

Ergonomic Compatibility for Metal dining table with Economic Architecture Space

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Abstract - The metal dining table is the only place in the home hold where all members assemble on a daily basis. Metal dining table occupies a majority of the space in. Most small flats and homes today have to serve more than one function for reduction of production costs and creation of diversity in metal dining table usage. The research problem is that the existing furniture models, and most of them are big and their transportation is difficult. Users are of them live in rental homes and might move every year, they should think of table which can be easily carried and meet their needs well. Also table used that will meet the needs and last for years. To overcome this problem that required changes in the form of the metal dining table. This may help the designer to design an appropriate product which suits the middle class populations are living in small flats & homes. Metal dining table design present from a four to six person family based on the interaction design. Therefore, the main objective of the present study has been to develop metal dining table design, ergonomic demanded, understand the present modular in the economic and the main problems the users face during use the metal dining table. From the identified needs ergonomic design and safety; to arrive design will largely suit the constrained space conditions architecture. Methodology is Analytical descriptive. The main results of this study show that, the design of metal dining table must be considered the demanded of the architecture space in small flats & homes, multifunction, flexibility, ergonomic dimensions and storage space.

Key words: *Folding tables - strength – durability- ergonomics - architecture space - ease of use.*

1. INTRODUCTION

The metal dining table is the most important element to consider when chooses furniture according to user requirement. The choice of metal dining table material affects the choose metal dining table that will work best. Metal furniture has become an interesting use in home for reasons including durability and clean ability. The user give almost care for the selection of their furniture. Most furniture's require flexibility, integration, portability and multi-functionality. The metal dining table is design independent circular rotatable trays stacked one on another can rotate in its central axis. Its save space to accommodate the food stuffs (1)

Metal dining table is the place where the family gathers for more than meals such as discussions, and homework. A metal dining table is a type of furniture featuring a flat and stationary horizontal upper surface used

to support objects of interest, for storage and dining. The surface must be held stable by support from below by either a columnar base with one or more supports or legs. It comes in a wide variety of materials, shapes. A table with a single, central foot is a pedestal table. There are many types of table such as fixed table, foldable table. These tables come with different size and design. It depends on what kind of purpose for the table.

Table surface can be in virtually any shape, although rectangular, square, round and oval surface are the most frequent. Metal dining table uses probably have the dining room furniture for many years. Some the table is heavier than normal. In flat and small home people feel uncomfortable, if a big table occupied their maximum space in the dining room space.

2. THEORETICAL STUDY

2.1. Traditional Metal dining table

In the last century, metal dining table has undergone major changes in form. Corresponding to these changes in it. The table manners connected with the foods and meals arranged have changed significantly. Traditional metal dining table is Style table and chairs that the concept of "the family as a happy circle" began to come up in daily life. Particularly in the decade of the 1960's. The family's dining space underwent a tremendous change. The traditional room for taking meals, the living room, was replaced by the combination kitchen-dining room characteristic of modern housing. In the process of the kitchen-dining room becoming the principal family space. (2)

2.2. Metal dining table & Human Relations

It is here that the changes in human relations inside the family are tellingly reflected. The way that family members behave when they gather around the metal dining table should be the best indicator of the nature family relations. In general the whole human's view of dining has changed from "the meal as a means of satisfying one's hunger" to "the meal as a form of enjoyment".(3)

That's why meals should be consumed by the family at the same time and around the same metal dining table. Regardless of whether it is round or square, the family should gather around a single surface, whether that be called a table. Approach to metal dining table design, flexible across and integrates social, environmental and economic fields.(4)

2.3. Metal dining table Design Consideration

2.3.1- Formal surface of metal dining tables:- Take consideration in the design of metal dining table. The objective of ergonomics is twofold in respect of the design of table interior space on the one hand. This increase the functional efficiency of human use. On the other hand, to preserve or develop certain human values (e.g. health, safety and satisfaction) . The type or size metal dining table depends a lot on the personal choice as well as requirement. Table surface is form take geometries: rectangular, boat-shaped, trapezoid shaped, round, square, u-shaped, v-shaped. Metal dining table a rectangular or oval metal dining table will serve the purpose well for a more cozy. Choose a round or square table, these shapes allow family to talk comfortably to each other as the distance from the center is equal for everyone.

