

Comparing Awareness and Behaviour Towards Food Consumption Trends: Gender Differences among Milkfish, *Chanos chanos* (Forsskål 1775), Purchase Decision Makers in the Province of Iloilo, Philippines

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Abstract

Numerous studies have validated that consumer awareness is not univocally consistent with behavior. This study attempted to compare awareness and behavior of milkfish, *Chanos chanos* (Forsskål 1775) purchase decision makers in the Province of Iloilo, Philippines towards food consumption trends. Food consumption trends included are: (1) food safety; (2) organic food; (3) sustainability in production; (4) good agricultural practices; (5) traceability; (6) local production; (7) support to local farmers; and (8) food labeling. Knowledge of awareness and behavior is essential in designing the value offering intended for the chosen target market.

Respondents of the study consisted of 378 milkfish purchase decision-makers. Sampling of respondents was performed by multi-stage stratified random sampling with degree of urbanization and congressional district as the bases of stratification. The sampling frame was developed from a list of households in 5 municipalities and 1 highly urbanized city. To determine the level of awareness and behavior, respondents were asked to answer an interview schedule with 5-point Likert scale-type questions for awareness and 7-point Likert scale type for behavior. A one-way ANOVA was conducted to explore the effect of gender on awareness and attitude towards the 8 food consumption trends.

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Except for food safety, results show that there was no significant difference between male and female purchase decision makers on the level of awareness for all 8 identified consumption trends. However, there was a statistically significant difference in the level of behaviour between male and female purchase decision makers for all 8 food consumption trends. Difference in the level of behaviour was found to be highest on the issue of food safety with males having an average of 5.9 (true of me) vis-à-vis 5.2 for females (somewhat true of me).

It was concluded that dividing the market based on gender is a viable segmentation variable due to considerable differences between male and female in their levels of awareness and behaviour towards food consumption trends.

Introduction

Chanos chanos (Forsskål 1775) or milkfish is the most important fish species being farmed in the Philippines today (Yap et al. 2007). It is cultivated in freshwater, brackish water and marine environments. The Province of Iloilo is one of the major milkfish producers, contributing 9 % to the country's milkfish production (PCAARRD 2012). Other top milkfish producing provinces cited were Pangasinan (39 %), Bulacan (11 %), Capiz (11 %), and Negros Occidental (10 %).

Not only is Iloilo a major milkfish producer but a major consumer as well. Based on the Philippine Statistical Authority (PSA 2014), the primary protein sources in the Province of Iloilo are pork (7.25 kgs.person⁻¹.year⁻¹), milkfish (6.89 kgs.person⁻¹.year⁻¹) and chicken (6.81 kgs.person⁻¹.year⁻¹). Consumption of milkfish in the Province of Iloilo is higher when compared to national and regional per capita consumptions (Table 1).

Table 1. Comparative animal protein consumption, kgs.person⁻¹.year⁻¹, Iloilo, Western Visayas and Philippines, 2014

LOCATION	PORK	BEEF	CHICKEN	MILKFISH	ROUNDSCAD
Philippines	9.466	0.926	8.077	3.663	5.738
Western Visayas	7.54	1.232	6.453	6.316	5.322
Iloilo	7.275	1.019	6.806	6.884	4.586

Source: BAS (2014)

While demand for fishery products is rising, attributed to increasing population, growing preference towards healthy food, and, intensifying human concerns about terrestrial animal welfare, the production of milkfish in the

Province of Iloilo is slowly dwindling (Fig. 1). It can only be surmised that milkfish production is declining because of diminishing financial sustainability arising from low profitability and level of competitiveness. Published studies are suggestive of the direct link between satisfying customer needs and profitability (Kahan 2013; Narver and Slater 1990; Siguaw et al. 1998).

