

Investigation on Restaurant Layout Design

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ABSTRACT

Expanding the wind mind of pleasure, comfort is court at its edge. Therefore, a successful implemented layout design could be a breaking point. For a restaurant to accommodate both the customers and associates, the layout design should be given a topmost priority. Layout design for any restaurant makes accomplishment of task efficient for both front and back of the house. Categorically, there are five types of restaurants which can be differentiated as Casual dining, family style, fast dining or high end, fast food or quick services and fast casual. Practically all types of restaurants deal with the same design considerations which are lighting design, colure design, sound and acoustic design, heating, cooling and ventilation design, material design, exterior space design and layout design.

Thus, in this thesis the subject matter is to understand “what are the important considerations in restaurant layout design?” defining the restaurant spaces and the relationship between them. The outcome will be valuable for restaurant management, interior designers, architects, architecture and interior design students. The layout design in restaurant can be considered in different variation such as proximity of spaces i.e. lobby, dining area, self-service area, kitchen, storage, water closet, mechanical and electrical room, staff room, changing room to each other, size of spaces, functional sequences and relationship between different functions, flow pattern in spaces, direction of functions and designing for disable groups.

Therefore, the aim of this study should serve the analysis of layout design, and create a guideline for successful restaurant design. As a result, the analysis was carried out on the layouts of the selected restaurants i.e Californian Gold, Funky Buddha, Palm House, Temel Reis, D&B which are located in Gazimagusa in North Cyprus.

The selected restaurants used as the case study, are the restaurants that have adequate accessibility to her information, while they are having acceptable architectural designs. these restaurants have a capability of serving food to 130-450 people at the same time while its size is between 450-5500 square meter. Because of the constraint of well design restaurants in Gazimagusa, there are a few restaurants that can be chosen in this study, some of these restaurants selected for inspection, according to the principles can count as casual and fine dining restaurants. Nonetheless, the information gathered are used for restaurant history and also for significant factors in restaurant design.

For the field study the selected restaurants were analyzed according to the layout design criteria's, which was developed, on the base of literature survey, observations, interview, sketches and photos which are all part of data collection method. Hence these items were had been used to analyzed each restaurant independently thorough the help of graphs, bubble diagrams, charts and pictures.

As a result the analysis conducted with having an acceptable design and design problem. The final layout analysis table, illustrates the acceptable percentage design and design problems for each individual space of all stated restaurants one by one. After reaching to the desired percentage of acceptable design and design problems for each particular

restaurants space, presented by chart, which gathers all the restaurant illustration according to the individual layout factors. These charts lead to the knowledge of the final layout design which shows the final categorization of the selected restaurant according to the best result.

Keywords: Restaurant, Design, Layout design, Design, Organization, Space relationship

ÖZ

Memnuniyet zihnin bakış açısını genişletir. Bu nedenle düzen ve tasarım başarılı bir hayatın kesişme noktasıdır. Bir restoran için müşteri ve çalışanların ihtiyaçlarını karşılamak ve ağırlamak adına işleyiş şeması, mekan organizasyonu ve tasarımına özen gösterilmelidir. Herhangi bir restoran için düzen, işleyiş şeması ve tasarımı, hem ön tarafta bulunan müşteri, hem de arka tarafta çalışanlar için işlevsel düzeni ve memnuniyeti artırıcı en önemli unsurların başında gelir. Genel olarak restoranları beş sınıfta incelemek mümkündür. Bunlar; aile restoranları, fast-food (çabuk/hızlı yemek) restoranları, üst düzey restoranlar, gündelik restoranlar, gündelik ve çabuk hazırlanan yemek servis eden restoranlardır. Tarzı ne olursa olsun, tüm restoranlar için mimari ve iç mekan tasarımı özellikle akustik, aydınlatma, ısıtma-soğutma ve havalandırma, malzeme ve renk seçimi, mobilya ve organizasyonu büyük önem taşımaktadır. Tüm bu unsurların gerektiği şekilde etkili olması ise işlevsel düzen, mekan organizasyonu ve tasarımına bağlıdır.

Tüm bunlar ışığında, bu çalışmanın esas amacı restoranların barındırdığı işlevler ve bunlar arasındaki ilişkileri tanımlamaktır. Elde edilen sonuçlar restorant işletmecileri, iç mimarlar, mimarlar, mimarlık ve iç mimarlık öğrencileri için değerli olacaktır. Restoran tasarımı, bizi karşılayan lobiden, yemek yenen mekanlara, personel odasından, mutfak ve çeşitli servis mekanlarına kadar birçok işlev grubunu bir arada barındırmaktadır.

Bu nedenle, bu tez çalışmasının amacı, işlevsel düzen, bunların tasarımı ve hizmet analizi ile birlikte başarılı bir restoran tasarımı oluşturmak için öncelik edecek bir rehber

oluřturmaktır. Bu amala oluřturulan etmenler/veriler seilen restoranlar zerinde test edilmiřtir. Analiz edilen restoranlar Kuzey Kıbrıs, Gazimağusa da yer almaktadırlar. Bunlar; Californian Gold, Funky Buddha, Palm House, Temel Reis ve D&B Restoranttır. Seilen restoranlar rnek deęerlendirmelerde kullanılmıř, iřleyiř řeması ve bunların mimari tasarıma etkileri bakımından deęerlendirilmiřtir. Bu restoranların byklę ortalama 450-5500 metrekare arasında iken, aynı anda 130-450 kiřiye yemek sunabilme zellięine sahiptirler.

Analiz sonucunda elde edilen verilere gre tasarım ve iřlevsel dzenden kaynaklanan problemler saptanmıřtır. Deęerlendirme sonucunda elde edilen bilgiler tablolar aracılıęıyla yzdelik olarak sunulmuřtur.

Anahtar Kelimeler; Restoran, tasarım, iřlev řeması, organizasyon, mekan iliřkisi.

To my family

For your unconditional support with my studies

I am honoured to have you as my parents

*Thanks you for giving me a chance to prove and improve myself through all
my walks of life*

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Chapter 1

INTRODUCTION

1.1 Background Information

Restaurant is referred to as an establishment which prepares, make and serve food, drinks to customers, and earns money in return. So many restaurants also offer food delivery or take-out. The restaurant owner, is called the restaurateur. This word came from the French verb 'restaurer', which means 'to restore' (Potter, 1999). Chef is the professional cooker in a restaurant, which guides the staff and supervises the cooking line.

Eating outside has long history which date back to Egypt (512 B.C) there were some dining places with a limited that served serving onion, wild fowl, and cereal (Walker, 2011).

According to (Theis, 2001) during ancient Rome there were places, which were offering the cold and hot food and serving drinks in Pompeii under the name of 'thermopolia' and after that sung dynasty in China at 11th century. The 'thermopolia' typically was a counter in L-shape with storage close to it that contains cold and hot food and beverages (Fig1).

This restaurant were established, because of the lack of kitchen in many dwellings, at that time and besides eating outside in the 'thermopolia' was considered as socializing and communicating which was significant factor. In Pompeii 'thermopolia' area,

identified across the whole town, they were located in the main axes of the town and near the important public spaces (Theis, 2001).

