

**Evaluation of Existing Food Service Systems at Selected Amma Unavagam in
Coimbatore and Chennai**

**Madhubala Shankar
(12PFD006)**

**Thesis Submitted to
Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore – 641043**

**In Partial Fulfilment of the Requirement for the
Degree of Master of Science in Food Service Management and Dietetics**

MARCH, 2014


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Signature of the Head of Department


Signature of the Supervisor

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1. INTRODUCTION

The world economy is more integrated with faster communication and hence forth, diet transition is more inevitable. Globalisation has played an enormous role in the transformation of food consumption pattern of the population. The mushrooming of shopping malls, convenience stores, vending machines and fast food outlets has created an alarming situation for population groups to expose for unhealthy eating habits. (Pingali and Yasmeen, 2004).

Food options, choices and eating behavior are influenced by a complex number of factors including the nation, culture, community, family and the individual's food preferences and are affected by global attributes. (Goldstein et al., 2005).

The process of analysing the foodservice markets is complex. There are often more than 100,000 restaurants and catering outlets in the major European countries. The restaurant and catering sector in France comprises 375,000 restaurants and food outlets. It is therefore impossible to collect product consumption information from all establishments. (Tourt et al., 2011)

Radhakrishnan, 2012 stated that ethnicity of food is extremely strong in India. However, dairy, meat, bakery, fruits and vegetables are the undeveloped categories in any supermarket. Modern food retail is burdened with extremely low profit margin. The modern retail needs to understand the customer preferences in terms of price, besides ensuring availability of right volume of stock.

A food service director has many options for food production and service. Most food service directors inherit a food service system, but many make modifications to that system or select and build a new system. For example, in today's environment it is very difficult to find adequate labor, which is forcing school food service directors to consider alternatives in food production (Mathew, 2007).

In past few decades, food prepared in a restaurant with limited service staff and from which the majority of meals are consumed off premises has been implicated as one of the contributors to increased population rates of obesity. (Pereia et al., 2005).

Edward, 2013 stated that the prevalence of eating out of the home is increasing, as the range of eating outlets and types of food. The food service industry is classified into two sectors; Firstly the profit, private or commercial sector and secondly the lost, public or

welfare institutional sector, both of which are integral and growing components of most economies.

The idea developed that changes in eating habits is based on people's values, embedded in social structures such as school, work and family. As western fast food companies are expanding in developing countries such as India, there is a considerable concern that such countries are in danger of succumbing in the same obesity trends as in the western countries. (Daniel et al., 2011)

There is a great concern about food safety, including Hazard Analysis Critical Control Point (HACCP) programme implementation, and quality control. It is important to know about the alternatives (Mathur, 2007).

India is home to a quarter of the world's hungry, according to United Nations data, despite being one of the biggest food procedures and experiencing years of rapid economic growth. (Gagarin, 2010).

In the past years subsidies has been a third rail of American politics. But their price tag, both direct and indirect, has now brought them back into the debate and created an imperative for change. Lifestyle disorders such as heart disease, diabetes and arthritis are strongly correlated with excess and run up medical bills of nearly 150 billion dollars every year. Agricultural subsidies undercut those efforts by skewing the markets in favor of unhealthy calories. (Andrew, 2010)

Aguilera, 2009 reported that the Indian fast food market is growing at an annual rate of 25 to 30 percent; foreign fast food chains are aggressively increasing their presence in the country. Especially in the organised fast food segment. Growing trends of consumption of new cuisines and increasing brand awareness has led to the increase of global players.

The new age Indian consumers have also played a significant role. Organized modern formats like malls, multiplexes and food courts have also become a favored destination. Consumer markets are being driven by the country's youth population. Be it college goers or the young working class, exposure to the international environment and culture, has created a demand for world-class products at affordable prices (Smith, 2001).

India entered in to a new era in Agriculture production when green revolution was introduced way back in 1960. The development of major and minor irrigation projects, use of high yielding varieties, fertilizers, plant production chemicals and the other parameters did help in enhancing the production. However, the overall gains have not been equitably shared by the farming community. This is mainly due to coverage of two-third cropped area under

rain fed condition, which constitutes nearly 67 percent of net cultivated area, contributing 44 percent of food grain production and supporting 40 percent of the population (Riserus et al., 2009)

Consumers may want more convenience foods but may not like food additives or higher costs (although some convenience foods cost less than their home-prepared counterparts). Some want home gourmet cooking, yet many consumers prefer to eat out at fast-food outlets. Reacting to fads of unpredictable duration and dealing with what appear to be contradictory trends are among the problems faced by food processors and distributors. (Allen, 2003)

In many industries convenience goods and products are offered to consumers through company-controlled retail outlets. Examples of these products include packaged products, gasoline, bank services, and fast foods, where the respective outlets are supermarket chains, service stations, branch banks, and franchised restaurants. Common to each of these product-outlet pairs are key problems involving the creation and evaluation of outlet building and development programs. (Amber, 2007)

All subsidies are implicit transfers; the distinction between direct and indirect transfers is, nevertheless, useful. Food subsidies are a common method of attempting to reduce food insecurity, although as noted above, because of fiscal constraints they have become less popular in recent years, with greater emphasis placed on employment and productivity-raising interventions. Where subsidies or direct interventions such as school-feeding programmes are pursued, the emphasis on targeting and cost-minimisation has become more pronounced with the introduction of economic reform programmes. (Javier et al., 2005)

In India, as well in other developing countries, there is evidence that the effectiveness of some vast public programmes designed at the national level has been consistently undermined by serious corruption at the local level. The intended beneficiaries fail to see benefits from programmes that draw significant amounts of government resources. Improved monitoring and enforcement from higher levels of government may prove effective, but may be too costly in many circumstances, even with improved technology. (Ramachandra 2011)

The government has issued food stamps directly to families living Below Poverty Line (BPL), instead of subsidized food, to ensure food security of the poor, and industry lobby said the current system is providing subsidized food items through the Public Distribution System (PDS, articles.economictimes.indiatimes.com)

The government spends ₹ 3.65 to deliver ₹ 1 for food while 57 percent of subsidized food grains do not reach the intended beneficiaries. These startling findings by the Independent Evaluation Office point to massive corruption and pilferages in the existing public distribution system. The agency's initial findings reveals that close to 36 percent of food grains are siphoned off in the supply chain, raising a serious question mark over effective implementation of UPA government's "game-changer" food security scheme which heavily depend on existing Public Distribution Systems network. (Kumar, 2005)

Chakraborty, 2013 reported that the work has been undertaken at the instance of the Planning Commission, Government of India. It provides an update of the earlier study relating to Government Subsidies in India, in connection with the preparation of the Discussion Paper, which was brought out in 1997 by the Ministry of Finance, Government of India.

The data on food subsidy clearly shows that subsidy has increased significantly in the post-reforms period in general and during last 6 to 7 years in particular reaching a record level of ₹ 72283 crore in 2011-2012. Increase in procurement price was main contributor to increase in economic cost of food grains which is responsible for rising food subsidy. Other components, which contributed to food subsidy, included open-ended procurement policy, increase in procurement costs mainly statutory charges by state government on procurement of food grains, constant central issue prices and distribution costs. (Sharma, 2012)

As the study details expressed on the budget canteen and frequency of eating out, the study was taken on the existing Amma Unavagam – literal translation “Mom’s restaurant” which is a food subsidisation program, enacted by Government of Tamilnadu. Under this scheme, the state’s municipal corporation runs canteens serving food mainly the dishes for breakfast, lunch and dinner at subsidised price. The corporation, with the self help groups, establishes canteens at various places in the city (www.ammaunavagam.co.in)

Hence the study entitled “Evaluation of existing food service systems at selected amma unavagam in coimbatore and chennai” was undertaken with following objectives.

General objectives: to

- Study the functional areas of the selected food service systems.
- Asses the hygiene and sanitation practices adopted at the food service systems.
- Elicit opinion from the customers on the quality of selected food service operations.

Specific objectives: to

- Impart guidelines on the safety, hygiene and sanitation practices and
- Evaluate the eco practices adopted in the food service operation.

2. REVIEW OF LITERATURE

The review of the literature pertaining to the study titled “Evaluation of existing food service systems at selected amma unavagam in coimbatore and chennai” is discussed under the following headings.

