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Cross Elasticity of Demand of Selected Wooden Furniture in Respect to Alternative Furniture in Chittagong City

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Abstract

A large market of furniture has developed in Chittagong city within the last two decades. There is no much research work on cross elasticity of demand on wooden furniture of Chittagong city. The study attempts to know the effect of several selected factors on wooden furniture. It accomplishes with a semi-structured questionnaire and collects data from 150 households randomly. It hypothesizes that alternative products to wooden furniture are good substitutes. The study identifies that the wooden furniture as a relatively necessary product has an elasticity measurement of less than 1 concerning the alternative products. The cross elasticity of wooden furniture to its alternative products' quantity is 0.30012 at a positive relationship ($p<0.001$), to the price of the alternative products 0.07155 at a negative relationship ($p<0.10$) and to family size 0.2825 at a positive relationship ($p<0.05$). Furthermore, regression analysis and elasticity measurement confirm that alternative products to wooden furniture are not substituted goods. Hence, the study nullifies the hypothesis. Again, it signifies that the increase in wooden furniture products' demand is much higher than the increase in alternative products. Furthermore, it indicates that wooden furniture is luxury goods in some households. The income and quantity demanded of the furniture are comparatively higher in their private apartment than that of the rented apartment. The study will be useful in developing furniture industries in the Chittagong city of Bangladesh.

Keywords: *Demand for wooden furniture; Alternative furniture; Substitute goods; Complementary goods.*

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গত দুই দশকে চট্টগ্রাম শহরে আসবাবপত্রের বড় বাজার তৈরী হয়েছে। কাঠের আসবাবপত্রের চাহিদার আড়াআড়ি স্থিতিস্থাপকতা নিয়ে চট্টগ্রাম শহরে কোন গবেষণা নেই। এই গবেষণা কাঠের আসবাবপত্রে কিছু নির্বাচিত প্রভাবক কোন প্রভাব ফেলে কিনা, তা জানার চেষ্টা করে। দৈব-চয়ন পদ্ধতিতে নির্বাচিত ১৫০ টি গৃহস্থালী থেকে অর্ধ-কাঠামোগত প্রশ্নমালার মাধ্যমে উপাত্ত সংগ্রহ করা হয়। এই গবেষণা শুরুতে অনুমান করে যে, অকাষ্ঠল আসবাবপত্রগুলো কাঠের আসবাবপত্রের ভাল বিকল্প হিসেবে কাজ করে। গবেষণায় পাওয়া যায়, বিকল্প আসবাবের সাপেক্ষে কাঠের আসবাবের চাহিদার আড়াআড়ি স্থিতিস্থাপকতা ১ এর থেকে কম। এটি বিকল্প আসবাবের পরিমাণের ক্ষেত্রে ০.৩০০১২ ধনাত্মক সম্পর্ক ($p<০.০০১$); বিকল্প আসবাবের দামের ক্ষেত্রে ০.০৭১৫৫ ঋণাত্মক সম্পর্ক ($p<০.১০$); পরিবারের আকারের ক্ষেত্রে ০.২৮২৫ ধনাত্মক সম্পর্ক ($p<০.০৫$) পাওয়া গেছে। রিগ্রেষণ এনালাইসিস এবং স্থিতিস্থাপকতা পরিমাপের মাধ্যমে এটি নিশ্চিত করা গেছে যে, অকাষ্ঠল আসবাব কাঠের আসবাবের কোন বিকল্প নয়। তাই এই গবেষণা পূর্ব-অনুমিত ধারণা বাতিল করে। এই গবেষণা আরো নিশ্চিত করে যে, কাঠের আসবাবের চাহিদার বৃদ্ধি বিকল্প আসবাবের চাহিদা বৃদ্ধির তুলনায় বেশী। অধিকন্তু, এই গবেষণা এটাও নিশ্চিত করে যে, কাঠের আসবাব কিছু কিছু গৃহস্থালীর ক্ষেত্রে বিলাসিতা দ্রব্য হিসেবে পরিগণিত। নিজস্ব বাসাবাড়ীতে পারিবারিক আয় ও আসবাবের সংখ্যাগত চাহিদা ভাড়া বাসার তুলনায় বেশী। এই গবেষণাটি চট্টগ্রাম শহরে আসবাবপত্র কারখানার উন্নয়নের জন্য কাজ করবে।