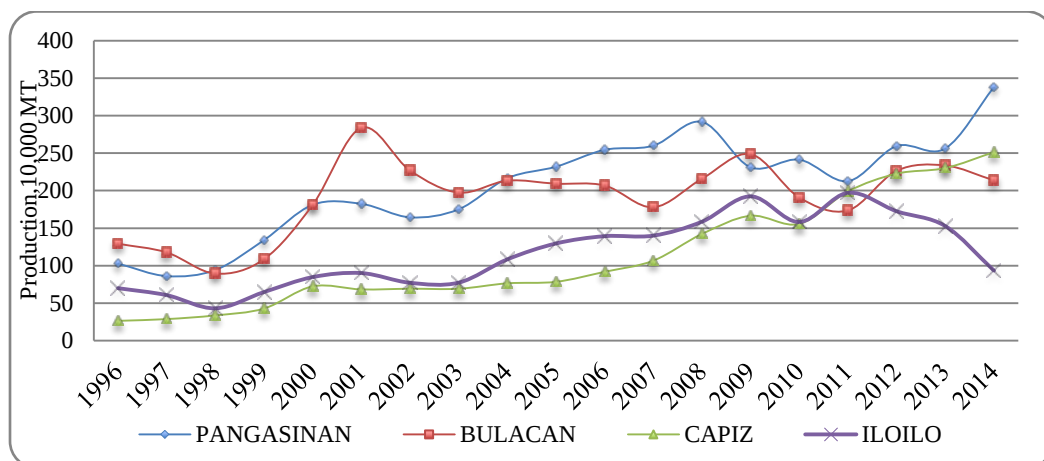


Fig. 1. Milkfish *Chanos chanos* (Forsskål 1775) production of top producing provinces in the Philippines, 1996-2014

The literature is rich on both theoretical and empirical studies on consumer demand covering various commodities and applied in many countries. In addition, many studies have been conducted to determine gender differences with respect to awareness and behavior towards food consumption trends, e.g., Wardle et al. (2004), Cavadini et al. (2000), Davy et al. (2006), Cooke and Wardle (2004) and Popkin et al. (1996). Kearney (2010) identified attitudes and behavior as drivers of food consumption. Knowledge of consumers' attitudes and behavior will be essential in designing the value-offering intended for the target market. Kotler (2013) defined market offering as 'a combination of product, services, information or experiences offered to the market to satisfy a need or a want.' Food consumption trends mentioned in FAO (2015) and considered in the present study were food safety, organic food, sustainability in production, good agricultural practices, traceability, locally-produced, support to local farmers, and food labeling.

Materials and Methods

Area of the Study

The research was conducted in the Province of Iloilo, Philippines. Iloilo is in the central part of the Philippine archipelago and it comprises the southeastern part of Panay Island and the island province of Guimaras. The capital city of the Province is Iloilo City. Iloilo is divided into 42 municipalities and 1 component city.

Types of Data and Methods of Data Collection

The study used primary data collected by trained enumerators. 378 respondents were requested to answer an interview schedule that assessed their level of awareness and behavior towards food safety, organic food, sustainability in production, good agricultural practices, traceability, locally-produced, support to local farmers, and food labeling. Level of awareness was measured using a 5-point Likert scale with the following categories: (1) not at all aware; (2) slightly aware; (3) somewhat aware; (4) moderately aware; and, (5) extremely aware. Behavior of respondents was evaluated as the self-rated likelihood of acting positively to the listed food consumption trends and was captured using a 7 point Likert scale with the following categories: (1) very untrue of me; (2) untrue of me; (3) somewhat untrue of me; (4) indifferent; (5) somewhat true of me; (6) true of me; and (7) very true of me. The survey instrument was translated into the local dialect to ensure that respondents understand the questions fully.

Sampling Procedure

Sampling of respondents was by multi-stage stratified random sampling. Those chosen as respondents were milkfish purchase decision-makers in each household. In the first stage of stratification, the basis was the degree of urbanization. This classifies the area as either urban or rural. Congressional district was used in the second stage of stratification. One representative municipality was randomly chosen in each of Iloilo Province's 5 congressional districts. This guarantees that each of the 5 congressional districts had a representative municipality.

The sampling frame was developed from the list of households obtained from the identified municipalities. Appropriate sample size per target population was determined based on 95 % level of confidence, 5 % margin of error, and 50 % response distribution. The formula used in determining the sample size was

$$\text{Sample size } n = \frac{NZ^2s^2}{Nd^2 + Z^2s^2}$$

where N = total number of sampling units in a population, $s = \delta^2$, Z = normal variable and d = maximum error deemed acceptable. The sampling frame was developed from the list of households obtained from the identified municipalities. The appropriate sample size per target population was determined based on 95 % level of confidence.

The distribution of sample size per municipality including a description of the chosen municipality is shown in Table 2. Sample size allocation per area covered was determined by proportional allocation.

