analysis, there are 6 factors of quality of mobile service, namely : call quality, charge, cell phone, added services quality, corporate image, employee's attitudes and behavior. The factor that affected the most customers' satisfaction was company image, next was added services, third was employee attitudes and behavior, call quality and cell phone affected less. "Charge" did not affect customers' satisfaction which is directly related to loyalty of customers. The result is show as the [Figure 6].

Following the results of the investigation and the market study, nowadays, the mobile market in Vietnam is in a strong period of growth and close to maturation. About ten years ago, the constituent factors of quality mobile telecommunication services were the price factor, however, at the present time, due to fierce competition between seven businesses making rates, charge of the businesses becomes equal, leading to its

being difficult to distinguish the difference of services among businesses.

[Figure 6] Model Analysis Result

5.2 Limitations and Future Research

This paper had surveyed customers who used mobile phone services in Hanoi, Vietnam. Therefore, the analysis is somewhat limited in sample and sampling method and needs to examine different ages and varied occupations, because the disparity in ages gives different analysis results.

Vietnam mobile industry is growing rapidly now. With the popularity of smart phones in Vietnam, various mobile services will be developed systematically such as mobile learning and mobile social network services.

Mobile learning is one of the fastest growing mobile services in the Vietnam market. Mobile learning researches should focus on perceived self efficacy, perceived anxiety, experience, individual productivity, etc. And in the individual side [16, 22], information quality and system quality such as access for IS success model are needed [1].

References

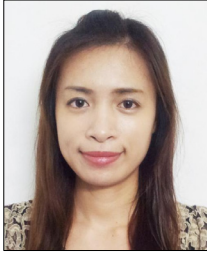[1] Alkhalaf, S., S. Drew, and A. Nguyen, "Validation of the IS Impact Model for Measuring the Impact of e-Learning Systems in KSA Universities : Student Perspective", *International Journal of Advanced Computer Science and Applications,* Vol.3, No.5 (2013), pp.73-78.

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숭실대학교 대학원 경영학과에서 경영학 석사학위를 취득하였으며, 현재 베트남에서 한국과 관련된 사업을 진행 중이다. 베트남 하노이대학교에 서 한국어학 학사 학위를 취득했고, 주요 관심분야는 서비스경영, 학원경영, 베트남과 한국간의 수출입 등이다.

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숭실대학교 대학원 경영정보시스템 전공으로 경영학 석사학위를 취득하였으며, 현재 숭실대학교 대학원 박사과정에 있다. 연구 관심분야는 서비스사이언스, e-Business, 데이터마이닝, 고객관리 등이다.

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조지아 주립대학에서 보험수리학 석사를 하고 동 대학에서 의사결정정보시스템으로 경영학 박사를 받았다. 현재 숭실대학교 경영학부 교수로 재직 중이며 주요 관심분야로 서비스사이언스, 데이터마이닝, 고객관계 관리, S/W 산업정책 등이며, Information Science, Fuzzy sets and System, 경영정보학회, 경영과학지 등에 다수 논문을 실었다. 주요저서는 서비스사이언스, 고객관계관리(CRM)를 위한 데이터마이닝의 활용과 실습, e-비즈니스 시대의 경영정보시스템 등이다.