PROSIDING PERKEM VII, JILID 1 (2012) 368 - 378
ISSN: 2231-962X

Status Quo Effect and Preferences Uncertainty: A Heteroscedastic Extreme Value (HEV) Model

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ABSTRACT

Analysts have to include the status quo option as one of the alternatives in the Choice Experiments (CE) technique. This is to ensure the technique is consistent with Hicksian welfare analysis. However, it comes with a price. Usually, respondents choose the option is not because it provides highest utility but for some other reasons (e.g. to avoid making difficult decision; to protest the attributes trade-off; or to speed up the interviewing process). One of the solutions to investigate the effect of this status quo option is by including the alternative specific constant (ASC) in an estimation model. However, the solution is not applicable for an estimation model that has no ASC. In this study, Heteroscedastic Extreme Value (HEV) model is applied to investigate the effect of status quo and preference uncertainty. Analysing respondents' preferences on attributes at recreational parks, the results suggest that there is more uncertainty on the status quo option. On the other hand, there is less uncertainty with the hypothetical alternatives.

Key words: choice experiments (CE), status quo, preferences, Heteroscedastic Extreme Value (HEV)

INTRODUCTION

An application of Choice Modelling (CM) technique in valuing environmental goods becomes popular lately. One of the reasons on this popularity lies on its advantages compare to another stated preferences method, contingent valuation method (CVM). See Rolfe, Bennett, & Louviere (2002) and Bateman et al. (2002) for the discussion of these advantages. Analyses in CE can be undertaken in four approaches, including Choice Experiments (CE), Contingent Ranking, Contingent Rating and Pair-wise. However, only CE is said to be relevant to the Hicksian welfare measurement because the approach include status-quo option in the list of alternatives (Hanley, Mourato, & Wright, 2001). Not only that, the status-quo option has to be included to mimic a real market transaction where the customer cannot be forced to buy a product (Carson et al., 1994).

The inclusion of status-quo comes with a price. It is argued that respondents opt the status quo not because it provides highest utility among alternatives (Banzhaf, Johnson, & Mathews, 2001), but to avoid making difficult decisions (Carson et al., 1994) or to protest about the attributes trade-off (Von Haefen, Massey, & Adamowicz, 2005). Therefore, the effects of status quo has been investigated by many analysts (i.e. Boxall, Adamowicz, & Moon, 2009; Marsh, Mkwara, & Scarpa, 2011; Scarpa, Willis, & Acutt, 2007).

The effects of status-quo can be investigated in many ways; one of them is through the Alternative Specific Constant (ASC). The ASC is similar to the constant term in the regression model and captures the average effect on utility of all factors not included in the model (Train, 2003). If the ASC is significant, then analysts have concluded that the status quo effect has occurred (Adamowicz, Boxall, Williams, & Louviere, 1998; Scarpa, Ferrini, & Willis, 2005). However, question arises here is to estimate a model that has no ASC. For instance, a study that apply the generic alternatives (e.g. Alternative A, Alternative B) is suggested not to include the ASC because the value is meaningless in terms of its interpretation (Hensher, Rose, & Greene, 2005). Therefore, the motivation of this study is to explore an effect on status quo option for an estimation model that has no intercept. For this purpose, a heteroscedastic extreme value (HEV) is applied.

The objective of this paper is to investigate how the CE can be applied to (1) determine attributes that public preferred when visiting recreational parks; (2) estimate the monetary value of these attributes and its interaction effect; and (3) explore the effect of status quo option and preference uncertainty by using the HEV model.

The rest of the paper is organized as follows. Section 2 describes the CE and status quo effect. Section 3 explains about attributes of recreational parks in Malaysia. Section 4 discusses the methodology in terms of experimental design and field work survey. Section 5 presents and discusses the empirical results. A comparison of two estimation models is included, one is without the status quo effect and another one is with status quo effect. Finally, Section 6 concludes.

