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CONSUMER VALUATION OF CULTURAL HERITAGE: ESTIMATING THE VALUE OF CORDILLERAN “HEIRLOOM RICE” THROUGH THE GASTRONOMIC SYSTEMS RESEARCH (GSR) APPROACH

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ABSTRACT

The Cordillera Administrative Region in the Philippines is famous for rice terraces where indigenous people grow diverse traditional rice varieties, through which they preserve their culture. For these people, rice grains are heirlooms. However, triggered by poverty, mass emigrations lead to abandoned rice terraces and potentially to the disappearance of their cultural heritage. The Philippine government sees the popularization of traditional “heirloom” rice varieties among non-traditional consumers as a vehicle to improve farmers’ livelihoods and food security, to preserve traditional practices that lend value to these rice varieties, and to conserve the Cordilleran cultural heritage. Heirloom rice is marketed as a high-end niche product. In this study, we estimated the value urban consumers place on cultural heritage by exposing them to a visual and auditory experience of heirloom rice culture preservation and by eliciting their willingness-to-pay for substituting their preferred rice with heirloom rice. We tested loss and gain information framings and assessed potential penetration of heirloom rice through the gastronomic systems research (GSR) framework.

Shoppers from the middle- to the high-income classes (N=136) attended an experimental auction in a supermarket in Metro Manila. These consumers were segmented according to their preference towards brown or white rice. Results indicate that 15% of white rice consumers were willing to substitute their preferred rice with heirloom rice and this market share increased to 30–38% after exposure to the cultural heritage preservation experience. White rice consumers exposed to the positive narrative were willing to pay significantly higher price premiums than those who did not receive information. Meanwhile, 39–42% of brown rice consumers were willing to substitute with heirloom rice but they were generally not affected by stories on rice cultural heritage preservation; the treatments did not affect their average valuations of heirloom rice. For both consumer types, the negative narrative generated larger discounts for heirloom rice.

These results suggest targeted marketing approaches to promote heirloom rice: by directly promoting heirloom rice through a gain information frame story on cultural heritage preservation or by first promoting the health benefits of brown rice consumption and then increasing the availability and visibility of heirloom rice as an alternative to standard brown rice.

Keywords: experimental auction, willingness-to-pay, heirloom rice, cultural heritage preservation

INTRODUCTION

The rice terraces found in the heart of the Philippines' Cordilleran Administrative Region (CAR) are world-famous man-made tourist destinations. In the CAR, communities of indigenous people have been able to preserve their cultures due to their isolation, as a response to Spanish colonization and the influx of lowlanders (Acabado and Martin 2015). A tangible example of the culture being preserved, aside from the rice terraces, is the diverse set of traditional rice varieties that thrive in the environmental conditions of the Cordilleras. These varieties are deeply embedded in cultural and social practices such that these are traditionally considered as heirlooms, as these are passed on from one generation to the next (Santiaguel 2010). Despite the richness of their cultural heritage, residents in the CAR are some of the poorest in the country (Philippine Statistics Authority 2015); within the region, farmers are notably among the poorest (Guieb 2016). This has resulted in rural-to-urban migration, which is limiting the supply of agricultural labor needed to maintain the rice terraces (<https://whc.unesco.org/en/list/722>). As the rice terraces fall under disrepair, the traditional rice varieties that are being cultivated there through the centuries are also in danger of becoming extinct.

To improve the livelihoods of farmers and to preserve the rice terraces and the cultures of the indigenous peoples living in the CAR, the Philippine government and social entrepreneurs have begun enhancing the market engagement between CAR farmers and outsiders through the commodification of these CAR traditional rice varieties. In this sense, the concept of "heirloom" no longer just connotes inheritance within communities and families; rather, it has been transformed into a credence attribute (Glover and Stone 2017) that can add value to the rice varieties sold to non-traditional consumers of these rice varieties.

