



## Customer Satisfaction in Mobile Service Quality: Evidence from Hanoi and Ho Chi Minh City's Officers

Pham Thi Thanh Hong<sup>1</sup>, Tran Hai Van<sup>2</sup>

<sup>1</sup>*School of Economics and Management, Hanoi,*

*University of Science and Technology, 1 Dai Co Viet, Hanoi, Vietnam*

<sup>2</sup>*Post and Telecommunication Equipment Jsc., 61 Tran Phu, Dien Bien, Ba Dinh, Hanoi, Vietnam*

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**Abstract:** This study explores the factors influencing the quality of telecommunication services in Hanoi and Ho Chi Minh City. By conducting an online survey of 413 office workers, the results indicate that among the five components of the perceived quality of telecommunications services, reliability, assurance, and empathy are Key factors affecting consumer satisfaction in Hanoi and Ho Chi Minh City. The findings of this research help mobile service providers to understand how consumers perceive the quality of mobile services. Thus, mobile service providers would effectively design marketing strategy to improve customer loyalty as well as enter new markets.

*Keywords:* Mobile service, service quality, online survey, empirical study, Vietnam.

### 1. Introduction

Mobile services are continually developing day by day. According to Infonetics Research's forecast, there will be an 11.8% increase in the compound annual growth rate (CAGR) of Mobile broadband revenue during the period 2013-2018. In Vietnam, subscriptions have reached nearly 140% per 100 inhabitants as per the latest update and this number will decrease in the next few years. Therefore, mobile service providers should understand well about customers' perception and evaluation to strengthen their competitive advantage and improve customer loyalty.

In many cases, customer satisfaction is tied to the customer's perception and product selection. It is said that customer satisfaction is the primary goal for most service firms to achieve a long-term relationship with both present and potential customers [1-4]. Many scholars also argue that customer value and customer satisfaction are the source of competitive advantage for modern companies [3, 5-7]. Research on the behaviour of mobile services states that service quality has a significant relationship with customer satisfaction [2, 4, 5, 8, 9]. These studies also found that the satisfaction of business people is different from students or retired people, the same as with the ways of payment. Besides, tangibility and empathy are considered as having the most effect on customer satisfaction [2]. However, there is no research focusing on office workers who are from 20 to above 50

\* Corresponding author. Tel.: 84-4- 983413593.

Email: Pham Thi Thanh Hong

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years old, well-educated, dynamic, and trusting. These people have stable incomes and intend to keep their phone number unchanged to maintain their social relationships.

There are many studies about customer satisfaction in Vietnam. A study about students using mobile services in Ho Chi Minh City, Vietnam, conducted by Dinh Thi Hong Thuy (2008) stated that service quality has a significant relationship with customer satisfaction [10]. Furthermore, Le The Gioi and Nguyen Minh Duan (2007) and Le Thi Tuyet Trinh (2012) mentioned that the key determinant of customer satisfaction is service quality [9][11]. These researches also found that the satisfaction of business people is different from students or retired people, the same as with the ways of payment. Besides, tangibility and empathy are considered as having the most effect on customer satisfaction as found by the study of Bui Van Trinh and Luu Ngoc Mai Anh (2013) [12].

Customers of mobile telecommunications services can be different subjects. They can be administrative organizations, social activist organizations, service organizations, manufacturing businesses or persons who needs to use mobile phones. People working in offices are not the exception. The number of people working in offices of Vietnam is quite high as the population age of Vietnam is young. These people have good education and are aged from 20 to above 50 years old, and this range of customers have dynamic, responsive characteristics. People working in offices have stable incomes and many social relationships. Thus, they usually keep their phone numbers for a long time to maintain connections with other people easily. But sometimes, due to some other reasons, people working in offices still change their mobile phone numbers and service providers. One reason for this is dissatisfaction with their current supplier.

It is known that there may be a gap between service quality and customer satisfaction. Pizam, A. and T. Ellis (1999) argued that service quality is a significant element of

customer satisfaction [13]. The competition between mobile telecommunication suppliers is becoming harsher as the market share has been subdivided into small pieces and is not as simple as before. So how to keep a huge loyalty customer to stay a long time with a happy attitude when the Vietnamese mobile telecommunications service sector is faced with this hard competition?

Thus, this study is going to find out the influence of service quality on the satisfaction of people working in offices with mobile services in Vietnam.

## 2. Research design

### 2.1. Research questions

This paper intends to find out: “Are the people working in offices satisfied with their current services?”; “What is the relationship of all dimensions to customer satisfaction in Hanoi and Ho Chi Minh City?”; and “Is there any positive affect from those five dimensions of the SERVPERF model on customer satisfaction?”. SERVPERF (Service Performance) was created on basis of critique of SERVQUAL by Cronin and Taylor in 1994 [15], and thus uses the same categories to assess service quality: (1) Tangibles, (2) Reliability, (3) Responsiveness, (4) Assurance, and (5) Empathy. However, SERVPERF measures quality as an attitude, not satisfaction.

The paper also wishes to know how each criterion contributes to customer satisfaction, and which plays the strongest impact. The result will show the service providers where to focus to improve their strategies and marketing.

On the other hand, the paper would like to discover if the role of gender, geographical location and payment types have a positive impact on the satisfaction of people working in offices.

### 2.2. Research framework

It is known that satisfaction results from a comparison of expectations and actual performance. In other words, satisfaction often

starts with the expectations a customer has, based on personal needs, communication, and past experiences.