Table 2. Profile of 5 sample municipalities and 1 highly urbanized city and sample size per area

ITEM	ILOILO CITY	MIAGAO	LEGANES	MINA	BAROTAC NUEVO	CONCEPCION
Land area (sq.km)	78.34	56.8	32.2	3.4	94.49	86.12
District	Lone District	1	2	3	4	5
Income class (2010)	1 st	1 st	4 th	5 th	2 nd	3 rd
Distance from the center (km)	0	40	11	38	27.5	105.6
Population (2010)	424,619	64,545	29,438	21,785	51,867	39,617
Milkfish production Status	Deficit ¹	Deficit ¹	Surplus ²	Deficit ¹	Surplus ²	Deficit ¹
No. of respondents	189	59	27	20	47	36

Source: Province of Iloilo (2016)

¹ non-milkfish producing municipality

² milkfish-producing municipality

Analytical Technique

The level of awareness and behavior towards food consumption trends was analyzed using means, standard deviations and frequency counts. Effect of gender on the level of awareness and behavior for each consumption trend issue

was determined using a one-way analysis of variance (ANOVA). This tests the null hypothesis that there is no difference in the means of the variables across gender of the purchase decision-maker.

$$H_o = \mu_1 = \mu_2 = \mu_3 \dots = \mu_n$$

$$H_1 = \text{at least one of the } \mu_s \text{ is different from the others}$$

Where H_o = null hypothesis, H_1 = alternative hypothesis and μ_n = mean of the variable (awareness and behavior on food consumption trends), n refers to gender category as either male or female. H_o is rejected or not, based on the F-test result. Probability value ($\text{Prob} > F$) less than 0.10 indicates significance at the 10 % level and is interpreted as the justification for rejecting the H_o . It is hypothesized that awareness and behavior on food consumption trends does not vary across gender of the milkfish purchase-decision maker. Levels of awareness and behavior were personal assessment of awareness and behavior towards food consumption trends measured on a Likert scale. Norman (2010) argued for the use of parametric statistics with Likert data, citing consistent results in the empirical literature dating back 80 years.

Results and Discussion

Level of Awareness towards Food Consumption Trends

Food safety was the food consumption trend consumers from Iloilo were most aware of (mean =3.65, moderately aware) (Table 3). The food consumption trend consumers were least aware of was sustainability in production (mean=2.86, somewhat aware). The order of ranking of the food consumption trend that respondents were most and least aware of was consistent between male and female respondents. Awareness was highest on food safety (3.65), followed by support to local farmers (3.30), local production (3.29), food labeling (3.13), organic food (3.14), and good agricultural practices (3.02). Level of awareness was lowest in the area of sustainability in production (2.86). The level of awareness gap was highest in the area of food safety with female respondents reported to be somewhat aware while the male respondents reported to be moderately aware (0.45). The awareness gap was lowest in the areas of sustainability in production and adherence to good agricultural practices among producers (0.02).

Table 3. Comparative level of awareness towards food consumption trends among milkfish *Chanos chanos* (Forsskål 1775) purchase decision makers in the Province of Iloilo, Philippines, 378 consumers, January 2016.

Food Consumption Trend	Mean	Female	Male	Variance	f-stat	p-value	sig
Food safety	3.65	3.46	3.91	0.45	10.80	0.001	***
Sustainability in production	2.86	2.86	2.87	0.02	0.36	0.547	ns
Good agricultural practices	3.02	3.01	3.04	0.02	0.02	0.897	ns
Organic food	3.14	3.11	3.19	0.08	0.03	0.855	ns
Traceability	3.03	2.97	3.11	0.15	1.10	0.295	ns
Locally-produced	3.29	3.21	3.41	0.19	1.99	0.159	ns
Support to local farmers	3.30	3.22	3.4	0.18	1.70	0.193	ns
Food labelling	3.13	3.06	3.24	0.17	1.42	0.234	ns

*** 1 % level of significance, ns- not significant

Of the 8 food consumption trends considered, only the level of awareness on food safety varied across gender. An analysis of variance showed that difference on the level of awareness across gender was significant, $F(1,376) = 10.84$, $p = .0011$. Post hoc analyses using the Bonferroni post hoc criterion for significance indicated that the average level of awareness was significantly higher among males ($M = 3.91$, $SD = 1.20$) than females ($M = 3.46$, $SD = 1.40$). This is consistent with the findings of Nurhan (2007) that male respondents scored higher than females on food safety knowledge in his study in the homes in Turkey. Except on the issue of food safety, the non-significant difference between genders in the level of awareness to all other food consumption trends can be attributed to unrestricted access to information regardless of gender in the study area. In the Province of Iloilo where the study was conducted, education as well as access to information is open regardless of gender. The relatively higher level of awareness among male purchase decision makers vis-à-vis their female counterparts may also be explained by the higher level of education among male respondents. About 93 % of the male respondents acquired a high school education and above, in contrast to female respondents who had 87 %. The level of education has a positive relationship with the level of awareness towards food safety (Unusan 2005; Patil et al. 2005).