Currently, "heirloom rice" has found a niche in the export market (Estigoy 2010, Comanda 2015, dela Cruz 2015) but is not widely available locally in the Philippines. Heirloom rice is mostly sold as a high-end product. In order to determine market penetration potential of heirloom rice, it is important to understand (1) how much value the concept of cultural heritage adds to these varieties; and (2) how the story of preserving cultural heritage needs to be communicated to consumers to demonstrate and to capture this value.

To formulate culture-sensitive and context-specific narratives that may enhance the consumption of heirloom rice by the target audiences, it was important to understand their rice consumption from a gastronomic systems perspective (Cuevas, de Guia *et al.* 2017); i.e., socioeconomic and cultural contexts dictate the occasions in which target consumers eat; these occasions then dictate the dishes that people consume; these dishes are defined by the ingredients and the cooking methods used to make these dishes. The gastronomic systems research (GSR) approach allows one to estimate potential market penetration of novel food products such as heirloom rice.

METHODOLOGY

Experimental auctions and contextualization of heirloom rice consumption

Experimental auctions (Rousu 2015) were conducted in October 2015 at Robinsons Place Pioneer Supermarket, following a two-benchmark endogenous endowment approach. Respondents (N = 136) were randomly recruited from a population of shoppers in the middle- to the high-income classes and aged 18–80. Those who were willing to participate were told that they would each receive 1 kg of rice for free after the experiment. Each experiment was conducted in Filipino and started with an animator presenting white and brown rice, both in 1-kg packages and as loose grain, to the respondent. The animator then provided cooked rice samples for the respondent to taste one at a time, allowing them to drink water in between samples. The respondents were then asked for their preference between white and brown rice; this was their "benchmark" rice. Raw and cooked samples of the same heirloom rice variety were then presented to the respondent for inspection and tasting, respectively. The respondents were then asked to think of occasions in which they would eat the heirloom rice to contextualize the product within the gastronomic system. Respondents were randomly assigned to information framing treatments (Aldridge 2006) as follows: (1) the *control* group was not provided with any information on cultural heritage preservation and heirloom rice; (2) the "*gain frame*" group was provided with information emphasizing the positive consequences of consuming heirloom rice on the preservation of the rice terraces and of cultural heritage of indigenous people in CAR; and (3) the "*loss frame*" group was provided with information on the negative consequences of not consuming heirloom rice on the rice terraces and on the culture of the indigenous people in CAR. The respondents were then asked which variety they preferred between their benchmark rice and the heirloom rice. They were then endowed with their non-preferred variety and asked which price premium they were willing to pay to substitute their non-preferred variety with their preferred variety. The advantage of this experimental design over using a fixed

benchmark is that it enables endogenizing the benchmark and eliciting both positive and negative willingness to pay to substitute brown or white rice for heirloom rice. Participants were told that their price premium was subject to an auction in which they were bidding against a randomly drawn price, whereby the respondents would pay the randomly drawn price if their bid was higher or equal to it in order to get their preferred rice. If their bid was lower than the randomly drawn price, they took home the non-preferred endowed rice (either the benchmark or the heirloom rice). At the end of the experiment, a short survey was conducted to collect socio-demographic information from the respondents.

Rice samples

White rice and brown (unpolished) rice samples were sourced from Robinsons Supermarket Pioneer, Mandaluyong City, Metro Manila, Philippines, the venue of the experimental auction. Heirloom rice varieties (unpolished) were procured from the Rice Terraces Farmers' Cooperative. Raw rice grains were placed in transparent bowls for visual inspection of respondents. On the other hand, rice samples were cooked using a 1:2 rice-to-water ratio (v/v) in rice cookers (Model RC-103, Asahi Electrical Manufacturing Corporation, Manila, Philippines). During the experimental auction, these rice samples were placed in sample cups and presented to the respondents monadically.

