APPLICATION OF COST CONTROL MEASURES IN COLLEGE CANTEEN

By

M. JAYALAKSHMI

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I. INTRODUCTION.

In the food service industry, the term 'Cost Control' has come to mean control over all items of income and expenses concerned with the functioning of food service unit. With the present spiralling of food costs, control of food cost assumes a very important role. As food is the largest single item of expenditure, food cost control in every respect is necessary. It is all the more important from the view point of the customer in a developing economy like ours where production is not increasing to the desired extent quantitatively and qualitatively. As Shoothalingam and Gangadharvashisht (1974) point out efficient cost control and an honest and efficient public distribution system can help to ensure price stability.

In a conscientious society, it is incumbent on Canteen Managers to supply their clients wholesome food meeting nutritional standards at the lowest possible cost. Cost is the important factor both to proprietor of the canteen and to the consumers. If the price to the ultimate consumer is to be kept down the turnovers in the canteen must be high so that the returns increase.

Terry (1972) defines controlling as determining what is being accomplished, that is the performance, evaluat-

ing the performance and if necessary applying corrective measures so that performance takes place according to plans.

Applying this definition, cost control means control over all items of income and expense concerned with the functioning of food service unit as has been aptly put by (Horn 1974)

With the present prohibitive food cost, today managers of food services of all types are facing great many problems. In order to realize any profit or just to break even requires control of everyphase of the operation. For effective cost control and efficient management, information concerning income and expenditure is essential. Systematic maintenance of records is an important tool for good cost control. Powell (1971) points out that wise and effective use of records help in identifying the problem in the running of food service institutions and set right the situation to increase efficiently and keep down costs. According to young (1971) utilization of data processing in food services, provides an excellent management tool and the necessary information, to determine accurate budgetory requirement, maintain control and ensure nutritionally adequate diet.

To provide meals at the lowest cost possible main-

taining standard of food served, good management in terms of quantity and quality, is very important. A Scientific feeding system is of great importance in increasing the efficiency of utilisation of food. Scientific and hygienic catering is a problem of considerable magnitude in India. This is very important in safeguarding the health of the people who patronise such catering institutions.

Catering management has to meet the needs of a wide range of people with heterogenous tastes and incomes. Portion control, cost accounting and standardisation of recipe and food are must in catering institutions. To obtain these objectives the technology must include, instruction in proper technique of purchase and storage, and skills in preparation of good and attractive service of food where customers satisfaction as Smith (1963) points out is the chief criteria.

Colleges and University have now recognise, their responsibility for the physical and social well being of students. The recent-trends in university education is students' participation in Campus activities and maximum involvement in student teacher relationship. As a result, students and faculty members spend more time away from home. In such situations a the need for a canteen in the College campus to supply students with nutritious food, at low cost is well

evident. Such canteens also offer students an opportunity for work experience and training programme, where by they can apply their theoretical knowledge in realistic situations use the canteen as a venue for imparting health education.

The Saradalaya Canteen at Sri Avinashilingam Home Science College was organised with the Philosophy of self service, and dignity of labour and on a non profit basis. It was run, to provide nutritious food of good quality to students and faculty members, at a reasonable cost. The canteen was also used as a quantity cookery lab for students of food service management and dietetics.

The present research study in the Saradalaya Canteen was undertaken with the following objectives.

A. Application of cost control measures through

1. Reorganisation of the job chart of the personnel
2. Monitoring purchasing, receiving, storing and issuing.
3. Implementation of work simplification techniques.
4. Introduction of standardisation of selected recipes and portion control..
5. Systematic maintenance of records and registers.

B. Evaluation of the cost controlling measures introduced.

II. REVIEW OF LITERATURE

The available literature pertaining to this study is reviewed under following heads:-

A. Role of Canteen in Colleges.

B. Tools for efficient management.

C. Work simplification technique

D. Effective cost control measures

and E. Evaluation studies on the efficacy of cost controlling measures.

A. ROLE OF CANTEEN IN COLLEGES:-

The college canteen is an institution food service on a limited scale, with a specialised function. As such the organisation and management principles of any large scale food service apply equally to the canteen. It may be necessary to consider a greater responsibility in the supply of goods. Buying prepared food away from home is becoming more wide spread. More lunches and food may be bought at school as more women join in the work force. Those lunches as Richardson (1972) points out need to be as good as or better than what mother would have provided.

College canteen serve as a social centres for students and staff. It also serves as a refreshing place for staff and students, because after drinking a cup of coffee or cool-

drink they feel fresh. Some of the students and staff find difficulty in bringing lunch, so the college canteen fulfills their requirement by supplying the afternoon meals.

The character of the campus food units is strongly affected by administrative policies and college financial limitations. Recognition of and of social health and educational significance of good food habits and dining behaviour differ greatly. The development of taste and well ordered habits of daily living may be important adjuncts of college education. The meals regularly consumed by college students have been to influence immediate health, growth and mental capacity and also the health of their offspring. (Kotschever 1976)

B. TOOLS FOR EFFICIENT MANAGEMENT:-

Terry (1972) defines management as a distinct process consisting of planning, organising, actuating, and controlling to determine and accomplish the objectives by the use of people and resources. Management may be defined as the art of securing maximum results with a minimum of effort so as to secure maximum prosperity and happiness for both employer and employee and give the public the best possible service.

Das Gupta (1969) explains management as the creation and control of technological and human environment of an

organisation in which human skill and capacities of individuals and groups find full scope for their effective use in order to accomplish the objective for which an enterprise has been set up. It involves individual, group, the organisation and the environment.

According to West et al (1977) the functions of management in an organisation are commonly classified as planning, organizing, delegating, actuating and controlling. Terry (1975) defines planning as selecting and relating of facts and making and using of assumptions regarding to future in the visualisation and formulation of proposed activities believed necessary to achieve the desired results. According Hart (1963) planning is the determination in advance of a line of action by which certain results are to be achieved. According to Lallen Prasad (1979) the process of organising consists of dividing activities assigning duties, and delegating authority for effective operation and achievement of goals.

Delegation of responsibility is essential to distribute work loads to qualified individuals at various levels. Who ever delegates a responsibility should not fail to do so with detailed instructions as to what is expected of the subordinate and the necessary authority to carry out the responsibilities (West et al 1977)

Actuating is getting work done with people. It is concerned with employees as human beings. Studies have shown that most people work at only 50 to 60 percent efficiency and some investigators place this figure as low as 45 per cent. The alert Manager is aware that through careful, and intelligent guidance, counselling and by effective supervision, the worker's productivity may be increased as much as 20 percent. This may mean the financial success and failure of an enterprise (West et al 1977).

Controlling is an important function in all types of enterprises. The function of controlling consists of the steps taken to ensure that the activities of the people conform to the plans and objectives of the organisation. Controlling and planning are simultaneously performed and are interrelated. The management should lay down, in clear and unambiguous terms the objectives of the organisation and should plan out a clear and realistic course of action for their attainment only then effective control would be possible.

Controlling, should not be viewed merely as a post-mortem of past achievements. The control system should be such that one can study the past, note the pitfalls and take corrective measures so that similar problems may not occur in future. (Lallen Prasad 1979.)

The director of a food service commonly uses the organisation chart as a means of explaining and clarifying the structure of an organization. He also uses the descriptions job specifications and work schedules as devices for the clear presentation of personnel and their responsibilities to top management and employees.

The Organization chart presents graphically the basic groupings and relationships of positions and functions. The organization chart usually is constructed on the basis of the line of authority but may be based on functional activity or a combination of the two. Functions and positions are graphically presented by the use of blocks or circles solid lines connecting the various blocks indicate the channels of authority. Those persons with the greatest authority are shown at the top of the chart and those with the least at the bottom (West et al 1977)

A job description as Lallan Prasad (1979) points out is an organised list of duties that reflects required skills and responsibilities in a specific position. It may be defined as a written statement of the main duties and responsibilities which a job entails.

The job specification help in preparing specifications for each job. A job specification contains personal capacities and inclinations deemed necessary for successful job performance.

A work schedule is an outline of work to be performed by an individual with stated procedures and time requirements for his duties (west et al 1977)

C. WORK SIMPLIFICATION TECHNIQUES:-

The term work simplification is familiar to the food service manager although various esignation are used by writters on this subject. Niebel (1962) points out the terms "Operation analysis" "work simplification", and "methods engineering" are frequently used synonymously. In most cases the person is referring to a technique for increasing the production per unit of time, and consequently reducing the unit cost.

In this era of keen competition, it is necessary in order to exist for industry and business alike continually and conscientiously to strive to make improvements - not only in our products, and services but in our method of producing the products and their distribution and in over all morale.

The work simplification approach is one means of accomplishing the objective improvement, a better product, at the right time, at the right price. The only way to accomplish this goal is to create within the organisation

an atmosphere of friendliness, understanding, and team work.

Work simplification is based on the concept that people are the most important asset to the success of the organization, and that "people do best things that they enjoy". The work simplification programme as Simenson (1959) points out will give them the opportunity to participate in the solution of their problem, thus giving dignity to each and every one.

WORK SIMPLIFICATION METHODS:-

Work sampling is a tool for fact finding and often is less costly in its time and money than a continuous study. The primary use of work sampling is to measure the activities and delays of men or machines and determine the percentage of the time they are working or idle, rather than to observe the detailed activities of a repetitive task (West et al 1977)

Reports of studies of work sampling made in food service enterprises have been limited, but the possibilities of successfully using this technique are indicated in a study by Wilson (1956) to determine why the student pay roll in one residence hall was greater than in other small units.

A pathway chart or flow diagram is a scale drawing of an area on which the path of the worker or movement of material during a given process may be indicated and measured but with no breakdown of time or details of the operation.
(West et al 1977)

Operation chart is a simple device to record, in sequence the elemental movements of the hands of the worker at a given station without consideration of time. (West et al 1977)

The process chart is a fairly simple technique for recording and analysing the breakdown of a job. It presents graphically the separate steps or events by the use of symbols for a given process, so that the entire picture of the job can be condensed into compact yet easily interpreted form (West et al 1977).

Micro motion is a technique whereby movement, of the worker is photographed, and recorded permanently on film.

A study was conducted by Grace and Beatrice in (1957) on work simplification techniques to determine how much improvement could be made by the same worker producing the same menu item. The first study was reviewed with the cook and the simplified plan of production was outlined with his co-operation. Two days later the study was repeated. Production of 300 portions of the menu item by the simplified method resulted in a saving of 16.5 minutes of direct labour time, 330 ft in distance travelled and 48 cents in direct labour costs.

D. EFFECTIVE COST CONTROL MEASURES:-

In common practice, control connotes curb, check or even physical restriction - Chettopadhyay (1976). In the words of Pierce (1979) control is "that force which guides towards predetermined policies and decisions. Professor Anthony (1979) defines it as "the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organisation objectives.

Das Gupta (1972) Kotas and Davis (1973), Jaya Chandran (1976) and Glew (1977) define cost control as a management function and it is absolute necessity in the financial operation of any successful food service. In the food service industry cost control as a basic objective will result in more profitable operation. Food cost is one area wherethe designer incorporate any ideas that will keep cost to a minimum.

According to Terell (1972) cost control involves managing of the inflow and out flow of money in any undertaking. Successful money management has three important phases- obtaining the amount needed using it well and measuring the results, as a gauge of operation and guide for future planning.

The first step in cost control in food service is to elicit which factors can be controlled and which cannot. The 2nd step is keeping records to gain knowledge of expenditure and quantity consumption cost per serving of a standard portion must be determined and evaluation made. In all stages of production between delivery and distribution it is important to check that there are no opportunities for losses. Employees who are responsible for running the food service must be properly trai ed so that they will effectively control costs by minimizing waste and maximizing the use of the available resources (Marshall 1974)

A food service system is an integrated programme in which the procurement, storage, preparation and service of foods and beverages and the equipment and methods required are fully co-ordinated to obtain minimum labour, optional customersatisfaction, quality and cost control (Livingston 1972) Thus from menu planning to garbage disposal food cost control is an integral part of every phase of food production (Moore 1953 and Jayachandran 1976).

The major objective of a food service organisation is to set up a situation in which prospective consumers are induced to consume food items containing needed nutrients in satisfactory quantities. In this regard the primary function of the menu is either to

a) list the item that will be served or

b) list the alternate items available from which one may select items likely to satisfy one's individual needs (aesthetic, quantitative, nutritive etc.) at variable prices. (Eckstein 1973)

Grier (1960) says that menu planning is the pivotal point around which the success of the food service rists. The menu determines the type and the quantity of foods that must be purchased and prepared. (Twaddle 1965 and West et al 1977)

Purchasing requires, knowledge of new commodities grown processed, stored, transported, marketed and handed. Seasonal supply conditions and market factors must be known so that goods are ordered on time. Cost is always an important consideration in procurement but it must not take precedence over other factors (Kotschever 1976)

The importance of purchasing function indicating the steps involved is depicted below:

Policy	Shows what market is aimed at
Menu	Determines the choice available to customer and food quality standards.
Volume forecast	Determines what foodstuffs are required.
Purchasing	Encompasses selection of suppliers, contracts economic ordering quantity.

Receiving	Quantity and quality inspection
Storing and issuing ..	Storage requirements, stock records, pricing.
Production	Preparation and cooking.
Selling	Provision of acceptable meals at correct selling price.
Control	Measurement of performance of departments and of total operation

According to Notas and Davis (1976) the procedure on a delivery arriving at an establishment is as follows.

i) A quick check is made against the delivery note and the copy of the order to check that the majority of the goods are being delivered.

ii) The good on being unloaded are then checked for quantity

iii) The good saving been checked for quantity are next checked for quality in accordance with the purchasing specifications.

According to Rosenblatt (1958) storing is an important aspect in controlling the goods received of special suitable storaged space should be allotted to each type of merchandise while storing, the commodities. A system should be evolved for using the oldest stock first. To ensure this

the merchandise entering the store room, should be date stamped so that their age could be determined.

Storage serves as a temporary house for the purchased food item. Storage has been called link between receiving and preparation (Luckowshy et al 1962)

Periodic checking to detect spoilage must also be undertaken good storage practice involves storing adequate quantities and not excess which will ultimately lead to spoilage, wastage and pilferage (Peffers 1960)

When goods are received into storeroom, the goods are delivered to the various department according to the quantity specified in the specification or requisition slip. This sort of issuing is necessary to control the issues of various items in the storeroom.