Research about customer satisfaction has used several models including SERVQUAL [14], and SERVPERF [2, 15]. Each model has good points and limitation points. The SERVPERF model has some advantages over the SERVQUAL model as it focuses more on service performance and is easy to apply (Brady and Cronin).

In this regard, the SERVPERF scale has been used to measure service quality in various service industries, including banks, credit card companies, telephone companies, and travel companies. Furthermore, it is suitable for examining e-services as well. The 5 dimensions (tangibility, responsiveness, reliability, assurance, and empathy) of service quality are measured for mass services as well as mobile services and will be dominant. Because of time and ability limitation, this paper decided to choose the SERVPERF model for this research [2, 15].

Therefore, the study's conceptual model (see Figure 1) is based on the studies of Cronin et al. (2000) and Leelakulthanit & Hongcharu (2011) [2, 15]. These studies have looked at the effect of service quality on the satisfaction of people working in offices and have looked at which factors will have the most influence on their satisfaction in using a mobile service. The model also examines how gender, geographic locations and payment types impact on this satisfaction.

Based on the purpose of the study and the theoretical framework, seven hypotheses are developed to answer the research questions as follows:

H1: Tangibility has a positive effect on the satisfaction of people working in offices in using mobile services.

H2: Reliability has a positive effect on the satisfaction of people working in offices in using mobile services.

H3: Responsiveness has a positive effect on the satisfaction of people working in offices in using mobile services.

H4: Assurance has a positive effect on the satisfaction of people working in offices in using mobile services.

H5: Empathy has a positive effect on the satisfaction of people working in offices in using mobile services.

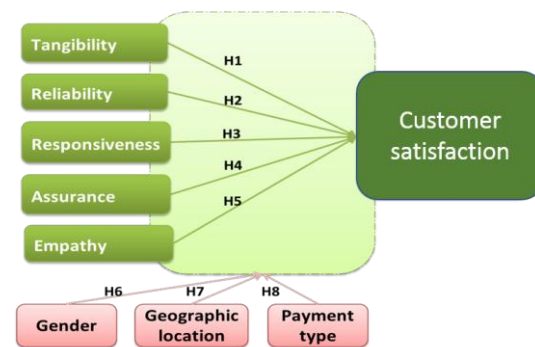


Figure 1. Research framework.

Source: Adjusted from Cronin et al., 2000 and Leelakulthanit & Hongcharu, [2, 15].

H6: There is a difference between the satisfaction of males and females in using mobile services.

H7: There is a difference between the satisfaction of pre- paid and post- paid users in using mobile services.

### 2.3. Data collection and sampling

A survey-based quantitative research method was used to collect data. A total of 1,000 staff working in offices in Hanoi and Ho Chi Minh City were invited to join the research. The survey link is sent randomly to the people working in offices via email and they answer online. This process was scheduled to occur over 3 months (from 1<sup>st</sup> February to 25<sup>th</sup> April 2018).

Surveyees got the invitation to do the survey via email or via a Google survey form. To get a high response rate, the sample was sent to the researcher's colleagues, partners, distributors and both online and offline friends in Hanoi and Ho Chi Minh cities (targeted surveyees). Besides that, the author created a post on Linked In where the address of the link to do the survey was provided. The author's

friends on Linked In can understand the purpose and do the survey online via the link in such a post (random people respond).

As a result, the research got 413 responses online (resulting in around a 41.3% response rate). The collected data was analysed via SPSS Statistic version 23.0. Descriptive statistic and

multiple regressions were used to examine the hypotheses.

#### 2.4. Sample descriptions

Table 2 presents the descriptive statistics of data in terms of number and percentage of respondents.

Table 1. Indicators to measure customer satisfaction

Variables	Indicators	Reference	
Tangible	SQ1	The paper and form of the service provider is standardized for all their systems.	Author
	SQ2	There are convenient transaction kiosks for customers in suppliers' stores.	Author
	SQ3	Service staff are well dressed and appear neat.	Johnson and Sirikit (2002)
Reliability	SQ4	When service providers promise to do something by a certain time, they do so.	Johnson and Sirikit (2002)
	SQ5	When I have problems about service, a service provider can solve problems correctly.	Johnson and Sirikit (2002)
	SQ6	A service provider keeps its records accurately.	Johnson and Sirikit (2002)
Responsiveness	SQ7	The website of the supplier has sufficient information that I need.	Author
	SQ8	I can quickly connect to the operator to solve my problem.	Johnson and Sirikit (2002)
	SQ9	Customer service staff are always willing to help customers.	Johnson and Sirikit (2002)
Assurance	SQ10	I can trust customer service staff.	Johnson and Sirikit (2002)
	SQ11	I feel safe in my transactions with customer service staff.	Johnson and Sirikit (2002)
	SQ12	Customer service staff do their job well	Johnson and Sirikit (2002)
Empathy	SQ13	A service provider pays attention in delivering services.	Johnson and Sirikit (2002)
	SQ14	Customer service staff know what I need.	Johnson and Sirikit (2002)
	SQ15	The service provider explains information to me clearly.	Johnson and Sirikit (2002)
Customer satisfaction	CS1	I am satisfied with the mobile telecommunication services from this telecom company.	Kuo (2009)
	CS2	I will not switch to the services of other suppliers.	Kuo (2009)
	CS3	Recommend the company's products or services to others.	Kuo (2009)