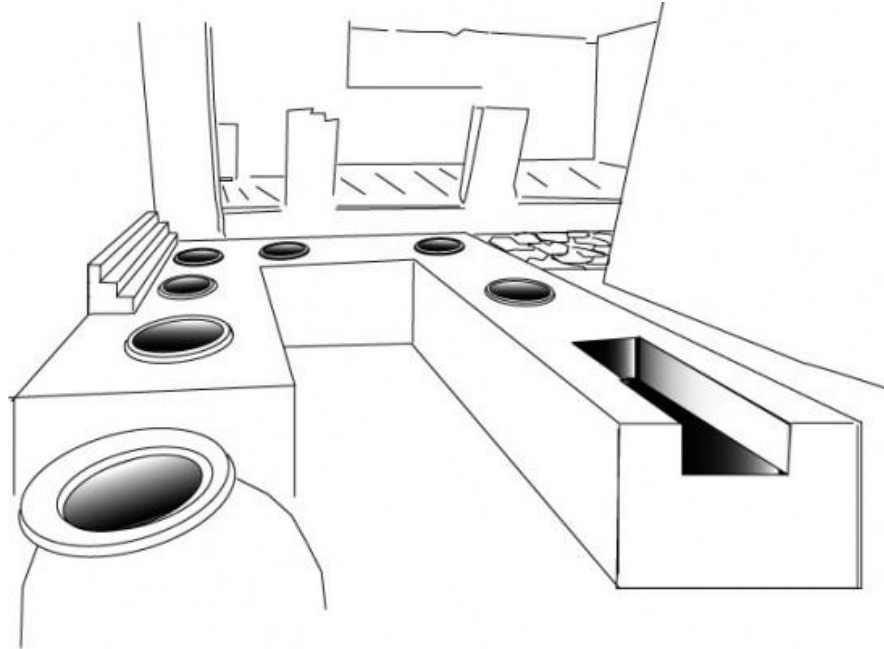


Figure 1. Thermopolia design (Ricotti, 2006).

The first construction that called “Restaurant” credited during 18th century in France. During the history, parallel to the technological, industrial developments, human needs and way of lives have been developed and restaurant designs were developed as well. There are different types and variations of restaurants today that designed in different concepts.

1.2 Problem Statement

Since 18th century, restaurants are the most common places for both eating and socializing (Potter, 1999). Eating and socializing plays important roles in a human’s life. It is possible to say that restaurants and restaurant design are important as well. Designing a successful restaurant is more than arranging furniture and creating different spaces, there are more than hundreds of elements that should considered in restaurant design. Most of the times both users and staff of restaurants are facing

with some problems, which are related with size, organization, planning and spaces. However, the main problems are relating with the layout design.

Thus, in this thesis the main aim is to understand “what are the important considerations in restaurant layout design?” defining the restaurant spaces and the relationship among them. The result it is expected to be useful for all restaurant managers, interior designers, architects, architecture and interior design students.

1.3 Aims and Objective

There are different factors that are effective on the quality of restaurant such as location, marketing, menu options, staffing, specials, materials/supplies and design. In addition, there are significant factors that are efficient on restaurant design such as façade design, entrance design, exterior space design, lighting design and control, and interior design. However, layout design is an important consideration for the restaurant that might affects all the others.

Each restaurant has their own and unique design perspective while they are all should follow the logical layout. The relationship between different spaces such as lobby, dining area, self-service area, kitchen, storage, water closet, mechanical and electrical room, staff room, changing room, these spaces' sizes, qualities, and sequences is all the part of the layout design. On the base of these, this study intended to make an investigation on layout design, and create a guide for successful restaurant design. In addition, an analysis will be carried out on the layouts of the selected restaurants that are in North Cyprus; Gazimağusa.

1.4 Methodology

In general terms, the evaluation of this thesis is qualitative. The data collection method is according to literature survey and field study. Literature survey covers historical background of restaurant, types of restaurants, restaurant design, main design considerations and the important factors related to the plan layouts.

For the case study specific kind of restaurants (casual and fine dining restaurants) which have enough accessibility to their information from Gazimağusa, North Cyprus will be selected and analyzed according to layout design factors, which will be developed, on the basis of literature survey, observations, interview, sketches and photos is part of data collection method. After all, for better results charts and graphs would analyze the collected data.

The current research is structured in a way to form four entire chapters, which are organized as follows: Chapter 1: this chapter introduces the research topic by giving brief information on subject matter and emphasizes on the history of restaurants and restaurant layout, besides, methodology, aims and objectives as well as scope and limitation of the study are defined.

Chapter 2: second chapter is based on the literature survey and theoretical background of the thesis that consists of historical background of restaurant, types of restaurants, restaurant design, main design considerations and the important factors related to the plan layouts are discussed.

Chapter 3: In the third chapter, the selected restaurant from Gazimağusa will be given and analyzed. The analyses will be evaluated due to the selected considerations.

Chapter 4: This chapter forms the concluding section of the thesis. Final remarks as well as suggestion for further study implications will be presented.

1.5 Limitation and scope of the study

This study is going to be limited on restaurant layout design, which is one of the most important factor in restaurant design. This thesis would be limited on Gazimağusa, North Cyprus restaurants such as "Temel Reis" and "Californian". This thesis is based on designer and restaurant owner preference to achieving the best result and satisfaction of users and restaurants staffs. For this reason, there will be interview with restaurants owners and professional designers and restaurant users.

Chapter 2

LITERATURE SURVEY

2.1 Historical Background

Restaurant is an establishment that prepares and serves food and other beverage to the customers. According to Yüksel and Yüksel (2002) “restaurant are generally assumed to be in the business of selling food”.

Restaurant was developed during 13th century in Hangzhou. Hangzhou was the economical, political and cultural center of China’s Song Dynasty, which had population over 1 million people at that time. Restaurant growing had been developed from Chinese teahouses, which was served to travelers. Years after years those places had started to be a food service area for local people and Hangzhous restaurant were established. During those times restaurant was used for different style of price brackets, cousin and religious requirements (Zarei, 2007).

Restaurant, as a buisness place which were preaparing and serving food as it ordered was dedicated on 18th century in France. During the history France have played an important role in developing the restaurant. There are three different theories about this development:

- 1- Boulanger, 1765.
- 2- Mathurin Roze the Chantoiseau in Paris, 1766.
- 3- Beauvilliers, 178

1- Boulanger, 1765

In 1765, a Parisian bouillon seller that called "Boulanger" wrote: "Boulanger sells restoratives fit for the gods"; this was probably the first establishment that called restaurant (Potter, 1999). The special food of the restaurant was a "soup restorantes" (restorative) which was the original name of restaurant, Boulanger believed that soup could cure all sort of illnesses. In 1767, he created a new soup that consisted of white sauce and sheep's (Walker, 2011).

2- Mathurin Roze the Chantoiseau in Paris, 1766

Referring to Spang (1961), the inventor was Mathurin Roze de Chantoiseau, a figure present of his time that he practically looks like an invention himself. The landowner's son and merchant, Roze went to Paris in the early 1760s. He had to float numbers of schemes he assumed would enrich his country and him at the same time. The first construction that called restaurant credited during 18th century in France (Spang, 1961).

