International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Assessment on Consumers' Awareness and Perception Towards Monosodium Glutamate (MSG) and Its Effect to Their Buying Behavior

Mr. Ariel Besyag Mariano

Instructor I, CA-DAEAM, Benguet State University

Abstract

Even though monosodium glutamate is generally accepted as a safe food additive by the United Nations Food and Agriculture Organization and the World Health Organization, there is a stigma with Monosodium Glutamate (MSG) being a dangerous food additive with claims that it causes headaches, heart palpitations or worse, cancer. The study was designed to assess the awareness and perception of today's consumers of monosodium glutamate (MSG) and how it affects their buying behavior. The study aimed to determine the level of awareness, perception and behavior of the respondents towards MSG and to evaluate their differences across classifications along selected profiles.

The study was conducted at Green Valley, Baguio City which is comprised of a population with different demographics. The results were statistically analyzed using test of proportions and comparison of means to show the differences and associations between the variables.

There is a high level of awareness among the respondents on MSG and its presence on certain commodities. When grouped along selected profiles, the respondents have shown the same level of awareness being highly aware on most of the commodities identified in the study and moderately aware on some. The stigma about MSG is still dominant, with the respondents showing a negative perception of the additive affecting their buying decisions. The negative perception on MSG is dominant over its benefits as suggested by the attitude exhibited by the respondents being neutral on the safety of MSG in moderate consumption and in making products tastier and appetizing.

INTRODUCTION

The safeness of monosodium glutamate (MSG), a widely used additive acting as food enhancer all around the world for over a century has been a controversy for decades. Even with the World Health Organization, the Food and Drug Administration of America and several other reputable agencies and authorities declaring MSG to be generally safe as a food additive, still the negative perception on MSG which aroused in the late 60's remains today. This study will assess how today's consumers perceive MSG as to its safeness as a food additive and how it relates to their buying behavior over products with MSG.

Background of the Study

Food safety along with food security is one of the many issues faced by every economy in the world. It is a global crisis being addressed by every nation. Though food security may seem to be an issue faced by countries with poor economies where hunger and malnutrition strike, food safety as another issue is not. As food security covers the abundance, sufficiency and availability of food, food safety as another

major concern in this issue seeks not only for food to be made available and sufficient, but also are to be made safe for consumption.

With the continuous growth of human population, food industries are seeking new ways to increase their production to meet the increasing demand for food. Today, food manufacturers are not only seeking ways to maximize their production to cater to the growing need of consumers for their products, but also to lower their costs of production.

Through the recent developments in the food industry, natural and synthetic additive substances are being used in food production to improve the quality and taste of food, to prolong their shelf life and to decrease costs. Despite their many benefits, these applications can sometimes cause allergy, chronic or acute food poisonings, deaths and labor force loss. Therefore, it is crucial that consumers perceive risks stemming from food and learn how to manage them when purchasing and thereby decide whether the food is safe or not (Onay et al., 2011).

Today, the relations between food production and consumption made it a technological obligation to use food additives. The increase in food production and processing together with the advancements in the industry led to an increase in the use of food additive substances. The increase in the number of people working in places other than homes, changes in eating habits, little time left for food preparation or the desire to spare less time for preparing food, encouraged commercial production of ready and semi-ready foodstuffs, which made it inevitable to use food additive substances (Yurttagul and Ayaz, 2008, as cited by Onay et al., 2011).

The first stage of the story of MSG begins in 1908 with chemist Ikeda Kikunae's isolation of the ingredient in sea kelp that gave flavor to konbu dashi, the standard Japanese broth. Trained in Germany, the center of organic chemistry at the time, Ikeda shared with his German colleagues a desire to develop a cheap and mass-manufactured source of nutrition. The product that emerged from Ikeda's laboratory, monosodium glutamate, was quickly patented in Japan, the United States, England, and France. In domestic announcements of his invention, Ikeda proposed calling its distinctive taste umami—a term derived from the colloquial masculine word in Japanese meaning "tasty" (Sand, 2005).

Monosodium glutamate (MSG) has then been used as a flavor enhancer which has been used effectively for over a century to bring out the best flavor of food. Its principal component is an amino acid called glutamate. Glutamate is found naturally in protein containing foods such as meat, poultry, and milk. Only free glutamate (in salt form with sodium or potassium) is effective in enhancing the flavor of foods. Some ingredients used in food processing such as autolyzed yeast, calcium caseinate, and hydrolyzed protein are known to contain free glutamate or MSG.

MSG is sold as fine white crystal substance with similar to appearance to salt or sugar. MSG and many ingredients that naturally contain MSG or added MSG such as pre- mix seasoning have been deliberately added to foods as flavor enhancer at different levels by consumers (Andarwulan et al., 2011).

Specifically, monosodium glutamate is the sodium salt of the amino acid, L-glutamic acid. Dissolved in water, the sodium and glutamate ions freely separate in solution. Glutamic acid is the most common amino acid found in the human body and a major constituent of virtually every dietary protein. It occurs mostly bound up in enzymes and other proteins although free or unbound glutamate is also found in many foods including meat, fish, poultry, human breast milk and vegetables. Fermented soy products, Parmesan cheese and tomato juice also contain large amounts of free glutamate. Food processing which involves aging, drying, roasting, fermentation, toasting or ripening of foods liberates free glutamate from the breakdown of protein causing the deliciousness in foods known as the umami taste. There are other

substances which contribute to the umami taste and include complex sugar phosphates such as inosine 5'-monophosphate (IMP), guanosine mono phosphate (GMP) and their derivatives. These substances are also found in meat, fish, vegetables and mushrooms (Safefood, 2012).

Wandel and Bugge (1996), as cited by Radam et al. (2010) stated that food safety related with MSG has become a high-profile issue facing, not only consumers, but also marketers, producers, processors, retailers and governments. Increased awareness of consumers towards food safety related with MSG has made them more conscious of their diet and food intake. Today, food regulations and increased consumer awareness are forcing food companies across the world to display more and more information on packaged food products (Kumar and Ali, 2011).

The prevailing opinion on MSG is that it is a dangerous additive, prone to causing headaches, heart palpitations or perhaps even cancer (Sufrin, 2014). It all started in 1968, when Dr. Robert Ho Man Kwok, a then recent Chinese immigrant, wrote a letter to the editors of the New England Journal of Medicine (NEJM). Dr. Kwok complained of a strange set of symptoms he experienced when he ate at "certain Chinese food restaurants," symptoms he did not experience when he ate back in China or in his own home cooking. He described "numbness at the back of the neck, gradually radiating to both arms and the back, and general weakness and palpitation." Dr. Kwok speculated about a few potential culprits for these maladies, with MSG among them. The NEJM gave his letter the amusing title "Chinese Restaurant Syndrome," but Americans failed to see the humor. Soon, countless others were writing the offices of the NEJM complaining of similar experiences with Chinese food. Unbeknownst to Dr. Kwok, his letter had shined a prejudiced spotlight on Chinese cooking that shapes our thinking to this day (Germain, 2017).

The study will assess the awareness and perception of today's consumers about MSG and as to how these perceptions affect their buying decisions. Despite the fact that monosodium glutamate is generally accepted as a safe food additive, the FDA says the addition of MSG to foods is GRAS, which means 'Generally Recognized as Safe' (Nogrady, 2015 and Bera et al., 2017). In 1988, it is evaluated and categorized as safe food ingredient by the United Nations Food and Agriculture Organization and the World Health Organization (Singh, 2005). In 1991, the Scientific Committee for Food (SCF) of the European Commission reached the same evaluation (Walker and Lupien, 2000), and it is legally manufactured and marketed in many countries including the Philippines. Still, its use to food has become a controversy for quite some time due to reports of having the so called "Chinese Restaurant Syndrome" which pertains to MSG's negative effects on consumers who have consumed products containing MSG.

The study could help consumers create or increase their awareness and build their perceptions about monosodium glutamate which will be useful for them in their purchase decisions. Also, results of the study could be of help for future researchers conducting the same or related studies.

Conceptual Framework

Product purchase starts with the awareness of consumers about the product. After awareness is the consumers' perception about the product which would affect their buying decisions.

Aside from price, quality is a key determinant of product purchase whereby consumers look for the components of a product and for products such as food, the ingredients and nutrient contents are highly considered determinants of product purchase. Due to issues relating monosodium glutamate to food safety, consumers' awareness and perception about this food additive be it positive or not, and their

attitude towards this additive greatly affect their buying decision over products with monosodium glutamate (MSG).

Figure 1 depicts the hypothesized interrelationships between the variables of the study. The independent variables of the study which includes the socio-demographic profile of respondents (as to their sex, age and stage in the life cycle, educational attainment, and income) along with their awareness of MSG and its presence on a product are the determining factors of consumer buying decisions. Moreover, these independent variables are considered as keystones to which consumers' perception over MSG are formed. These consumers' perception along with their attitude towards MSG (be it positive or not) then becomes an intervening variable leading to an effect towards consumer buying behavior in terms of their buying decisions which is the dependent variable of the study.