Source: Author's

Table 2. Sample's descriptive statistics

Item	Characteristic details	No. of respondents	Percentage of total
1	Gender	413	100.0
	Male	223	54.0
	Female	190	46.0
2	Age	413	100.0
	21-30 years old	145	35.1
	31-40 years old	199	48.2
	41-50 years old	49	11.9
	> 50 years old	20	4.8
3	Education	413	100.0
	College or Bachelor degree	257	62.2
	Master and higher degree	156	37.8
4	Usage period	413	100.0
	Less than 1 year	11	2.7
	1-3 years	37	9.0
	3-5 years	80	19.4
	More than 5 years	285	69.0
5	Payment type	413	100.0
	Pre-paid	240	58.1
	Post-paid (monthly payment)	173	41.9
6	Using service	413	100.0
	Domestic call	413	100.0
	International call	203	49.2
	SMS	367	88.9
	Mobile internet service	366	88.6
	Other service	46	11.1

Source: Survey results.

## 2.5. Reliability of the collected data

All measures obtained from the 413 individuals (N = 413) were subjected to reliability analysis to assess the dimensionality of the measurement scale. Table 3 indicates that all measurements exhibited high reliabilities with Cronchbach's alphas ranging from 0.665 to 0.850. Therefore, all measurements were reliable and valid.

## 2.6. Exploratory factor analysis

Table 4 shows several important parts of the SPSS output: the KMO measure of sampling adequacy and sphericity and Bartlett's test. For these data, the value of KMO is 0.831, which falls into the range of 0.8 and 0.9 (being great), so we can say confidently that factor analysis is appropriate for these data. For these data, Bartlett's test is highly significant ( $p = 0.000 <$

0.001), and therefore factor analysis is appropriate.

Table 5 shows the rotated component matrix. There are several things to consider about the format of this matrix. First, factor loadings less than 0.5 have not been displayed because we asked for these loadings to be suppressed. In this table, the factor "Transaction security" is under 0.5 and not shown. This factor is taken out of the table. All the remaining variables are substantially loaded as the same.

## 3. Findings

### 3.1. Customer satisfaction

To overview customer satisfaction for using a mobile service, there are 3 indicators designed to gather the customers' opinion.

Table 3. Reliability statistics for the variables

Item-total statistics	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's Alpha if item deleted
<b>Tangibility</b>				<b>0.726</b>
Document standardization	7.387	2.320	0.554	0.629
Convenient transaction kiosks	7.271	2.334	0.568	0.612
Employees neat and clean	7.288	2.414	0.518	0.672
<b>Reliability</b>				<b>0.692</b>
Speed of service	7.017	2.463	0.485	0.628
Right at the first-time service	6.956	2.440	0.565	0.535
Billing and service charge is accurate and clear	6.923	2.222	0.483	0.640
<b>Responsiveness</b>				<b>0.676</b>
Website information	6.651	1.859	0.490	0.585
Operator connection speed	6.615	2.169	0.565	0.509
Service staff willingness to support customer	6.249	2.018	0.434	0.658
<b>Assurance</b>				<b>0.665</b>
Customer's trust	6.925	1.710	0.472	0.578
Transaction security	6.683	1.902	0.565	0.482
Service staff evaluation by customer	6.717	1.738	0.418	0.659
<b>Empathy</b>				<b>0.778</b>
Delivering service attention	6.763	1.866	0.581	0.756
Service staff acumen	6.726	2.321	0.645	0.683
Service staff competent	6.574	2.066	0.643	0.668
<b>Customer satisfaction</b>				<b>0.850</b>
Overall customer satisfaction	6.484	1.988	0.678	0.829
Customer loyalty	6.920	1.909	0.698	0.811
Customer recommendation	6.935	1.809	0.785	0.727

Source: Survey results

Table 4. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.831
Bartlett's Test of Sphericity	Approx. Chi-Square	3,057.786
	df	105
	Sig.	0.000

Table 5: Rotated Component Matrix

Component	1	2	3	4	5
Convenient transaction kiosks	0.763				
Document standardization	0.690				
Employees neat and clean	0.686				
Right at the first-time service		0.747			
Speed of service		0.704			
Billing and service charge is accurate and clear		0.703			
Website information			0.834		
Operator connection speed			0.637		
Service staff willingness to support customer			0.628		
Customer's trust				0.780	
Service staff evaluation by customer				0.554	
Service staff acumen					0.836
Delivering service attention					0.724
Service staff competent					0.637
<i>Extraction Method: Principal Component Analysis.</i>					
<i>Rotation Method: Varimax with Kaiser Normalization.</i>					

They are: Overall customer satisfaction, Customer loyalty, and Customer recommendation.

As shown in Table 5, we can see the mean of satisfaction is 3.685, which is considered to show that customers agree that they are satisfied with their current service company. The means of not switching to other providers and recommendations to others are 3.249 and 3.235, which are considered to be at an uncertain level but very near to agreement level. This result shows that the service providers have not given customers as high satisfaction as they expected and there is still much more

improvement needed to increase the pleasure of customers.

Besides, related to overall customer satisfaction, the majority of customers (69.1%) agree that they are happy with their current service provider. However, 37% said they were uncertain about their satisfaction in using the mobile service and 3.9% were dissatisfied with the current service.