3- Beauvilliers, 1782

However, in 1782, in the Rue de Richelieu, Beauvilliers founded the first Parisian restaurant. For the first time he introduced the list of dishes, which was on menu, and serving them in the individual tables throughout fixed hours (Potter, 1999).

After that restaurant spread rapidly around the world. In 1794, Julian's Restarator was opened in Boston, United State (Walker, 2011). The modern and formal style of dining, which gave food to the customers with the plate that food arranged on it, that is introduced by Russian Prince Kurakin in France in 1810. This later spread rapidly around the world and starting from England (Zarei, 2007).

According to records book of Guinness 2012, the oldest restaurant is “Sobrino de Botin” in Madrid which was opened in 1725 and it is still existing today.

Restaurant is a place for socializing, communicating and when it comes to designing a restaurant, creating, stunning and gorgeous restaurant with good food is not enough (Anon, 2012).

Creating a successful restaurant would not be possible, unless multiple factors balance with each other. The factors are design, energy saving, good cuisine, intimacy and restaurant displayed. To achieve these factors, creating a good layout design is necessary, these factors together creating the overall concept of restaurant. Each type of restaurant has its own special and unique design concept, idea, and cooking philosophy (Piotrowski, 2007).

2.2 Types of Restaurant

Before the design process of restaurant starts, there are factors that are necessary to be determined. These factors are quality and quantity of the food, food preparation style, menu style that is fixed or daily, types of food, services style and numbers of the customers. According to these factors restaurants can be divided to different categories, although the most common categories are casual dining, family style, fine dining, fast food (quick services) and fast casual restaurants, which will be explained one by one in the following parts (Anon, 2012).

By dividing the restaurants into categories of “exclusive”(fine dining), “highseats” (family style), “normal” (casual dining), “inns, guest house” (fast casual, fast food) It is possible to understand how many sq/m of different spaces is required for each types of restaurants (Table:1).

Table 1: Floor area required for each type of restaurants (Neufert, 2002, 456).

TYPE	Chair occupancy per meal	Kitchen area required (m ² /cover)	Dining area required (m ² /seats)
Exclusive restaurants	1	0.7	1.8-2.0
Restaurants with high seats	2-3	0.5-0.6	1.4-1.6
Normal restaurants	1.5	0.4-0.5	1.6-1.8
Inn/ guest house	1	0.3-0.4	1.6-1.8
Approx,80%supplement is added for storage rooms, personal rooms and etc. Cover = seats × no. of seats changeovers.			

2.2.1 Casual Dining

This type of restaurant has relaxing and friendly atmosphere, moderate food pricing and table services, offering in casual dining restaurant. It is appropriate to say that, casual dining restaurant is between fast casual and fine dining restaurant. These kinds of restaurants have limited alcohol menu, which includes different type of beers and wines with side bar and bar staff (Beriss, 2007).

Casual upscale restaurants and it is professional service delivery, offer an attentive and significant low pricing than fine dining restaurant. Upscale casual restaurant unifying well designed interior decor and sometimes-exterior design plus elegant menu listing (Barrows, 2009) (Fig 2).

It is possible to mention Applebee's, Big Boy, Chili's, Denny's, IHOP, Ponderosa Steakhouse and Waffle House as some examples for casual dining restaurant around the world.



Figure 2. Plan scheme and interior view of “La Condesa” restaurant (Anon, 2011).

2.2.2 Family Style

Family style restaurant it same as casual dining with a difference, that is food are served in a bigger dishes on a tables while Side dishes bring as well, where customers can serve the food for themselves and pass it to the other people at the table. Chinese and Japanese restaurants mostly serve the food in this way (Piotrowski, 2007) (Fig 3).

Lots of families especially on a Sunday are gathered around a big king size table to dine and wine, such life have being tagged to be a family style and modern restaurants and country clubs exhibit is this trait is. The styles of service in a restaurant have always being reserved for 'VIP' treatment or private guests. The server moves round and making sure food is severed. Guests are always waiting to mimic the family life style, making it a home away from home (Fink, 2009).

The examples for this group are Chinese restaurant (Tuzla, Glapsides, Cyprus), the Old Spaghetti Factory, Chili's Grill & Bar, Trattoria Romana situated around the world.

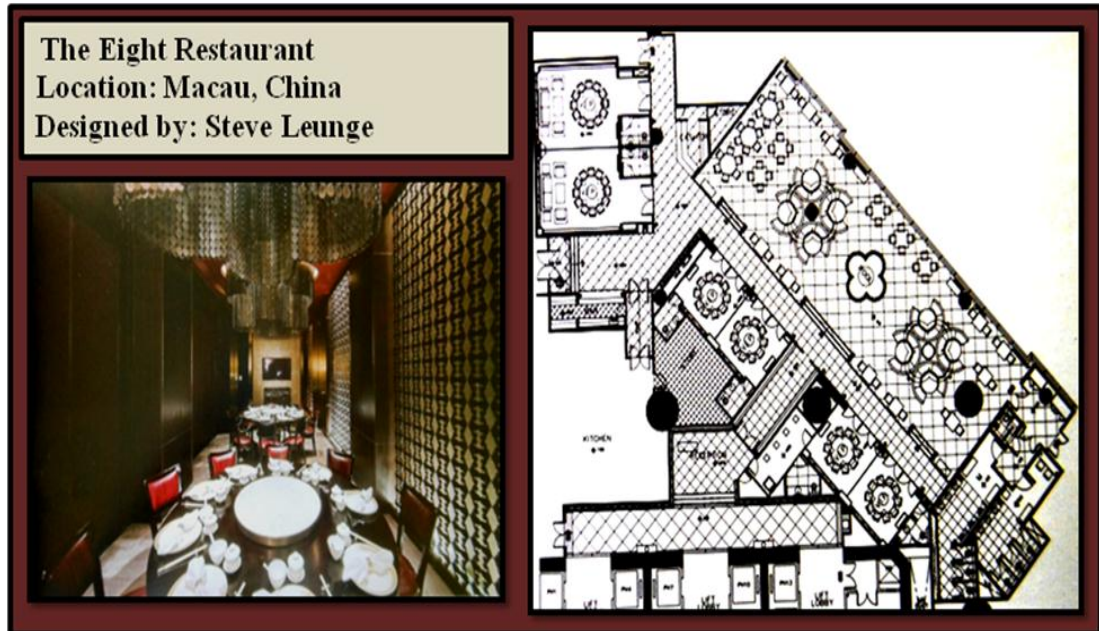


Figure 3. Plan scheme and an interior view from “The eight” restaurant (Zhai, 2008).

2.2.3 Fine Dining or High End

This restaurant compare to casual dining is more formal, has better quality of materials, furniture's and more luxury decor and high quality design is offered in these restaurants. Full services with special food are offered to customers group (Piotrowski, 2007).

Fine dining restaurants requires the staffs that are highly trained and qualified in personnel management these personnel need to wear formal attire sometime there are certain rules for dining which customers expected to follow. The majority of fine dining restaurants client are loyal guest keeping and maintain customers is a task that should be adequately considered as a responsibility. It is easier to maintain already existing customers than getting a new one (Barrows, 2009) (Fig 4).

These restaurants are mostly small business and personal or have few branches. Eziç, Californian in Gazimağusa, north Cyprus and Cabaret, Buffalo Chophouse, Fiamma Steak House are some of the examples from other countries.