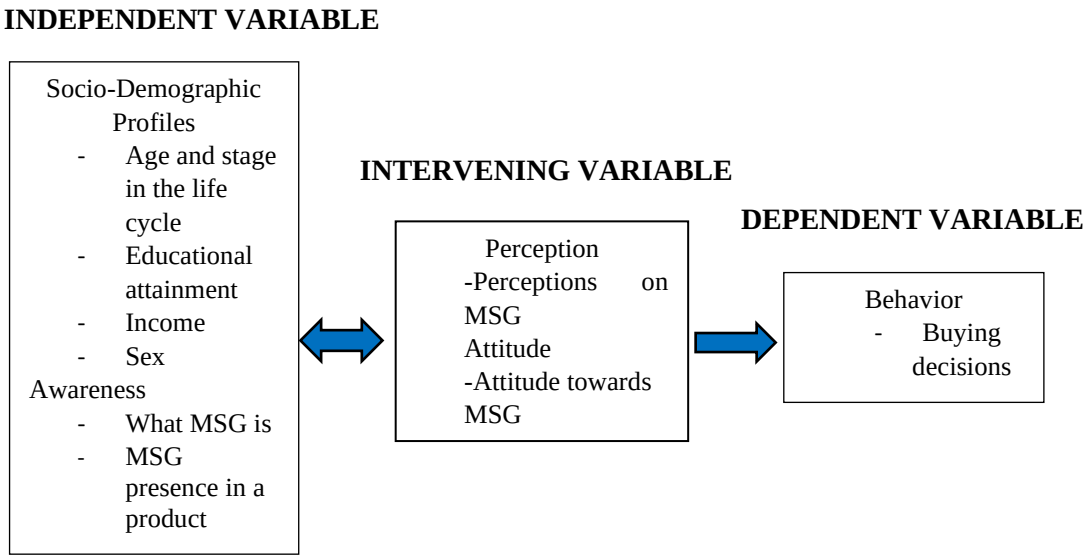

Figure 1. Paradigm of the study

Demographics on Consumer Behavior

Age. The age and stage in the life cycle of an individual is a predictor of how a consumer would behave over a product. The American Institute for Learning and Development identified twelve (12) stages of human life cycle based from the book of Thomas Armstrong, *The Human Odyssey: Navigating the Twelve Stages of Life*. The study focused on four of these human life cycle stages; adolescence (ages 12-20), early adulthood (ages 20-35), midlife (ages 35-50) and mature adulthood (ages 50-80) as these stages would be the stage where an individual would most likely be engaging in consumer purchase in terms of purchasing power and decision making.

Sex. Since the study focused on monosodium glutamate primarily in relation to health issues, sex would be highly considered as part of the consumer demographics. Along with age, sex is a key factor to likely influence health related behavior. For instance, women are reported to be taking more responsibility for their health, potentially related to risk perception and the gender bias that women are socialized to be more concerned about health issues than men (Deeks et al., 2009).

Income. Income is a key determinant of product purchase as it determines the purchasing power of individuals. The capability of a consumers to spend over a product is highly associated with their income. Income is more important than social class in explaining the consumption of low social value

products and services that are not related to class symbols but require substantial expenditures (Mihic and Culina, 2006).

Educational attainment. It would only be but logical that a more educated consumer would tend to be wiser in purchase decision making as compared to a regular consumer. The issue on the safeness of monosodium glutamate has been based on norms, on insights and opinions of persons who claimed that the said ingredient has a negative effect on human health and of persons claiming to have experienced such negative effects after taking in the ingredient. However, the fact that MSG has been recognized as safe by legal authorities, the level of education of consumers would be a factor in determining the purchase and consumption of MSG.

Education affects how people view things around them. It affects the level of discretion they employ while making purchases. In this era, education has also become the determinant of social class and the easiest method to climb up in the society. The more educated a person is, the higher the level of discretion he or she will employ in making purchases. People's preferences can change with education. Every customer is well informed in this era. However, the more educated ones take more time before deciding a purchase. Education affects a number of things including the fashion you wear and the programs you watch. It affects even your choice of stationery and the magazines you are reading. It is why the same ads do not work with all customers. Highly educated customers look for information and do not rely on ads alone. They question the information served before them. If observed carefully, education's effect can easily be seen on consumer behavior. An educated customer would weigh his options carefully before going for a purchase.

Consumer behavior is affected by several factors; the chief among them are age, sex, income and education. While our preferences change with age and level of education, sex and income also affect our product choices and decision-making patterns (Pratap, 2017).

Awareness on Consumer Purchase

Consumer purchase always starts and involves awareness. The most recognized consumer purchase intention model involves five stages: identification of the problem, searching information, evaluating the substitutes, making decision and behavior after purchase. Each step in the purchase intention model primarily involves awareness:

Identification of the problem. It is the consumers need recognition or being aware of the need that needs to be addressed. This then leads to a consumers' search for products and/or services to satisfy that need.

Searching of information. It is technically being aware of all information regarding the perceived need's fulfillment. It involves equipping oneself with the information about products and/or services that will satisfy these needs.

Evaluating the substitutes. It means being aware of all possible alternative ways as to addressing the perceived need. It involves weighing alternatives as to which among of these will better satisfy the need.

Decision making. It is the stage of selecting from various alternatives as to which would best meet the fulfillment of the perceived need. This would only be possible if the consumer is aware of all information needed to come up with the decision.

Shahid et al. (2017) stated that consumers are always hesitant of buying new products. Before buying anything, wise consumers will always do market research or ask someone they trusts and after being well aware of what, how and where to buy, they will buy the product.

Perception and Behavior

Perception is a derivative from a consumers' awareness and demographic profile. Perception is

understood to be a process through which impressions are formed (Kempen et al., 2010 citing Du Plessis and Rousseau, 2007). Uwe et al. (1993) as cited by Radam et al. (2010) defined perception as an event over time rather than as an instantaneous reaction to outside stimulation. They also view perception as an event, the roots of which are to be found beyond the restricted confirms of awareness often closely intertwined with the observers' private world of memories and emotional experience.

According to Katona and Strumpel (1978) as cited by Radam et al. (2010), attitudes and perception are closely related. Both these concepts tend to affect one's perceptions and shape one's behavior. They suggested that the growing concern among consumers related to poor quality of products and services may have been affected by "… the worsening of workmanship, lesser durability, and similar objective factors, or in consumers' expecting more from the goods and services than before."

Attitude

Consumer attitudes, on the other hand, are a composite of a consumer's (1) beliefs about, (2) feelings about, (3) and behavioral intentions toward some objects within the context of marketing, usually a brand or retail store. These components are viewed together since they are highly interdependent and together represent forces that influence how the consumer will react to the object (Perner, 2018).

Monosodium Glutamate as Food Additive

Safefood (2012), also known as The Food Safety Promotion Board, an organization employing expertise on food science, mentioned that adding MSG to meat, vegetables and just about any other type of prepared food imparts a savory flavor - the umami taste – and thus helps enhance the flavor. This explains why glutamate is often deliberately added to foods by food processors and restaurants, either as pure MSG, hydrolyzed protein, yeast extract or a variety of food ingredients rich in glutamates, such as cheese, tomato pastes, stocks and sauces. Though MSG can improve the taste, it cannot improve the quality of inferior-quality food or make up for poor cooking practices. It does not allow a cook to substitute low-quality for high-quality ingredients in a recipe, it is not a preservative and does not tenderize meat. MSG simply enhances the savory flavor already present in food. However, over-use of MSG, or use with poor quality ingredients, will result in an unpalatable product.

It was also discussed by the organization that because MSG has no smell or specific texture of its own, it can be used in many different dishes for its ability to improve the palatability of foods by balancing and enhancing other flavor (e.g., sugar seems sweeter; and salt seems saltier). MSG and other amino acids such as alanine, aspartate, and arginine are all used to improve the flavor of food. The basis of our ability to enjoy this umami taste is rooted in evolution. Animals require certain amino acids for growth and nutrition and they obtain these through eating protein-rich sources of food. From birth, specific taste receptors (taste buds) on the human tongue are responsive to many of the twenty amino acids naturally used in the production of proteins by all cells in the body. Glutamate triggers the strongest response by human taste receptors, thus providing a biochemical link to nutrient-rich and protein-rich sources. Interestingly, those other flavoring agents known as 5'-nucleotides (e.g. IMP and GMP), greatly increase the umami response of the taste receptors to amino acids – causing a synergism of taste. The addition of even a small quantity of MSG to food that contains these nucleotides produces an umami taste response that is six-to-eight-fold greater than that expected from the same quantity of MSG added alone.