1. Introduction

Bangladesh is a densely populated country having 1252 people per km^2 [1]. The per capita natural resource of its forest is alarmingly declining with the increase of the country's population [2]. As the tree grows slowly compared to the rise in the human population, there is a danger that the demand for wood is exceeding the supply [3]. Bangladesh is a country of limited forest resources to meet up its increasing demand. Furniture manufacture, construction, and decoration mainly use timber. While the production of furniture in many other countries uses several alternative materials to wood, the rural and urban areas in Bangladesh mostly use wood [4]. Due to the high demand for various timber products, the furniture industries are flourishing day by day. To serve the demand for wood for making furniture, Bangladesh mainly imports wood (logs) from Russian Federation, China, Indonesia, Australia, India, Cameron, Myanmar, Malaysia, and other countries [5]. There are no reliable statistics about the furniture industries in the country. However, nowadays, the substitute for wooden

furniture is available. The substitute products are of processed wood, melamine board, Medium Density Fiber Board (MDF), particleboard and steel.

In Bangladesh, where a high population increases the demand for scarce forest resources, especially wood, change of wood-use trend or household furniture over a few decades can play a decisive role in the field of wood utilization presently available locally. In economics, the cross-price elasticity of demand shows a response of the quantity demanded of a product to a price-change in the relevant products [6, 7]. It shows relevance to the introduction of substitutes of the wooden furniture in the market.

A large market of furniture has developed in Chittagong city within the last two decades [8]. However, there was no systematic study, so far, on the profitability, sustainability, and development of timber-based furniture industries. It is essential to access the current market situation and marketing system for its strengths and weakness and possible opportunity and threats. There was no accurate statistical data on cross elasticity measurement of the wooden furniture market in Chittagong. The economist can understand the realistic scenario of using wooden furniture and its substitutes or complements. So, understanding the effect of the use of substitute products on wooden furniture is crucial. The economic traits of wood products in tropical deforestation in Malawi [9], the markets and market failure regarding tropical deforestation [10], the determination of the close causes and inherent impulsive forces behind tropical deforestation [11], the effectiveness of market-based conservation in the tropics in Ecuador and Bolivia [12], and the global competitiveness of the Chinese wooden furniture industry [13] discuss on the contribution of wooden furniture and market-based wood economy to the deforestation in many developing countries. However, there is a dearth of knowledge of whether the use of a substitute product is increasing or decreasing the use of wooden furniture. The study hypothesizes that alternative furniture made of raw materials rather than wood is a good substitute for the wooden furniture in Chittagong city. The research, on this hypothesis, undertakes its attempts to fulfill the following objectives: to know the demand for wooden furniture; to know the

demand for alternative furniture to wood; to know the cross elasticity of demand of wooden furniture to the other alternative furniture.

2. Materials and Methods

The research bases on primary information collected through direct observation and semi-structured questionnaires for a household in Chittagong city. The following methods have been followed to accomplish this research.

2.1 Selection of the study area

The study selected Chittagong city as a study area purposively because of the heavy dependence of the city dwellers on the furniture. The Chittagong city divides into several wards and *Mahallas*[1], under the jurisdiction of Chittagong City Corporation (Figure 1). Most of the furniture making industries of Chittagong city area has developed at the fore entry point of the city; they are Chittagong-Rangamati road, Chittagong-Cox's Bazar road, Chittagong–Dhaka road, and Bridgeghata water (Firingibazar).

2.2 Description of the study area

The Chittagong city lies in the second-largest position among the cities of Bangladesh. As per the scale of the commercial activities of the cities in Bangladesh, the Chittagong city has got the favored status of the commercial capital of Bangladesh. Anowara and Patiya Upazila on the south, Patiya and Boalkhali Upazila on the east, Hathazari and Sitakunda Upazila on the north, and the Bay of Bengal on the west surround this city. The Chittagong city lies in the southeast part of Bangladesh between 22°14' and 22°30' north latitudes and between 91°45' and 91°53' east longitude. The area of Chittagong Metropolitan city is 145 km^2 [14].