Statistical analyses

The price premiums were recorded as positive numbers for respondents who were willing to switch brown or white rice with heirloom rice and as negative numbers for respondents who were not willing to do the switch, but were willing to pay to substitute heirloom rice for brown or white rice. Descriptive statistics were calculated using MS Excel and R (version 3.3.2). Significance testing for continuous variables were conducted using the one-way analysis of variance (ANOVA) and the Kruskal-Wallis test (in R). Categorical variables were compared using Fisher's exact test (in R).

RESULTS AND DISCUSSION

Sociodemographic characteristics of the respondents

The participants of the experimental auctions belonged to the middle- to high-income classes (Table 1), based on a slight modification of the published income classification from the Philippine government (National Statistics Office 2014, Cuevas, Pede *et al.* 2016). The average age of the respondents was 41 years and each household had, on average, four members. Respondents estimated that they were purchasing 78 kg rice per capita annually at an average frequency of four times a month. We did not find any significant differences between the treatments for a set of continuous variables in both the brown and white rice consumer segments. Moreover, most of the respondents from the two groups were Filipinos and finished tertiary education. More than half of the respondents were female; likewise, more than half of them were married and were household heads. In both groups, the majority of the respondents were employees. Likewise, most of the respondents stated that they did not have hired cooks, and they were the primary shoppers in their households. Within the brown rice segment, more respondents who were exposed to the loss frame treatment preferred to purchase vacuum-packed rice than those exposed to the gain frame and to those not exposed to the information treatments (Table 1). Meanwhile, there were significantly more respondents who preferred white rice and were not exposed to the information treatment who obtained information from the television than those who were exposed to the loss frame treatment (Table 1). Results (not shown) also indicated that the respondents assigned to the different treatments, regardless of rice segment, did not show significant differences for the sociodemographic attributes considered in this study.

Experimental auctions

During the experimental auctions, it was determined that 53% of the 136 respondents preferred brown rice as their benchmark while the rest preferred white rice (Table 1), indicating that for this market segment, there is already a growing acceptance of brown rice. The latter may be due to Philippines-wide campaigns promoting its consumption as a more nutritious option to white, polished rice (Hunt, Johnson *et al.* 2002, Cuyno 2003, Javier 2004). Moreover, brown rice has been associated with reduced diabetes risk (e.g., Zhang, Malik *et al.* 2010).

The shift towards heirloom rice was most dramatic in the segment of white rice consumers (Fig. 1). Filipinos

traditionally tend to prefer white rice for everyday consumption (reviewed in Del Mundo and Juliano 1981, de Leon 2005). It is associated with affluence, long product shelf-life, ease of preparation, and an acquired preference (Mojica and Reforma 2010). Of these consumers, 15% were readily willing to substitute white rice with heirloom rice in the absence of supplementary information on cultural heritage preservation. However, when they were exposed to a story on the negative consequences of not consuming heirloom rice on the rice terraces and on the culture of the indigenous people in CAR, this market share increased to 30% and further to 38% when the story was framed in a positive way, i.e. emphasizing the positive consequences of consuming heirloom rice on the preservation of the rice terraces and of cultural heritage of indigenous people in CAR. The positive story was further found to induce a significant increase in WTPs by USD 0.72, while the negative story did not have a significant impact (Fig. 2).

Table 1. Descriptive statistics of socio-demographic information of the respondents^{a, c, e}