Figure 4. Plan scheme and interior view of “Jinwu Guocai” restaurant is located in Shenzhen, China (Zhai, 2008).

2.2.4 Fast Food or Quick Serve Restaurant

It can be mentioned that the emphasize of fast food restaurants are in speed of services, any food with low preparation time can count as fast food which served with soft drinks. Ingredients used in a fast food services restaurant are either preheated or precooked to increasing the cooking time (Piotrowski, 2007).

Foods are served to the customers as takeaway package. Fast food restaurant can be stands or kiosks, with no shelter, sitting or have interior and sometime exterior sitting area. Furniture's are as simple as possible either benches or basic chairs and tables (Lee, 2006). Colours that mostly use in fast food restaurant are yellow, red. It is liable to say fast food restaurant came from USA and distributed around the world (Fig

5). Burger city and KFC in Gazimağusa, north Cyprus, McDonalds, Kentucky, Wendy's, Taco Bell, Fried Chicken, Pizza Hut are some of the examples for this group around the world.

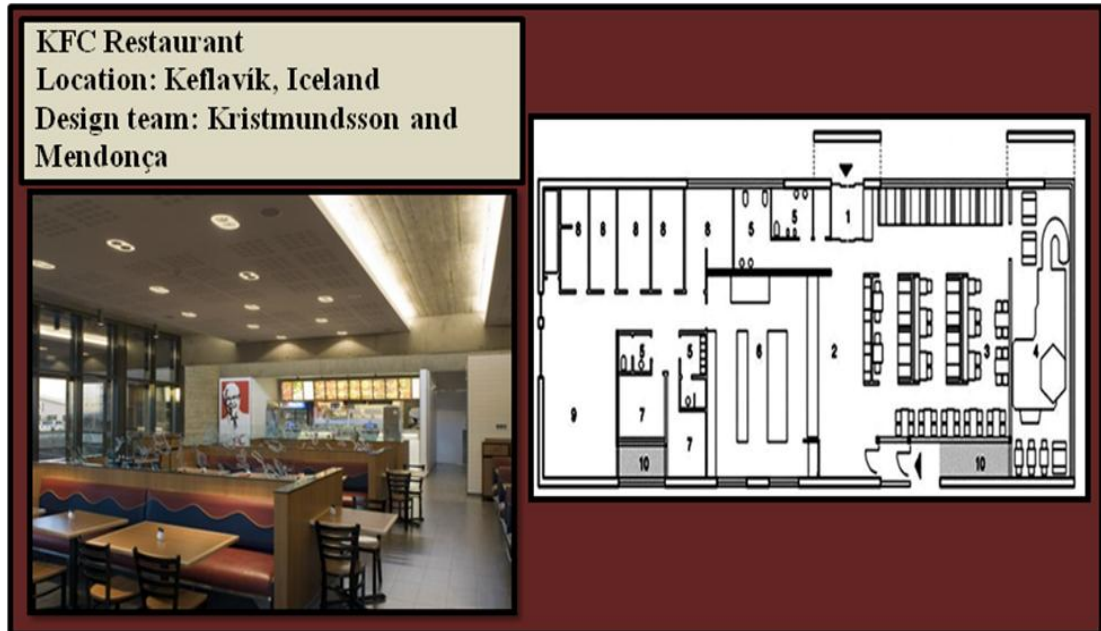


Figure 5. Interior view and Plan scheme of “KFC” restaurant (Pinho, 2009).

2.2.5 Fast Casual:

Smith (2012) in his book Fast food and junk food mentioned that:

according to a restaurant research consulting firm(Technomic information services) located in Chicago in the united state of America, created the term fast casual , this would reflect a new category of restaurant chain with their meal priced between that of fast food chains, such as, Burger King, McDonald's or subway and casual restaurants like Denny's, Applebee's or Ruby Tuesday.

This type of restaurant does not offer full table service while higher food quality and better atmosphere can be enjoyed than in a fast food restaurant offers. Visible kitchen and counter with handmade food presented to please the customers, steak dishes sometime it can be part of menu. Mostly, they try to emphasize on high quality in-

gredients, handmade and healthy food. Although, full table service are not offered, using common dishes instead of plastic dishes satisfying the customers so it is appropriate to say the food quality and services is much higher than fast food restaurant (Walker, 2011) (Fig 6). Taco Del Mar and Atlanta Bread are some of the examples for this group around the world. Restaurants also have different variations like bistro and brasserie, buffet, café, cafeteria, coffeehouse, destination restaurant, Mongolian barbeque, pub teppanyaki-style etc (Mealey, N.D).

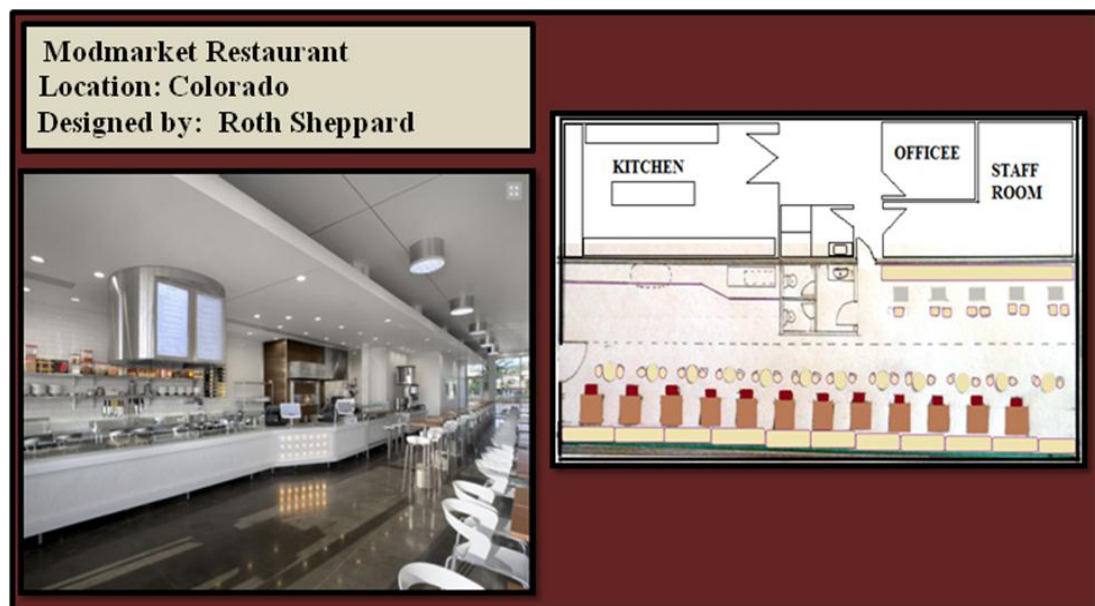


Figure 6. Interior view and plan schema of “Modmarket” (Mealey, N.D)

2.3 Main consideration in restaurant design

As mentioned previously, restaurants have different types and concepts, but still there are many factors, which need to be implemented in the design of all restaurants. These factors can be categorized and changed according to the different variables like types of restaurant, owner and designer preference, climate, types of customers etc.