The total population of Chittagong city is 25,92,439 having male 13,62,852 and female 12,24,587 with a population density 16513 per km^2 in the total number of households 5,58,097 [14]. The average household size is 4.6, and the annual growth

[1] *Mahalla* is the smallest unit of the city corporation in Bangladesh. Several *Mahallas* compose of ward.

rate of the population is 2.62. The literacy rate of the people of Chittagong city is 69%. The contribution of Chittagong city to the national economy is much higher than other cities because of the presence of the Chittagong port, diversified economic activities, natural beauties, industrial activities, and its relevant geographical location factor. In Chittagong, the major economic settlements are Chittagong port, lots of garments industries, a huge number of medium and heavy industries, and natural beauties such as Potenga sea beach, Foy's Lake, Karnaphuly river bank, Batali hill. The industrial belt is in Fouzdarhat, Baizid Bostami, Kalurghat industrial, and Potenga industrial area. Natural beauties are playing a vital role in the development of the tourism industry in Chittagong. It was upgraded as a municipal city in 1863, and was upgraded to a municipal corporation in 1982 and finally to a city corporation in 1989. There are 41 wards (administrative areas) in Chittagong city. In Chittagong city, the mean annual rainfall is 3058 mm, with a mean annual temperature of 29.53°C, having a mean annual relative humidity of 78% [14].

2.3 Selection of the households and the respondent

The demand for the furniture only considers the furniture used by the households in Chittagong city. The study selected 150 households randomly so that the survey covered all the 41 wards. It was the concern of the survey to cover both own and rented households to cross-check the consumption of the selected furniture. From each of the surveyed household family sizes, income per month, quantity, and price of the furniture purchased for the last ten years. All the names and locations of the households are listed by asking the interview of the owners. The selected furniture were Chair, Reading Table, Dining Table, Dressing Table, and *Alna*[2]. They are common and available furniture in every household in Bangladesh. The size of the furniture is standard as per the perception of the households and the furniture-sellers.

2.4 Data collection

The study directly collected data about the type of household, income per month, family members, the primary raw materials of used furniture (Chair, Reading Table,

[2] *Alna* is furniture which is used for hanging clothes.

Dressing Table, Dining Table, and *Alna*) by personal contact. Data on different aspects were calculated for each and presented in tabular form.

2.5 Data processing and analysis

The study used MS Excel, SPSS, and language R [15] for analyzing the data. To find out the cross elasticity of the wooden furniture to other alternative furniture, the study applied the following model.

The model:

An exponential regression model can be expressed as Gujarati *et al*. [16] and cited by Rahman [17];

$$Y_i = \beta_0 X_i^{\beta i} e^{\varepsilon i} \text{----------(1)}$$

It can reduce to

$$\ln Y_i = \alpha + \beta_i \ln X_i + \varepsilon_i \text{----------(2)}$$

Here, Y_i is the quantity demanded of the wooden furniture, X_i is the factor affecting the demand of wooden furniture, ε_i is the error term with mean zero and constant variance, and $\alpha = \ln\beta_0$ and β_i are the parameters. The differentiation of equation (2) can estimate the elasticity of demand for wooden furniture concerning the given factor, X_i.

$$\frac{\partial yi}{\partial xi} \cdot \frac{\text{Xi}}{\text{Yi}} = \beta_i$$

Here, β_i means cross elasticity.

Linear regression analysis was done to determine the effect of several factors on the demand for wooden furniture. The descriptive analysis was done to classify the findings of different parameters by the ownership pattern of the households. The study compared the private and rented households groups by using the column comparison test. For each significant pair, the key of the smaller category appears under the category with a larger mean. Tests adjust for all pairwise comparisons within a row of each innermost suitable using the Bonferroni correction.

Figure 1. Wards of the Chittagong City Corporation (Source: Chittagong City Corporation).

3. Results and Discussion

3.1 Demand for wooden furniture

The study estimates that if a household shifts from a rented apartment to a private apartment, the probability ($p<0.10$) of purchasing wooden furniture increases by 0.8524 times (Table 1). It estimates that, if a household increases by one family member, the uses of wooden furniture increases by 0.4585 times ($p < 0.005$). It also estimates that, if the quantity of alternative furniture increases by 1 unit, then the quantity of the wooden furniture will be increased by 0.5088 times ($p<0.001$).

Table 1. Regression parameter estimates of the wooden furniture demand model applied in Chittagong City.

