

## Understanding consumer satisfaction with railway transportation service: An application of 7Ps marketing mix

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### ABSTRACT

Railway transportation (RT) plays a crucial role and it is an inseparable part of one country's main traffic network. However, due to the advantages of aviation industry and other modes of transportation, the share of RT of total traffic volume gradually decreases and RT enterprises are facing various difficulties. Customer satisfaction is one of the essential factors for the survival of any business organization. In order to accordingly offer products and services, RT companies must understand their customers and find out to what extent the consumer is satisfied with their offered services and products. The objective of this study is to evaluate the effect of each factor on the passengers' satisfaction and freight owners for RT service in Vietnam's context. The study utilizes 7Ps marketing mix (Product, Price, Place, Promotion, People, Process and Physical evidence) to analyze the customer satisfaction level. The collected data are analyzed through the multiple regression method by the use of SPSS software to understand the relationship of marketing mix elements and consumers' satisfaction. The study finding helps us guide the RT operators on their marketing strategy formulation. Customers will benefit through enhanced knowledge regarding both core and augmented products associated with RT services. It is also expected that this work can be used as a reference material for RT managers to enhance competitiveness.

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## 1. Introduction

Transportation is an integral part in the existence and social-economic development of each local, zone, country, region and the world. Transportation plays an important role in helping distribute and circulate goods and products quickly and timely; it meets the travelling demand of human beings. Railway transport (RT), since its origin till the present, has always played a crucial role and is an inseparable part of the whole country's main traffic network. Currently, RT enterprises are facing challenges and difficulties due to the increase in advantageous conditions in competition with other modes of transportations. One of the measures to overcome the difficulties and challenges of the transportation market is that rail transportation enterprises must find the necessary measures to attract more customers to their business. Customer satisfaction is a vital factor to be successful in the marketplace and is considered as a key performance indicator (Mostaghel, 2006). Customer satisfaction is a business term to measure how products and services meet or surpass customer expectation. Marketing is all activities undertaken by a company to create relationships with and satisfy customers. Marketing theory has been widely applied in the business services sector, including the transport sector. The science of marketing research will help RT companies understand the customers and the transportation market, which is one of the conditions for railway transport enterprises to exist and develop in the transport market.

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Research on marketing and RT sector is not new. Vargo and Lusch (2004) conducted a comprehensive assessment and analysis of the origins of service marketing, practices and marketing strategies. They concluded that firms should focus more than just creating goods and the exchange of information (part of relationships). Laisi (2010) evaluated the Russian railway freight market's main national peculiarities and examined the barriers to entry and realize the market's problems and positive factors. The study indicated that the main national peculiarities in Russian railway freight market is associated with personal relations. Beck (2011) conducted an empirical analysis on 11 rail companies. The research findings determined whether market entry barriers exist in this market. Based on the marketing theory, it can be concluded that the customer satisfaction and its maintenance is directly related to the return on investment, sales profits, growth in market share, and lowering costs. The effective components of services marketing on the customer satisfaction include product, place, process, people, promotion, physical evidence, and price. The variables of the current study are the same factors influencing on services marketing, the use of which can be effective on maximizing the consumption, customer satisfaction, right to choose, and services quality. Therefore, this study aims to investigate whether each of 7P marketing mix components can affect the RT customers' satisfaction in Vietnam.

In the current study, authors attempt to look at customer satisfaction and identify the most influential factors in enhancing the customer satisfaction with RT service in Vietnam's context and provide its recommendations to improve weak points by studying marketing mix including price, place, promotion, product, personnel, procedure management and physical assets.