- A. Food Service Systems and Operations- Global and Indian Scenario**
- B. Customer Satisfaction and Expectations-Transition over Generations**
- C. Employee and Customer Education and its Outcomes**

A. Food Service Systems and Operations- Global and Indian Scenario:

Today globalization and liberalization are affecting economies of not only developing but also developed countries. The focus areas for organizations are also changing from profit maximization to maximizing profits through increased customer satisfaction. The pressures of competition are forcing the organizations to not only look on the processes but also on the way they are delivered. During past two decades business scenario has changed drastically. **(Ghobadian, 2004)**

This comprehensive overview of local food systems explores alternative definitions of local food, estimates market size and reach, describes the characteristics of local consumers and producers, and examines early indications of the economic and health impacts of local food systems. But defining “local” based on marketing arrangements, such as farmers selling directly to consumers at regional farmers’ Markets or to schools, is well recognised. **(Martinez, 2010)**

The food production and food service are carried out as a part of a single operation. This reflects the traditional restaurant concept. The operation focuses around the production of meals separate from the service of those meals. This accommodates the trend of decoupling and recognizes that in the modern food service industry, there is the large scale production.

(Escueta et al., 2008)

The global food and beverage industry suffered during the recession and the global malaise that followed. High commodity prices continue to impact profitability. Consumer spending remains sluggish and limits the ability of food and beverage companies to raise their prices. **(Kai, 2011)**

Charles 2010 stated that food prices in major world markets are at or near a historical low, there is increasing concern about food security—the ability of the world to provide healthy and environmentally sustainable diets for all its peoples. This article is an introduction to a collection of reviews whose authors were asked to explore the major drivers affecting the food system between now and 2050.

Complex socio-ecological systems like the food system are unpredictable, especially to long-term horizons such as 2050. In order to manage this uncertainty, scenario analysis has been used in conjunction with food system models to explore plausible future outcomes. Food system scenarios use a diversity of scenario types and modeling approaches determined by the purpose of the exercise and by technical, methodological and epistemological constraints. **(Riley 2010)**

A structured instrument was developed to examine the food service practices. Based on a survey of food and beverage manager's perceptions on food service practices were assessed by a food service practices and demographic characteristics. Factor analysis was performed to identify service practices, one-way ANOVA was employed to test the association of the demographic characteristics with food service practices.

(Chand, 2004)

Food processing is the transformation of raw ingredients into food, or of food into other forms. Food processing typically takes clean, harvested crops or butchered animal products and uses these to produce attractive, marketable and often long shelf-life food products. **(Rais et al., 2013)**

Globally, the incidence of food borne diseases is increasing and international food trade is disrupted by frequent disputes over food safety and quality requirements. It has never been more important for developing

countries to implement and enforce a food control system based on the modern concept of risk assessment. These Guidelines provide important information on the principles and practices of food control and the trend away from a merely punitive to a preventive approach to food control. **(Daniel et al., 2003)**

The agri-food system as a modern, highly complex, integrated, internationally competitive and growing part of the Canadian economy. It is a resilient system, continuously attempting to respond to the challenges and opportunities it faces by restructuring and adapting to changing consumer demands, advancing technology and globalization. **(Patrick, 2005)**

The issues presented above regarding the unsustainability of our current food system are particularly relevant to universities because they have great power to enact change. As stated by **(David, 2003)**, many of the problems we see today regarding our food system are a result of an improperly-structured education system, which has produced decision-makers with no knowledge of ecological principles.

B. Customer Satisfaction and Expectations- Transition over Generations:

Customer satisfaction is crucial for firms relying on customer relationships where revenue Streams are based on recurring sales. In such an environment the Customer is not only in contact with the final service or product, but also with its production. Customer satisfaction is achieved through an evaluation of the customer's perceived service Quality against the customer's expectations on the upcoming service quality. As such, the understanding of the phenomenon of customer expectations becomes important for firms operating in this type of context. **(Marcus, 2009)**

Effective national food control systems are essential to protect the health and safety of domestic consumers. The new global environment for food trade places considerable obligations on both importing and exporting countries to strengthen their food control systems and to implement and enforce risk-based food control strategies. Consumers are taking unprecedented interest

in the way food is produced, processed and marketed, and are increasingly calling for their Governments to accept greater responsibility for food safety and consumer protection. **(Lasser et al., 2000)**

Impact of globalisation and privatisation as well as economic recession prevailing in our country it became very difficult almost to restrict the price level of the essential commodities. Particularly the increase in price level of commodities like onion, dhal etc. had a severe impact on the middle class people and those who come under the middle class category. **(Sudhakar, 2012)**

Service experiences are the outcomes of interactions between organizations, related systems and processes, service employees and customers. Considerable research in marketing and management has examined customer satisfaction with service experiences. **(Arnold, 2006)**

For service innovation, building good service operations can increase the opportunities for successful management of customer expectations. Good service experiences can be achieved through several high quality operational processes. Implementing these operational processes can ensure customers experience good and enjoyable service. Accordingly, service operation design attempts to create a good service environment and pleasant atmosphere for customers. The customer strategy refers to managing customer encounters by using technology or employees to meet customer expectations. Managing customer expectations remains necessary for providing a good service experience. **(Voss et al., 2008)**

These early perspectives have not significantly advanced the progress of satisfaction work for some time and it wasn't until many and diverse perspectives were integrated, elaborated, and extended that others began the study of conceptual satisfaction in earnest. Here, the underlying mechanisms of how consumers construct, consciously or subconsciously, their satisfaction conclusions are explored so that a grander strategy of fostering satisfaction and diminishing dissatisfaction can emerge. This will allow new actionable strategies resulting in more diverse practical implications for practice.

(Oliver, 2007).

Customer satisfaction reflects the expectations and experiences that the customer has with a product or service. Expectations reflect both past and current product evaluation and use experiences. Customers hold both explicit and implicit performance expectations for attributes, features, and benefits of products and services. **(Smith, 2012)**

It is obvious that customers are important stakeholders in organizations and their satisfaction is a priority to management. Customer satisfaction has been a subject of great interest to organizations and researchers alike. In recent years, organizations are obliged to render more services in addition to their offers. The quality of service has become an aspect of customer satisfaction. It has been proven by some researchers that service quality is related to customer satisfaction. Others used service quality dimensions to evaluate service quality. **(Spring, 2012)**

Harvey, 2010 reviewed that the past decade has seen a rise in the number of natural disasters, persistent protracted conflicts and major humanitarian emergencies. The global food price crisis has led to calls for change in the international food security architecture. Even though food prices have fallen considerably following their peak in 2008, they are likely to remain volatile as a result of rising energy costs, increasing climatic variability, the growing demand for food from emerging economies such as China and continuing instability in the global financial system.

The global food and beverage industry suffered during the recession and the global malaise that followed. And while measured growth again appears to be the norm in many markets, challenges persist. High commodity prices continue to impact profitability. Consumer spending remains sluggish and limits the ability of food and beverage companies to raise their prices. **(Taylor, 2003)**

The modest progress in reducing malnutrition over the past two decades and the severe impacts of recent food crises have re-ignited a debate on new ways for improving food and nutrition security. The framework

links the complex interactions of factors at the macro and micro levels and shows how external shocks such as global food price spikes and natural disasters as well as interventions in form of policies and programs affect the availability of food, people's access to it and the resulting nutritional status of individuals. **(Fisk, 2005)**

This vision of food sovereignty, LFS have to go beyond the distance travelled by food products before they reach the final consumers (food miles) and integrate social, economic and environmental benefits. Nevertheless, the existing evidence highlight the positive effects of such initiatives: better incomes for producers, lower carbon footprint (depending on method of production), and promotion of healthier diets (through better access to fresh fruits and vegetables as well as nutrition education associated with these initiatives). **(Blouin, 2004)**

The practitioners have recently suggested that food safety requires a better understanding of organizational culture. Interventions to improve food safety are more likely to be effective if greater attention towards how an organization does food safety is considered. A concept called "food safety culture" has been introduced to understand how an organization does food safety. Researchers have adapted measurements from other research fields to evaluate factors that shape the organizational food safety culture. **(Catherine, 2012)**