Parameter	**Estimates**	**Std. error**	**t value**	**pr (> |t|)**
Interception	3.373e + 00	1.061e +00	3.179	0.00186***
Household type	0.8524	0.4726	1.804	0.07369 *NS*
Family size	0.4585	0.1621	2.829	0.005544**
Income per month (Tk)	-0.0001250	0.0000865	-1.445	0.15089 *NS*
Price of wooden furniture (Tk)	0.00005117	0.000326	0.157	0.87569 *NS*
Price of alternative furniture (Tk)	-0.00188	0.00103	-1.815	0.07188 *NS*
Quantity of alternative furniture	0.5088	0.08604	5.913	0.000000295***

Notes: $p< 0.001$ (***), $p< 0.01$ (**), $p= 0.5$ (*); *NS*= Not significant

3.2 Elasticity measurement

The study estimates that a 1% change in the family size leads the 28% change in the demand for wooden furniture in the same direction at the significance level $p<0.01$ (Table 2). One percent change in the prices of the alternative furniture leads to a 7% change in the demand for the wooden furniture in the opposite direction at the significance level $p<0.10$. The study also estimates that a 1% change in the quantity demanded of the alternative furniture leads to a 30% change in the demand for the wooden furniture in the same direction at the significance level $p<0.001$.

The results show that cross elasticity measurement for all the factors lies below 1. Thus it shows an inelastic figure for all the factors to the quantity demanded of the wooden furniture. The elasticity measurement firmly indicates that all the alternative furniture does not lie in substitute goods to the wooden furniture [18]. The study hypothesized that alternative furniture is a substitute for wooden furniture. It, therefore, nullifies the hypothesis.

Table 2. Elasticity estimates of wooden furniture concerning alternative furniture and other factors in Chittagong City.

Parameter	Estimates	Std. error	t value	pr (> |t|)
Interception	1.93318	0.67792	2.852	0.00508**
Log of family size	0.28250	0.11306	2.499	0.01374*
Log of income	-0.03889	0.5065	-0.768	0.44407 *NS*
Log of prices of the wooden furniture	0.01257	0.3525	0.357	0.72203 *NS*
Log of prices of the alternative furniture	-0.07155	0.3869	-1.849	0.6673 *NS*
Log of quantity of the alternative furniture	0.30012	0.4791	6.265	0.0000000533***

Notes: $p< 0.001$ (***), $p< 0.01$ (**), $p= 0.5$ (*); *NS*= Not significant

3.2.1 Chair

The raw materials of the Chair as the alternative products to the wooden chair were bamboo, cane, plastic, plywood, and steel (Figure 2). The own apartment and rented apartment had a difference in using the alternative chair. The bamboo-made chair was present in 70% of the owned apartment, while its presence was the lowest in the rented apartment. The uses of the cane as an alternative chair in their apartment are slightly different, which is about 7%. The difference between the uses of plastic chair in own and rented apartment is about 12%. The uses of a plywood chair and steel chair in a rented apartment is relatively higher than the owned apartment. Overall, the use of plywood and steel chairs get priority in the rented apartment while the own apartment gives priority to the bamboo-made chair among all the alternative chairs.

The income of the households living in the own apartment was the highest, Tk 60525±4204 than that of the rented apartment, which was significantly different

($p<0.05$) each other (Table 3). The wooden chair bought by the households also was significantly different between the own apartment and the rented apartment. The regression analysis shows that household type and family size had a significant ($p<0.05$) effect on the demand of the wooden chair.

Table 3. Household type and other parameters for demanding wooden chairs in Chittagong City.

Parameter	**Household type**	
	Own Apartment (A)	**Rented Apartment (B)**
Family size	5	6
The income per month (Tk)	B 60525±4204	35880±1786
Price of the wooden chair (Tk)	B 7821±1109	4788±462
Price of the alternative product (Tk)	2632±280	2728±234

Note: For each significant pair, the key (A or B) of the smaller category appears under the category with a larger mean.

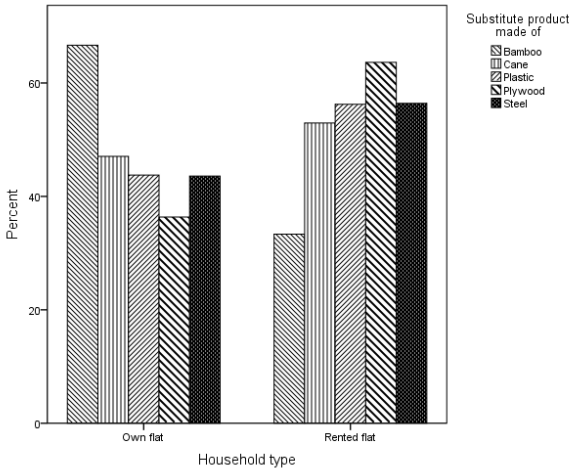

Figure 2. Comparison of uses of different alternative furniture to a wooden chair in Chittagong city[3].