	Brown Rice					White Rice				All
	Control	Loss	Gain	All ^d		Control	Loss	Gain	All ^d	
Age (yrs)	41.23 (14.48)	41.27 (15.53)	46.21 (15.86)	42.90 (15.24)		36.00 (9.07)	36.96 (14.97)	41.71 (15.51)	38.22 (13.63)	40.70 (14.64) [18.00, 80.00]
Household size	3.77 (1.80)	3.86 (2.12)	4.17 (2.46)	3.93 (2.11)		4.25 (2.15)	3.65 (1.99)	4.33 (2.48)	4.06 (2.20)	3.99 (2.14) [1.00, 10.00]
Annual income (USD) ^b	17,051.73 (11,319.48)	17,590.54 (10,949.67)	25,409.38 (17,066.30)	20,002.25 (13,776.90)		25,774.75 (13,557.58)	21,358.76 (18,507.16)	30,273.56 (29,778.65)	25,663.93 (21,688.93)	22,666.57 (18,093.97) [2,579.09, 128,954.30]
Per capita purchase (kg/annum)	78 (50)	79 (52)	87 (55)	81 (52)		81 (50)	72 (71)	71 (51)	74 (58)	78 (55) [3, 360]
Monthly purchase frequency	4 (6)	3 (2)	3 (1)	3 (4)		6 (8)	4 (6)	4 (6)	4 (7)	4 (5) [1, 30]
Female (%)	50.00	59.09	70.83	59.72		60.00	52.17	47.62	53.13	56.62
Filipino (%)	100.00	95.45	100.00	98.61		100.00	91.30	95.24	95.31	97.06
Married (%)	69.23	63.64	50.00	61.11		35.00	60.87	61.90	53.13	57.35
Household head (%)	50.00	59.09	54.17	54.17		60.00	60.87	57.14	59.38	56.62
Primary shopper (%)	76.92	86.36	87.50	83.33		80.00	78.26	85.71	81.25	82.35
Hired cook (%)	7.69	13.64	16.67	12.50		10.00	13.04	28.57	17.19	14.71
Occupation (%)										
Self-employed	15.38	18.18	20.83	18.06		20.00	8.70	14.29	14.06	16.18
Employee	61.54	68.18	58.33	62.50		75.00	65.22	66.67	68.75	65.44
Housewife	11.54	9.09	12.50	11.11		0.00	13.04	4.76	6.25	8.82
Retiree	7.69	0.00	4.17	4.17		0.00	4.35	4.76	3.13	3.68
Student	0.00	4.55	0.00	1.39		0.00	8.70	0.00	3.13	2.21
Unemployed	3.85	0.00	4.17	2.78		5.00	0.00	9.52	4.69	3.68

	Brown Rice				White Rice				All
	Control	Loss	Gain	All ^d	Control	Loss	Gain	All ^d	
Education (%)									
Secondary	3.85	4.55	8.33	5.56	5.00	8.70	4.76	6.25	5.88
Tertiary	69.23	72.73	62.50	68.06	70.00	82.61	80.95	78.13	72.79
Post-graduate	26.92	22.73	29.17	26.39	25.00	8.70	14.29	15.63	21.32
Preferred packaging of purchased rice (%)									
Loose	34.62	13.64	33.33	27.78	40.00	34.78	42.86	39.06	32.37
Pre-packed	53.85	40.91	54.17	50.00	30.00	43.48	23.81	32.81	41.01
Vacuum-packed	11.54 ^a	50.00 ^b	16.67 ^a	25.00	30.00	26.09	33.33	29.69	26.62
Information source about rice (%)									
Radio	7.69	4.55	0.00	4.17	10.00	0.00	0.00	3.13	2.45
Television	38.46	27.27	41.67	36.11	55.00 ^a	17.39 ^b	28.57 ^{ab}	32.81	23.04
Articles	15.38	36.36	33.33	27.78	20.00	17.39	23.81	20.31	16.18
Word-of-mouth	53.85	40.91	50.00	48.61	35.00	39.13	38.10	37.50	28.92
Specialty store	3.85	4.55	4.17	4.17	0.00	0.00	0.00	0.00	1.47
Wet market	11.54	4.55	0.00	5.56	5.00	0.00	0.00	1.56	2.45
Supermarket	19.23	22.73	20.83	20.83	15.00	43.48	47.62	35.94	18.63
Personal experience	3.85	13.64	16.67	11.11	5.00	0.00	4.76	3.13	4.90
Internet	0.00	0.00	4.17	1.39	5.00	0.00	9.52	4.69	1.96
N	26	22	24		20	23	21		136

^a Means are presented with standard deviations in parentheses. Ranges across all treatments are indicated by the minimum and maximum values in brackets.