CHOICE EXPERIMENT AND STATUS QUO EFFECT

Choice Experiment (CE) is one of the techniques in the stated preferences method. CE requires respondents to choose one most preferred alternative from a series of alternatives presented to them. To follow Hicksian welfare measurement theory, one of the alternatives must be in a form of status quo or current scenario. In many cases, respondents choose SQ is not because the alternative provide higher utility but because of some other reasons (i.e. to avoid making difficult decisions and to protest about the attributes trade-off). In CE literature, this is known as status quo effect (Samuelson & Zeckhauser, 1988) or endowment bias (Kahneman, Knetsch, & Thaler, 1991). The rest of this paper however will use the former terminology.

The status quo effect was coined in the literature by Samuelson & Zeckhauser (1988). Their study has encouraged other analysts to follow in their footsteps. Among them are Kahneman, Knetsch, & Thaler (1991); Boxall et al. (2009) and recently by Marsh et al. (2011). Each study has demonstrated on different goals. For instance, Kahneman, Knetsch, & Thaler (1991) have shown that the respondents are most likely to opt for status quo if they want to avoid anticipated losses from the decision that they will made. Meanwhile, Boxall et al. (2009) hypothesized that the propensity for respondents to choose status quo is because of complexity factor (e.g. cognitive burden) when answering CE questions. This hypothesis is believed was coming from a study by Beshears, Choi, Laibson, & Madrian (2008) where they found that complexity often leads to a delay of choice. Iyengar and Kamenica (2007) also supported the hypothesis where they found that respondents tended to opt for the simple option when presented between complex and simple options. Blamey, Bennett, Louviere, Morrison, & Rolfe (2000) explained that the complexity in CE could arise from several sources, among them, the number of choice cards for respondents to answer; the number of alternatives in each choice card and whether or not the alternatives in each card is labelled.

Recently, Marsh et al. (2011) did a study that compare between respondents where descriptions of the status quo is provided to those who has their own descriptions of the status quo. In their study on the freshwater streams valuation, the results show that respondents who could provide details on their perception on status quo displayed stronger preferences on water quality improvements. The results also show that this group of respondents inclined to the status quo option compared to their counterparts. They argued that this happened because of a relationship between the amount of knowledge that respondents have about status quo and a tendency for choosing them.

Some analysts (i.e. Scarpa et al., 2005; Willis, 2009) however have demonstrated the SQ effect on various econometric approaches. To investigate the effect, Scarpa et al. (2005) have applied the error component models while Willis (2009) used the heteroscedastic extreme value (HEV) model. Both studies have used ASC in the models. The relationship between ASC and SQ effect have been discovered by Adamowicz et al. (1998). In their study of Caribou habitats, they found the significant negative for ASC means that the anticipated utility when moving away from current scenario is negative. They considered this as a form of status quo effect.

The inclusion of ASC in estimation models has been argued by Hensher et al. (2005) for CE analysis that using generic alternatives. This is because the value corresponds to the intercept for the latter is meaningless in terms of its interpretation. Nothing much can say on the value because the trade-offs in choice sets is between attribute levels that have no association with a particular label. Therefore, a Conditional Logit (CL) model that has no ASC is not suitable to be applied to investigate SQ effect. Alternatively, analysts can apply HEV model. Based on the random utility model (RUM), the model deviates from the CL model in the sense that the latter assumes the scale factor value to be $\mu = 1$. In other words, the CL function assumes of equal variances for each alternative in each choice set. The HEV relaxes the assumption. Details about the model are explained further in the model specification section.

ATTRIBUTES OF RECREATIONAL PARKS IN MALAYSIA

Recreational parks have been set-up for many purposes. According to Abu Bakar (2002), these include for relaxation purposes (i.e. viewing scenery, picnicking, bird watching, taking pictures, reading, listening to music); educational and learning purposes (i.e. watching cultural shows, creative acts, or painting demonstrations) and playing purposes such as playing on swings and slides, jogging, boating, exercising, and fishing. Apart from that, parks also have been established to improve environment through its role on providing fresh air, climate and land erosion control.

Parks can be defined as an enclosed piece of ground, within or near a city or town, ornamentally laid out and devoted to public recreation (Gibberd, 1982). Meanwhile, Elliot (1988) describes parks as lands intended and appropriated for people's recreation by means of their rural, sylvan, and natural scenery and character. In Malaysia, parks refer to areas of open space where recreational activities are held (Town and Country Planning Department Peninsular Malaysia, 2002).