The customer loyalty in the survey shows clearly that the subscribers here are not sure about their loyalty: 50.1% chose a neutral answer, 34.9% said they would not switch and 15% chose to move to another service provider at the time of the survey. This number should

be an alert for the service providers because once a customer is attracted by any interesting marketing advertisements or campaigns, they will be ready to switch.

When being asked about recommendations to other people about mobile telecommunications service providers, the majority of surveyees (49.6%) gave a neutral answer; only 35.9% said yes they would recommend their service provider and the rest said they would not. Maybe customers have some barriers to suggesting to other people their current service.

From the overview of the customer satisfaction survey, we can see there are many customers not quite comfortable with their present service. We can easily understand this from the above relative questionnaires. These descriptive data will be used for further analysis.

### 3.2. Tangibles

From the 413 respondents, a total of 59.8% people agree or strongly agree that their service provider has a convenient transaction shop for r customers. In the meantime, 31% people were neutral about this statement and 9.2% disagreed but no one had strong disagreement about this idea.

From the survey result, 224 in a total of 413 people (equivalent to 54.2%) agreed and strongly agreed that the service staff appear to be clean and well dressed. There were 38.3%, just in the middle and a small group, with 7.5% not agreeing about the statement of staff appearance. So with only 54.2% agreeing customers, this is not quite a high rate. It seems that employees need to improve their image a good deal.

### 3.3. Reliability

The next dimension is reliability, which represents the capacity of a company to provide the services it promises. There are 3 indicators to collect the information from respondents to

find out whether the reliability impacts on the satisfaction of customers:

- How is the speed of service? Does the service provider solve the customer's requirements according to their committed timeframe?
- Do they solve the requirements of customer correctly at the first-time service?
- Is their billing and service charge accurate and clear?

The response mean value is from 3.43 to 3.53. The numbers show that the customers almost all agree with the speed of service response, is right at the first service and as well as the charge information being clear. Some of the people still disagreed or strongly disagreed so we can see the value of the indicators is from 1 to 5 for the total of the 3 statements.

For the speed of service, 55.4% of the customers agreed that their service provider committed within their timeframe; 6.5% of the customers said they strongly agree via the survey. 28.1% of the total of 413 respondents said that they were neutral and 16.5% had negative evaluation on that (in that 14.1% disagreed and 2.4% strongly disagreed). From that number, we can see the feedback from customer for the statement is quite good, but the providers still need to make more effort.

There is an almost 50% of the responses showing that the service providers execute customers' requirements correctly in the very first service (206 people). Nearly 40% of the customers at the neutral level when saying this and nearly 10% do not agree with the above. This shows that the customer agreement level is not too high and that service providers still need to improve much in this field.

The survey shows that 51.9% of the customers evaluated that the billing and service charges are clear and accurate. This means there are 48.1% who remain saying they are not too sure or disagree with the billing information of their service provider. From that result, we can guess there are some problems in the billing systems of the telecommunications service. This indicator is important, as it will affect



directly the credit of that company to the customers.

### 3.4. Responsiveness

The third dimension is responsiveness. Three indicators were designed to get information for the evaluation responsiveness variable: Website information, Operator connection speed, and Service staff willingness to support customers.

The mean value for those indicators is from 3.107 to 3.508. The standard deviations are from 0.725 to 0.910. The website information indicator mean is 3.107 and the standard deviation is 0.910 which corresponds to no opinion. The mean value of the connection speed indicator is 3.143, which is considered as neutral. Besides, there are small differences between the values of speed connection because the standard deviation was low (0.725). The mean value of the staff willingness indicator is 3.508 and the standard deviation is 0.888, which is considered as agreement level but the level of agreement is not quite high. With that number above we can see there is a lot effort needed from the service provider to get a high evaluation by their customers.

When talking about the website information, only 44.6% agreed that they could find needed information on the service supplier's website. 38.1% said they were uncertain and 27.3% totally disagreed with this statement. This number reflects the fact that some people meet difficulties in finding the instructions or data they need - maybe the website does not include all information, or if it does, the design is unclear, making it difficult for the customer to find it.

28% of the respondents said that they could connect to the operators quickly. 55% said they were uncertain and 16.9% did not agree with this. The number of agreeing and disagreeing people is not as high as the number of neutral people. From that we can see the connection time is not fast and the service provider should pay more attention to this indicator.

The survey found that customers consider the service staff at the store are willing to help them (40.4% agreed and 11.9% strongly agreed). There were 47.7% who were indifferent to this. Only 12.6% said they disagreed in comparison with 52.3% who said they agreed, but the service provider should review this indicator again to get a higher positive rate.

### 3.5. Assurance

There are 3 indicators to collect information from respondents about the ability of the organization's employees to inspire trust and confidence through their knowledge and courtesy: Customer trust, Transaction security, and Service staff evaluation by customers.

From the above statistical table, customers are uncertain about giving personal information to service staff. The mean of this indicator is only 3.24, which revealed mild disagreement regarding the customer's trust. The mean value of transaction security and the overall staff evaluation are 3.48 and 3.45, which are considered as an agreement level. That means customers feel safe in their transactions and say the service employees have done their job well, but not the best.

Regarding this statement about trusting the service staff, 33.8% said they were confident to give their personal information to the staff. Half the respondents said they were uncertain and 15.8% refused to provide this information. From the survey, in my opinion I think the service companies need to build their images and credence for more customers to totally believe them.