Also many people find an oval table surface more pleasing visually than a rectangle. But a rectangular base under an oval table surface can pose design problems. A rectangular, 4-leg-and-apron base has a relatively narrow

overhang along the sides but an extended overhang at the ends. An oval 4-leg-and-apron base is complicated and therefore more expensive to design and construct. Finally, there are compromises to the “personal zone” for each person.

2.3.2- Round table surface: The absolute minimum table surface space for a diner would be in the form of round. These table would four seats and the middle size from it would six seats.

2.3.3- Oval table surface: Many people find an oval table surface more pleasing visually than a rectangle. The oval table may facilitate conversation between diner’s best, because each has a better view of the others. But a rectangular base under an elliptical table surface can pose design problems.

2.3.4- Square table surface: Square tables tend to be more flexible, easier to move and rearrange.

2.3.5- Rectangular table surface: Use rectangular tables to create aesthetically appealing spaces that can also seat many varying party sizes.

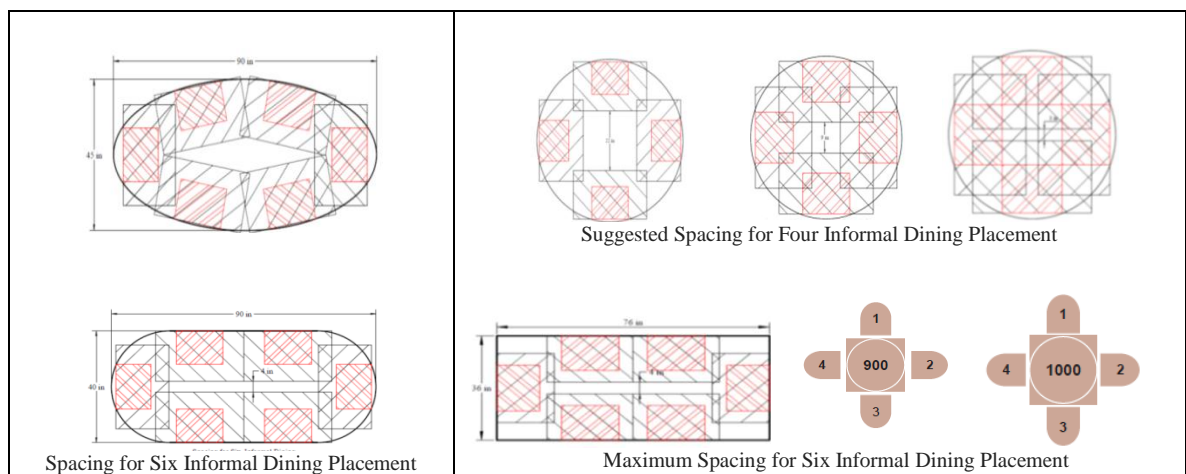


Figure (1) the relation between seating arrangement single pedestal for metal dining table

Table (1) STANDARD TABLE DIMENSIONS

Metal dining table Type	Height	Length	Width/Depth
Square Metal dining table	28 inch –30 inch	36 inch –72 inch	36 inch –72 inch
Rectangular Metal dining table	28 inch –30 inch	60 inch –80 inch	36 inch –42 inch
Round Metal dining table	28 inch –30 inch	36-inch to 48-inch	36-inch to 48-inch

Figure (1) the relation between seating arrangement single pedestal for metal dining table. Also there are compromises to the “personal zone” for each person. The amount of curvature at the ends of the ellipse can be increased. The minimum table surface space for an individual is 24” x 16” but is really appropriate only for breakfast. A much more comfortable table surface space for each individual is 30” x 18”.(5)

Table (1) show the size of different shape of metal dining table. Where the typical metal dining table surface is 30 inch above the floor. The table surface thickness usually is at least 1 inch but more than 1 ½ inch. If the table surface is supported by individual legs, there needs to be an

apron to hold the legs upright. The typical height of the apron is 4 inch.(6)