The organization also added that the umami taste is not unique to Oriental cuisine. In fact, there is historical evidence for its popularity amongst the people of the ancient Roman world. Even today, Italian cuisine, with rich and concentrated tomato sauce and added cheeses such as parmesan, can provide even more glutamate than an ethnic Asian meal. When a consumer next grates parmesan cheese onto some

dull spaghetti, what he or she will have done is add glutamate to stimulate their tongue's umami taste receptors, thus sending a message to the brain which signals a rich and full sense of deliciousness. Almost all foods have some naturally occurring glutamate in them but the ones with most include: ripe tomatoes, cured meats, dried mushrooms, soy sauce, yeast extract including well known products such as Bovril® and Marmite®, stock cubes and of course Worcester sauce and various fermented Asian fish sauces.

Statement of the Problem

The study was designed to assess the awareness and perception of consumers on MSG and its effect to their buying behavior. The research aimed to answer the following questions:

1. What is the socio-demographic profile of consumers in Green Valley, Baguio City?
1. What is the consumers' level of awareness on food products with added MSG?
2. What are the differences of consumers' level of awareness on MSG presence on certain food products when grouped according to sex, age, educational attainment and income?
3. What is the perception of consumers on the safeness of monosodium glutamate?
4. What is the association of the buying behavior of consumers on products with MSG and consumers' sex, age, educational attainment and income?
5. What is the consumers' attitude about monosodium glutamate?

Hypotheses of the Study

With the above problems, the following hypotheses were driven for testing:

1. The respondents are: mostly females, in their midlife stage, post secondary graduates and belong to the high income group.
2. The respondents' level of awareness on MSG and its usage on certain commodities do not differ from moderate.
3. The level of awareness of the respondents do not differ across selected classification along profile of respondents.
4. The respondents perceive monosodium glutamate to be unsafe for consumption.
5. The buying behavior of the respondents is associated with sex, age, educational attainment and income.
6. The consumers' attitude about MSG is neutral.

METHODOLOGY

This chapter covers the research design, population, locale and time of the study. Also, this chapter covers the data collection instrument, data collection procedure and treatment of data which were used from data gathering to analysis of these data to come up with the results of the study.

Research Design

The study made use of the quantitative research design using descriptive survey. The design was appropriate in the study since the researcher assessed and explored the perspective of the consumers on products with MSG presence. Also, numerical information as to level of awareness and attitudes were gathered and categorical descriptions were generated.

Population and Locale of the Study

The study was conducted on September 2018. A total of 160 household consumers served as the respondents for the study which were selected through random sampling. The study was conducted at

Green Valley, Baguio City, an area populated with individuals having different demographics which was specifically selected for the study since the researcher explored and assessed the perspective of consumers with varying demographic profiles.

Data Collection Instrument

A survey questionnaire was used to gather all the data necessary for the study. The questionnaire's face validity was established by having the questions formulated logically linked with the objectives of the study ensuring all relevant data were gathered which include the respondents' socio-demographic profile, awareness and perception of monosodium glutamate, and the effects of such awareness and perception to their buying behavior. Furthermore, the questionnaires were pilot tested to a subset of the population, and the data were analyzed to determine the reliability of the instrument and a revision of the instrument was done.

Data Collection Procedure

Prior to data collection for the study, the survey instrument was pilot tested to certain respondents to check for errors and further improve the instrument. The pretested instrument was then administered to the respondents to gather data necessary for the research. Upon collection of survey instruments, a supplementary interview was conducted to certain respondents with incomplete response in order to supply other additional or missing information ensuring that all data required were gathered.

Treatment of Data

The data gathered were statistically analyzed in accordance to the objectives of the research using descriptive and other appropriate statistical tools which include chi-square test, F-test and T-test in assessing differences between variables of the study with selected profile of the respondents. Relative frequencies were used in assessing the relationship between variables such that of the respondents' socio-demographic profile to their perception about MSG. Test of proportions and comparison of means were used in analyzing differences and associations. Furthermore, logistic regression was employed to answer the main problem of the study.

RESULTS AND DISCUSSION

Profile of the Respondents

Table 1 presents the distribution of respondents according to demographic profile. The profile of the respondents gathered includes sex, age, educational attainment and income.

Distribution of Respondents According to Sex

Of the 160 total respondents, 110 or 68.8% respondents were females which is expected as the respondents were households and it is more prevalent for

Table 1. Distribution of respondents according to demographic profile

PROFILES	F	%
Sex		
Male	50	31.3
Female	110	68.8
Age		
12-20	8	5.0
21- 35	66	41.3
36 - 50	59	36.9

51 - 80	27	16.9
Educational Attainment		
Pre-secondary (Elem. Undergrad, Elem. Grad)	35	21.9
Secondary Level (HS undergrad, HS grad, Vocational)	63	39.4
Post Secondary (College Undergrad, College Grad, Post Grad.)	62	38.8
Income (Php)		
10,000 and below	97	60.6
10,001 – 20,000	49	30.6
20,001 and above	14	8.8

the female of households to be in charge of making the buying decisions on goods for household consumption. Males on the other hand, have 50 frequency which accounts for 31.3 % of the total number of the respondents. This result further shows the change in the traditional understanding that women, as wives, are the household managers making household decisions as seen on the data presented with a relatively large number of male respondents.

Distribution of Respondents According to Age

The distribution of respondents according to age is limited to four ranges which is associated to the different stages in the human life cycle. The age ranges considered in the study are from 12-20 years old (adolescence), 21-35 years old (early adulthood), 36-50 years old (midlife) and 51-80 years old (mature adulthood).

More number of the respondents falls under early adulthood (ages 21-35), with a frequency of 66 or 41.3% followed by midlife (ages 36-50), with a frequency of 59 or 36.9% of the population. Mature adults (ages 51-80) accounted for 27 or 16.9% and the least are the adolescents (ages 12-20) which accounted for a frequency of 8 or 5% of the population. This result implies that most of the respondents were belonging to the younger generations led by Millennials (ages 21-35) and Generation X (ages 36-39). This result with the varying ages of the respondents is beneficial to the study as age is a great contributing factor affecting the buying behaviour of consumers.

Distribution of Respondents According to Educational Attainment

The educational attainment of the respondents were grouped into three levels: pre-secondary level which includes those who were elementary undergraduate and elementary graduate, secondary level which includes high school undergraduate, high school graduate and vocational course graduates and the post-secondary level which includes college undergraduate, college graduate and post graduate.

More number of the respondents have attained secondary and post-secondary level, having 63 or 39.4% of the respondents to have reached secondary level and 62 or 38.8% have reached post secondary level. The remaining 35 or 21.9% of the respondents have reached pre-secondary level.

This result shows that as the respondents were mostly moderate to highly educated individuals. There is also a significant number of the respondents with low level of educations which is needed for the analysis of the study as these different levels of education would be associated with their perspectives as consumers.

Distribution of Respondents According to Income

Income distribution of respondents were measured in three ranges of monthly income: 10,000 PHP and below, 10,001 PHP - 20,000 PHP and 20,001 PHP and above. Most of the respondents (97 or 60.6%) claimed to be below 10,000 PHP income range. There were 49 or 30.6% respondents who claimed to be under the 10,001 PHP - 20,000 PHP income range and the remaining fourteen (14) or 8.8% of the respondents claimed to have above 20,001 PHP and above income range. This result of the respondents with varying income levels is necessary in assessing the resulting differences in their perspectives.

Awareness on MSG and MSG Containing Products

Respondents Level of Awareness on the Presence
of MSG on Certain Commodities

Table 2 presents the level of awareness of the respondents on the presence of MSG on certain commodities. Result shows that there is a highly significant difference on the respondents level of awareness across certain commodities considered in the study. Among the commodities used in the study were:

Table 2. Awareness level of the respondents along the different commodities/food products with MSG

COMMODITIES/ FOOD PRODUCTS	MEAN	DESCRIPTIVE EQUIVALENT	T-VALUE	SIG.
Condiments	2.52	Highly Aware	9.755**	0.000
Ready made mixes	2.64	Highly Aware	13.637**	0.000
Calorie dense foods	2.99	Highly Aware	159.00**	0.000
Frozen foods	2.54	Highly Aware	10.243**	0.000
Canned goods	2.46	Moderately Aware	7.965**	0.000
Instant noodles	2.92	Highly Aware	39.243**	0.000

**- highly significant

Legend:

2.50 - 3.00 Highly aware
1.50 - 2.49 Moderately aware
1.00 - 1.49 Not aware

condiments, ready-made food mixes, calorie dense foods (junk food), frozen foods, canned goods and instant noodles.

The respondents level of awareness were the highest on calorie dense foods and instant noodles with mean scores of 2.99 and 2.92 respectively which can be attested to the fact that these two commodities are the most commonly known food products with MSG content. The respondents were also highly aware on MSG's presence on ready made food mixes with a mean score of 2.64, frozen foods with a mean score of 2.54 and condiments with a mean of 2.52. Only with canned goods did the respondents have a moderate level of awareness with a mean of 2.46.