As in the survey result, 170 of the 413 people (41%) agree that they feel safe in their transactions and they believed it is secured by the service provider. 57.1% are neutral and only 1.9% disagreed with that. Despite the number of people disagreeing being small, the number giving a neutral answer is huge (more than 50%). We can see that security matters need to be improved as soon as possible.

The overall staff evaluation indicator is not that different to the above. 42.85% agreed that the service staff at the stores do their jobs well. 49.88% said they were neutral about that and the remaining 7.27% disagreed. From that number, the attitude and knowledge of staff needs to be improved as fast as possible.

### 3.6. Empathy

To measure the empathy of the service companies, the research used 3 statements corresponding to 3 indicators as follows: Delivering service attention, Service staff acumen, and Service staff competency.

The mean values for these indicators are from 3.27 to 3.46, meaning customers are unsure whether service providers understand and give personalized attention or not. The delivering of customer attention and service staff acumen are valued as uncertain indicators. In the meanwhile, the service staff competency is considered as an agreed level.

Talking about the delivering of service attention of service provider, 43.8% customer agreed and evaluated it at a good level, 34.9% said it was just normal and about 23% said they had not received such service. This means that the service providers do not usually give their attention to individual customers to make them feel their requirements are important and the suppliers are trying to make clients satisfied.

Staff competence is one of the most important things that impresses a customer. The ability of staff to quickly understand and quickly provide support will show they really take care of their customers. 92.2% agreed, 4.4% were uncertain and the 3.4% disagreed. These numbers tell the fact that half of the customers feel that staff are still slow to capture information, and this needs to be enhanced.

The survey result shows this last indicator of the Empathy variable gets an agreement level from customers. About 50% said they agreed that they get accurate and clear answers from service staff, 41.2% said they were uncertain

and 11.1% disagreed with this. Despite the good number saying yes, this is not so high for service providers to be confident in their staff. They still need to increase the capability and skills for staff.

### 3.7. Correlations between variables

As shown in Table 6, there is a positive correlation between the variables: the correlation between tangibility and customer satisfaction indicates that there is a significant correlation between the two variables with the coefficient correlation  $r = 0.581$  at  $p < 0.01$  level. Moreover, there is a significant correlation between reliability and customer satisfaction ( $r = 0.661$  at  $p < 0.01$  level). The research result presents that there is a significant correlation between responsiveness and customer satisfaction,  $r = 0.599$  at  $p < 0.01$  level. As the results show, there is a significant correlation between assurance and customer satisfaction,  $r = 0.697$  at  $p < 0.01$  level. It was found that empathy and customer satisfaction have a strong significant correlation with the coefficient correlation  $r = 0.676$  at  $p < 0.01$  level.

To achieve the objective of this study, multiple regression was used to study the effects of the independent variables ( $X_1 =$  Tangibility,  $X_2 =$  Reliability,  $X_3 =$  Responsiveness,  $X_4 =$  Assurance,  $X_5 =$  Empathy) on the dependent variable ( $Y =$  Customer satisfaction).

Significance level for variables are accepted at a significance level = 99%. Table 7 shows the analysis of multiple regressions. The value of R is 0.804, the value of R square is 0.646 and the standard error of the estimate is 0.398. The model summary and the data are shown in Table 7.

The results from Table 7 show that the model can explain 64.2% of the variability in customer satisfaction according to the regression model. The value of the  $R^2$  (R Square) is an acceptable value for explaining the variability of customer satisfaction.

Table 6. Correlations among the variables

		1.	2.	3.	4.	5.	6.
1. Customer Satisfaction	Pearson Correlation	1	.581**	.661**	.599**	.697**	.676**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	413	413	413	413	413	413

Note: \*\* Correlation is significant at the 0.01 level (2-tailed).

1. Customer satisfaction, 2. Tangibility, 3. Reliability, 4. Responsiveness, 5. Assurance, 6. Empathy

Table 7. Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.804 <sup>a</sup>	0.646	0.642	0.398

a. Predictors: (Constant), Empathy, Responsiveness, Tangibility, Assurance, Reliability

b. Dependent Variable: Customer Satisfaction

Table 8. Coefficients<sup>a</sup>

Unstandardized Coefficients				Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF	
1	(Constant)	0.132	0.124		1.070	0.285		
	Tangibility	0.033	0.039	0.036	0.847	0.398	0.489	2.046
	Reliability	0.188	0.042	0.202	4.465	0.000	0.423	2.365
	Responsiveness	0.054	0.044	0.054	1.234	0.218	0.460	2.176
	Assurance	0.362	0.048	0.336	7.540	0.000	0.437	2.289
	Empathy	0.323	0.038	0.333	8.513	0.000	0.569	1.758

a. Dependent Variable: Customer Satisfaction

As shown in Table 8 the Collinearity Statistics VIF result for Tangibility = 2.046, Reliability = 2.365, Responsiveness = 2.176, Assurance = 2.289 and Empathy = 1.758. These results are acceptable and significant, complying with the standard requirement value for Collinearity Statistics VIF, standard requirement VIF < 10.

Table 8 shows that all the values of the T-statistic are significant. Therefore, all the independent variables can be retained in the model. In other words, these variables can explain the change in customer satisfaction. Multiple regression analysis identified only three of five dimensions of service quality influencing customer satisfaction, and with a positive direction.

Specifically, the information of Table 8 was employed to determine whether tangibility has no effect on customer satisfaction, the result of regression analysis revealed that there is no significant relationship between tangibility and customer satisfaction (p = 0.398), B = 0.036. Because the significance value can't meet the requirement that the value of significance should be less than 0.05. Therefore, this hypothesis (H1) is rejected, meaning that the Tangibility of services does not have significant impacts on customer satisfaction.