Food waste in the global food supply chain is reviewed in relation to the prospects for feeding a population of nine billion by 2050. Different definitions of food waste with respect to the complexities of Food Supply Chains (FSC) are discussed. An international literature review found a dearth of data on food waste and estimates varied widely; those for post-harvest losses of grain in developing countries might be overestimated. As much of the post-harvest loss data for developing countries was collected over 30 years ago, current global losses cannot be quantified. **(Silvestre, 2008)**

C. Employee and Customer Education and its Outcomes:

Employees need to understand the reason(s) they are doing something. For example, a food safety fact is that employees should not cut up raw meat and then ready-to-eat food, such as raw vegetables for a salad, on the same cutting board without properly cleaning and sanitizing the cutting board first. Employees need to understand that the reason for this food safety fact is that raw meat can contain dangerous microorganisms that can contaminate the ready-to-eat food. **(Leonard, 2003)**

Foodservice workers play a major role in preventing outbreaks of food borne illness and in meeting the goal of serving safe food. The purpose of this study was to assess foodservice employees' knowledge, attitudes, practices, and training regarding food safety at one mid western university. Comparisons were made between student and full-time employees. Full-time employees had higher ($p \leq 0.001$) mean total scores for food safety knowledge, attitudes, practices, and training than student employees. Emphasis on food safety training for student employees is needed to ensure these employees have appropriate food safety knowledge and attitudes and to ensure that food safety practices are followed. **(Jennaine, 2001)**

Incentive measures, such as salaries, secondary benefits, and intangible rewards, recognition or sanctions have traditionally been used to motivate employees to increase performance. Incentive systems reside within organizations, their structure, rules, human resource management, opportunities, internal benefits, rewards and sanctions, etc. Based on perception or reality, organizational incentive systems do have a significant influence on the performance of individuals and thus the organization overall. Perhaps the most pervasive structural motivators and incentives are located at the societal level, such as security, rule of law, investment climate, civil service pay or legislation conducive to civic engagement. **(Cronin, 2006)**

The Bureau of Labor Statistics publishes long-term occupational employment projections every 2 years. Various factors affect occupational employment levels over time, including population and industry growth, technological advances, and changes in consumer demand. Total employment, a measure of all jobs in the U.S. economy, is projected to

increase by 15.3 million over the 2008–18 periods, representing a growth rate of 10.1 percent.¹ among occupational groups, strong employment growth is expected in healthcare occupations. **(Gammie, 2010)**

Training is the process of acquiring specific skills to perform a job better **(Jucious et.al, 2007)**. It helps people to become qualified and proficient in doing some jobs. Usually an organization facilitates the employees' learning through training so that their modified behavior contributes to the attainment of the organization's goals and objectives. The training as the process of teaching, informing, or educating people so that (1) they may become as well qualified as possible to do their job, and (2) they become qualified to perform in positions of greater difficulty and responsibility.

Food workers play a critical role in ensuring food safety, those who do not practice proper personal hygiene, including hand washing at the appropriate times and using appropriate methods, can contaminate food. The FDA Report on the Occurrence of Food borne Illness Risk Factors in Selected Institutional Foodservice, Restaurant, and Retail Food Store Facility Types (2009) identified risk practices and behaviors that contributed to food borne illnesses: improper holding/time and temperature; poor personal hygiene; and contaminated equipment/prevention of contamination. Studies have found that food safety training is positively associated with self-reported changes in food safety practices. **(Peters, 2009)**

The well-being of employees is in the best interest of communities and organizations. The workplace is a significant part of an individual's life that affects his or her life and well-being of the community. The average adult spends much of his or her life working, as much as a quarter or perhaps a third of his waking life in work. As much as a fifth to a quarter of the variation in adult life satisfaction can be accounted for by satisfaction with work. **(Rodgers, 2007)**

Focuses on the roles of customers in creating quality and productivity in service experiences. Presents two conceptual frameworks to aid managerial understanding and focus research efforts on customer participation. The first framework captures levels of customer participation

across different types of services. The second discusses three major roles of customers in the service delivery process. Two examples of the concepts are presented - one in a weight loss context and the other in a mammography screening setting. Both are based on empirical research and illustrate specific applications of customers' roles in creating the service experience.

(Bitner, 2003)

Regardless of the specific tools and methods a firm adopts or what quality experts an organization follows, managing for quality and competitive advantage means a firm must become customer oriented. Unfortunately, many quality-management programs and efforts to enhance competitiveness take a rather limited view of potential customer involvement in the process. This article first examines familiar roles that customers play in both manufacturing and service organizations. Then, insights from organization theory, services marketing, Strategic management, and total quality concepts are integrated to develop both a conceptual model and 10 propositions based on a more complex view of potential customer contributions to competitive quality. **(Cynthia, 2005)**

Service employee management that examines constructs simultaneously across three interfaces of the service delivery process: manager-employee, employee-role, and employee-customer. The authors examine the attitudinal and behavioral responses of customer-contact employees that can influence customers' perceptions of service quality, the relationships among these responses, and three formal managerial control mechanisms. However, the use of empowerment has both positive and negative consequences in the management of contact employees. Some of the negative consequences are mitigated by the positive effects of behavior-based employee evaluation. To increase customers' perceptions of service quality, managers must increase employee's self-efficacy and job satisfaction, and reduce employees' conflict and ambiguity. **(Hartline, 2003),**

Kular, 2008 states that employee engagement has become a hot topic in recent years. Despite this, there remains a paucity of critical academic literature on the, and relatively little is known about how employee

engagement can be influenced by management. Although there is a great deal of interest in engagement, there is also a good deal of confusion. At present, there is no consistency in definition, with engagement having been operationalised and measured in many disparate ways.

Reaction outcomes refer to trainees' perceptions of the program, including the facilities, trainers, and content. (Reaction outcomes are often referred to as a measure of "creature comfort.") They are often called class or instructor evaluations. This information is typically collected at the program's conclusion. **(Noe, 2006)**

Previous work on service performance has focused on either organization- or individual-level analysis. This multilevel study of 257 employees, 44 managers, and 1,993 customers from 25 restaurants demonstrated that both individual- and store-level factors were significantly associated with employee service performance: conscientiousness and extraversion explained within-store variance, and service climate and employee involvement explained between-store variance. Further, employee service performance aggregated to the store level explained between-store variance in customer satisfaction and loyalty. **(Chung, 2004)**

Michael, 2001 reported that *study investigates the effect of being customer oriented on service performance perceptions and outcome behaviors. Specifically, the focus is on identifying the influence that being perceived as a customer-oriented firm has on consumer quality perceptions, customer satisfaction, and service value. The impact of being customer oriented on consumers' outcome behaviors is also investigated. The customers' evaluations of employee service performance, physical goods, and services capes. Indirect effects on organisational quality, customer satisfaction, value attributions, and outcome behaviors are also reported.*

Thomas, 2004 reviews literature highlighting a number of problems associated with entrepreneurship education and training programmes. The major problem relates to balance: too much of an emphasis on knowledge and not enough on competence; too much emphasis on information transfer learning methods and not enough on individual small group learning

methods such as project teams, peer exchange, individual counseling and workshops.

A service recovery performance model is proposed and tested with data from frontline bank employees. The empirical results suggest that top management commitment to service quality, as manifested by frontline employees' appraisal of training, empowerment, and rewards, has a significant effect on their perceptions of service recovery performance. The influence of management commitment to service quality on service recovery performance is mediated by frontline employees' affective commitment to their organization and job satisfaction. Implications of the results and further research avenues are discussed. **(Osmen, 2003)**

There is no need for the entire employee to get the same level of subsidy provided a free or subsidized meal is available to all employees, the exemption applies. The word "Canteen" has its ordinary meaning. A restaurant, café, public house or similar establishment which serves meals to public at large is not a canteen. **(Ramaswamy, 2009).**

3. METHODOLOGY

The methodology pertaining to the study titled "**Evaluation of existing food service systems at selected amma unavagam in coimbatore and chennai**" was elicited under the following headings.

PHASE I: Selection of area and designing tools for collection of data from selected food service operations.

PHASE II: Observation of the functional areas at the selected food service operations.

PHASE III: Elicit opinion from the customers on the food service systems and

its operations.

PHASE IV: Promotion of hygiene and sanitation practices at the selected food

service systems.

PHASE I: Selection of area and designing tools for collection of data from selected food service operation

A total of four food service operations with two centers from Coimbatore and Chennai each, were selected by purposive sampling method (**Palys, 2008**) in order to elicit the food service systems and its operations.