2.4. Dining Chairs

Heavy dining room chairs will be frustrating for children to pull out from the table. Many dining chairs come with upholstered seats, which are comfortable, but are also likely to be spilled on eventually. A narrow chair with a low back won’t work if the family or guests are very tall. Most metal dining tables are 29 to 30 inches height, and you want about 12 inches from seat to the surface of the table. Dining chairs are 18 to 19 inches height tables. Another option would be to go for transparent, acrylic seating, as it keeps the focus on metal dining table while making the room look spacious. (7)

For smaller sized rooms, chairs users can be pushed under the table when not in use. Should application of ergonomics principles throughout the use it user friendly, safe, convenience, operational requirements and cost effective with a view to get optimal human performance. Metal dining table and chair that is used at home makes up another large group and can be classified by its style. Many of the user population do not have anthropometric data. It is therefore, desirable also to have the worktable adjustable (7).

2.5. Metal dining table materials:

The base is usually going to be made of solid. The surface can be made of either solid wood or a combination of solid wood edging and sheet good. Table surface manufactured from a steel box frame section with a solid timber surface mounted on the surface. Table surface structure made up of integral wide range structure to make the table. For a round, oval or elliptical table, the “north-south” and ”east-west” distances between the table legs should be within 6” of the major and minor diameters of it.

2.6. Table Base

The base makes the table stainless steel strength and stability. Base design allows easy chair access. Go for a pedestal base instead of legs. A great trick to seat more people in a limited space is to choose a table with a pedestal rather than legs. This allows for more chairs to be set around the table and also provides more legroom. The most common type of table base is four legs held together at their surfaces by an apron. As a general rule, the points of contact with the floor should be within 6” of the corners of a rectangular table surface.(8)

A pedestal is a single or double support. Usually but not always the pedestal is a rather thick column or urn shape. This is accomplished with a pedestal by having a X-shaped leg structure or flat panel attached to the bottom of the pedestal (fig.2). Usually there will also be a flat panel “sub-surface” attached to the surface of the pedestal, and this sub-surface is then attached to the table surface to hide this sub-surface.(9) Cast iron bases are easy to assemble. A full-length bolt inside the column of the pedestal base, simply line up the notch in the column with the receptor in the surface leg, seat the surface leg and column into the bottom leg and tighten the nut below.

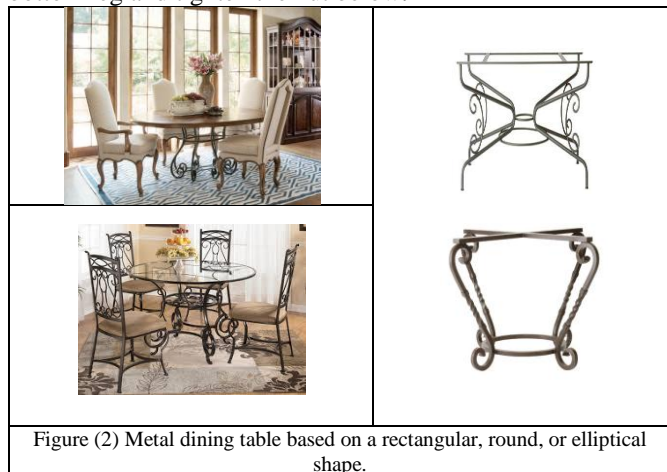


Figure (2) Metal dining table based on a rectangular, round, or elliptical shape.

2.7. Space saving metal dining table

There are available a lot of space saving table suitable to be used to help by user for saving living space. Different types found of table hinges are available, Tables round and square come with a special "flip" mechanism allowing user to flip the table surface down for easy space saving storage against a wall or in a storage room. When in use to develop multi-functional space architecture; due to the brief periods of time in the day that dining occurs. To transform the space, the tables retract towards the ceiling (fig 4). To enable the floor space to be used, the chairs fold flat and hang up against the walls. Due to the inherent shape of the folded chairs – vertically longer than wider, the height of the room is accentuated. Once the room is clear of furniture, the canteen area can be the venue for other activities.(10)

