



## Food Safety and Sanitary Practices of Food Service Operation in a State University

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### **Abstract:**

*The study was conducted to assess the profile of food stalls in terms of food safety and sanitary practices of food service operations at Don Honorio Ventura Technological State University. The respondents consisted of 183 students and Hotel and Restaurant Management instructors selected by simple random sampling. Data relevant to the study were collected through survey questionnaire. Results showed that majority of the food stall vendors and operators practice certain requirements following policies and rules regarding sanitary practices. There were problems with regard to sanitary permits, some were not posted and easily seen inside the food stall. Majority of the food servers and food handlers do not secure health certificate from the local government. As to implications of food safety and sanitation practices to the customers' preference, prices of food showed that majority of the respondents highly preferred followed by food palatability, ambience, acceptability, sanitation, and nutritional value.*

*From the point of view of food service questions like why are they popular, are school administrators show concern of students' health and safety, do student organizations monitor areas of preparation, utensils used, food storage, and water supply. This is to focus on improving healthy practices and nutrition situation of every food stalls. Findings indicated that food stall vendors/operators do not secure and post sanitary permits which make the operations inadequate in terms of requirements and practices.*

**Key words:** Food Safety, Sanitation, Food Stalls Operators

## Background of the Study

The evolution of street foods provides livelihood for large number of people particularly women with a low capital investment. In 1996, health organizations have given this business a chance to operate in the market and became an avenue for self-employment. Selling of street foods provided opportunities for starting entrepreneurs.

Many of the street foods are identified with the low income level customers or the “poor” as they are commonly termed. Business related to selling street foods are perceived to be hazardous to health because of the perception of other people that owners/operators are somewhat illiterates or lack the knowledge in proper food handling.

Why is sanitation important? Since it is a legal requirement by the local government and the university, food should be handled in a hygienic environment by healthy food handlers in such a way that the food is not contaminated with harmful agents. Food sanitation prevents food poisoning outbreaks, most of the food related illness caused by street food outlets, restaurants, chain restaurants are the result of unsanitary food handling practices. Just one case of food poisoning, is enough to destroy your business. Hence, training employees to apply and follow safe food handling practices is a requirement. Sanitation is more than cleanliness. If done properly, it can improve the aesthetic qualities and hygienic conditions of commercial operations. Given if customers do not get sick, preparing or serving food in unsanitary condition will surely affect food quality and taste. Keeping things properly and sanitary practices will no longer look into your food preparation area.

Food services which operate without the necessary business permits had no fixed income due to the way they

operate, less access to formal resources in terms of capital credit, materials and credit facilities, water, and manpower training program (Ortiz, Catral 1997).

In the part of 2014, Don Honorio Ventura Technological State University (DHVTSU) prescribed and designed regulations for the operations of food stalls, prescribed uniform food stalls in the conduct of food service operations in terms of food preparation, sanitary practices, type of food service and structural requirement. The most important change was their business operations were legitimized. This development required the operators to secure local permits.

The phenomenon of the food stalls/food stores were the basic factors behind this study. An investigation of the students and personnel of the college, added dimensions to the study. Looking at resources, five (5) aims of management such as time, money, materials, method, market and manpower training present in the conduct of business operations, describe the customers perception on the current status of the transformed food stalls.

### **Personal Hygiene**

Hygiene is the application of sanitary principles for the preservation of health. This refers to the cleanliness of a person's body. Health workers play an important part in food sanitation for they are potential source of microorganisms that cause illnesses to others through the transmission of viruses or through food poisoning.

### **Employees Hygiene**

Employees who have minor illness like fever, cold and similar should not come in contact with food, equipment, and utensils used in the processing, preparing and serving of food. Human illnesses may be transmitted through foods like respiratory tract such as common cold, sore throat, pneumonia, scarlet fever, tuberculosis and trench mouth, intestinal disorder,

dysentery, typhoid fever and infectious hepatitis. The person having this condition is known as CARRIER.

## **Inspection**

Inspection is a preventive measure which can identify existing problems and detect potential problems and can monitor an ongoing sanitation problem but should be conducted periodically (e.g. monthly) and include raw materials, prepared products, site, facilities and equipment. (Marriott, Gravani 2006)

The evolution of food stalls operation can be a response by an increasing population of our students, workers and more men and women joining the work force that could help to enhance family life.

