A STUDY ON THE CONSUMER SATISFACTION/DISSATISFACTION WITH THE BUS SYSTEM IN THE PEOPLE'S REPUBLIC OF CHINA

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ABSTRACT

This study analyses the passenger experience with the bus system in Shanghai, the People's Republic of China (PRC) in the perspective of consumer satisfaction/dissatisfaction (S/D) theory, to which we take an ecological approach (Thorelli 1983). The data used in this study were originally collected in June, 1982. The sample comprised 191 passengers who used the Shanghai Bus Company (SBC), a state monopoly which operates more than 4,000 buses on about 80 regular routes (as of 1982). The findings generally support the notion that the level of S/D of passengers is determined by prior expectations of the performance of the bus system, perceived performance based on actual experience, and also strongly influenced by environmental specifics such as the local traffic situation as well as broader socio-cultural aspects. The quality of the service provided by the SBC is considered to be below the level that public transportation is normally supposed to meet. Consequently, passengers perceive the performance of the bus system as quite low based on their actual experience. Nevertheless, their attitudes toward several aspects of the bus service suggest that they have relatively low level of dissatisfaction with the bus system. The low level of performance-specific expectations that serves as a frame of reference to compare actual experience has been found important in explaining the narrower band of negative disconfirmation than the traditional consumer S/D theory might predict. In addition, the study found that contextual factors and socio-cultural aspects also exercise an important influence, as the ecological perspective suggests, narrowing the perceived discrepancy between the expectation and performance and resulting in a relatively low level of dissatisfaction with the bus system.

BACKGROUND OF SHANGHAI PUBLIC TRANSIT AND THE DATA

Shanghai Public Transit System

Shanghai Bus Company (SBC), a state monopoly, operates more than 4,000 buses on about 80 regular routes, 10 peak time express routes, and some special routes. The operation is mainly confined to the urban areas. Buses run from 4 a.m to 12 p.m. throughout the week. The fare is somewhat related to the distance of travel. Also, the majority of regular commuters purchase monthly tickets heavily subsidized by their employers. Over ten million daily bus ridings were reported by the company in 1982. More than one million commuters are known to hold monthly tickets. The overwhelming majority of passengers use buses for the purpose of basic transport, specifically long distance commuting. Much less frequently, buses are taken for other purposes (such as shopping), especially during the rush hours. In order to accommodate as many passengers as possible, it is not permitted to carry over more than minimum baggage on the bus. This study found that only 10 percent of passengers bring children with them in the bus. These circumstances are due to the lack of an adequate public transportation system to serve the huge population of the urban area (about 7.5 million in 1982). The quality of service delivered by the bus system to the passengers in China is considered to be below the level that public transportation is normally supposed to meet. In the meantime, the bicycle plays an equally important role as an alternative means of transportation for the public in Shanghai. Huge crowds of people may be seen pedaling during rush hours anywhere in Shanghai. There were far more than one million bicycles registered in the city in 1982.

The Data

The data used in this study were originally collected by a group of MBA students at the Shanghai Institute of Mechanical Engineering (SIME) in June, 1982. It should be noted that the questionnaire was both designed and administered in an environment theretofore entirely unused to survey techniques. Thus, the data have some clear cut weaknesses. There is no measure of overall level of satisfaction. Some of the questions are ambiguously phrased and some of the items are redundantly scaled. A questionnaire with 39 items was originally designed to measure respondents' opinions about the bus system in such functional aspects as promptness, safety, punctuality, comfort, and convenience. Factor analysis indicated the variables could not be grouped into five functional aspects of bus transportation as the survey intended. However, the survey represents pioneering research on passenger S/D in the PRC. Also, analysis of the demographics of the subjects suggests that they can be taken as broadly representative. One hundred and ninety one persons of the 1,600 employees at the SIME participated in the survey. The sample consisted of faculty members 45 percent, university-owned plant workers 26 percent, service staff 17 percent, and administrative personnel 12 percent (Students live in campus dormitories). Sixty two percent of the respondents were male and 38 percent were female. One third of the sample were regular bus riders.