In contrast, the result of regression analysis revealed that there was a positive relationship between Reliability and customer satisfaction at the significance level (p = 0.000), B = 0.188. The correlation analysis for these variables showed a positive coefficient. Therefore,

Hypothesis (H2) is accepted, meaning that the Reliability of service has a positive impact on customer satisfaction.

The result of regression analysis revealed that there is a significant relationship between Responsiveness and customer satisfaction ( $p = 0.218$ );  $B = 0.054$ . Because the significance value can't meet the requirement which is that the value of significance should be less than 0.05. Therefore, the third hypothesis (H3) is rejected, meaning that the Responsiveness of services does not have significant impacts on customer satisfaction.

The result of regression analysis revealed that there is a significant relationship between Assurance and customer satisfaction ( $p = 0.000$ );  $B = 0.336$ . The fourth hypothesis (H4) is accepted because the result of significance is less than 0.05 (Significance requirement standard  $< 0.05$ ), meaning that the Assurance of service has a positive impact on customer satisfaction.

Finally, the multiple regression analysis shown in the above table was employed to determine whether Empathy influences customer satisfaction. The result of regression analysis revealed that there was a positive relationship between these two variables at the significance level ( $p = 0.000$ ),  $B = 0.323$ . Hypothesis (H5) is accepted because the result of significance is less than 0.05 (Significance requirement standard  $< 0.05$ ). So, the Empathy of service has a significant impact on customer satisfaction.

From the above table, Reliability, Assurance and Empathy contribute to the customers' satisfaction significantly. Moreover, relationships are all found to be positive, implying that the more positive the service quality in Reliability, Assurance and Empathy, the greater the customer satisfaction in using a mobile service. However, the tangibility and responsiveness does not affect customer satisfaction at a statistically significant level.

Based on Table 8, the explanatory power of the model, as reported by the R Square value, is 0.646, documented that the five variables

(tangible, reliability, responsiveness, assurance, and empathy) can explain about one-half of the variation in customer satisfaction. The variance that can predict the constant is service quality. Thus, the reasonable multiple regression equation for customer satisfaction is:

$$\text{Customer satisfaction} = 0.132 + 0.033(\text{Tangible}) + 0.188(\text{Reliability}) + 0.054(\text{Responsiveness}) + 0.362(\text{Assurance}) + 0.323(\text{Empathy})$$

This result means that we can remove three variables and run the linear regression again. Finally, Reliability, Assurance and Empathy most contributed to Customer Satisfaction. These variables statistically significantly predicted Customer Satisfaction,  $p = 0.000$ ,  $R^2 = 0.644$ . All 3 variables have a positive impact on Customer Satisfaction and added statistically significantly to the prediction - all p-value are  $0.000 < .005$ .

$$\text{Customer satisfaction} = 0.132 + 0.214(\text{Reliability}) + 0.396(\text{Assurance}) + 0.337(\text{Empathy})$$

We can see that only three dimensions of the SERVQUAL model (Reliability, Assurance and Empathy) contribute a positive impact to Customer Satisfaction with the significant result as in the above formula.

#### 4. Discussion

The results of data analysis on the level of neutrality and agreement shows the total of the five dimensions of service quality, which are tangible (Mean = 3.658, SD = 0.720) was shown at the agreement level, reliability (Mean = 3.483, SD = 0.717) was shown at the agreement level, responsiveness (Mean = 3.253, SD = 0.658) was shown at the neutral level, assurance (Mean = 3.387, SD = 0.618) was shown at the neutral level, and empathy (Mean = 3.344, SD = 0.685) was shown at the neutral level, too.

##### 4.1. Hypothesis 1

Regarding the questions 1 to 3 of the questionnaire asking customers about their

evaluation of the physical surroundings of the suppliers, customers seem to be satisfied with the 3 statements, and mostly for the appearance of stores. Even though the feedback shows that the customers agreed that the physical surroundings are good, the agreement level is not high, meaning that the suppliers need to focus more on the setting up the store design. Besides, they should pay attention to the location of the transaction store or the parking place for customers, etc.

Results of the linear regression show that tangible utilities have no significant influence on customers' satisfaction ( $\alpha > 0.05$ ). Therefore, there is no relationship between Tangibles and customer satisfaction.

In some researches, the tangibles factor is the least important factor that indicates for the appearance of suppliers' representative stores and their infrastructures. This result may be derived from the fact that customers only come to the stores when they need to change a SIM card or sign a contract, etc. Moreover, during the use of mobile phone services, customers do not have to come to the stores often because most of their issues can be solved online [1]. Tangibles have no impact on customer satisfaction as mentioned by Agyapong (2010) [7]. In contrast, Aydin et al. (2005) found that Tangibles have a positive impact on customer satisfaction in their research [16].

In this research's opinion, the appearance of the supplier's physical stores are one the most important things for customers, so the tangibles still have an impact on customer satisfaction even if its affect is only a little bit, not high and significant.

#### 4.2. Hypothesis 2

The statements 4 to 6 of questionnaire part II were used to measure the reliability dimension. The highest one is accuracy of service charge information; however, this statement also presents the most standard deviation, which is 0.991. Therefore, the company should give more attention to this foible. This connects to the contract theory of

Eugenia et al. (2015) [3], which suggested that customers could be strongly dissatisfied when the products or services turn out to be contradictory with the previous promises or advertising. Nevertheless, the statement "the mobile phone service is performed right the first time" receives the second most satisfied opinions with a standard deviation of 0.841.

