

ASSESSMENT OF ORGANISED MODULAR KITCHEN

By
D.PAVITHRA
(13PIR009)

A THESIS SUBMITTED TO
AVINASHILINGAM INSTITUTE FOR HOME SCIENCE
AND HIGHER EDUCATION FOR WOMEN,
COIMBATORE – 641 043.

In partial fulfillment of the requirements for the Degree of
**MASTER OF SCIENCE
IN
INTERIOR DESIGN AND RESOURCE MANAGEMENT**

MARCH 2015



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SUPERVISOR**



**SIGNATURE OF THE
HEAD OF THE DEPARTMENT**

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Gratitude is the inward feeling of kindness received. Thankfulness is the natural impulse to express that feeling.

-Henry Van Dyke

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INTRODUCTION

“Home is not merely four square walls, Through with pictures hung and gilded, Home is where affection calls Filled with the heart hath”

- Devadas

The origin and development of the home in human history marks the beginning of civilization. The primitive nomadic man, having discovered fire and agriculture thought of settling down at one place to escape from loneliness, natural calamities and the attack of wild animals. The cave perhaps was the first form of shelter. From the cave to the modern home, home making has undergone great changes. With the advances in science and technologies modern home provide great comfort, convenience and facilities.

The home performs various functions with the great influence on the well-being of an individual. It is a place where individuals are bound together by love and affection. It's a center of social life, a place of health, happiness and comfort for the entire family in all stages and condition of life. It is here that the bodies and minds of young children are developed, preparing them to shoulder their responsibilities as future citizen. The children also develop their personality, attitude, values, a sense of belonging and security in a home. The family members enjoy group living, which helps them to develop physically, emotionally, mentally and socially. The home provides its inmate, rest and privacy. It is again here that an individual acquires custom, tradition; habit and culture of family in particular and social group in general. In this dwelling they learn important values like honest, loyalty and the art of living together.

The word home connotes far more than a house, mere structure proving shelter and protection from the element of nature a good home provides a healthy environment for its members leading to their sound personality development; it satisfies their need physical, emotional and social.

A home helps in meeting the economic needs of its members. It is here that professional skills are passed on through generations. A home is a place where some members who cannot support themselves for reasons of sickness, unemployment, old age, widow-hood or other handicaps get shelter and care.

Housing deals with selection, arrangement and utilization of housing space; home equipment and furnishing to enhance family living and managerial aspect of homemaking. The home satisfies psychological as well as physical needs. Home is a place with fixed characteristics and traditional activities (Nickel and Dorsey, 2002).

Most families spend approximately one -third of their income for housing and its upkeep. The size of the house, arrangement of rooms, equipment chosen, the storage facilities, material and finishes used are important in taking or saving time and energy. In spite of it kitchen is frequently poorly located and planned.

Today the urban Indian homes are modern in architecture. To save time and boot efficiency Indian kitchens are becoming organized and modern in outlook. Technology is changing the way we buy food, cook, and eat. We are witnessing a transition phase in face of Indian kitchens as they move from “Gas Chula” to Induction cookware (Vishal Thakur, 2007).

Kitchen is considered the heart of the house. It reflects the likings of the housewife, help and satisfaction of family members. It should be airy, well lighted, ventilated and with lot of work space (Premlata Mullick, 2007).

As a result today the kitchen has become a room one has to consider most carefully for the benefit of women. From time immemorial women have been performing diverse roles in the house activities as house wives, mothers and as home maker now she functions as consumer buyer, a chosen of goods and services and a co-manager in the use of available resource for family well being (Nickel and Dorsey, 2002).

According to Charlotte Baden-Powell (2005) kitchen should normally have 100-150sq.ft of floor area. Kitchen must be proofed against flies, mosquitoes and other source of infection. It should have barred windows and ventilators with wire gauze. The location, size, and orientation of the kitchen the position of the cooking area, sink, cupboard, etc., have a direct bearing on the convenient and comfort of the person who works in it (Stella Soundararaj, 2008).

The chores of the home making concentrates in the kitchen are complex, so they must be carefully planned in sequence of preparation, cooking and serving. Functional kitchen must have adequate organized storage space located at each work Centre. The efficiency of well-planned kitchen depends on its size, shape and arrangement of its work Centre at comfortable working height. When work surface in the kitchen are too low one must stand on the stool. If the surfaces are too high the arms and shoulder raised to make adjustment to the height. Such adjustment avoids uncomfortable position while working and unnecessary fatigue (Nickel and Dorsey, 2002). So a gas stove dining table and few shelves does not constitute a kitchen any more but a women needs a perfect kitchen.

Today more and more women are working outside the home. Women in India work more than 14hrs a day, much harder than men on variety of task (Charlotte Baden-Powell , 2007). Research has shown that an average woman spends more than 3 ½ hrs every day in kitchen. With inflexible standard to meet both at home and at work place the working women always are chasing an impossible ideal (Kumar, 2000). Women especially who are working need efficient kitchen to save her time and energy at home and concentrate on her work outside.

The kitchen which is every woman's domestic work place should be convenient, comfortable, super-efficient and functionally flawless. It also should be designed to take the drudger out of the chores, besides the making her strut about proudly as she whips up miraculous mouthwatering dishes to suit every palate (Mary Fisher Knott, 2010) whether brand new and ultra-modern or old and full of mellowed charm. A kitchen should reflect the taste and character of its owners. Also it must reflect the individual needs, work habit and life style of the home maker and the family.

New life style, new concept of planning and technological advances all play a role in transforming kitchens from dull sterile work areas to cheerful, colorful content for group, living which make the home maker work cheerfully in the kitchen. A well-organized home is determined by the quality of kitchen. It is a place where homemaker spends large part of her day. Hence it is the most lived room and the most expensive room in the house.

Making a perfect kitchen or modular kitchen with appropriate working height has been the trend these days. The modular kitchen features are not only superbly functional and fully equipped they also aesthetically designed and extremely utilitarian with proper working height. A kitchen today can be remodeled, designed or readymade. Today readymade or modular kitchen have taken the world storm scrupulously designed and fulfill individual needs and to adopt available space. Modular kitchen have become the common way of life.

A Concept of modular kitchen has been revolutionize and gained popularity. People prefer more to engage modernize kitchen in order to enhance the picture of their home as more stylish and aesthetic looks. Modernize kitchen not only provides the elegant look but also it brings out the well-organized kitchen room for effective cooking. Moreover it comes with all facilities and provides the easy functioning and organized kitchen room (<http://www.fantasykitchens.in/importance-benefits>).

Modular Kitchen is a term used for the kitchen layout consisting of modules of cabinets made up of pre-made cabinet parts with diversified materials which hold accessories inside, which can facilitate the effective usage of the spaces in a kitchen (<http://www.uniquewood.in/what-is-a-modular-kitchen>). These parts are fitted together to create a whole, functional kitchen design. According to Sakina Babwani (2014) modular kitchen has a sleek, clean and trendy look. Usually, it involves the use of straight line cuts and designs with a variety of modern contemporary finishes. A freedom to choose plenty of finishes (colors or patterns) to make modular kitchen stand out from the rest. If the modular kitchen is well designed and planned for proper space management, lot of storage can be created even in the smallest of kitchen areas. Repairing work can be easily done on a modular kitchen. If required, individual components of a modular kitchen can even be replaced, without affecting the rest of the kitchen components. Cleaning the modular kitchen requires less effort.

Modular kitchen appliances need to be chosen with care and wisdom. There are many things that need to be considered before taking the plunge. Features play a very important factor in the decision making process of modular kitchen appliances. Another thing that is important is the level of performance that it offers. While these are important, factors that have become important these days are brand, aesthetic appearance and even the versatility of the equipment. Modular kitchen appliances are now available in various colors, patterns and designs. People desire to choose quirky and designer appliances that inspire them to cook and prepare meals (Chakharbarti, 2001).

Besides their aesthetic and functional capabilities and their customization, Modular kitchens are easy to repair and can be shifted easily as they are made up of modules. Installation also becomes convenient because of the pre-fabrication. Diverse color schemes, well defined areas, a DE cluttered space are the other advantages. Though the advent of Modular kitchens was noticed in the mid-1990s, however, it was only with time that it started getting popular (Lagomarsino, 2004).

On this popularity of Modular kitchens he elucidates, "Earlier the Modular kitchen industry was in its inceptive stage. The acceptance level of potential customers was very low with various myths surrounding the concept of modular kitchen regarding cost and accommodation. But now, kitchen is an integral and most focused area of one's home in every sense. It is the heart of home, and with the changing trend, designs transform from classic to contemporary to modern kitchen designs. Although modular kitchen industry is amongst the most challenging industry with a growth rate of 30-40%, yet it is a virgin market as more than 80% of the market is still in the hands of unorganized players."

With the demand of the clients, Modular kitchens have become a must in many houses where the homeowners can plan every fitting, every material and every layout. More sophisticated, streamlined, sleek, - modular kitchens are aesthetically very pleasing. They come in various shapes - U-shaped (very efficient and great space saving), L-shaped (good for small kitchens),

straight (the basic form), island kitchens (for bigger sized kitchens) and parallel kitchens (eliminating the need to walk between two work areas). Circular work islands and central islands customized into many layers are gaining tremendous popularity. Options like freestanding island kitchens also integrate extra storage space.

In an age of socialization, kitchens are also seen as places of interaction where the hosts and guests can chit chat - a kitchen bar is a space for guests to sit while the hosts complete their chores. In large kitchens, more than one workstations make a lot of sense in saving time. Movable/foldable countertops while providing an extra platform can also be seamlessly melted into the kitchen decor to free up space. Round countertops are also preferred at many places in larger spaces to curb much movement.

Modular kitchen normally consist wooden cabinets, counter tops, internal accessories like Drawers, Base, wall; tall and upper Cabinets, Roll-Out or Pullout Shelves, corner unit, trolley, bottle rack, and accessory rod are some of the common kitchen cabinet accessories. Butt, Overlay Hinges, Flush Hinge, Inset Hinges are frequently used hinges. , electro domestic gadgets like chimney, hob, built-in-oven, sink with or without drain board and in some cases a refrigerator, dishwasher or other gadgets. The designer normally designs the space using modules of standardized/customized sizes to suit individual spaces (Thomas Koontz, 2010).

Modular kitchens are about varied textures and finishes, smoothness, freedom of space - aesthetic as well as of functional vitality; newer materials like stone, glass or aluminum; more emphasis on the work triangle (the easy movement between the sink, refrigerator and hob) and intelligent use of light (artificial/natural). Materials like wood, granite, quartz emanate a great Modular look.

Most of the kitchens are loaded with all appliances and accessories (coffee machine, ice maker), to reduce the actual cooking time and to make it less tedious. The other concepts that are being incorporated here include the position of extremely minimalistic furniture pieces with very classic pieces; the

introduction of technology and automation for the worktop, chimney, and other such key areas; Eco friendliness (anti-bacterial kitchens) as a key focus area of the Modular Kitchen (Juliet and Aidan, 2011).

Modular kitchens come with specific accessories - chimneys, dishwashers, ovens, pull out drawers, trolleys, wine cutleries, cooking range, adjustable shelves and it's surprising to find the diversity in these accessories themselves.

Well-organized, utility kitchens are always at the top of every homemaker's wish lists. With changing times, kitchens have undergone a huge makeover in terms of designing and technological improvements—this has led to the emergence of Modular Kitchens. It helps in efficient, pest-free storage of everyday kitchen essentials and easy retrieval of utilities apart from raising the aesthetic value. Modular kitchens have been designed by carefully attributing all essential functions of a kitchen in compact and convenient manner. Other than adding aesthetic beauty to home, these kitchens combine easy functionality and space maximization in the most effective way. The easy maintenance of modular kitchens enhances their overall appeal to a great extent.

However cost is a major aspect to be considered with the vast array of modular option available in the market consumer are little confused to choose the right type of kitchen. Hence with all these aspect in mind the present study has been undertaken with the following objectives.

- To find out the extend of satisfaction of homemakers who own a modular kitchen
- To find out the availability of modular kitchen in the market
- Develop a design based on the opinion and suggestion given by the homemakers

It is hoped that the study definitely help the homemakers to decide the type of kitchen one have to opt in future for their house.

II. REVIEW OF LITERATURE

The literature pertaining to the study on “**Assessment of Organized Modular Kitchen**” is reviewed under the following heading:

1. Role and Functions of a Kitchen
2. Existing Kitchen Models
3. Need and Characteristics of Efficient Kitchen
4. Modular Kitchen and its Advantages

1. **ROLE AND FUNCTIONS OF A KITCHEN**

Kitchens are important premises of any home. Kitchen is a room or part of a room used for cooking and food preparation (washing cutting, kneading, mixing) etc. Modern residential kitchen is typically equipped with a stove, a sink with hot and cold running water, a refrigerator and kitchen cabinets arranged according to a modular design. Many households have a microwave oven, a dishwasher and other electric appliances. The main function of a kitchen is cooking or preparing food but it may also be used for dining, food storage, entertaining, dishwashing, laundry (<http://en.wikipedia.org/wiki/Kitchen>).

A kitchen can make anybody's health and at the same time it can destroy anybody's health (Lagomarsino, 2004). A woman spends a major part of her time in the kitchen; therefore designing the layout of the workspace must be given considerable attention along with the organization of the work surface. Designing of a functional storage should be according to the anatomical measurements, age, sex and postural consideration of the users' to serve the purpose (Chakharbarti, 2001). Proper space for the storage and performance of routine activities, the correct positioning of equipment save a lot of unnecessary bending and other motions. It not only adds to the convenience and comfort of the homemaker but also enables the task to be performed quickly by the homemaker with least cost (Kistwaria, 2007). Organization of the work surface or storage spaces decreases the cost of work (Kumari and Dayal, 2009). Poorly designed work surface in terms of

counter height, width and depth and kitchen storage space causes permanent body damage besides increasing the work hence it should be given careful attention (Kistwaria, 2007).