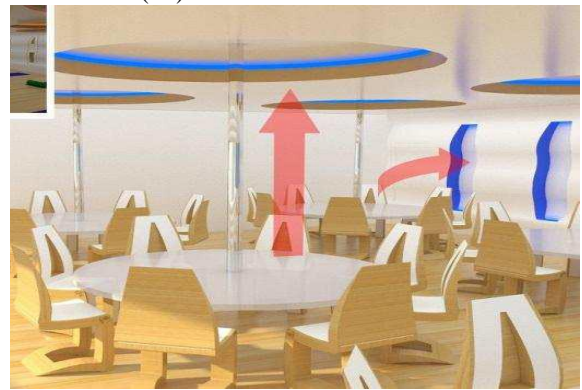


Figure (4): the tables retract towards the ceiling

2.8. Metal dining tables design flexibility

The design flexibility for metal dining table is more economic in the long term and adaptable can avoid considerable long-term capital cost through building-in the capacity to adjust to different circumstances. For solving the ergonomic problems of sitting.(11) The design consideration has two approaches; to shrink metal dining table scale aggressively with design formality for the saving of space; the other one is to reveal ordered aesthetics passively to avoid untidy space.(12)

This concept is space saving & proper folding metal dining table and chair arrangements. Its multipurpose light weight, compact, folding metal dining table and chair arrangements and one stand of chair are adjustable as per the requirements. Metal dining table and chair is design to make people live easier and more comfortable. It is also convenient to provide seating arrangements and tables that may be reduced to small size for ease of carrying and flexible design of seating arrangements should be folded and can be easily stored.(13) Easy to manufacture, assemble, table and store, saving space, cost and adding to its utility. It is could replace not only many different types of useful but also aesthetically metal dining tables to provide the simple table necessary for a small flats and homes.(14)

2.9. Expanding table surface:-

Metal slides can be used to allow a table to expand at the center. So that additional leaves can be inserted, increasing the table’s length maximum extension, round

overlapped with intersecting triangles. The perfect height of the table will naturally depend on its intended use. also need to consider whether the dining chairs will have arms or not, as the table should be high enough to allow the arms to slide beneath it.

Supporting the table surface from the middle allows more flexibility in metal dining table placement. A single pedestal can support a round table up to 54" in diameter, and a rectangular table up to 72" long. Two edge designs: straight edge with 25 mm MDF surface metal legs with height-adjustable glides. Adjustable tables such as drop-leaf tables give the option of expanding the length when necessary. The materials of the metal dining table and chairs may affect the price.

Round and flat steel tube with powder painting, antirust aesthetic and easy to assemble. Easily control carry this table was designed to be economic, and can easily fit. This table is practical and ideal in situations where tables have to be stored temporarily while the room is used for other purposes. The table fit any purpose or matches any design concept precisely. The high - design ensures that the mobile table is also attractive when flipped up. In a round from 100 to 150cm format it has more than enough space for four to six person when opened out.(15)

3. ANALYTICAL STUDY

From the research study, it find that the Requirements for choice of metal dining table demanded the following:-

3.1.Ergonomic safety:

- Should reduce the chance of a table tipping if a child climbs on it, or an adult diner pushes down on the edge.
- Unlike other table aprons with sharp steel edges, safe edge helps hands and fingers avoid cuts and scratches.
- Table doesn't have screws, nuts or bolts.
- The absence of pointed edges makes it an even safer.
- The tables are strong, stable, easy assembly and disassembly of the product.

3.2.Comfort:

- The height of table legs can be adjusted and they can prepare the setting consistent with the user's body measurements.
- All dimensions of chairs are adjusted according to the ergonomic standards.
- It positions the legs are less likely to interfere with chair placement, seating with keep the back straight.
- Having the sense of comfort during eating.
- Dining chairs that use metal dining table should be sure the sizes work together.
- Designing a chair for children and elderly with through adjustability of it height.

3.3.Ease of use:

- Round dining People are encouraged to communicate with each other at the table.
- Metal dining table and chairs can be cleaned easily, low weight and easy portability.