This type of food service is considered a phenomenon because it started in the backstreets of the university belts and sidewalks business of Pampanga, catering to hundreds of students and employees within the areas. These were converted into food stores, restaurants and food stalls.

The evolution of the business is a social and cultural concept something visible in the rich and the poor, the professional and students alike patronize the type of street food prepared and offered. Lot of observation are noticed that customers eat while standing, without discomfort, sitting and eating on a small table.

Food stalls owner and operators should be responsible for keeping their kitchen clean and sanitary. If sanitation standards are not met, the prospect of being closed down and other precautionary measures will be needed.

## **Objectives of the Study**

This study centered on Food Safety and Sanitary Practices of Food Service Operations, and specifically pursued the following objectives:

1. Determined the profile of food stalls operator and owners in terms of number of years of operation and number of personnel/workers.
2. Clarify if food stalls operators followed policies or rules on sanitary practices.
3. Sought if sanitary permits are posted in conspicuous places in food stalls.
4. Determined if food handlers and workers secure health certificate from the local government.
5. Described services in terms of type of food, structural requirement, floors construction, walls construction, and ceiling construction.
6. Described the food safety practices of food stalls in terms of food handling and food preparation methods of food vendors.
7. Described the implications of food safety and sanitation practices to the customers.
8. Explained the sanitation practices of food stall owners in terms of garbage disposal and waste segregation practices.
9. Analyzed the level of sanitary practices on campus.

### Conceptual Framework

Local Government requirements for food stalls/food service operations	Assessment of the students and workers ways adopted by food stalls owners and operators.	Acceptable standard sanitary measures for food stalls/food services
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### Definition of Terms

The following terms are defined operationally on how they are used in the research:

1. **Bacteria** – refers to species of which are in the food industry used in products such as milk, butter and

- cheese. Some from toxins which may or may not be killed by heat that can cause foodborne illness.
- 2. **Detergent** – refers to chemical used to remove grease, dirt and food, such as washing-up liquid.
  - 3. **Equipment** – refers to stoves, range hood, counters, refrigerator, freezer, sink, dishwashing machine, tables used in the operation of a food service establishment.
  - 4. **Food Poisoning** – refers to an illness that occurs when people eat food that has been contaminated with harmful germs.
  - 5. **Food Preparation** – the manipulation of foods intended for human consumption by such means as washing, slicing, peeling and chopping.
  - 6. **HACCP** – stands for Hazard Analysis Critical Control Point which refers to sanitation program devised by Food and Drug Association, for sanitary program design and hygienic operations with the objective in which the objective is the prevention of contamination.
  - 7. **Hazard** – refers to biological, chemical or physical agent factor with the potential to cause an adverse health effect.
  - 8. **Personnel** – refers to body of person employed to render some services in an organization such as factory or office.
    - a body of employees that is a factor in business especially with respect to efficiency selection training, service and health.
  - 9. **Practices** – refers to habitual conduct that is socially acceptable.
  - 10. **Sanitary** – refers to wholesome food handled in a hygienic environment by healthy food handlers in such a way that the food is not contaminated with disease causing or otherwise harmful agents.
  - 11. **Sanitizer** – refers to product that acts as a detergent and a disinfectant.

## Review of Literature and Related Studies

Due to the immediate improvement of student and employees eating habits and styles, there is a need for awareness in unsanitary conditions of food stalls. The first line of defense against disease is frequent and effective hand washing by food handlers.

Study revealed that restaurant workers often skipped hand washing and cited inconvenience and lack of time. Meanwhile, there have been related management to give more emphasis on sanitary and hygiene practices during employees training and periodic refresher lesson to their staff. (Taylor, 2000)

This study proposed the sanitation education plans, with demonstration techniques and hands-on activities like microbial plate kit, and testing sanitizer and test to what extent food safety knowledge and practices of workers have improved after such education plan program.

The Department of Health (DOH) defines food safety as the assurance guarantee that food will not cause harm to consumers when it is prepared or eaten according to its intended use (DOH 2006).

Food Agricultural Organization (FAO 1999) defines food safety as the absence of contaminants, adulterants, and other substance that may make food injurious to health or an acute or chronic basis.

