

Socio-economic Analysis of Rickshaw Pullers: An Introduction of Mini-bus Services of Chittagong University

MOHAMMAD MAMUN MORSHED BHUYAN¹

KAZI JULFIKAR ALI

Abstract

This paper examines the effect of introduction of mini-bus services on the daily income of rickshaw pullers that ply their rickshaws on the Chittagong University campus. An empirical model has been used for the purpose. The findings, which are statistically significant at 1% level, show that introduction of mini-bus services sharply reduces the income of the rickshaw pullers. This paper also looks at the transport problem of Chittagong University campus. Though the introduction of mini-bus services was inevitable and imperative for meeting the transport need of students, teachers and employees of the University, it has had a negative impact on the rickshaw pullers' daily income.

1. Introduction

Employment generation and adoption of modern technology are most important elements of economic development. But each of them is negatively correlated. The common idea is that if production or service system is mechanised, the number of employment will decline because a machine can replace more than one man. However, for this argument mechanisation process has not been stopped. It has increased demand for its speed, accuracy and cost saving. However, it is resisted by the existing workforce in an underdeveloped and thickly populated

* Assistant Professor (Economics), Department of Humanities, Chittagong University of Engineering and Technology, Chittagong-4349, Bangladesh.

country for fear of loss of employment and income. Such a common decision was the introduction of mini-bus services in the Chittagong University campus. This service was partially provided by the rickshaw pullers.

Rickshaw is a man driven labour oriented semi-automated vehicle, which provides transport services for goods and passengers on small scale for short distance without the use of fuel of any kind – natural gas, diesel and petroleum. But University of Chittagong, the second largest public university in Bangladesh, is situated 20 km away from Chittagong city. Most of the students of this university are daily commuters by availing the train services offered by the university authority. But this service is not sufficient and convenient for about 25 thousands non-resident students. To overcome this problem, after a long struggle with the rickshaw pullers, university authority was successful to introduce the Mini-bus from Chittagong city to university campus. Rickshaw is one of the most important sectors of the Bangladesh economy and provides a means of subsistence for groups of people for whom there is quite literally no alternative. (Whitelegg et.al. 2003: 160). A large proportion of rickshaw pullers appear to come from the rural extreme poor (Begum and Sen 2005: 14) and work not only under the conditions identified above but also within a framework of poverty and malnutrition. In addition, rickshaw pulling is unskilled and requires no particular level of education. This exacerbates an already negative view of rickshaw pullers and evictions. During hartals, rickshaws are the only form of vehicular transport that is allowed to operate.

The site of Chittagong University explains why the university authority has so long felt the pressing necessity of a good network of transportation that would keep the institution operational. Since its inception, the location of the university from the population centre became a constant headache that haunted the administration but with the passage of time due to poor sense of priority, the plan visualized to make the institution fully residential got buried. So the problem of carrying non-residential students, teachers, officers and the staff to and from the campus became an everyday problem resulting in many frequent unpleasant situations that retarded academic progress of the institution. Moreover, university offices, halls, quarters and classrooms are not within the walking distance from one another. But as time passed by, rickshaw service showed its shortcomings proving it expensive, time consuming and at times problem-some. In fact, most of the universities in Bangladesh are situated far away from city approach. So the importance of generalization of this study can never be over-emphasized. Due to its distinctive location, the initiatives of the Chittagong University authority to introduce mini-bus services need to be judged for socio-demographic enquiries.

The main objective of the paper is to examine how a pragmatic decision to solve a problem might create problem of inequality and economic losses. The remainder of the paper proceeds as follows: methodological issues and the data used in the empirical analysis are dealt with in Section 2, while the results and discussion are presented in Section 3. Finally, summery and policy implications are presented in Section 4.

2. Methodology

2.1 The Data

In this study, only primary data were used to analyse the socio-economic impact on rickshaw pullers by introducing mini-bus services in Chittagong University campus area. Chittagong University campus has been taken as the study area. A structured questionnaire was prepared in the light of the objectives of the study that was filled up by direct interview. Random sampling technique was employed to collect the data. There were about two hundred and fifty rickshaw pullers in Chittagong University campus area, of which one hundred and sixty rickshaw pullers were selected for purpose of this study. The data were collected from the respondents during the period of January 2008-March 2008. All filled-up questionnaires were fully scrutinized and the data thus collected were processed and analysed to reach a conclusion in line with the research objective.