Kitchen must be proofed against flies, mosquitoes and other source of infection. It should have barred windows and ventilators with wire gauze. The location, size, and orientation of the kitchen the position of the cooking area, sink, cabinets, etc., have a direct bearing on the convenient and comfort of the person who works in it (Stella Soundararaj, 2008). As a housewife usually spends a sizeable time in the kitchen, hence it is a most lived and expensive room in the house. In spite of it kitchen is poorly located and planned. It must be well located because the location of kitchen is very important with respect to housewives movement in relation to other functional space. The environment in which a housewife performs her job has a big influence on her (Susan Maney, 2006).

The kitchen is primarily a food preparation center; it can be the center of other activities as well, especially within homes, depending on its size, furnishing, and equipment. If washing machine is present, washing and drying laundry is also done in the kitchen. It may also have to serve as a fulltime or occasional dining area, a laundry or a day time nursery. Frequently the ironing if nit the washing is done in the kitchen. Sewing and mending also may find a place in the kitchen. The kitchen often serves as the office in the house where accounts are kept and where the market list and menus are made. With these functions in mind, the kitchen is the home of family should not be too small neither should it be too large for the sake of efficiency, an oblonged shaped kitchen is easier to arrange than a square shaped (Mervyn Kaufman, 2008).

Major component of work centre in kitchen are adequate work area on counter space, adequate storage areas and sufficient access to facilities like ventilation, lighting, drainage etc (Vishal Thakur, 2007).

In addition to a sink, cabinet, stove and refrigerator, many have a dishwasher, trash compactor, garbage disposal, and small appliances such as food processors and microwave oven (Mervyn Kaufman, 2008).

Specialists refer to the sink, stove and refrigerator as the kitchen triangle, the area of greatest activity which requires careful planning and unobstructed access. Of the three, the sink will see the most action and should have easy access to the stove and refrigerator, as well as your countertop workstations.

Sinks need to be installed in close proximity to the plumbing, but often kitchens are designed with the sinks installed right above the plumbing or in a poor location. Instead of making this kitchen design mistake, consider hiring a plumber to relocate the drains and the plumbing to accommodate the best placement for the sink (Juliet Kinchin and Aidan, 2011).

Regardless of kitchen size or layout (L-shaped kitchen, galley, U-shaped or Island style), the sum of all the legs in a work triangle should not be less than ten feet and greater than twenty-five feet. If the sum of the legs in the work triangle is too small, people will be tripping over each other and if too large, food preparation could be a very tiring task.

Storage and Work Space

When researching on common kitchen layouts, the term "work triangle" is likely to come up again and again. This mantra of kitchen layout design refers to the triangular spacing that creates a convenient relationship between three key elements of any kitchen: the stove, sink and refrigerator. Almost all kitchen layouts will feature some version of the work triangle. (<http://www.hgtv.com/design/rooms/kitchens/u-shaped-kitchen-design-ideas>).

Lovett (2006) informs that based on the arrangement of cabinets and 3 major appliances refrigerator, sink and range is arranged. The kitchen work triangle is probably the most researched and applied ergonomic principle around. It is the centerpiece of most kitchen layouts.

The goals of a good kitchen work triangle are to place the three most common work sites the most efficient distance apart and to minimize traffic through the work zone. Make sure that the triangle doesn't intersect an island or peninsula for more than a foot. In the kitchen the three main work sites are:

- Refrigerator - the cold storage work site
- Sink - the cleaning/preparation work site
- Stove - the cooking work site

These represent the three points of the kitchen work triangle. If you place these too far away from each other you waste a lot of steps while preparing a meal. If they are too close to each other you have a cramped kitchen without any place to work.

Kitchen Work Triangle Basics

- Each leg of the triangle should be between 4 and 9 feet
- The total of all three legs should be between 12 and 26 feet
- No obstructions (cabinets, islands, etc.) should intersect a leg of the work triangle
- Household traffic should not flow through the work triangle (http://ergonomics.about.com/od/kitchen/f/work_triangle.htm).

All kitchen types can have optimal workflows. Every kitchen can be divided into kitchen zones, regardless of size or shape.

Work Zones – Simplifying Everyday Life

When deciding where to put cabinets and appliances in relation to each other, it can be helpful to think in terms of zones or work zones. This approach, focusing on function rather than objects, mean you'll end up with an everyday-friendly and efficient kitchen.

The three main zones, in relevance to the working triangle, are: storage (fridge, freezer and dry storage), washing (sink and dishwasher) and cooking (cooktop, oven, and microwave). Placing them well is crucial to achieving an ergonomic work triangle, with a natural workflow and everything within reach. Here are some basic tips to consider when planning your work zones:

Cooking Zone

Avoid crossing the kitchen with hot pots and pans. Think about placing your oven and cook top near the sink and countertop.

Washing Zone

The sink is an important area. Plan to have your fridge close at hand for easy food prep. Close proximity to your cook top makes it easier to drain your pasta and vegetables.

Storage Zone

For storing, make sure you have enough storage for all the food - both for dry goods and in the fridge. A countertop near your high cabinets and fridge makes it easier to unpack shopping bags (http://www.ikea.com/ms/en_CA/rooms_ideas/kitchen_howto/NA/zones_and_layouts.html).

For right-handed users, consumables, non-consumables, cleaning, preparation and cooking should be laid out clockwise. For left-handed users, in the reverse order. The preparation zone is the main work area and should be a minimum of 2'6" wide. This will ensure there is enough worktop space to make cooking easy and enjoyable. The Work Station *Create* separate stations for food prep, cooking, baking, and cleaning. Each area is centered around a major appliance and needs at least 15 inches of counter space.

The interesting thing about having a modular kitchen is that it can still be somewhat unique because different combinations of upper, lower, wall, crockery and full units can be grouped to fit each kitchen's size and style. With lot of accessories like trolleys, racks, holders, magic corners, hanging rod, etc. (<http://www.wisegeek.com/what-is-a-modular-kitchen.htm>).

Storage Design Involves Iron Rules:

Things should be stored where they are first used.

- Size storage to the things being stored.

- Store items in a single layer with no item hidden behind or beneath another.
- Kitchen storage should be within easy reach. Shelves should reach a maximum height of 56 inches, and there should be adjustable shelving between 14 and 48 inches from the floor.
- Food and utensil storage areas should be organized within this area to avoid uncomfortable bending or dangerous reaching.
- Keep heaviest items on lower shelves. You don't want to balance them over your head.
- Lightweight items should be stored on higher shelves.
- Least-used items should be stored on the highest shelves.
- Items should be stored where they are most often used. For example, the coffee pot filters, and coffee should be stored near the sink (http://www.extension.org/pages/13935/home-safety-in-the-kitchen-storage-considerations#.VJRi_BDABg).

2. EXISTING KITCHEN MODELS

According to Chakrabarti (2001) the rule is that kitchen/ fire has to be positioned at the Agni moola. The platform should be placed at the east side of the southeast kitchen. At south east corner the burner has to be there. The sink has to be fixed at northeast corner of the kitchen.

In kitchen aesthetics are important, but the function of how the kitchen works is even more important. The way the kitchen is laid out will make the difference in how quickly and efficiently the kitchen is used. The work triangle is one of the important points to be kept in mind while designing a kitchen. It refers to kitchen spacing that creates an efficient relationship between key elements of any kitchen: the refrigerator stove and sink. Most kitchen layouts will feature some version of the work triangle. A poor layout can result in retracing the steps and spending more time in the kitchen can be a turn off to enjoying cooking. Kitchen can be planned in following layouts to make it more efficient L, U, G, Single lane and galley kitchen (Juliet and Aidan, 2011). While

certain floor plans create a more spacious, efficient kitchen, each kitchen layout can be enhanced with the right cabinetry and decorative accents. Depending on the overall size of the kitchen, an island can be added all kitchen layouts to expand storage and create additional counter space. The width of walkways between cabinetry and the island is important. Island can be created in all shapes and size and not limited to standard square or rectangle (<http://www.durasupreme.com/getting-started/kitchen-design-101#.VNjbquaUf4Y>).

Island Kitchen

In every kitchen there is the potential for great storage, display, and functionality. The sad fact is all kitchens don't have enough of any of these. A kitchen island solves these problems and looks beautiful doing it. (<http://freshome.com/2010/08/30/6-benefits-of-having-a-great-kitchen-island/>).

An island contributes a lot to a kitchen: it anchors the space, serves as an extra work surface and eating area, added counter space and storage, and sometimes even an extra cook-top are just some of the positives. An island can make a larger kitchen messy sometimes if properly not designed. Island kitchen is practical in rooms where space is plenty. Choosing the wrong island or placing it in the wrong spot can be a disaster, especially in a work area that can get over cluttered. Islands that obstruct the flow of traffic to and from the sink, refrigerator, stove and primary workstations will create bottlenecks and major hassles. At minimum, an island should be 4 feet long and a little more than 2 feet deep, but it must also have room for people to move and work around it. Specialists recommend that unless the kitchen is at least 8 feet deep and more than 12 feet long, one shouldn't even consider an island. (<http://freshome.com/2012/10/23/10-mistakes-you-dont-want-to-make-in-your-kitchen-design/>).

L-Shaped Kitchen

L-shaped kitchens work particularly well for homeowners with a small-to medium-sized kitchen space. An L-shaped layout provides compact counter space, solves the problem of maximizing corner space. It provides

space for more than one person, to work in the kitchen. The cabinets are placed on two adjacent walls forming the "L" design. A natural work triangle is created. The "legs" of the L can be as long as you want, though keeping them less than 12 to 15 feet will allow you to efficiently use the space. With an L-shaped layout, you'll eliminate traffic (Ernst and Peter Neufert, 2000).



One of the primary benefits of an L-shaped kitchen design is that it will easily retain the crucial "work triangle. Normally the range and the refrigerator would be located roughly on the same wall for easy access from the refrigerator to the stove. Normally the sink and dishwasher would be located on the next wall. In an L-shaped kitchen, the work triangle is the space between the sink, range and refrigerator. In an L-Shaped kitchen you want to be very careful that you don't put appliances too far apart.

U-Shaped Kitchen

A U-shaped kitchen is spacious kitchens. It has counter space surrounding the cook. A U-shaped kitchen consists of work space on three adjoining walls, two parallel walls perpendicular to a third (Donald, 2003). As its name suggests, this configuration features a horseshoe-shaped work area, with cabinets and counters running around three sides with an open end for

access. At its most narrow, it can be as compact as a galley kitchen. There are no traffic lanes flowing through the work area. Basically a wide galley kitchen with one end closed off. Going a bit wider (if your space allows) might seem desirable, but too wide can reduce efficiency, because the points of contact within the work triangle (stove, refrigerator and sink) get too far apart (<http://www remodelista.com/posts/remodeling-101-the-u-shaped-kitchen>). The base of the U-shaped kitchen is best when it is 10-18 feet wide. A U-shaped kitchen can have legs as long .It will need to divide that elongated leg into different work sites for efficient use (http://ergonomics. about.com/od/kitchen/ qt/U_Shape_ Kitchen. htm).



It also has the advantage of maximum storage space. In a smaller U-kitchen, the layout keeps workstations functional and compact. Those fortunate to have a larger kitchen can integrate multiple workstations in the design. With separate areas for food preparation, storage, cleaning and baking, multiple cooks can make a meal together easily. In most U-shaped kitchens, these elements are separated into distinct zones. Many homeowners with large kitchen space use the space in the middle to feature a kitchen island, perfect for food preparation and extra storage. Because of their larger design and luxurious utility, U-shaped kitchen layouts are favorites of homeowners looking for a large, functional and attractive kitchen space that can be used for cooking and cleaning as well as for conversation and gathering.

G-Shaped Kitchen

The G-shaped kitchen layout is essentially a pumped-up version of the U-shaped layout. The G-shaped kitchen adds a partial fourth wall of cabinets off the "U". The kitchen work triangle can easily be accommodated in any number of ways in a g-shaped kitchen (<http://www.build.com.au/g-shaped-kitchens>).



The fourth wall or peninsula serves as a way to visually separate the space from the rest of the living area. Create extra space in a cramped kitchen by eliminating a wall. It also can add casual breakfast bar seating to the ample storage and counter space usually found in a U-shaped kitchen. (Ernst and Peter Neufert, 2000). If the peninsula is not so long that getting in and out of the kitchen becomes difficult. Essentially this area is a work aisle, not a walkway, so a width of 4 feet would be ideal. At the same time, don't make the peninsula so short that it can't offer enough room to seat a few guests or contain an appliance or both, like the cook top and breakfast bar shown here. This fourth leg is what makes the G-shaped layout - unlike the U-shaped layout - workable for multiple cooks (<http://www.kitchens.com/design/layouts/common-kitchen-layouts/g-shaped-kitchen>). Depending on the size of the kitchen, G-shaped kitchens can seem cramped. To make the room feel more spacious, open up the wall in a nearby room and create a pass-through or breakfast bar for the family (<http://www.kraftmaid.com/plan/kitchen/kitchen-planning/g-shaped-kitchen/>).

Single-line Kitchen

Also known as a 'single line kitchen', 'pullman kitchen' or 'straight kitchen', a single wall kitchen is designed entirely along a single wall. Single-wall kitchens are best for small apartments where space is extremely limited. They're not ideal for much more than basic cooking, and will be a challenge for more than one person to use at any given time (<http://www.build.com.au/single-wall-kitchens>). Ideal for smaller homes, the one-wall kitchen works by keeping all appliances, cooking tools and ingredients within easy reach it has cabinets against only one wall. Because of the space, the work triangle is a work line with all stations against one wall. In this work line the sink often sits between the range and refrigerator, a convenient location for cleanup. This design also offers counter space on both sides of the range, which is an important code and safety consideration. Unfortunately, the sink, range and refrigerator still take up a fair amount of counter space, so finding enough work room for food prep can be a challenge, as is having two cooks use the space (<http://www.kitchens.com/design/layouts/common-kitchen-layouts/one-wall-kitchen>).



Everything is only a step away. It can be extended or compacted to fit almost any area. Incorporate a microwave in the upper cabinetry to create extra bench space .Add full height cabinets to ceiling for more storage space .It can be enhanced with an island bench or moveable work bench. Single line kitchen can allow for a small table or dining setting. A proper kitchen island can be used to add much needed storage and workspace to a single wall kitchen (effectively converting it into a kind of galley kitchen), as well as providing a built-in breakfast bar type dining area (<http://www.build.com.au/single-wall-kitchens>).