CONSUMER SATISFACTION/DISSATISFACTION THEORY AND ECOLOGICAL LINK

In a widely accepted consumer satisfaction/ dissatisfaction (S/D) theory, performance-specific "expectations" and experience-based "perceived performance" of a product are two key constructs in determining consumers' level of S/D (Day 1977; La Tour and Peat 1979; Ölander 1977; Oliver 1977, 1980). According to this paradigm, prior to purchase or use of a product, the consumer forms expectations of its performance. These expectations are user predictions of the nature and its performance of the product (or service). These expectations are considered to create a frame of

reference against which the consumer implicitly or explicitly makes comparative judgments of the actual performance which they experience. Previous studies in S/D have consistently observed the significant expectation effects (Anderson 1973; Linda and Oliver 1979; Oliver 1977; Olshavsky and Miller 1972; Swan 1977). The perceived discrepancy will cause a positive (when perceived performance exceeds expectations) or negative (when perceived performance falls below expectations) disconfirmation. This cognitive comparison, in turn, leads to an emotional reaction called satisfaction/dissatisfaction. The level of S/D is determined by the magnitude of the perceived discrepancy between the expectations and actual performance that an individual has experienced. Many studies have reported significant disconfirmation effects (Cardozo 1968; Cohen and Goldberg 1970; Olson and Dover 1979; Woodside 1972).

The conventional S/D paradigm is more broadly interpreted in this paper by the ecological approach to such phenomena, according to which all marketing phenomena form an interaction system with the environment (Thorelli 1980, 1983; Thorelli and Thorelli 1977, Ch. 6). Most studies in S/D in marketing to date have emphasized the behavioral and cognitive aspects of consumers and tended to ignore the impact of contextual or environmental effects. In the ecological view, marketing phenomena are conditioned (but certainly not necessarily determined) by their setting. The emphasis is on environmental probabilism, as opposed to simple-minded determinism. The structure-strategy-performance paradigm is a key application of marketing ecology. In the present context, the SBC, the Shanghai street system, zoning plans, etc. represent the structure (operating environment). Interactive strategies are pursued by both the SBC (bus availability, price, etc.) and by actual and potential clients (choosing means of transport, type of tickets, location in the bus-when possible, etc.).

Performance is the outcome of the interaction process. This is where the bridge between S/D and ecology theory is struck. Ecologically speaking, perceived performance is conditioned by both actual performance and the local structure-strategy environment (perceived as well as actual). In addition, performance expectations are influenced by the macro-environment (culture in its broadest sense), which generates "norms" as to what might legitimately be expected by way of bus system performance. Thus, it is postulated that the level of consumers' S/D is determined by their prior expectations, perceived performance, and environmental specifics such as local contextual variables as well as broader socio-cultural factors.

ANALYSIS PLAN

Twenty two variables were selected from the original data set and the scales of some of them were slightly changed to make up for deficiencies indicated. The full text of English version of these items are shown in Appendix. In order to see whether the data could be analyzed with the S/D paradigm, the variables were grouped into three categories: expectation, experience, and S/D. The variables were *a priori* grouped based on the face validity of their contents. To check whether the grouping "reasonably" conforms to the three dimensions of the S/D paradigm, the 14 items are submitted to the factor analysis. It was reasoned that the factor analysis is relevant for this purpose because it is a technique that helps in identifying underlying dimensions within variables (Dillon and Goldstein 1984). By using factor analysis in a confirmatory fashion, these variables can be explained in terms of their common underlying dimensions (factors). (Although factor analysis assumes interval scale values of variables, the technique is generally considered robust to the violation of this assumption, at least for descriptive purposes.) Varimax rotated factor loadings based on maximum likelihood method are shown in Table 1. The results of factor analysis generally support the grouping of the variables.

Table 1
Factor Analysis of Three Group Variables

Variables	Factors and Loadings		
	Expectation	Experience	S/D
V01	.99		
V02	.38		
V03*	*		
V04		.59	
V05		.54	
V06		.51	
V07		.49	
V08		.43	
V09		.36	
V10*		*	
V11			.78
V12			.38
V13*			*
V14*			*

Note: Variables marked with asterisk did not load on the relevant factor, but will be used in the discussion in the category, when relevant.