These are the factors that needs consideration and should be design carefully in each restaurant's types: Lighting design, colour design, sound and acoustic design, heating cooling and ventilation design, material selection, exterior space design and restaurant layout design (Durocher, 2010).

2.3.1 Lighting Design

Light and shade can render and give characteristic to the space, Light also can change the human moods, brightness can make people feel happy and absence of light can cause sadness (Potak, 2004). Generally there are three major aspects in lighting design: function, human health and aesthetic (Ozay, 1998).

Light is use for creating and making both light and dark surfaces, they also can visually create texture, materials and colours (Potak, 2004). Beside of natural light which is necessary for both visual access and day light artificial light in interior space can make lots of pleasant, desirable and dramatic effects.

The various colours that emitted and released by light bulbs can change the colours of room illuminated. Designing light is one of the important factors in interior design and should be considered, specially, when there are different artificial light in the interior space (Miller, 1985). Since late centuries the light and it characteristics was represented in architecture and it has classification from psychology to art. Generally, light distributed in spaces to create and image for vision and give information about the world (Evan, 1948).

According to Ganslandt and Hofmann (1992) there are two types of good and bad lighting which can be defined below:

2.3.1.1 Good lighting

- Is a energy saver and also efficient
- Perception is limited on intended object
- Providing nighttime visibility
- Control the bright as much as needed

2.3.1.2 Bad Lighting

- Is the lights that waste the energy
- Make light pollution
- Create visual distortion and glare
- Obscures the view of stars
- Bad influence on the cycle of.

The aim of using light in architecture is to make, provide and increase the environment visually according to function of the place.

Table 2: This table shows the minimum foot-candle required in each restaurant area.
(Durocher, 2010)

Restaurant area	Minimum foot candles
Receiving	25-45
Storage	15-20
Pre-Preparation	20-30
Preparation/Production	30-50
Ware-washing	70-100
Pos/ Cashier	35-50
Intimate dining	5-15
Fast- food dining	75-100
Dining room cleaning	30-50

Durocher (2010), in their book *Successful Restaurant Design* mentions that: Lighting that is too homogeneous make the environment seem dull. Furthermore, Lighting that is too harsh can make food too look unappetizing

Lighting level in restaurant design depends on the activity in that area, which is minimum 5-15 foot-candles in dining area and 75-100 foot-candle maximum in fast food restaurant. Entrance, dining area and bar should have more control on lighting during day and night (Table 2) (Piotrowski, 2007).

2.3.2 Colour Design

Colour and light linked closely to each other without light, colour cannot be perceived. Different elements can affect design. One of the significant elements is colour. Colour can transform the temperature feeling, which is divided to warm and cool hues, where as other colours like cream and gray are counted as neutral colours and they do not transform any temperature felling (Faravar, 2010).

Hesselgreen (1969) wrote that colour perception can be transformed in to temperature conception in human mind. Figure 7 is showing the effect of colour in environment of a restaurant. Colour has a great capability to change the space dimensions as well. Colour can dramatically change the space and environment; It can make a small room seems bigger or dark room look lighter.

Architect and designers should choose proper colour to create pleasant atmosphere and satisfy both restaurant customers and owners. Before choosing the colours, designer should choose the mood that wants to express in the space (Kerrigone, 1992).

Generally, bright colours and colourful tones are mostly dedicated to the fast foods and quick service restaurant which could be recognizable and attract people from proximity, while full service restaurant offer more muted tones (Piotrowski, 2007).

perhaps it is possible to say Park Avenue Restaurant in New York, is the only restaurants that the menu and the interiors' is changing according to the seasons, spring, summer, fall and winter. The following images show the restaurant design for each season (Fig 7).

Kopacz (2004) in her book colour in three-dimensional design mentioned that:

colour can have influence on the length of stay beside the contrast, in other words:

higher contrast could decreases the average of stay.

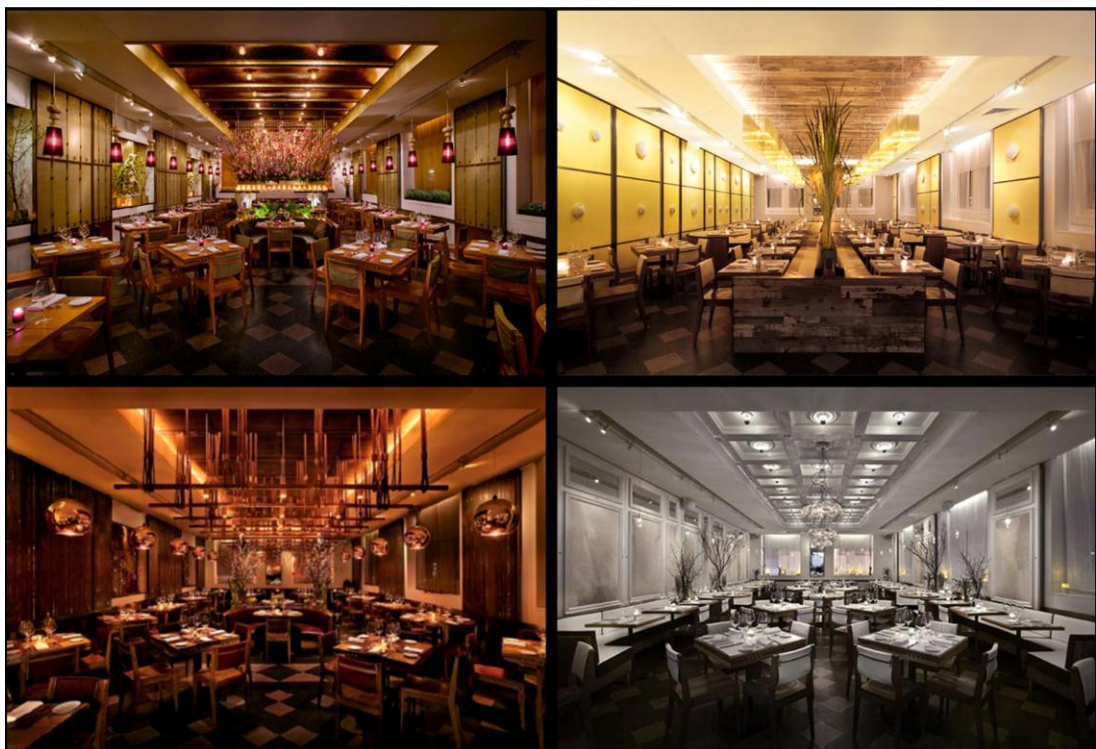


Figure 7: Park Avenue Restaurant in New York (Durocher, 2010).

Using contrast in colour, texture and material can divide interior space area by segmenting the unity of space. These contrasts can change the atmosphere and mood of space and at the same time creates focus and attention in areas with psychological, functional and aesthetical meanings (Mehyar, February 2008).

2.3.3 Sound and Acoustic Design

Sound is an essential part of all environments, and ability to control it is a science. Noise shows its importance while people are working and living closely together. Specialist in acoustic design concept and consult on task related issue, that involves conference rooms, concert halls, offices, residences, restaurants etc. Teleconferencing and video rooms needs the sound to be adjustable.