Suitable records are essential to good business, and for scientific food cost control. They provide a basis for reconciliation with financial books and secure a firm grip on the details of the business provide a means x in the prevention of irregularities, in purchasing, receiving, storing and dispensing supplies and help to exercise better internal control. (Batiliboi 1962).

A standard recipe may be defined as a written formula for producing a food item of a specified quality and quantity

for use in a particular establishment. It should show the precise quantities and qualities of the ingredients together with the sequence of preparation and service of food item (Kotas and Davis 1976).

Standardised recipe are fine as far as they go but they alone will not assure of quality food absolute yield and controlled food costs. Standardised recipes do not reflecteon the ability of either the cook or the supervisor. They should be regarded as a dependable control tool. (Goodenow 1962)New (1951) Kotas and Davis (1976) Shinns (1976) state the objectives of standardised recipes as follows.

a) To predetermine the quantities and the quality of the ingredients, to be used stating the standard purchase specification wherever possible;

b) to predetermine the yield obtainable from a recipe if a standard yield has not been prepared.

c) to pre-determine the food cost per portion

d) to predetermine the nutritional value of a particular dish

e) to facilitate menu planning.

f) to facilitate purchasing and internal requisitioning

g) to facilitate food preparation

h) to facilitate portion control.

Standardised portions or portion control is important

not only in the control of costs but also in creating and maintaining guest or customer satisfaction and goodwill.

Portion control means the size or the quantity of food to be served to the customer. The size of portion is determined by the management by reference to a number of factors, type of customers, or establishment quality of food, portion size adjusted to the price changed and the amount of profit required. (Jayachandran 1976 Kotas and Davis 1976)

According to Kotas and Davis (1976) standard portion sizes are important for two reasons.

a) Irregular portion sizes of an item served, to customers eating at the same table lead to customer dissatisfaction. Too small a portion will usually result in the loss, of a customer where as a correct and fair portion may result in repeat business with the customer.

b) As the standard portion size is related to the price to be paid for an item any excess in portion size causes a higher food cost for that dish and a reduced gross profit.

Portion control begins with the purchase of foods, according to definite specifications, so that known yields

can be obtained from each food. The establishment and use of standardised recipe to include the number and size of each portion the recipe will yield is the next step in portion control. Each food director will determine the size portion to be served and its selling price in relation to total volume and cost of the recipe (West et al 1977)

The control of standard portion sizes is essential the desired gross profit is to be achieved in the kitchen. This can only be done by frequently checking that staff are using correct portioning equipment provided and by spot checking some food items at each meal period for the standard position size.

Cost is a word with many different meanings and the costs of business operation may be combined in different ways for different purpose. The costs that are used as a basis for selling prices are not the some as the costs used to support financial accounting. Different costs are studied as an index of productive performance. And finally there is a whole range of different concepts of cost used to provide a quantitative basis for management decision making (Willsmore 1971)

The main components of cost control in canteens are:

a) Food cost.

b) Labour cost.

c) Operating and other expences.

a) FOOD COST:-

Food is the most controlled item for expenditure and the one subject to the greatest fluctuation in the food service budget.. The expenditure on food varies greatly from one type of institution to another and often for institution of the same type because of the form of food purchased, the amount of on premises preparation, geographic location and delivery costs (West et al 1977)

Food cost are usually expressed as a percentage of the total money spent on food. They very widely from 18 - 20%, to 70 - 80% depending on the services rendered by the restaurants.

Food cost is frequently broken down into categories such as meat fish, poultry milk and dairy products, vetetables and fruits, cereal and grains (F.A.O. 1963)

b) LABOUR COSTS:-

Labour cost in food service organisations have been spiralling upward over the last few years until this item of expenses has become one of the most controversial in the

overall budget. Many food services are finding their labour costs almost as high and in some situation, higher than the food cost percentage. Food costs have been controlled to a fine point but until recently less concern has been given to controlling labour costs. (West et al 1977)

e) OPERATING AND OTHER EXPENSES:-

Control should not end with consideration of food and labour costs only. West et al (1977) define that 12 - 18% of the departmental budge will be used for other items classified as overhead and operating expenses. These include utilities laundry, and linnne supplies, repairs, replacement, and maintenance telephone, printing papergoods, office supplies and cleaning materials, depreciation, rent, insurance and taxes.

Pricing:-

One of the important responsibilities of any food service manager is to determine a sound basis for establishing the selling price for food price involves, two consideration; the precosting of standardized recipes and predetermination of food cost percentage level which of the income spent for food. The selling price of an item of food

is based on raw food cost plus a mark up suitable for the type of organisation. (West et al 1977)

Kotas and Davis (1976) opines that pricing must be compatible with the main objective of the business clearly the most important objective of a non-welfare catering operation is to earn a satisfactory profit. Given the number of covers, the higher the price, charged, the higher normally the net profit earned by the establishment and vice-versa. Given the price level of the establishment the lower the operating costs in higher normally the net profit. Hence there is a rather obvious link between pricing and profitability.

8. EVALUATION STUDIES ON THE EFFICACY OF COST CONTROLLING MEASURES:-

A study was conducted in the department of Dietetics of the University of Michigan Hospital embarked on a programme aimed at the combined objectives of improving food quality, increasing labour efficiency, and lightening food cost control The food service management team started with the general guides as follows:-

a) Recognising the need and responsibility for and values to be gained through a production control programme.

b) Developing basic plans for the programme.

c) Surveying the adequacy of the available physical facilities

d) Selecting and scheduling specific menu item for standardization.

e) Formulating procedures for listing and developing selected procedures.

f) Systematically calculating and standardising recipe yield.

g) constructing the written recipe.

The greatest reward from the above programme has been the consistent production of top quality food. The food production staff can see its efforts bring forth good results and employees known they have prepared products of which they can be proud. In addition food cost have been simultaneously reduced, and stabilised through improved control of yields and portions. There has also been increased customer satisfaction as expressed by both patients and capeterie patrons. Increased job satisfaction for employee and supervision has been another of our rewards standardised recipes lessen everyones frustration because they furnish directives for all production activities in the kitchen (Margarite 1962)

Another study was conducted at National School lunch Programme and the objective of this study was to improve the financial management of the programme, and also to increase

the student participation in the programme.

At the time of analysis, the subject high school had a school lunch programme special milk programme, alecarte food service, and two adult feeding operations.

Operating costs for the months of January, February and March, were selected, for analysis Two procedures were followed in establishing food costs.

The first was to use actual data available from alecarte and special functions. The second procedure was to compute costs for the National School lunch Programme and adult feeding operations.

The food cost was determined by all actuall food costs described in the first procedures were subtracted from the total monthly cost of food used. The remainder represented the cost of food used to operate the school lunch programme and the two adult feeding programme.

To access the labour cost to these programme, the percentage of standard food cost for the lunch programme and adult feeding operations were used to establish labour cost.

For indirect cost the percentage of total food and total labour costs each programme were used as a basis for applying other expenses.

Results obtained from this study illustrate that the National School Lunch Programme was not being subsidised by the sale of the food to students on the other hand. The adult feeding operation were subsidised. (Kathleleen Martin 1976).

XII. METHODOLOGY

The methodology of this research project included the following steps:-

A. Survey of Preferences and opinions on the different aspects of the canteen by selected regular customers.

B. Computation of the existing income expenditure pattern

C. Cost controlling through

1) Reorganisation of the job charts of the workers.
2) Monitoring purchasing, receiving, storing and issuing.
3) Application of work simplification techniques.
4) Introduction of standardisation of selected recipes and portion control.
5) Systematic maintenance of records and registers.

D. Evaluation of the cost controlling measures introduced.

A. <u>Eliciting the preferences and opinion of the customers</u>:-

To elicit the needs and opinions of selected customers the investigator selected at random, 40 students 20 faculty members who visited the canteen regularly. The tool to elicit the above information was the questionnaire (Appendix A) which was developed by the investigator. The questionnaire included were objective type eliciting details

on food preferences, suggestions for new recipes, improving sanitation and service. These questionnaire were distributed through the selected customers, with the request to return the duly filled questionnaire within five days.

B. Computation of existing expenditure pattern:-

The investigator calculated the existing expenditure for the months of December and January which were considered to be control months through computation of food cost, labour cost maintenance, and miscellaneous.

C. Cost controlling through:-

i) Reorganisation of the Job charts of the workers:-

The investigator reorganised the job chart of the cook as, planning the menu, checking the ingredients for the next day, preparing coffee and the main dish and helping in counter service.

The two assistant cooks in the canteen were allocated the following job.

a) To prepare the indents for grossories and vegetables

b) To clean and arrange the stores

c) To receive the ingredients issued by the investigator from the stores for the next day's preparation.

d) To prepare snack items

e) To help in counter service.

and f) To clean the ice cream machine.

The helper is to be prepare ice-cream, issue tickets and to maintain and settle accounts. The cleaner is responsible for the overall cleaning of the interior of the canteen and fill in drinking water.

2. Monitoring purchasing, receiving, storing and issuing:-

Purchasing was done on a monthly basis for the dry provision by placing an indent from the co-operative super market. The vegetables were purchased thrice a week by placing a purchase order form. Milk was purchased daily from the co-operative society. Delivery of all goods was done at the door step.

The goods on delivery were checked for correct weight and good quality by the investigator. The amounts were entered in the store room registers. The investigator also oriented the canteen personnel to check the goods in terms of quantity and quality at the delivery point.

The investigator also trained the canteen personnel in the proper organization and storage of the foods. Maintaining cleanliness in the storeroom formed an important aspect.

The food articles were arranged in the racks with the older stock in the front area, to facilitate their immediate utilization. Ingredients like rice flour sugar were stored in sacks, while pulses spices condiments which were purchased in a packeted form, were stored on the shelves. Vegetables were stored in the kitchen shelves and if milk was left over, it was stored in the kitchen. Thus to the extent possible, spoilage of foods was prevented.

Issuing food materials from the store room to the production area according to the requirements in terms of the total production for the day is another aspect in cost control. Issuing of all ingredients were done in the previous day evening. It was entered in the store room records which were maintained by the investigator. The investigator checked the remaining foods frequently with the store room records to prevent pilferage.

3. Application of work simplification techniques:-

Work simplification is a way of getting something done step by step by breaking a problem into simple segments.

The work simplification techniques were introduced through -

a) The pathway chart and process chart

b) Introduction of labour saving devices.

Pathway chart and Process chart:-

The investigator evaluated the work carried out by the cook for three selected recipes by observing the various movements and the time taken with the help of the pathway and process chart. From this the investigator analysed the activities and time, and advised the cook on her wasted effort.

LABOUR SAVING DEVICES:-

Vegetable chopper:-

Two portion of vegetables with identical quantities were chopped by conventional methods and vegetable chopper, respectively. The time table was noted and compared.

Pressure cooker:-

Identical portions of dhal were cooked in pressure cooker and in ordinary boiling method and the time was noted and compared.

Chappathi presser:-

Time taken for rolling out 50 chappathi in Chappathi presser, and in rolling board with rolling pin was calculated and compared.

4. Introduction of standardisation of selected recipes and portion control:-

A standard recipe is one that has a written formula for producing a food item of a specified quality and quantity. By standardisation we are able to get the right quantity at the right time and the portion can be increased by adding the ingredients. Portion control will also help us to estimate the number of portions to be prepared and to prevent wastage in the canteen. The recipe preferred by the customers were standardised. The recipes were filed in the recipe files portion control was brought about by having definite measures for each item that was sold for example scoop of ice-cream, 250 grams of cooked rice with a table spoon of salad and weight for snock items, and specific volume tumblers for coffee and cold drinks. The standardised recipes were given (Appendix 9.)

5. Systematic maintenance of records and registers:-

Maintenance of complete and accurate records is the basic requirement of scientific cost control. A food service

operation no matter how small or large cannot long exist without systematic records. When accurately maintained daily records & registers serve as a guide for efficient operation.

The various records maintained were purchase record, Bincord and sales registers (Appendix C).

Purchase record included the date of purchase, name of the item, cost per unit, total quantity purchased, and the total cost of each item. Two separate purchase records were maintained for dry provisions and perishables.

Bincord:-

This was prepared for each commodity showing the description of the commodity, date, quantity of goods received, quantity of goods issued and the balance remaining.

Sales registers:-

Ticket books with separate denominations were maintained with numbers. The opening number and closing numbers were noted and according to the denomination it was entered into the registers.

The above measures were adopted for a period of two months namely February and March which were considered as the Experimental Period.

D. Evaluation of the cost controlling measures introduced

The impact of the cost controlling measures introduced was evaluated by comparing the overall income expenditure pattern for the control and experimental period.

IV. RESULTS AND DISCUSSION

Results obtained in this study are tabulated and discussed under the following heads:

A. Consumer preferences and opinions on the different aspects of the canteen.

B. Income and expenditure pattern of the canteen before the introduction of the cost control measures.

C. Management of the canteen

D. Effectiveness of work simplification techniques adopted.

E. Efficacy in standardisation of selected recipes and techniques adopted for portion control

F. Overall Income expenditure pattern for the control and experimental period.

A. CONSUMER PREFERENCES AND OPINIONS ON THE DIFFERENT ASPECTS OF THE CANTEEN:-

The sole objective of the college canteen is to provide for faculty members and students adequate nutritious snacks at reasonable cost.

For 70% of the students and 55% of the staff members the college canteen essentially served as centre for giving refreshments items like, coffee, cooldrinks and ice cream. 18% of the students and 40% of the staff

had a difficulty in bringing lunch, as they started early from their homes due to the reason that their houses were situated far away from the college. For this group, the canteen served lunch. During lunch hours and after college hours, the canteen served as a place of get together with friends overa cup of coffee. But this use was limited since, canteen was open only during intervals and after college hours. Table I presents the clientels' preference for lunch item, sweet and savoury to the be served in the canteen.

TABLE -I

CLIENTEL PREFERENCE FOR LUNCH, SAVOURY AND SWEET ITEMS.