Results of the linear regression show that reliability has a significant influence on customer's satisfaction ( $\alpha < 0.05$ ). Therefore, there is a relationship between Reliability and customer satisfaction. This result is consistent with the findings of Boohene & Agyapong, (2011) [1] that reliability has the most impact on customer satisfaction in using telecommunication services. Eugenia et al. (2015) [3] also mentioned reliability is a good predictor of customer satisfaction.

Since "reliability and service quality go together and are complementary to each other" [17], the company should pay more attention to this insufficient dimension to enhance the quality of provided services.

#### 4.3. Hypothesis 3

The Responsiveness variable was measured by the statements 7 to 9. The indicator "willingness of service staff to help customers" got the highest mean (3.508) with a standard deviation of 0.888. The website information and operation connection speed are rated at a neutral level, so it will be more challenging to conquer customer satisfaction. Even though two statements have the neutral agreed level and a high standard deviation  $\alpha > 0.05$ , it is hard to conclude that customers are not satisfied with this dimension because of those possibilities. As the customers increase the "adequate service", their "desired service" will also increase; this mean score might represent for their "desired service" which means the service that they hope or wish for. Thus, their perception remains in the zone of tolerance but has not reached the level of "desired service". In other words, customers could have been satisfied with basic attributes and even

performance attributes, but their perceptions have not arrived at delight attributes [1]. Nevertheless, if the mean score represents customers' "adequate service", then Vietnamese telecommunication suppliers have not genuinely satisfied most of their customers' demands. It is possible that the companies still might focus on hard skills training pertaining to service knowledge, technical skills or administrations, while disregarding the employees' attitude in the way they deal with customers [7].

#### 4.4. Hypothesis 4

Assurance is considered as the most important predictor of customer satisfaction ( $\beta=0.336$ ). Assurance is the customer's feeling of safety, has a positive relationship with customer satisfaction, and there is a strong significant effect on it. Based on the responses, most of the respondents do consider assurance to be an important part of the service quality. Many customers have reported their highest satisfaction on transaction security with service staff, and the second one is service staff solving customer requirements well. Besides that, they are still afraid to give their personal information to the staff, so the suppliers should increase the level of assurance in database protection, showing how to secure and keep customer trust to retain existing customers and even attract new ones.

This finding is consistent with Boohene and Agyapong (2011) [1] in the research on customer satisfaction in using mobile services in Ghana, and Eugenia et al.'s study (2015) [3] about consumers in Taiwan.

#### 4.5. Hypothesis 5

Our results suggest that a significant positive relationship exists between empathy and customer satisfaction. Even though most customers would enjoy using the service, some customers felt suppliers rarely conduct surveys about customer requirements to improve the service quality. Companies should care more about the specific benefits to individual

customers. Understanding specific needs of customers and their value helps to build relationships between the company and customers. This empathy engenders trust and contributes to the long-term success of the company [1]. In summary, the satisfaction of customers on the empathy dimension is at an uncertain level.

Empathy has a significant influence on customer's satisfaction ( $\alpha < 0.05$ ,  $\beta = 0.333$ ). In the research of Eugenia et al. (2015) [3] and in the research of Aydin et al. (2005) [16] the same result was found.

#### 4.6. Customer satisfaction

As the results of data analysis on the level of agreement show, customer satisfaction (Mean=3.390, SD=0.665) was shown at the neutral level.

The hypotheses aim to identify the effect of service quality (tangible, reliability, responsiveness, assurance, and empathy) on customer satisfaction of customers using mobile telecommunications in 2 cities in Vietnam. According to the result of the hypotheses' test it shows that there is a relationship between service quality and customer satisfaction. Overall, most customers are satisfied with the current services with a highest average mean score (3.685). On the other hand, loyalty and recommendation nearly got the agreed level. Therefore, we can conclude that customers are satisfied with the telecommunication services in Vietnam, but the satisfaction level is not quite high. Eugenia et al. (2015) has mentioned in her research about the same topic with customer in Taiwan a similar finding [3]. It also agrees with the findings of Torsten and Ilknur (2016) [18]. So, we can see this result is similar with other researches, and we can conclude that the customer satisfaction in using mobile services of people working in offices is not different from that of other people.

## 5. Conclusions and implications

### 5.1. Conclusions

From the research, customer satisfaction (Mean = 3.390, SD = 0.665) was shown to be at a slightly satisfied level with the service quality of mobile service providers. Customers of these services, who are working in offices highly appreciate the appearance of the store and staff as well as the Reliability dimensions. Even though customers are quite satisfied with the mobile services in general, they do not have positive perceptions of some dimensions. The most considerable will be for providing personal information and suppliers' survey conducting. Therefore, the suppliers need to have more specialized campaigns on customer data security and enhancing customer services.

The hypothesis of the service quality test shows that these variables have an influence on customer satisfaction. If a product outperforms expectations (positive disconfirmation) post-purchase satisfaction will result [4] [19]. Thus, when customers use the mobile telecommunications service and get better service quality, they will get more satisfaction.