## 2. 7Ps marketing mix components

The marketing mix is a series of marketing tools that an organization uses to produce the response it wants from its various target markets. It includes any measure that the organization can do to influence the demand for the services that it offers. A 4Ps (Product, Price, Place and Promotion) model is commonly used in manufacturing industry in which products are tangible; meanwhile, the service industry uses a 7Ps approach to satisfy the customers' needs: product, price, place, promotion, people, physical facilities and processes (Ivy, 2008). The products of service industry have specific characteristics including intangibility, heterogeneity, inseparability and perishability (Agu et al., 2017; Jin & Suh, 2005). The 4Ps includes four elements (traditional marketing mix elements) namely product, price, promotion and place. Because any change on each element should be compatible with other elements, marketing mix term was chosen (Mullins et al., 2012). The product is what is being sold. Companies must determine what customers need and then develop the exact product with the suitable quality to meet their expectations. Pricing is a prominent element in the model of services marketing (Wood & Pierson, 2006). The dimensions of pricing include list price, discounts, allowances, payment term and credit terms. It can be concluded that pricing has a significant effect on customer motivation. Promotion is identified as sales promotion, advertising, personal selling and public relations.



Fig. 1. Elements in 7Ps model

Promotion activities are conducted to create awareness about a brand and to communicate with present and potential stakeholders, and the general public (Duncan, 2005). Place (or distribution) is defined as a set of interdependent organizations involved in the process of making a product available for consumption by consumers. The product should be available in the right place, at the right time and in the right quantity, while keeping storage, inventory and distribution costs to a reasonable level. It was found that there are positive relationships between distribution intensity or efficiency and brand preference, loyalty and patronage (Kim & Hyun, 2011; Tolba, 2011). It was believed that services need a different type of marketing mix (Booms & Bitner, 1982). Therefore, three Ps namely personnel, physical assets and procedures were included and finally 7Ps were shaped (Rafiq & Ahmed, 1995). Regarding people in 7Ps, the quality, skills and attitude of staffs/employees to a certain extent shape customers' decisions (Agu & Ogbuji, 2008). The RT enterprises have such employees/staffs as train driver, customer service officers, operations managers, operations staff, waybill officers, security personnel, porters/lodgers, as well as offline staff, accounts officers, auditors. Service process means the process of delivering the product/service, and the behavior of those who deliver it, are important to customer satisfaction. Product/service attractiveness to consumers can be

improved by providing timely, quick and accurate or error free services (Agu & Ogbuji, 2008). Physical evidence comprises of the factors which are integrated into a service to make it tangible and measurable. Due to similarities in services' characteristics, 7Ps model can be applied to RT services.

### 3. Methodology

#### 3.1. The proposed model

The model development includes the following steps:

- Assumptions of the model:

P1: The more diversity of RT services, the easier the customers to choose the service and the higher the customer satisfaction is.

P2: The more competitive the fares and freight rates are, the more satisfied the customers are.

P3: The availability of ticket types, the easiness of contract signing and the convenience in payment increase the customer satisfaction.

P4: The easier the access to discount programs, promotions, advertisements, the more satisfied the customers are.

P5: The better the service staffs are, the more satisfied the customers are.

P6: The more standardized the service process is, the more satisfied the customers are.

P7: The better the physical evidence is, the more the satisfaction level is.

- Measurement scale: Using a qualitative scale in an ascending order from 0 to 10, of which 0 is customers "strongly dissatisfied" and 10 is customers "strongly satisfied" with the service provided.

- Data analysis includes Cronbach's coefficient alpha test; the multiple regression method; ANOVA analysis.

- Applicability of the model: 7Ps service marketing model to analyze the customer satisfaction is applied based on the survey results of customers' opinions who use RT services. The satisfaction of customers is assessed through questionnaires or survey results.