2.2 Specification of the Model

Using the survey data a simple classical linear regression model has been estimated in this Section to examine how the duration of work, the number of working days of the university (when university remains open), introduction of mini-bus services and ownership of rickshaw affect the income of the rickshaw puller. The daily income of the rickshaw puller is a function of duration of work, working days of the university, introduction of mini-bus services, and ownership of rickshaw. The income model can be written as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + u_i$$

where, Y_i = daily income
 X_1 = duration of work
 X_2 = if the university is open
 0 otherwise
 X_3 = if mini-bus services are introduced
 0 otherwise

$$\begin{aligned}
 X_4 &= \text{if rickshaw puller owns rickshaw} \\
 &\quad 0 \text{ otherwise} \\
 u_i &= \text{error term}
 \end{aligned}$$

A priori expectation about the sign of the coefficients is . The error term is assumed to be random and serially independent having zero mean with finite variance. In order to determine the appropriate technique of estimation, the empirical model is estimated by the OLS method. To better facilitate different diagnosis like autocorrelation, multicollineality have been used in this study.

2.3 Hypothesis of the Study

Income

Income can be defined as a flow of money, goods or services to any economic agent or unit. In other words, it refers to consumption opportunity gained by an entity within a specified time frame, which is generally expressed in monetary terms. In this paper it is used to measure the amount of money or its equivalent received by the rickshaw pullers during a period of time in exchange for plying rickshaw in and around the university campus.

Duration of Work

Duration of work is a quantitative variable and it indicates the time period that the rickshaw puller utilizes per day. This duration varies significantly on the basis of whether the university remains open or not. It is observed that if the university remains open the working hour is found to be less due to huge influx of people and vice-versa.

H_0 : There is no relationship between duration of work and income of the rickshaw pullers.

H_1 : There is relationship between duration of work and income of the rickshaw pullers.

Working Day of the University (University Remains Open)

This variable is introduced here to compare the income of the rickshaw pullers during the period, when the university is closed with that of when it remains open. It is a qualitative variable and it indicates all days of the week when classes and offices remain open.

H₀: There is no relationship between working days of the university and income of the rickshaw pullers.

H₁: There is relationship between working days of the university and income of the rickshaw pullers.

Introduction of Mini-bus Services

In this study it is incorporated as a dummy variable and it is a qualitative variable and is used to mean that the university authority introduced the mini-bus services as a new transport system to carry the non resident students, teachers, officers, staffs and others to and from the campus and to smoothen academic progress of the institution.

H₀: There is no relationship between introduction of mini-bus services and income of the rickshaw pullers.

H₁: There is relationship between introduction of mini-bus services and income of the rickshaw pullers.

Ownership of Rickshaw

Ownership of rickshaw is incorporated as a dummy variable in this study to measure the amount of income and it indicates whether a rickshaw puller owns a rickshaw of his own or not.

H₀: There is no relationship between ownership of rickshaw and income of the rickshaw pullers.

H₁: There is relationship between ownership of rickshaw and income of the rickshaw pullers.

2.4 Socio-economic Analysis

In order to get the vivid picture of the condition and to meet the socio-demographic enquiries, this paper includes age, asset condition, sanitation, pure drinking water and education level of the rickshaw pullers. The average age of the sample rickshaw pullers is about 35 in which most of them are in the age group 30-40. Though negligible in number, it is alarming to mention that 5% of the child rickshaw pullers are plying rickshaw to maintain their livelihood. Most of them took this as a hereditary profession. About 82 percent of the sample rickshaw pullers are married, 16 percent are unmarried, and only 2 percent are widowed or divorced of which 1 percent got married more than once. Both in terms of

household human capital assets and physical capital assets, they come from very poor origin and most deprived social categories. Only a few of them have cultivable land as they were gradually evicted during the inception of the university and their house status is not up to the mark. About 38 percent of the rickshaw pullers can read and write, 26 percent can only sign, and the rest are illiterate. All of them send their children to school, which indicates that their sense of priority of education has increased to a remarkable extent. Almost all of them use sanitary latrine and drink water from tube well. The average dependent household of rickshaw pullers is 5 which is above the national standard and make it more difficult to reach the subsistence level.

3. Results and Discussion

The findings show that duration of work is statistically significant at 1 % level of significance. The coefficient of duration of work variable X_1 is 12.86 and in that case the null hypothesis can be rejected at 1 % level of significance. The results indicate that as duration of work increases by one hour, daily income increases by

Table 1 : Empirical Results on the Basis of Survey Data

Variable	Parameter Estimated	Standard Error	T Statistic	p value	Eigenvalue	Condition Index
X_1	12.86*	1.269	10.139	0.0001	3.59199	1.00000
X_2	14.30*	5.201	2.749	0.0067	0.59640	2.45413
X_3	-26.13*	5.155	-5.069	0.0001	0.50104	2.67752
X_4	6.33	5.309	1.192	0.2351	0.29161	3.50967
Intercept	-6.57	13.633	-0.482	0.6305	0.01896	13.76384
R^2	0.5034					
DW	1.875					

