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Malaysian Consumers' Preference and Willingness to Pay for Environmentally Certified Wooden Household Furniture

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ABSTRACT

Demand for certified timber products (CTPs) is on the rise, with major markets currently in North America and Europe, where consumers are willing to pay price premiums for these wood products. It is reported that there is little or no local demand for CTPs in the developing producer countries as consumers are said to have little interest in the products and cannot afford to be environmentally ethical in their consumption. A survey was conducted in Kuala Lumpur to determine whether consumers in Malaysia, which is a tropical CTPs producing and exporting country, have a preference and willing to pay price premiums for environmentally certified wooden household furniture (ECWHF). The willingness to pay (WTP) was estimated with the contingent valuation method using the Turnbull lower-bound estimator. The results indicated that a majority (74%) of the respondents showed a preference for ECWHF when priced at similar bid level with its identical non-certified products. However, a much lower percentage of these respondents were found to be willing to pay a price premium for the products. Of the 994 respondents surveyed, only 40.7% indicated a positive WTP. On average, the respondents were willing to pay about 18% more for ECWHF over its identical non-certified competitor. CTPs may be appropriate for specific niche markets which should be identified by marketers of these wood products.

Keywords: Contingent valuation, consumer, preference, willingness to pay, certified timber products

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INTRODUCTION

At the Rio de Janeiro's Earth Summit in 1992, it was agreed that the world's forests are to be sustainably managed and wood products entering the international trade should originate from areas that are certified

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to practise sustainable forest management (SFM). Since then, many initiatives have been formulated and done to address and implement forest management and timber product (or chain-of-custody) certification schemes. At the moment, about 356.7 million ha of forests (approximately 9.0% of the world's forests) have been certified under various certification schemes worldwide (UNECE, 2010). It was estimated that about 471.8 million m^3 of industrial roundwood could be produced from these certified forests, representing about 26.4% of the world's industrial roundwood production.

One of the major issues in marketing certified timber products (CTPs) to consumers is their willingness to pay price premiums as these wood products are expected to be more expensive than non-certified timber products (Jensen *et al*., 2004). This is because sustainable forest management and certifying the practice are expected to cost more than the present forest management practices (Fischer *et al*., 2005; Leslie, 2006; Chen *et al*., 2010). On average, the total costs for introducing a forest management certification system and implementing higher management standards could cause forest management costs to increase by 5% to 25% (Nussbaum *et al*., 1996; Sikod, 1996; Williams *et al*., 1997). Abdul Rahim (2002) reported that the compliance with SFM practices has imposed an incremental cost of about 69.6% to logging concessions in Malaysia. Meanwhile, the total harvesting cost under the SFM was estimated at RM198.54/m^3 compared to merely RM117.03/m^3 using the conventional logging method. In addition, the subsequent chain-of-custody certification would add more cost in making CTPs available to the customers. These increases in cost are expected to be passed on to consumers in the form of more expensive CTPs. It is, however, believed that consumers would be willing to pay more for products originating from certified, sustainable managed forests (Merry & Carter, 1997), with a premium ranging from 5% to 10% (Forsyth, 1998).

Demand for certified timber products, both in the business and consumer markets, is reported to be on the rise (Jayasinghe *et al*., 2007). The market for CTPs is currently in North America and Europe (Durst *et al*., 2006), where consumers are said to be more concerned with the environmental impacts of the products they purchase (Rowlands *et al*., 2002; Moon & Balasubramaniam, 2003). An increasingly large number of individuals in these markets are willing to pay price premiums for environment-friendly products (Laroche *et al*., 2001). Homeowners in the USA, for example, are willing to pay an average of 12.5% more for environmentally certified wood products (Ozanne & Vlosky, 1997). A more recent study by Aguilar and Vlosky (2007) reported that consumers in the USA are willing to pay between 10% and 25% more for CTPs. Veisten (2007) estimated the willingness to pay (WTP) for eco-labelled wooden furniture among IKEA customers in Norway and England, using the conjoint analysis (CA) and contingent valuation (CV) methods. The median WTP for the

English customers were estimated at 16.4% and 7.5% based on the CA and CV methods, respectively. The Norwegian customers have a much lower WTP of 2% and 4%, respectively.