^b The currency conversion rate during the experimental auction (October 25, 2015) was USD 1.00 = PHP 46.53 (source: <https://www.exchange-rates.org/Rate/USD/PHP/10-26-2015>)

^c A different lowercase letter in superscript beside each mean indicates significant difference at $\alpha=0.05$ for each row when comparing across treatments per market segment (brown and white rice consumers), based on the Fisher's exact test for vacuum-packed and television.

^d A different uppercase letter in superscript beside each mean indicates no significant difference at $\alpha=0.05$ for each row when comparing between market segments (brown and white rice consumers), based on the Fisher's exact test for pre-packed.

^e The three treatments, regardless of rice market segment, did not have significant differences for the sociodemographic attributes considered in the study.

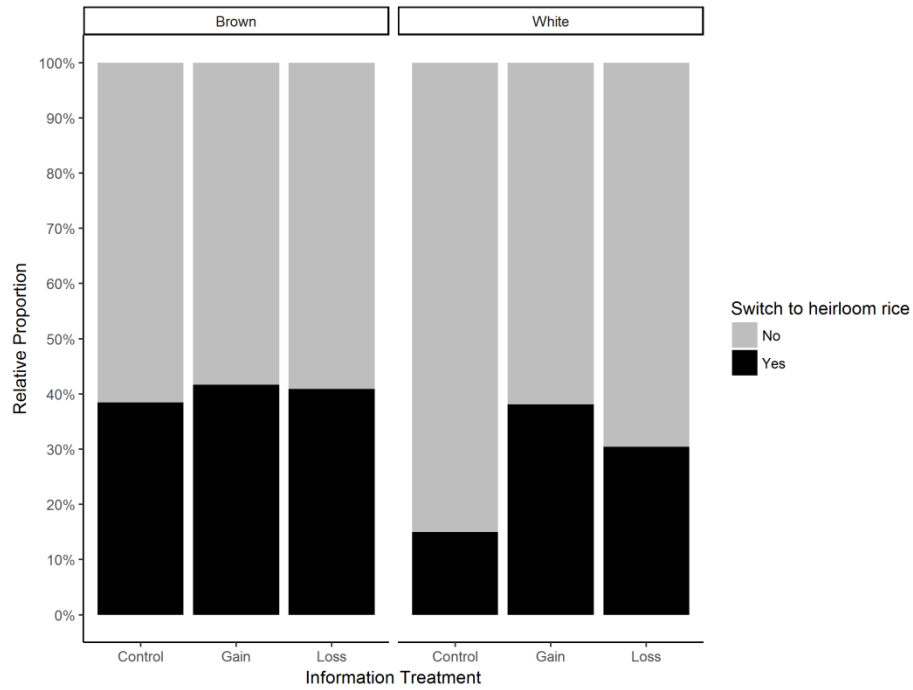


Fig. 1. Market shares of indigenous “heirloom” rice among urban consumer segments of brown and white rice before and after exposure to alternative framings of visual and auditory experiences on rice cultural heritage preservation ($N = 136$)

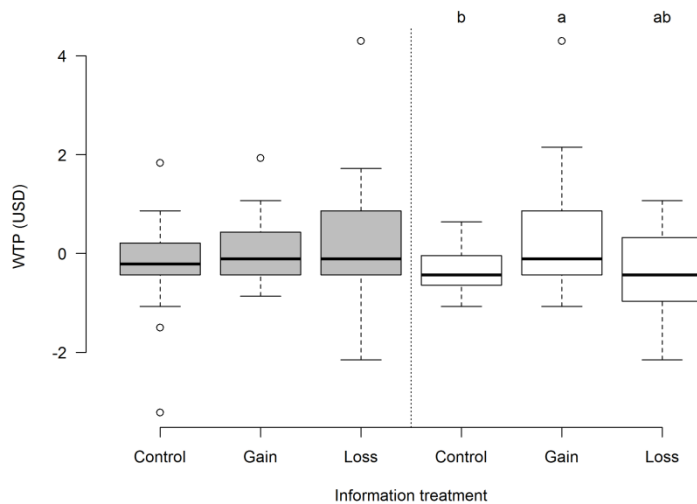


Fig. 2. Urban consumers’ willingness-to-pay (WTP) for substituting brown (gray boxes) and white (white boxes) rice to indigenous “heirloom” rice before and after exposure to alternative framings of visual and auditory experiences on rice cultural heritage preservation ($N = 136$)