Galley kitchen

Galley is a term used to refer compartment of ship, train, or aircraft where food is cooked and prepared. Strictly the term refers to kitchen with units in 2 parallel facing lines. By nature and necessity, these kitchens make use of small, cramped spaces to feed tens or even hundreds of people. Many restaurant and other commercial kitchens are designed in similar fashion, with cooks working in a long, narrow space between appliances and counter space. But what works in a commercial kitchen has some drawbacks in a home (<http://www.kitchens.com/design/layouts/common-kitchen-layouts/galley-kitchen>).



Such kitchen increase storage space by working vertically, with hanging pots, dishes rack etc. (Mervyn Kaufman, 2008). In galley kitchen both the work triangle or work line can be formed. The open ends of this kitchen provide a great flow to the space and allow for easy entry and exit. When both sides of the kitchen are built along walls, over bench cabinetry can be maximized to create extra storage opportunities. Excellent use of the kitchen triangle. It has lots of workspace and cabinets on either side. Great for small apartments with limited space. No clashing drawer, cabinet appliance openings. It often includes ceiling hung cabinets, hanging pots and dish racks, utilizing vertical space with great efficiency. All of this maximizes storage, and requires little movement to accomplish tasks. Galley kitchens are popular in apartments and small homes, where space is at a premium. But they can work in larger spaces as well, where the nature of the design creates a streamlined look.

3. NEED AND CHARACTERISTICS OF EFFICIENT KITCHEN

Modular Kitchen is a term used for the kitchen layout consisting of modules of cabinets made up of pre-made cabinet parts with diversified materials which hold accessories inside, which can facilitate the effective usage of the spaces in a kitchen (<http://www.uniquewood.in/what-is-a-modular-kitchen>).

Kitchen is an intrinsic part of every house and a place where a lot of time is spent. Modular kitchen is very important today to cope up with the fast paced lifestyle. As such, it should be designed for convenience and functionality. Apart from this, more and more people are spending money to ensure that it's classy, stylish and contemporary. A modular kitchen combines all these aspects. In a well-planned modular kitchen, a large amount of storage can be created even in a small space. Modular kitchen are easy to design, develop and install (SakinaBabwani, 2014).

Appliances in a modular kitchen are as important as the kitchen itself. Out of all sinks are the most important accessories. It is a known fact that no kitchen is complete without a sink. Secondly chimneys are very important as exhaust fans cannot purify the air in the kitchen. Chimneys are located just above the

cooking hob hence all smoke; oil vapors, dust particles and carbon get sucked into it. The appliances aid in giving a substance to the modular kitchen. It enables the kitchen to give out a completed look (www.modularkitchenkochi.in).

Kitchens are fast becoming the favorite area in the house where everybody enjoys a leisure time. Today's kitchen is so much more than simply a place to prepare food and it's often seen as the most important room in the house. The kitchen is also places of meeting and has social significance. Kitchen occupy large amount of your time and peak attention periods. In residences Kitchens should be placed strategically for easy accessibility to all major work areas and rooms (Donald, 2003).

"A well-planned kitchen allows a better utilization of the space by the family members." Larger kitchens with greater storage and space potential are easy to plan than smaller kitchens due to space restrictions. It is really important to know the right arrangement for a Modular Kitchen designs. There are several steps to getting good modular kitchen designs. We work closely with our customers and will discuss your requirements in detail to ensure your kitchen suits both your lifestyle and your existing space available for kitchen.

A well planned kitchen is a useful addition to any home and performs many roles - from housing and hiding appliances - providing extra storage and work space - providing seating - creating a divide between the cooking space and the dining area.

A well planned modular kitchen would involve/cover all essential zones. Depending on the space available, could add/remove the least essential zone in accordance with our Indian styles. For example, a dish washing machine is something which we may not be comfortable with. So could eliminate that aspect from the "cleaning zone". The main advantage of having zones in your kitchen is that it improves the process flow of cooking and makes it more enjoyable. We offer a free consultation and design service (www.orenkitchenworld.com).

Enter the changing face of design in residences and the two spaces here that have got the biggest makeover in the recent times are the kitchens and bathrooms. While bathrooms are the spaces to cleanse and connect to oneself, kitchens are the spaces where the ladies of the house (and incase some men too) spend a considerable amount of time whipping out the best of the meals for their family members. Kitchens today are not synonymous with cooking alone; they have evolved into spaces which foster interaction between the families or between the family and their guests. In large spaced residences today one finds the kitchen divided into two sections - one for the cooking, and the other section for people to hang about. Outcomes of the proliferation of the nuclear family, this transformation that kitchens are noticing today are enabling them to become a multipurpose space that needs to be integrated into the entire house. Time savings, convenience, and energy efficiency have become the main protagonists in the new evolution of kitchens (Ravi Karumbiah, 2013).

More open, free and more aligned to the innate activities of the house - that are today's kitchens besides becoming a place for culinary explorations! To ease this entire process, Modular kitchens have stepped in - A modular kitchen gets its name from the module - the small sections which are assembled together to form the kitchen. Besides having the latest gadgets - accessories and appliances choice of materials, styles, designs, accessories, and combinations, which help in making every kitchen unique, customized and one-of-its-kinds (Pawan Malhotra, 2013).

The Current Trends

The sneaky drawers have been replaced by drawers with soft closing technology that can glide in and out with just a small tap. The synchronization of the cabinetry with the entire kitchen has become so important that appliances (like the microwave and the oven) are concealed by making their exteriors match with the cabinetry styling. The cabinetry can be wall mounted, base cabinets, suspended shelving units from the ceiling and furniture styled cabinets; while the storage has increased by manifolds, the way the storage is extracted is much more intelligent than ever before. In the conventional

wasted corners of kitchens, spaces are creatively carved out for storing appliances. Compact larder units are a great way of storing dry grocery and fresh drink bottles. One finds cups hanging under the kitchen cabinets on mid-way systems. These kind of space use makes the kitchen more efficient and de clutters it, making cooking a more enjoyable task. Wall cabinets and doors don't necessarily need a handle today to be operated. Consider running mirrored plinths along the bottom of the base cabinets - the floor area will visually increase (Donald, 2003).

Technology has definitely made cooking and its allied activities faster. Refrigerators with televisions integrated into their doors, motorized lids transforming a kitchen into a living space by covering the hob and sink areas, four door wall cabinets converting into a fully functional kitchen with a press of a button, are the many innovations in kitchen equipment and appliances that one finds today. Chimneys with feather touch buttons and built in LED lights, oil filters, luxurious chimneys in crystals with carbon pads (eliminating the need of any ducting area) are also there in the market. There are some chimneys which are noiseless while others can be remote operated, some have the sensor technology and can switch on and off automatically as needed.

There are pyrolytic ovens which are self-cleansing - one can just increase the oven temperature and the food and grease are mostly burned off. There is also the concept of an integrated fridge which is fitted with a wooden panel over the door that is created to match the cabinetry. They are ventilated from the front (instead of the back as in standard refrigerators) and hence can be placed anywhere without the consideration for air space around them. Available in different sizes, these are energy efficient and have alarms which go on when the refrigerator door is left open (ArpitaNagori and Neeta Lodha, 2011).

Sinks today also see a lot of variations - in materials, shapes, and colors. The availability of a plethora of materials has also stepped in to offer new finishes to the kitchen design - glass, stainless steel, wood, laminates, lacquer, stones like granite, slate and marble, high glass veneers and eco- friendly options. Glass is used a great deal nowadays to make the kitchen look elegant. Frosted or stained glass doors for cabinets help in making the space visually open.

Stainless steel appliances are still considered very trendy. Contemporary ideas for decorating kitchen appliances, cabinets and walls have also come in. Vinyl clings are inexpensive, temporary and can be used on stainless steel. Wallpapers (washable) and patterns are now a regular with kitchen decor. So are backsplashes in glass, stainless steel and even brick. Laminates are also available where one can write and erase and even pin sheets.

The splash of colors has also made its way into the kitchen today. From neutrals, to blue and lighter green shades, to warmer colors to bold colors, all are being implemented. Distressed finishes have been a favorite. Sometimes the monotony of the kitchen is broken by giving a strikingly different color to the central island. While neutral shades were much in demand earlier, today one finds the presence of bold contrasting colors in most kitchens to make a statement. Faucets today are high tech and stylish. Pull-out faucets have made life a tad easier. Chrome finished faucets are elegant (Mervyn Kaufman, 2008).

The color and material trend being followed are mostly neutral colors and neon; introduction of pastel colors into the kitchen and the use of BBS Bacteria Block Silver Guard (an anti-bacterial material that disinfects all worktops and spaces in the kitchen thereby rendering a safer environment).

Internationally, product designers are definitely coming up with more out-of-box solutions in kitchens. While there has been an innovation of a Modular space saving kitchen cabinet system for a one bedroom apartment, a studio or a loft (which has sliding modules when one is not cooking or working can slide together and create different kind of sideboards), there is also a portable kitchen unit which comes with a cooktop, a sink, garbage disposal system and work space for food preparation, and can be assembled or disassembled in a few minutes.

There is also a novel concept of enclosed kitchen sinks with movable cutting boards and retractable faucets when counter space is restricted. Multipurpose kitchenette including a cooking hub, dish washer, sink, fridge and washing machine assimilated in one structure and with a sensor

technology is also quite an innovation. There are also internet refrigerators which download recipes on their LCD screens and keep the consumer informed about the expiry of the food inside.

Maura (available in veneer, lacquered paint, and lacquered glass finishes) contains deep fryer and barbeque options with a quartz worktop. There is also a Le-Man tray as an option for corner and it houses an island chimney and a built – in oven. Adele revels in the natural beauty of wood and has a wide range of lacquered colors that evoke the feel of a pure material. Lucy (available in versatile layouts) is specifically designed for contemporary environments where space is shared and the kitchen becomes its very own furnishing system. It is proposed with an aluminum frame in a polished champagne finish and a horizontally-grooved glass door in catalogue-featured colors. Glass features in the countertop and sink. Brava is based on a hand-less concept, has a smooth, neat look and is available in various finishes such as veneer, high gloss lacquered, colored glass, gold and silver foils on acrylic base. The uses porcelain and is designed to withstand heat, shock and chemical resistance; Creative through its geometric feels personalizes your living space exclusively by creating more than eight layouts in a single design (Ranganath, 2013).

4. MODULAR KITCHEN AND ITS ADVANTAGES

We all want our homes to look beautiful. It is one place where every corner should reflect comfort, style and perfection. To make sure this happens we select every piece of furniture that accommodates in it. Along with all the rooms in our house, kitchen plays quite a significant role. Today's kitchen is the hub of the home, where families and friends gather to cook, eat, entertain, and share daily life. Kitchen, if planned and executed well, can make socializing truly enjoyable. It provides an edge to the kitchen remodeling or redesigning with a modern day structure of cooking area furniture with units intended designed for distinct purposes. It enhances the appeal of the kitchen giving an array of designs that perfectly suits the taste.

The social kitchen has an important role to play in the home every day. These days the concept of the kitchen getting socially famous is expanding constantly. The latest evolution in kitchen design incorporates research where the application of the ideas, innovations and concepts helps to increase the sense of wellbeing and social interaction in the modular kitchen. This type of modular kitchen design plan is called the Active Living Spaces (Donald E. Silvers, 2003).

Now a days kitchen is also a place to get entertained and mingle with your guests while preparing meals by adding a breakfast bar or a dining table to the end of the kitchen, if it has enough space. It is a trendy concept and can be well adapted to the Indian kitchen, especially in nuclear families living in the cities. It can be done by carving out a corner where a small table with two or three bar stools or even chairs can be placed around the table. It helps in socializing or helping the kids with their studies, homework, projects etc. while continuing to work and cook in your kitchen

Modular kitchens have transformed the interior décor of the house making it a place where you don't just cook but can relax and enjoy with family. The concept of Modular Kitchen has brought great revolution in today's lifestyle. Where the life of people is becoming more and more strenuous and busy, they favor for a lifestyle free from hassles and hardships. Hence, people today are looking out for modular kitchen options. The builders today are creating kitchen space from the view point of a modular kitchen. A very important aspect of the modular kitchen design is the use of the principle "Work Triangle" which calls for easy movement between the 3 focal points of kitchen, namely, the sink, refrigeration and hob. A successful modular kitchen is a result of perfect identification and placement of shape, space, accessories, cabinets, appliances, etc. (Charlotte Baden and Powell, 2007).

Modular is among the top priority segment in designing your home, because in today's busy life when we need everything systematic and time saving, how can one forget kitchen where we spend almost 3 hours of days, modular kitchen not only add beauty to your beautiful home but it also give best use of every 'inch' space in your kitchen making it more functional and systematic keeping every utensils, appliances and groceries at their perfect place designed within your kitchen in beautiful manner.

Majority of urban people now live in apartments in residential complexes. The sizes of the apartments vary greatly. While some are quite large and spacious, some are like small matchboxes. However, in all these apartments, the kitchen plays a pivotal role. Depending on the size of the apartment, the size of the kitchen also varies. In small kitchens, space constraint is a major problem. Modular kitchen is the best solution to this problem. With the help of this kitchen model, even the small space can be utilized in the most effective manner. Lots of storage space can be created in the kitchen with a modular setup it is possible to get more space, so that working in the place becomes convenient and easy (Donald, 2003).

Modular kitchen provides systematic storage and easy accessibility to every item as per their usage priority during cooking and serving food. Modular kitchen consists of base cabinets, wall cabinets and racks for storage of kitchen utensils and other items in an organized manner, installing magic corner gives accessibility to un-used corner space. Installing modular kitchen is always appreciated because everything is factory made ready to install, we just need 2 days to fit everything in kitchen without disturbing your daily schedule.

Here the component and aspects of them are managed in very calculated manner, so that the space utilized must be minimal and the maximum usage. With each component of the house is placed in well-mannered way and arranged properly. Each of its requirements is very well sectionalized. Each section has its very own particular role and is designed according to it. Modular kitchen is integrated systems which can be even dismantled at any stage. It is totally reusable and portable (Lovett, 2006).