- Before choosing a metal dining table, should measure dining room, add to determined space to walk around the table and pull out the chairs.
- Should designer try to leave 48 inches between the edge of the table and the wall or closest piece of furniture.
- Ease of individuals' accessibility to the things on the table;
- Able and chair arrangement according to their requirements affects the look surrounding..
- Low weight of table and chairs generates a little pressure on the user during their carrying.
- The surface can be wiped clean without fear of damaging the finish.

3.4.Performance:

- Smart use of materials and forms in order to clean the table easily.
- Metal dining tables work well in different situations.
- Metal dining table spaces require flexibility to accommodate phases of the family life cycle.

3.5.Effect Economic factor on architecture space:

- The flexible metal dining table provides has far more than financial benefits:
- Therefore, the tables are suited to any purpose and can be precisely matched to any design concept.
- Whichever metal dining table shape chooses, make sure it works well with the shape and size of small flats and homes.
- The metal dining table fits all needs and is easily moved around or stored by one person.
- The metal dining table shape is should integration of easy furniture and metal dining table, the compatibility with small home.
- Fit a round metal dining table in limited space. It will fit snugly more people. While a rectangular table fills a larger room better.
- Provide alternative architecture spaces for people to accommodate different types of living and varying living styles.
- Metal dining table design should be consistent with user tastes and solve their problems.

4. RESULTS

- 1- folded metal dining table is more economic than fixed especially in saving architecture space.
- 2- Understanding user requirements is the starting step of any design activity. It is necessary and one of the most important steps in product development cycle.
- 3- The children and the elderly people or those are with chronic conditions. It indicated that an adjustable chair and a workbench of standard size were highly desirable at the workplace. However, the standard height of the workbench could not be defined without the anthropometric data of the user population.
- 4- the type best suited for table depends on the size, shape and weight of the table.
- 5- The modular and light weight folding metal dining table is suitable for continual daily use.

- 6- Integrating the easy metal dining table and chair in one product helps the furnishings to fit better in small home of target group and decreases the costs of buying.
- 7- That foldable metal dining table and chair is desirable for apartments, who have limited living space. Because adaptability of space to facilitate privacy in accommodation, and the development.

- 8- Functional and cost-effective organized based on design criteria also it is not only used for dining but for other purpose and adaptable to new ways of work and new use.

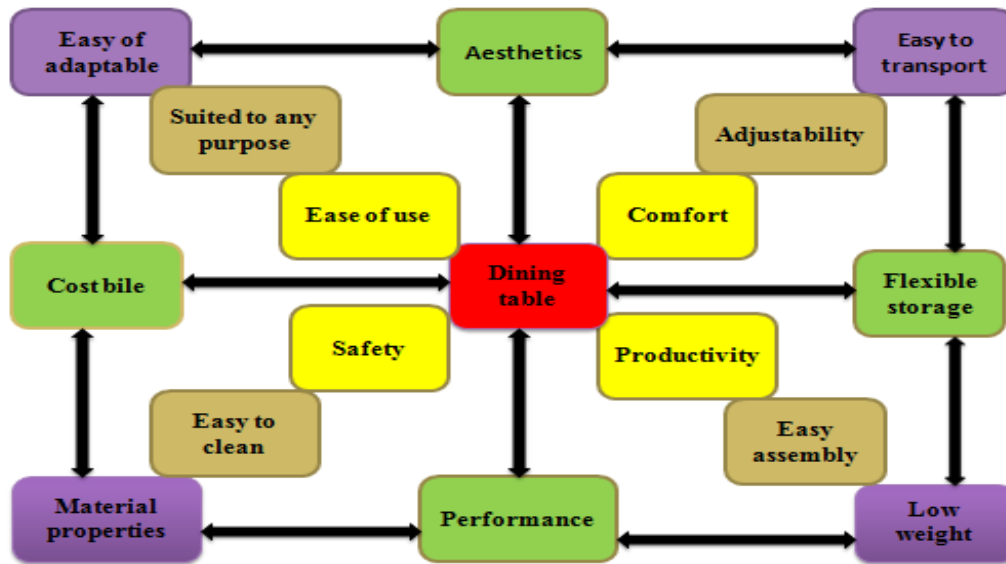


Figure (5) requirements choose metal dining table

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