Several variables did not load on the respective categories to which they are expected to belong. The weaknesses of the data previously indicated are presumed to be the reason for this. Nevertheless, these variables will be referred, when necessary, to make the discussion more meaningful, especially to bring in the ecological perspective. Our position is that the technique should not necessarily bound the scope of substance of the topic, especially when the data itself has weaknesses.

Variable 3 (V03) will be discussed in the expectation category because its content is obviously relevant to the category (see Appendix for the full text). Variable 14 (V14) will be included in the discussion about the S/D because it is quite relevant to the category. Also, it has a strong correlation with V13 (.46, p= .001). Variable 13 (V13) will also be referred in the discussion about the S/D considering its content. V10 will be included in the

discussion about the experience considering its content. Pearson correlation data indicate that V10 has a strong correlation with V6 and V9, and V13 with V11 and V14 of the experience (all are significant at p .05 level).

Analysis is primarily based on Pearson product moment correlations and Chi square test of independence to account for the within and between group relationships. Unless otherwise indicated, the results of both Pearson correlations and Chi square tests reported in this study are significant at least at the .05 level. Percentage response data are also used to detail significant differences.

ANALYSIS AND DISCUSSION

Prior Expectations

Although the bus system is the major means of the public transit system in Shanghai, the bicycle plays an equally important role as an alternative means of transportation. In this context, the respondents' prior expectations of the bus system can be measured by asking them to compare bus and bicycle in some functional aspects. Three questions in Table 2 were used for this purpose.

Table 2
Prior Expectation

Variable			Percent Response
V01 - V02	Have you ever ridden on a bicycle? If so, what do you think of a bicycle compared a bus in terms of;		
V01	Speed	Faster	52
		Similar	46
		Slower	02
V02	Comforts	Better	54
		Similar	43
		Worse	03
V03	In case of bad weather such as rain, snow, storm, etc., will you give up the bicycle for the bus?		
		Yes	38
		Probably	45
		No	17

Respondents were first asked to compare bus and bicycle in terms of speed (V01). Surprisingly, more than 50 percent of them answered bicycle was faster than bus while only a meager 2 percent considered bus was faster than bicycle. In the next question (V02), 54 percent of them indicated that bicycle was more comfortable than bus and only 3 percent said bus was better. Finally, the respondents were asked whether they would give up bicycle for bus in inclement weather conditions (V03). It is surprising to find that 45 percent of them were reluctant to take a bus even in bad weather, which contrasts with 38 percent who said yes. Thus, this finding seems to suggest that the passengers take the bus just for basic long-distance commuting, or when induced to do so by situational factors such as adverse weather conditions. This view is suggested by the fact that an overwhelming 91 percent of the respondents using the bus said it takes more than 60 minutes from home to work. For 43 percent of respondents, it takes more than one and a half hour (V17). Also, a majority of passengers usually do not take children when they ride the bus (V22). Therefore, it seems reasonable to conclude that the vast majority of the respondents hold very low level expectations of the bus

Table 3
Actual Experience

Variable			Percent Response
V10	How long do you usually wait for a bus at the bus stop after the scheduled arriving time?		
		Over 20 minutes	14
		10 to 20 minutes	54
		Less than 10 minutes	32
V09	How many times do you change buses to go to work?		
		Two and more	37
		One	44
		None	19
V08	How many times did the bus not halt at the bus stop or alter its regular route during the past one month?		
		More than three	18
		One to three	23
		None	59
V04 - V07	How many times have you experienced incidents cited below while you are on board a bus during the past 12 months?		
V04	Mechanical troubles:		
		More than three	28
		One to three	43
		None	27
V06	Physical injury such as getting jammed by the door:		
		More than three	15
		One to three	39
		None	46
V07	Pickpockets:		
		More than three	09
		One to three	49
		None	42
V05	Accidents such as road accidents involving casualties:		
		More than three	06
		One to three	31
		None	63