Time for change Modular kitchens to the rescue; where style meets functionality. Modular kitchen fitted with built-in appliances bring in the look, the feel and the ambience, and can be modified or customized as per the client's needs. The rise of modular kitchens in this day and age, modular kitchens are the 'new-age' phenomena. Such concepts aren't luxury anymore, but a necessity to have. In the past, modular kitchens across the nation were installed, far and few between. Blame it on the lack of 'certified and trained professionals' or the 'demand' for the same, installing modular kitchens needed a lot of planning and was an expensive affair back then (Mary Fisher Knott, 2010).

With the advent of international players in the market joining hands with the national companies, professional training was imparted on the installation of modular kitchens – reputed institutions impart courses catering to this domain as well.

So, yes there is a demand for Modular kitchens that are fitted with stylish and intuitive Built-In Appliances. In this day and age, an Indian woman has a wide range to choose from and the myriad variety of sophisticated range of kitchen appliances can only justify her need.

Hence, think modern and transform the humble kitchen into a place where cooking can be done in fun. A little splash of color, cabinets, smooth countertops and perfect dazzling shelves or more can encapsulate a homemaker's wish. (<http://www.bhg.com/kitchen/>).

III. METHODOLOGY

The methodology pertaining to a study on “**Assessment of Organised Modular Kitchen**” was carried out by conducting surveys. The details are given below:

The schematic representation of the methodology is given in Figure - I

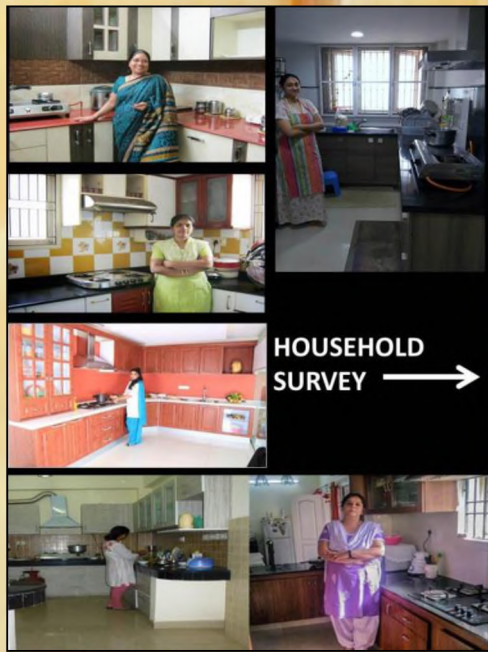
A. Household Survey

B. Market Survey

A. HOUSEHOLD SURVEY

According to PannerSelvam, (2005) a household survey is a survey that is administered at the household level. It collects information about the households and the individuals living in those households. The households' survey is the collection of data on gender, income and geographic inequalities in education access, progression, attainment and expenditures. In order to obtain the required information on modular kitchen such as work triangle, storage cabinets with baskets/ corner units / tall units/ plate racks/ railing, shutters, shelves, sink units, and chimney pole systems so as to keep the kitchens as steer lined as possible a household survey was found necessary. The household survey includes the following steps:

- a. Selection of Area
- b. Selection of Sample
- c. Selection of Method
- d. Framing of Research Tool
- e. Pretesting the Schedule
- f. Conduct of the Survey
- g. Consolidation and Analysis of Data



Area Selected Coimbatore City	Number of households
R.S Puram	12
Saibaba Colony	12
Ramanathapuram	09
Saravanampatti	08
Pelamedu	06
Vadavalli	03
Total	50

**Survey –
Coimbatore City**



Area Selected	Number of Shops
R.S. Puram	10
Race Course	2
Saibaba Colony	3
Total	15

FIGURE 1

SCHEMATIC REPRESENTATION OF THE METHODOLOGY

a. Selection of Area

The area selected for the survey was Coimbatore also known as Kovai, is a city in India. It is the second largest city and urban agglomeration in the Indian state of Tamil Nadu, after Chennai and the sixteenth largest urban agglomeration of India. It is one of the fastest growing tier-II cities in India and a major textile, industrial, commercial, educational, information technology, healthcare and manufacturing hub of Tamil Nadu. It was the capital city of the historical Kongu Nadu and is often referred to as the Manchester of South India. Coimbatore has been ranked 4th among Indian cities in investment climate by Confederation of Indian Industry (CII). Many families belonging to affluent society reside in ultra modern house in Coimbatore city. Hence the study was conducted in Saibaba colony R.S Puram, Ramnathapuram, Vadavalli, Pelamedu and Saravanampatti in Coimbatore city. Besides convenience, acquaintance easy accessibility, familiarity of the place and co-operation extended by the volunteers to the investigator were the major reason for choosing the city. Figure 2 shows the area selected for this study

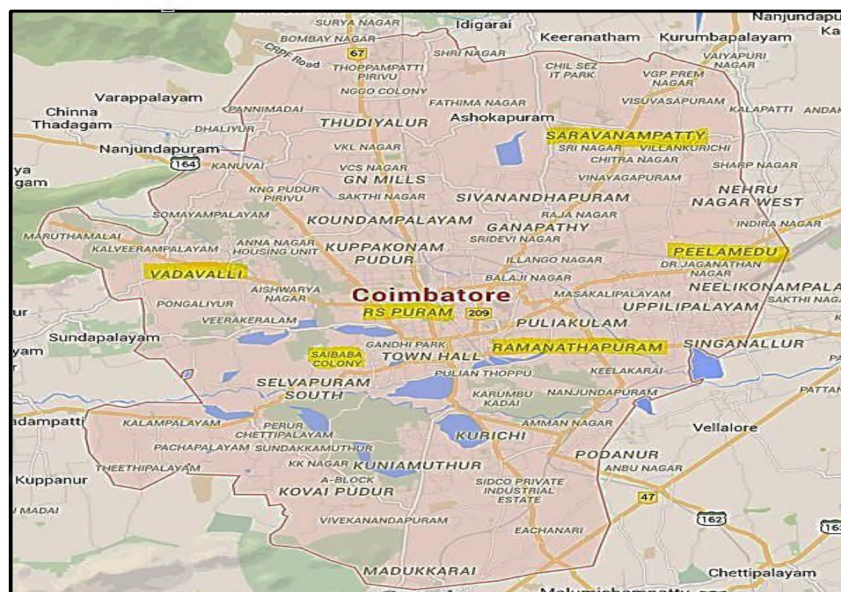


FIGURE 2
AREA SELECTED

b. Selection of Sample

According to Gupta (2010) sampling is simply the process of learning about population on the basis of a sample drawn from it. Kumar (2011) states that sampling is process of selecting a sample from bigger group of sampling population to become the basis for estimating or predicting the prevalence of an unknown piece of information, situation of outcome regarding the bigger group. Hooda (2001) Sampling enables us to draw a sample, which can be used for making statistical influence about population parameters.

For the study 50 households who owned the modular kitchen was selected by using purposive sampling techniques. Abbas (2009) reveals that purposive sampling denotes the method of selecting a number or group of unit in such a way that the selected groups together yield as nearly as possible the same average or proportion as the totality with respect to these characteristics which are already a matter of statistical knowledge.

c. Selection of Method

Interview method was adopted for the collection of data. Interview is an art governed by certain scientific principles; interview is two way methods which permit exchange of ideas and information. It is a unique method in that it involves the data through direct verbal interaction. This method offers greater depth, support, flexibility, clarity and stimulation to respondent to give valid answer (Ranjit Kumar, 2011).

d. Framing of Research Tool

Schedule and questionnaire are the most important tools generally used in social research. Interview schedule contains standard observation to be asked to the interviewee for getting relevant information (William and Paul, 2007) stated that a schedule helps collecting data, in which the enumerators along with schedules go to respondents, put forth questions from the performance in order the questions are listed and record the replies in the space meant for the same in the performance.

To collect details related to this study, it was necessary to include in the schedule questions which would help to elicit information on shape of kitchen, availability of models, cost, material uses, durability, maintenance,

special features and accessories of modular kitchen. Hence an interview schedule was a tool selected for the interview.

e. Pretesting the Schedule

To check the validity and reliability of the schedule, pretesting was done through a pilot study. Pilot study helps in improving data collecting routines, trying scoring techniques, revising locally develops measures and checking the appropriateness of standard measure Paneerselvan (2005), states that pretesting provides not only the extent of clarity of questions and of correctness of interrupted but also affords the possibility of identifying new aspect of study, which might not have been anticipated at the planning stage. Hence the prepared schedule was pre tested among five homemakers and necessary modification was made based on the response. Based on the experience gained during pretesting, the schedule was modified to avoid any ambiguity and complexity. The schedule thus finalize is presented in Appendix – I.

f. Conduct of the Survey

According to Gupta (2010) Personal interview is an effective informal verbal and non-verbal conversation, initiating for specific purpose and focused on certain planners content areas this method was chosen to find the required information from the dealers. The investigator approached the selected homemakers personally and good rapport was established with the respondents and the questions were asked informally adopting personal interview method and relevant information was gathered by using the pretested interview schedule. Plate 1 shows the conduct of household survey.

g. Consolidation and Analysis of Data

The necessary information collected and consolidated was presented in suitable tables as tabulation and diagram is a process of summarizing raw data and displaying the same in compact form for further analysis. Gupta (2010) indicates that, tabulation is one of the simplest and most revealing devise for summarizing data and presenting them in the meaning full table. Thus the data was consolidated and table was analyzed, discussed and presented in Chapter IV.



PLATE 1
HOUSEHOLD SURVEY

B. MARKET SURVEY

Market survey is a tool used to gather information about existing or potential customer in a certain market or population selling modular kitchen. This part of the study comprises of market survey in selling modular kitchen. A modular kitchen is essentially made of modules manufactured in a factory. It is assembled on the site according to the design approved by the client. This survey was conducted among shop keepers to analysis selling pattern of consumer through existing market trend paves way for a clear understanding of the selling pattern of modular kitchen. The market survey includes the following steps

- a. Selection of Location and Sample
- b. Formulation of the Tool
- c. Pretesting the Schedule
- d. Conduct of the Study
- e. Consolidation and Analysis of Data

a. Selection of Location and Sample

For the market survey covering all the stores in the adopted area of Coimbatore city was considered and hence 15 shops selling modular kitchen was selected by using purposive sampling techniques. Gupta (2010) reveals that purposive sampling denotes the method of selecting a number or group of unit in such a way that the selected groups together yield of newly as possible the same average or proportion as the totality with respect to these characteristics which are already a matter of statistical knowledge. Selection was also bound on the point of sale experience, ease of accessibility and willingness to participate.

b. Formulation of the Tool

To collect relevant information based on the study an interview method was administered using a prepared schedule. Interview method may be defined as a systematic conversation for a specific purpose and focused in certain planned content area is not a simple two way conversation between

an investigator and an informant (Kumar (2011)). The interview schedule was framed to obtain the details regarding the type and shape of kitchen, availability of models, cost, material used, durability, maintenance, special features and accessories available were obtained from the owner of the shop.

c. Pretesting the Schedule

Before the final firm of the interview schedule is adopted it is absolutely essential to pretest the schedule (Hooda, 2001). Pre-testing is the final stage in questioner construction and the most important one. The interview schedule was pretested on two respondents for adequacy and consistency of the schedule and it was modified after the pretest based on the suggestion given by the respondent. The finalized schedule is given in Appendix II.

d. Conduct of Study

The investigator approaches the shop owner during their free time and explained the purpose of the study and gathered the required information by using the schedule. Plate-2 shows the investigator collecting the information from the shop owners.

e. Consolidation and Analysis of Data

The collected information was consolidated, discussed and presented in Chapter IV.



PLATE 2
MARKET SURVEY

4. RESULTS AND DISCUSSION

The results of “**Assessment of Organised Modular Kitchen**” are discussed under the following major headings:

- A. The Findings of the Household Survey
- B. The Findings of the Market Survey
- C. Develop a Design Based on the Opinion and Suggestion Given by the Homemakers

A. THE FINDINGS OF THE HOUSEHOLDS SURVEY

The findings of the household survey are presented under the following heading:

- 1. Socio Economic Background of Selected Households
- 2. Information on the House of the Respondent
- 3. Information on the Existing Kitchen
- 4. Attitude of Homemakers towards Work Performance
- 5. Opinion of Homemakers Regarding their Kitchen

1. SOCIO ECONOMIC BACKGROUND OF SELECTED HOUSEHOLDS

Information on type of family, type of house, place of residence, type of house, family size, education status, employment status, monthly income, body height and elbow height of home makers are given in this part of the results.

Table I gives the socio economic background of the selected households.

TABLE I

SOCIO ECONOMIC BACKGROUND OF SELECTED HOUSEHOLDS

S.No	Details	Number	Percentage
i.	Type of family a. Joint b. Nuclear	22 28	44 56
ii.	Type of house a. Own apartment b. Own individual house	23 27	46 54
iii.	Place of residence a. Urban b. Semi-urban	39 11	78 22
iv.	Family size a. Small b. Medium c. Large	25 15 10	50 30 20
v.	Educational status of homemakers a. Professional course b. U.G c. P.G and above	12 22 16	24 44 32
vi.	Employment status of homemakers a. Employed b. Unemployed	27 23	54 46
vii.	Income a. Below 50,000 b. 50,000 to 75,000 c. 75,000 to 1,00,000 d. Above 1,00,000	2 8 35 5	4 16 70 10

i. Type of family

A nuclear family is a family group consisting of a pair of adults and their children.