The history of recreational parks in Malaysia can be divided into three phases in relation to the colonial period. The first phase, which occurred before the 15th century, refers to pre-colonial times. The second and third phases refer to colonial period and after Malaysia gained its independence, and extend until the present day. Each phase focused on different concepts of parks. For instance, in the pre-colonial times, elements of garden parks, such as tropical landscape plantations, were planted in the compounds of royal palaces. However, during colonial period, parks have been built for the recreational activities of British officers and their families. Two public parks that have been built by British but exist until present is Lake Garden in Kuala Lumpur that was built in the 1890s and Lake Garden in Taiping (built in 1910).

Nowadays, parks serve as a place for residents to do activities as explained before. To attract people to come to parks, various amenities and facilities have been provided in parks. Usually, this is subject to the design concepts of parks. It includes park's potential visitors and its location as well. For instance, parks that have targeted to attract teenagers would concentrate on facilities and amenities that suit to their age such as special courtyard for them to do physical activities (i.e. cycling and hiking).

One of the issues to manage parks in Malaysia relates to funding concerns. The fund to manage parks come from the federal government where usually it is not sufficient to cover park's operation costs (Ishahak, 1983). Consequently, amenities and facilities provided at parks are not well maintained and eventually, it will affect the total number of visitors to visit parks. Apart from that, the low maintenance amenities and facilities are likely to have an adverse impact on visitors' safety especially to children. Since attributes to be provided at parks encompass many things, a study need to be undertaken to determine types of attributes that visitors prefer to use or engage when visiting recreational parks. Information on visitors' preferences would be useful for park's management for their planning and design purpose in future.

The study identifies four attributes to measure visitors' utility when they visiting a park. The attributes are park's amenities, recreational facilities, information and natural attractions. At the same time, variable of price is also included to estimate visitors' willingness to pay for attributes. These attributes are chosen based on extensive reviews on previous economic studies of outdoor recreation parks. The final list of attributes is determined after conducting three focus group meetings and stakeholder interviews. The details of these attributes and their levels are shown in Figure 1.

EXPERIMENTAL DESIGN AND RESEARCH METHODOLOGY

Each choice card consists of the SQ alternative and two hypothetical alternatives. The study employs the generic format where the alternatives are presented in terms of Park A, Park B and Park C. The Park C (the status quo alternatives) resembles to park in Malaysia at the present time. The experimental design in the study is undertaken in three steps. One is to determine the number of choice tasks (or runs) to ensure the generated design is perfect balance and orthogonal. Two is to create an Orthogonal Main Effect Plan (OMEP). Lastly is pairing the generated alternatives.

The first step used the Statistical Analysis Software (SAS) has produced eighteen runs. The second steps used the software developed by Nguyen (accessible at http://designcomputing.net/gendex/noa/) to generate OMEP. For pairing purpose, the study employed the "cyclical or foldover" approach where construction of a second alternative is based on the level of the first alternative (Louviere, Islam, Wasi, Street, & Burgess, 2008). Investigating these pairing alternatives with the software developed by Burgess (2007), the results show that the design is 100% efficient, with the main effects uncorrelated. The design generated by the software was *D-efficient*, with the *D-error* is sufficiently low (Rose & Bliemer, 2006). Each respondent is asked to answer six choice cards.

In the first week of September 2009, a series of face to face interviews were conducted to gather a response on CE questions. In order to identify usable respondents, the study employed some follow up questions. The follow up questions asked respondents to state level of frequency for attributes used in the study, when they were answering the CE questions. The frequency was measured as: always; seldom; and never. The respondents who stated "never" to all of these attributes were removed from the analysis, because their answers to the CE questions might be ill-informed. After analysing these follow up questions, the total numbers of usable respondents were 188. These 188 respondents provide 1128 choice responses. The example of choice card is shown in Figure 2.

MODEL SPECIFICATIONS

This section explains the specification of estimation models that take into account the effect of SQ. The section begins with Conditional Logit (CL) model and then follows with HEV model. Suppose the visitor faces a choice among *J* alternatives of parks in a choice set. The utility that visitor *n* derives from choosing a park can be expressed as $U_n = V_n + e_n$. Based on the RUM framework, the indirect utility function of U_n can be decomposed into two components: V_n– the part that is a function of factors observed by the analysts which is known as the systematic component or deterministic element (Hanley et al., 2001) and e_n- the part that is unknown by the analysts and is assumed to be a random with density $f(e)$. The former part is known as the stochastic component (Hanley et al., 2001; Swait, 2007).