#### 3.2. Data collection

Two surveys were conducted to collect information and opinions from passenger and merchandise owner from May 2018 to June 2019. The passengers' questionnaire consists of three parts: the first part includes demographic information such as age, gender, the frequency of using RT service; the second part includes the satisfaction of using RT services. The second part has 27 question items. The questions were asked on a 10-point Likert scale from 0 (strongly dissatisfied) to 10 (strongly satisfied). The third part offers open-ended questions that ask passengers to add their personal comments and suggestions. Similarly, the merchandise owners' questionnaire consists of three parts and the second part includes 26 question items. The paper questionnaires were delivered by hand (manually) to every respondent. The survey took no more than 30 minutes to complete. In the passenger survey, 200 questionnaires were delivered. After excluding incomplete and invalid responses, 196 questionnaires were used for analyzing the data. In the merchandise owner survey, of 150 questionnaires we delivered, 145 questionnaires were valid.

#### 3.3. The satisfaction model for passengers

In order to determine the satisfaction level of passengers (PS) based on the 7 variables of RT service marketing, the research proposes a model of analyzing the relationship of 7 factors to the overall satisfaction level of the passengers, characterized by the coefficients  $\beta_{pi}$  ( $i=0-7$ ). Details of the questions are given in Table 1 as follows,

**Table 1**

Items on the passengers' satisfaction level

Code	Passengers' satisfaction level on RT service	
Products		
PP1	PP11	Providing product information to passengers
	PP12	The ease level in choosing the route
	PP13	Punctuality
	PP14	The ease level in switching to other modes of transport
Ticket price		
PP2	PP21	The reasonability of ticket price
	PP22	The information of ticket price
	PP23	The diversity of ticket price in each service
	PP24	The promotional ticket price

**Table 1**  
Items on the passengers' satisfaction level (Continued)

Place (distribution system)		
PP3	PP31	At station
	PP32	Online
	PP33	The availability of various ticket types
	PP34	The payment method
Promotion		
PP4	PP41	The dispersion of promotional campaigns
	PP42	The company's perceived image
	PP43	The dispersion of advertising campaigns
	PP44	Other promotional activities
People		
PP5	PP51	The staff dress appropriately and politely.
	PP52	The staff is polite and service-minded.
	PP53	The staff has good foreign skills.
	PP54	The staff provides accurate information.
Service process		
PP6	PP61	The service process of departing passengers
	PP62	The process of serving the arriving passengers
	PP63	The process of serving in railway wagons
Physical evidence (transport and station facilities)		
PP7	PP71	The comfort of transport and station facilities
	PP72	The cleanness of stations and railway wagons
	PP73	Audio equipment
	PP74	The guide posts at station

**Table 2**  
Results of the Cronbach's alpha test for the passengers

No.	Variable	Number of items	Cronbach alpha	No.	Variable	Number of items	Cronbach alpha
1	Product (PP1)	4	0.739	5	People (PP5)	4	0.718
2	Price (PP2)	4	0.613	6	Process (PP6)	3	0.722
3	Place (PP3)	4	0.612	7	Physical assess (PP7)	4	0.637
4	Promotion (PP4)	4	0.615				

**Table 3**  
Results of Cronbach's alpha test for items

No.	Code	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's Alpha if item deleted
Results of Cronbach's alpha test of PP1					
1	PP11	17.13	3.346	0.616	0.633
2	PP12	17.13	4.649	0.448	0.724
3	PP13	17.13	4.902	0.506	0.703
4	PP14	17.62	3.846	0.599	0.639
Results of Cronbach's alpha test of PP2					
5	PP21	19.78	5.711	0.352	0.571
6	PP22	20.27	5.601	0.440	0.518
7	PP23	19.77	4.157	0.504	0.447
8	PP24	20.14	5.538	0.302	0.610
Results of Cronbach's alpha test of PP3					
9	PP31	20.27	4.350	0.370	0.564
10	PP32	19.95	4.161	0.470	0.477
11	PP33	19.66	5.342	0.415	0.542
12	PP34	20.28	4.829	0.344	0.577
Results of Cronbach's alpha test of PP4					
13	PP41	19.69	4.687	0.440	0.511
14	PP42	20.51	4.836	0.382	0.554
15	PP43	20.66	4.286	0.423	0.525
16	PP44	20.37	5.302	0.340	0.583
Results of Cronbach's alpha test of PP5					
17	PP51	18.06	4.925	0.471	0.687
18	PP52	19.26	5.114	0.593	0.605
19	PP53	18.47	5.184	0.426	0.714
20	PP54	19.71	5.992	0.628	0.626
Results of Cronbach's alpha test of PP6					
21	PP61	11.74	1.845	0.637	0.523
22	PP62	12.34	2.809	0.549	0.637
23	PP63	12.25	2.876	0.483	0.702
Results of Cronbach's Alpha of PP7					
24	PP71	19.33	5.895	0.434	0.558
25	PP72	19.22	5.549	0.412	0.573
26	PP73	18.73	5.027	0.426	0.569
27	PP74	18.70	6.415	0.421	0.574