Joint family is a type of extended family composed of parents, their children, and the children's spouses and offspring in one household. Irrespective modular kitchen is owned in, majority of 56 percent of the households which belong to nuclear family system.

ii. Type of house

It is worthy to note that the modular kitchen were seen in both own apartments and in own individual house almost in equal proportion (46 percent and 54 percent). However, majority of homemaker who own modular kitchen live in own individual house.

iii. Place of residence

Among the homemakers who owned modular kitchen surveyed majority of 78 percent of them resides in urban area and only 22 percent of them reside in semi urban area.

iv. Family size

With regards to the size of family, it is encouraging to note that 50 percent of the homemakers who own modular kitchen belong to small family. Rest 30 percent of them belong to medium family and other 20 percent of them belong to large family system.

v. Educational status of homemakers

Educational back grounds have had an impact on economic status and on, life style of an individual. Changes in lifestyle have implications on design of a kitchen. This is clearly seen from the table V where 32 percent of those who possessed modular kitchen respectively highly educated.

vi. Employment status of homemakers Income

Among the surveyed households who owned modular kitchen the employment status of homemaker was almost equal 54 percent of homemakers were employed and rest of 46 percent were unemployed.

vii. Income

Kitchen is the most expensive room in the house. Since investment on modular kitchen is high only families belonging to high income group could afford to install it. This is evident from the table V were majority of 70 percent of households with modular kitchen were earning a monthly income of Rs. 75,000 to 1, 00,000 per month.

a. Body height and elbow height of selected homemakers

Height of the work surface should be adapted to the body and elbow height of the homemakers for a comfortable working, desirable height of work surface for household tasks. Because of the need to maintain a posture and arm positions to avoid static work and the fatigue. The Body height and elbow height of selected homemakers are shown in Table II.

TABLE II

BODY HEIGHT AND ELBOW HEIGHT OF SELECTED HOMEMAKERS

Body Height	Number	Percentage
145 cm to 150 cm	13	26
150 cm to 155cm	17	34
155cm to 160 cm	13	26
160cm to 165cm	7	14
Elbow Height	Number	Percentage
90cm to 95cm	15	30
95cm to 100cm	18	36
100cm to 105cm	11	22
105cm and 110cm	6	12

The investigator noticed wide variation in height of selected homemakers, thirty four percent of the homemakers owning modular kitchen was ranging between 150 to 155 cm and 26 percent of homemaker owning modular kitchen was ranging between 145 to 150cm and 155 to 160cm respectively. The elbow height of the homemakers of 36 percent of the homemakers with modular kitchen respectively ranged between 95 to100cm.

2. INFORMATION ON THE HOUSE OF THE RESPONDENT

Though all the respondents were livings in their own house, maximum of 52 percent of house owners erected modular kitchen later after the construction because of financial crises.

The type of kitchen depends on the year of construction, plinth area of the house, number of bedrooms, person in charge for planning, and money invested in the house. This information are given in Table III.

TABLE III
INFORMATION ON THE HOUSE OF THE RESPONDENT

S.No	Details	Number (50)	Percentage
a.	Year of construction		
	a. Before 2000	12	24
	b. 2000-2005	6	12
	c. 2005-2010	15	30
	d. 2010-2015	17	34
b.	Size of house		
	a. Above 600sq.ft less than 1200sq.ft	9	18
	b. Above 1200sq.ft	41	82
c.	No of bedrooms in the house		
	a. 2 to 3bhk	15	30
	b. 3 to 5bkh	24	48
	c. 6 More than 6bhk	11	22
d.	Person in charge of planning house		
	a. Interior designer	6	12
	b. Architect	19	38
	c. Civil engineer	20	40
	d. Self	5	10
e.	Money invested in the house		
	a. Below 30lakhs	12	24
	b. 30 to 50lakhs	14	28
	c. 50 to 70lakhs	17	34
	d. More than 70lakhs	7	14

a. Year of construction

The survey was taken in houses constructed for last 15yrs the result showed that majority of 34 percent of the house were constructed in 2010-2015.

b. Area of the house

The plinth area of majority of 82 percent of the house that owned modular kitchen was above 1200 sqft and is categorized as upper middle income group.

c. Number of bedrooms in the house

The number of bedrooms in the house varied with the size of the house. Majority of 48 percent of the households with the modular kitchen were having 3 to 5 fully furnished bedrooms in their house.

d. Person in charge for planning

Only 10 percent of house owner planned their kitchen by themselves Eleven percent were planned with the interior designer and the rest of the house were planned either by an experienced architect or civil engineer. This shows that designing a kitchen is not easy and it requires skill and experience.

e. Money invested on the house

Maximum of thirty four percent of households with modular kitchen had invested 50 to 70 lakhs for the house 20 percent of households invested less than 30 lakhs for the house. Hence it is concluded that modular kitchen is affordable even for the middle income group.

3. INFORMATION ON THE EXISTING KITCHEN

Information on person responsible for designing the kitchen, source of information regarding the modular kitchen, efficiency of modular kitchen, size, shape, cost and year of installation of kitchen, shape and size of the kitchen, space provided for work centers, distance of work triangle, height of work enter of selected kitchen, and storage cabinets provided are given in this aspect.

a. Person responsible for designing the kitchen

Almost all over the world, in most homes, both husband and wife go out to work either out of necessity or out of choice. The time available to spend in the kitchen is minimum giving rise to demand for well-designed kitchen. The person responsible for designing the kitchen is given in Table IV and Figure 3.

TABLE IV
PERSON RESPONSIBLE FOR DESIGNING THE KITCHEN

S. No	Person Responsible	No.	Percentage
1	Specialist in modular kitchen designing	22	44
2	Interior designers	13	26
3	Civil engineers	6	12
4	Architects	8	16
5	Self	1	2

All the selected homemakers who own modular kitchen expressed their kitchen were designed by the specialist is (44 percent) Interior designers (26 percent), Civil engineers (12 percent), Architects (16 percent) and self (1 percent).

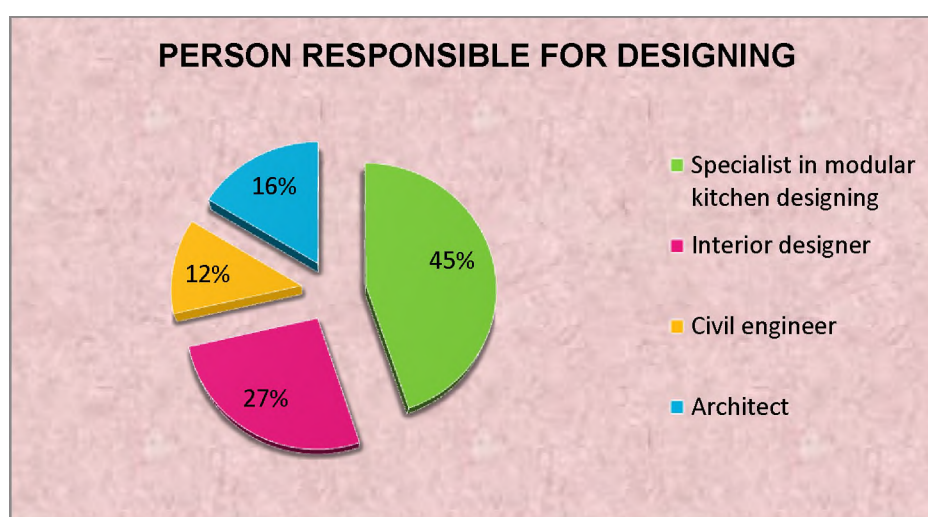


FIGURE 3
PERSON RESPONSIBLE FOR DESIGNING THE KITCHEN

b. Source of Information on Modular Kitchen

Though all those who have designed the modular kitchen were informed by the engineers, architect, and interior designers on the facilities to be added in the kitchen, the source of information regarding modular kitchen were obtained mainly through newspapers, (34 percent) magazine (28 percent) friends and family member (24 percent), internet (14 percent). Figure 4 emphasizes the source of information gathered by the homemakers on modular kitchen.

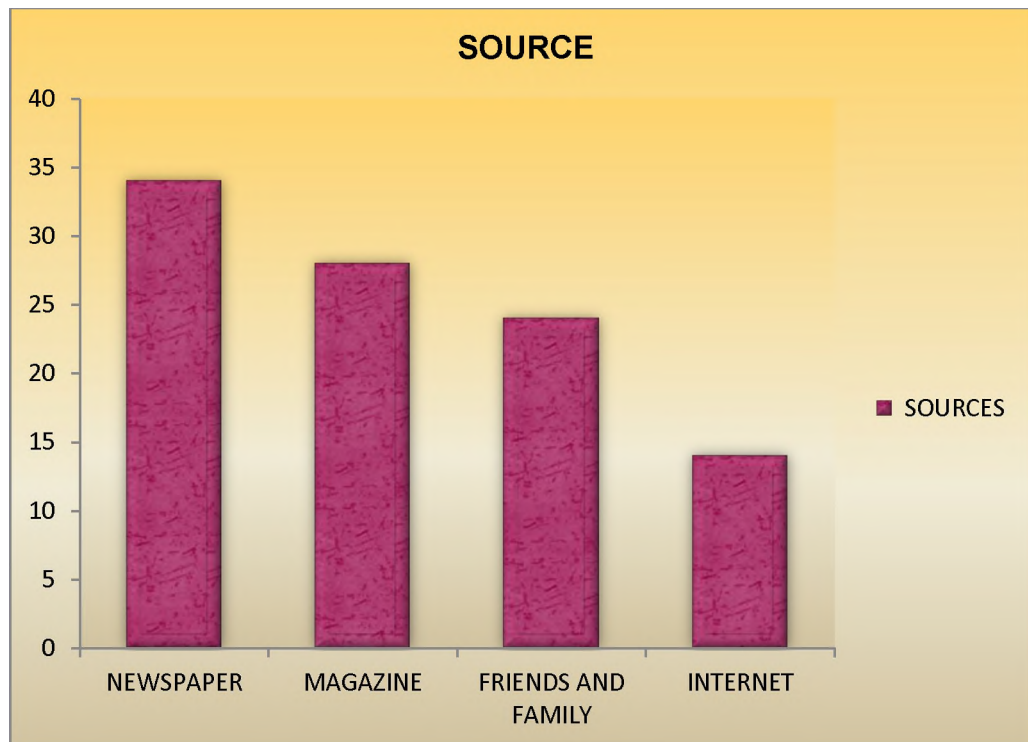


FIGURE 4
SOURCE OF INFORMATION ON MODULAR KITCHEN

c. Efficiency of Modular Kitchen

Modular kitchen were considered the best and efficient by the surveyed homemakers due to the convenience in operation by 40 percent, efficient use of space by 42 percent and elegance by 30 percent of the surveyed homemakers. Attractiveness, easy maintenance, good finish, adequate storage space, effective lighting, convenient working light and location of work centers add a plus point considered by the homemakers who owned the modular kitchen. The efficiency of modular kitchen as expressed by the homemakers is given in figure 5.

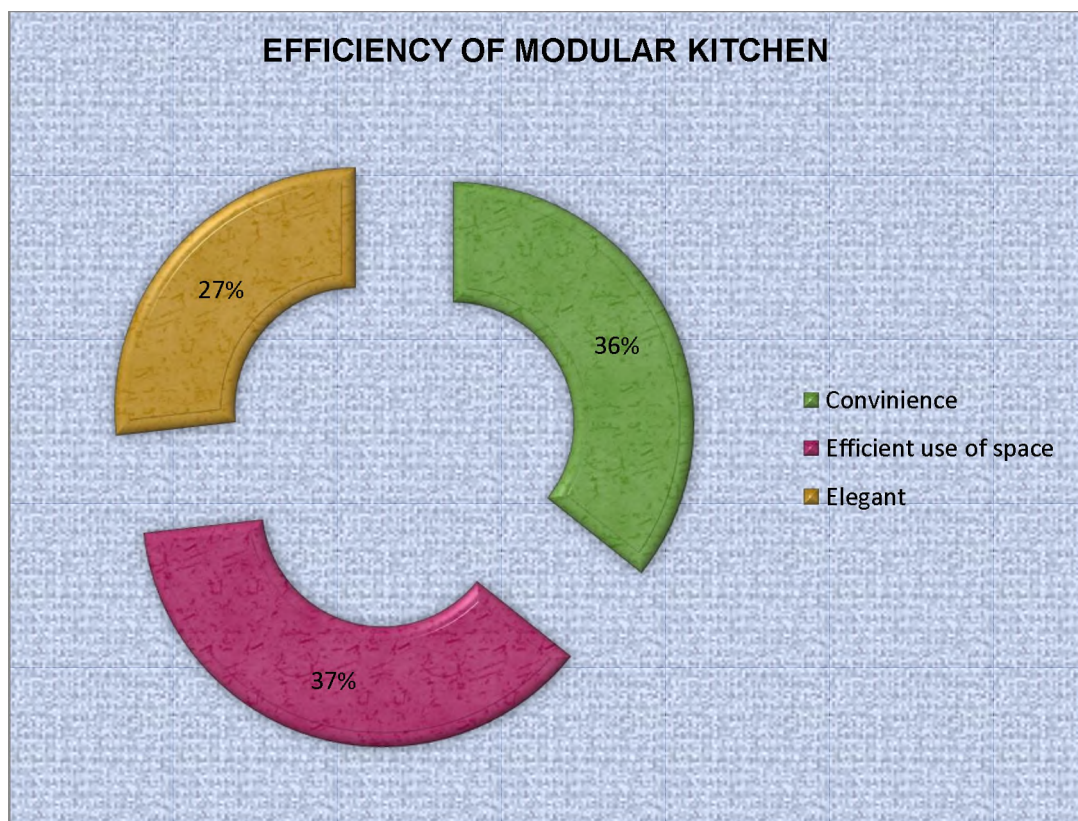


FIGURE 5
EFFICIENCY OF MODULAR KITCHEN

d. Shape, Size ,Cost and year of installation of the Kitchen

Shapes of the kitchen are generally decided by the home makers alone or with the help of engineer or architects. Table V gives information on shape size and cost of the kitchen.

TABLE V
SHAPE, SIZE COST AND YEAR OF INSTALLATION OF THE KITCHEN

S.no	Details	Modular kitchen	
		Number	Percentage
i.	Shape of the kitchen		
	a. L kitchen	21	42
	b. U kitchen	17	34
	c. Island kitchen	12	24
ii	Size of kitchen		
	a. 80sq.ft	7	14
	b. 120sq.ft	22	44
	c. 160sq.ft	21	42
iii.	Cost of kitchen		
	a. Below 2 lakhs	18	36
	b. 2lakhs to 4 lakhs	22	44
	c. Above 5 lakhs	10	20
iv	Year of installation		
	a. Before 2000	3	6
	b. 2000 to 2005	10	20
	c. 2006 to 2010	15	30
	d. 2011 to 2015	22	44

i. Shape of the kitchen

Regarding the shape of the kitchen, irrespective of type of kitchen, L shaped kitchen were found in majority of 42 percent of the surveyed households, due to availability of space. However due to its efficiency 34 percent of households opted U shaped kitchen 24 percent of the households had island included in their kitchen is shown in Plate 3.