In a simple scenario that only consists of two parks in a choice set, *i* or *j*, the behavioural model is therefore, choose park *i* if and only if $U_{in} > U_{ij}$. In random utility terms, the probability that visitor *n* chooses park *i* (P_{in}) is shown in 1:

$$\begin{aligned} P_{in} &= P_r\left(U_{in} > U_{jn}\right) \\ &= P_r\left(V_{in} + e_{in} > V_{jn} + e_{jn}\right) \\ &= P_r\left(e_{jn} - e_{in} < V_{in} - V_{jn}\right) \end{aligned} \quad (1)$$

The equation (1) explains that the probability to choose park *i* from the entire possible outcome (in this context, park *i* and *j*) is equal to the probability of stochastic component when the outcome of park *i* is chosen. To simplify this, an indicator of function $I[U(V_n, e_n) = U_{in}]$ can be used to explain how the (1) is operating.

The indicator function takes value 1 if the statement in bracket is true (when U_{in} is chosen) and otherwise, it is equal 0. The probability of visitor *n* chooses park *i* is equal to the expected value of indicator function which is all possible value of stochastic component when park *i* is chosen.

$$\begin{aligned} P(U_{in}|V_n) &= \text{Prob } I[U(V_n, e_n) = U_{in}] = 1 \\ &= \int I[U(V_n, e_n) = U_{in}] f(e_n)\, de_n \\ &= \int I(e_{jn} - e_{in} < V_{in} - V_{jn}\ \forall j \neq i)\, f(e_n)\, de_n \end{aligned} \quad (2)$$

Probability of choosing park *i* can be calculated by specifying the distribution of the error terms, e_n. Note that, basically, the error terms are assumed to be distributed independently and identically (iid) with a Gumbell (or Type 1 extreme-value) distribution (Swait, 2007) as stated in (3).

$$f(e) = \exp\left(-\exp(-\mu e)\right) \quad (3)$$

Following (3), McFadden (1973) has shown that the selection of park *i*, can be expressed in terms of logistic function where the error terms are assumed to be distributed with the Gumbell distribution with a scale factor μ as shown in (4). In addition, McFadden (1973) have generalised the logistic distribution to the case of three and more parks. The function is known as the CL function.

$$P\left(V_{in} > V_{jn}, \forall\, i \neq j\right) = \frac{\exp\left(\mu V_{in}\right)}{\sum_{j \in J_n} \exp\left(\mu V_{jn}\right)} \quad (4)$$

The presence of the scale factor, μ, plays an important role in determining choice probabilities. For instance, when μ approaches 0, equation (4) indicates all choice probabilities will approach to the equal probabilities for all alternatives, $(1/J_n)$. Whilst, when μ approaches ∞, equation (4) indicates that all choice probabilities become completely deterministic (Ben-Akiva & Lerman, 1985; Swait, 2007). In Gumbell distribution, μ_n is used to capture the degree of spread (variance) of error terms for the visitor *n*. This is shown in (5) where μ_n is inversely related to var(e_n). The larger the scale parameter yields to the smaller the variance.

$$Var\ (e_n) = \sigma^2 = \pi^2/\mu_n^2 \tag{5}$$

The scale factor, however, cannot be identified in the CL function (Hanley et al., 2001; Swait & Louviere, 1993) because the value is confounded with the vector of utility parameters (Swait & Louviere, 1993). Because of this, the scale factor value is always assumed to be $\mu = 1$ (Hanley et al., 2001; Swait, 2007). In other words, the CL function assumes of equal variances for each alternative in each choice set. The function that relaxes the assumption is Heterocedasticity Extreme Value (HEV). The scale parameter for each alternative can be estimated however for identification purposes, one of the scale parameters is set to one. If we relate the value of variance for each alternative to uncertainty, it would suggest that the higher variance (or low scale factor) for an alternative means that more uncertain of individuals with the expected utility from that alternative. The explanation suggests that the HEV is suitable to be employed to investigate whether respondents are certain with utility from status quo alternatives.