Table 2 indicates that all Cronbach’s alpha coefficient >0.6, which shows the questionnaire is reliable (Nunnally & Bernstein, 1994). The corrected item - total correlation shows how much each item correlates with the overall questionnaire score. Correlations less than .30 indicate that the item may not belong on the scale. In Table 3 all corrected item - total correlation > .30 indicates that the corresponding item correlate very well with the overall scale.

**Table 4**  
Passengers’ satisfaction statistics

No.	Code	No. of samples	Min	Max	Mean	Std. dev
1	PP11	196	5	8	5.87	1.057
2	PP12	196	5	8	5.87	0.803
3	PP13	196	5	7	5.88	0.668
4	PP14	196	5	8	5.38	0.918
5	PP21	196	5	8	6.87	0.966
6	PP22	196	5	8	6.39	0.896
7	PP23	196	5	8	6.88	1.245
8	PP24	196	5	8	6.51	1.088
9	PP31	196	5	8	6.45	1.125
10	PP32	196	5	8	6.77	1.069
11	PP33	196	5	8	7.06	0.752
12	PP34	196	5	8	6.44	1.003
13	PP41	196	5	8	7.39	0.983
14	PP42	196	5	8	6.57	1.003
15	PP43	196	5	8	6.41	1.127
16	PP44	196	5	8	6.70	0.903
17	PP51	196	5	8	7.11	1.143
18	PP52	196	5	8	5.91	0.962
19	PP53	196	5	8	6.69	1.122
20	PP54	196	5	8	5.45	0.696
21	PP61	196	5	8	6.42	1.100
22	PP62	196	5	8	5.83	0.811
23	PP63	196	5	8	5.91	0.840
24	PP71	196	5	8	6.00	1.018
25	PP72	196	5	8	6.11	1.143
26	PP73	196	5	8	6.60	1.271
27	PP74	196	5	8	6.63	0.882
28	PS	196	5	7	6.11	0.461

In order to investigate the passengers’ satisfaction (PS) on RT services, the multiply regression analysis was adopted. In the analysis, PP1, PP2, PP3, PP4, PP5, PP6 and PP7 are independent variables; the passengers’ satisfaction (PS) is dependent variable. The multiply regression equation can be written as:

$$PS = \beta_{p0} + \beta_{p1}PP1 + \beta_{p2}PP2 + \beta_{p3}PP3 + \beta_{p4}PP4 + \beta_{p5}PP5 + \beta_{p6}PP6 + \beta_{p7}PP7,$$

where,  $\beta_{pi}$  ( $i=1...7$ ) are beta coefficients – one to go with each independent variable. In the equation, since the constant (beta zero) is included, these coefficients are unstandardized. In this study, the data were analyzed using SPSS version 20.0. The results of analysis are presented in Table 5.