Table 4
Satisfaction/Dissatisfaction

Variables	Percent Response	Pearson Correlations	Chi Squares	
V11 Do you consider that the buses run smoothly ?				
Not smooth	26%	V02-.18*	V05 12.14**	4
So-so	63	V04 .15*	V06 13.37**	4
Smooth	11	V05 .16*	V10 10.77*	4
		V06 .25**	V12 13.19**	4
		V08 .16**	V20 08.19*	2
		V12 .25**		
		V13 .13*		
		V14 .27**		
		V20-.21**		
V14 What do you think about the level of conductors' service?				
Bad	16%	V05 .23**	V02 00.88"	4
So-so	72	V06 .17*	V05 24.48**	4
Good	12	V07 .14*	V06 13.46**	4
		V08 .18**	V07 09.78**	4
		V11 .27**		
		V13 .13*		
V13 Do you think it is necessary to pack in if the conductor asks passengers to do so during the rush hours?				
Not necessary	03%	V07-.15**	V02 10.52*	4
Indifferent	16	V11 .13**		
Necessary	81	V14 .13**		
		V19-.14**		
V12 Are you worried about possible wounds in the bus due to overcrowding?				
Worried	67%	V11 .25**	V20 19.26**	2
Indifferent	19			
Not worried	14			
V15 Do you think it is necessary to reduce the number of seats in the bus to make space to accommodate more passengers in rush hours?				
Necessary	56%	V18-.23**	V07 22.81**	4
Indifferent	19	V20-.18**	V18 10.55*	4
Not necessary	25		V20 06.35*	2

V16 What item amount the listed below is in need of urgent improvement with the current bus system?

Reducing waiting time	25%
Maintaining order at the bus stop	18
Improving safety level	17
Reducing the number of bus transfers	13
Promptness	11
Improving driver/conductor service	07
Increasing cars in suburban route	05
Reducing seats	04

V18 What is your average bus riding time on your way to work?

More than 60 minutes	30%
30 to 60 minutes	41
Less than 30 minutes	29

Note: 1. For both Pearson coefficient and Chi square test:
* : significant at the .05 level or less
**: significant at the .01 level or less
For Chi square test:
w: significant at the 064 level
Figures to the right of the significance level are degrees of freedom.

in terms of its performance.

Actual Experience

In an effort to guage the passengers' perception of the performance of the bus system, 7 experience variables were analyzed as shown in Table 3.

Respondents were asked how long they usually waited for a bus at the bus stop after the scheduled time (V10). A majority of 68 percent said more than 10 minutes, and 14 percent said buses were late more than 20 minutes. When respondents were asked how many times they must change buses to go to work (V09), an even greater majority of 81 percent indicated that they had to change at least once. Thirty-seven percent suffered this inconvenience more than two times while only 19 percent did not have to change. When asked how many times they experienced that a bus did not halt at the bus stop, or altered its regular route during the past one month, 23 percent of the respondents indicated one to three times and 18 percent of them said more than three times (V08). Respondents' responses to in-bus experience during the past 12 months reveal more interesting aspects about their experience (V04 - V07). The vast majority of 73 percent of respondents experienced vehicle breakdowns while they were on board. Twenty-eight percent indicated they experienced mechanical trouble more than three times (V04). Respondents were asked whether they had ever been injured on the bus such as getting jammed by the door (V06). The majority of 54 percent indicated they suffered injury one to three times. Fifteen percent said more than three times. Interestingly, when respondents were asked whether they had been pickpocketed, more than 50 percent of them indicated that they experienced the kinds of incidents one to three times (V07). Among other things, "overcrowding" seems to be the main reason for the injury and pickpocket, which is one of the serious problems of the bus system in most PRC metropolitan areas. In Shanghai, passengers are literally packed into the bus like sardines during rush hours. Physical injury, damage to baggage and suits, pickpocketing, and any other unpleasant incidents frequently take place in this pandemonium. Finally, 37 percent of respondents were reported to have witnessed road accidents and casualties in which the bus they were on board was involved (V05).

This may explain why an absolute majority of passengers (90%) do not bring children with them when they ride the bus (V22).

Therefore, it is evident that the Shanghai Bus Company provides passengers with services which fall below the normative level of performance in many respects. The passengers' experience with the bus system may be adequately described as "lamentable" by Western standards.

SATISFACTION/DISSATISFACTION

Since the original data do lack clear dependent variables to measure the respondents' overall level of S/D explicitly, it was necessary to make inferences about their S/D using several proxy variables (V11 - V14) that measured respondents' opinions about some aspects of the bus system, which are shown in Table 4.