A well designed interview schedule comprising components such as the type of food service system, layout of the organisation, organisational chart, year of establishment and food service timings. Specific information on the functional areas such as methods of purchasing, frequency of purchase of raw materials, storage of materials and distribution of ingredients were elicited. The type of menu, type of food service, preparation method, equipments available at different functional areas. Information on the fuel used, procedures at waste disposal area, food cost, pricing, employee information, sanitation and hygiene practices at different areas were included in the interview schedule to elicit information from the selected Amma Unavagam (**Appendix I**). The proposal of the study was also approved by the Institutional Human Ethics Committee of our University and is enclosed as (**Appendix II**).

Plate 1



Collection of data from the centre incharge of Amma Unavagam

PHASE II: Observation of the functional areas at the selected food service operations

The functional areas of the food service operations namely purchasing, receiving, storage, production, food service, waste disposal and hygiene and sanitation were observed at the selected Amma Unavagam.

PURCHASING AREA

According to Sethi 2007, purchasing good food is the basis for preparation and serving meal to the customers. Information on the method of purchasing adopted for perishable, semi-perishable and non-perishable commodities, the frequency of purchasing raw materials, comprising daily, once in a week; twice a month; seasonal; or anytime basis were elicited.

RECEIVING AREA

The registers for stock maintained in the centres with the details of the quantity of cereals, pulses, vegetables, spices received with frequency as daily, weekly and monthly basis were elicited. The equipments available at the receiving area were also noted in the interview schedule.

STORAGE AREA

In the storage area, the type of storages such as cold and dry were observed. The cleaning schedule, sanitation and hygiene practices at the storage were elicited and recorded in the interview schedule.

Plate 2



Centre I

Centre II

Centre III

Centre IV

Chennai

Coimbatore

Storage area

PRODUCTION AREA

Preparation of different foods recipes with ingredients and production process were noted. The equipment used in the production area, quantities taken for preparation, cooking time and yield were quantitatively studied in all the selected centres.

Plate 3



Centre I

Centre II

Centre III

Centre IV

Chennai

Coimbatore

Production Area

FOOD SERVICE AREA

The type of service, portion size, methods of portion control were observed. The display of the details of menu on the board was noticed. Sanitation and hygiene practiced in this area was noted.

Plate 4



Centre I

Centre II

Centre III

Centre IV

Chennai

Coimbatore

Food Service Area

PRICING

The food cost of each dish was calculated. Total ingredients used, total yield, number of portions were noted for each dish. Since The food cost was calculated in par with the open market. Subsidy pricing was followed where the government extends 67 percent

financial support to extend the growth of economic sector of the country. The difference in actual food cost and subsidised food cost calculated.

WASTE DISPOSAL AREA

The mode of disposal of waste products using incinerators, bins, garbage was observed. The ways of waste disposable for degradable and non-degradable products were observed. The frequency of disposal of waste was also elicited.

EMPLOYEE INFORMATION

Employee information such as monetary and non monetary benefits was collected. Monetary benefits like salary, bonus, incentives, contribution to pension and non-monetary benefits like medical and life insurance, housing, education plans, and employment insurance were elicited from the employees.

HYGIENE AND SANITATION

Hygiene and sanitation practices were observed at the selected food service operations. Sanitation practices at purchasing area, receiving area, storage area, food service area and production area were observed. Personal hygiene of each employee was also observed.

Observation at the functional areas of the food service systems



PURCHASING AREA:

Quality of food commodities.
Appropriate utensils.



RECEIVING AREA:

Proper packaging for products.
Accurate Quantity check, Quality check.



STORAGE AREA:

First in first out procedure.
Proper clearance of wastes.
Record maintenance.
Prevent cross contamination.



PRODUCTION AREA:

Safer method of preparation.
Apron, gloves, head cap check.
Prevent contamination.



FOOD SERVICE AREA:

Covering of food with lids.
Proper handling of food and utensils.
Portion control.
Holding foods at right temperature.

PHASE III: Elicit opinion from the customers on food service systems and its operations

A total of four hundred customers with one hundred customers in each centre were approached to understand the opinion, views and feedback, using the questionnaire. **(Appendix III).**

General information on their demographic profile including name, age, educational qualification, income status, marital status was elicited. Other information's such as cost

demands, frequency of visit to the outlet, quality and quantity of foods provided, rating of dishes on three point rating scale, hospitality, service by the employees, specialty of the Amma Unavagam. The preferences and suggestions from the customers were also elicited in order to explore as recommendations to the Government of TamilNadu.

PHASE IV: Promotion of hygiene and sanitation practices at the selected food service systems

Education programmes based on the existing food service systems were designed. It comprised of best cooking methods, cooking without nutritional loss, ways to use of fats and oils, vegetables. Modules were designed using power points, charts and mini posters in regional language tamil for the education to employees at the selected food service operations.



Plate 5

Education session to the employees of Amma Unavagam

PowerPoint Presentation

Educating the employees for different areas for the careful handling of foods. Regular Practices to be followed at receiving area, production area, storage area, food service area were prepared. Environmental hygiene, food hygiene and personal hygiene practices were included with two sessions in order to create awareness and practice hygiene at all possible areas. Each session were conducted for the duration of 15minutes.

Charts

Charts were prepared to highlight on the safety measures to be followed during cooking and ways to cook without nutritional losses. General for cooking were given to each employee at all the centres. Two sessions were conducted to educate the employees so as to enable them to practice every day. Each session were conducted for 10minutes.

Mini posters

The educated modules were presented as mini posters and stuck in each functional area. The regular practices are made available at each area for them.

Education Modules

AID USED	EDUCATION	NUMBER OF SESSIONS	DURATION OF EACH SESSION
POWERPOINT PRESENTATION	<ul style="list-style-type: none">• Regular Practices to be followed in each area.• Environment hygiene• Personal hygiene• Food hygiene	2 (at each centre)	15 minutes
CHARTS	<ul style="list-style-type: none">• Cooking without nutritional losses• Safe cooking methods	2 (at each centre)	10 minutes
MINI POSTERS	<ul style="list-style-type: none">• Regular Practices to be followed in each area.	6 Posters permanently stuck on boards and walls (at each centre)	---

4. RESULTS AND DISCUSSION

The results of the study titled “Evaluation of existing food service systems at selected Amma Unavagam in Coimbatore and Chennai” are discussed under the following headings.

- A. Data from Selected food service operations.
- B. Observation at the functional areas of selected food service operations.
- C. Opinion from the customers on the food service systems and operations.
- D. Promotion of hygiene and sanitation practices at the selected food service systems.

A. Data from Selected food service operations :

(i) Information of the food service systems:

Table I gives the basic information of the food service systems such as the name of the food service system, location, year of establishment and work timings of the centre.

TABLE I

Information of the food service systems

Name of the food service system	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Location	West Mambalam	Jafarkhanpet	Flower market	Mettupalayam road
Year of establishment	February 2013	February 2013	June 2013	June 2013
Work timings	Forenoon 7 to 10 am Afternoon 12 to 3 pm	Forenoon 7 to 10 am Afternoon 12 to 3 pm	Forenoon 7 to 10 am Afternoon 12 to 3 pm	Forenoon 7 to 10 am Afternoon 12 to 3 pm

Food service systems were named as Amma Unavagam, which was an initiative of the food security by the Government of Tamil Nadu. A total of 213 centres are located at Chennai and Coimbatore. All the 200 wards of Chennai Corporation have a centre each and there are 13 centres in Coimbatore. The centres are run by Women Self Help Groups. The study was done at two centres each in Chennai and Coimbatore. In Chennai, Centre I is located in West Mambalam, Centre II is located in Jafarkhanpet and in Coimbatore, centre III is located at Flower market, centre IV is located at new bus stand, Mettupalayam road. The centers in Chennai were started on February 2013 and in Coimbatore by June 2013. Work timings of all the centers were 7 am to 10 am for breakfast and from 12 pm to 3 pm for lunch.

(ii) Layout design of the food service operations.

The layouts of all the four centres were figured out with the dining structure, ventilation, equipments at each area and are given in (APPENDIX IV).