LUNCH			SAVOURY			SWEETS		
PREFERENCE								
Name of the item	No.	%	Name of the item	No.	%	Name of the item	No	%
Peas Rice	25	42	Puffs	20	33	Cake	23	38
Tomato Rice	15	25	Murukku	14	23	Biscuit	21	35
Poori	13	22	Bonda	12	20	Gulob-Jamoon	17	28
Carrot Rice	5	8	Pakoda	12	20			
Fried Rice	2	3	Bajji	1	2			
Coconut Rice	Nil	Nil	Vadai	1	2			
			Groundnut	-Nil-				

Among cereal preparation for lunch peas rice was upper most in the list with 42% of the clientel giving preference to this while fried rice has the least preference with only 8% of the cliental preferring this. Coconut rice did not find a place in the list of first preference but 7% of the cliental gave this as their third preference. Inspite of the common concept that poori has popularity the investigator found that the preference for poori only to the extent of 22%

Puffs with mixed vegetable stuffing ranked first among the savoury items with vadai down in the scale. There was not a wide variation, in cliental preference, among murukku, bonda and pakoda. Groundnut, a nutritious snack was rated only as a second preference.

The three common sweet items preferred by the clientel were cake, biscuit and Gulab Jamoon with out much difference for their preference. Cake a baked product dominated the list. With this background of clientels preference, the investigator was enable to standardise the item which were 'Popular' among the clientels.

Table IX shows the clientels preference regarding introducing new lunch, savoury, sweet and other items.

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TABLE - XI

CLIENTEL PREFERENCE REGARDING INTRODUCING NEW LUNCH, SAVOURY, SWEET AND OTHER ITEMS.

LUNCH			SAVOURY			SWEET			OTHER ITEMS		
PREFERENCE											
Name of the item	No.	%	Name of the item	No.	%	Name of the item	No.	%	Name of the item	No	%
Vegetable Rice	17	28	Cutlet	28	47	Bhedusha	24	40	Cone Ice Cream	29	48
Chappathi with Kuruma	16	26	Chips	15	25	Halwa	18	30	Cool drinks	25	42
Masala Dosai	16	26	Mixture	15	25	Milk - Kova	12	20	Fruit salad	7	12
Curd rice	11	18	Bhal-poori	9	15	Ladhu	8	14	Fruits	6	10
Uttappam	11	18	Popcorn	4	7	Choco-late	8	14	Milk shake	4	7
Plain-dosai	9	15	Cashew nuts	3	5	Fruit-cake	8	14	Lolly pops	4	7
Pongal	9	15				Rasa-Gulla	7	12			
Sambar-rice	8	13				Burfi	4	5			
Porata	7	12									
Fullmeal	6	10									
Uppuma	5	8									
Kichadi	4	6									

The information provided by the clientele with regard to introducing new items in the canteen indicated a variety of food items. Vegetables rice was the most popular, followed by chappathi with kuruma and Masala dosai. Since the latter two involved time consuming procedures, the investigator chose vegetable rice for standardisation. It was interesting to note that curd rice, a rather a less popular item, has also been included in the cliental preference.

Among the savoury items, as high as 47% of the clientele wanted vegetable cutlet to be introduced in the canteen, chips and mixture were also preferred. Cashewnuts also found a place, in the list, but due to unprohibitive cost, the investigator not attempted to introduce this. Vegetable cutlet was chosen for standardisation by the investigator.

Bhadusha was the most popular item with 40% of the clientele preference for introducing in the canteen. A list of nine sweets were given by the consumer but with the limited time available the investigator standardised only Bhadusha to introduce in the canteen menu.

The preference for other snack items included cone ice cream as number one preference with six other items following it. Since the existing set up in the canteen included ice cream machine, the investigator chose chocolate ice cream with cone for standardisation and introduction.

Thus the survey on consumer preference enables the investigator to choose items which were popular among the clientel for standardisation and introduction in the canteen menu.

With regard to service in the canteen, the customer suggested a system should develop for quick and efficient service, so that customers must not wait near the counter to get the necessary eatables. 76% of the clientele were dissatisfied with the slow service. The main reason which could be attributed to slow service is that the personnel in the canteen had such a time schedule that soon after cooking in the kitchen, they have to come and take over counter service which resulted in total exertion with over work.

TABLE XII presents the clientele satisfaction regarding the equipment and furniture in the canteen.

TABLE - XII

CLIENTELE SATISFACTION REGARDING THE EQUIPMENT AND FURNITURE IN THE CANTEEN.

S. No.	Particulars	Satisfied		Not Satisfied	
		No.	%	No.	%
I	EQUIPMENTS:-				
	a) Tumblers	37	62	23	38
	b) Ice cream cups	12	20	48	80
	c) Spoons	10	17	50	83
	d) Servieing plates	22	33	38	67
II.	FURNITURE:-				
	a) Table	54	90	6	10
	b) Chair	49	82	11	18
III.	WASHING AREA	5	8	55	92
IV.	TICKET COUNTER	47	68	18	32
V.	SERVING COUNTER	40	67	20	33

Table XII shows that clientele were satisfied with the number of coffee tumblers since 80% of the clientele were not

satisfied with the ice cream cups and spoons due to the size and cleanliness since it was a popular items among the customers, the difficulty was over come by the introduction of cones which eliminated the using of cups and spoons and also washing. Sixty three percentage of the clientele were not satisfied about the serving plates because it was less in number and also clientele disliked the Hindalium plates. They prefer stainless steel plates. Suggestions were given to the canteen authorities to introduce stainless steel plates which could maintained much better.

Clientele were also not satisfied about the washing area, because it was slippery and the left over food materials got accumulated in the sink. Necessary steps were taken to clean the washing area daily with the bleaching powder, and washing soda. A separate bin was placed in washing area, to throw the left overs so that it will not affect drainage. All these steps were taken because good nutrition which calls for wholesome food served under sanitary condition is necessary to keep physically fit (Counen 1964).

More than 60% of the clientele were satisfied with the existing ticket counter and service counter. The furniture arrangement was also satisfactory as stated by the clientele.

B) Income and expenditure pattern of the canteen before the introduction of the cost control measures.

Food cost in any food service institution forms the largest part of the expenditure and as the definition of west and wood (1977) food cost percentage is that percentage of the income spent for food. The investigator applied this definition and calculated the income expenditure pattern for the control months of December 1981 and January 1982 when the cost control measures were not introduced.

Table IV and V presents income and expenditure pattern of the control months of December 1981 and January 1982 when the cost control measures were not introduced.

TABLE IV

INCOME AND EXPENDITURE FOR THE MONTH OF DECEMENT 1981 AND JANUARY 1982.

Sl. No.	Month/Year	Income	Expenditure	Profit or loss
1.	December 1981	5,521.06	5,921.81	-7.0%
2.	January 1982	7,510.75	8,138.76	-18.2%

Table V shows the break up the expenditure pattern for the month of December 1981 and January 1982.

TABLE - V

EXPENDITURE PATTERN

S. No.	Month	COST IN RUPEES					
		Food	Labour	Fuel	Maintenance	Miscellaneous	Total
1.	December	4225.75	1225	481.06	50.00	40.00	5921.81
		76.7%	21.7%	8.7%	0.9%	0.7%	
2.	January	6283.96	1225	449.10	160.50	30.20	8138.76
		83.53%	16.30%	5.97%	2.13%	0.40%	

The two tables indicate that the expenditure exceeded the income for both the control months. The food cost constituted as much as 83% of the total income followed by labour and fuel. In these two particular months, the reason attributable for high food cost, may be because of inadequate and constant supervision in the storeroom, while foods were issued. Though the personnel in the canteen were well trained in weighing, they needed constant guidance in proper issuing.

C. MANAGEMENT OF THE CANTEEN:-

Old world was characterized by the need to manage things stone, wood and iron

the New world is characterised by the need to manage com lexity is the very stuff of today's world

-Stafford Beer.

The old concepts of management can be applied only in a modified form to suit the present organisation. All those who are accountable for getting the inputs transformed into outputs through a system are to work as a team as Lallen Prasad (1979) points out to achieve the goals of their organisation. They are to manage to get the results which investors, customers, employees and society expect of them.

The functions of management in an organisation are commonly classified as planning, forecasting organising delegating actuating and controlling. (West et al 1977)

Planning:-

Planning involves, deciding in advance what is to be done, where how and by whom, it is to be done and how results are to be evaluated. The functions of what is to be done involves, identification of alternatives and selecting one of them. While planning for this canteen, the main objective was to run it on non profit non loss basis. Clientele needs were determined using a questionnaire as a tool to gain information for the study and according to that menu was formulated, and purchasing of provision was done according to the planned menu.

Forecasting:-

Accordingto Allen Louis (1964) forecasting is systematic attempt to probe the future by inference from knownfacts. The

The purpose is to provide management with information on which it can plan decision. In the canteen the forecasting was done by referring the questionnaire as this helped to know the customer preference. For example, vegetable rice was preferred very much by the clientele and hence it was prepared in higher amounts compared to usual other items.

Organising:-

The organisation function identifies activities and tasks into positions, and puts like task together in order to take advantages of special abilities and skills of the worker, and use his talents effectively. The chief function of the organising process is the establishment of relationship among all other functions of management. The chart of an organisation may be considered first tool of management. The organization charts followed in the canteen is as shown figure. I.

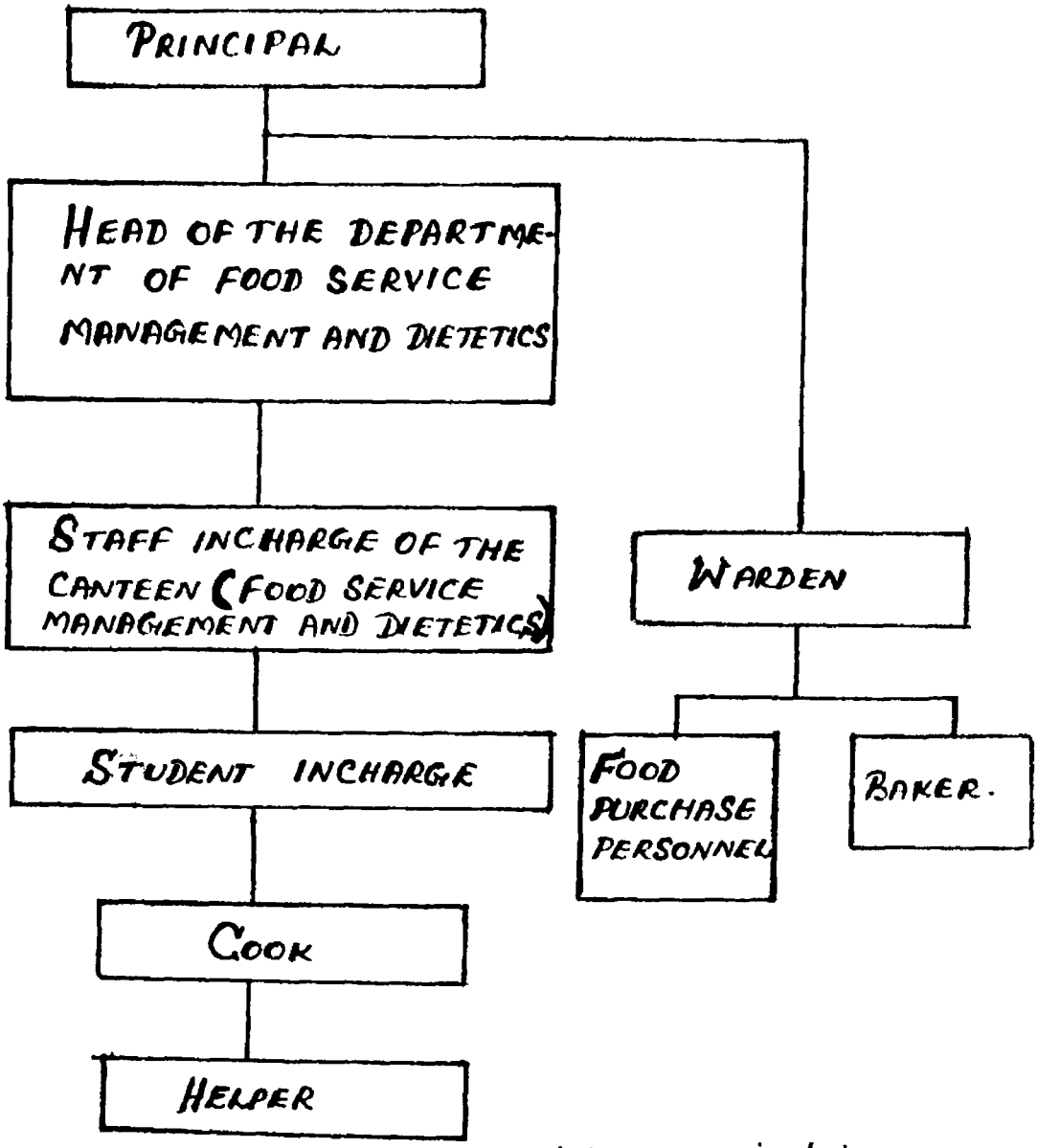
Delegation:-

Zakraishek (1975) defines delegation as an art and a science which is based on the principles of extension and accountability.

Table VI shows the delegation of work in the canteen

FIGURE-I

ORGANIZATION CHART OF THE CANTEEN



The type of organization structure followed is line or here the delegation of responsibility is vertical at each step, the sponsibility is redelegated to subordinate. The Principal and ead of the depart-ment of Food service manag-ent and dietetics mmunicate policy matters to the staff who convey it the student incharge. The Baker, Food purchase personnel o not work for the canteen alone. They are under different uthorities.

TABLE - VI

DELEGATION OF WORK IN THE CANTEEN

Personnel	Location of work	Job description
Cook	Kitchen and Serving counter	Planning the menu, checking the ingredients needed for the next day, preparation of food and helping in counter service.
Assistant Cook (2)	Kitchen, Storeroom and serving counter	Receiving the ingredients issued by the investigator preparing snack items, cleaning and arranging the storeroom, preparing the market list, and helping in counter service.
Helper	Ice Cream making and ticket issue counter	Preparing ice cream mixture operating ice cream machine writting up the bulletin board and issuing tickets, and settling the accounts.
Cleaner	Washing area kitchen area and Dining area	Cleaning the vessels, serving area dining area, and kitchen, Cleaning and arranging table and chairs filling drinking water.
Baker	Bakery	Preparing and handling over the backed products.
Food purchase personnel	Hostel	Purchasing ingredients, and handing over.
Student in charge	Canteen	Issuing of ingredients, maintaining of records and checking the market list, prepared, and items delivered from the market.