**PLATE 3
ISLAND KITCHEN**

ii. Size of the kitchen

The size of the kitchen is determined not only by the number of person using the kitchen or amount of food prepared but the activities performed in the kitchen. The size of the kitchen majority of 44 percent of families has 120 sq.ft kitchen areas.

iii. Cost of the kitchen

The cost of kitchen varies according to the size, accessories, work surface and storage cabinet provided. The table V reveals that that majority of 44 percent of the households have spend 2 to 4 lakhs on their kitchen.

iv. Year of installation

As the modular kitchen is one of the recent trend which is slowly developing majority of 44 percent of the households installed it in 2011 to 2015, 30 percent 2006 to 2010 was installed , 20 percent was installed in 2000 to 2005 and rest 6 percent was designed before 2000.

d. Space provided for the work centers

An ideal kitchen should provide adequate space for various activities such as cooking, preparing food, grinding, cutting, kneading, mixing, storing (food, vessels and equipment) and for cleaning as all these activities are carried out in all the households surveyed. The amount of space allotted for each are depends on the size of the kitchen.

Table VI gives information on space provided for the work centers.

TABLE VI
SPACE PROVIDED FOR THE WORK CENTERS

Details of work center						
Square meter	Preparation		Cooking		Washing	
	No.	%	No.	%	No.	%
Less than 1sqm	21	42	16	32	16	32
1 to 2 sqm	24	48	26	52	28	56
Above 2 sqm	5	10	8	16	8	16

Applying conscious effort to planning work could reduce the time commitment and perhaps goal attainment. On enquiring the homemakers about planning their household activities they revealed that the household activities were planned ahead by majority of the homemakers. The important operation in the kitchen are concentrated in three main work areas namely the preparation, cooking and washing. The majority of 48 percent, 52 percent and 58 percent of households had provided 1 to 2 sqm space for cooking, preparation and washing respectively.

e. Distance of work triangle of selected kitchen

The work triangle is one of the important points to be kept in mind while designing a kitchen. It refers to kitchen spacing that creates an efficient relationship between key elements of any kitchen: the refrigerator, stove and sink.

Table VII represents the distance of work triangle of the household surveyed.

TABLE VII
DISTANCE OF WORK TRIANGLE OF THE SELECTED KITCHEN

Distance of work triangle in meter	Number	Percentage
3.0 to 3.5	6	12
3.5 to 4.0	11	22
4.0 to 4.5	22	44
4.5 to 5.0	10	20
5.0 to 5.5	1	2

The distance of the work triangle of the selected modular kitchen was measured during the survey by the investigator for cooking, preparation and cleaning centers calculated. It was found that majority of 44 percent had a work triangle measuring 4m to 4.5m, followed by 3.5 to 4.0m by 22 percent and 4.5 to 5.0m by 20 percent of the modular kitchen. The maximum distance of 5.0 to 5.5m was noticed by two percent of the households and minimum space of 3.0 to 3.5 was noticed by 12 per cent of the households respectively.

f. Height of work center of selected kitchen

There is no single height level which suits all the people at all the time as people vary in height. Table VIII represents the height of work center of selected kitchen.

TABLE VIII

HEIGHT OF WORK CENTER OF SELECTED KITCHEN

Height of Work Center In feet and inches	Number	Percentage
2'3" to 2'6"	21	42
2'6" to 2'8"	18	36
2'8" to 2'10"	11	22

It was observed by the investigator that among all the surveyed households the worktop was even for all the work center maximum of 42 percent of the households work center height ranged between 2'3" to 2'6" and 36 percent of the households work top ranged between 2'6" to 2'8".

g. Storage cabinets provided in the kitchen

An efficient kitchen should be provided with adequate space for storage like wall cabinet, and for storage of electrical appliance. Table IX presents the information on the volume of storage cabinets provided.

TABLE IX

STORAGE CABINETS PROVIDED IN THE KITCHEN

Cubic Meter	Wall		Base	
	No	%	No	%
Less than 1 cubic meter	35	70	10	20
1 to 2 cubic meter	9	18	28	56
2-3 cubic meter	6	12	12	24

Regarding the volume of the wall cabinet majority of the 70 percent was less than 1 cubic meter and for base cabinet 56 percent of the space ranged between 1 to 2 cubic meters.

4. ATTITUDE OF HOMEMAKERS TOWARDS WORK PERFORMANCE

Attitudes of workers towards tasks have been related to fatigue. People who dislike a task are more likely to report tiredness than those who enjoy the activities. The attitudes of homemakers on the facilities provided in the work center are given in table X and figure 6

TABLE X

ATTITUDE OF HOMEMAKERS TOWARDS WORK PERFORMANCE

Details	Highly satisfied		Not satisfied	
	No.	%	No.	%
Preparing	50	100	0	0
Cooking	45	90	5	10
Cleaning	46	92	4	8
Storing	45	90	5	10

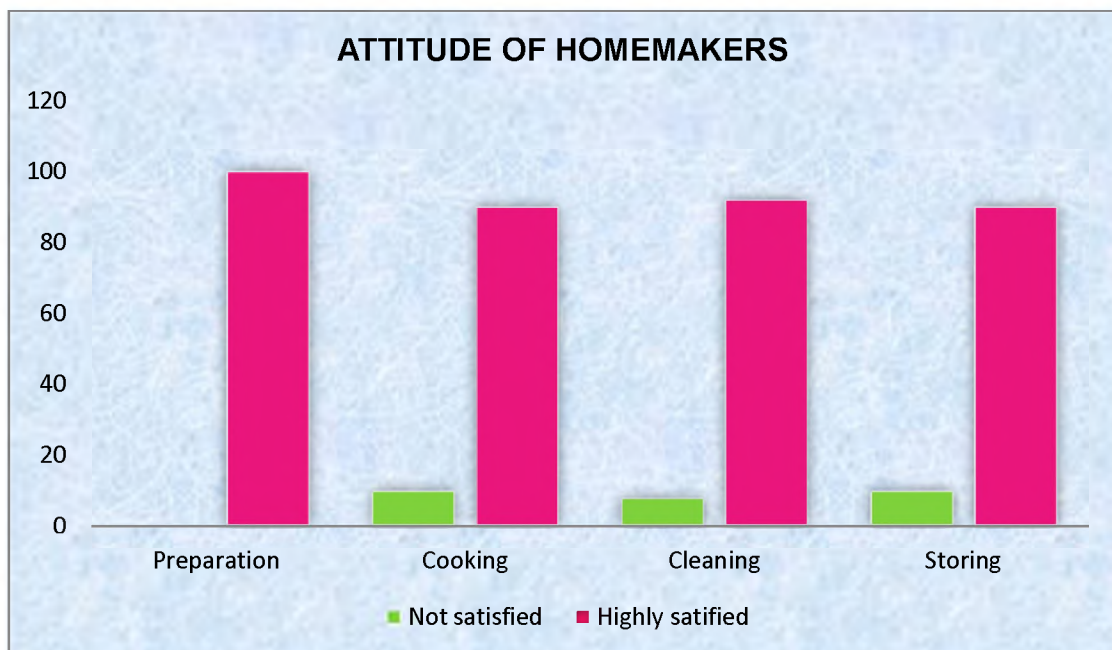


FIGURE 6

ATTITUDE OF HOMEMAKERS TOWARDS WORK PERFORMANCE

Regarding the extend of satisfaction of preparation, cooking, washing and storing centers provided in kitchen except 10 percent for storage, 8percent for cleaning and 10 percent for cooking, all the others were highly satisfied irrespective of the type of kitchen owned by the homemakers expressed that the storage provided was difficult to clean. In most of the kitchens the heights of the work top in few kitchens were not suitable for the height of the homemaker and so it resulted in fatigue. That was the major reason for their dissatisfaction. Hence they considered cleaning and cooking as fatigue causing activity.

5. OPINION OF HOMEMAKERS REGARDING THEIR KITCHEN

An efficient kitchen should not only look good but also satisfy the need for greater function and convenience. Table XI and figure 7 represents the details on the opinion of homemakers regarding their kitchen. Since the kitchens were designed the experts with the consent of the homemakers, all the homemakers were satisfied with the kitchen irrespective of the type of kitchen possessed.

TABLE XI
OPINION OF HOMEMAKER REGARDING THEIR KITCHEN

Opinion	Number	Percentage
Saves time	23	46
Easy to clean	22	44
Easy to maintain	14	28
Reduce unnecessary work	21	42
Saves energy	19	38

*Multiple responses exceeds 100

Since the kitchens were designed by the experts with the consent of the homemakers, all the homemakers were satisfied with their kitchen irrespective of the type of kitchen possessed. As the kitchen was designed technically it is being more comfortable, energy saving and time saving for the homemakers to use.

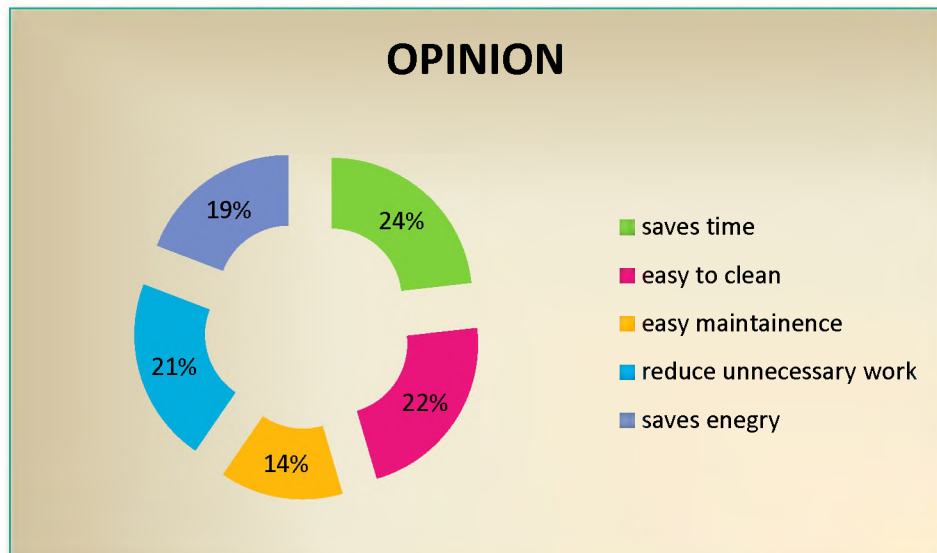


FIGURE 7

OPINION OF HOMEMAKER REGARDING THEIR KITCHEN

B. THE FINDINGS OF THE MARKET SURVEY

The information obtained from the market survey as expressed by the shop owners are discussed below

1. General Information of the Selected Shops
2. Number of Kitchen Sold Per Month
3. Material Used for Construction of Modular Kitchen
4. Brands of Fittings and Accessories
5. Most Demanded Kitchen Layout
6. Guarantee Period
7. Price and Budget
8. Number of Days Required for Preparation and Installation of Modular Kitchen
9. Media Used by the Shopkeepers for Advertising their Product
10. Other Facilities as Expressed by the Shop Owners

1. GENERAL INFORMATION OF THE SELECTED SHOPS

General information of the selected shops includes name of the shop, year of establishment, Website of shop (if any) number of sales person in the shop and place of manufacture, and details on branches of shop. Name of the shops, year of establishment and number of sales person are presented in Table XII.

TABLE XII

GENERAL INFORMATION OF THE SELECTED SHOPS

S.No	Name of the shops	Year of establishment	Number of sales person
1	R.S Agencies	1987	12
2	The Kitchen World	1989	6
3	Décor point	1992	3
4	Kenn wood Decors	1994	7
5	Bharat Agencies	1996	7
6	Pago Kitchen	1997	9
7	Lakshmi ceramics	1997	13
8	Gilma	2001	3
9	Kitchen Paradise	2001	2
10	Garnet - No.1	2001	4
11	Inscape	2004	12
12	VeneezaCucine	2005	4
13	The Kitchens Outlook	2006	2
14	SRM Agency	2008	13
15	Asthetik Store	2014	3

For the survey 15 shops were selected from Coimbatore in that ten shops were from R.S Puram, two from Race course, and three from Saibaba colony. It was observed that two shops were started in late 80's, five shops were started in 90's and 8 shops were started after 2000.

For the effective sales in the shop, sales persons were required .The number of members working in the selected shops varied with the size of the shop and year of establishment. Shops which are functioning in a larger area ranging between 3500-10,000 sq.ft had employed 9-12 members. The rest of the shops had employed 6-9 members and 2-6 individuals. The shops provided the facility of door delivery when the customers purchased for a reasonable amount.

Except kitchen paradise and kitchen outlook, all the other shops were also selling bathroom fittings, wall papers, storage units, office furniture, interior accessories and doors. Except asthetik store all the other shops had a website for their concern.

When it comes to the manufacturing unit of the store most of the shops had their unit in and around Coimbatore, such as Vellakinaru, Kanuvai, Karamadai, Veerakeralam, Kupeapalayam and Podanur). Shops namely Pago kitchen and VeneezaCucine and kitchen outlook stated that they import modular kitchen from Germany, Italy and Australia.

2. NUMBER OF MODULAR KITCHEN SOLD PER MONTH

The number of modular kitchen sold per month by the selected shops are presented in Table XIII.

TABLE XIII**NUMBER OF MODULAR KITCHEN SOLD PER MONTH**

Name of shops	Number of Modular kitchen sold per month
R.S Agencies	12
The Kitchen World	6
Décor point	10
Kenn wood Decors	6
Bharat Agencies	7
Pago Kitchen	4
Lakshmi ceramics	4
Gilma	5
Kitchen Paradise	10
Garnet - No.1	6
Inscape	11
VeneezaCucine	5
The Kitchens Outlook	8
SRM Agency	7
Asthetik Store	4

With regards to the number of kitchen sold every month R.S Agencies sold Maximum of 12 modular kitchens per month, followed by Inscape that sold 11 kitchens and Bharat agencies sold 7 modular kitchens per month. The rest of the shops sold up to 3-7 modular kitchens per month.

