

Travel response towards street crimes and security issues on mode choice Decisions in developing countries

Atta Mehroz

Civil engineering
Mehran University
Jamshoro, Pakistan
atta.mehroz@yahoo.com

Prof Dr Agha Faisal Habib Pathan

Prof. Dr. Aneel Kumar

Civil Engineering
MUET
Jamshoro

Abstract

This research investigates traveler response towards street crimes and security issues while making mode choice decisions of transit system in developing countries like Pakistan which are suffering from terrorism and security problems. The funding for expensive transit projects is also a problem in developing countries. Terrorism and crimes on transit system can lead to the failure of such projects if travelers react to these crimes by shifting from transit mode to other modes. The success of transit projects in term of ridership largely based on traveler's safety and security. In order to increase the overall ridership of these heavy projects, this research is beneficial to evaluate the mode choice decisions of traveler. This paper includes questionnaire survey of including SP and RP data in Karachi city. The research investigates the perceived situation of different security measure and travelers level of confidence on them. The results of regression model calibrated shows the effects in selection of security measure and indicate that security screening is necessary whether what type of security is provided

Keywords

Mode choice, SP & RP, Street crimes, safety, Regression

I. INTRODUCTION

Pakistan is a developing country with large population and growing travel demand. For the last ten years, Pakistan is under the curse of terrorism which has bad effects on the development of the country in general and on travel pattern in Pakistan. Transportation network has been targeted for many years in the different countries worldwide. Transportation facilities (Riley 2004). Similarly BRT/MRT

has remained a target for terrorist attack and different street crimes. By introducing BRT, it has soft edge for terrorist to attack. Most significant attacks reported in the world including bomb blasting on Paris metro system in 2004, Madrid train attack in 2005, underground bus attack in London which has produced and raised questions about security system of the transportation facilities. On the other hand, 45 people were killed in safoora Goth Karachi. In Quetta another attack had occurred on qambarani road and three passengers were killed and 24 injured. On 16 March 2016, fifteen travelers were killed by a bomb blasted near a bus of government officers in Peshawar. On 4 March 2009, a bus was fired upon by twelve gunmen on Sri Lankan cricketers. Similarly, there have been uncountable street crimes on traveler every day. There is significant difference between perceived and actual levels of crime and disorder on public transport (DTLR 2002).

All this menace has not only affected the ridership of public transport but has brought significance changes in the travel pattern and decisions of travelers. To increase the security measures in public transport, the cost for travel also increases. Because BRT places are crowded places and are vulnerable security threats. Recently, Pakistani government is introducing BRT in different cities of country. BRT Lahore and Islamabad are fully functional and similar BRT projects are designed for Karachi, Multan and Faisalabad. For security measures, cost on security measures have great importance to investigate and willingness to pay for security concerns. Terrorism is well financed, ruthless and well organized. The credible threats of increasing terrorism on transit system require quick actions to prepare for, to prevent and respond to violence (APATA 2001). Terrorism on different modes of travel and negative thinking about the security issues have become serious issue. Terrorism on modes of travel needs its own behavioral and security model

(Jenkins 2004). With no doubt traveler anxiety about terrorism has different effects on travelers than that of accidents.

Methodology

In methodology, questionnaire has been developed which consists of RP and SP data and distributed in Karachi city in different locations especially at bus stops. Questionnaire consisted of two parts. In 1st part demographics and socioeconomic characteristics questions were asked and in 2nd part traveler behavior about crimes and security issues were addressed. It included mode of travel, frequency and stated preferences questions about safety and security of Mass transit system in Karachi. Descriptive Data Analysis was done to investigate the effect of socio-economic and demographic characteristics on travel response in view of safety and security issues of Transit system. The significance of different factors in selecting security measures and satisfaction was tested using t-test and chi-square tests. Finally Model was developed for different security measures and affects of additional cost in security selections either which type of security traveler's want. Different software's were used to analyze the data. SPSS is used to see the statics