(iii) Organisational chart of Amma Unavagam:

FIGURE II

Organisational chart of the food service system

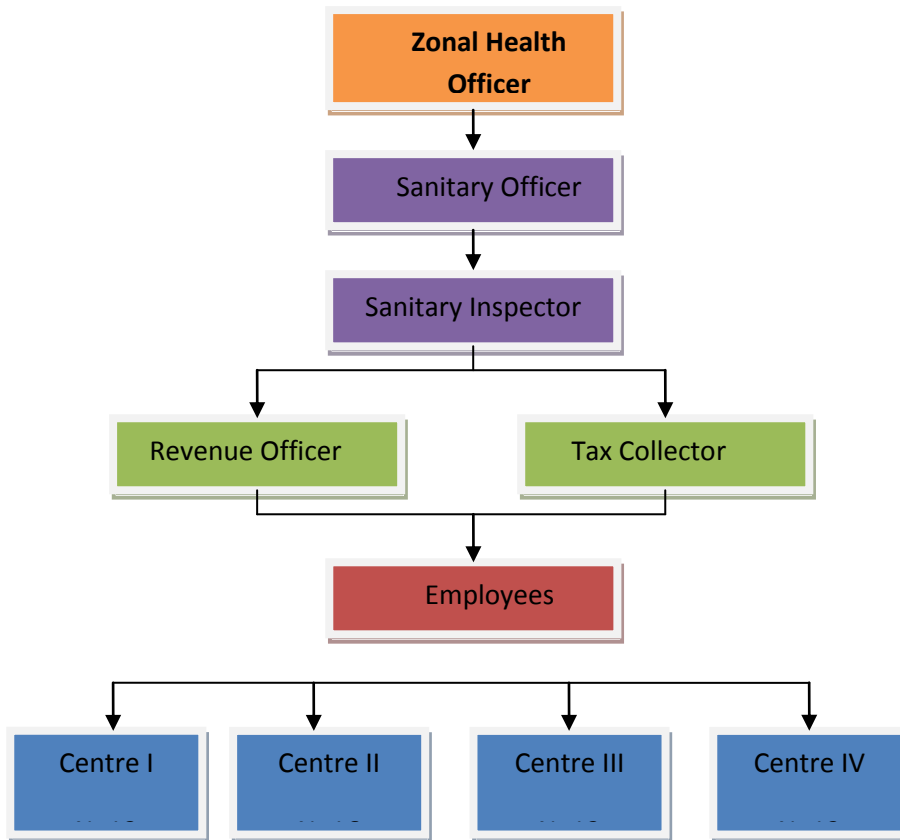


Figure V depicts the organisational flow of the selected food service system. A Zonal Health Officer allotted at each zone had the control of entire food service and is at the top level management. A sanitary officer, sanitary inspector, revenue officer and tax collector were designated as the middle level management and take care of the purchasing of raw materials, collection of cash from each centre. The lower level comprises of employees at the food service operations. A total of twelve female employees in Centre I, III and IV and total of sixteen female employees in Centre II including the centre incharge were employed in the centre. The employees take care of the production and service at each centre.

B. Observation at the functional areas of selected food service operations:

- (i) Method of purchasing of raw materials.

Table II reveals the method of purchasing of raw materials in the food service operation.

TABLE II
Method of purchasing of raw materials

Method of purchasing	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Formal buying	x	x	x	x
Negotiated buying	x	x	x	x
Open - market buying	x	x	x	x
Whole sale buying	✓	✓	✓	✓

Since this is a food service system operated by the Government of Tamil Nadu, the raw materials are purchased on the basis of wholesale buying. The corporation supplies the needed quantity of the raw materials to each food service systems on regular basis. It was observed that the other methods of purchasing adopted food service operation such as formal buying, negotiated buying and open-market buying were not practiced in these food service system.

(ii) Frequency of purchase of raw materials :

Table III reveals the frequency of purchase of raw materials in food service operations.

TABLE III
Frequency of purchase of the raw materials

Purchase of raw materials	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Daily (Perishable)	✓	✓	✓	✓
Weekly (semi-perishable)	✓	✓	✓	✓
Monthly (non-perishable)	✓	✓	✓	✓

The perishable food commodities such as milk, vegetables were procured daily, semi perishable foods like fats and oils were procured weekly, and non perishable foods like cereals, pulses, spices were procured monthly twice by all food service operations. In accordance to McDonalds Corporation 2008, the raw materials are the ingredients that will go into producing the finished product.

(iii) Type of storage in food service operation :

Table IV reveals the different type of storage available in food service operatio

TABLE IV

Type of storage in food service operations.

Type of storage	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
<u>DRY</u>	✓	✓	✓	✓
Jute bags				
Shelves	✓	✓	✓	✓
Cabinets	x	x	x	x
<u>COLD</u>	✓	✓	✓	✓
Refrigerator				
Walk in cooler	x	x	x	x
Deep Freezer	x	x	x	x

Food and Drug Administration, 2000 stated that the plan review for storage needs to provide adequate refrigerator facilities for the proper storage, transportation, display, and service of potentially hazardous foods. Specific refrigeration needs will be based upon the menu, number of meals, frequency of delivery, and preparation in advance of service. All refrigerators must be capable of maintaining potentially hazardous foods (PHF) at 41°F or below.

The selected food service systems had appropriate storage facilities. All the four food service operations had shelves and jute bags for storage of dry and non-perishable commodities such as cereals, pulses and spices. Refrigerators with 1 – 10°C capacity were available for storage of perishable commodities like milk and vegetables.

- (iv) Method of distribution of ingredients:

Table V reveals the method of distribution of ingredients in the food service operations.

TABLE V
Method of distribution of ingredients

Method of distribution of ingredients	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
FIFO	✓	✓	✓	✓
LIFO	x	x	x	x

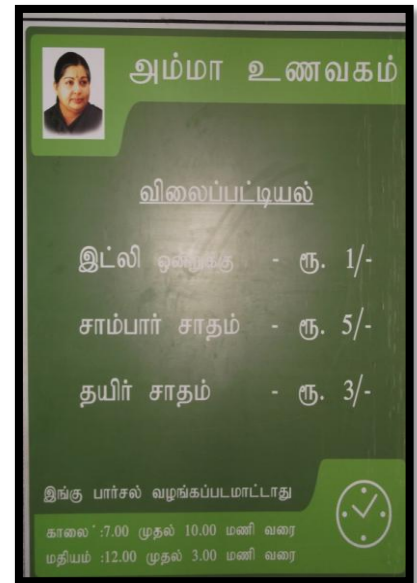
The ingredients are distributed in accordance to first in first out method at all the four food service operations. Registers such as main stock books and sub stock books are maintained in the storage area. Here the main stock book comprises of the total ingredients bought regularly, in sub stock books the intake of daily ingredients are recorded.

(v) Type of menu pattern :

Figure III reveals the data of the Type of menu pattern followed by the food service operations.

FIGURE III

Menu boards



The type of menu pattern followed in all the food service systems is the set menu. Because it comes under the subsidised food system, menu is set by the Government of Tamil Nadu. The menu boards are available at the outlets with menu and costs

(vi) Type of foods prepared:

Table VI reveals the different foods prepared at each food service operations.

Table VI
Type of foods prepared

Type of foods	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Idli	✓	✓	✓	✓
Pongal	✓	✓	x	x
Sambar rice	✓	✓	✓	✓
Curry leaves rice	✓	✓	x	x
Onion rice	✓	✓	x	x
Curd rice	✓	✓	✓	✓
Chapathi	x	✓	x	x

The Centre I in Chennai, all the dishes except Chapatti were prepared. In centre II, Chennai, all the foods were produced. In centre III, Coimbatore, only Idli, Sambar rice, curd rice was prepared for service. Same as in Centre IV, Coimbatore. In Chennai the Amma Unavagam centres were started six months earlier than in Coimbatore and because of more visitors and preferences to customers, more number of dishes were prepared in Chennai.

Table VII
Number of portions sold per day

Type of foods	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Idli	1500	1500	1200	1200
Pongal	500	500	-	-
Sambar rice	500	500	300	300
Curry leaves rice	500	500	-	-
Lemon rice	500	500	-	-
Curd rice	500	500	300	300
Chapathi	-	700	-	-

In Chennai the quantity of all the foods prepared were more than in Coimbatore. In centre I and II 1500 portions of idli, 500 portions of Pongal, sambar rice, curry leaves rice, lemon rice and curd rice each was produced and prepared daily. In centre III and IV only 1200 portion of idli and 300 portion of sambar rice and curd rice were produced and served.