**Table 5**  
Multiple regression results of the analysis on passengers’ satisfaction

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	$\beta_i$	Std. Error	Beta		
(Constant)	$\beta_{p0} = -0.355$	0.458		-0.774	0.440
PP1	$\beta_{p1} = 0.157$	0.038	0.222	4.157	0.000
PP2	$\beta_{p2} = 0.185$	0.034	0.288	5.483	0.000
PP3	$\beta_{p3} = 0.188$	0.035	0.275	5.285	0.000
PP4	$\beta_{p4} = 0.080$	0.037	0.119	2.163	0.032
PP5	$\beta_{p5} = 0.171$	0.033	0.272	5.245	0.000
PP6	$\beta_{p6} = 0.091$	0.035	0.146	2.607	0.010
PP7	$\beta_{p7} = 0.143$	0.032	0.234	4.424	0.000

**Table 6**  
Results of ANOVA test for the passengers’ satisfaction model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	21.685	7	3.098	29.348	0.000 <sup>b</sup>
Residual	19.845	188	0.106		
Total	41.531	195			

  

R <sup>2</sup> test				
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate
1	0.723 <sup>a</sup>	0.522	0.504	0.325

With Sig < 5%, all regression coefficients  $\beta_{Pi}$  ( $i=0-7$ ) are statistically significant. F value of 29.348 and Sig.=0.000 <5% (ANOVA test);  $R^2 = 0.522$  ( $R^2$  test) show that the model is a good fit for the data and 52.2% of the variance was accounted for. The regression equation would be:

$$PS = -0.355 + 0.157.PP1 + 0.185.PP2 + 0.188.PP3 + 0.08.PP4 + 0.171.PP5 + 0.091.PP6 + 0.143.PP7$$

It can be concluded that Place (PP3) and Price (PP2) are the most influential factor in creating passengers' satisfaction.

### 3.4. The satisfaction model for freight owners

In order to determine the satisfaction level of freight owners (OS) based on the 7 variables of RT service marketing, the research proposes a model of analyzing the relationship of 7 factors to the overall satisfaction level of the freight owners, characterized by the coefficients  $\beta_{Oi}$  ( $i=0-7$ ).

**Table 6**

Items on the freight owners' satisfaction level

Code	Freight owners' satisfaction level on RT service	
<b>Products</b>		
OP1	OP11	Providing product information to freight owners
	OP12	The ease level in choosing the route
	OP13	Ontime route
<b>Price (freight charges)</b>		
OP2	OP21	The reasonability of freight charges
	OP22	The flexibility of freight charges
	OP23	The regulation of freight charges
	OP24	The accessibility of promotional activities
<b>Place (distribution system)</b>		
OP3	OP31	The ease level in signing transport contract
	OP32	The method of signing contract
	OP33	The contract payment method
<b>Promotion</b>		
OP4	OP41	The dispersion of promotional campaigns
	OP42	The company's image
	OP43	The dispersion of advertising campaigns
	OP44	Other promotional activities
<b>People</b>		
OP5	OP51	The staff dress appropriately and politely.
	OP52	The staff is polite and service-minded.
	OP53	The staff is acknowledgeable and facilitate completely at stations
	OP54	The staff is acknowledgeable and facilitate completely on route
<b>Process</b>		
OP6	OP61	The process to get a train wagon
	OP62	The shipping and receiving process
	OP63	The loading and unloading process
	OP64	The processing time
<b>Physical assess (transport and inventory facilities)</b>		
OP7	OP71	The suitability of the train wagon
	OP72	The connectivity to other transport modes
	OP73	The convenience of loading and unloading
	OP74	The capability of loading and unloading facilities
OS	Freight and goods-owners' satisfaction level	

In order to investigate the effect of 7Ps elements on the freight owners' satisfaction level, 7 predictors (independent variables) including OP1, OP2, OP3, OP4, OP5, OP6 and OP7 were split into 26 observed variables. Table 7 indicates that all Cronbach's alpha coefficient >0.6, which shows the questionnaire is reliable. The corrected item - total correlation shows how much each item correlates with the overall questionnaire score. Correlations less than .30 indicate that the item may not belong on the scale. In Table 8, all corrected item - total correlation > .30 indicates that the corresponding item correlate very well with the overall scale.