Data Collection and Results Analysis:

The data consist of total 262 sample size in which 22.90% was Female and 77.10% was male. There ages from 18 to 70 in which most of the people was young.63.74%,age from 30 to 39 was 15.27%,40-49 was 4.97%,age from 50 to 70 was 3.05%..respondent having education Matric was 9.92 %, intermediate respondent was 30.53 %,traveler having bachelor was 30.53 %.Master degree holder was 3.05 % and uneducated was 5.34 %.The income of 17.56 % people was 10000 to 15000 , Mostly people was having 25000 t0 30000 income and 21.37% people was having income above 30000.

Results show 23.5% people having frequency 1 time a daily make a journey for office purpose. Out of 40 who are making journey for office, 67.5% people make a trip 1 time a daily.

Figure 1 shows results of question related to fear from street crimes with respect to mode of travel. Results shows that the traveler of Bus and auto are afraid than other mode of travel. 32.06 % bus users and 11 % auto users 9.54 % car users are feeling unsafe. At other hand , out of all modes car is more secure mode and mostly car traveler were unafraid from street crimes. So public transport in Karachi city is less secure. If people reacted by shifting mode from Bus to passenger cars will be bad sign. It can cause the more congestion and failure of transit project.

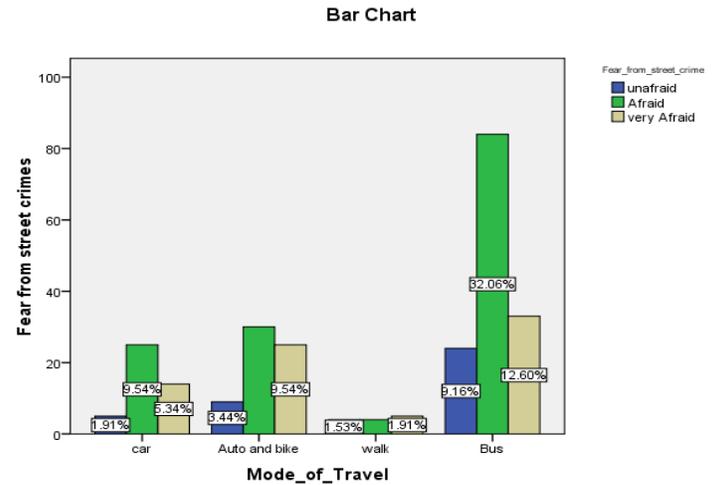


Fig.1

Fig 2 shows the results of street crime that makes more fear.36.26 % people reported afraid from mobile snatching which was using bus and 13.74% auto and bike users was afraid from mobile snatching. People which are traveling by car were more afraid from cash snatching. Public transport user were the more effected than other mode. It can reduce the ridership of bus. Comparing all mode of travel, Bus is most unsafe mode and in Karachi.

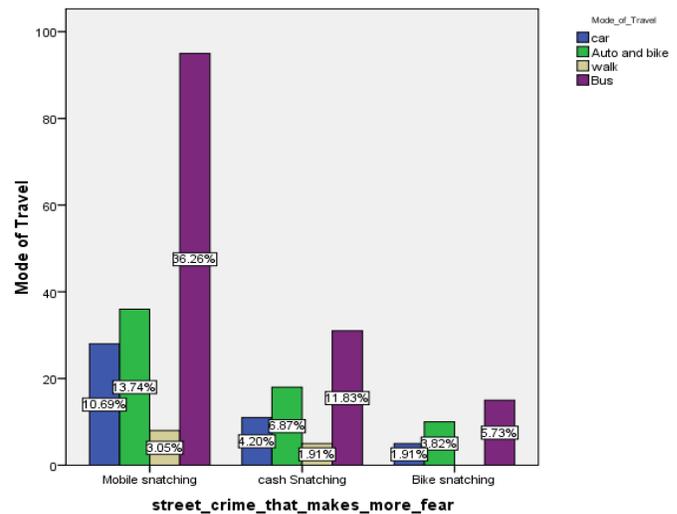


Fig.2

Fig.3 shows Metal detector is preferred by the people instead of walk through gates and other physical checks. Overall, people want armed security. In favor of armed security, 59.16 % people select armed security at BRT projects.7.37 % people show their confidence on police

security. If there is no physical check then only armed security is preferred.