Also, there is a significant relationship between service quality and customer satisfaction. But with service quality consisting of five dimensions, the different dimensions have different effects on customer satisfaction. Reliability ( $\beta = 0.202$ ), assurance ( $\beta = 0.336$ ) and empathy ( $\beta = 0.333$ ) have a significant relationship with customer satisfaction; assurance ( $\beta = 0.336$ ) is higher than the others, meaning assurance has more impact than the others on customer satisfaction. The significance value of tangible and responsiveness are more than the alpha level ( $\alpha = 0.05$ ). Therefore, they have no relationship with customer satisfaction at a significant level. Accordingly, the three most important dimensions (reliability, assurance and empathy) in turn give the most satisfaction to customers using telecommunication services.

## 5.2. Management Implications

The analytical results of this study have several implications for researchers and practitioners. Obviously, the ultimate target of

mobile service providers is to improve the company performance and increase its market share. However, since Vietnam mobile telecommunication is in the 4G era, mobile service providers must confront a new competitive situation, and different 4G mobile services are provided to customers. For mobile service providers, this research can be used to find out what factors influence customer satisfaction and for marketing strategy planning.

In this research, we also found that Reliability, Assurance and Empathy all significantly affect customer satisfaction in using mobile services, but the users here still feel not really satisfied with their current service. Thus, mobile service providers should only focus their investments in these 3 categories to boost performance.

Based on the findings of this study, mobile service providers should focus on the Reliability, Assurance and Empathy of service quality. These three dimensions of service quality have a significant relationship with customer satisfaction in using mobile services in Hanoi and Ho Chi Minh City, Vietnam. From that they can make customers sacrifice time and effort in purchasing their mobile services, and how to make customers feel it is worth choosing their company over other mobile service providers.

### *Improve relationship with distribution channels*

The findings imply that the customer service sector needs to be ameliorated. In the tough competition where service operators hardly hold a proprietary technology in the mobile service market, enhancing customer service is a pivotal strategy to pre-empt customer satisfaction against other competitors. This can help the company not only win more customers but also gain more of the market share.

The suppliers here have done a good job in providing reliable services that have satisfied the majority of customers. However, that does not mean that they can stop improving their

service. For example, they should work closely with distribution channels. Distribution channels help suppliers bring products and services closer to customers as well as to receive feedback from customers through the process of using the service. Besides chargeable staff are people who can easily get feedback from customers about the service. That is an effective information channel for companies to offer new business, policy changes or policy adjustments accordingly. Therefore, there should be cooperation between suppliers and distribution channels, so chargeable staff can quickly fix customer complaints. Besides, as good relationships and benefits increase, the selling of mobile sim cards at dealers will be reduced.

#### *Professional ethics and working environment socialization*

It is important to improve the capacity for employees, but suppliers also cannot ignore professional ethics; therefore they need to combine harmoniously to create both special attention on the issuing of sim cards or the collection of telephone charges that can improve the confidence of their customers. There should be an open discussion between the leadership and staff of the company to talk about professional ethics to enhance the consciousness of each person, to exchange ideas and propose strict sanctions if there are deliberate mistakes.

#### *Complete customer policy*

Moreover, even if companies have very nice customers, it will become meaningless if service staff do not follow them closely. Therefore, companies need to implement policies for customer care and their staff must carry these policies out strictly. They need to develop appropriate policies and stimulate participation from both employees and customers.

In addition, companies should develop a database of customers that can consolidate information from different departments such as customer information management, customer interaction management, marketing

management, product & services management, etc. so that the company has a full picture of all customers. By that system, tellers will easily recognize many potential customers and collaborate with other technical departments in the company to implement marketing activities, sales and provide appropriate services. Therefore, companies will optimize profitability and bring the highest satisfaction to customers. Besides, the system also helps the leadership to consider and evaluate employees' effectiveness.

#### *Enhance customer empathy*

Customers expect to be given individual attention. Thus, the suppliers should understand specific customers' desires or requests and respond to them promptly. To achieve that target, the company needs to invest in a large research investigating customers' demands according to each segment. Each customer group has definite requirements for their desired services; by understanding these desires, the company can provide services accordingly. Employees' performances should also be monitored to assure that there is no mistake in dealing with each customer's circumstance. Furthermore, when the company receives any complaints, they need to respond to the customer with precise and satisfactory answers or actions. Those answers or actions should not be equivocal which can cause confusion for customers.

#### *Training for employees*

Company should emphasize more soft skills training for the staff force which deals directly with the customers. Their skills in promotion, communication and negotiation should instil confidence in customers. Employees should flexibly tackle customers' problems without having them waiting too long and giving an unsatisfactory response. Furthermore, more employees need to be arranged for the customer service sector so that customer's issues can be tackled in succession and in the shortest time.

Even though most customers have been satisfied with the appearance of the store, the simplicity or security of the service, etc.... the company should not disregard these factors.



Without their supportive roles, the service quality of the company could have resulted in dissatisfaction. Those dimensions should also have better elaboration to ensure the long-term loyalty of customer to the company.

### 5.3. Suggestions and recommendations

There are some suggestions for future research. First, the culture and regulations are quite different from one country to the other, which is the limitation of the paper. Thus, future researchers may wish to conduct study (1) involving a sufficiently large sample size for the entire country, or (2) including other target groups by geographic location or culture difference factors.

Finally, this study used closed-ended questions to examine the factors that influenced customer satisfaction, and the relationships among the variables. Future researchers may wish to use other methods for collecting data. Further studies could be carried out to develop and validate the models by adding external constructs within a more specific context.

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