Table VI ensures the fact that delegation of responsibility is essential to distribute work loads to qualified, individual at various levels.

Actuating:-

Actuating is getting work done properly by planning out the work schedules for a day thus giving responsibilities to each personnel.

Table VII shows the work schedule for a day in the canteen.

TABLE VII

WORK SCHEDULE OF THE WORKERS FOR A DAY

Time	Cook	Assistant Cook	Helpfer	Cleaner	Baker	Food Purchase personnel
7.00 – 8.30 PM	Boiling the milk preparation of the items to be prepared for menu	Pre-preparation for snacks.	Preparation of ice cream mix	Filling drinking water	Pre-Preparation of the bakery products.	—
8.30 – 9.00 PM	Breakfast	Breakfast	Breakfast	Cleaning tables and chairs.	Breakfast	—
9.00 – 9.30 PM	Preparing Coffee	Arranging the counter or coffee sales	Doing office work	Breakfast	Preparation of bakery product	—
9.30 – 12.00 PM	Preparation of the main item	Preparation of snack item	Operating icecream machine collecting ice cream from the machine.	helps the cook and clean the kitchen area	Baking the bakery products	—
12.00 – 12.15 PM	Collecting and arranging the menu item for sales	Portioning out the lunch items in plates for sales	Gets ready at the ticket counter for sales	Washing the vessels used for cooking	Delivers baked products.	—

Time	Cook	Assistant cook	Helper	Cleaner	Baker	Food purchase personnel.
12.15 - 2.00 PM	Sales	Sales	Sales	Collecting and washing used plates and tumblers	—	—
2.00 - 2.30 PM	Checking the ingredients needed for the next day	Lunch	Lunch	Cleaning the Dining area	—	—
2.30 - 3.00 PM	Lunch	Looking after the sales counter.	Checking the sales	Lunch	—	—
3.00 - 4.00 PM	Looking after the counter sales	Preparation and handing over the market list and preparing for evening items for sales	Sales	Washing the vessels	—	Purchasing and delivering of goods.
4.00 - 5.30 PM	Sales	Sales	Sales	Washing and Cleaning	—	—
5.30 - 5.45	Helps in the cleaning the vessels and kitchen	Receiving the ingredients issued by the investigator for the next day cleaning the ice cream machine.	Settling accounts and winding up the work	Cleaning the dining area	—	—

Controlling:-

Control function is closely linked with planning. The Management control system serves as a warning signal of the difficulties ahead and maps out plans to avoid them. This function is partly covered under planning. The control function is a process which ensures that performance takes place in conformity with plans. Thus the management control is the technique by which executive measures actual performance and guides it towards the achievement of predetermined objectives (Kotas and Davis 1977). Control measures were applied by the investigator in every stage of ope ation of the canteen. They were -

Buying:-

The Investigator checked the store room before preparing the indent. This prevented over accumulation of goods which leads to spoilage and pilferage.

Receiving:-

Here the investigator applied the control measure, by checking the delivery according to quality and quantity specified in the purchase order or indent.

Storing and Issuing:-

Storing of all ingredients were done by providing adequate storage space to all the ingredients. Overstock and understock of ingredients were prevented by proper control applied by the investigator.

The investigator issued daily the things needed for the days menu the previous day itself. This helped to have a control and check over the items in the store room and also a check over the registers maintained.

Preparing:-

The main function of the "Preparation" stage is to prepare in accordance with the current volume forecast the necessary number of portions, showing at least for the main items of food, the budgeted, or standard cost perporation the actual portion cost and the resulting cost variance. In this stage, the investigator applied the control measures by instructing the cook to follow the standardised recipe so that the product result will be upto the standard and the portions obtained will be also according to the standard yield, so that wastage was prevented. (Kotas and Davis 1977)

Selling:-

All the items were sold at a price which consisted of food cost plus overhead cost. As the canteen runs on a non profit non loss basis, proper control is necessary for fixing the cost of each item as the canteen should not run under loss.

D. Effectiveness of work simplification technique adopted

Work simplification is a way of getting something done by step by step by breaking a problem into simpler

segments. It is an organised way of carrying out a particular work.

Table VIII indicates the time and distance consumed for three recipes during control period and experimental period.

TABLE VIII

TIME AND DISTANCE CONSUMED BEFORE AND AFTER ADOPTING WORK SIMPLIFICATION TECHNIQUE

Sl. No.	Name of the rape	No. of portions	Control period		Experimental period	
			Consumption of		Consumption of	
			Time minutes	Distance (M)	Time minutes	Distance M
1.	Vegetable Rice	70	167	72.6	117	18
2.	Tomato Rice	60	132	72.6	111	22
3.	Poori	75	160	119.2	120	29

The above table brings out clearly that time and distance were saved considerably to carry out a standardised portion by adopting work simplification technique. The unnecessary movements by the worker is eliminated considerably. This also lessened the time taken by the workers to finish a particular activity.

In the case of vegetable rice the time was reduced considerably because during the control period when the vegetables were cut using ordinary methods. During the experimental period vegetable chopper was introduced, which saved the time considerably for the worker. The distance covered decreased considerably during the experimental period, with the pathway chart introduced by the investigator.

The same was true in poori also because the chappathi presser as a labour saving device was introduced.

The time saved ranged between 21 - 50 minutes for the three recipes, the highest for vegetable rice followed by poori where in addition to the organised pathway and process charts labour saving devices were introduced.

The distance covered reduced considerably ranging between 54 - 90 metres which was mainly because of the following two points.

1) All the ingredients necessary for the above three standardised recipes were issued the previous day from the store-room and kept ready in the preparation area for efficiently carrying out the work. Further all the equipment required for the particular recipe were properly arranged in the preparation and cooking area to facilitate smooth functioning.

2) The unnecessary movement to the store room were considerably reduced with the proper pathway chart introduced by the investigator.

Figures II - IV illustrate this.

Table IX shows the comparison of time taken before and after introducing labour saving equipment.

TABLE IX

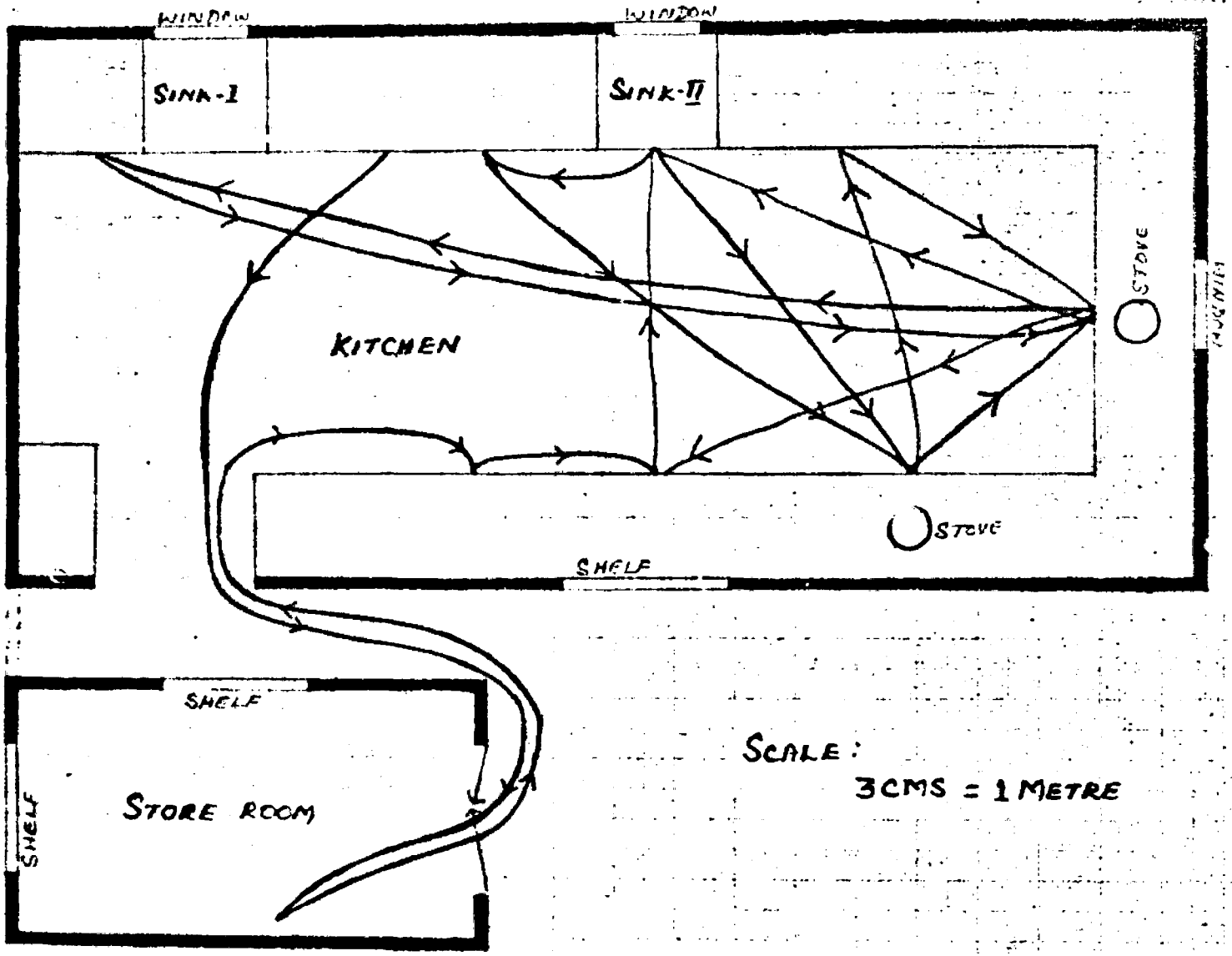
COMPARISON OF TIME TAKEN BEFORE AND AFTER INTRODUCING LABOUR SAVING EQUIPMENT.

Sl. No.	Equipment used	Recipe item	No. of portion	MINUTES Time taken for preparation	Time Saved
1.	Chappathi Presser (LSD)	Poori	50	40	40
2.	Rolling pin (CT)			80	
2.	Vegetable Chopper (LSD)	Vegetable rice	70	20	29
	Aruvamanai (CT)			49	
3.	Pressure Cooker (LSD)	Peas Rice	65	15	60
	Boiling method (CT)			75	

LSD - Labour saving device CT - Conventional Type

FIGURE - II - A

PATHWAY CHART FOR VEGETABLE RICE [BEFORE ADOPTING WORK SIMPLIFICATION TECHNIQUE]

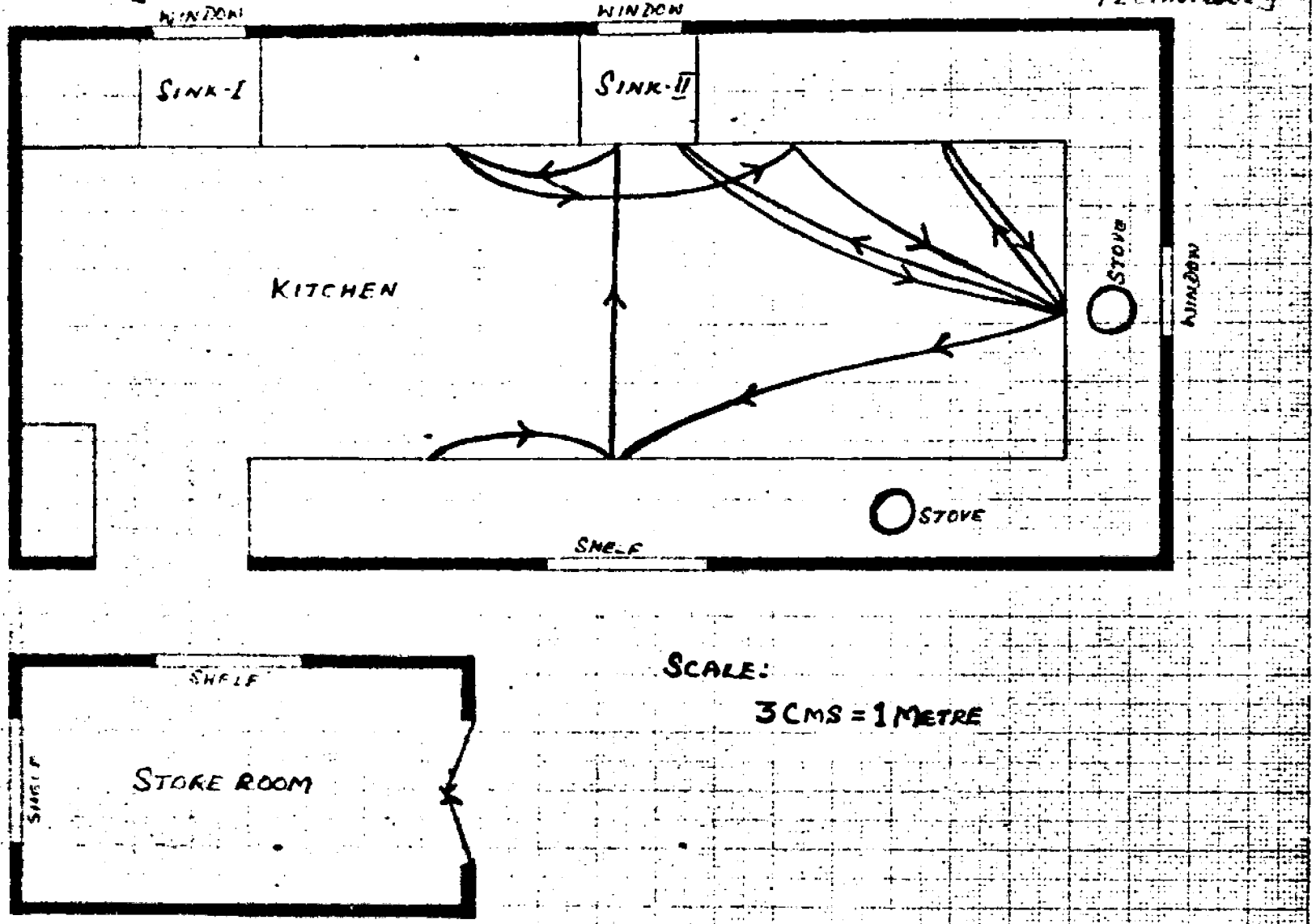


SCALE :