**Table 7**

Results of the Cronbach's alpha test for the freight owner

No.	Variable	Number of items	Cronbach alpha
1	Product (OP1)	3	0.617
2	Price (OP2)	4	0.613
3	Place (OP3)	3	0.649
4	Promotion (OP4)	4	0.718
5	People (OP5)	4	0.803
6	Process (OP6)	4	0.639
7	Physical assess (OP7)	4	0.648

**Table 8**  
Results of Cronbach's alpha test for all predictors

No.	Code	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's Alpha if item deleted
Results of Cronbach's alpha test of OP1					
1	OP11	11.34	1.989	0.466	0.484
2	OP12	12.13	2.976	0.491	0.465
3	OP13	11.92	2.918	0.368	0.596
Results of Cronbach's alpha test of OP2					
4	OP21	19.97	5.270	0.332	0.585
5	OP22	20.46	4.611	0.455	0.501
6	OP23	19.83	4.375	0.399	0.539
7	OP24	20.27	4.115	0.402	0.540
Results of Cronbach's alpha test of OP3					
8	OP31	13.56	3.848	0.493	0.505
9	OP32	13.31	3.815	0.483	0.522
10	OP33	12.77	5.128	0.420	0.610
Results of Cronbach's alpha test of OP4					
11	OP41	19.47	7.478	0.533	0.640
12	OP42	20.40	7.484	0.502	0.658
13	OP43	20.60	7.069	0.496	0.664
14	OP44	20.32	7.599	0.494	0.663
Results of Cronbach's alpha test of OP5					
15	OP51	17.95	7.011	0.597	0.769
16	OP52	19.21	7.323	0.676	0.726
17	OP53	18.44	7.103	0.556	0.792
18	OP54	19.67	8.388	0.722	0.734
Results of Cronbach's alpha test of OP6					
19	OP61	19.00	7.738	0.391	0.589
20	OP62	19.02	7.882	0.333	0.629
21	OP63	18.24	6.611	0.428	0.568
22	OP64	18.29	7.475	0.558	0.490
Results of Cronbach's alpha test of OP7					
23	OP71	16.95	4.529	0.568	0.467
24	OP72	17.08	6.443	0.368	0.619
25	OP73	17.14	6.690	0.394	0.609
26	OP74	17.34	5.190	0.419	0.594

**Table 9**  
Freight owners' satisfaction statistics

No.	Code	No. of samples	Min	Max	Mean	Std. dev
1	OP11	145	5	8	6.36	1.188
2	OP12	145	5	8	5.57	0.798
3	OP13	145	5	8	5.77	0.934
4	OP21	145	5	8	6.88	0.832
5	OP22	145	5	8	6.39	0.914
6	OP23	145	5	8	7.01	1.051
7	OP24	145	5	8	6.57	1.129
8	OP31	145	5	8	6.30	1.221
9	OP32	145	5	8	6.56	1.235
10	OP33	145	5	8	7.10	0.852
11	OP41	145	5	8	7.52	0.944
12	OP42	145	5	8	6.57	1.032
13	OP43	145	5	8	6.37	1.160
14	OP44	145	5	8	6.66	1.010
15	OP51	145	5	8	7.19	1.086
16	OP52	145	5	8	5.92	0.965
17	OP53	145	5	8	6.70	1.138
18	OP54	145	5	8	5.46	0.677
19	OP61	145	5	8	5.89	1.100
20	OP62	145	5	8	5.87	1.156
21	OP63	145	5	8	6.66	1.320
22	OP64	145	5	8	6.61	0.900
23	OP71	145	5	8	5.92	1.149
24	OP72	145	5	8	5.80	0.813
25	OP73	145	5	7	5.73	0.690
26	OP74	145	5	8	5.54	1.155
27	OS	145	5	7	6.13	0.490