This result of consumers having high level of awareness on MSG and its usage on commodities paired with the stigma on MSG affects their buying behavior. In fact, result from a study conducted by Radam et al. (2010) have shown that consumers were willing to pay premium price towards products labeled with "No MSG". These results were consistent with each other and are directed towards how MSG in general negatively affects the buying behavior of consumers. This behavior of consumers being willing

to pay more for products that does not contain MSG shows their high level of awareness of the compound and the stigma on MSG resulting for them to detest products containing the said compound which further suggests a negative effect of MSG to the buying behavior of consumers.

Respondents' Level of Awareness when Grouped According to Sex

Table 3 presents the awareness of respondents on the presence of MSG on certain commodities when grouped according to sex. Results show that in most of these commodities, there is no significant difference in consumers' level of awareness on the presence of MSG across the different sexes.

Female respondents were more aware of MSG's presence on condiments wherein they had a mean score of 2.57 which means highly aware, while male respondents were only moderately aware with a mean score of 2.40. As to ready-made food mixes, there is a closer gap between the mean scores of the different sexes having female respondents with a mean score of 2.66 and male respondents with a mean score of 2.60; both are categorized as highly aware.

Table 3. Awareness of respondents when grouped according to sex

COMMODITIES	SEX		T-VALUE	SIG.
	MALE	FEMALE		
Condiments	2.40	2.57	-1.512^{ns}	0.133
Ready-made mixes	2.60	2.66	-0.624^{ns}	0.534
Calorie dense foods	3.00	2.99	0.673^{ns}	0.502
Frozen foods	2.30	2.64	-3.183**	0.002
Canned goods	2.28	2.54	-2.143*	0.034
Instant noodles	2.94	2.91	0.611^{ns}	0.542

ns-not significant *- significant **- highly significant

Legend:

2.50 - 3.00 Highly aware
1.50 - 2.49 Moderately aware
1.00 - 1.49 Not aware

The highest level of awareness on MSG's presence among these commodities measured were on calorie dense food and instant noodles. Also, male respondents have a higher mean score than female respondents on both calorie dense foods and instant noodles with a score of 3.0 and 2.94 respectively and female respondents with a score of 2.99 on calorie dense foods and 2.91 on instant noodles. It can be observed, however, that apart from calorie dense foods and instant noodles, female respondents have higher level of awareness of MSG presence on most of these commodities than male respondents.

Among these commodities, an exception, however, can be made for frozen foods and canned goods wherein it is found that there is a significant difference on the level of awareness of the respondents on account to their sex. Female respondents were more aware than the male respondents on the presence of MSG for both of the commodities. Female respondents had a mean score of 2.64 and 2.54 on their level of awareness for frozen foods and canned goods respectively which is categorized as highly aware and is way high compared to male respondents who were moderately aware with mean scores of 2.30 and 2.28 on frozen foods and canned goods respectively.

This result implies that females are generally more health conscious than males. MSG's rise to popularity is due to issues related to food safety and health. The general view that women are more health conscious than men and that women perform healthier food choices and food intake as concluded in a study by Arganini et al. (2012) and several other studies is in congruence with this result of female respondents being more aware than the male respondents about MSG and its usage to common commodities.

Respondents' Level of Awareness When Grouped According to Age

Table 4 presents the level of awareness of the respondents on the presence of MSG on certain commodities when grouped according to age. Result shows that across the different age groups, there was no significant difference on the level of awareness of the respondents.

The level of awareness of the respondents across different age groups were the highest on calorie dense foods with the adolescent (ages 12-20), midlife (ages 36-50) and mature adults (51-80) having the same mean score of 3.0 and the young adults (ages 21-35), with a mean of 2.98. It is followed by instant noodles

Table 4. Awareness of respondents when grouped according to age

COMMODITIES/ FOOD PRODUCTS	AGE				F-VALUE	SIG.
	12-20	21-35	36-50	51-80		
Condiments	2.37	2.53	2.56	2.44	0.306^{ns}	0.821
Ready made mixes	2.50	2.59	2.75	2.59	0.966^{ns}	0.410
Calorie dense foods	3.00	2.98	3.00	3.00	0.470^{ns}	0.704
Frozen foods	2.62	2.47	2.58	2.63	0.495^{ns}	0.689
Canned goods	2.25	2.42	2.54	2.44	0.516^{ns}	0.672
Instant noodles	2.75	2.91	2.95	2.93	1.104^{ns}	0.349

ns-not significant

Legend:

2.50 - 3.00 Highly aware (H)
1.50 - 2.49 Moderately aware (M)
1.00 - 1.49 Not aware (N)

where the midlife group has the highest mean score (2.95), then the mature adults (2.93), young adult (2.91) and the adolescents (2.75); all categorized highly as aware.

For the commodities namely: frozen food, condiments and canned goods, the level of awareness along the different age groups varies from high to moderate. Frozen foods had the mature adults and adolescents to be the highest but with slightly different mean scores of 2.63 and 2.62 respectively and the midlife having a mean of 2.58 being all categorized as high level of awareness while young adults with a mean of 2.47 is categorized under moderate level of awareness. For condiments, the midlife and young adults were highly aware, with mean scores of 2.56 and 2.53 respectively while the mature adults and adolescents were moderately aware, having mean scores of 2.44 and 2.37 respectively. Only the midlife respondents were highly aware of MSG's presence on canned goods, with a mean score of 2.54 and the other age groups were moderately aware, with mean scores of 2.44 for mature adults, 2.42 for young adults and 2.25 for the adolescents.

Jawajala et al. (2018) have mentioned in their findings that as people age, they are becoming very health

conscious giving primacy to their health and thus incorporate in their lifestyles diets that are not only nutritious and tastes good, but those that contribute to their health and well-being. On the contrary, it was found that younger consumers were more health conscious than older generations based on a survey conducted by Nielsen (2015), revealing that younger consumers were more particular about health in relation to food being the most willing to pay more for health attributes. All these findings, however, were insignificant to the findings of this study whereby there was no significant difference among the different age groups when it comes to their awareness of MSG and its usage to certain commodities. This result of having no significant difference on the level of awareness of the respondents across different age groups implies that there is a wide range of awareness about MSG and its usage to certain commodities. As people are becoming more health conscious as they age (Jawajala et al., 2018), younger generations at the same time were found to becoming more engaged on taking initiatives for their well-being making health-promoting diet and lifestyle a priority (Nielsen, 2015).

Gustafson (2017) further explained that while professional health care is generally practiced in response to diseases which is prevalent to the older people who are more susceptible to acquired and degenerating diseases, an increasing interest in preventive measures shows a shift in awareness and behavior, especially among the young. These facts make the idea that older people are more health conscious invalid, but rather health is now a priority of all ages. This also explains the result of having a slight difference in the level of awareness by the respondents resulting to a no significant difference finding on the level of awareness of the respondents across different age groups which proves that the young consumers are becoming health proactive with their lifestyles in particular.

Respondents' Level of Awareness when Grouped
According to Educational Attainment

Table 5 presents the level of awareness of respondents on the presence of MSG on certain commodities when grouped according to educational attainment. Results reveal that there was a highly significant difference in the level of awareness of respondents across different educational attainment for condiments, ready-made food mixes, frozen foods and canned goods.

On all of these aforementioned commodities, the post-secondary respondents had the highest level of awareness followed by secondary and then

Table 5. Awareness of respondents when grouped according to educational attainment

COMMODITIES/ FOOD PRODUCTS	EDUCATIONAL ATTAINMENT			F-VALUE	SIG.
	PRE-SECONDARY	SECONDARY	POST-SECONDARY		
Condiments	2.17	2.47	2.76	9.665**	0.000
Ready made mixes	2.46	2.57	2.82	5.214**	0.006
Calorie dense foods	3.00	2.98	3.00	0.768ns	0.466
Frozen foods	2.14	2.54	2.77	11.153**	0.000
Canned goods	2.00	2.41	2.77	14.878**	0.000

Instant noodles	2.83	2.92	2.97	2.520^{ns}	0.084

ns-not significant **- highly significant

Legend:
2.50 - 3.00 Highly aware
1.50 - 2.49 Moderately aware
1.00 - 1.49 Not aware

pre-secondary. Post-secondary respondents had high level of awareness on all of the commodities, with mean scores of 2.76 on condiments, 2.82 on ready-made food mixes, 2.77 on frozen foods and 2.77 on canned goods. On the other hand, secondary respondents had a varying level of awareness from highly aware to moderately aware, with mean scores 2.47 (moderately aware) on condiments, 2.57 (highly aware) on ready-made food mixes, 2.54 (highly aware) on frozen foods and 2.41 (moderately aware) on canned goods. Pre-secondary respondents had a moderate level of awareness on all other commodities apart from calorie dense foods and instant noodles, with means of 2.17 on condiments, 2.46 on ready-made food mixes, 2.14 on frozen foods and 2.0 for canned goods.