(vii) Type of food service:

Figure IV reveals the type of service at the food service systems.

Figure IV
Type of food service



All the four food service systems adopt to the counter service pattern for the service of food. It was a good practice that was observed as foods were not parceled to be taken out from the outlet.

(viii) Types of fuel used:

Table VIII reveals the type of fuels used in the food service operation.

TABLE VIII
Type of fuels used

Type of fuels	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Solid fuels	x	x	x	x
Liquid fuels	x	x	x	x
Gaseous fuels	✓	✓	✓	✓

All the four food service operation used gaseous fuels widely in all the types of fuels. The recent bound in US oil and gas production, driven by upstream technologies that are unlocking light tight oil and shale gas resources, is spurring economic activity with less expensive gas and electricity prices giving industry a competitive edge and steadily changing the role of North America in global energy trade (International Energy Agency, 2012). Solar energy has to encourage to be used as a renewable source in food service was recommended to the higher officials.

(xi) Ways of waste disposal:

Table IX reveals the data of the ways waste disposal in the selected food service operation.

TABLE IX
Ways of waste disposal

Ways of waste disposal	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Incinerators	x	x	x	x
Bins	✓	✓	✓	✓
Pits	x	x	x	x

All the four centres dispose their waste by dustbins. Foods wastes are immediately placed in the designated bins. Wastes are disposed as biodegradable such as vegetable wastes, food wastes and non – biodegradable such as plastics are separately disposed. Waste handler collects and disposes of food waste after meal times. It is highly recommended that food waste should be composted. The wastes are disposed daily twice once in the morning and once in the evening.

(x) Utilisation of leftover :

Table X reveals the approximate quantity of leftover in each food service operation

TABLE X
Utilization of leftovers

Utilization of leftovers	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I (Approx.)	Centre II (Approx.)	Centre III (Approx.)	Centre IV (Approx.)
Idli	130	100	55	60
Pongal	45	50	-	-
Sambar rice	20	35	20	30
Curd rice	20	15	35	40
Lemon rice	35	20	-	-
Curry leaves rice	30	25	-	-
Chapathi	-	200	-	-

Leftovers are given to the nearby slum areas and orphanages on the daily basis. Only minimum portions ranging from 10 to 50 are left except idlis. Major portion of idlis were

left in centre I and II in Chennai. This may be attributed to the reason that these centres at Chennai offer more choices to the customers than in Coimbatore.

(xi) Details of employees in the food service systems :

Table XI reveals the information of the number of employees working in each food service operation.

TABLE XI
Details of employees in the food service systems

Number of employees	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Male	x	x	x	x
Female	12	16	12	12

Employees play a major role in the food service operation as the service has to be provided round the clock and customer choice is varied. Employees who work in groups comprised of mostly men tend to show lowest levels of job satisfaction and thus working in groups mostly women fall in the middle of the gender – balanced and mostly men groups. (Fields & Blum 1997). In centre I, III, & IV twelve employee were there in total. In centre II sixteen female employees including the centre incharge are selected from the self help groups. They are selected and trained on all aspects of the food service operation to seek more employment opportunities to the women, they were selected and appointed.

(xii) Employer benefits

Table XII predicts the information on the employer benefits

TABLE XII
Employee benefits

Employee benefits	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Monetary benefits	✓	✓	✓	✓
Non monetary benefits	x	x	x	x

Salary is given on the monthly basis to all the employees as the monetary benefits. On the basis of daily wages of ₹ 300 per day to each employee and hence the total of ₹ 9000 per month is given as the monetary benefit. Non-monetary benefits are not available for them since they are considered as daily laborers. Also inclusion of these employees in the government and provision for non-monetary benefits such as education for children, medical benefits and allowances were given as recommendations to the officials.

(xiii) Pricing of foods prepared:

Table XIII reveals the data on the differentiation between food cost and the subsidized cost.

TABLE XIII
Cost of foods with subsidised cost per portion

Items	Qty (gms)	Food cost ₹	Subsidized cost	Difference ₹
Idli	1	12.50	1	11.50
Pongal	250g	20	5	15
Sambar rice	350g	25	5	15
Curd rice	350g	25	3	22
Chapathi	2	30	3	27

Curry leaves rice	350g	25	5	20
Lemon rice	350g	30	5	27

The food cost was calculated in par with open market. Actual food cost varies in wide range with the subsidised food cost. Actual cost of one idli was ₹ 12.50 and it was sold at the rate of ₹ 1. In the subsidised rate sambar rice and curd rice are sold at ₹ 5 and ₹ 3, whereas the actual cost is ₹ 25 per portion.

(xiv) Hygiene practices – Personal hygiene :

Table XII Reveals the personal hygiene practices carried out in the food service operation

TABLE XIV
Personal Hygiene Practices

Personal Hygiene Practices	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Head cap	✓	✓	✓	✓
Gloves	✓	✓	✓	✓
Apron	✓	✓	✓	✓
Trimming of nails	✓	✓	✓	✓
Medical check – up	✓	✓	✓	✓

Personal hygiene practices were adopted at all the food service operations. General practices like apron, gloves, head cap, trimming of nails, and medical checkup everything were properly maintained. Employees were provided with necessary gloves, apron, head cap and within the organization medical checkups are organised once in six months.

(xv) Food Hygiene practices

Table XV reveals the information about the food hygiene practices carried out in the food service operations.

TABLE XV
Food Hygiene Practices

Food hygiene practices	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Lids to cover food	✓	✓	✓	✓
Washing of vegetables before cooking	✓	✓	✓	✓
Use of proper utensils	✓	✓	✓	✓

Food hygiene practices were adopted in all the four food service operations. General practices like proper cleaning of vegetables, proper lids for covering foods, use of proper utensils for cooking and serving.

(xvi) Environmental hygiene practices:

Table XVI reveals the data on the environmental hygiene practices followed in the food service operations.

Environmental hygiene practices	Amma Unavagam
--	----------------------

TABLE XVI

Environmental hygiene practices

	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Site	✓	✓	✓	✓
Structure	✓	✓	✓	✓
Equipments, furniture and fittings	✓	✓	✓	✓
Ventilation	✓	✓	✓	✓
Lighting	✓	✓	✓	✓
Water supply	✓	✓	✓	✓
Waste disposal	✓	✓	✓	✓

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According to Sethi 2007, environmental hygiene and sanitation refers to the total environment in which food is delivered, prepared and served. In all

the four food service operation, proper environmental hygiene practices are followed. The whole site area was kept clean, proper structure was planned, efficient equipments, lightings, furniture and fittings were available. The whole area was observed for the proper ventilation. Adequate water supply was provided. Proper waste management practices were also carried out.

(xvii) Eco friendly practices :

Table XVII reveals the information on the Eco friendly practices adopted at the food service operation.

TABLE XVII
Eco friendly practices

Eco-friendly practices	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Recycling of water	✓	✓	✓	✓
No use of plastics	✓	✓	✓	✓
Vermicomposting	✓	✓	✓	✓
Solar energy	✓	✓	✓	✓

Eco friendly practices are adopted in all the four centres such as recycling of water, preventing practices, vermicompositing and use of solar. These eco practices create a good environment for the visitors and can be a role model for other food service operations.

C. Opinion from the customers on the food service systems and operations

- (i) Age-wise distribution of the selected customers

Table XVIII reveals the age-wise distribution of the selected customers.

TABLE XVIII

Age-wise distribution of the customers

N=400

Age in years	Number	Percent
20-30 yrs	50	12.5
30-40 yrs	75	18.8
Above 40 yrs	275	68.8

The details on age-wise distribution of the selected customers reveals that 68.8 percent of the customers ranged above 40 years followed by 12.8 percent of the customers ranged between 30 and 40 years and finally 12.5 percent of the customers from 20 to 30 years of age.