In order to predict the freight owners' satisfaction (OS) on RT services, the multiply regression analysis was adopted. In the

analysis, OP1, OP2, OP3, OP4, OP5, OP6 and OP7 are independent variables; the passengers' satisfaction (OS) is dependent variable. The multiply regression equation can be written as:

$$OS = \beta_{00} + \beta_{01} \cdot OP1 + \beta_{02} \cdot OP2 + \beta_{03} \cdot OP3 + \beta_{04} \cdot OP4 + \beta_{05} \cdot OP5 + \beta_{06} \cdot OP6 + \beta_{07} \cdot OP7$$

where,  $\beta_{0i}$  ( $i=1 \dots 7$ ) are beta coefficients – one to go with each independent variable. In the equation, because the constant (beta zero) is included, these coefficients are unstandardized. In this study, the data were analyzed using SPSS version 20.0. The results of analysis are presented in Table 10.

**Table 10**  
Multiple regression results of the analysis on freight owners' satisfaction

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	$\beta_i$	Std. Error	Beta		
(Constant)	$B_{00} = 0.197$	0.274		0.720	0.473
OP1	$B_{01} = 0.147$	0.041	0.198	3.594	0.000
OP2	$B_{02} = 0.168$	0.037	0.223	4.505	0.000
OP3	$B_{03} = 0.116$	0.031	0.168	3.699	0.000
OP4	$B_{04} = 0.088$	0.040	0.116	2.192	0.030
OP5	$B_{05} = 0.140$	0.037	0.188	3.772	0.000
OP6	$B_{06} = 0.147$	0.039	0.191	3.811	0.000
OP7	$B_{07} = 0.134$	0.045	0.153	2.954	0.004

**Table 11**  
Results of ANOVA test for the freight owners' satisfaction model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	48.299	7	6.900	70.197	0.000 <sup>b</sup>
Residual	13.564	138	0.098		
Total	61.864	145			

  

R <sup>2</sup> test				
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate
1	0.884 <sup>a</sup>	0.781	0.770	0.314

With Sig < 5%, all regression coefficients  $\beta_{0i}$  ( $i= 0-7$ ) are statistically significant. F value of 70.197 and Sig.=0,000 <5% (ANOVA test);  $R^2 = 0.781$  (R<sup>2</sup> test) show that the model is a good fit for the data and 52.2% of the variance was accounted for. The regression equation is as follows,

$$OS = 0.197 + 0.147 \cdot OP1 + 0.168 \cdot OP2 + 0.166 \cdot OP3 + 0.08 \cdot OP4 + 0.140 \cdot OP5 + 0.147 \cdot OP6 + 0.134 \cdot OP7.$$

Based on the above regression equation, Price (OP2) and Place (OP3) have the largest impact on freight owners' satisfaction.

#### 4. Discussions and implications

The study findings have revealed the relationship between the main independent variables (the marketing mix elements: price, place, promotion, people, physical evidence, and process) and the dependent variable (the consumers' satisfaction on RT services). Of the independent variables, price element has the largest effect on customer satisfaction on RT services. In order to increase the satisfaction level of customers, several suggestions are as follows:

- RT company must adjust the method to calculate rail transport fares and costs in compliance with the current new situation. The transport costs consist of two main parts: the first part is allocated for the railway infrastructure fee and the rest is the cost at the RT company. Of the above 2 cost portions, RT company can only adjust the first part. The RT company must spend expenses items reasonably, efficiently and economically to reach the target of cost reduction and lower price.

- RT Enterprises need to complete the new online channel by diversifying and enriching sales channels, meeting the tastes of train passengers through applying scientific technologies in the process of buying tickets, helping passengers to access in the easiest way. With the limited budget for marketing activities, using E-marketing is an effective solution. In order for E-marketing to reach its targets, RT Enterprises need to integrate the above tools to achieve the highest possible performance. E-marketing tools may include: website marketing, email marketing, search engine optimization (SEO).