World Trade Organization defines food safety as “assistance focusing on the protection of human life and health from foodborne risks arising from additives, contaminants, toxin/disease causing organism in foods and beverages”. (Lee 2005)

In a European study (1990), major food safety incidents have common characteristics and include biological, chemical or physical hazards. They occur throughout the food system globally after result from one or combination of factors

including contaminated materials, preparation, handling or storage, packing problem, mishandling, changes in processing, inadequate maintenance of equipment, and addition of incorrect ingredients.

In 2002 U.S. consumers stress the need for knowledgeable, well-trained food service and retail food stores employees have changed food preference with many people/consumers away from home now eating raw foods or slightly cooked foods that can increase the risk of foodborne illness. (Marriott, Gravani 2006, pp. 7)

Hyun Jung Yoo, Eugene Song, Robert Scharff (2012) concluded in their study that knowledge in food safety issues covers related factors such as 1) involvement of food safety, 2) levels of safety, 3) lack of consumer education, 4) food policy and 5) sanitary conditions of producer.

Marriott, Gravani (2006) stated that food system is a complex concentrated and dynamic chain of activities that begins with the production of raw agricultural commodities or farm and then to retail **food store** and **food service** establishments (restaurants and institution) where they are merchandized, prepared and sold to customers.

The skin, fingers, fingernails, jewelry, hair, eyes, mouth, and nose are just some of the parts of the human bodies could be potential sources of bacterial contamination. (Marriott, Gravani 2006)

Welfare facilities should be provided by the Food Operators/Management such as **clean dressing rooms** and **require pre-employment physical examination** to verify if workers are in good physical, mental and emotional health and impress the importance of good hygienic habits and the food they handle remain wholesome.

## Food Safety and Sanitation Policies

Marriott, Gravani (2006) managers must fully ensure that available sanitation tasks are not omitted and must be planned ahead to maximize the use of resources, familiarize new employees with cleaning routine, basis from supervisory tasks as inspections and save employees time that might be spent in deciding which tasks to perform.

At the Bar and Grill local restaurant in the city of Pampanga, it offers the perfect place in the perfect menu to fit any occasion at a reasonable budget, but **cleanliness** and **sanitation practices** are observed and applied to both prepared and served foods.

Restaurant serving native and exotic dishes preferably grilled, establishment starts with a good food and excellent food **safety practices** to keep customers coming in. Some of these practices are washing of hands before returning to work, wearing of hairnet, keeping long hairs tied in a ponytail, bathing daily, and keeping their finger nails cut short and clean. (Cayanan and Songco 2013)

### Sample Cleaning Program (Partial), Food Preparation Area

Item	When	What	Use	Who
Floors	As soon as possible Once per shift between rushes Weekly, Thursday evening January, June	Wipe up spills Damp mop Scrub Strip, reseal	Broom, bucket, mop, and dustpan Mop, bucket, or scrubber Brushes, bucket detergent (brand) See procedure	----- ----- ----- -----
Walls and ceilings	As soon as possible February, August	Wipe up splashes Wash walls	Cloth; portable high-pressure, low-volume cleaner; or portable foam cleaner Same as above	----- -----
Work tables	Between uses and at end of day Weekly Saturday p.m.	Empty, clean, and sanitize drawers; clean frame, shelf	See cleaning procedure for each table See cleaning procedure for each table	----- -----

Hoods and filters	When necessary Daily, closing Every Wednesday evening	Empty grease traps Clean inside and out Clean filters	Container for grease See cleaning procedure Dishwashing machine	----- ----- -----
Broiler	When necessary After each use	Empty drip pan, wipe down Clean gird tray, inside, outside, top	Container for grease; clean cloth See cleaning procedure for each broiler	----- -----

Many regulations are available from various jurisdiction to determine specific requirements for the food operations and areas where it is located. Cities and countries have designated government entities with their own food safety criteria (Bauman, Marriott and Gravani 2006), which often differ from one area to another and can change periodically.

### **Implementing Rules and Regulations of Chapter III “Food Establishments” of the Code on Sanitation of the Philippines (P.D. 856)**

#### **Food Stalls**

1. Adequate ventilating hood shall be installed in the cooking areas.
2. Hand washing and dishwashing facilities shall be provided.
3. All for sale and in storage shall be maintained hot (not less than 60°C) or cold (not higher than 7°C), as the case maybe.
4. All other requirements of a regular restaurant shall be imposed in the operation of food stalls.
5. Those that are proposed to be operated outside of the fast food areas are subject to the approval of the local health officer.