3 CMS = 1 METRE

FIGURE - II B

PATHWAY CHART FOR VEGETABLE RICE [AFTER ADOPTING WORK SIMPLIFICATION TECHNIQUE]



SCALE:

3 CMS = 1 METRE

FIGURE - II C

PROCESS CHART FOR VEGETABLE RICE

[BEFORE ADOPTING WORK SIMPLIFICATION TECHNIQUE]

		TASK OR JOB : PREPARING VEGETABLE RICE.
OPERATIONS	O	PLACE : SARADHALAYA CANTEEN.
INSPECTIONS	□	EQUIPMENTS AND TOOLS USED : ALUMINIUM VESSELS, KNIFE, ...
MOVES	→	
STORAGE	▽	OPERATOR : KAVERI
DELAY	D	
UNIT PRODUCED.	70	
TOTAL DISTANCE MOVED	72.6 MTS	ANALYST : JAYA LAKSHMI
TIME TAKEN	169 MINUTES	

DESCRIPTIVE NOTES	ACTIVITY	TIME IN MINUTES
Going to the Store room	O □ → ▽ D	1
Weighing rice	O □ → ▽ D	9
Coming back to the kitchen	O □ → ▽ D	2
Weighing vegetable	O □ → ▽ D	4
Cutting vegetables	O □ → ▽ D	45
Coming near the shelf	O □ → ▽ D	1
Taking masala ingredients	O □ → ▽ D	1
Going to the sink	O □ → ▽ D	—
Going to the grinding stone	O □ → ▽ D	—
Grinding masala	O □ → ▽ D	3
Going to the stove number I	O □ → ▽ D	—
Keeping the vegetables for cooking	O □ → ▽ D	3
Going near the vessel shelf	O □ → ▽ D	1
Coming to the gas stove II	O □ → ▽ D	—
Doing the seasoning	O □ → ▽ D	36
Going near the sink to take water	O □ → ▽ D	1
Coming back to the gas stove II	O □ → ▽ D	2
Going to the sink II	O □ → ▽ D	2
Washing rice	O □ → ▽ D	14
Coming back to gas stove I	O □ → ▽ D	1
Checking vegetables	O □ → ▽ D	2
Going to gas stove II	O □ → ▽ D	1
Adding and stirring rice	O □ → ▽ D	16
Preparing salad.	O □ → ▽ D	20
Removed the cooked rice and storing.	O □ → ▽ D	2

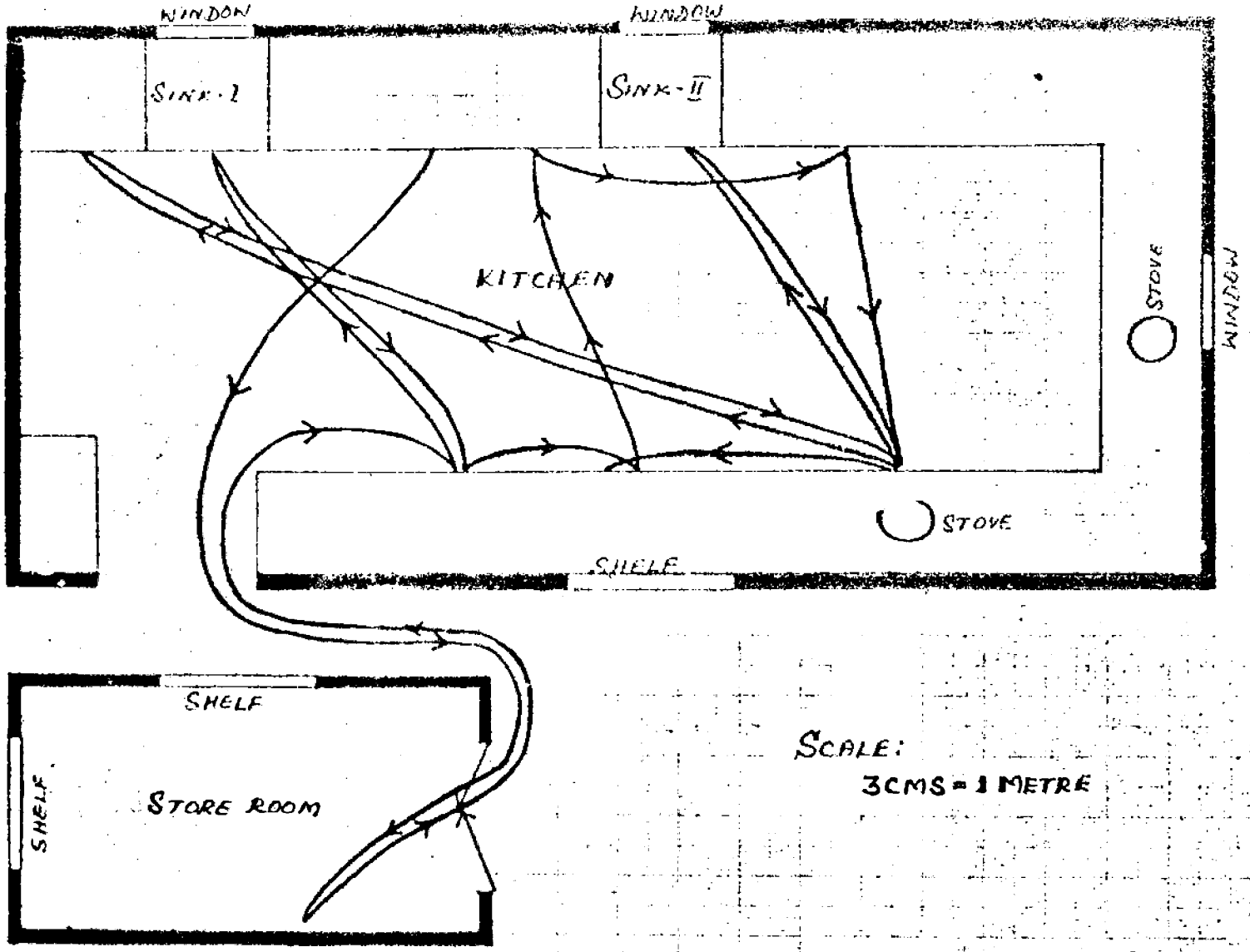
FIGURE II D
PROCESS CHART FOR VEGETABLE RICE
[AFTER ADOPTING WORK SIMPLIFICATION TECHNIQUE]

		TASK OR JOB: PREPARING VEGETABLE RICE.
OPERATIONS	○	PLACE: SARADALAYA CANTEEN
INSPECTIONS	□	EQUIPMENTS AND MATERIALS USED: VESSELS, KNIFE.
MOVES	→	TOOLS USED: VEGETABLE CUTTER, PRESSURE COOKER.
STORAGE	▽	
DELAY	D	OPERATOR: KAVERI
UNIT PRODUCED	70	
TOTAL DISTANCE MOVED	18 MTS	ANALYST: JAYA LAKSHMI
TIME TAKEN	114 MINUTES.	

DESCRIPTIVE NOTES	ACTIVITY	TIME IN MINUTES
Weighing vegetables	○ □ → ▽ D	5
Cutting vegetables	○ □ → ▽ D	25
Coming near the shelf	○ □ → ▽ D	1
Taking masala ingredients	○ □ → ▽ D	1
Going to the sink	○ □ → ▽ D	—
Going to the grinding stone	○ □ → ▽ D	—
Grinding masala.	○ □ → ▽ D	3
Coming back to the vessel shelf	○ □ → ▽ D	1
Going to the gas stove II	○ □ → ▽ D	—
Doing seasoning	○ □ → ▽ D	34
Coming to take water	○ □ → ▽ D	—
Going back to gas stove II	○ □ → ▽ D	—
Going to the sink II	○ □ → ▽ D	—
Washing rice	○ □ → ▽ D	20
Going to Gas stove II	○ □ → ▽ D	—
Adding rice and stirring	○ □ → ▽ D	3
Preparing salad	○ □ → ▽ D	22
Removing the cooked rice and storing.	○ □ → ▽ D	2

FIGURE - III A

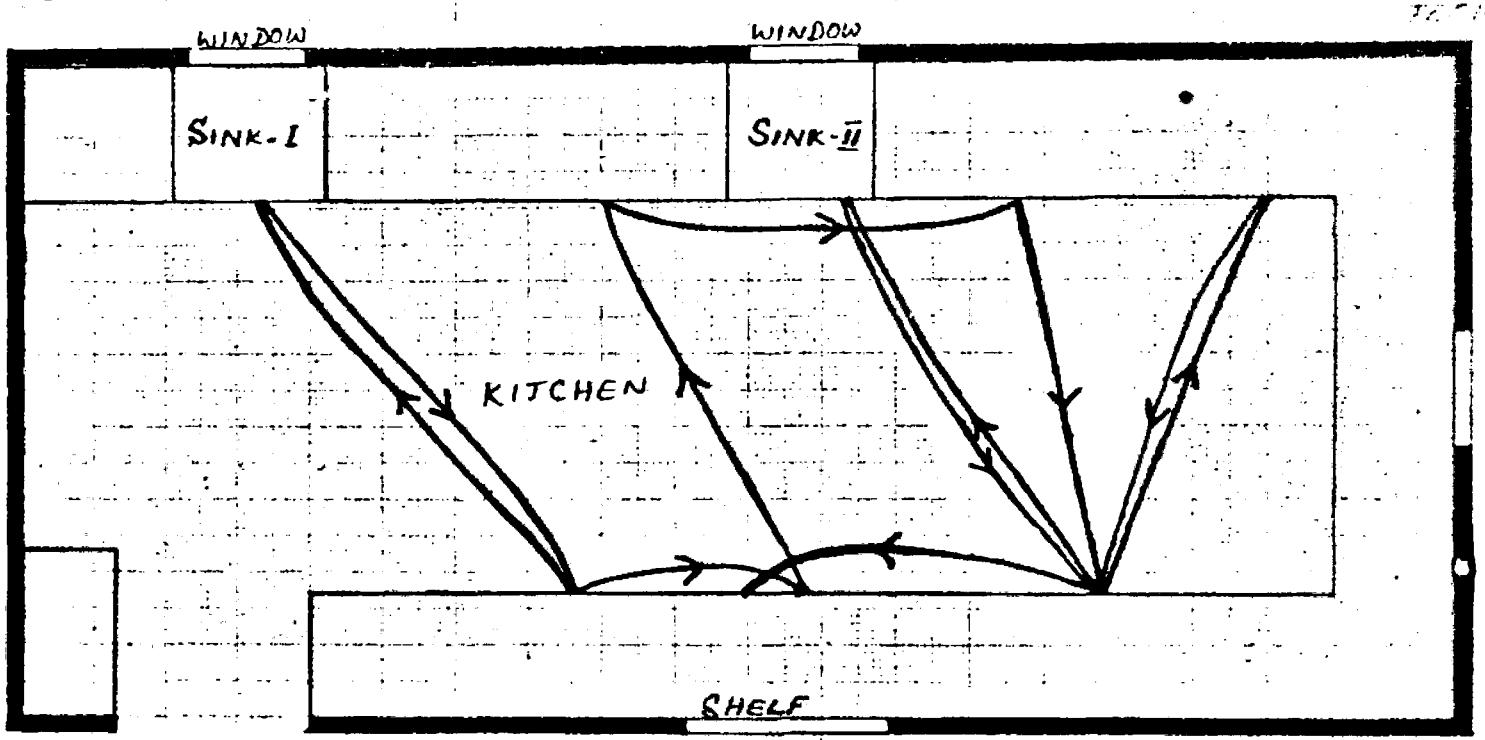
PATHWAY CHART FOR TOMATO RICE [BEFORE ADOPTING WORK SIMPLIFICATION

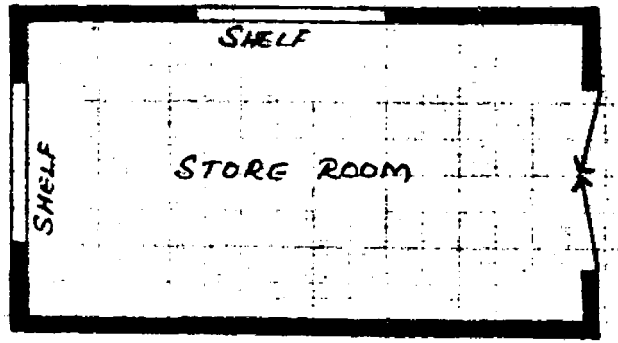


SCALE:
3CMS = 1 METRE

FIGURE-III-B

PATHWAY CHART FOR TOMATO RICE (AFTER ADOPTING WORK SIMPLIFICATION)





SCALE

3 CMS - 1 METRE

FIGURE - III C

PROCESS CHART FOR TOMATO RICE
[BEFORE ADOPTING WORK SIMPLIFICATION TECHNIQUE]

		TASK OR JOB : PREPARING TOMATO RICE.
OPERATIONS	O	PLACE : SARADALAYA CANTEEN.
INSPECTIONS	□	EQUIPMENTS AND TOOLS USED : ALUMINIUM VESSELS, LADDLES, PLATES, KNIFE.
MOVES	→	
STORAGE	▽	
DELAY	D	OPERATOR : RENUKA.
UNIT PRODUCED	60	
TOTAL DISTANCE MOVED	72.6 MTS	ANALYST : JAYA LAKSHMI
TIME TAKEN	132 MINUTES	