It is also found that in calorie dense foods and instant noodles, there was no significant difference in respondents' level of awareness across different educational attainment. The level of awareness of the respondents on calorie dense foods when grouped according to educational attainment had a very slight difference on mean with the pre-secondary and post-secondary having the same mean score of 3.0 and secondary, with a mean of 2.98 which means that the respondents were highly aware of the presence of MSG on calorie dense foods. Also, the level of awareness of the respondents on instant noodles varies but are still with slight difference in mean as post-secondary (2.97), secondary (2.92) and pre-secondary (2.83); this means that the respondents were highly aware on the presence of MSG on instant noodles. This was expected as calorie dense foods and instant noodles are the most common commodities known to have MSG content which makes respondents' educational attainment irrelevant to their awareness. Even if the respondents have very little to no education at all, it has been a common knowledge that when it comes to MSG containing products, calorie dense foods and instant noodles are the primary products being brought up containing such.

Based on the data from the result presented, it can be concluded that apart from the commodities calorie dense foods and instant noodles, the level of awareness of the respondents is directly associated with their educational attainment. It can also be noted that respondents with higher level of educational attainment had higher level of awareness on the presence of MSG on certain commodities.

Respondents' Level of Awareness of when Grouped
According to Income

Table 6 presents the level of awareness of respondents on the presence of MSG on certain commodities when grouped according to income. Results show that there was significant to highly significant difference on respondents' level of awareness across different income levels on certain commodities.

There was significant difference on consumers' level of awareness on condiments and frozen foods and a highly significant difference on ready-made food mixes and canned goods. The result suggests that income is associated with

Table 6. Awareness of respondents when grouped according to income

COMMODITIES/ FOOD PRODUCTS	INCOME <10,000	10,001-20,000	20,001 & ABOVE	F-VALUE	SIG.
Condiments	2.40	2.67	2.79	4.00*	0.020
Ready made mixes	2.53	2.82	2.86	5.082**	0.007
Calorie dense foods	2.99	3.00	3.00	0.322ns	0.725
Frozen foods	2.42	2.73	2.71	4.169*	0.017
Canned goods	2.32	2.69	2.64	4.921**	0.008
Instant noodles	2.89	2.95	3.00	1.566ns	0.212

ns-not significant *- significant **- highly significant

Legend:
2.50 - 3.00 Highly aware
1.50 - 2.49 Moderately aware
1.00 - 1.49 Not aware

consumer awareness with the higher income earners having a higher level of awareness. For instance, the case for condiments wherein there was a significant difference among consumers' level of awareness, the mean scores of the different income groups are as follows: 2.40 for consumers under 10,000 PHP and below income group, 2.67 for the 10,001 PHP to 20,000 PHP income group and 2.79 for the above 20,000 PHP income group. The same is true for all other commodities except frozen foods with a slight difference between the mean scores of the 10,001 PHP to 20,000 PHP income group and above 20,000 PHP income group making the former a bit higher with mean scores of 2.73 and 2.71 respectively.

These results in general, corroborates with the findings of Jawajala et al. (2018), whereby consumers with higher level of income typically have higher level of awareness on products due to acquired different lifestyles and consumption habits as a result of their purchasing power. An exception, however, can be made for the respondents' level of awareness on calorie dense foods and instant noodles presenting a not significantly different result which goes hand in hand with the results presented in Table 5 wherein the same commodities did not present a significant difference between the awareness of respondents with different educational attainment. Calorie dense food and instant noodles were the most basic of this low value products enumerated to have MSG component and is consumed by all types of consumers with different lifestyles and consumption habits.

Respondents' Perception of MSG

Table 7 presents the perception of consumers about MSG primarily on its safety for consumption. Of the 160 total respondents, only 25 or 15.6 % regard MSG to be safe for consumption, with most of the respondents (135 or 84.4%) regarding MSG to be unsafe for consumption. This result goes hand in hand with the findings of Radam et al. (2010) studying consumers' willingness to pay over

Table 7. Perception of respondents about MSG and MSG containing products

REGARD ABOUT MSG	F	%
Safety		
Yes	25	15.6

No	135	84.4
PERCEPTION		
Tastier food	116	72.5
Appetizing food	42	26.3

products labeled not containing MSG, where it is found that consumers were willing to pay premium over products not containing MSG and that there is a high and increasing demand for such products, a finding that suggests how negative the perception of consumers about MSG is.

Although the majority regards MSG to be unsafe for consumption, many (116 or 72.5%) regards food products containing it to be tastier. Moreover, out of the total respondents, there were 42 or 26.3% who regard MSG containing products as appetizing which suggests that while the majority regards MSG as unsafe, some appreciate the value of MSG as to the benefit it offers; that is, making products taste better. This was supported by a study conducted by Henry-Unaeze (2010) which concluded that 54.6% of his total respondents have claimed to be using MSG because it is good. This shows the undeniable benefit of MSG, even with the respondents dominant regard of MSG as unsafe, they cannot deny the fact that it makes food tastes better as shown in the data presented.

Behavior Towards MSG and MSG Containing Products

Respondents' Behavior towards MSG and MSG Containing Products

Table 8 displays the behavior of consumers towards MSG as to its effect to their purchase decisions. Result shows that majority of the respondents (98 or 61.3%) claimed to be affected by the presence of MSG on a product in their purchase decisions while 61 or 38.1% claimed otherwise.

Table 8. Behavior of respondents towards MSG

BEHAVIOR	F	%
Does the presence of MSG on a product affects your purchase decision		
Yes	99	61.9
No	61	38.1
Does the presence of MSG on a product affects buying decision?		
Does not buy products with MSG	16	10.0
Buys lesser quantity of products with MSG	77	48.1
Buys products even with MSG because of the need of the product	46	28.8
Buys products with MSG as it is better tasting and Appetizing	22	13.8

About the different behavior that respondents exhibit as a result of the presence of MSG over a product, 48% claims to buy lesser quantity of products with MSG. Forty six (28.8%) of the respondents claimed to be still buying products even with MSG as a result of their need of the product whilst 16 or 10% claimed that they refrain from buying products with MSG. There were 22 or 13.8% of the respondents who were on the positive side of MSG, claiming they buy products with MSG because they taste better and appetizing. This shows that there is a part of the population who acknowledges MSG and that not everyone is on the negative thought of it.

These results, in general, show a negative effect of MSG to the buying behavior of consumers over products containing such. Consumers have exhibited a more dominant behavior of buying lesser quantity of products containing MSG to not buying products with MSG at all. This implies that even with efforts of the Joint Expert Committee on Food Additives (JEFCA), from the United Nations Food and Agriculture Organization together with the World Health Organization after due assessment declaring MSG to be safe placing it in the safest category for food additives (Bera et al., 2017), the Food and Drugs Administration of the USA declaring it to be GRAS - generally recognized as safe (Nogrady, 2015), and with the same result of evaluation by the Scientific Committee for Food of the European Commission (Walker and Lupien, 2000), the stigma on MSG is still dominant over the consumers of today affecting their purchase decisions.

Respondents' Buying Behavior on Food Products with MSG

Presented in Table 9 is the association of the buying behavior of respondents on food products containing MSG to selected profile of the respondents. Profile variables considered include: sex, age, educational attainment and income.

Buying Behavior Associated with Sex

Result revealed that there was a significant difference on the buying behavior of respondents across different sexes. Female respondents present themselves to be more affected in their purchase decisions by the presence of MSG on a product. This corroborates with the findings of the study by Arganini, et al. (2012) whereby it was found that women generally perform healthier food

Table 9. Association of the buying behavior and selected profile variables

PROFILE	BUYING BEHAVIOR		CHI-SQUARE VALUE	SIG.
	Yes	No		
Sex				
Male	24	26	5.936*	0.015
Female	75	35		
Age				
12 - 20	6	2	4.579ns	0.205
21 - 35	39	27		
36 - 50	33	26		
51 - 80	21	6		
Educational Attainment				
Pre-secondary (Elem. Undergrad, Elem. Grad)	14	21	9.183*	0.010
Secondary Level (HS undergrad, HS grad, Vocational)	42	21		
Post-Secondary (College Undergrad, College Grad, Post Grad.)	43	19		
Income				

10,000 and below	55	42	3.377^{ns}	0.185
10,001 – 20,000	33	16		
20,001 and above	11	3		

ns- not significant *- significant

choices than men.

With their buying behavior being affected by the presence of MSG or not, female respondents with frequency of 110 have responded with a yes/no ratio of
75:35, while the male respondents who had a frequency of 50 responded with a
yes/no ratio of 24:26. This data show how the female respondents were more affected in their purchase decisions when it comes to food products with MSG as compared to male respondents whose ratio distribution were almost equal.