### **Walls and Ceilings**

Even smooth structures are sources of undesirable contaminants unless they have regular and effective cleaning and repair. (Longree and Armbruster 1996)

### **Standard Sanitary Measures**

The sanitation program should be evaluated during continuous supervision and self-inspection for effectiveness, Monitoring is necessary to verify that the procedures are followed. Evaluation should be documented in the form of periodic inspection reports to verify that the program is being followed and that expected results have occurred. (Marriott, Gravani 2006)

### **Food Handlers**

Food handlers/humans can transmit bacteria causing illness for they are the major source of food contamination through hands, breath, hair, perspiration, coughs and sneezes which can transmit microorganisms capable of causing illness. Transfer of human and animal urine and sweat by workers is a potential source of pathogenic microorganisms that can invade the food supply.

For a food handler, to be considered healthy, he/she must be free from diseases that may contaminate food such as intestinal disorder, typhoid fever and hepatitis, respiratory tract disease, tuberculosis, sore throat and skin diseases or disorders, boils, lesions and skin infections. (Ang and Balanon 2010)

### **Research Methodology**

The study was done in Don Honorio Ventura Technological State University Bacolor, Pampanga. It is a first class state university in Pampanga located a few kilometers to Metro Manila and has shown a quick increase in student population

and food businesses. Thirty five food stores/food stalls were covered in the study.

One hundred eighty six students from different colleges: Engineering, Education and Business Studies and personnel/workers at Don Honorio Ventura Technological State University were the respondents.

This study was conducted from January 2014 to December 2015. The descriptive survey method was used. The researcher made questionnaire which was patterned from the Local Government Code on Food Safety and Sanitation Practices of Food Stalls and was validated and tried out.

The questionnaire was composed of two parts: Part I was the profile of the students where 176 female and male students and 10 female Hotel and Restaurant Management teachers were selected in a random sampling method and Part II was for policies or rules regarding sanitary practices, structural requirements description, food safety practices of food stalls owner, implications of the food safety and sanitation practices to the customers preference. Data about the selected respondents from different colleges were analyzed in terms of their profile using descriptive statistics such as frequency counts and weighted mean.

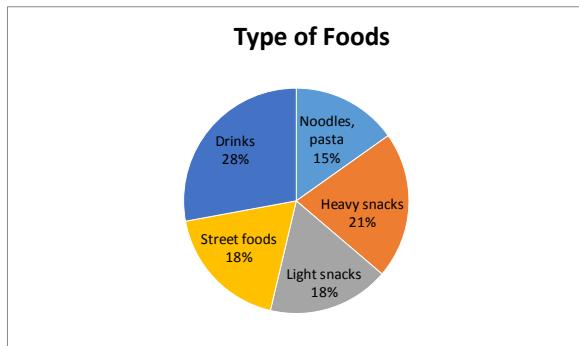
Questionnaires were therefore distributed to the respondents and were retrieved/collected after one week by the researchers and by an authorized class representative. Analysis was done through observation and interviews by the respondents and the researcher. The respondents were asked to rate specific items using a four (4) point scale: 1) Greatly Affect, 2) Moderately Affect, 3) Fairly Affect and 4) Does Not Affect. The other items were answered by Yes or No.

The study also analyzed the problems that were encountered during the school year as narrated by the food store owners and operators. Interviews and self-accomplished questionnaire were used to gather data. Descriptive statistics were used to analyze these data because it provides information

about health practices of food operations of food stalls at Don Honorio Ventura Technological State University.

## Results and Discussion

### Description of the Food Service Operations on Type of Foods, Structural Requirements, Years of Operations and Number of Workers



**Figure 1.**

Figure 1 describes the type of food served by the different food stall owners at DHVTSU, the highest percentage is on “drinks” (28%), followed by “heavy snacks” (21%), “street foods” (18%), and “light snacks” (18%) while the least are “noodles and pasta” with 15%.

Of the various food groups served in food stalls, it was brought out that drinks are the most saleable because they are wholesome and basically clean. Heavy snacks are also patronized by consumers because they served as excellent lunches. Noodles and pastas served only as comfort foods.