These results show that *social impact* and *experience* (conveyed through the information treatments in this study)—considered as evolving value drivers (Ringquist, Phillips *et al.* 2016)—appear to be at work in this more traditional market segment. More specifically, the results suggest that positively framed information provided increased premiums for heirloom rice. Perhaps, this market segment did not value nutritive benefits of brown rice as much as the respondents who preferred brown rice (Mojica and Reforma 2010). Perhaps, they were willing to switch to heirloom rice thanks to the positive feeling or the “warm glow” they received—generated by the positive story—from their conscious contributions towards the preservation of cultural heritage (Andreoni 1990).

Penetration of heirloom rice in the segment of brown rice consumers, in contrast, was higher; 39–42% of shoppers were willing to substitute brown rice with heirloom rice (Fig. 1) and these market shares were not significantly affected by information on cultural heritage preservation and information framing. Similarly, WTP averaged -USD 0.01, and was not significantly affected by exposure to information on cultural heritage preservation (Fig. 2). These market shares are close to the potential (maximum attainable) market share of traditional rice varieties in total rice consumption, which was estimated to be around 46.6% by experts, based on contextualizing the gastronomic system to Filipino dishes and occasions (Cuevas, de Guia *et al.* 2017). As a result, stories on cultural heritage preservation—no matter how they were framed—were not the right nudges to increase market shares even further in this consumer segment. These respondents were already consuming brown rice, perhaps because they were interested in the health benefits in the first place or because they wanted to differentiate themselves from white rice consumers (Mojica and Reforma 2010). Hence, promoting heirloom rice consumption to this market segment may need a different marketing strategy; perhaps including one that highlights the nutritive benefits of consuming heirloom rice.

It has been reported previously that loss aversion typically translates into higher WTPs when respondents are exposed to the messaging framed as a loss (reviewed in Oparinde, Birol *et al.* 2016). However, the experiments showed that WTP in both segments was more variable after exposure to the loss frame than in the other treatments (Fig. 2). This suggests that this message framing probably generated divergence among the respondents; thus, not clearly indicating if the respondents had loss aversion for cultural heritage and the rice terraces of the CAR.

Heirloom rice in the gastronomic system

Respondents indicated that heirloom rice has the highest market penetration potential through the consumption of rice-based dishes during lunch and dinner (Fig. **Error! Reference source not found.**). This finding is similar with results elicited from experts who put heirloom rice in the context of middle- to high-income urban rice consumers (Cuevas, de Guia *et al.* 2017). The market penetration for breakfast was not as high as for lunch and dinner (Fig. **Error! Reference source not found.**) because the frequency of breakfast as an eating occasion has declined over the years (Timlin and Pereira 2007), which could be attributed to the increasing opportunity cost of the meal preparer’s time that comes alongside urbanization (Mason, Badiani *et al.* 2012). Special occasions occurred less frequently than lunch and dinner (Cuevas, de Guia *et al.* 2017); hence the limited market penetration for heirloom rice during these special occasions (Fig. **Error! Reference source not found.**). On the other hand, the respondents viewed *merienda* (snack) time as the least favorable time to switch to heirloom rice; though *merienda* occurs twice a day, the respondents most likely did not associate this occasion with rice grain consumption. Rice dishes associated with the *merienda* eating occasion are linked with churches and markets and therefore mostly consumed during the weekends (Fernandez 2002).