A study assessing consumer's purchasing attitude and habits in relation to food safety conducted by Onay et al. (2011) also supports this result. In the study, it was found that as compared to men, women exhibit an attitude of having a habit of being more cautious in their product purchase taking all precautions that need to be taken when purchasing food.

Buying Behavior Associated with Age

From the result presented in Table 9, it is found that there was no significant difference on the buying behavior of respondents when grouped according to age. A report on Global Health and Wellness by Nielsen (2015) have concluded that younger consumers are more health conscious in the sense that they are willing to pay more for foods with health attribute to some degree. Timi Gustafson (2017), a registered dietitian and health counselor have said in his article that younger generations, millennial in particular are leading the charge by making health-promoting diet and lifestyle choices a priority.

It is not the case for products with MSG though; it can be observed from the data presented that the mature adults had the highest ratio of those whose buying behavior were affected over those who are not with a ratio of 21:6, followed by the young adults with a ratio of 39:27, the midlife with a ratio of 33:26 and the adolescents 6:2. More number of the respondents were affected in their buying decisions over those who were not and it did not differ across the different age groups. In general, this result of having no significant difference on respondents' buying behavior across different age groups corroborates with the findings presented in Table 4 which shows no significant difference on the level of awareness of the respondents on MSG and its presence to certain commodities when grouped according to age.

Buying Behavior Associated with
Educational Attainment

It was found that there was a significant difference on the buying behavior of respondents across different educational attainment with the respondents having higher level of educational (secondary and post-secondary) attainment claiming to be more affected with their purchase decisions over products containing MSG against the respondents with lower educational attainment. The post-secondary respondents when asked if MSG in a product affects their buying decisions have responded with a yes/no ratio of 43:19 which is the highest among the group. It is followed by the secondary level respondents who have responded with a yes/no ratio of 42:2.

The result further reveals that the lower level group (pre-secondary) had responded with the same question differently than the previous higher levels having a yes/no ratio of 14:21. This shows that

respondents under the pre-secondary level of educational attainment were less affected by the presence of MSG on a product with their purchase decisions.

This result shows that the level of education affected the buying behavior of the respondents with the higher educational attainment group (secondary and post-secondary) being affected by the presence of MSG on a product in their purchase decisions. In the study of Jawajala et al. (2018), it was found that with better level of education, people display more knowledge and understanding with access to variety of information influencing their beliefs and attitudes and subsequently their consumption habits and purchase decisions. This result of having the higher educational attainment group to be more affected by MSG's presence on a product in their purchase decision implies that there is low knowledge on the safeness of MSG by the respondents as depicted by their behavior. Also, this further suggests that as the respondents with higher level of education may be more knowledgeable about MSG, they may have been constrained by the stigma on MSG and are closed minded with its safeness as a food additive just as declared by concerned authorities and still clings to the belief that its consumption is not good for their health.

Buying Behavior Associated with Income

Test results presented show that there was no significant difference on respondents' buying behavior across different income levels. Apart from the information that can be drawn with the data presented showing more number of the respondents in the lower income group to have claimed that their purchase decision is affected by the presence of MSG on a product, further test has revealed that there is no significant difference on the respondents buying behavior when grouped according to income.

This goes in contrast with the findings of the study conducted by Mihic and Culina (2012) revealing that income has a considerable influence on buying behavior. Commodities considered in the study and so as other commodities containing MSG are common goods with low social values that every consumer is buying regardless of income level. These commodities are basic goods which makes the income level insignificant as to a consumers purchase decision.

Attitude towards MSG

Respondents' Attitude towards MSG

Presented in Table 10 are the different attitude of respondents about MSG. The respondents in general, with a mean of 3.98, believes that MSG is bad for their health which corroborates with the result presented in Table 7 revealing the negative perception of the respondents about MSG with the majority of the them

regarding MSG to be unsafe for consumption.

The respondents, however, are neutral on the ideas that MSG is not bad if consumed with moderation with a mean of, that they like MSG containing products as it is more delicious and tasty and that they do not buy MSG as it is not good for their health with mean scores of 2.99, 2.57 and 3.12 respectively . All these suggest a behavior that the respondents are not necessarily refraining from

Table 10. Attitude of respondents towards MSG

ATTITUDES	MEAN	DESCRIPTION
I firmly believe that MSG is bad for my health	3.89	Agree
I believe MSG is not bad for the health if consumed with moderation	2.99	No opinion
I like MSG containing products as it is more	2.57	No opinion

delicious and tasty		
I dont like products with MSG because it is not good for my health	3.36	Agree
I dont buy products with MSG as it is not good form my health	3.12	No opinion
I buy products with MSG if I need or want the product	3.51	Agree
I buy products with MSG because it is delicious and it tastes better	2.47	Disagree

Legend: 4.50 - 5.00 - Strongly agree
3.50 - 4.49 - Agree
2.50 - 3.49 - No opinion
1.50 - 2.49 - Disagree
1.00 - 1.49 - Strongly disagree

or not buying MSG containing products even though they think that these are not good for their health. This attitude is supported by another result where the respondents agreed, with a mean of 3.51, that they buy products even if these contains MSG if they want or need the product.

This result in general shows that the respondents' attitude towards MSG is also negative. This implies that the negative belief of the respondents on the safeness of MSG is dominant over the perceived value it offers making them exhibit a neutral behavior towards the safety of MSG in moderate consumption and was only driven to consume products with MSG out of necessity. This was a result of the evident prevalence of the negative perception by the respondents on MSG as presented in Table 7.

Respondents' Attitude when Grouped According to Sex

The attitude of respondents towards MSG when grouped according to sex as presented in Table 11 shows that it is not significantly different. Both sexes

Table 11. Attitudes of respondents towards MSG when grouped according to sex

ATTITUDES	SEX		T-VALUE	SIG.
	MALE	FEMALE		
I firmly believe that MSG is bad for my health	3.70	3.97	-1.321^{ns}	0.188
I believe MSG is not bad for the health if consumed with moderation	2.84	3.06	-0.976^{ns}	0.331
I like MSG containing products as it is more delicious and tasty	2.72	2.51	0.957^{ns}	0.340
I dont like products with MSG because it is not good for my health	3.28	3.39	-0.530^{ns}	0.597
I dont buy products with MSG as it is not good form my health	2.90	3.23	-1.584^{ns}	0.115

I buy products with MSG if I need or want the product	3.74	3.41	1.724^{ns}	0.087
I buy products with MSG because it is delicious and it tastes better	2.44	2.48	-0.190^{ns}	0.850

ns-not significant

Legend: 4.50 - 5.00 - Strongly agree
3.50 - 4.49 - Agree
2.50 - 3.49 - No opinion
1.50 - 2.49 - Disagree
1.00 -1.49 - Strongly disagree

believed that MSG is not good for their health with mean scores of 3.70 (Male) and 3.97 (Females) while they were both neutral on the safety of MSG if consumed with moderation with means of 2.84 (Male) and 3.06 (Female) and on liking products with MSG as they are more delicious with means of 2.72 (Male) and 2.51 (Females). Both male and female respondents were also neutral on not not buying products with MSG as they are not good for their health with mean scores of 2.90 and 3.23 respectively.

There is only a different attitude exhibited by the different sexes on buying products even it contains MSG if they need or want it. Data shows that the male respondents exhibit the said attitude of buying MSG containing products out of their need or want of them with a mean of 4.74 while the female respondents are neutral about the idea of buying these products with a mean of 3.41, hinting that females are more cautious on this type of matter which in particular is related to health.

This result shows that as it is found on research that women were more health conscious on food choices than men (Arganini et al., 2012), the same case holds true for MSG containing products considering that the prevailing perception of the respondents about MSG was more of negative as presented in Table 7 where the majority of the respondents regarded it to be unsafe. It can be observed from the data presented that female respondents have higher mean scores than the male respondents on negatives attitudes towards MSG in particular.

Respondents' Attitude when Grouped

According to Age

As presented in Table 12, when the respondents' attitude towards MSG is associated with their age, only the attitude of buying a product with MSG as it is delicious and tastes better did the result showed a significant difference across the different age groups. The result shows that as the older respondents (midlife and mature adults) exhibit an attitude of not buying products with MSG because they do not find them to be more delicious and tasty, with the midlife having a mean score of 3.25 and mature adults with a mean of 2.03. The younger respondents, (adolescents and young adults) on the other hand, are neutral about it, hinting that they are more open about the positive side of MSG that it makes products more delicious and tastier with adolescents and young adults having mean scores of 3.25 and 2.65 respectively.

In general, this result shows that the respondents' attitude towards MSG is not associated with their age. The respondents across different age groups exhibited a consistent attitude just as the general attitude of the respondents presented in Table 10. As the older generation become more health conscious to improve their health and longevity, the younger generation, on the other hand, are becoming health

conscious in a pre-emptive manner as to avoid unnecessary health issues in the future. This makes the negative attitude towards MSG being insignificantly different across the different age groups.