[3] 'Flat' in the figure is written in the text as 'Apartment'

3.2.2 Reading Table

The raw materials of the reading table as the alternative products to the wooden reading table were plastic, plywood, and steel (Figure 3). The own apartment and rented apartment had significant ($p<0.05$) differences in using the alternative reading table. The plywood-made reading table was present in 57% of the owned apartment, while its presence was the lowest (50%) in the rented apartment. The difference between the uses of steel reading table in own apartment is 23%, and the rented apartment is about 78%. The uses of the plastic reading table in the rented apartment are relatively higher than the owned apartment. Overall, plywood and steel reading tables get priority in their own apartment. In contrast, the rented apartment prioritizes the plastic reading table among all the alternatives reading tables.

The income of the households living in the own apartment was the highest, Tk 58571±4912 than that of 38233±2068 in the rented apartment, which was significantly different ($p<0.05$) each other (Table 4). The wooden reading table bought by the households also was significantly different between the own apartment and the rented apartment. The regression analysis shows that the Income per month (Tk) had a significant ($p<0.001$) effect on the demand of the wooden reading table.

Table 4. Household type and other parameters for demanding wooden reading tables in Chittagong city.

Parameter	**Household type**	
	Own Apartment (A)	**Rented Apartment (B)**
Family size	5	6
Income per month (Tk)	B 58571±4912	38233±2068
Price of the wooden reading table (Tk)	B 4548±335	3228±234
Price of the alternative product (Tk)	5100±511	4263±269

Note: For each significant pair, the key (A or B) of the smaller category appears under the category with a larger mean.

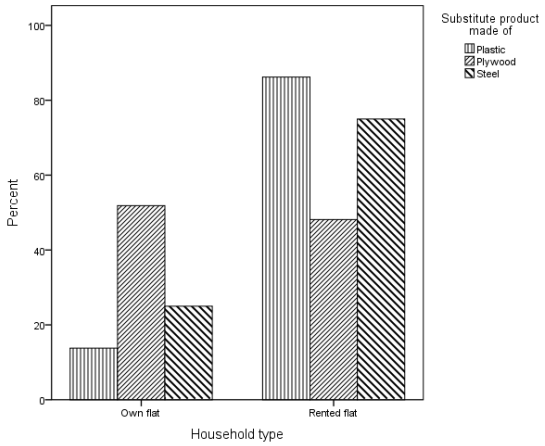

Figure 3. Comparison of uses of different alternative furniture to the wooden reading table in Chittagong City.

3.2.3 Dressing Table

The raw materials of the dressing table as the alternative products to the wooden dressing table were Iron, plywood, and steel (Figure 4). The own apartment and rented apartment had a difference in using an alternative dressing table. The plywood-made dressing table was present in 39% of the owned apartment, while its presence was the highest (62%) in the rented apartment. The difference between the uses of the steel dressing table in the owned apartment is 35% and the rented apartment is about 68%. The uses of the iron dressing table in a rented apartment (61%) are relatively higher than an owned apartment (38%). Overall, the use of plywood and iron dressing table get priority in the own apartment. In contrast, the rented apartment gives priority to the steel dressing table among all the alternative dressing tables.

The income of the households living in the own apartment was the highest, Tk 59882±5295, than that of Tk 40200±2410 in the rented apartment, which was significantly different ($p<0.05$) each other (Table 5). The price of the wooden

product, Tk 17200±1577, is higher in the own apartment than Tk 14902±1133 in the rented apartment (Table 5). The price of the alternative product, Tk 42719±4458, is also higher in the own apartment than the rented apartment.

Table 5. Household type and other parameters for demanding wooden dressing table in Chittagong City.

Parameter	**Household type**	
	Own Apartment (A)	**Rented Apartment (B)**
Family size	5	5
Income per month (Tk)	B 59882±5295	40200±2410
Price of the wooden dressing table (Tk)	17200±1577	14902±1133
Price of the alternative product (Tk)	42719±4458	33923±4224

Note: For each significant pair, the key (A or B) of the smaller category appears under the category with a larger mean.