DESCRIPTIVE NOTES	ACTIVITY	TIME IN MINUTES
Going to the store room	O □ → ▽ D	1
Weighing the rice	O □ → ▽ D	4
Coming back to the kitchen	O □ → ▽ D	1
Weighing tomatoes and onions	O □ → ▽ D	9
Going near the sink I	O □ → ▽ D	–
Washing tomatoes	O □ → ▽ D	3
Coming back to cutting area	O □ → ▽ D	–
Cutting tomatoes and onions	O □ → ▽ D	22
Going near the shelf	O □ → ▽ D	–
Taking masala ingredients	O □ → ▽ D	2
Going near the grinding stone	O □ → ▽ D	–
Grinding masala	O □ → ▽ D	3
Coming near the shelf	O □ → ▽ D	–
Going to the vessel shelf	O □ → ▽ D	1
Coming back to gas stove I	O □ → ▽ D	1
Doing seasoning	O □ → ▽ D	28
Going to take water	O □ → ▽ D	1
Coming back to Gas stove I	O □ → ▽ D	1
Going to sink II	O □ → ▽ D	–
Washing rice	O □ → ▽ D	18
Coming to gas stove I	O □ → ▽ D	–
Adding rice and stirring	O □ → ▽ D	5
Preparing salad	O □ → ▽ D	30
Storing the cooked rice.	O □ → ▽ D	2

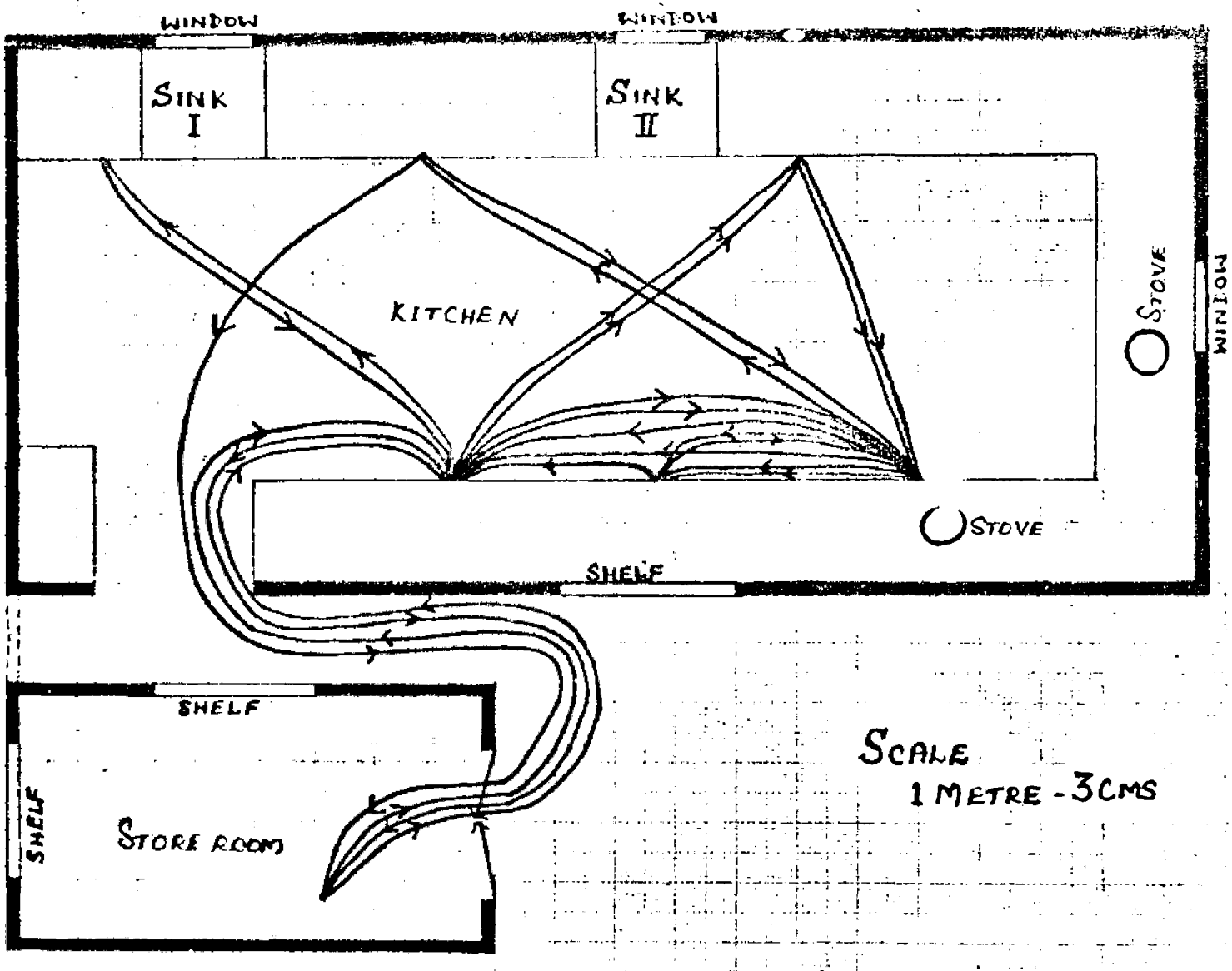
FIGURE - III D
PROCESS CHART FOR TOMATO RICE
[AFTER ADOPTING WORK SIMPLIFICATION TECHNIQUE]

		TASK OR JOB : PREPARING TOMATO RICE
OPERATIONS	O	PLACE : SARADALAYA CANTEEN
INSPECTIONS	□	
MOVES	→	EQUIPMENTS AND TOOLS USED : ALUMINIUM VESSELS, LADDLES, PLATES, KNIFE
STORAGE	▽	
DELAY	D	OPERATOR : RENUKA
UNIT PRODUCED	60	
TOTAL DISTANCE MOVED	22 MTS	ANALYST : JAYA LAKSHMI
TIME TAKEN	111 MINUTES	

DESCRIPTIVE NOTES	ACTIVITY	TIME IN MINUTES
Weighing vegetables (onion and tomatoes)	O □ → ▽ D	5
Going to the sink	O □ → ▽ D	—
Coming back to the cutting area	O □ → ▽ D	—
Cutting vegetables (onion and tomatoes)	O □ → ▽ D	20
Going near the shelf	O □ → ▽ D	1
Taking masala ingredients	O □ → ▽ D	3
Coming to the grinding stone	O □ → ▽ D	—
Grinding	O □ → ▽ D	3
Going to the vessel shelf	O □ → ▽ D	—
Coming back to Gas stove I	O □ → ▽ D	1
Doing seasoning	O □ → ▽ D	27
Going to take water	O □ → ▽ D	—
Coming back to gas stove I	O □ → ▽ D	1
Going near the sink II	O □ → ▽ D	—
Washing rice	O □ → ▽ D	15
Coming back to gas stove I	O □ → ▽ D	—
Adding and stirring rice	O □ → ▽ D	4
Preparing salad.	O □ → ▽ D	30
Removing and storing the cooked rice	O □ → ▽ D	2

FIGURE - IV A

PATHWAY CHART FOR POORI



SCALE
1 METRE - 3CMS

——— DENOTES BEFORE APPLICATION OF WORK SIMPLIFICATION TECHNIQUE

FIGURE-IV B

PATHWAY CHART FOR POORI [AFTER ADOPTING WORK SIMPLIFICATION TECHNIQUE]

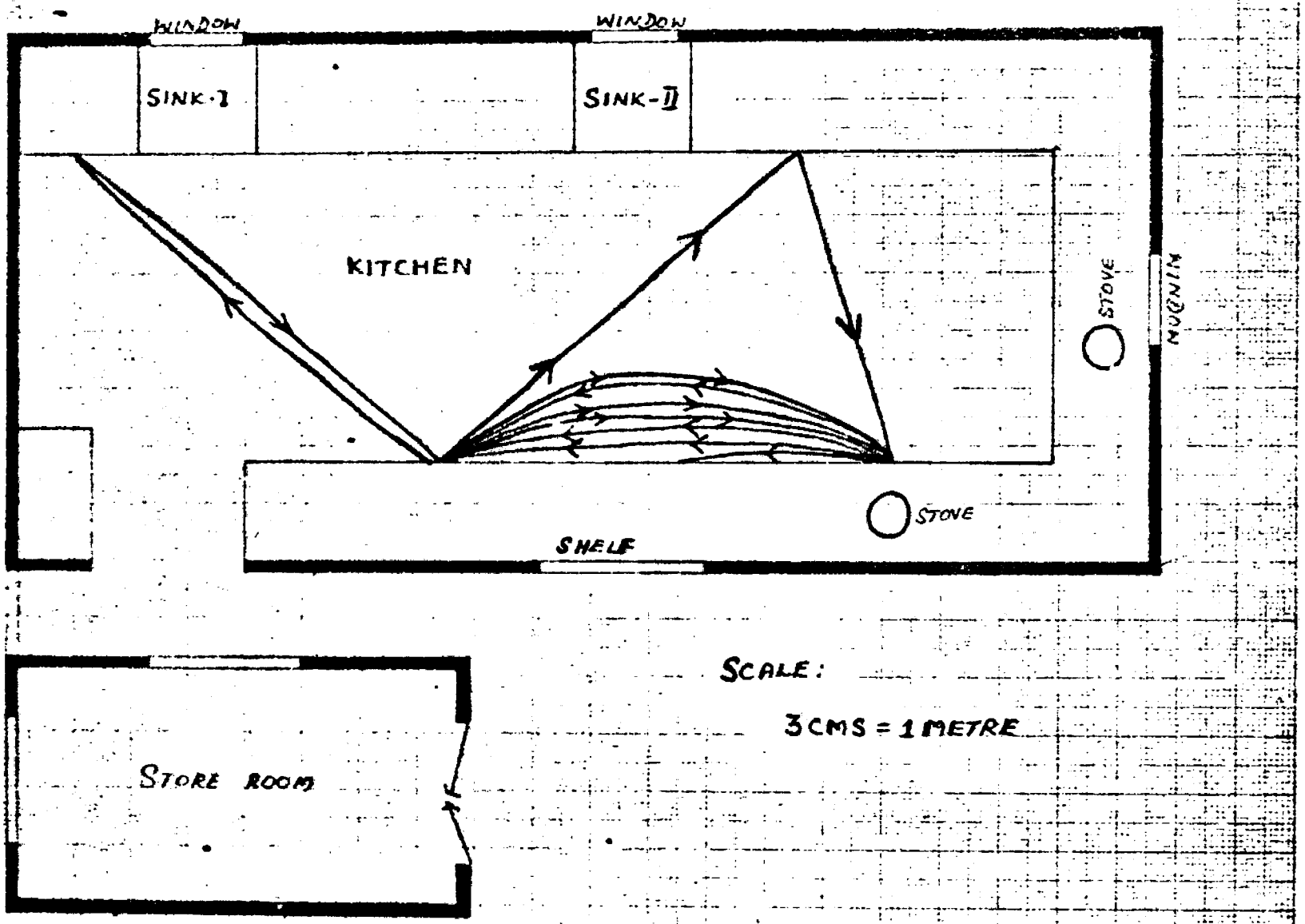


FIGURE-IV C
PROCESS CHART FOR POORI
[BEFORE ADOPTING WORK SIMPLIFICATION TECHNIQUE]

		TASK OR JOB : PREPARING POORI
OPERATIONS	O	EQUIPMENTS AND TOOLS USED : FRYING PAN, STRAINER, STORING PLATE, ROLLING PIN, ROLLING BOARD
INSPECTIONS	□	
MOVES	→	
STORAGE	▽	OPERATOR : MARY
DELAY	D	
UNIT PRODUCED	75 SETS	ANALYST : JAYA LAKSHMI
TOTAL DISTANCE MOVED	119 MTS	
TIME TAKEN	160 MINUTES	PLACE : SARADALAYA CANTEEN.

DESCRIPTIVE NOTES	ACTIVITY	TIME IN MINUTES
Going to the store room	O □ → ▽ D	1
Weighing maida and wheat flour.	O □ → ▽ D	4
Coming back to the kitchen	O □ → ▽ D	1
Going to sink take water	O □ → ▽ D	2
Coming back to mixing place	O □ → ▽ D	—
Mixing the flour	O □ → ▽ D	17
Making arrangements for rolling	O □ → ▽ D	2
Going to the storeroom.	O □ → ▽ D	1
Coming back to the kitchen	O □ → ▽ D	1
Rolling pooris	O □ → ▽ D	45
Going near the vessel shelf	O □ → ▽ D	—
Coming back to gas stove I	O □ → ▽ D	1
Going to rolling area	O □ → ▽ D	—
Rolling pooris	O □ → ▽ D	10
Going to gas stove I	O □ → ▽ D	—
Frying pooris	O □ → ▽ D	14
Going to vessels shelf	O □ → ▽ D	—
Coming back to the rolling area	O □ → ▽ D	1
Storing the pooris	O □ → ▽ D	—
Started rolling	O □ → ▽ D	18
Coming back to frying place	O □ → ▽ D	—
Frying pooris	O □ → ▽ D	15
Coming back to storing area	O □ → ▽ D	—
Going to rolling area	O □ → ▽ D	—
Rolling pooris	O □ → ▽ D	15
Going to frying place	O □ → ▽ D	—
Frying pooris	O □ → ▽ D	10
Started frying	O □ → ▽ D	—
Going to the storing place	O □ → ▽ D	2
Storing pooris.	O □ → ▽ D	

FIGURE - IV D
PROCESS CHART FOR POORI
[AFTER ADOPTING WORK SIMPLIFICATION TECHNIQUE]

		TASK OR JOB : PREPARING POORI
OPERATIONS	O	PLACE : SARADALAYA CANTEEN
INSPECTIONS	□	EQUIPMENTS AND TOOLS USED : FRYING PAN, STRAINER, STORING PLATE, CHAPPATHI PRESSER.
MOVES	→	
STORAGE	▽	
DELAY	D	
UNIT PRODUCED	75 SETS	OPERATOR : MARY
TOTAL DISTANCE MOVED	29 MTS	ANALYST : JAYA LAKSHMI
TIME TAKEN	120 MINUTES	