Moreover, a particular amount of noise is needed in a residential area and restaurants, so it is possible to say in all kind of spaces there can be sound suitable to the hearing or disturbing from residential to the outer-most part of the technologically demanding environments. (Knackstedt, 2012)

Restaurant is a very noisy place, fast food and fast casual restaurants are in top of this list while fine dining restaurant has less noise compared to them. It is realistic to say everything that happening in restaurant are making a noise, from cutting, washing and cooking in kitchen section to chair moving, guest traffic, food delivering, eating and talking in dining area, and more over there is background music and entertainment that increasing the noise. Controlling all these sounds is impossible, unless using acoustic and sound absorbance material in restaurant design. According to Kent Ballast (2010) each space has different noise criteria while the preference for restaurant is between 35-40 Decibel (dB).

The acoustic materials can be use in ceiling as sound absorbance or in floor as carpet. Dividing and separating the dining area in to smaller parts by using partition can reduce the sound also using chair and table cloths and acoustic panels in the wall and other sound absorbance will control the sound as well (Piotrowski, 2007).

2.3.4 Heating, Cooling and Ventilation

One of the important and also expensive considerations in any restaurant design is heating, cooling and ventilation system. The most efficient way to control the air quality and temperature in restaurant is by air chandelling unitt is (Durocher, 2010).

Each kitchen in any type and size, creates heat and smell and when it comes to the big and crowded kitchens for restaurant ventilation system plays an important role, on the other hand, heating and cooling system can protect the customers in restaurant during summer heat and winter cold, which ends to the better sale for owner and customers satisfaction (Mealey, N.D).

Heating and air-cooling system have begun to taken for granted over the years in most of the restaurants side. Having an air conditioning system "A/C and HAVAC" in place would make the environment more user friendly. Usually, a well-situated air conditioning system during construction would provide a better controlled heating, cooling and well-ventilated atmosphere. It could also be a centralized and automated by computer system technology (Kubba, 2010).

2.3.5 Material Selection

Using same and common materials creates a unity and shows the circulation in whole space, while different materials can separates spaces from each other and divides functions. Generally, materials are used to covers the floors, walls and as a finishers (Ozay, 1998).

Although the finishes and materials that use in front of the house (front of the house is referred to, as the dining and public area) are different from the materials that are used in back of the house (back of the house is referred to, as the support spaces and kitchen), but they should be chosen in a way to support the quality level and try to follow the general concepts of the restaurant (Binggeli, 2011).

2.3.5.1 Floor Covering

Restaurant floor is more than a pattern for covering the surface. Floor can work as a directional signal; elegancy, comfort ability, work as sofa and either reflect or absorb sound (Durocher, 2010).

According to Ozay (1998), function of the building, the using conditions of the interior and the users are three aspects that help designer to choose acceptable material for space; at the same time making harmony between materials are important and needs to be considered. It is essential to choose appropriate cover for restaurant floor, aside from being easy to clean it shouldn't get dirty fast as well, also it shouldn't be slippery but be smooth at same time, and it is better to be sound absorbance and doesn't cause much sound while chairs are moving and people are walking in top of it (Durocher, 2010). As an example it is possible to mention Nishimura restaurant is located in Beijing, China and it is designed by CL3 architects (Jane Arnett, Joey Wan, Rain Ho, Alice lei, Vani Cheung, Chi Lo) this restaurant reflecting natural garden theme, materials that using in this restaurant are wood , rocks, slate, sand , pebbles and dried tree branches (Fig8).



Figure 8: Nishimura restaurant is located in Beijing, China designed by CL3 architects (Jane Arnett, Joey Wan, Rain Ho, Alice lei, Vani Cheung, Chi Lo) (Weijian, 2009).

2.3.5.2 Wall Covering

Wall material and finishes can have effects on atmosphere, interior areas and entire design in the restaurants. (Fig 8-9) They can be wood, stone, plaster, brick, glass, concrete, metal, plastic or wall paper; these materials can have different colour, pattern and texture (Ozay, 1998).

Like restaurants floor covering materials, wall covering materials for restaurants also should easily get clean and stay clean for as long as it can, it is better to be sound absorbance and at the same time be resistance to tear and wear.



Figure 9: “Jinwu Guocai” restaurant is located in Shenzhen, China (Zhai, 2008).

2.3.5.3 Window and Door Covering

Windows and doors are important parts of wall for each establishment. For controlling the sound and noise which comes from outside It is possible to use double glazing window or there are materials such as curtain, blinds, screens, draperies, shutter and roller shade (Durocher, 2010). These materials are available in different colour, texture, these materials should be washable and cleanable and as a same time have harmony with entire space (Fig 9).

According to the health department's requirements, the materials and finishes that using in food handling area have to be sanitary and get clean easily while floor finishes being slip resistance as well. Flooring cover and bases should be according to the local health department. Wall surface must be "fiberglass reinforced plastic"

(FRP) and the panels and other materials like tiles, should be acceptable by "food and drug administration" (FDA), also the ceiling material should be cleanable, like vinyl-faced panels (Binggeli, 2011).

2.3.6 Exterior Space Design

Exterior design of the building has a direct relation to the perception of the customer and visually gives the first thought and general idea about what is happening inside also reflect the personality of building, and all these can have direct effect on the restaurant success.

With this knowledge is possible to understand the importance of exterior space design. Exterior design It itself is dividing to three categories of: 1- Façade design. 2- Entrance and signage design. 3- Sitting area (Piotrowski, 2007). Also, there are other categories like parking design and landscape design which are out of the limit of this study.

2.3.6.1 Façade Design

Designing a window in restaurant façade can create a visual communication between inside and outside and gives passersby the idea of what is happening inside the restaurants. Windows also can shows how crowded is inside the dining area and how is the interior design of the restaurant (Fig 10).

Sky lights and windows creates focal points and emphasis the interior space by passing the light, visual relation with surrounding can bring about attention and it can practically divide the space (Mehyar, February 2008).



Figure 10: Honeycomb restaurant is located in Shenzhen, China and designed by "SAKO" architects (Weijian, 2009).

2.3.6.2 Entrance and Signage Design

Entrance is the transitional and intersectional point between indoor and outdoor; it is separator and connector between human space and nature (Berkman, 2004). Each restaurant is recognizing by It is entrance and signage therefore it should be attractable and recognizable among other restaurant and places, besides it should be designed and defined in a way to be welcome and attractable.

Good examples to this areas are the golden arches of McDonald's and the huge guitars of Hard Rock Cafés, although the architecture and designer of Hard Rock Café is different in each location, the signage is recognizable in all around the world, when people see the big guitar they know where they are (Fig 11) (Piotrowski, 2007).