**Table 1. Structural Requirements, Number of Years of Operations and Number of Workers**

STRUCTURAL REQUIREMENTS		
<i>Floors are constructed of:</i>	<i>Frequency</i>	<i>Percent</i>
Cement	27	77.14
Cement and Tiles	3	8.57
Wood	0	0.00
Tiles	5	14.29
Others	0	0.00
Total	35	100
<i>Walls are constructed of:</i>		
Sheet metal	5	14.29
Sawali	3	8.57
Local decorative materials	0	0.00
Cement	27	77.14
Total	35	100
<i>Ceilings are constructed of:</i>		
Dust proof	20	57.14
Smooth	5	14.29
Washable	5	14.29
Non-absorbent	5	14.29
Total	35	100
<i>Number of Years of Operation</i>	<i>Frequency</i>	<i>Percent</i>
1-3	3	8.57
4-6	15	42.86
7-10	10	28.57
Above 10	7	20.00
Total	35	100.00
<i>Number of Workers</i>		
1-3	5	14.28
4-6	20	57.14
7-10	10	28.57
Total	35	100.00

Table 1 presents the structural requirements, number of years of operations and the number of workers of food stall owners.

As revealed in Table 1, most of the food stalls floors and walls are made of cement with both 77.14%. Also, majority of the ceiling are dust proof.

In addition, food stalls have been in operation mostly for 4-6 years (42.86%) with 4-6 workers (57.14%).

Proper construction of floors, walls, and ceilings are part and parcel of good plant sanitation. They should be easily cleaned, properly constructed, and made-up of smooth materials.

Food Service Manual (FDA, 1978a). Walls and ceilings that are rough may harbor bacteria and may survive in surfaces which may contaminate foods.

Findings showed that majority of the operators had 4-6 years in operation. The present operation was in this type of business as a result of the influence of their families who were also engaged in similar occupations.

Studies showed that 10 or 28.57% were 7-10 years in operation, 3 or 8.57% were operating 1-3 years. Reasons were mainly economic and augment the family income. Raymondo (1993)

Food vendors were average operating more than seven stalls or 20% was notably increasing in number, reason were mainly economic.

For number of workers 4-6 or 57.14% more than half of the operators. 7-10 or 28.57% moderately workers were influenced by family member, 5 or 14.28% operation seem no other means of income.

## **Food Safety Practices of Food Stall Owners, Personnel in Food Handling and Food Preparation**

**Table 2. Food handling and Preparation**

<b>Food Handling</b>	<b>Frequency</b>	<b>Percent</b>
Wear clean garments	135	71.43
Wash and sanitize hands	89	47.09
Remove all kinds of accessories	68	35.98
Wear headbands, hairnets or cap	67	35.45
Refrain from smoking inside the kitchen and serving counters	111	58.73
Avoid sneezing and coughing directly on food	111	58.73
<b>Food Preparation</b>		
Steaming	17	8.99
Frying	52	27.51
Baking	3	1.59
Grilling	4	2.12

Steaming and Frying	54	28.57
Steaming, frying and baking	8	4.23
Steaming, frying, baking and grilling	3	1.59
Steaming, frying and grilling	12	6.35
Steaming and baking	1	0.53
Steaming and grilling	1	0.53
Frying and baking	3	1.59
Frying and grilling	6	3.17

Table 2 presents the respondents observation on food safety practices of food stall owners and personnel in food handling and food preparation. The most observed food handling were “*Wear clean garments*” with 71.43% followed by *Refrain from smoking inside the kitchen and serving counters*” and “*Avoid sneezing and coughing directly on food*” with 58.73%, and “*Wash and sanitize hands*” with 47.09%.

On the other hand, the least observed were “*Wear headbands, hairnets or cap*” with 35.45% and the second least “*Remove all kinds of accessories*” with 35.98%.

## Food Handling

Cleanliness and being clean are important in food handlers, desirable and basic to food handling. As reflected in the FDA Food Service Manual 1978a and 1993 recommendation that clean garments and sanitary habits are essential to reducing contamination of food for which the food handler is the primary source. On the same situation, Miller et.al (1994) evaluated the effectiveness of wearing caps or hairnets should be used to prevent hair from contacting food surfaces and the food itself.