Behavior towards Food Consumption Trends

Respondents exhibited the highest consistency in personally-assessed behavior in accordance to food safety (mean = 5.52, 'true of me') practices

(Table 4). This means that the males in general behaved in accordance with food safety practices. Respondents were found to exhibit the lowest personally-assessed behavioral consistency score with respect to sustainability in production (mean = 4.21, neutral). The behavioral gap across gender was noted to be highest on the issue of food labeling (0.72). Male respondents, on the average, tended to behave in conformance with food labeling requirements/regulations vis-à-vis their female counterparts by 0.720. Variability in the means of personally assessed behavior towards food consumption varied between male and female respondents. Difference in behavior was noted to vary at 0.01 significance level in the areas of food safety, traceability, and food labeling. Difference in behavior was noted across gender at 0.05 significance level for organic food consumption, sustainability in production, and local production. Finally, difference between genders with respect to good agricultural practices and support to local farmers was noted to vary at 0.1 significance level.

Table 4. Comparative level of behavior towards food consumption trends among milkfish *Chanos chanos* purchase decision makers in the Province of Iloilo, Philippines, 378 consumers, January 2016.

FOOD CONSUMPTION TREND	Mean	Female	Male	Variance	f-stat	p-value	sig
Food safety	5.52	5.24	5.9	0.661	11.5	0.008	***
Organic food	4.61	4.41	4.9	0.49	6.57	0.011	**
Sustainability in production	4.21	4.04	4.46	0.42	5.07	0.025	**
Good agricultural practices	4.58	4.43	4.79	0.36	3.53	0.061	*
Traceability	4.31	4.06	4.65	0.59	9.08	0.003	***
Locally-produced	4.67	4.47	4.95	0.48	6.47	0.011	**
Support to local farmers	4.7	4.54	4.91	0.37	3.63	0.057	*
Food labelling	4.4	4.1	4.82	0.72	12.8	0.000	***

*** 1 % level of significance, ** 5 % level of significance, * 10 % level of significance

In spite of the relatively small differences in awareness between the genders with respect to food consumption trends, males generally behaved at a level that was more consistent with food consumption trends than did females. This indicated that males generally adopted food trends faster than females. In food safety, for example, male purchase decision makers generally behaved in accordance with food safety practices than female purchase decision makers. Although some claim, e.g., Verbeke et al. (2007) that awareness is not being

translated into actual purchase behavior, in Iloilo, this held only for female purchase decision-makers but not for males. Kotler (2013) contended that many factors influence consumer behavior and among those are cultural (culture, sub-culture, and social class), social (reference groups, family, and roles and statuses), personal (age and life cycle stage, occupation, economic situation, lifestyle, personality and self-concept) and psychological (motivations, perception, learning, and beliefs and attitudes) factors. Attribution to individual and combined effects of these factors on variability in behavior for all food trends across gender may be difficult but, in the present study, the over-all effects of these factors strongly influenced male rather than female purchase decision-makers.

Conclusions and Recommendations

This study investigated the level of awareness and behavior of milkfish purchase makers in the Province of Iloilo across gender. This was a study into the gender differences among consumers in awareness and behavior for potential use in understanding market segmentation.

On awareness, only food safety showed a significant difference between male and female respondents. On behavior towards food consumption trends, there was an observed difference between male and female purchased decision-makers. Males generally outscored the females in terms of level of behavior towards all food consumption trends. Information generated is vital in the segmentation of the milkfish market because product marketers would want to know more deeply how the consumers are reacting to food issues.

Based on the results of the study, food marketers would be advised to segment the milkfish market. A market segment is comprised of a homogenous group of existing and potential customers sharing the same needs, wants and demand characteristics and that would respond similarly to a given marketing action. Grouping the market based on the gender of the purchase decision maker is a viable segmentation variable due to considerable differences between males and females. If the intent of marketing communication is to increase the level of awareness, communication that would appeal largely to both genders can be adapted except on the issue of food safety where it will be more effective if addressed to women. Marketing communication to close behavior gaps between men and women can be made more effective if targeted towards women.

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