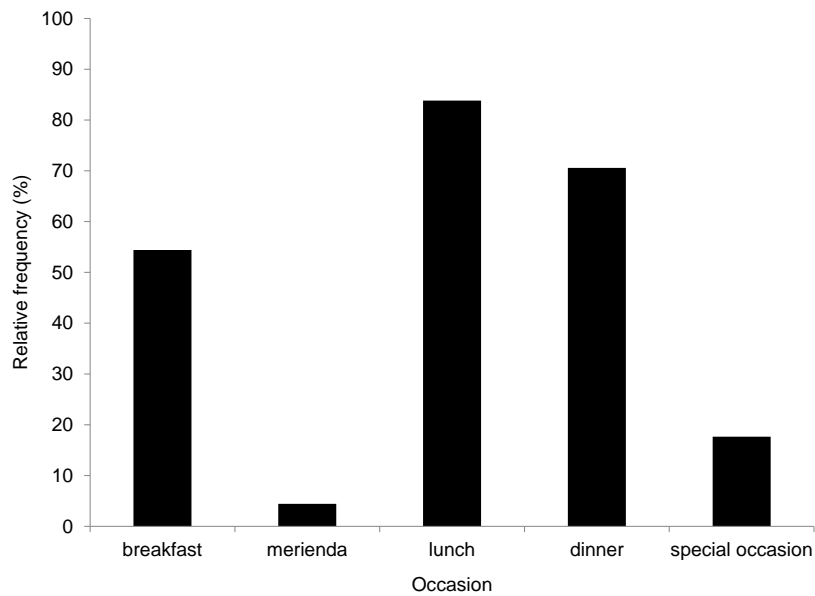


Fig. 3. Relative frequencies of occasions in which the respondents would eat heirloom rice.

As lifestyles change due to urbanization, the target consumers of heirloom rice will increasingly dine out. The most frequent occasions for dining out are lunch and afternoon *merienda* time (Nielsen Report 2017a); consumers typically spent these occasions in highly convenient establishment where food was typically served fast like convenience stores, bakeries, eateries, and doughnut shops (Nielsen Report 2017b). Hence, to reach out to the target consumers, marketing strategies nudging an increased consumption of heirloom rice ideally should also focus on the lunch occasions that are eaten out of the home, aside from dinner which is eaten more frequently at home. Famous restaurant chefs could play a market leader role here in endorsing and promoting signature dishes that are based on heirloom rice (de Guzman 2016).

CONCLUSION

Heirloom rice varieties are grown in the CAR and are symbols of cultural heritage. To preserve the cultures of the indigenous people cultivating these rice varieties, efforts are being made to commodify heirloom rice for the urban rice consumer. Our experimental auctions revealed that 15–42% of supermarket shoppers from the middle- to high-income classes in Metro Manila are willing to substitute white or brown rice for heirloom rice. Market penetration of heirloom rice was lowest in the segment of white rice consumers, but more than doubled after offering them a visual and auditory experience of cultural heritage preservation. If the experience was framed as a gain, by emphasizing the positive consequences of consuming heirloom rice on the preservation of the rice terraces and of cultural heritage of indigenous people in CAR, consumers' WTP for substituting white rice to heirloom rice increased significantly. Market shares were highest in the segment of brown rice consumers, but could not be further increased through the experience of cultural heritage preservation. This suggests that marketing strategies for white rice consumers should be distinct from those for brown rice consumers; i.e., marketing heirloom rice as a vehicle for preserving the rice terraces and cultural heritage appeared to be more effective for white rice consumers than for brown rice consumers if the marketing strategy successfully provides these consumers with the positive feeling of cultural heritage preservation. For the segment of brown rice consumers, marketing strategies emphasizing the health benefits of heirloom rice might prove to be more effective instead. Finally, marketing strategies for heirloom rice should target

lunch and dinner, the eating occasions during which respondents see that heirloom rice can substitute for the usual rice consumed in these occasions.

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