RESULTS AND DISCUSSION

The variables used in the random utility models are presented in Table 1. The number of categorical variables that can be entered into the estimation model is equal to *J*-1 where *J* is the total number of categories. Since the respondents' characteristics cannot be inserted directly into the model, they were interacted with variable price. All the qualitative variables were coded with the dummy coding.

The estimated coefficients and implicit prices for basic CL and the CL with interactions models are presented in Table 2. The explanatory power for both models considered good with their adjusted psuedo-R^2 are 21% and 29%, respectively. The estimated results show that all attributes are significant at least at 10% in both models and have the *a priori* expected signs. The results also confirm to the axioms of choice: *non-satiation* when the coefficient values for attribute at higher level are greater then the coefficient values for attribute at lower level. The attribute of natural attractions (NAtt) is significant (at the 1% level) in the basic and interactions models. This indicates that the respondents in city centre appreciate natural attractions and this is expected, because by living in an urban area opportunities to participate in activities such as "hands-on training on planting" are limited.

All the estimated interactions variables were significant at 5% or a higher level except AgePri2. The results for interactions with the prices attribute also show that the estimated coefficient for respondents who have a university degree is greater than the estimated coefficient for those who do not. This suggests that a respondent who has attained higher education is willing to pay more, compared to a respondent with a lower level of education. In terms of interaction with ethnic groups and price, the results for Chinese, Indians and others show a negative sign. This indicates that these ethnic groups were not willing to pay as much as the base ethnic group, Malays.

The implicit price for each attribute was calculated as the ratio of coefficients for the attribute (or level) with the parameter of cost using the Wald procedure (Delta method) in Limdep 8.0. The implicit price measures the respondents' willingness to pay. For instance, the implicit price for attribute Fac2 in basic CL model means that respondents are willing to pay an extra of RM19.41 to obtain an improvement to the attribute from the basic to higher level. The results for the extended model provide some illustrations of implicit price that take into account the respondents' socio-demographic characteristics. For instance, the average implicit price for a young Chinese respondent (i.e. 18 to 24 years old) who has attained higher education (i.e. having a University degree) is 71% less compared to the Malay respondents with similar characteristics.

As shown in Table 2, the implicit prices of attributes Amen, Fac1, Fac2, and NAtt1are higher in the basic CL compared to the extended CL. In terms of implicit price order of attributes, both models show similar results with facility at higher and lower level, amenities, natural attribute at higher and lower level and lastly, information at higher and lower level.

STATUS QUO EFFECT AND PREFERENCES UNCERTAINTY

The results for basic and extended HEV models are presented in Table 3. The goodness of fit for both models is slightly higher than calculated adjusted pseudo- R^2 in the basic and extended CL. All the attributes in HEV have the same sign as in CL. The order of preferences for attributes in HEV also similar with CL model. However, there are changes in significance for attributes. Attributes of information which is statistically significant for both levels in CL is no longer significant in HEV. In terms of implicit price, the calculated amount of money that respondents are willing to pay for improvement in attributes in HEV model are lower compared to CL. It indicates that the influence of uncertainty towards the preferences of attributes and its implicit prices.

The preference uncertainty in HEV model is analysed through the scale parameter coefficient. Since the estimated scale parameter coefficient of status quo for basic and extended HEV models are significant, it suggests that the respondents are uncertain with their expected utility from the status quo option. The magnitude of uncertainty is measured through the value of scale parameter as shown in equation 5. The higher the scale value, the lower the variance (i.e. means that lower uncertainty). In the study, the scale parameter coefficient is considered low with 0.8443 and 0.6242 for basic and extended HEV models, respectively. Therefore, it would suggest that the respondents are uncertain with the utility generated from status quo option. On the other hand, the results indicate that respondents are more certain with alternative options.

CONCLUSION

This article has focused to investigate preferences uncertainty on attributes available at parks. Because of the limitation in CL model where they assume that the scale parameter needs to be constant at 1, the model is not suitable to investigate preferences uncertainty where the variances are constant for all alternatives. Alternatively, this article applied a model that relaxes the assumption, namely Heterocedastic Extreme Value (HEV).