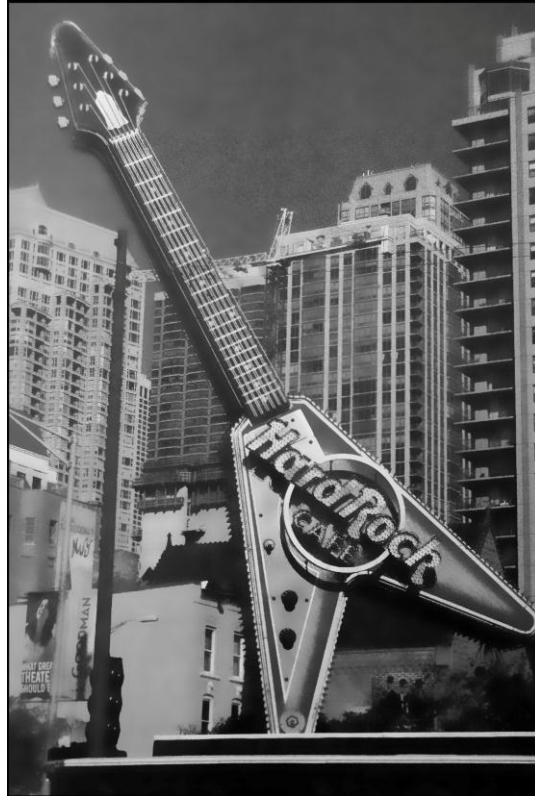


Figure 11: Signage of Hard Rock Café. (Durocher, 2010)

The restaurants' signage needs to stand out and be visible always and it also has to be designed in a unique way to identify easily. It is better to have visual access to inside of restaurant that people can have an idea about the interior area and the situation inside the place.

According to Ching (1996) there are two main options for positioning the entrance. First is place the entrance in the center of street façade, which is better for those building that, has symmetry in plan and second is placing entrance in one of the frontal edge of the building plan.

2.3.6.3 Sitting Area

In some restaurant the exterior area is designed for sitting usually front of the restaurant, this area could be use during some special seasons, if it is used for all the seasons it should be designed in a way to protect customers from unpleasant weather.

For the comfort of workers is better that the exterior sitting area have direct excess to the final preparation area, kitchen, storage and for sure to services (Fig 12) (Durocher, 2010).



Figure 12: Some views of Ezich Peanuts located in Kyrenia, Cyprus.

2.3.7 Restaurant Layout Design

The type of restaurant design has direct relation with layout design, as a result, study focusing on fine and casual dining restaurant and their layouts. To create a fine restaurant, good plan is necessary and designing a good plan is not happening, unless it has appropriate design layout. Generally, the overall goal of each restaurant layout design is to create a straight and smooth flow of food service, employees and equipments with no cross or back traffic.

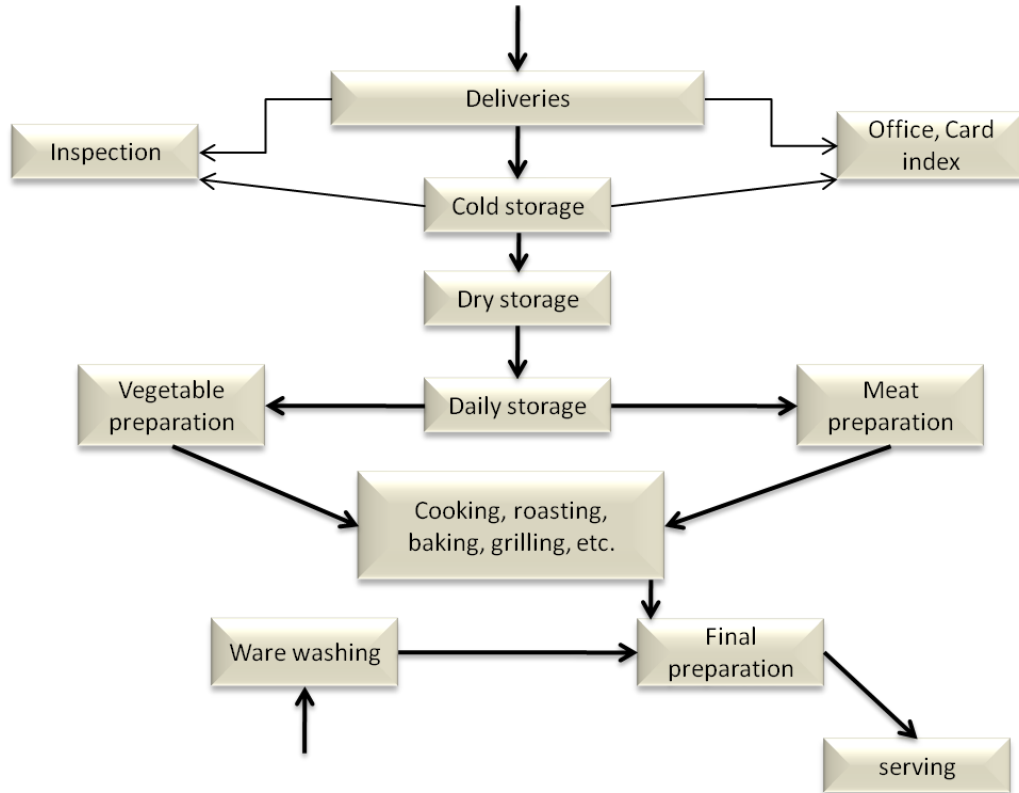
The raw ingredients and materials should enter from receiving area and follow a logical path to the storage, kitchen, preparation, serving area and returns to the back of the house (Arora, 2007).

In designing a restaurant layout there are areas that need to be considered long away. These areas are receiving, kitchen, dining area, bar, services, cashier area, staff space, office, restroom, storage and employee restroom. Each one of these areas are essential and need to consider and design well (table 8) (Piotrowski, 2007).

Receiving area is generally located at the back of the house with the access from the main street it is also located close to the kitchen and it is the first point that the food and supplies are taken into the restaurant. Therefore, it should be designed carefully. The receiving area must be protected from the snow, rain, heat and other excessive temperature and at the same time should not be visible to the customers but should have visual accessibility from the managers' office (Arora, 2007).

Kitchen generally located between storage and dining area. Kitchen itself is divided into different sub areas like storage (dry storage and cold storage or refrigerator), preparation area, ware-washing area, cooking and final preparation, fabrication area each of these areas should be designed carefully according to the requirements in the menu (Arora, 2007). It is proper to say for serving high quality meals it is necessary to design high quality kitchen (Table 3).

Table 3: Diagram of the common restaurant kitchen(Neufert, 2002, 456).



Dining area can be either outside inside or on both side of restaurant. Dining area generally situated near the holding and service area so that food temperatures maintained to the point of service. Size of dining area is equally effect the number of customers, bigger dining area can serve more amounts of customers, and defining a service space; it is necessary in dining room especially in big dining area to increase the speed of service. (Stipanuk, 1992). Generally, restaurants' biggest space is the dining area and for more privacy, designers add partitioning which divides the whole dining area into separate unit is. Dining area has more functionality includes, entertaining customers and guests, celebrating special occasions, gathering and holding family meetings etc. A conducive room with well-lighted surrounding, ventilation and sanitary makes the meal pleasant with long lasting experience (Cruz, 2001). Bar can be located in those restaurant that serves alcoholics drinks. It can also be used by single person to seat alone and not wait for table to get free or for those that wants to

drink before meal, because of the bar situation, it is possible to be noisier than dining room. If the owner does not want the extra noise in dining room, the bar can be separated by partitioning or allocating a separate space or getting a better sound absorbance (Almanza & Kotschevar, 1985).

Cashier area is needed in those restaurants that customers have to pay in their way out it is occupying a smaller area, mostly located inside the dining room.