Table 12. Attitudes of respondents when grouped according to age

ATTITUDE	AGE				F-VALUE	SIG.
	12-20	21-35	36-50	51-80		
I firmly believe that MSG is bad for my health	4.37	3.70	4.07	3.81	1.452^{ns}	0.230
I believe MSG is not bad for the health if consumed with moderation	3.50	3.06	2.95	2.78	0.683^{ns}	0.564
I like MSG containing products as it is more delicious and tasty	3.25	2.74	2.44	2.26	1.880^{ns}	0.135
I don't like products with MSG because it is not good for my health	3.37	3.38	3.17	3.70	1.193^{ns}	0.314
I don't buy products with MSG as it is not good form my health	3.00	3.21	3.03	3.14	0.251^{ns}	0.861
I buy products with MSG if I need or want the product	3.75	3.51	3.64	3.15	1.322^{ns}	0.269
I buy products with MSG because it is delicious and it tastes better	3.25	2.65	2.35	2.03	2.667*	0.050

ns-not significant *-significant

Legend:

4.50 - 5.00 - Strongly agree

3.50 - 4.49 - Agree

2.50 - 3.49 - No opinion

1.50 - 2.49 - Disagree

1.00 - 1.49 - Strongly disagree

With the prevailing negative perception of MSG by the respondents, and with the finding of Jawajala et al. (2018) that people becomes more health conscious as they age, the midlife and mature adults who are the older ones among the respondents should have exhibited a significantly different attitude towards MSG being more negative than the younger generations. However, as it is found by Nielsen (2015) that the younger generations, on the other hand, were taking the lead of becoming more health proactive than the older generations. It can then be concluded apart from the findings that being health conscious is now a thing not only for the older generations, but is also a consideration made and incorporated by the younger generations in their lifestyles.

Respondents' Attitude When Grouped
According to Educational Attainment

Table 13 presents the attitude of the respondents towards MSG when grouped according to educational attainment. Result shows no significant difference on respondents' attitude towards MSG across different educational attainment. The attitude exhibited by the respondents across the different groups were almost the same which shows that their level of education was not associated with their attitude.

All the different groups strongly believed that MSG is bad for their health. It can be noted, however, that the group post-secondary level had a higher mean of 3.97 than the secondary level, with a mean of 3.94 and the pre-secondary with

Table 13. Attitudes of respondents when grouped according to educational attainment

ATTITUDE	EDUCATIONAL ATTAINMENT			F-VALUE	SIG.
	PRE-SECONDARY	SECONDARY	POST-SECONDARY		
I firmly believe that MSG is bad for my health	3.66	3.94	3.97	0.816^{ns}	0.444
I believe MSG is not bad for the health if consumed with moderation	2.83	3.05	3.03	0.338^{ns}	0.714
I like MSG containing products as it is more delicious and tasty	2.66	2.52	2.58	0.120^{ns}	0.887
I dont like products with MSG because it is not good for my health	3.37	3.21	3.50	0.900^{ns}	0.409
I dont buy products with MSG as it is not good form my health	3.00	3.03	3.29	0.941^{ns}	0.392
I buy products with MSG if I need or want the product	3.69	3.49	3.43	0.560^{ns}	0.572
I buy products with MSG because it is delicious and it tastes better	2.77	2.48	2.29	1.573^{ns}	0.211

ns-not significant

Legend: 4.50-5.00 –Strongly agree
3.50-4.49- Agree
2.50-3.49- No opinion
1.50- 2.49- Disagree
1.00-1.49- Strongly disagree

a mean of 3.66. Another noticeable difference on the attitude exhibited by the respondents is in buying products with MSG because it delicious and tastes better wherein the post-secondary disagrees with a mean of 2.29, while the pre-secondary and secondary were neutral about it with mean scores of 2.77 and 2.48 respectively. Apart from their belief on MSG being bad for their health, all other attitudes exhibited by the different groups were almost the same. The different groups were found to be all neutral on the safeness of MSG if consumed with moderation and that MSG containing foods products were more delicious and tasty.

Respondents' Attitude when Grouped
According to Income

Table 14 presents the attitude of respondents towards MSG when grouped according to income. The same result is revealed with that of the results presented in Table 12.

Across different income levels, the respondents dominantly believed that MSG and MSG containing products are bad for their health, and are neutral on the safety of MSG when consumed with moderation. The respondents' attitude towards liking and buying MSG containing products was also neutral together with the idea of not buying MSG containing products as these are not good for their health which

suggests that they still buy products with MSG. Necessity is one of the main reasons consumers would still buy products even if they contain

Table 14. Attitudes of respondents when grouped according to income

ATTITUDE	INCOME <10,000	10,001-20,000	20,001 & ABOVE	F-value	Sig.
I firmly believe that MSG is bad for my health	3.76	4.08	4.07	1.305^{ns}	0.274
I believe MSG is not bad for the health if consumed with moderation	2.92	3.14	3.00	0.455^{ns}	0.635
I like MSG containing products as it is more delicious and tasty	2.58	2.53	2.71	0.109^{ns}	0.897
I dont like products with MSG because it is not good for my health	3.31	3.57	2.93	1.694^{ns}	0.187
I dont buy products with MSG as it is not good form my health	3.06	3.29	3.00	0.629^{ns}	0.535
I buy products with MSG if I need or want the product	3.52	3.39	3.86	0.951^{ns}	0.388
I buy products with MSG because it is delicious and it tastes better	2.69	2.16	2.00	3.880*	0.023

ns-not significant *- significant

Legend:

4.50 - 5.00 - Strongly agree
3.50 - 4.49 - Agree
2.50 - 3.49 - No opinion
1.50 - 2.49 - Disagree
1.00 - 1.49 - Strongly disagree

MSG, as shown in the data; both the low and high income groups agree that they would still buy MSG containing products if they needed it.

There was only a significant difference from the attitude of respondents across different income levels on the attitude of buying products with MSG as it is delicious and tasty. Compared to the higher income group, the low income group presents themselves to be neutral about buying products with MSG seeing the value that they are delicious and tasty. Again, this result shows that in general, the attitude of the respondents towards MSG and MSG containing products were more likely associated with their preference rather than their income.

Summary

The following are the summaries of the findings:

1. With household consumers as respondents, more number of the respondents are females. It is not surprising as household management is often the task of mothers which includes activities such as the purchase of goods for household consumption. The respondents were mostly under the age range of 21-50 years belonging to the young adult and midlife stages of the human life cycle. As to the educational attainment of the respondents, many of them have reached secondary and post-secondary levels and most of them claimed to be under the income range of below 20,000PHP monthly income.

2. Generally, the respondents were highly aware of MSG and its presence on certain commodities. The level of awareness of the respondents were constant among the female respondents being highly aware on the presence of MSG on commodities considered in the study while the male respondents were moderately aware on some.
3. The female respondents were more aware than male respondents on the presence of MSG among certain commodities. Age and income had no implication on the level of awareness of the respondents while educational attainment and income were found to be associated with it. Higher educational attainment was directly associated with having a higher level of awareness by the respondents on most of the commodities containing MSG except for calorie dense foods and instant noodles which were commonly known commodities to contain MSG.
4. The negative perception of MSG persisted. The benefits of MSG which were making products tastier and more appetizing were recognized; however, the stigma on MSG still exist to this day. Most of the respondents regard MSG unsafe for consumption, affecting the buying behavior by means of buying lesser quantity of products if they contain MSG or not buying such products at all. Only a few would consider buying a products containing MSG if they need it or want it and because it is tastier and appetizing.
5. There is a significant difference on the buying behavior exhibited by the respondents across certain profiles. There is significant difference on the behavior of the respondents when grouped according to sex and educational attainment where female respondents and respondents with higher level of education were found to be more affected in their purchase decisions. When grouped according to age and income, it was found that there is no significant difference on the behavior exhibited by the respondents.
6. The respondents have exhibited a negative attitude towards MSG and MSG containing products. The respondents were still largely affected by the stigma on MSG with many of them still believing MSG to be bad for their health while having no opinion on its safety if consumed with moderation and that it makes products more appetizing and tasty.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the results, the following conclusions were drawn:

1. The respondents of the study are mostly females, belonging to the young adult and midlife stages, with moderate to high levels of education and belongs to the low income group.
2. The respondents of the study were highly aware of MSG and its presence on certain commodities.
3. There is no significant difference on the level of awareness of the respondents when grouped according to sex on most of the commodities; it can be observed that the level of awareness of the females were constantly high across all the commodities considered in the study while the male respondents were moderately aware on some commodities. When grouped according to age, there is also no significant difference on the level of awareness of the respondents being all highly aware of MSG's presence on most of the commodities. Further, it is found that there is a significant difference on the respondents' level of awareness when grouped according to educational attainment and income level. The respondents with higher level of educational attainment were more aware of MSG and its usage on certain commodities than those with lower level of education and the respondents with higher income were more aware than the low income group.