This article investigated the uncertainty effect of status quo option through scale parameter value. The results show that the scale parameter for both models, basic and extended HEV, is significant at least at 10%. Since the scale value is considered low, so that we can expect the expected utility from status quo is uncertain. This indicates that public are uncertain with utility anticipated from status quo compared to other alternatives. Apart from that, the implicit prices calculated in HEV are lower than their counterpart calculated in CL model. The finding suggests that the interpretation of estimates using different estimation model should be carried out in note because it will give significant impacts on policy recommendations.

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APPENDIX

TABLE 1: Variables for random utility models

Variable	Type	Definitions
Amen	Qualitative	Amenities and services available at parks. It has two levels- **basic** and higher levels.
Fac	Qualitative	Facilities available at parks. It has three levels- **basic**, medium and higher levels.
Info	Qualitative	Information available at parks. It has three levels- **basic**, medium and higher levels.
NAtt	Qualitative	Natural attractions available at parks. It has three levels- **basic**, medium and higher levels.
Pri	Quantitative	Park entrance fee. The levels for package price were **RM0** or **RM3.00**, RM5.00, RM20.00 and RM35.00.
AgePri	Qualitative	The interaction between age of respondent and package price. It has three levels- **18 to 24 yrs old**, 25 to34 yrs old and 35 yrs old and above.
EduPri	Qualitative	The interaction between education level attained by respondent and package price. It has two levels- **Non-university degree** and university degree
EthPri	Qualitative	The interaction between ethnic group of respondent and package price. It consists of three groups- **Malays**, Chinese, and Indians and others.

*The bold denotes base level.

TABLE 2: Results of basic and extended CL models

Variable	Basic MNL		Extended MNL	
	Coeff.	Implicit Price	Coeff.	Implicit Price
Amen	0.5179*** (0.0868)	6.20	0.5712*** (0.0893)	5.54
Fac1- Medium	1.0505*** (0.1155)	12.58	1.1542*** (0.1175)	11.19
Fac2- Higher	1.6203*** (0.1221)	19.41	1.7387*** (0.1258)	16.86
Info1-Medium	0.2022** (0.1024)	2.42	0.3029*** (0.1076)	2.94
Info2- Higher	0.2347* (0.1391)	2.81	0.3389** (0.1489)	3.29
NAtt1- Medium	0.3357*** (0.1109)	4.02	0.3980*** (0.1153)	3.86
NAtt2- Higher	0.3516*** (0.1157)	4.21	0.4347*** (0.1208)	4.22
Price	-0.0835*** (0.0050)	-	-0.0628*** (0.0080)	-
AgePri1: 25 to 34 yrs old (Age1 x Price)	-	-	-0.0193** (0.0081)	-
AgePri2: 35 yrs old and above (Age2 x Price)	-	-	0.0063 (0.0087)	-
EduPri: University Degree (Edu x Price)	-	-	0.0216*** (0.0068)	-
EthPri1: Chinese (Ethnic1 x Price)	-	-	-0.0990*** (0.0091)	-
EthPri2: Indian and others (Ethnic2 x Price)	-	-	-0.0628*** (0.0115)	-
	Summary Statistics			
Log-likelihood function: $L(\beta)$	-970.5034		-873.5593	
Log-likelihood: $L(0)$	-1239.2347		-1239.2347	
Psuedo-R^2	0.21518		0.29358	
Adjusted Psuedo-R^2	0.21204		0.28917	
Number of observations	1128		1128	