It is, however, reported that there is little or no local demand for CTPs in developing producer countries (Durst *et al*., 2006; Espach, 2006; Miyata, 2007). Consumers in the Asian countries are said to have little interest in CTPs (Gale, 2006). The probability of gaining any price premium for CTPs is also said to be poor as consumers in the developing countries can not afford to be environmentally ethical in their consumption (van Kempen *et al*., 2009). In Malaysia, for example, there seems to be no effort to market such wood products locally, despite the fact that the country is a producer and exporter of tropical CTPs (Mohamed, 2008). Even though the more affluent and developed countries may continue to be major markets for these CTPs, there is little empirical evidence to show that such wood products have no potential in a developing country like Malaysia. This paper presents the findings of a study that investigated consumers' preference and WTP price premiums for environmentally certified wooden household furniture (ECWHF) in Malaysia. In this paper, the magnitude of the price premium the Malaysian consumers are willing to pay was also estimated.

METHOD

A mall-intercept survey using a self-administered questionnaire was conducted in 2008 to obtain the data for the study. A total of 1,048 questionnaires were distributed to systematically selected adults at four shopping malls in Kuala Lumpur, Malaysia. The location of the malls were chosen to ensure that a broad cross-section of consumers were included in the study. These consumers were selected based on the previously determined criterion that every tenth adult who passed the research assistants were approached and asked to participate in the survey. The questionnaire was distributed to those who had given their consent and then collected upon completion during the survey.

In the questionnaire, the respondents were shown two pictures of identical wooden dining furniture sets. They were first asked to decide as to which set they would choose in a hypothetical wooden dining furniture purchase situation. It was indicated to the respondents that the only difference between the two furniture sets was the type of the timber used to make the items (certified versus non-certified timbers), while price, design, quality and other attributes are identical. To ensure that the respondents understood the meaning of certified timbers, the following definition was included in each questionnaire: "*Forest certification is a system of forest inspection plus a means of tracking timber through a "chain of custody" – following the raw material through to the finished product. The goal of forest certification is to ensure that the products have come from forests which are well managed – meaning its management takes into account environmental, social and economic benefits of the forests.*

Timbers which come from forests which are certified are thus certified timbers". This definition was repeated three times in the questionnaire. The respondents were given the following response options: "Choose set made from certified timbers", "Choose set made from non-certified timbers", "Would choose either set", and "Don't know". Nonetheless, the respondents were not asked about WTP.

The respondents answering "Choose set made from non-certified timbers" were asked which of the several statements best described the reason for not choosing the dining furniture set made from certified timbers, whereas those indicating a preference for the dining set made from certified timbers ("Choose set made from certified timbers" response), an indifference ("Would choose either set" response) or uncertainty ("Don't know" response) were asked about their WTP. A contingent valuation method (CVM), with single-bounded dichotomous choice questioning format regarding WTP a price premium for CTPs, was used in this study. The method is currently the standard approach used to elicit consumers' WTP, which can be conducted by direct survey via telephone, mail or face-to-face (Li *et al*., 2002). In the dichotomous choice CVM, each respondent was asked for his/her WTP a particular price for a particular good in a hypothetical market with a "YES" or "NO" option to the premium offered (McCluskey *et al*., 2005).

The stated preference scenario given to respondents was: "*You may have to pay a higher price for wood products made from certified timbers due to the costs of getting certified, maintaining certification, and segregation in the production and marketing systems. Would you be willing to pay if it costs more to buy a set which is made from certified timbers than the set which is made from non-certified timbers?*" Those who answered this question in the affirmative were then asked "Would you be willing to pay an extra RMXXX for the set made from certified timbers?" The hypothetical initial bid price for both furniture sets was RM2000 and the premium for the wooden furniture set made from certified timbers was offered at one of the following bid price levels: RM100, RM200, RM300, RM400 and RM500. The premium amounts were selected based on an earlier study conducted by Mohamed and Ibrahim (2007). Each respondent faced only one randomly assigned premium. The respondents who answered negatively were asked which of the several statements best described the reason for not willing to pay a premium.