Source: Field data

* indicates 1% level of significance

more than TK. 12 per hour. The coefficient of university open variable X_2 is 14.30 and in that case the null hypothesis can be rejected at 1 % level of significance. The results indicate that if the university remains open, the daily income of the rickshaw pullers increases by about TK. 14 per day. The coefficient of variable introduction of Mini-bus service X_3 is -26.13 and in that case the null hypothesis can be rejected at 1% level of significance. This result implies that introduction of mini-bus services reduces the income of the rickshaw pullers severely and about TK. 26 has been reduced from his daily income. The value of coefficient ownership of rickshaw is 6.33 and it is statistically insignificant but has meaningful sign and it indicates that if the rickshaw puller owns the rickshaw, his

income increases by TK.6 daily. The preceding regression differs only in the intercept coefficient but not in the slope coefficient. It is interesting to note that all qualitative variables affect the daily income of the rickshaw puller significantly.

To check the reliability of the above results, the diagnosis of multicollinearity, and autocorrelation is essential. Though not widely shared, some authors suggested condition index as the best available technique to detect it. The mechanism behind this measure is to use the square root of the ratio of largest to the smallest characteristics root. For our postulated model, according to the rule of thumb multicollinearity is not a troublesome problem. Again to judge the validity of the aforementioned results, though not inevitable for cross-section data, the test for presence or absence of autocorrelation or serial correlation has been conducted. In Table 1, the value of d statistic is 1.875, which is greater than tabulated value. In that case it can be said that there is no serial correlation in the residuals.

Table 2: Descriptive Statistics of the Variables Used in the Model

Variable	Maximum Value	Minimum Value	Mean	Standard Deviation
X ₁	250	40	121.58	45.32
X ₂	15	06	10.18	0.1637

Source: Field data

To articulate the scenario and the descriptive statistics of the variables in the model, the mean and standard deviation are presented in Table 2. From this table, the average income of the rickshaw puller is obtained about Tk.121.58 and standard deviation is 45.32. The result is remarkable in the sense that the introduction of mini-bus services reduced the income of the rickshaw pullers drastically and this causes standard deviation to increase. The mean and standard deviation of the duration of work variable is 10.18 and 0.1637 hours, respectively. Descriptive statistics are not calculated in this text because the rest of the variables are qualitative in nature.

4. Summary and Conclusions

Most of the universities of Bangladesh are situated in remote areas but the position of Chittagong University is worse than others. A significant number of rickshaw pullers became landless during the inception of the university. They were gradually evicted and their income fell by a significant extent. After the

withdrawal of inter-bus service, rickshaws became a major source of carriage. This illiterate and landless section of the society chose this profession for their survival and found it profitable. But this unprecedented introduction of mini-bus services shattered their dream and disrupted their normal way of life. Because of low income, the rickshaw pullers have never enjoyed a comfortable living, but their economic condition was not as worse as at present.

Their past earnings enabled them to get basic necessities for survival. When mini-bus services were commenced, their children were compelled to leave school in search of jobs for getting money because their parents were unable to bear their educational expenses. The empirical findings show that the duration of work, the number of working days of the university, and the introduction of mini-bus services variables are statistically significant. On the other hand, only ownership of the rickshaw variable is insignificant, since very few of them have rickshaws of their own due to abject poverty. Virtually no information is available that directly addresses the conditions of this poorer section of the society. This is not a special case at all as these catastrophes may occur when a modern technology is adopted to make life vibrant and mobile.

Our empirical study shows that the introduction of mini-bus services has badly hurt the rickshaw pullers and more than two hundred and fifty rickshaw pullers have fallen easy victims of the circumstances. Introduction of mini-bus services has reduced the income of the rickshaw pullers to a considerable extent as their income falls by about TK.26 every day.

A few suggestions can be made to improve the conditions of the rickshaw pullers – the people that have no bargaining power. The authority should create opportunities for alternative work for this poorest section of the society so that they can increase their income to keep alive. Having no money or means of investment these people absolutely depend on their physical strength, which they find hard to keep intact. These rickshaw pullers failing to keep pace with the changing needs of time will, instead of surviving, go into the land of oblivion and none will lament their obscurity. But they have a right to social protection and security and the means that will enable them a modest living.

References

1. Begum, S. and B. Sen (2005), "Pulling Rickshaws in the City of Dhaka: A Way Out of Poverty?" *Environment and Urbanization*, Vol. 17.
2. Gujarati, D.N. (1995), *Basic Econometrics*, Singapore: McGraw-Hill International Edition.
3. Kmenta, J. (1986), *Elements of Econometrics*, USA: Macmillan Publishing Company.
4. Whitelegg, J. and N. Williams (2000), "Non-motorized Transport and Sustainable Development: Evidence from Calcutta", *The International Journal of Justice and Sustainability*, Vol..5 (1), pp. 7 -18.