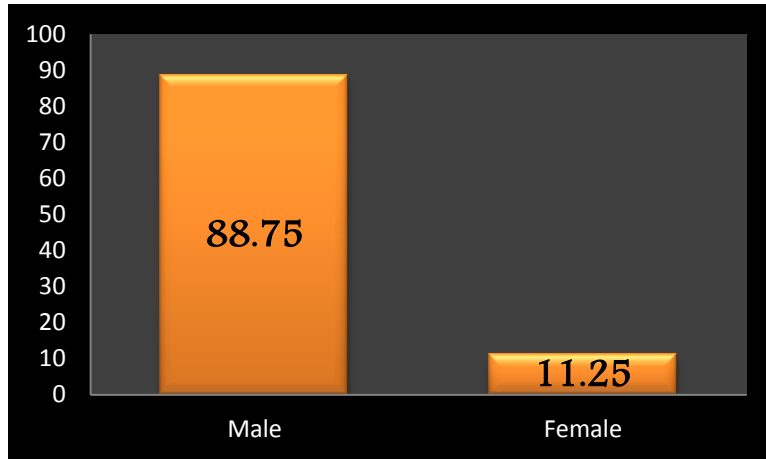
- (ii) Gender-wise distribution of the selected customers

Figure IV reveals the gender-wise distribution of the selected customers at the food service operation

FIGURE V

Gender-wise distribution of the selected customers

N=400



In accordance to the study by Manico et.al, 2007, it was observed that 88.75 percent of the customers were males and 11.25 percent of the customers were females. There were more number of male customers to the centres owing to the reasons of work timings,, easy access to bus stations and low cost.

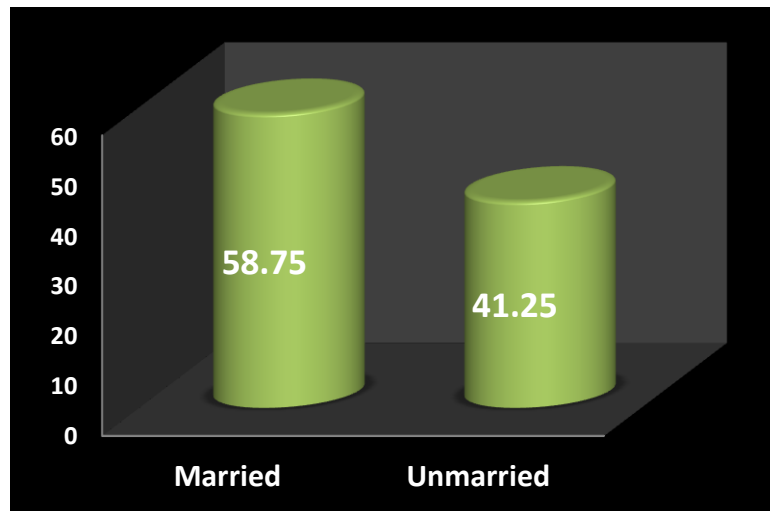
(iii) Marital status of the selected customers.

Figure V depicts the marital status of the selected customers.

FIGURE VI

Marital status of the selected customers

N=400



From the 400 selected customers, 58.75 percent of the customers were married. 41.25 percent of the customers who visited the food service systems during the study period were unmarried.

(iv) Education qualification of the customers

Table XIX reveals the education qualification of the customers

TABLE XIX

Educational qualification of the customers

N=400

Education	Number	Percent
Illiterate	180	45
High school	165	41.25
College	55	13.75

Forty five percent of the customers who visited the food service outlets were illiterates. Customers with high school education were 41.25 percent and 13.75 percent were graduates. Illiterates such as daily labor, working in near-by small shops visited often to this food service operation, since the price of the dish is very low and food was also provided at

adequate quantities. It was also heartwarming that 55.1 percent were literates and were in search of job, preparing for civil service examinations and other examination by the government and private sector.

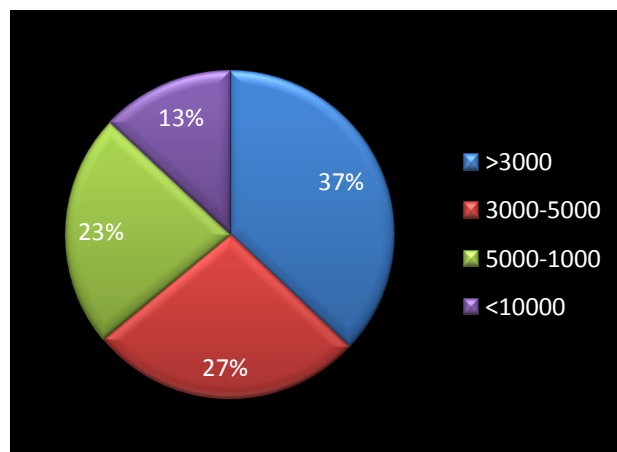
(v) Income range of the selected customers

Figure VI reveals the income range of the selected customers

FIGURE VII

Income range of the selected customers

N=400



(HUDCO Classification, 2003).

The customers with lower income group had more frequent dine outs to the tune of 17 percent. Majority of the customers were with income below ₹ 3000. However, the studies with the wide range of countries at various income and consumption levels are not very strong variants and leaves room for additional explanatory factors like culture, religion and possible choices (Reus swig et.al, 2004)

(vi) Details of the occupation of the selected customers.

Table XX predicts the details of occupation of the selected customers.

TABLE XX
Details of occupation of the selected customers.

N=400

Occupation	Number	Percent	Chi-Square
Student	30	7.5	56.382**
Daily labor	170	42.5	
Auto drivers	15	3.8	
Office Assistants	115	28.8	
Sales representatives	48	12.0	
Higher professionals	22	5.5	

** - Significant at one percent level.

From the 400 selected customers, 42.5 percent were daily labors with more frequency in dining out. Office assistants were found to be around 28.8 percent. Sales representatives in nearby areas were found to be 12 percent and 7.5 percent of students and 5.5 percent of were higher officials. Daily laborers were predominant customers to these food service due to the economic affordability. There was one percent significance observed in the occupation of the customers who visited the food service operation.

(vii) Frequency of dining out :

Table XXI depicts the frequency of dining out by the selected customers

TABLE XXI

Frequency of dining out

N=400

Frequency of dining out	Number	Percent	Chi-Square
Daily	178	44.5	112.475**
Weekly once	107	26.8	
Once in a month	70	17.5	
Rarely	45	11.3	

** - Significant at one percent level.

The details on the frequency of dining out, showed that 11.3 percent of the people dining out rarely. It is evident from this table that 44.5 percent customer dined daily 44.5 and 26.8 percent of the customers dine out once in a week and 17.5 percent of the customers visited once in a month. There was one percent significance observed in the frequency of dining out to these subsidised food service when statistically interpreted with Chi-square.

According to Nielson, 2010 the majority of global customers (44percent) dine out between one and three times per week, as many as 38 percent only enjoy a meal out-of-home once a month or less. Consumers in the Asia Pacific markets dine out more frequently than consumers in other regions, particularly in Hong Kong, where nearly one-third (31 percent) say they eat at restaurants everyday or more than one day.

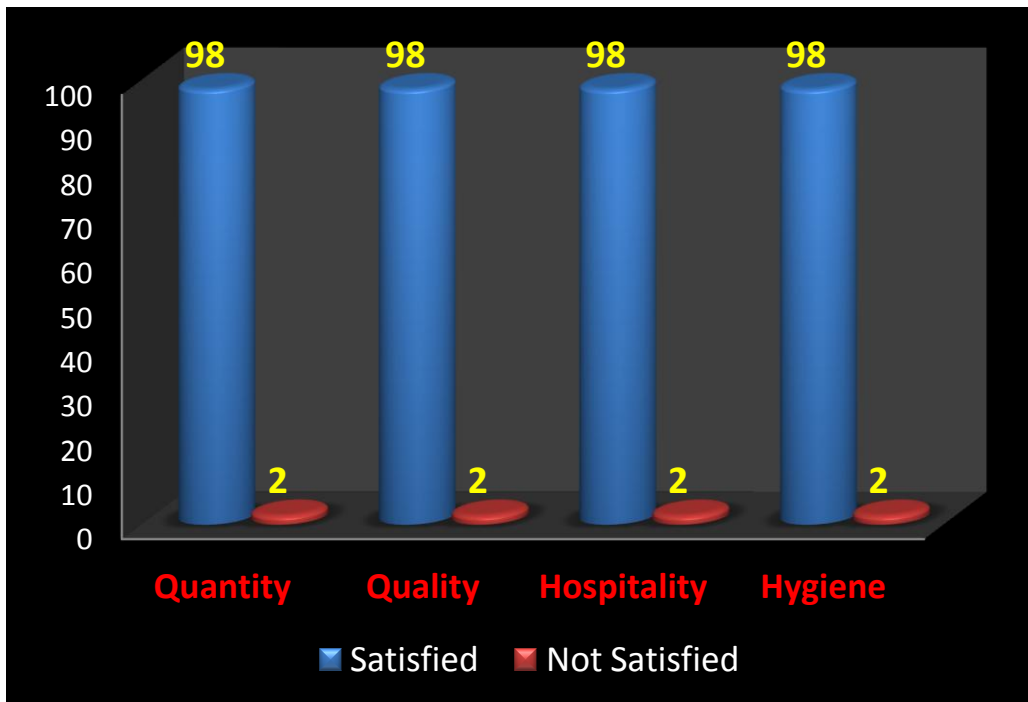
- (viii) Quality, Quantity, Hospitality, Hygiene of the foods provided at the food service systems

Figure VII depicts the quality, quantity, hospitality and hygiene of the foods provided by the food service systems

FIGURE VIII

Quality, Quantity, Hospitality, Hygiene Of the foods provided

N=400



From the 400 selected customers, 98 percent of the customers were satisfied with quality and quantity of the foods provided in the food service operation.