RESULTS AND DISCUSSION

General Characteristics of the Sample

After eliminating incomplete and erroneous questionnaires, only 994 questionnaires were used in the analysis. The majority of the respondents were Malays (74.4%) and slightly more than half were females (52.2%). The average monthly income of the respondents was about RM2372 (RM3.08 to USD1) and their average age was 32 years. The average education level of the respondents was equivalent to a certificate, which is usually a two-year post-

secondary school formal education. About 76.7% of the respondents currently own a wooden dining furniture set at home. A summary of the respondents' demographics is shown in Table 1 below.

TABLE 1
Respondents' demographic information

Characteristics	Percentage (%)
Gender	
Male	47.79
Female	52.21
Age	
30 years and below	53.82
31 – 40 years	27.16
41 – 50 years	13.78
51 – 60 years	4.73
61 years and above	0.51
Ethnic	
Malay	74.44
Chinese	14.89
Indian and others	10.67
Education	
At least 6 years (primary)	3.82
At least 13 years (secondary)	30.08
At least 15 years (certificate)	13.88
At least 16 years (diploma)	23.64
At least 17 years (university degree)	28.57
Monthly gross income	
RM2000 and below	58.15
RM2001 – 4000	30.88
RM4001 – 6000	5.53
RM6001 and above	3.32
(Missing cases: 51)	

Preference for Wooden Dining Furniture Set Made from Certified Timbers

A majority (74.0%) of the respondents showed a preference for the wooden dining furniture set made from certified timbers when asked to make a choice in the hypothetical wooden furniture purchase situation given in the survey (Table 2). Some studies have reported similar consumer's/ customers' propensity to choose CTPs over its identical non-certified products, especially when both items are priced at the same level. For example, about 94.3% of the customers in British Columbia's home improvement market interviewed by Forsyth *et al*. (1999) indicated that they would choose a certified wood product if it was priced at the same level as its non-certified competitor. An experiment conducted by Anderson and Hansen (2004) at two Home Depot outlets in Oregon, USA also showed that a large percentage of the consumers preferred to buy certified plywood when offered at a similar price over the identical uncertified product.

TABLE 2
Distribution of the respondents' responses to hypothetical furniture purchase situation

Respondents' choice	Frequency	Percentage (%)
Choose set made from certified timbers (Preference)	736	74.0
Would choose either set (Indifferent)	150	15.1
Don't know (Uncertain)	75	7.5
Choose set made from non-certified timbers	33	3.4
Total	994	100.0

About 15.1% and 7.5% of the respondents are either indifferent or uncertain of their choice, respectively.

Meanwhile, the remaining percentage (3.4%) of the respondents chose the wooden dining furniture set made from non-certified timbers. The commonly mentioned reasons for their choice were that they believe both types of timber are similar and that certified timbers are not necessary as the forests in the country should have been well-managed.

Incidence of Consumers' WTP Price Premiums

The WTP component of the study involved determining whether the respondents would be willing to pay a price premium for the wooden dining furniture set made from certified timbers and their WTP one of the five bid price premiums offered. Only about 61.5% of those who had indicated their preference for the wooden furniture set made from certified timbers were found to be willing to pay a price premium for the product (Table 3). Much lower percentages (53.3% and 38.7%) of those who were indifferent and uncertain about their choices were shown to be willing to pay more for the set, respectively.