Findings showed that majority of the food handlers wear clean garments followed by hand washing practices using soap and sanitizers (Felix 1991). Marriott and Gravani (2006) recommended a hydrogen peroxide-based powder sanitizer solution in 3% and 6% solutions and found it effective as an antibacterial agent against may be used on all types of surfaces, equipment, floors, and walls.

When observed about their wearing of accessories (jewelry) is also found to have significant effects on food handling. Scores for workers who smoke inside the kitchen and serving customer and avoiding sneezing and coughing directly on food is not enough for the customers to be dissatisfied. These are areas for concern and improvement.

## Food Preparation

Steaming and frying, greater number of customers who evaluated the product as highly acceptable in terms of price, very practical to prepare and well-shaped and improve appearance especially when served with sauce.

Baking and grilling, and frying and baking is moderately liked by the respondents. This means that this method of cooking moderately matches with ways of preparing food.

Frying and grilling, steaming and baking, and steaming and frying were perceived to have slightly strong in terms of food preparation by food stalls owners and operators but for some, it does not stop them from patronizing these food stalls.

**Table 3. Implications of Food Safety and Sanitation Practices to the Customers Food Preference**

Food Safety and Sanitation Practices	Mean	Std. Deviation	Verbal Description
Food palatability	3.20	0.678	Moderately affects
Price of food	3.35	0.730	Greatly affects
Ambience/Service	3.10	0.744	Moderately affects
Acceptability	3.24	0.678	Moderately affects
Sanitation	3.13	0.781	Moderately affects
Nutritional Value	3.20	0.752	Moderately affects

**Legend:**

1.00 – 1.75: Does not affect

1.76 – 2.50: Fairly affects

2.51 – 3.25: Moderately affects

3.26 – 4.00: Greatly affects

The implications of food safety and sanitation practices to the customers' food preference are presented in Table 3. Customers

greatly affect on food price with a mean of 3.35 and standard deviation of 0.730. Whilst, customers moderately affect on food palatability, ambience/service, acceptability, sanitation and nutritional value with a mean value of 3.20, 3.10, 3.24, 3.13, and 3.20, respectively.

Food price gained and influenced customers to patronize food products. For about 35 pesos or less, one can buy a meal or snack; this made a major attraction for the popularity of food stalls. Food service manager should request products produced under condition of high sanitary standard and nutritive value. Only four students were concerned on ambience/service. The result may be due to the fact that customer are more concerned with time-saving or convenience. (Lim et.al. 2005, Kim 2002 and Nami Joo 2012)

## Sanitary Practices of Food Stall Owners and Personnel

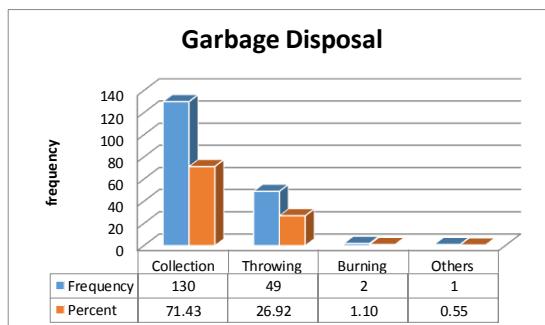


Figure 2.

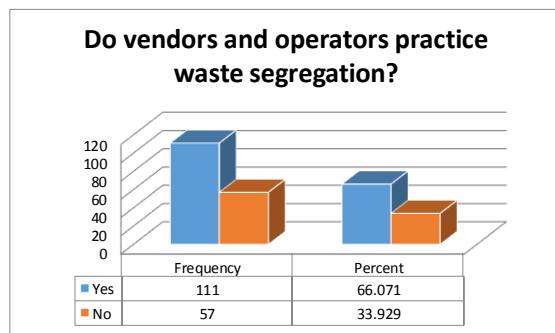


Figure 3.

Respondents' observations on sanitary practices of food stall owners and personnel were presented in Figure 2 and Figure 3. On garbage disposal, the highest percentage observed was "Collection" with 71.43%. This is followed by "Throwing" with 26.92% as shown in Figure 2.

Findings showed that majority of the operators disposed garbage and refuse has been to truck the waste to the university garbage dumps, which odor and insect problem are created.

Throwing found to have a high level of practice in the university campus which may result contamination of water supply, food, drink, equipment, and utensils and will make contact with food. Food waste such as tin can, plastic caps, plastic wrap, and polystyrene (Styrofoam box).