3. MATERIAL USED FOR CONSTRUCTION OF MODULAR KITCHEN

Each brand of modular kitchen had various special features introduced in the form of material like hard wood, rubberized wood, solid wood, particle board, medium density fiberboard, plywood, plastic laminate, melamine, thermo foil used for cabinets.

Though the material used for floor, wall counter and sink in modular kitchen were according to the preference of the customer, all the shop owners revealed that they fix tiles on the wall above the working area either partially or fully as required by the client. Granite, marbles and ceramic tiles for floor, particleboard of medium density fibre and synthesized wood for cabinet and stainless steel sinks were preferred mostly by the client. Besides the materials used they stated that the hoods, chimneys and sink & faucets were also special features considered among different brands. The height, length and breadth of various work centers are decided according to the specification of the customers.

4. BRANDS OF FITTINGS AND ACCESSORIES

Modular kitchen fittings and accessories are available in varied materials. One needs to choose the material depending upon the area where it will be used. There is a variety of accessories available like plain baskets, bottle baskets, thali baskets, vegetable baskets, partition baskets, large utensil basket, plate baskets, bottle partition, cutlery basket, carousel, magic corner, plain drawers, partition drawers, mini food storage unit, removable cutlery unit, adjustable box cutlery unit, half carousel, 3/4th carousel, magic, hanging grid pan, hook, paper and foil holder, hanging single spice rack, spice shelf, hanging wine glass holder, ladle cradle, dish rack, ladder unit, rotating unit, double tall unit, under sink basket, detergent holder, kitchen keeper, shelf corner, use me shutter, perforated bin, bin holder are provided by all of the selected shops. (Plate 4 shows the accessories available for modular kitchen.)



Hot!

More!

Plain Basket



More!

Bottle Basket



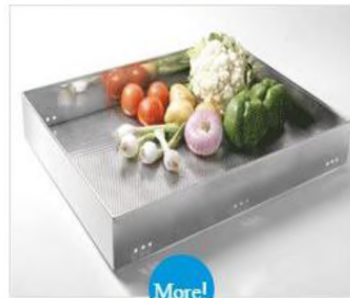
More!

Thali Basket



More!

Vegetable Basket



More!

Perforated Vegetable Basket



Hot!

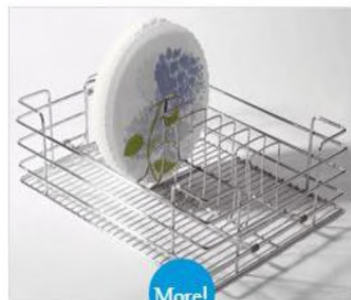
More!

Partition Basket



More!

Large Utensils Basket



More!

Plate Basket



More!

Thali Basket



Hot!

More!

S Carousel



More!

Ideal Magic Corner



More!

Universal Magic Corner

**PLATE 4
FITTINGS AND ACCESSORIES**



More!

Plain Drawer



More!

Partition Drawer



More!

Mini Food Storage Unit



Hot!

More!

Removable Cutlery Basket



Hot!

More!

Cutlery Basket



More!

Adjustable Box Cutlery Basket



More!

Half Carousel



More!

Carousel 3/4 Round



More!

Magic Carousel



Hot!

More!

Hanging Double Shelf



More!

Hanging Double Spice Rack



More!

Hanging Cutlery Holder



More!

Storage Rack



More!

Ladle Cradle



More!

Dish Rack

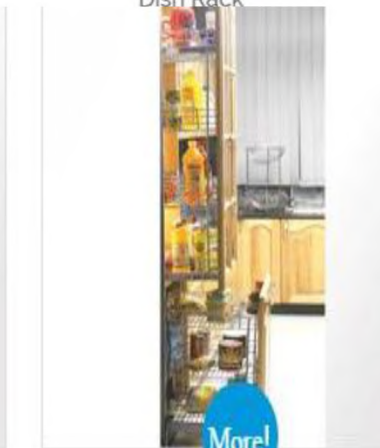


Hot!

More!



More!



More!



Hot!

More!

Chef Larder Unit



More!

Rotating Unit



More!

Double Tall Unit

Under Sink Basket

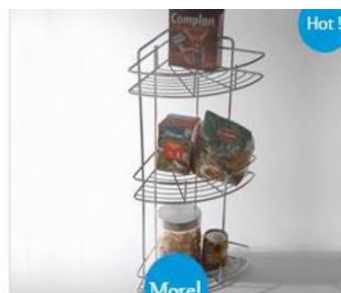
Kitchen Keeper

Detergent Holder



More!

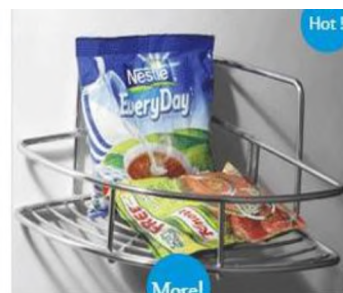
Plate Rack



Hot!

More!

Triple Shelf Corner



Hot!

More!

Single Shelf Corner

5. MOST DEMANDED KITCHEN LAYOUT

It is observed from the survey that the most demanded kitchen layout preferred by the customer are 'L' and 'U' shaped kitchen. It is the layout of the kitchen and not its colour or its style. And it's said that in recent days clients prefer island kitchen to be included in their kitchen. (Plate 5 shows the most demanded kitchen layout)

6. GUARANTEE PERIOD

Irrespective of the brand name and the shops, all the various designs of modular kitchens were given a warranty for a period of 1 to 5 year. It is surprising to note that kitchen paradise system gives 10 years guarantee for the modular kitchen sold by them.

In all the shops surveyed they design kitchen of any shape and color according to the taste of the customers.

7. PRICE AND BUDGET

The cost of modular kitchen is not fixed as it is based on the other special features and accessories included and the size of the kitchen. The size of kitchen will depend on the size of the room allotted by the clients. Some of the international luxury brands are more expensive and the rates can go up to Rs. 2 crores depending on the needs.



L-SHAPED KITCHEN



U -SHAPED KITCHEN

PLATE 5

MOST DEMANDED KITCHEN

8. NUMBER OF DAYS REQUIRED FOR PREPARATION AND INSTALLATION OF MODULAR KITCHEN.

Number of days required for preparation and installation as stated by the shop owners is given in Table XIV.

TABLE XIV
NUMBER OF DAYS REQUIRED FOR INSTALLING THE MODULAR KITCHEN

Name of the Shops	Number of days required for	
	Preparation	Installation
R.S Agencies	20-25 days	4-5 days
The Kitchen World	20-25days	2-3 days
Bharat Agencies	20-25 days	2-3 days
Pago Kitchen	100days	3-5 days
Lakshmi ceramics	20-25 days	2-3 days
Décor point	40-45days	4-5 days
Kenn wood Decors	30-45 days	2-3 days
Gilma	40-65days	2-3 days
Kitchen Paradise	20-25 days	2-3 days
Garnet - No.1	20-25days	4-7 days
Inscape	20-25 days	2-4 days
VeneezaCucine	100days	2-3 days
The Kitchens Outlook	35-100 days	4-5 days
SRM Agency	20-25days	2-3 days
Asthetik Store	20-35days	2-7 days

A modular kitchen can be installed within a minimum of 2 days to maximum of 7 days but it required longer period for preparing the cabinets, shutters and work tops and accessories. The shop owners require a minimum of 20 days to maximum of 65 days for preparation when it is constructed with ply and Medium Density Fibre (MDF) shutters whereas when it comes to solid wood it takes 100days to complete the construction. It is noted that the shops which sold the imported model required maximum period of 120days for obtaining the modules from Italy, Germany and Russia.

9. MEDIA USED BY THE SHOPKEEPERS FOR ADVERTISING THEIR PRODUCT

Advertising is the best way to communicate to the customers. Advertising helps informs the customers about the brands available in the market and the variety of products useful to them. It is done using various media types, with different techniques and methods most suited. The media used by the shopkeepers for advertising their products is presented in table XV

TABLE XV
MEDIA USED BY THE SHOPKEEPERS FOR ADVERTISING THEIR PRODUCT

Media Used	Number (15)	Percentage
Newspaper	15	100
Pamphlets	11	74
Exhibitions	6	40
Posters	4	27
Magazines	3	20

*Multiple responses exceeds 100

Hundred percent of the surveyed shops advertised their products through newspapers, pamphlets (74 per cent), exhibition (40 per cent), posters (27 per cent) and magazines (20 per cent).

10. OTHER FACILITIES AS EXPRESSED BY THE SHOP OWNERS

All the shop owners disclosed that they don't give any credit facilities to the client for modular kitchen they sell. But they make arrangement in the bank for availing loan for the clients. All the shops take an advance from the clients while placing order and obtaining the remaining amount from the clients while installing the kitchen.

All the shops, which exhibit their products, especially during festival season, announce discount on few products and brands and during this particular discount period they experience the maximum sales.

All the surveyed shops had the facility to modify the design according to the client's requirement without affecting the utility and beauty of the kitchen.

C. DEVELOP A DESIGN BASED ON THE OPINION AND SUGGESTION GIVEN BY THE HOMEMAKER

The investigator had obtained information from household survey and modified an existing modular kitchen according to the requirements and suggestions given by the homemakers in consultation with architect and civil engineers. The modifications are closed aqua guard unit, inbuilt hanging unit, island with side shelves and extra breakfast table puller, vegetable cutter. The existing model and modification made are given in plate 6, 7, 8,9,10 and 11.



PLATE 6
EXISTING L SHAPED ISLAND KITCHEN

The surveyed homemakers find it difficult to interact with the family member when they work in kitchen, Hence the investigator designed an interface between kitchen and dining for the convenience of the homemakers.

An Interface between Kitchen and Dinning



PLATE 7

AN INTERFACE BETWEEN KITCHEN AND DINNING

Through the modular kitchen is fully furnished the aqua guard was placed open in all the households and the homemakers had an opinion to close the particular unit for the aesthetics. The investigator designed it in the way it can be easily utilized as the lower portion of the unit is kept open which is not visible and so the water can be collected through it.



Closed aqua guard unit with open bottom for convenience

PLATE 8

CLOSED AQUA GUARD UNIT

The investigator found that tavas kept open in the wall or placed one on other in the cabinet which actually gave an unpleasant appearance and hence the drawer with the inbuilt hanging unit was designed.



Inbuilt hanging unit

**PLATE 9
INBUILT HANGING UNIT**

An island is created in the kitchen for extra storage cabinet with the side shelves, placement of equipment, and with the puller tray to widen the breakfast table.



Extra breakfast table puller

Side shelves

PLATE 10

ISLAND WITH SIDE SHELVES AND EXTRA BREAKFAST TABLE PULLER

The homemakers found it difficult while cutting vegetables and cleaning the waste and hence an inbuilt vegetable cutter with the slider to put the directly into the bin. A removable drainer and bowl to put the vegetables and to clean the vegetables are designed by the investigator for the convenience of the homemakers.

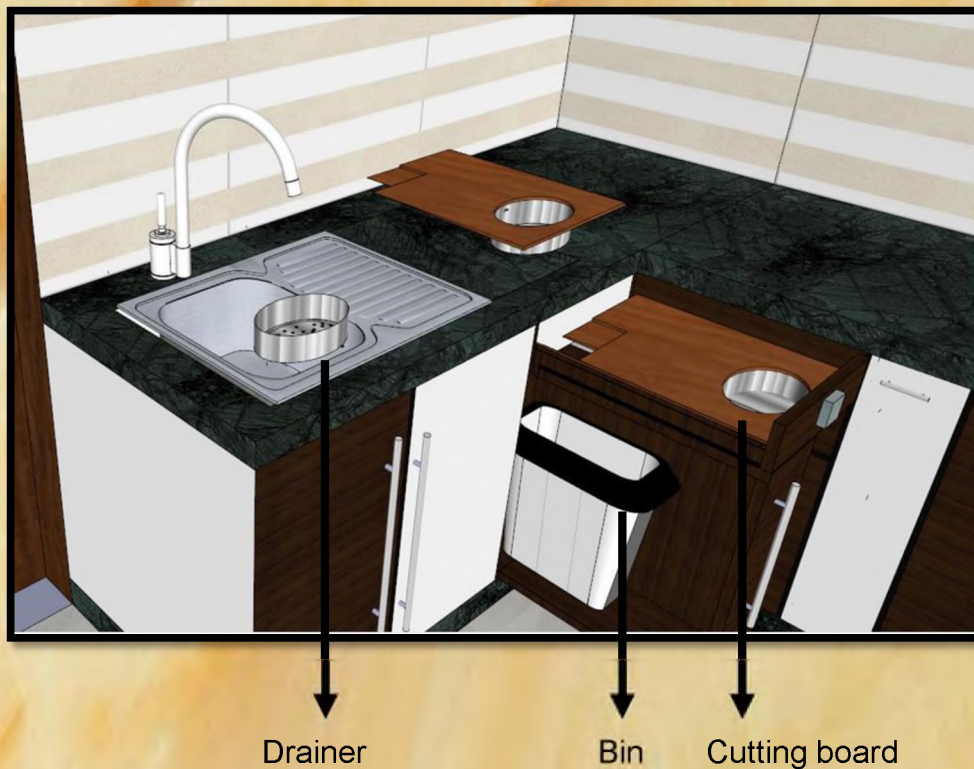


PLATE 11
VEGETABLE CUTTER

V. SUMMARY AND CONCLUSION

The word home connotes far more than a house, mere structure providing shelter and protection from the element of nature a good home provides a healthy environment for its members leading to their sound personality development; it satisfies their need physical, emotional and social. The chores of the home making concentrates in the kitchen are complex, so they must be carefully planned in sequence of preparation, cooking and serving. Functional kitchen must have adequate organized storage space located at each work centre. Today the urban Indian homes are modern in architecture. To save time and boot efficiency Indian kitchens are becoming organized and modern in outlook.

Hence with all these aspect in mind the investigator had taken up the study with the following objectives.