When the respondents were asked whether they considered buses ran smoothly (V11), surprisingly only 26 percent said it did not. The majority of them did not seem to be concerned about whether buses ran smoothly or not. Eleven percent of the respondents even considered the vehicle ran smoothly. This variable has a strong inverse correlation with the expectation variable V02. That is, the respondents who considered buses were less comfortable than bicycles perceived buses ran relatively smoothly and vice versa. This finding suggests that the lower the prior expectations are, the narrower the band of negative disconfirmation is, which results in relatively low level of dissatisfaction. Chi square tests show that this variable is significantly associated with the set of experience variables (V05, V06, and V10). The demographic variable sex (V20) is highly correlated with V11. As expected, women tend to be more sensitive to smooth-running than men do.

Respondents were then asked what they would think of the conductor's service (V14). Only 16 percent considered conductor's service bad. A clear majority of 72 percent seemed to think the service was at a permissible level. As similar to the response to V11, 12 percent regarded conductor's service good. Chi square test shows this variable is moderately related with expectation variable V02 ($p = .06$). This variable (V14) is strongly associated with the set of experience variables (V05 - V07) as shown in Chi square statistics. Pearson data also show substantial correlation between this and experience variables (V05 - V08).

Respondents were then asked about their opinion about "cramming" into the bus (V13). An overwhelming majority of 81 percent consider it is necessary to pack in if asked by the conductor during rush hours. Only 3 percent think "cramming" is not necessary. As discussed previously, a majority of the respondents experienced various kinds of inconveniences such as injury and pickpocket for which overcrowding is mainly to blame. Considering this, respondents' responses concerning 'cramming' appear to be very positive. Nevertheless a majority of 67 percent of respondents do worry about the consequences of overcrowding (V12). Contextual factors may account for this seemingly paradoxical phenomenon. It is no doubt that commuters are well aware of the highly limited availability of the public transportation system in contrast to the overwhelming number of passengers. Therefore, they may be prepared to forego individual concern about overcrowding and willing to endure a certain level of inconvenience. Thus, it may be quite reasonable to conclude that these kinds of local situational factors together with lower prior expectation play an important role in reducing the magnitude of negative disconfirmation. Chi square test confirmed that this variable (V13) and expectation variable V02 are strongly associated. Respondents with a low expectation of comfort of bus tend to be more willing to accept "cramming." Pearson data indicate that actual experience variable V07 is inversely correlated with this variable. Naturally, the more the passengers had experienced pickpockets, the less they are willing to pack into the overcrowded bus. Pearson data indicate that age (V19) is negatively related to crowding, as would we expect intuitively.

A set of related variables (V15 - V16, and V18) may add more understanding of the passengers' S/D with the bus system. When asked whether it is necessary to reduce the amount of seats to accommodate more passengers (V15), a majority of 56 percent replied in the affirmative. Both Chi square and Pearson data indicate that bus riding time (V18) and sex (V20) are significantly correlated with this variable. The respondents whose riding time is relatively long tend to hold negative attitude toward seat reducing. Women appear to be more sensitive to this issue than men do. Since women are more concerned about overcrowding, they would like to have more space than seats in the bus. In an effort to infer which aspects of services the passengers' dissatisfaction is focused on, the respondents were asked to indicate an item that need urgent improvement among given 8 items (V16). Reducing waiting time, maintaining order at the bus stop, and improving safety level are on top of the list in that order. All of them are the basically necessary functions that the public transit system is required to offer to the passengers.

This finding suggests that the level of services provided by the bus system falls far below the normative requirements in most of the functional aspects. Perceived performance level of passengers is very low as discussed in the relation to actual experience. Nevertheless, the level of dissatisfaction of the passengers inferred by in this section the tends to be relatively low. It has been established that low expectation level, and contextual variables help to explain the narrower band of negative disconfirmation which has resulted in relatively lower dissatisfaction. Passengers' actual experience with the bus cannot be generally interpreted to be positive, which seems to have contributed to drive their expectation level relatively low. This can explain in part the narrower band of negative disconfirmation. From an ecological point of view, Chinese culture also improves our understanding. As Kindel (1983) pointed out, the Chinese have a greater tolerance for cognitive dissonance than Westerners; this may, to some degree, account for the passengers' apparently low level of dissatisfaction.