As revealed in Figure 3, about 67% of the vendors and operators practice waste segregation while 33% do not practice as observed by the respondents.

Majority or 66% of the respondents noted that vendors/food stalls operators practice waste segregation. They should provide durable, easily cleanable insect and rodent-proof containers. (FDA Food Service Sanitation Manual 1978a and 1993)

Segregation again should give an impression of sanitary condition of food stalls. This physical separation must assure that waste disposal will help develop, promote and implement sanitation program.

**Table 4. Sanitary Practices of Food Stalls**

<i>Which of the following activities can be put into practice?</i>	<i>Frequency</i>	<i>Percent</i>
Avoid the use of Styrofoam and plastics	111	58.73
Participate in an educational campaign	94	49.73
Keep constant awareness of environmental issues	126	66.67
<i>How would you rate the sanitary practices of food vendors and operators in the campus?</i>	<i>Frequency</i>	<i>Percent</i>
Excellent	19	10.38
Satisfactory	90	49.18
Needs improvement	74	40.44
Total	183	100

<i>Do vendors and food stalls operators have policies or rules regarding sanitary practices?</i>	<i>Frequency</i>	<i>Percent</i>
Yes	119	63.98
No	67	36.02
Total	186	100

<i>Is the sanitary permit easily seen or posted in a conspicuous place in the food stall?</i>	<i>Frequency</i>	<i>Percent</i>
Yes	75	40.54
No	110	59.46
Total	185	100
<i>Do servers/food handlers secure health certificate from the local government?</i>	<i>Frequency</i>	<i>Percent</i>
Yes	10	28.57
No	25	71.43
Total	35	100

As divulge in Table 4, respondents observed that majority of the vendors and food stalls operators have policies or rules regarding sanitary practices. On the other hand, sanitary permits are not easily seen or posted in a conspicuous place in the food stall and food handlers should secure health certificate from the local government.

Results of the activities that can be put into practice of food stalls owners showed that *avoiding the use of Styrofoam and plastics* was preferred the most due to its ability to readily absorb heat and not a good material for sauce-based nor broth-based foods.

*Participate in an educational campaign* was given an average rating of 49.73% due to standard in operating school food services are not strictly monitored.

With regard to *keep constant awareness of environmental issues*, majority or 66.67% of the respondents considered the best practice (indicator) and that food services operators should take responsibility for sanitary practices.

The assessment of rating as to sanitary practices of food vendors and operators in the campus, *satisfactory*, (49.18%) rating by the respondents positively commented, as compared to *excellent* which is only rated 10.38%, this result to have the

second to the highest. *Needs improvement* have the biggest effect on sanitary practices of food vendors and operators in the campus.

Also, respondents perceived an over-all satisfactory rating on the sanitary practices of food vendors and operators in the campus. Further, the following are the activities suggested by the respondents that can be put into practice, *keep constant awareness of environmental issues* (66.67%), *avoid the use of Styrofoam and plastics* (58.73%) and *participate in an educational campaign* (49.73%).

This study considered that food service its policies/rules are prescribe in the implementation for a sound environmental management. The biggest percentage of 63.98% 'Yes' answer followed by 36.02% 'No' answer. This means that food stalls vendors and operators practice certain requirements and food safety standards for food stalls.

Among the 183 respondents, 40.54% of the respondents answered 'Yes' and the remaining 59.46% of the respondents answered 'No'. The findings simply implies that there are more food stalls that should be required to secure sanitary permit in preparation for their business as a legal requirement. Although some food stalls vendors/operators did not secure and did not post sanitary permits, it is still assumed that they are inadequate in requirements.

In terms of securing health certificate for servers or food handlers, ten (or 28.57%) of the respondents answered 'Yes' and 25 (or 71.43%) answered 'No'. This findings can be attributed to food business owners in requiring their workers secure health certificate.

The students and personnel respondents have ranked the satisfactory rating on the sanitary practices of food vendors and operators in the campus.

The findings suggested that food sanitary requirements should be put into practice. This problem affects every detail in the food operation. Thus, keep constant awareness of

environmental issues avoid the use of Styrofoam and plastics, and participation in an educational campaign were regarded as the last among the problem mentioned by respondents.

## Conclusions

Based on the results of the findings, the following conclusions were made.