- RT company should improve the service quality of staffs who work directly with passengers. There are two main groups including the on-board staffs and at-the-station staffs. Several solutions are: regular training and upgrading of professional qualifications; improve the communication skills of service personnel (both on-board and at-the-station staffs); implement an appropriate remuneration package for on-board and at-the-station staffs.

- RT company must establish a standard service processes including service process for passengers boarding a train at the station; service process for on-board passengers; and service process for passengers detraining at the destination station.



- Stations and station architecture should be improved. At large stations, there are a large number of often tourists, it is advisable to arrange a waiting room specifically intended for this type of passengers. Reconstruct the radio system on board and at the station, adjust the sound system properly so that passengers can hear the broadcasted information clearly. Create mobile storages to solve the problems related to the unloading of cement, phosphate.

- It is necessary to develop means of transportation: renovation, upgrading and replacement of old locomotives; assembling, manufacturing new locomotives; renovating and upgrading old railway carriages; Import, build new high-quality railway carriages.

Moreover, RT Enterprises transport a variety of goods from chemicals, rebar of all kinds, construction materials (diatomite brick), home appliances to agricultural products. So, the preservation to maintain the good quality services in transportation of commodities during the transportation is especially important. If this cannot be guaranteed, goods cannot be consumed in the market. At the end of the transportation process, the consignee will inspect the seals, the goods' quality, then accept and receive the goods. The goods are transported by RT Enterprises through many stages, processes, procedures from departure place to destination. Goods are transported to the station, which is then loaded onto the wagons, after reaching the destination station, goods are unloaded at stations and the transport process is finished when the goods are delivered to the consignee. Avoiding the loss or damage of transported goods can be managed upon the stages of the transport process: Goods are loaded onto the wagons, Goods are on the way of transferring, and Goods are unloaded at destination stations. During the above stages of freight transport, RT Enterprises shall be responsible for the whole process from when the goods are sealed, loaded, invoiced until the goods are handed over to the owners/consignees.

During the freight transport of RT Enterprises, depending on the type of transported goods, escort personnel are required and they are in charge of technique and freight safety issues: goods caring and fire prevention. In order to ensure safety when participating in the freight transport process, the escort personnel must firmly grasp the process, technique and characteristics of the goods to be transported; strictly follow the regulations to make sure of the safety of goods. In addition to ensure the safety of railway personnel participating in the freight transport, the safety of traffic participants is also important. Currently, Vietnam Railways regularly encounters incidents and obstacles that affect the smooth flow of the entire route during freight transport and passenger transport. These issues can be divided into two groups: objective incidents and subjective incidents. Objective incidents are often accidental incidents caused by crashing, striking with people and vehicles outside the railway sector due to violations of architectural contiguity and violations of regulations on crossroads. Subject incidents are RT Enterprises' own obstructive problems: carriage failure, locomotive failure, freight contract issues, and service process violations. The characteristics of freight transport process is not to use labor tools to change the physical appearance and physical & chemical properties of the labor objects.

## 5. Conclusions

RT Enterprises are facing to the sharp decline in the number of passengers and freight transport volume, the study has investigated the relationship between the marketing mix components and consumers' satisfaction and given several suggestions to maximize the satisfaction for the demand of passengers and freight owners. The study proposed two satisfaction model based on multiple regression method for passengers and freight owners. With the application of the proposed method for measuring the consumers' satisfaction on RT services it comes to increased objectivity by using the subjective opinions of customers, freight owners, and by using this method and testing its results and statistical software for the consistency coefficient, we may obtain some insight about the target group about the quality of the services. Also based on the research results, RT Enterprises can measure the impact of each group of factors affecting the satisfaction of the RT service users in certain periods. The solutions proposed in the study may satisfy the current existing customers and incite customers using other means of transportation to switch to RT services and also attract new customers.

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