CONCLUSION

The findings generally support the notion that the

level of S/D of passengers is determined by prior expectations of the performance of the bus system, perceived performance based on actual experience, and also strongly influenced by environmental factors such as local traffic situation and cultural aspects.

The quality of the service provided by the bus system in most functional aspects falls far below the "normative level" suggested by the broader Chinese socio-culture. Consequently passengers have perceived the performance of the bus system as quite low based on their actual experience. Nevertheless, their attitudes toward several aspects of the bus service suggest that they have relatively low level of dissatisfaction with the bus system due to the characteristics of the local setting (personal transport market). The low level of performance-specific expectations that serves as an initial reference point for the respondents to compare actual experience has been found important in explaining the narrower band of negative disconfirmation than the traditional consumer S/D theory might predict. This indicates the study has found that contextual factors and culture exercise an important influence, narrowing the perceived discrepancy between the expectation and performance and resulting in a relatively low level of dissatisfaction with the bus system.

This research suggests that the ecological perspective be more explicitly incorporated into S/D study to enrich our understanding. By definition, as it were, environmental factors become especially important in dealing with marketing phenomena in different social, cultural, and political environments.

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APPENDIX
TEXT OF THE SURVEY QUESTIONS USED IN THE ANALYSIS

V01-V02 Have you ever ridden on a bicycle? If so, what do you think of a bicycle compared with a bus in terms of;

V01	Speed:	Faster	52%
		Similar	46
		Slower	02
V02	Comforts:	Better	54%
		Similar	43
		Worse	03

V03 In case of bad weather such as rain, snow, and storm will you give up the bicycle for the bus?

Yes	38%
Probably	45
No	17

V04-V07 How many times have you experienced incidents cited below while you are on board a bus during the past 12 months?

V04 Mechanical troubles:

More than three	28%
One to three	43
None	27

V05 Accidents such as road accidents involving casualties:

More than three	06%
One to three	31
None	63

V06 Physical injury such as getting jammed by the door:

More than three	15%
One to three	39
None	46

V07 Pickpockets:

More than three	09%
One to three	49
None	42

V08 How many times did the bus not halt at the bus stop or alter its regular route during the past one month?

More than three	18%
One to three	23
None	59

V09 How many times do you change buses to go to work?

Two and more	37%
One	44
None	19

V10 How long do you usually wait for a bus at the bus stop after the scheduled arriving time?

Over 20 minutes	14%
10 to 20 minutes	54
Less than 10 minutes	32

V11 Do you consider the buses run smoothly ?

Not smooth	26%
So-so	63
Smooth	11

V12 Are you worried about possible wounds in the bus due to overcrowding?

Worried	67%
Indifferent	19
Not worried	14

V13 Do you think it is necessary to pack in if the conductor asks passengers to do so during the rush hours?

Not necessary	03%
Indifferent	16
Necessary	81

V14 What do you think about the level of conductors' service?

Bad	16%
So-so	72
Good	12

V15 Do you think it is necessary to reduce the number of seats in the bus to make space to accommodate more passengers in rush hours?

Necessary	56%
Indifferent	19
Not necessary	25

V16 What item amount the listed below is in need of urgent improvement with the current bus system?

Reducing waiting time	25%
Maintaining order at the bus stop	18
Improving safety level	17
Reducing the number of bus transfers	13
Promptness	11
Improving driver/conductor service	07
Increasing cars in suburban route	05
Reducing seats	04

V17 What is the average time for commuting including walking, waiting for bus, and bus riding?

More than 90 minutes	43%
60 to 90 minutes	48
Less than 60 minutes	09

V18 What is your average bus riding time on your way to work?

More than 60 minutes	30%
30 to 60 minutes	41
Less than 30 minutes	29

V19 What is your age?

Over 55 years old	03%
30 to 55 years old	56
Less than 30 years old	41

V20 Your gender:

Male	62%
Female	38

V21 What is your occupation?

Faculty member	45%
Plant worker	26
Service staff	17
Administrative personnel	12

V22 Do you usually bring a child with you when you ride a bus?

No	90%
Yes	10

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