As most consumers and food service operators owned the food stalls, food costs were sufficiently low for profit. Labor costs are kept low due to helpers were family members or household helps as workers whom they were considered just assisting in the business and paid very minimal.

This was a type of business, profitable enough and low capital requirement. Food stalls are strategically located in terms of time and place and even extending credit.

Some observed basic food service standards with regards to menu and pricing but cleanliness and waste management practices has to be improved.

Food appeal, taste variety of cooked and served foods, pricing and customers perceived these factors as reasonable and essentials.

Although these food stalls are already transferred no longer in temporary counters and tables, the more they can attract the crowds in the campus.

Just like other stores, food owners practice credit to student customers and this practice is even extended to some personnel and workers if food allowance is too far from pay days.

The Kapampangan food choices still considered the best cuisine in the community due to its palatability, acceptability of taste, flavors and secret trademarks.

The transformed food stalls serves as model as how street foods can be a good alternative means of living for many Filipinos

and secondary sources of meals and snacks next to what the University Food Center can offer.

Based on the study on the conditions of food stalls/food services, the following important recommendations can be used:

1. The sanitation factor should be practiced in a stricter monitoring on the part of the local government on the maintenance of the food stalls.
2. Training on waste disposal can be a part of the environmental campaign of the local government.
3. Training for the stalls helpers (cooks and servers) should be required before securing and renewal of sanitary permits.
4. Sanitary permits should be posted in a clean area near the entrance of the food stalls, thus will inform the public/customers on the importance of food safety and sanitary practices.
5. The use of environment friendly disposable food wrap and food packaging materials should include pulp-based packaging materials as substitute for plastics and cellophane.
6. A strategy for waste disposal is needed to identify the quantity and characteristics of waste materials. Monitoring is required to establish a continuous program.
7. Appointed school official should assist closely and take care of some routine tasks and should give sufficient time for proper attention to sanitary details for the program to succeed.

## REFERENCES:

### *Journals*

- Ebora, Maribel (1997). Acceptability of Lutong Bahay to the Residents of Dormitory Complex and Area II Boarding House in University of the Philippines, College of Home Economics. Diliman, Quezon City.
- de Guzman, Ines (2005). Food Safety Concepts Considered by Grade V Pupils in Buying from the School Canteen. Philippine Association for Technology and Home Economics in State Colleges and Universities Journal. Vol. IX April 2008. Quezon City, Philippines.
- Guevarra, Shirley V. (2006). Introduction of Disposable Biodegradable Food Packaging Material in an Educational Foodservice Establishment. Philippine Association for Technology and Home Economics in State Colleges and Universities Journal. Vol. VII. Quezon City, Philippines.
- Guevarra, Shirley V. (2010). Evaluation of the Potential of Street Food in the Philippine Food Tourism. Philippine Association for Technology and Home Economics in State Colleges and Universities Journal. Vol. XI. Quezon City, Philippines.
- Jung Yoo Hyun, Song Eugene, and Scharff (2012). Perceived Risk and Safety-Seeking Behavior of Consumers in Seoul, Shanghai and New York. Asian Regional Association for Home Economics Journal. Vol. 19. Korea.
- Ortiz, Paula A. and Catral, Ma. Lourdes (2007). The Jolli Jeep-Food Trailer Phenomenon in Makati. Philippine Association for Technology and Home Economics in State Colleges and Universities Journal. Vol. VIII. Quezon City, Philippines.

*Books*

- Ang, Mary Jean and Balanon, Hannah A. (2010). Food Safety and Sanitation.
- Longree, Karla and Armbruster, Gertrude (1996). Quantity Food Sanitation. NY: John Wiley and Sons.
- Loverio, Jennifer P. (2011). Assessment of Fast Food Safety Practices of Three Selected Catering Companies.
- Marriott, Norman G. and Gravani, Robert B. (2006). Principles of Food Sanitation. U.S. Springer Science and Business Media, Inc.
- Ramos, Maria Corina Caingat (1997). A Study on the Sanitary Practices of Fast Food Restaurant Personnel (Master's Thesis). Hotel and Restaurant Management, University of the Philippines, College of Home Economics.
- Zabala, Marianne P. (2010). Environment Friendly Packaging of Fast Food Restaurant. University of the Philippines, College of Home Economics.