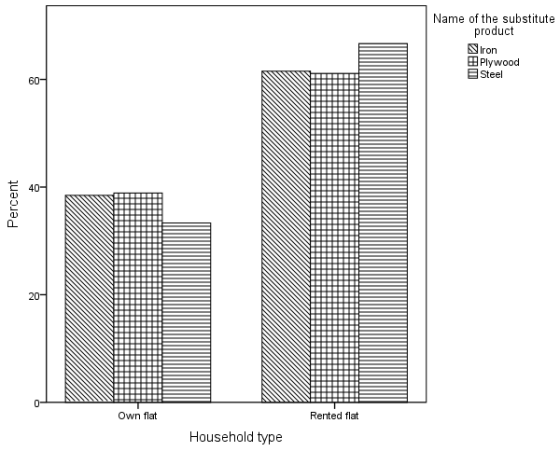

Figure 4. Comparison of uses of different alternative furniture to the wooden dressing table in Chittagong city.

3.2.4 Dining Table

The raw materials of the dining table as the alternative products to the wooden dining table were plastic, plywood, and steel (Figure 5). The own apartment and rented apartment had a difference in using the alternative dining table. Plastic made dining table was present in 71% of the rented apartment while its presence was the lowest (30%) in the owned apartment. The difference between the uses of the steel dining table in the owned apartment is 75%, and the rented apartment is about 25%. The uses of the plywood dining table in the rented apartment (63%) are relatively higher than the owned apartment (38%). Overall, the use of the steel dining table gets priority in their own apartment. In contrast, the rented apartment gives priority to the plastic dining table among all the alternative dining tables.

The income of the households living in the own apartment was the highest, Tk 60882±4824, than the income of Tk 35843±1417 in the rented apartment, which was significantly different ($p<0.05$) each other (Table 6). The price of the wooden product is higher Tk 43465±4389 in the own apartment than the rented apartment (Table 6).

Table 6. Household type and other parameters for demanding wooden dining table in Chittagong City.

Parameter	**Household type**	
	Own Apartment (A)	**Rented Apartment (B)**
Family size	5	6
Income per month (Tk)	B 60882±4824	35843±1417
Price of the wooden dining table (Tk)	43465±4389	26033±1572
Price of the alternative product (Tk)	35851±4118	35012±3713

Note: For each significant pair, the key (A or B) of the smaller category appears under the category with a larger mean.

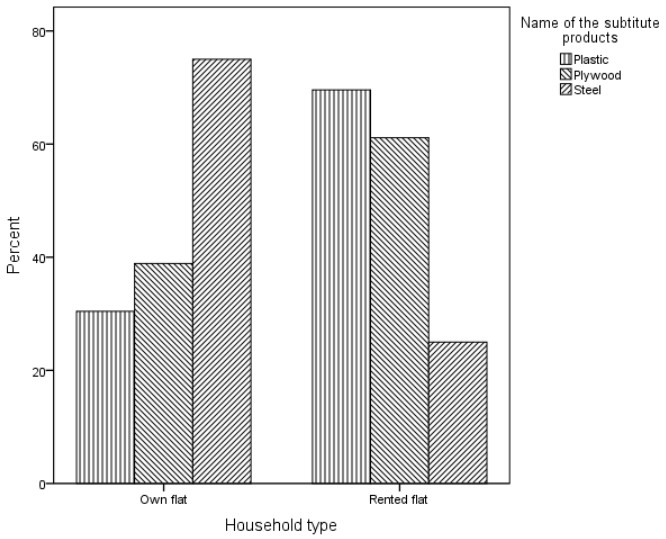

Figure 5. Comparison of uses of different alternative furniture to the wooden dining table in Chittagong city.

3.2.5 *Alna*

The raw materials of *Alna*, as the alternative product to the wooden *Alna*, was plywood and steel (Figure 6). The own apartment and the rented apartment had a difference in using alternative *Alna*. Plywood-made *Alna* was present in 70% of the rented apartment, while its presence was the lowest (35%) in the owned apartment. The difference between the uses of steel *Alna* in its apartment is 39%, and the rented apartment is about 63%.

The income of the households living in the own apartment was the highest, Tk 60913±7029, than that of income of Tk 32369±1938 in the rented apartment, which was significantly different ($p<0.05$) each other (Table 7). The regression analysis shows that the income per month (Tk) had a significant ($p<0.001$) effect on the demand of the wooden *Alna*.

Table 7. Household type and other parameters for demanding wooden *Alna* in Chittagong city.