4. There exists a negative perception about MSG among the respondents. The negative perception about MSG prevails among the respondents which negatively affects their buying behavior by buying lesser quantities of products that contains MSG or not buying such products at all.
5. The buying behavior of the respondents was associated with the respondents' sex and educational attainment. With the presence of MSG on a product, female respondents and respondents with higher level of education were found to be more affected in their buying decisions. Income level and age of the respondents, on the other hand, showed no association with their buying behavior.
6. The respondents, being consistent with their negative perception of MSG, had exhibited a negative attitude towards the compound. The respondents believed that MSG is bad for their health and had no opinion on the safeness of MSG when consumed in moderation, on MSG's benefit of making food delicious and tasty and that they don not buy MSG containing products as it is not good for their health.

Recommendations

Based on the results, the following recommendations were drawn:

1. Concerned agencies should conduct initiatives to promote proper awareness of MSG as the stigma about this compound has negatively affected the food processing sector for decades. Consumers must be educated that as there may have been individuals who are sensitive to this compound just as there is on other compounds, they should be educated as well of the fact that there is no scientific evidence associating MSG to the different symptoms or diseases that are allegedly brought about by its consumption and that it is purely anecdotal.
2. The labeling of MSG as a component of a product should be strictly implemented in the food processing industry for the sake of those consumers who are sensitive of the compound and those who do not prefer MSG and want to avoid it as part of their diet. Also, manufacturers should be using as an indicator the word monosodium glutamate or MSG which is the common name of the compound rather than using other names for the same compound on their products.

LITERATURE CITED

1. AMERICAN INSTITUTE FOR LEARNING AND HUMAN DEVELOPMENT. (n.d.). The Twelve Stages of Life: The Twelve Stages of Human Life Cycle. http://www.institute4learning.com/resources/ articles/ the-12-stages-of-life/. Accessed on April 3, 2018.
2. ANDARWULAN, N., L. NURAIDA, S. MADANIJAH and ZULAIKHA. 2011. Free Glutamate Content of Condiment and Seasonings and Their Intake in Bogor and Jakarta, Indonesia. Food and Nutrition Sciences 2, (2011): 764-769. http://www.SciRP.org/journal/fns doi: 10.4236/ fns.2011. 27105. Accessed on September 24, 2014.
3. ARGANINI, C., R. COMITATO, A. SABA, A. TURRINI and F. VIRGILI. 2012. Food Choice and Dietary Intake in Modern Western Societies, Public Health - Social and Behavioral Health, Prof. Jay Maddock (Ed.), ISBN: 978-953-51-0620-3, InTech. http://www.intechopen.com/ books/public- health-social-and-behavioral- health/gender-differences-in- foodchoice- and-dietary-intake-in-modern-western-societies. Accessed on April 4, 2018.
4. BERA, T.K., J. BISHAL, S.J. KAR, P. MUKHERJEE, P.K. YADAV and S. YADAV. 2017. Effects of Monosodium glutamate on Human Health: A Systematic Review.World Journal of

Pharmaceutical Sciences ISSN (Print): 2321-3310; ISSN (Online): 2321-3086 Published by Atom and Cell Publishers © All Rights Reserved. http://www.wjpsonline.org/. Accessed on April 3, 2018.

5. DEEKS, A., C. LOMBARD, J. MICHELMORE and H. TEEDER, (2009). The Effects of Gender and Age on Health-Related Behaviors. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2713232/ Accessed on April 3, 2018.
6. GERMAIN, T. 2017. A Racist Little Hat: The MSG Debate and American Culture. Colombia Undergraduate Research Journal. 2017; 2:1. doi: 10.7916/D8MG7VVN. https://curj.columbia.edu/ article/a-racist-little-hat-the-msg-debate-and-american-culture/. Accessed on December 6, 2017.
7. GUSTAFSON, T. 2017. Younger Consumers Are More Health Conscious Than Previous Generations. https://www.huffingtonpost.ca/timi-gustafson/ younger-consumers-are-mor_b_14290774.html. Accessed on April 7, 2019.
8. HENRY-UNAEZE, H.N. 2010. Consumer Knowledge, Attitude and Practice Towards the Use of Monosodium Glutamate and Food Grade Bullion Cubes as Dietary Constituents. Pakistan Journal of Nutrition 9 (1), pp 76-80. ISSN 1680-5194. © Asian Network for Scientific Information, 2010.
9. JAWAJALA, R.P., A.R. JAWAJALA and P.A. PARAFFULLA. 2018. Study on Consumer Demographics, Awareness, Perceptions and Beliefs as Determinants of Consumer Acceptance of Foods with Health Claims in India. International Journal of Management Studies. Vol.–V, Issue –2(5), April 2018. DOI :10.18843/ijms/ v5i2(5)/06. DOI URL :http://dx.doi.org /10.18843/ijms/v5i2(5)/06. Accessed on April 4, 2019.
10. KEMPEN, E., M. BOSMAN, C. BOUWER, R. KLEIN and D. VAN DER MERWE. 2011. An Exploration of the Influence of Food Labels on South African Consumers' Purchasing Behavior. International Journal of Consumer Studies 35 (2011), pp 69-78. doi: 10.1111/j.1470-6431.2010.00928.x
11. KUMAR, S. and J. ALI. 2011. Assessing Consumer Awareness and Usage of Food Labels and Influences on Food Buying Behavior. 21st Annual IFAMA World Forum and Symposium on the Road to 2050: Sustainability as a Business Opportunity, Frankfurt, Germany June 20-23, 2011.
12. MIHIC, M. and G. CULINA. 2006. Buying Behavior Consumption: Social Class versus Income. Management, Vol11,20016,2, pp77-92.
13. NIELSEN 2015. We Are What We Eat. Healthy Eating Trends Around the World.
14. NOGRADY, B. 2015. BBC Future – Is MSG as Bad as It's Made Out to Be? http://www.bbc.com/future/story/20151106-is-msg-as-bad-as-its-made-out -to-be. Accessed December 6, 2017 1:02:11 AM EST.
15. ONAY, D., S. ERSOY-QUADIR and M. AKMAN. 2011. An Analysis on Consumers' Food Purchasing Attitudes and Habits in Relation to Food Safety. *Pakistan Journal of Nutrition* 10 (3): (2011) pp 241-248.
16. PERNER, L. 2018. Consumer Behavior. Attitudes. USC Marshal. https://www.consumerpsychologist.com/cb_Attitudes.html. Accessed on April 3, 2018.
17. PRATAP, A. 2017. Effect of demographic Factors on Consumer Behavior: Age, Sex, Income and Education. Cheshnotes2018. https://www.cheshnotes.com/2017/07/ effect-of-demographic-factors-on-consumer-behavior-age-sex-income-and-education/. Accessed on April 3, 2018.
18. RADAM, A., M.R. YACOB, T.S. BEE and J. SELAMAT. 2010. Consumers' Perception, Attitudes and Willingness to Pay towards Food Products with "No Added MSG" Labeling. *International*

Journal of Marketing Studies, Vol. 2, No.1, (2010) [Online] Available: www.ccsenet.or/ijms. Accessed on April 4, 2018.

19. SAFEFOOD. 2012. MSG Usage in the Ethnic Catering Industry. We Have a Choice. Retrieved from: www. safefood.eu. Accessed on September 24, 2014.
20. SAND, J. 2005. A Short History of MSG. Good Science, Bad Science, and Taste Cultures. Gastronomica, Fall 2005, Vol. 5 Issue 4, pp.38-49.
21. SHAHID, Z., T. HUSSAIN and F. ZAFAR. 2017. The Impact of Brand Awareness on the Consumers' Purchase Intention. J Account Mark 6: 223. doi:10.4172/2168- 9601.1000223.
22. SINGH, M. 2005. FACT OR FICTION? The MSG Controversy. http://nrs.harvard.edu/urn-3:HUL.InstRepos:8846733. Accessed on December 6, 2017 1:02:11 AM EST.
23. SUFRIN, J. 2014. Why MSG's Bad Rap Is So Hard to Shake. Special to the Globe and Mail. https://www.theglobeandmail.com/ life/food/-and-wine/food-trends/why-msgs-bad-wrap-is-so-hard-to-shake/ article 214 42180/. Accessed on December 6, 2017.
24. WALKER, R. and J.R. LUPIEN. 2000. Glutamate Safety in the Food Supply. The Safety Evaluation of Monosodium Glutamate. School of Biological Sciences, University of Surrey, Guildford GU2 5XH, Surrey, UK and *Food and Nutrition Division, FAO, 00100 Roma, Italy. Retrieved from: https://academic.oup.com/jn/article-abstract/130/4/1049S/4686675 Accessed on March 1, 201