***significant at 1%, ** significant at 5%, and *significant at 10%; std. errors are in brackets

TABLE 3: Results of basic and extended HEV models

Variable	Basic HEV		Extended HEV	
	Basic HEV	Implicit Price	Extended HEV	Implicit Price
Amen	0.3797*** (0.0865)	4.93	0.4559*** (0.0900)	5.14
Fac1- Medium	0.9058*** (0.1167)	11.76	0.9360*** (0.1114)	10.55
Fac2- Higher	1.3308*** (0.1353)	17.28	1.3891*** (0.1318)	15.66
Info1-Medium	0.0355 (0.1007)	0.46	0.1645 (0.1102)	1.85
Info2- Higher	0.0818 (0.1329)	1.06	0.1508 (0.1392)	1.70
NAtt1- Medium	0.1928* (0.1060)	2.50	0.2711** (0.1095)	3.06
NAtt2- Higher	0.2359** (0.1098)	3.06	0.2825** (0.1125)	3.18
Price	-0.0770*** (0.0049)	-	-0.0569*** (0.0071)	-
Scale Parameter	0.8443* (0.4473)	-	0.6242** (0.3125)	-
AgePri1: 25 to 34 yrs old (Age1 x Price)	-	-	-0.0166** (0.0067)	-
AgePri2: 35 yrs old and above (Age2 x Price)	-	-	0.0072 (0.0071)	-
EduPri: University Degree (Edu x Price)	-	-	0.0180*** (0.0056)	-
EthPri1: Chinese (Ethnic1 x Price)	-	-	-0.0795*** (0.0076)	-
EthPri2: Indian and others (Ethnic2 x Price)	-	-	-0.0506*** (0.0090)	-
	Summary Statistics			
Log-likelihood function: $L(\beta)$	-966.8098		-872.2526	
Log-likelihood: $L(0)$	-1239.2347		-1239.2347	
Psuedo-R^2	0.21983		0.29614	
Adjusted Psuedo-R^2	0.21671		0.29174	
Number of observations	1128		1128	
***significant at 1%, ** significant at 5%, and *significant at 10%; std. errors are in brackets				

FIGURE 1: Attribute Card

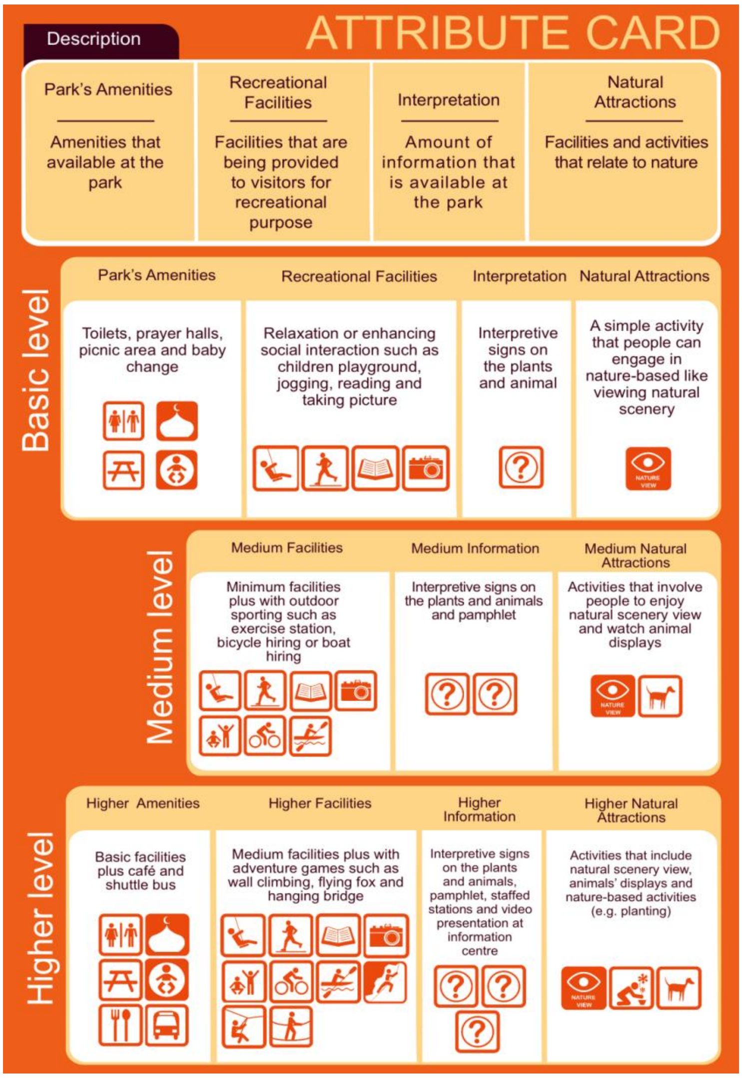

FIGURE 2: An example of choice card