- To find out the extend of satisfaction of homemakers who own a modular kitchen.
- To find out the availability of modular kitchen in the market
- Develop a design based on the opinion and suggestion given by the homemakers

METHODOLOGY

- The area selected for the survey was Coimbatore also known as Kovai, is a city in India. It is the second largest city and urban agglomeration in the Indian state of Tamil Nadu, after Chennai and the sixteenth largest urban agglomeration of India. It is one of the fastest growing tier-II cities in India and a major textile, industrial, commercial, educational, information technology, healthcare and manufacturing hub of Tamil Nadu. Hence the study was conducted in Saibaba colony R.S Puram, Ramnathapuram, Vadavalli, Pelamedu and Saravanampatti in Coimbatore city.

- For the study 50 households who owned the modular kitchen was selected by using purposive sampling techniques. Interview method was adopted for the collection of data.
- For the market survey covering all the stores in the adopted area of Coimbatore city was considered and hence 15 shops selling modular kitchen was selected by using purposive sampling techniques. To collect relevant information based on the study an interview method was administered using a prepared schedule.

FINDINGS OF THE STUDY

- Joint family is a type of extended family composed of parents, their children, and the children's spouses and offspring in one household. Irrespective modular kitchen is owned in, majority of 56 percent of the households which belong to nuclear family system.
- It is worthy to note that the modular kitchen were seen in both own apartments and in own individual house almost in equal proportion (46 percent and 54 percent). However, majority of homemaker who own modular kitchen live in own individual house.
- Among the homemakers who owned modular kitchen surveyed majority of 78 percent of them resides in urban area and only 22 percent of them reside in semi urban area.
- Educational back grounds have had an impact on economic status and on, life style of an individual. Changes in lifestyle have implications on design of a kitchen. Thirty two percent of those who possessed modular kitchen respectively highly educated.
- Among the surveyed households who owned modular kitchen the employment status of homemaker was almost equal 54 percent of home makers were employed and rest of 46 percent were unemployed.
- Majority of 70 percent of households with modular kitchen were earning a monthly income of Rs. 75,000 to 1, 00,000 per month.
- Height of the work surface should be adapted to the body and elbow height of the homemaker for a comfortable working, desirable height of work surface for household tasks.

- Thirty four percent of the homemakers owning modular kitchen was ranging between 150 to 155cm and 26 percent of homemakers owning modular kitchen was ranging between 145 to 150cm and 155 to 160cm.
- Maximum of 52 percent of house owners erected modular kitchen later after the construction because of financial crises.
- The survey was taken in houses constructed for last 15yrs the result showed that majority of 34 percent of the house were constructed in 2010-2015.
- The plinth area of majority of 82 percent of the house that owned modular kitchen was above 1200 sqft and is categorized as upper middle income group.
- Majority of 48 percent of the households with the modular kitchen were having 3 to 5 fully furnished bedrooms in their house
- Ten percent of house owner planned their kitchen by themselves other eleven percent were planned with the interior designer and the rest of the house were planned either by an experienced architect or civil engineer
- Maximum of 34 percent of households with modular kitchen had invested 50 to 70 lakhs for the house 20 percent of households invested less than 30lakhs for the house were as both the group own modular kitchen
- Information on person responsible for designing the kitchen, source of information, shape and size of the kitchen, cost, brand of the modular kitchen, year of installation, source of information regarding the modular kitchen, area allotted for work centers and storage space available are given in this aspect.
- Kitchen was designed by the specialist either alone (44 percent) or in collaboration with Interior designers (26 percent) or civil engineers (6 percent) or self (1 percent).
- The source of information regarding modular kitchen were obtained mainly through newspapers, (34 percent) magazine (28 percent) friends and family member (24 percent), internet (14 percent).

- Modular kitchen were considered best and efficient by the surveyed homemakers due to the convenience in operation by 40percent, efficient use of space by another 42percent and elegance by 30percent of the surveyed homemakers.
- Regarding the shape of the kitchen irrespective of type of kitchen, L shaped kitchen were found in majority of 42 percent of the surveyed households, due to availability of space.
- The size of the kitchen of majority of 44 percent of families had 120 sq.ft kitchen areas.
- Majority of 44 percent of the households have spent 2 to 4 lakhs on their kitchen.
- The majority of 48 percent, 52 percent and 58percent of households had provided 1 to 2sqm space for cooking, preparation and washing respectively.
- Majority of 44 percent had a work triangle measuring 4m to 4.5m.followed by 3.5 to 4.0m by 22 percent and 4.5 to 5.0m by 20 percent of the modular kitchen. The maximum distance of 5.0 to 5.5m was noticed by 2 percent of the households and minimum space of 3.0 to 3.5 was noticed by 12 per cent of the households respectively
- Maximum of 42 percent of the household work center height ranged between 2'3" to 2'6" and 36 percent of the household work top ranged between 2'6" to 2'8".
- Majority of the 70 percent was less than 1 cubic meter and for base cabinet 56 percent of the space raged between 1 to 2 cubic meters.
- Regarding the extend of satisfaction of preparation, cooking, washing and storing centers provided in kitchen except 10percent for storage, 8percent for cleaning and 10percent for cooking, all the others were highly satisfied irrespective of the type of kitchen owned the homemakers expressed that the storage provided was difficult to clean. In most of the kitchens the heights of the work top in few kitchens were not suitable for the height of the homemaker and so it resulted in fatigue.

- Since the kitchens were designed by the experts with the consent of the homemakers, all the homemakers were satisfied with their kitchen irrespective of the type of kitchen possessed.
- With regards to the number of kitchen sold every month R.S Agencies sold Maximum of 12 modular kitchens per month, followed by Inscape that sold 11 kitchens and Bharat agencies sold 7 modular kitchens per month. The rest of the shops sold up to 3-7 modular kitchens per month.
- Most demanded kitchen layout preferred by the customer is 'L' and 'U' shaped kitchen.
- Generally the cost will be calculated on the basis of sq.ft. The cost of the modular kitchen started from Rs.600 per sqft. This also included the labour charges. Typical unit prices range starts between Rs 1 lakh and Rs. 25 lakhs; this depends on the style, look, materials and space.
- A modular kitchen can be installed within a minimum of 2days to maximum of 7days but it required longer period for preparing the cabinets, shutters and work tops and accessories. It is noted that the shops which sold the imported model required maximum period of 120days for obtaining the modules from Italy, Germany and Russia.
- Hundred percent of the surveyed shops advertised their products through newspapers, pamphlets (74 per cent), exhibits (40 per cent), posters (27 per cent) and magazines (20 per cent).
- All the surveyed shops had the facility to modify the design according to the client's requirement without affecting the utility and beauty of the kitchen.
- The surveyed homemaker found it difficult to interact with the family member when they work in kitchen. And hence the investigator designed an interface between kitchen and dining.
- The investigator designed it in the way it can be easily utilized as the lower portion of the unit is kept open which is not visible and so the water can be collected through it.

- The investigator found the tawas kept open in the wall or placed one on other in the cabinet which actually gave an unpleasant appearance and hence the drawer with the inbuilt hanging unit was designed.
- An island is created in the kitchen for extra storage cabinet with the side shelves, placement of equipment, and with the puller tray to widen the break fat table.
- The homemaker found it difficult while cutting vegetables and cleaning the waste and hence an inbuilt vegetable cutter with the slider to put the directly into the bin. A removable drainer and bowl to put the vegetables and to clean the vegetables are designed by the investigator for the convenience of the homemaker.

CONCLUSION









Kitchen is one of the most important arenas in the residential houses. Mostly, women use the kitchen for cooking purpose. So, it is important to maintain the kitchen room in a pleasant way so that women wish to work there with quite happiness. The modular kitchens will make women to work peacefully with a relaxed mind. Also, the modular kitchens are designed so as to impress the visitors who come house. The main advantage of modular kitchen is to make an impressive environment inside the kitchen room. It provides more attraction to the kitchen room. The interior modeling of a kitchen also include the making of attractive cabinets, shutters, counters, hob, chimney, sink etc. Also, a wide range of designing services and bench top options are included in the modeling of house kitchens. So, it is an easy way to design or model your kitchen. Modular kitchens are not only meant for impressions and attractions but also well known for making woman to cook with much pleasure. Modular kitchen will gain satisfaction by fulfilling the homemaker's requirement in modeling their kitchen room.

RECOMMENDATION












1. Choose the kitchen service provider with care. Check to see what brand they are providing because a reputed brand obviously means better quality, durability and better after sales service.
2. Before planning for a modular kitchen, decide the counter top, tiles and the sink is in right place. This saves time and money because a modular kitchen cannot be fitted under an existing counter top and sink.
3. Ask the kitchen solution provider whether drawings of the layout are part of the service provided. They can generate virtual kitchens on a computer. Almost all colors and finishes available are generally on display. This will give an idea on how the kitchen will look like after the completion.
4. Check whether the kitchen solution provider can provide a complete solution means storage system with internal accessories, appliances, dadoing with the tiles, counter tops, ducting with a chimney to circulate and filter air that is generated from greasy cooking and gas cylinder installation for the hob, among other requirements. This to get all the requirements in a single window.
5. Make sure that the kitchen provider gives written guarantee and after sales service.

These are basic guidelines when buying a modular kitchen. Once you have decided on the kitchen provider, interact closely with them and trust their judgment for best result.

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APPENIDX-I

AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN, COIMBATORE-43

Performance Analysis of Modular Kitchen Interview Schedule To Elicit Information on Working Performance of Modular Kitchen

A.GENERAL DETAILS

1. Name of interviewer :
2. Name of interviewee :
3. Address :

4. Type of family : a. joint b. nuclear
5. Size of house :
6. Type of house : a. Own apartment b. Rented apartment
c. Own individual house d. Rented individual House
7. Height of home maker:
8. Elbow height of home maker:
9. Money invested on house:

B.SOCIAL ECONOMIC PROFILE

S. No	Family Members	Age	Education	Occupation	Income/ Monthly
1.	Head of the family				
2.	Home maker				
3.	Son				
4.	Daughter				
5.	Grand Parents				

B. Information about Modular Kitchen

1. Who designed the kitchen?
 - a. Interior designer
 - b. Architect
 - c. Self
 - d. Civil engineer
 - e. Carpenter

2. Shape of kitchen:

- a. U- Shaped kitchen
- b. L- Shaped kitchen
- c. Island kitchen
- d. One wall kitchen
- e. Two wall kitchen

3. Details of the kitchen

	Length	Width	Area
Size			
Height			
Color			
Cost			

4. Details of work center

	Size			Comfortable		If no, reason
	Length	Breath	Height	Yes	No	
Cooking						
Preparation						
Cleaning						
Storage						
Sink						

5. Size of storage cabinet

Storage Space	Length	Width	Height
Wall			
Base			
Special Storage			
Any Other			

6. Furnishing

- a. Custom made (carpenter made)
- b. Readymade units (modular units)

7. What are the different activities undertaken in kitchen

- a. Storing
- b. Cleaning
- c. Cutting
- d. Grinding
- e. Kneading
- f. Cooking
- g. cleaning vessel

11. Do you carry cooking related activities to other room?

- a. Yes b. No

13. Do you wish to have an interface inside kitchen /dining area?

- a. Yes b. No

14. List any 5 comforts of your kitchen?

15. List any 5 discomforts of your kitchen?

16. Average daily times spend in kitchen?

- a. less than 3 hrs b. 3-5 hrs
c. 5-7hrs d. more than 7hrs

17. Give the major and minor equipment in your kitchen and the place of storage?

18. Do you feel your kitchen simplifies your work?

- a. Yes b. no

If yes

- a. Saves time b. Saves energy c. Easy to clean and maintain

If no, Why?

19. Give your extend of satisfaction regarding your kitchen?

LIST	HIGHLY SATISFIED	NOT SATISFIED	REASON
Storing			
Preparing			
Cooking			
Cleaning			

20. Give your suggestions for the prospective buyer and owner of modular kitchen and ultra modular kitchen?

APPENIDX-II

AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN, COIMBATORE-43

Interview Schedule to Elicit Information on Modular Kitchen Available In the Market

A. GENERAL INFORMATION

1. Name of the interviewer :
2. Name of the interviewee :
3. Name of the shop :
4. Address :
5. Year of establishment :
6. Website id of the shop :
7. How many sales person in the shop :
8. Items supplied :
9. Place of manufacture :
10. Do you have any other branch, give detail?

B. AVAILABILITY OF DETAILS ABOUT ALL TYPES OF KITCHEN?

S. No	Kitchen model	Brand	Special feature	Height & width	Cost	Warranty	Guarantee

1. List of companies for fittings/accessories

2. Standardized shutters for various cabinets are available in different material/finishes:-

3. What are the shapes of kitchen available?

4. What are the colors frequently sold?

5. Have you employed interior designers for suggesting material /design for the customer? if yes how do they help the customers ?

C.

1. Details of kitchen which have the greatest demand

Model of kitchen	Brand name	Reason for demand

2. What kind of customers do you have?

- a. Business
- b. Professional
- c. Govt. employees
- d. Executive
- e. Other

3. How many kitchens do you sell each month?

4. Number of days required for preparation and installation of modular kitchen.

5. Do you provide any accessories alone with kitchen?

If yes, mention

6. Do you provide any installation/ credit facility in your shop for the modular kitchen?

- a. Yes
- b. No

7. i. How is the sale during discount period?

- a. Minimum sale
- b. Maximum sale
- c. Moderate sale

ii. For which type of kitchen you give maximum discount?

8. Do you give any compliment alone with kitchen?

If yes, what type of compliments is given?

9. Are the designs fixed?

- a. Yes
- b. No

If no, do you make modification in kitchen design based on the client's suggestions?

10. What is the reason behind for selling the particular brand (in your shop)?

11. Is the cost of kitchen inclusive of labour charges?

If yes, what will be the labour charge?

Do you opt any services contract:

a. Yes b. No

12. List of Accessories available in market:-

13. Do you face slackness in sales at any point of time?

a. yes b. no

14. Do you use media to motivate people?

a. Yes b. no

If yes

a. Pamphlets c. newspapers
b. Tv d. radio