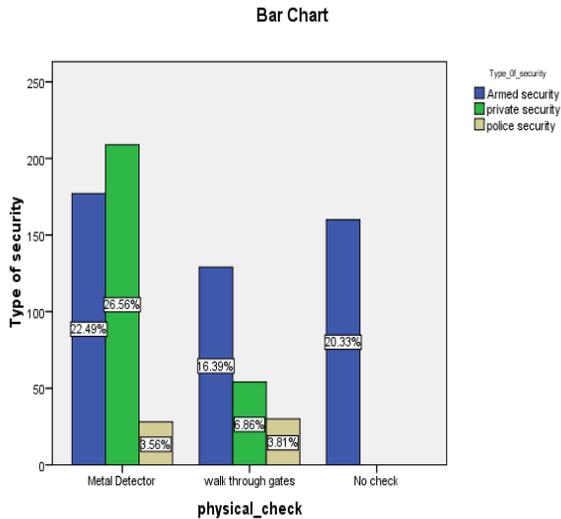


Fig.3

Regression Model

From the Model R value shows that 65.2% variable dependent to each other and R-square value 43% which means 43 % people are considering additional cost in selection of security measure. Model shows that people are giving more importance to physical check than type of security. In coefficient Table all the $p < 0.05$ so all the variables are associated to each other. Estimated parameter shows physical check has given much importance by respondents. The Beta weight shows the importance of independent variable. Physical check is more necessary in security measure than what type of security is provided. In overall security, physical check must be done. type of security If physical check is provided different type of security ,additional cost must be considered. Here is a F test with value 289.840 with degree of freedom 786, the test is highly significant.so we can suppose that there is linear relationship between physical check, type of security and additional cost.

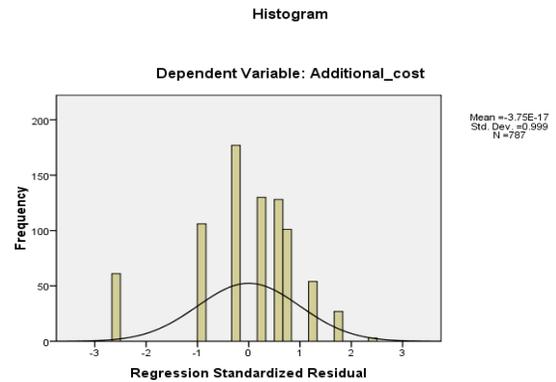


Fig.4

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.652 ^a	.425	.424	.625

a. Predictors: (Constant), physical check, Type_Of_security

Coefficients^a

Model	Unstandardized Co-efficients		Standardized Co-efficients	t	Sig.
	B	Std. Error	Beta		
(Constant)Type_of_security	.166	.039	0.277	4.257	.000
physical	.362	.038	0.030	9.522	.000
check	.728	.030		24.063	.000

CONCLUSION

It concluded and gives understanding of different factors affecting the travel behavior during street crimes and security issues while traveling through Mass transit system. Fear from street crimes affects the travel behavior and people are afraid from street crimes. Public transport is more unsafe mode and people are more afraid from mobile snatching as compared to cash snatching and bike snatching during bus journey. The level of security in Mass transit system should be provided with Armed personal if there are no physical checks. From different physical checks metal detector is appreciated as compared to walk through gates. People are willing to pay for additional cost while providing security measures in transit system. For Armed security, mostly people are willing to pay.

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