TABLE 3
Respondents' willingness to pay price premiums for wooden furniture set made from certified timbers

Respondent's choice of wooden furniture set made from certified timbers	WTP price premium		
Total	Yes	No	
Preference	453	283	736
Indifferent	80	70	150
Uncertain	29	46	75
Total	562	399	961

Note: Thirty-three respondents chose the wooden furniture set made from non-certified timbers

TABLE 4
Distribution of the responses by premium amount

WTP response	Premium offered (RM)					
	100	200	300	400	500	Total
Yes	121	77	76	76	55	405
No	13	12	37	47	48	157
Total	134	89	113	123	103	562

Upon further elicitation, not all of the 562 respondents who had indicated their WTP a price premium responded affirmatively to the premium offered to them. In particular, only 72.1% of these respondents were willing to pay a premium for the wooden furniture set made from certified timbers. The distribution of the responses for the various premium levels is shown in Table 4. It is worth noting that the percentage of the respondents indicating a positive WTP decreased with an increase in the premium offered. For example, 90.3% of those offered a premium of RM100 indicated a positive WTP, whereas only 53.4% were willing to pay a RM500 price premium for the wooden dining furniture set made from certified timbers. Other studies (e.g., Ozanne & Vlosky, 1997; Forsyth *et al*., 1999; Anderson *et al*., 2005) also reported a similar inverse relationship between WTP and the amount of premium offered. The remaining 27.9% mentioned reasons like they could not afford to pay more, they did not believe it would cost more to make wood products from certified timbers, or that manufacturers should not charge higher prices even when it costs more to make wood products from certified timbers for not willing to pay the price premium offered to them.

Estimate of Consumers' Mean WTP

Parametric or non-parametric approaches can be used to estimate the mean WTP from dichotomous choice contingent valuation questions. The respondents' mean WTP for the wooden dining furniture set made from certified timbers was calculated using the Turnbull lower-bound nonparametric estimator. The estimator is a good alternative to other parametric estimates if only the mean WTP is to be estimated (Loureiro *et al*., 2009). The calculation following that of Ahtiainen (2007) is shown in Table 5. The results showed that the respondents, on average, were willing to pay an additional RM359.27 for the wooden dining furniture set made from certified timbers. This represents a premium of almost 18% over the set made from non-certified timbers.

TABLE 5
Turnbull estimate of the lower bound on the sample mean

Lower bound of interval	Upper bound of interval	Probability of answering *yes* at upper bound	Change in density
RM0	RM100	0.9030	0.0970
RM100	RM200	0.8652	0.0378
RM200	RM300	0.6726	0.1926
RM300	RM400	0.6179	0.0547
RM400	RM500	0.5340	0.0839
RM500	∞	0	0.5340

Estimate of lower bound mean:
RM0 * 0.0970 + RM100 * 0.0378 + RM200 * 0.1926 + RM300 * 0.0547 + RM400 * 0.0839 + RM500 * 0.5340 = RM359.27

CONCLUSION

The results of this study have shown that there is a consumer preference for CTPs in Malaysia. About 74% of the respondents in the study had expressed their willingness to buy wooden household furniture made from certified timbers if they were priced at similar level with identical non-certified products. Meanwhile, other 15.1% would probably choose ECWHF in a similar purchase situation. However, the number of consumers who will choose CTPs is expected to decline when they have to pay price premiums for them. This is consistent with the findings of other research, whereby the number of those expressing a positive WTP decreases with an increase in the amount of premium. Overall, only 40.7% of the consumers were found to be willing to pay a price premium for CTPs. On average, consumers in Malaysia were willing to pay about 18% more for CTPs over their identical non-certified competitor.

Thus, it is important to note that while there appear to be a preference and WTP a premium for CTPs among consumers in Malaysia, a discrepancy between the actual consumers' behaviour and their stated intention may occur. This is because consumers' purchase of wood products, in this case wooden household furniture, would also be influenced by other product attributes like quality, design, functionality and price. However, the results have shown that there is a potential for CTPs in a developing country like Malaysia. CTPs may be appropriate for specific niche markets, which should be developed by marketers of these wood products. Hence, identification of the characteristics of the consumers, who will make up the niche markets, should be attempted.

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