Parameter	**Household type**	
	Own Apartment (A)	**Rented Apartment (B)**
Family size	5	6
Income per month (Tk)	B 60913±7029	32369±1938
Price of the wooden *Alna* (Tk)	2658±312	260417±133
Price of the alternative product (Tk)	4053±736	3539±413

Note: For each significant pair, the key (A or B) of the smaller category appears under the category with a larger mean.

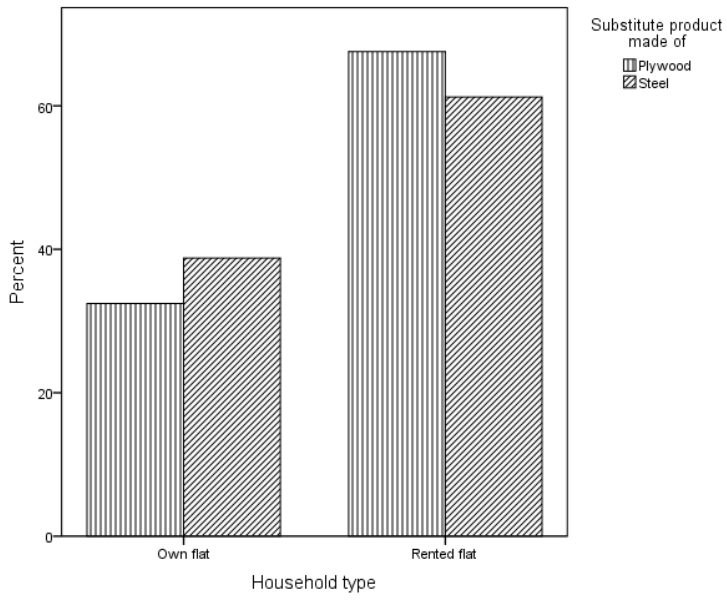

Figure 6. Comparison of uses of different alternative furniture to wooden *Alna* in Chittagong city.

The study examined any effect of alternative non-wood furniture on the selected wooden furniture. For the chair, reading table, dining table, dressing table, and *Alna*, the study did not find any non-wood furniture which could substitute the wooden furniture. Instead, some households were found to regard wooden furniture as luxury goods. When an item of wooden furniture becomes a status symbol, it turns into a luxury good [19, 20]. The study can indicate an overall inelasticity of wooden products in Chittagong city, which shows an inevitable pressure on the forests for wooden products. It also connects to the market failure and negative externalities imposed on the natural environment in the country [10]. Geist and Lambin [11] analyzed the frequency of close causes and impulsive driving forces behind deforestation, including their interactions. It shows that regional causal factor synergistic with economic factors, regional institutions, and national policies influences the deforestation as evident in the 152 subnational case studies. The increasing demand for wooden furniture is creating a shortage of sawn timber in the market, which is creating pressure on the growing stock of the trees in the forests [21]. This is one of the many proximate causes of deforestation in Bangladesh [2, 22-24].

Ebeling and Yasué [12] suggest that certification of woods can lead to sound forest management, reducing deforestation and forest degradation in Ecuador and Bolivia. Broadly, forest certification can ensure sustainable forest management by enforcing forestry laws, providing financial incentives, and land tenure security [12]. It can provide the guidelines of commercial forestry operations [25]. It primarily emphasizes on the situation of the countries where governance capacity is deficient. The forest certification in Bangladesh can enhance the betterment of forest management in Bangladesh and can reduce the deforestation. As per the study of Ebeling and Yasué [12] on forest certification and the effectiveness of market-based conservation in the tropics, this study can link to the favorable conditions in Bangladesh, especially on the forest governance situation, to go for forest certification [26-28]. The Government of Bangladesh should impose the certification

rules to the wooden furniture companies. The certification rule can make the wooden furniture elastic in the market [29-31].

4. Conclusion

The study identifies the wooden furniture as relatively necessary products having an elasticity measurement of less than one. Furthermore, regression analysis and elasticity measurement confirm that alternative products to wooden furniture are not substituted goods. For the chair, reading table, dining table, dressing table, and *Alna*, the study did not find any non-wood furniture which could replace the wooden furniture. Hence, the study nullifies the hypothesis that 'non-wood alternative furniture is substituted good to wooden furniture.' Again, it signifies that the increase in demand for wooden furniture is much higher than the increase in alternative products. It also indicates that wooden furniture is luxurious good in some households. The income and quantity demanded of the furniture are comparatively higher in the private apartment than that of the rented apartment. The findings of the study would be useful in furniture-industry development in Bangladesh.

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