Ninety eight percent of the customers were satisfied with the service of hygienic food. Only two percent of the customers had some suggestions like there should be more care in the hygiene of the foods provided.

Hospitality is the relationship between the guest and the host, or the act or practice of being hospitable. This includes entertainment of guests, visitors or strangers (Nissen, 2006). The customers were satisfied with the hospitality by the employees at all centres.

(ix) Customer satisfaction with the price of the menu:

Table XXII reveals the information on the customer satisfaction with the price of the menu at the food service operation

TABLE XXII

Customer satisfaction with the price of the menu

Price of the menu	Amma Unavagam			
	Chennai		Coimbatore	
	Centre I	Centre II	Centre III	Centre IV
Yes	✓	✓	✓	✓
No	x	x	x	x

Since subsidy pricing was followed where the government extends 67 percent financial support to contribute to the growth of economic sector of the country. The difference in pricing is borne by the Government of Tamil Nadu to ensure the low cost menu. As the price is affordable by all the customers, the customers were fully satisfied with the price.

(x) Suggestions:

- The number of outlets can be increased especially near bus stations, railway stations, hospitals etc.
- Customers prefer more breakfast varieties like dosai, poori.
- Customers prefer more variety in side dish for the lunch menus.
- Food hygiene practices, such as plastic sheets on plates before service rather than serving directly on plates.

D. Promotion of Hygiene and Sanitation practices at the selected food service systems

Education sessions were conducted to the employees to promote more on the hygiene and sanitation practices for different food service operations.

(i) Education session using Powerpoint:

Powerpoint presentation was made in regional language tamil to educate employees on some of the regular practices to be followed at the receiving area, storage area, production area, food service area. Some of environmental hygiene, personal and food

hygiene practices were also educated. There was a good impact on the education sessions conducted. Employees responded well on their new learning.

(ii) Education session using Charts:

Charts were also made in regional language tamil on the general tips on safety cooking and cooking without nutritional losses. After education, they have started practicing all these methods.

(iii) Mini Posters:

Mini posters were made to stick permanently at each area. General tips and regular practices to be followed are made in the posters. It was in order for the employees to remember the practices at all times during work.

5. SUMMARY AND CONCLUSION

“Access to healthy food for all”...

- Ascherio (2006)

The world economy is more integrated with faster communication and hence forth, diet transition is more inevitable. Globalisation has played an enormous role in the transformation of food consumption pattern of the population. The mushrooming of shopping malls, convenience stores, vending machines and fast food outlets has created an alarming situation for population groups to expose for unhealthy eating habits. India is home to a quarter of the world’s hungry, according to United Nations data, despite being one of the biggest food producers and experiencing years of rapid economic growth.

Consumers may want more convenience foods but may not like food additives or higher cost although some convenience food costs less than their home-prepared counterparts. Some want home gourmet cooking, yet many consumers prefer to eat out at fast-food outlets. Reacting to facts of unpredictable duration and dealing with what appears to be contradictory trends are among the problems faced by food processors and distributors.

A total of four food service operations with two centers from Coimbatore and Chennai each, were selected by purposive sampling. A study was done at the functional areas of the selected food service operations and a total of 400 customers who dine in at these selected food service operations were identified to study on the opinions and preferences of foods provided at the outlets. The employees were educated on the regular practices to be carried out in each area using PowerPoint presentations, charts and mini posters.

The salient findings of the study are presented in the following pages:

PHASE I: Observation of the functional areas:

- Functional areas such as purchasing area, receiving area, storage area, production area, food service area were observed at the food service systems named as Amma Unavagam which was an initiative of the food security by the Government of Tamil Nadu.
- The raw materials were procured by the method of wholesale buying, since this system is operated by the Government of Tamil Nadu.
- The raw materials that were perishable such as milk, vegetables were procured daily, semi-perishable foods like fats and oils were procured weekly and non-perishable foods like cereals, pulses and spices were procured monthly twice by all food service operations.
- All the four food service operations had appropriate storage facilities such as dry storage for storing non-perishable foods such as cereals and pulses and cold storage for preserving perishable foods such as milk and vegetables.
- First in first out method was followed for the distribution of food commodities at the storage area for the production for each meal in par to the request given by the centre incharge.
- Set menu pattern is followed in all the food service operations. Idli, Pongal, Sambar rice, Curry leaves rice, Lemon rice, Curd rice and Chapathi were the only menu set in the food service operations.
- Gaseous fuels were used in all the food service operations.
- Dustbins were used for the disposal of wastes. Wastes are discarded as Biodegradable and non-biodegradable.
- Leftovers were given to orphanages and nearby slums.

- A total of twelve employees were there in Centre I, III & IV and sixteen employees in Centre II including the Centre In-charge. Monetary benefits were given to employees. Insurance, medical benefits were recommended to the higher officials. A monthly salary of ₹ 9000 was designated to each employee. All the employees were a part of the Self Help Group.
- Subsidised cost differentiation with the actual costs was calculated with the wide range of difference in each menu.
- Personal hygiene, environmental and eco-friendly practices were adopted in all the food service operations.

PHASE II: Customers opinion on the food service systems and service.

- The age wise distribution of the selected customers who dined out reveal that 68.8 percent of the customers ranged above 40 years.
- It was observed that 45 percent of the customers who visited were illiterates, 41.25 percent of them were within High school education and 13.75 percent were only graduates. Illiterates such as daily labor, working in nearby shop visit often to this food service operation.
- The income range of the customers revealed that customer with low income range of ₹ 3000 had more frequent dine out to the subsidised food service, Amma Unavagam.
- The customers were fully satisfied with the quality, quantity, service and hygiene of the foods provided.
- The number of outlets can be increased especially near bus stations, hospitals etc. Customers prefer more variety in side dish for the lunch menus. Customers prefer more breakfast varieties like dosai, poori, etc. Food hygiene practices, such as some plastic sheets on plates before service rather than serving directly on plates.
- The phase IV education sessions planned for employees were useful and they responded well on their new learning and practiced at each area.

Conclusion:

The food service system has an enormous role to satisfy the customers, through provision of food in par with the demands. The study reveals the higher levels of customer satisfaction for the subsidised food centres as it tracks the development of the Below Poverty Line people. Hence the subsidised food systems should be encouraged to enhance economic development of the population to access food, which is one of the basic

necessities of the humankind. Government of Tamilnadu is the forerunner of such subsidised food service and it will be of true success with joint efforts of the customers, employees and the Government to provide a wholesome and nutritious food for the quality living of the population.

Recommendations to the government:

- The number of outlets can be increased especially near bus stations, hospitals and other peak access centres.
- Customers prefer more breakfast varieties like dosai, poori, kitchidi, uthapam in the centre.
- Customers prefer more variety in side dishes for the lunch menus.
- **The food service can appoint dietitians to plan and monitor the provision of nutritious and wholesome food.**
- **Enhance the use of eco friendly practices and use of renewable sources in the food service sector.**

Recommendations for the future study:

- Hygiene and sanitation practices in the food service operations.
- Case studies of the subsidised food systems in India and Abroad.
- Eco practices and use of renewable sources in food service sector.

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