DESCRIPTIVE NOTES	ACTIVITY	TIME IN MINUTES
Going to take water	O □ → ▽ D	1
Coming back to mixing area	O □ → ▽ D	—
Mixing the flour	O □ → ▽ D	19
Rolling pooris.	O □ → ▽ D	18
Coming to vessel shelf	O □ → ▽ D	1
Going to gas stove 1	O □ → ▽ D	—
Coming back to rolling area	O □ → ▽ D	—
Rolling pooris	O □ → ▽ D	10
Going near the gas stove 1	O □ → ▽ D	—
Started frying	O □ → ▽ D	14
Coming back to rolling area	O □ → ▽ D	—
Rolling pooris	O □ → ▽ D	12
Going to gas stove -1	O □ → ▽ D	—
Started frying	O □ → ▽ D	13
Storing pooris	O □ → ▽ D	2
Coming back to rolling area.	O □ → ▽ D	—
Rolling pooris	O □ → ▽ D	15
Coming back to gas stove -1	O □ → ▽ D	—
Frying pooris	O □ → ▽ D	10
Storing pooris	O □ → ▽ D	2
Coming back to storing area	O □ → ▽ D	3

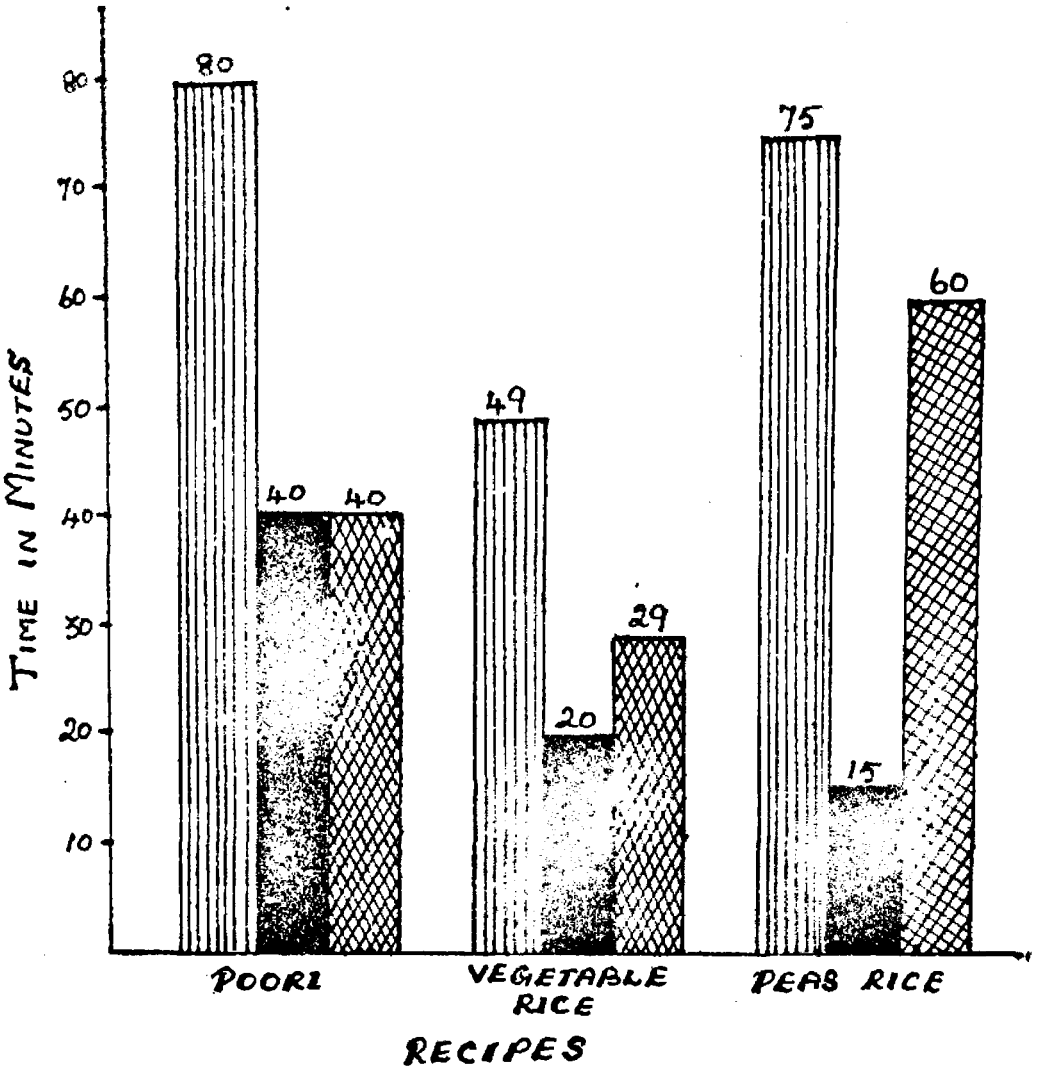
The above table shows the time saved by using the labour saving equipment. Chappathi presser reduced 40 minutes of the preparation time and the time saved by using vegetable cutter was 29 minutes, and 60 minutes was saved by using pressure cooker. Studies on labour saving devices have observed similar trends. Saving time is of considerable importance in food service institution because of the present hike in labour cost. Figure V, illustrates this.

2. Efficacy of standardisation of selected recipe and techniques adopted for portion control.

Table IX shows that efficacy in standardisation of selected recipes and cost analysis of receipes.

FIGURE - V

COMPARISON OF TIME TAKEN BEFORE AND AFTER INTRODUCING LABOUR SAVING EQUIPMENT.



KEY:

TIME TAKEN BY CONVENTIONAL METHOD

TIME TAKEN USING LABOUR SAVING DEVICES

TIME SAVED

SCALE:

Y-AXIS : 1½ CMS = 10 MINUTES

TABLE X

STANDARDIZATION AND COST ANALYSIS OF RECIPE

Sl. No.	Name of the receipe.	Portion size (g)	No. of portion	Total food cost (Rupees.)	Overhead	Cost price (--Paise--)	Selling price	Difference
1.	Vegetable Rice	250	270	36.00	14.40	72	75	3
2.	Tomato Rice	250	60	30.50	12.20	71	75	4
3.	Poori masal(2)	100	85	37.60	15.04	70	75	5
4.	Peas Rice	250	65	32.16	13.46	71	75	4
5.	Cutlet (1)	45	80	40.00	16.00	70	75	5
6.	Vadai (2)	70	87 (sets)	33.90	14.20	57	60	3
7.	Bhadusha (1)	60	92	45.87	18.34	69	75	6
8.	Melting moments (2)	50	71 sets	20.54	8.21	40	40	-
9.	Coconut Biscuit (2)	40	81 sets	9.10	3.64	31	35	4
10.	Chocolate Icecream	75	182	91.00	36.40	87	150	63

The investigator took special efforts while standardising the selected recipes even from the pre-preparation stage to control food cost. The personnel were requested to observe the investigator when the recipe was standardised for the first time. The points of emphasis were accurate amount of ingredients, minimising

the work during the preparation stage, adoption of proper cooking methods to ensure the maximum possible desired quality and adopting proper portion control technique. The personnel were trained twice in the standardisation technique for the above selected recipes.

The standardisation techniques implemented resulted in a difference of 3 - 7 paise between the cost and selling price. This difference was required to make up the fluctuations in food prices during the different part of the year. In the case of melting moments the cost and selling price were the same.

Ice cream price was kept high to cover the cost of maintenance of the ice cream machine and also the depreciation.

West-et-al (1977) suggests that overhead cost be calculated as 40% over the food cost in non profit food service institution and hence the investigator applied this while doing computation.

F. Overall income and expenditure pattern for the control and experimental period.

Table XI and XII shows the income and expenditure pattern for the control and experimental period.

TABLE XI

INCOME AND EXPENDITURE PATTERN

Sl. No.	Months	Income	Expenditure Rupees	Profit or loss	Profit or loss %
1.	December - 81	5,521.06	5,921.81	- 400.75	7.9
2.	January 82	7,510.75	8,138.76	- 628.01	10.8
3.	February 82	8,363.81	8,139.24	224.57	2.7
4.	March 82	15,256.75	13,475.93	1780.82	11.7

TABLE XII

EXPENDITURE PATTERN

Sl. No.	Month	Cost in Rupees					
		Food	Labour	Fuel	Maintenance	Miscellaneous	Total
1.	December	4225.75	1225	481.06	50.00	40.00	5921.81
		76.5%	21.1%	8.7%	0.9%	0.7%	
2.	January	6273.96	1325	449.10	160.50	30.20	8138.76
		85.5%	16.3%	5.9%	2.1%	0.4%	
3.	February	6430.97	1245	399.07	18.00	46.20	8139.24
		76.8%	14.8%	4.7%	0.2%	0.5%	
4.	March	11305.86	1285	665.12	69.90	150.25	13475.93
		74.1%	8.4%	4.4%	0.5%	0.9%	

From the above the income and expenditure pattern for the control period namely December, 1981, January 1982 and the experimental period namely February and March 1982 indicates that the cost control measures adopted by the investigator has quantifiable impact. The income and expenditure pattern before cost control measures adopted show a monthly deficit while the concerted effort, by the investigator in terms of the cost control inputs resulted in a monthly profit of Rs.1,002/- (Rupees One thousand Two only) Hence constant guidance and supervision are very much necessary in food cost control measures. Figure VI and VII illustrates this.

The quality of the food also consistently improved because of the efforts, the investigator took to orient the personnel of the canteen in recipe standardisation. The food cost and fuel& cost also reduced to some extent with the introduction of cost control measures.

FIGURE - VII

EXPENDITURE PATTERN FOR THE CONTROL AND EXPERIMENTAL MONTH

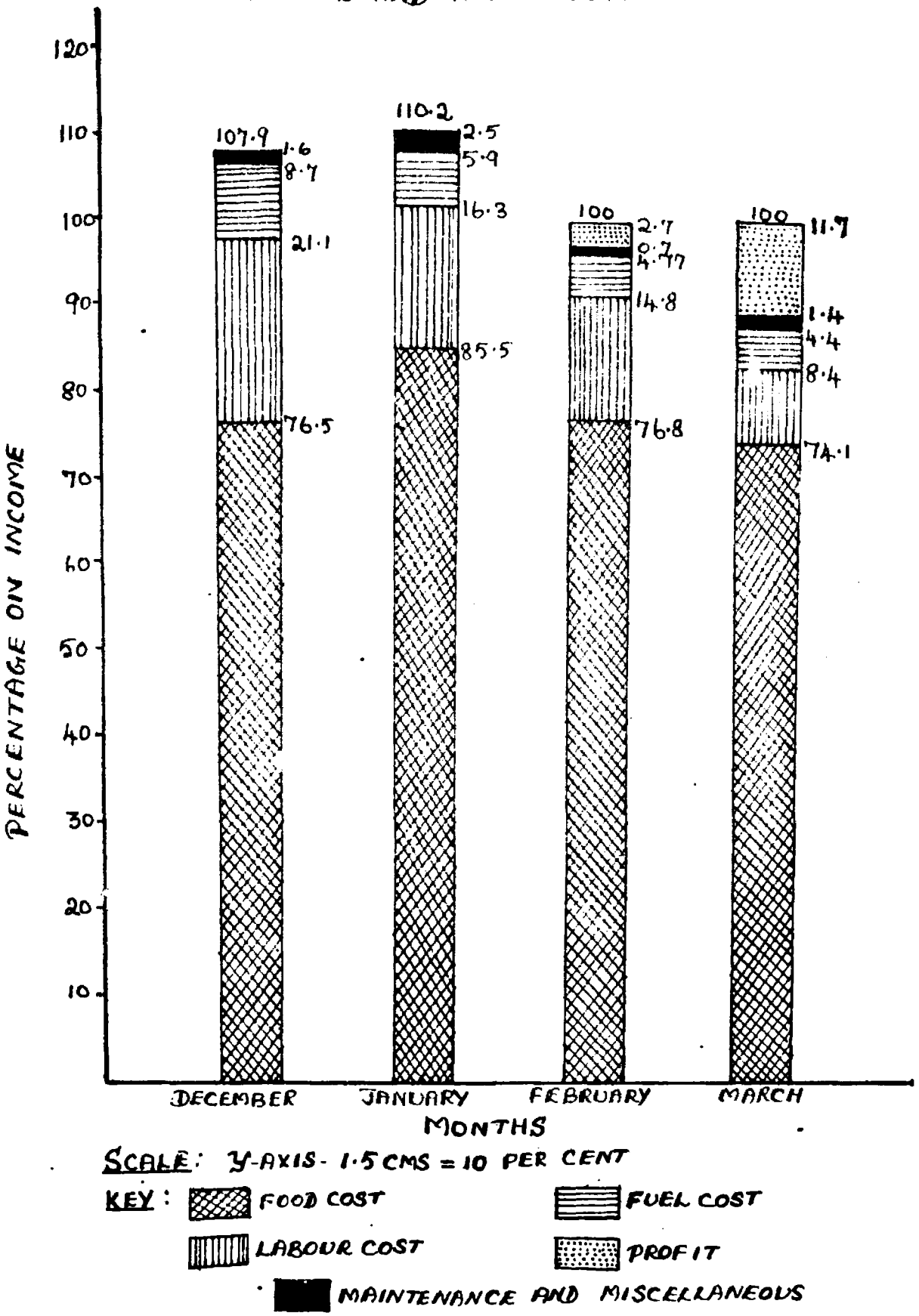
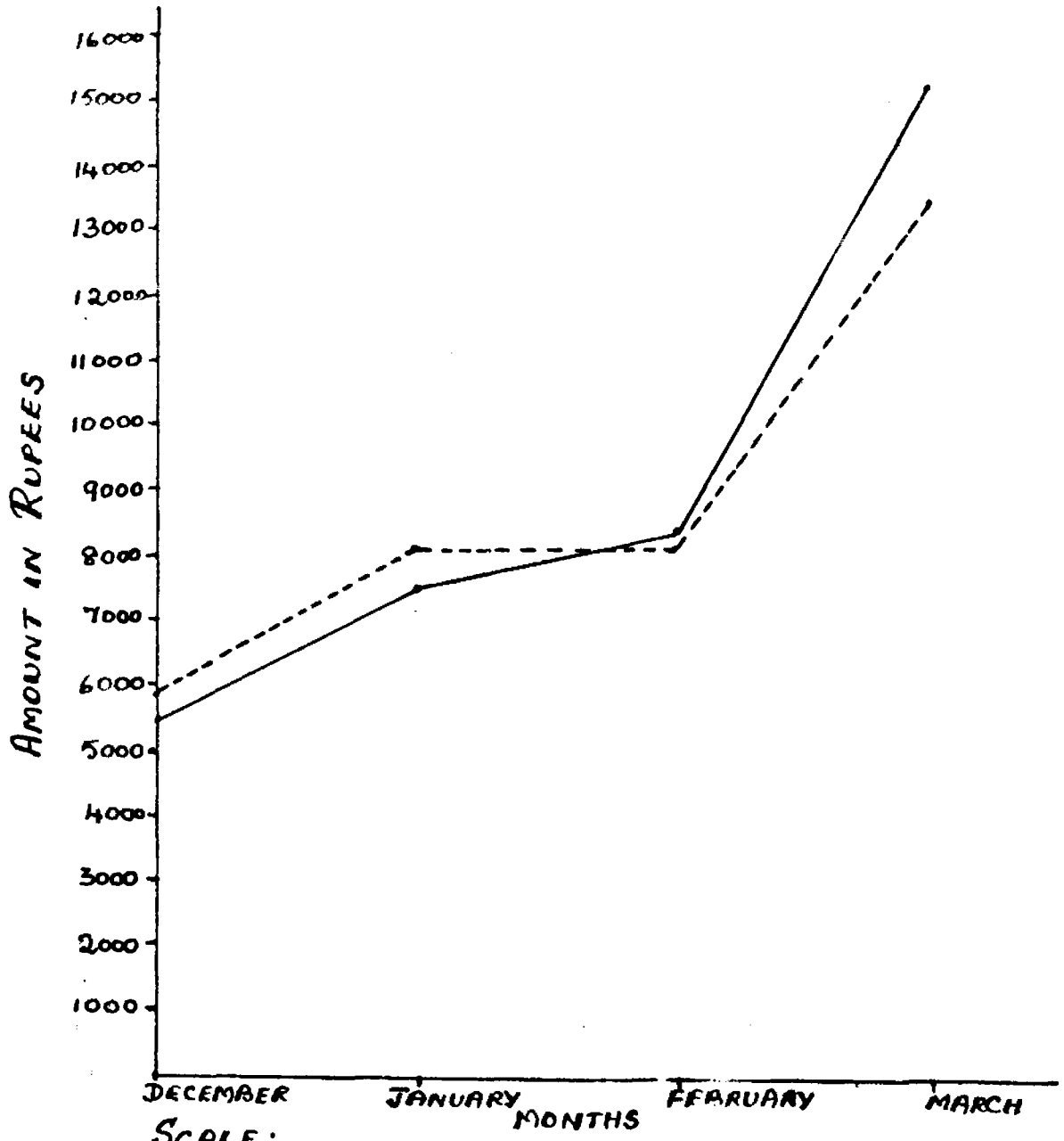


FIGURE - VI

INCOME AND EXPENDITURE PATTERN FOR THE CONTROL AND EXPERIMENTAL MONTH



SCALE:

X-AXIS : 4 CMS = 1 MONTH.

Y-AXIS : 1 CM = Rs. 1000.

KEY:

——— INCOME.

- - - - - - - EXPENDITURE.

V. SUMMARY AND CONCLUSION

This research study in "Saradalaya Canteen" was undertaken with the objective of introducing cost control measures to bring about improvement in the running of the College Canteen.

The investigator studied the working of the canteen for four months, the first two months as control months when no cost control measures were applied, and in the last two months cost control measures were introduced and it was treated as experimental months.

Clientele preference were studied and based on this four lunch items, two savoury items, two baked products, one sweet item, and chocolate ice cream were standardised. The canteen personnel were trained well in standardising these recipes, minimising time, and energy consumption and conserving nutrients to the extent possible.

Organisation pattern was the line type and this type of organization was found to be very effective. The investigator reorganised the job chart and pinpointed the job, functions of cook, two assistant cooks, the helper and cleaner through a work schedule.

Food purchase, receipt, storage and issues were monitered by the investigator in such a way to minimise

wastage through spoilage and pilferage and issuing the ingredients according to the volume of production. The personnel in the canteen were also trained in these aspects.

Labour saving devices and works implification techniques were adopted which facilitated the workers finishing the job without fatigue. The personnel in the canteen were well oriented with systematic maintenance of records and registers.

Evaluation of the impact of the cost control measures introduced indicated quantifiable change. The income and expenditure pattern before cost control measures adopted showed a monthly deficit while a concerted effort by the investigator, in terms of cost control inputs resulted in a marginal monthly profit.

The quality of the food also consistently improved with reduction in food and fuel cost. Hence constant guidance and supervision of personnel in food service institution are very much necessary in food cost control measures.

RECOMMENDATIONS-

1) In addition to the food items served at present in the canteen convenience food such as sandwich, buns,

Popcorns and varieties of candies could also be served. Along with coffee, tea also can be served.

2) Installing a water cooler in the canteen will facilitate making use of the available limited space in the best possible manner.

3) The personnel in the canteen should well trained in management, works simplification aspects, and sanitation aspects. At suitable intervals they should also be given on the job training in the above aspects to carry out the work efficiently.

4) The present existing kitchen can be remodelled with properly arranged work area and good ventilation with the instalment of exhaust fan.

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APPENDICES

APPENDIX - I

QUESTIONNAIRE TO EVALUATE THE CUSTOMERS SATISFACTION AND PREFERENCES IN SARADALAYA CANTEEN.

Student/Staff

Name: Date

Class/Department

1. List reasons with ☐ for your patronising the canteen

a) Social gathering ☐

b) Difficulty in bringing lunch ☐

c) Just for Refreshment ☐

d) Economical ☐

2. List the items liked by you in the order of preference

LUNCH	SAVOURY	SWEETS

3. Name the recipes that can be introduced in our College Canteen

Lunch	Savoury	Sweets	Other items

4. Any you happy with the service in our canteen

Yes ☐ No ☐

Give Reasons

5. Any you happy with the following things

Particulars	Satisfied	Not satisfied	Reasons
EQUIPMENTS:-			
Tumblers			
Ice cream cups			
Spoons			
Serving Plates			
FURNITURE			
Table			
Chair			
Washing Area			
Ticket counter			
Serving counter			

APPENDIX - II -(a)

PROCEDURE FOR STANDARDIZED RECIPES

VEGETABLE RICE:

Preparation time: 1 hr. 57 minutes

No.of portions obtained: 70

Ingredients:

Rice	=	3 Kg
Tomato	=	1 Kg
Cabbage	=	½ kg
Potato	=	½ kg
Carrot	=	½ kg
Beans	=	½ kg
Onion	=	½ kg
Ginger	=	40 grams
Garlic ~~xxx~~	=	40 grams
Oil	=	½ litre
Pepper, Somph Cinnamon Cardemom	=	30 grams
Bread slices	=	10

METHOD:-

1) Cut all the vegetables into long thin slices
2) Slice onions.
3) Heat fat, and fry onions, spices, and add all vegetables and fry it for some time.
4) Add enough water
5) Wash and drain rice.
6) When the water starts to boil add the rice.
7) When the rice is cooked remove from the fire.
8) Cut the bread slices into pieces and fry it nicely and add it to cooked rice.

TOMATO RICE

Preparation time: ½ hr and 5½ minutes

Ingredients:

Rice	=	3 Kg
Tomato	=	3 Kg
Onion	=	½ kg
Chillies	=	100 gram
Garlic, Cinnamon, Cloves	=	40 grams
Oil	=	½ litre

No. of portions obtained 60

METHOD:-

1. Slice the tomatoes cut the onion and chillies
2) Heat the oil in pon and fry the Garlic, Cinnamon and cloves.
3) Add onion and chillies and fry it till brown
4) Add the tomatoes and fy fry till the mixture reaches into a chutney consistancy.
5) Add enough water.
6) When the water begins to boil add the washed rice
7) Cook the rice till it gets soften.

APPENDIX - II C

POORI MASAL

Preparation time: 2 hrs.

No. of portions obtained : 75

Ingredients:-

Maida flour = 1½ kg

Wheat flour = 1½

Oil = 1 Litre

Masal

Potato = 3 Kg

Onion = 1½g

Chillies = 100 grams

Oil = 100 Ml.

METHOD:-

1) Prepare a still dough with water, salt, atta and maida
2) Set aside the dough for at least half an hour.
3) Knead the dough again till soft
4) Divide into even sized balls
5) Roll out to 1/10 inch thickness and 3 to 4 inch in diameter
6) Fry the poori's in the oil.

MASAL:-

1) Boil the potatoes peel and mash
2) Cut onions, and chillies
3) Heat the oil add the seasonings onions, and fry it, till brown
4) Add the mashed potatoes
5) Add little water and turmeric powder and bring it to boil
6) Remove from fire when it starts boil.

APPENDIX -II - (d)

PEAS RICE

Preparation time : 1hr & 15 minutes.

No.of portions obtained : 65

Ingredients-

Rice = 3 Kg

peas = 1 kg

Onion = ½ kg

Chilli powder, Cloves, Ginger, Bayleaf, Cinnamon = 50 grams

Oil = ½ litre

METHOD:-

1) Wash and soak the rice
2) Soak the peas previous night
3) Drain rice, slice onions
4) Heat fat, fry sliced onions, till golden brown
5) Remove onions, add whole spices
6) Add rice and fry well
7) Cook the peas separately in a pressure cooker
8) Add boiling water to the fried rice
9) Add fried onions
10) Cover and cook
11) When it is 3/4 done Add the cooked peas

APPENDIX XI (e)

VEGETABLE CUTLETS

Preparation time: 2 Hours

No.of portions obtained : 80

Ingredients:-

Potatoes	4 Kg
Carrots	3/4 Kg
Peas	1/2 Kg
Onion	3/4 Kg
Lime	3
Ginger	30 grams
Green chillies	70 grams
Maida flour	50 grams
Oil	1/2 Litre

METHOD:-

1) Boil the potatoes and mash
2) chop and cook the vegetables
3) chop greenchillies, ginger and grind it to a fine paste
4) Cut the onions fine
5) Mix the cooked vegetable, and ground chillies and ginger mixture to the mashed potato
6) Fry the onions and add it to the vegetable mixture
7) Add lime suice and salt
8) Make into small balls and dip it into maida flour batter, and make the ball into desired shape, and roll into bread crumbs.
9) Deep fry the cutlets.

APPENDIX - II (f)

VADAI

Preparation time: 2 hours

Ingredients:- No.of portions obtained : 87 nos

Black gram dhall	2 kg
Pepper	10 grams
Coconut	150 grams
Oil	1 Litre

METHOD:-

1) Soak the blackgramdhall one hour before grinding
2) Remove the bask
3) Grind them to fine paste.
4) Powder the pepper, and cut the coconut into small thin pieces, and add it to the batter
5) Make into even sized balls, and flatten the balls while putting into oil.
6) When it turns to golden brown colour, removed from the fire.

APPENDIX - II (c)

BHADUSHA

Preparation time: 1 Hr & 30 minutes

Ingredients:- No.of portions obtained : 92

Maida flour	1½ Kg
Dalda	½ Kg
Vanilla essence	2 Tea spoon
Baking soda	5 grams
Sugar	2 Kg
Oil	3/4 Litre

METHOD:-

1) Add vanilla essence and baking soda to the dalda and cream it well.
2) Add the maida flour to the cream and mix it well
3) Add water to the above mixture till it becomes to a soft dought consistency
4) Make it into small size balls, with a slight depression on the centre.
5) Fry it in the oil, till it turns to golden brown
6) Make a sugar syrup. The sugar syrup should reach the soft ball stage remove from the fire and it should be stirred continuously till it reaches fondent stage.
7) The fried Bhadusha should be dip into the syrup

APPENDIX - II (h)

MELTING MOMENTS

Preparation time = 45 minutes

No.of portions obtained = 72 sets

Ingredients:-

Flour	1Kg
Sugar	750 grams
Dalda	650 grams
Egg	4
Vanilla essence	1 tea spoon
Baking powder	5 grams
Bread crumbs.	

METHOD:-

1) Sift the flour and baking powder twice
2) Cream fat and sugar
3) Beat egg with vanilla and add to the creamed mixture
4) Add flour and mix gently into soft dough
5) Make into small pieces (walnut size) and roll into breadcrumbs
6) Place on baking sheet an inch apart
7) Bake at 375°F for about fifteen minutes.

APPENDIX - II (1)

COCONUT BISCUIT

Preparation time : 30 minutes

No.of portions obtained : 41 nos

Ingredients:-

Maida flour	½ kg
Coconut	½ kg
Dalda	400 grams
Cardamom	20 grams
Baking ammonia	10 grams

METHOD:-

1) Cream the dalda, baking ammonia, powdered cardamom and desicated coconut.
2) Add maida flour to the above mixture
3) Roll out the mixture into thin layers and cut it into desired shape using the biscuit mould
4) Bake at 375°F for about ten minutes.

APPENDIX - V (1)

CHOCOLATE ICE CREAM

Preparation time : 2 Hours

No.of portions obtained : 182 Cones.

Ingredients:-

Milk	=	13 litres
Corn flour	=	120 grams
Frio mix	=	30 grams
Chocolate Powder	=	75 grams
Sugar	=	3 Kg.

METHOD:-

1) Ten litres of milk was boiled and cooled
2) Add sugar to the cooled milk
3) Corn flour was dissolved in remaining three litres of raw milk and
4) Boil the cornflour milk mixture.
5) When it started to boil add the frio mix powder and remove from the fire.
6) The above mixture was strained through a strainer and mix it with the cooled milk
7) The chocolate powder was dissolved in the above mixture
8) The mixture is poured into the ice cream machine.

APPENDIX - III (a)

PURCHASE RECORD FOR GROCERIES

RECORDS AND REGISTERS:-

Date	Name of the item	Unit	Quantity	Rate/Kg	Total cost

APPENDIX - III (b)

PURCHASE RECORD - VEGETABLES

DATE	Name of the item	Rate/ Kg	Quantity Purchased	Total cost

APPENDIX - XII (g)

BINCARD

NAME OF THE ITEM

Date	Quantity Received	Quantity Issued	Balance

APPENDIX - III (d)

SALES REGISTER

Date	Name of the item	STARTING Number	CLOSING Number	No.of Portion	Amount