Each restaurant needs a room for their staff (staff room). The staff can leave their belongings and change their cloths. Moreover, staff needs separated restroom separately from customers' restroom it is possible to add shower in their area.

Office is another part in restaurant design, which is necessary for the restaurant manager, assistant and chef. The managers' office needs to be secured and located in a closet door properly demarcated from dining and kitchen area. It is better to have a visual access to control entrance into the dining area and kitchen, these areas is control by camera (Stipanuk, 1992).

Restroom needs to have direct access, but not visual access to dining area. Restroom should have opening like window to provide fresh air for guest.

2.3.7.1 Main Considerations in Restaurant Layout Design

Perhaps layout design is the most significant factor for designing any foodservice operation. Service organizations ought to provide and offer what their customers requires, what they need and in a way, they want it. The efficiency, capacity and quality of this operation will noticeably get affected through the layout design, so the layout design must be considered from the start (Jones, 2006).

To archive a good restaurant layout there are elements that needs to be considered. These elements are proximity between spaces, size of the space, sequences of the space, relationship between functions, flow pattern, directions and the design for the disable groups that should apply correctly in each part of restaurant.

2.3.7.1.1 Proximity

Proximity is important in all types of building from house plans to airport and hospital plans. There are spaces needed to be closed or away from each other. In following (table 4), it is possible to see how important it is for each restaurant function to be adjust together in service facility, number “0” not important at all, number “3” extremely important.

Table 4: The numbers in the table shows the importance of each function to be close and adjust to each other (Brichfield, 2008).

	RECEIVING	DRY STORAGE	REFIREGERATED STORAGE	PREPRATION	FINAL PREPRATION	SERVICE	WAREWASHING	TRASH HOLDING	CUSTOMER ENTRANCE
RECEIVING									
DRY STORAGE	1								
REFIREGERATED STORAGE	0	1							
PREPRATION	0	2	3						
FINAL PREPRATION	0	0	2	3					
SERVICE	0	0	0	1	3				
WAREWASHING	0	0	0	1	1	3			
TRASH HOLDING	3	0	0	0	0	0	0		
CUSTOMER ENTRANCE	0	0	0	0	0	0	0	0	

There is not any design rules to specify the proximity between each function of the restaurants. One of the important restaurant characteristics is to be sure foods are served hot and on time to the customers.

The proximity of the serving point to the guest seat should be proportional. Therefore, it is important to emphasize on the proximity between kitchen and dining area. According to the observation and preferences of costumers, there is a proper proximity between kitchen and dining area. If this proximities increase or decreases, this can cause some disadvantages. If the proximities become too short or too close to each other, this creates uncomfortable situation for both costumers and staff.

For example, if kitchen in the restaurant is too close to the dining area, this can make costumer an unpleasant situation, like the smell of food, heat, noise and crowd. Another example is the proximity between the lavatory and dining area that if it were too short which can cause the malodorous smell, noise and uncomfortable situation for costumer. On the other hand, if the proximity of these functions becomes too long, again can cause some other issues like, ordering and service problem (cold & late food that make costumer unsatisfied), make staff tired, flow problem and crowd. Therefore, a proper proximity can make both costumer and staff satisfy, which can change according to some factors like urban area, location, weather, type of restaurants, kind of food, amount of costumers, traffic etc (Almanza & Kotschevar, 1985).

2.3.7.1.2 Sizes

According to "Ching" a place which is too high or too big can have negative energy on users or even observers (Ching, 1996). Each type of restaurant according to the number of services, needs different sizes for each area; proper to say number of

customers, tables and chairs can have effects on restaurant space and sizes. In following tables (5-7) it shows the effect on each other.

Table 5: Table shows the toilet number according to customer's places (Neufert, 2002, 456).

Customer places	Toilets for men	Toilets for women
50	1	1
50-200	2	2
200-400	3	4
400	Determine in individual cases	

Table 6: Approximately space allocation for restaurant planning (Almanza & Kotschevar, 1985).

Space	Percent
Total	100%
Kitchen	30%
Dining	50%
Service	20%

Table 7: This table shows the area which is needed for chair occupancy (per-meal), dining area and kitchen for restaurant (Neufert, 2002, 456).

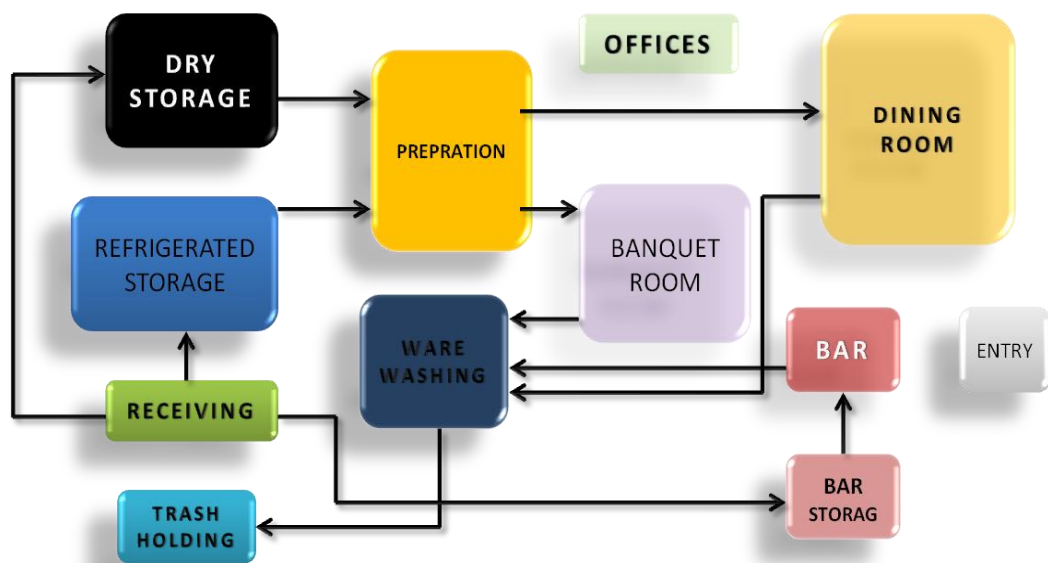
TYPE	Chair occupancy per meal	Kitchen area required (m ² /cover)	Dining area required (m ² /seats)
Exclusive restaurants	1	0.7	1.8-2.0
Restaurants with high seats	2-3	0.5-0.6	1.4-1.6
Normal restaurants	1.5	0.4-0.5	1.6-1.8
Inn/ guest house	1	0.3-0.4	1.6-1.8

Approx,80%supplement is added for storage rooms, personal rooms and etc.
Cover = seats × no. of seats changeovers.

2.3.7.1.3 Functional Sequences and relationship

Although, there are many types of restaurants from casual dining to fast casual, but design principles are applying to all restaurants equally, therefore all restaurant following same diagram (table 8) and principle but not same design.

Table 8: Restaurant layout diagram (Brichfield, 2008).



As it shown in the table 8, create a restaurant layout, regardless to their type, it needs common spaces. These spaces are entrance, waiting area (some restaurant does not provide waiting area), cashier, dining area, kitchen (kitchen itself include different spaces like, refrigerated storage, preparation area, ware- washing etc.), office, re- stroom, staff room, trash holding area (Piotrowski, 2007).

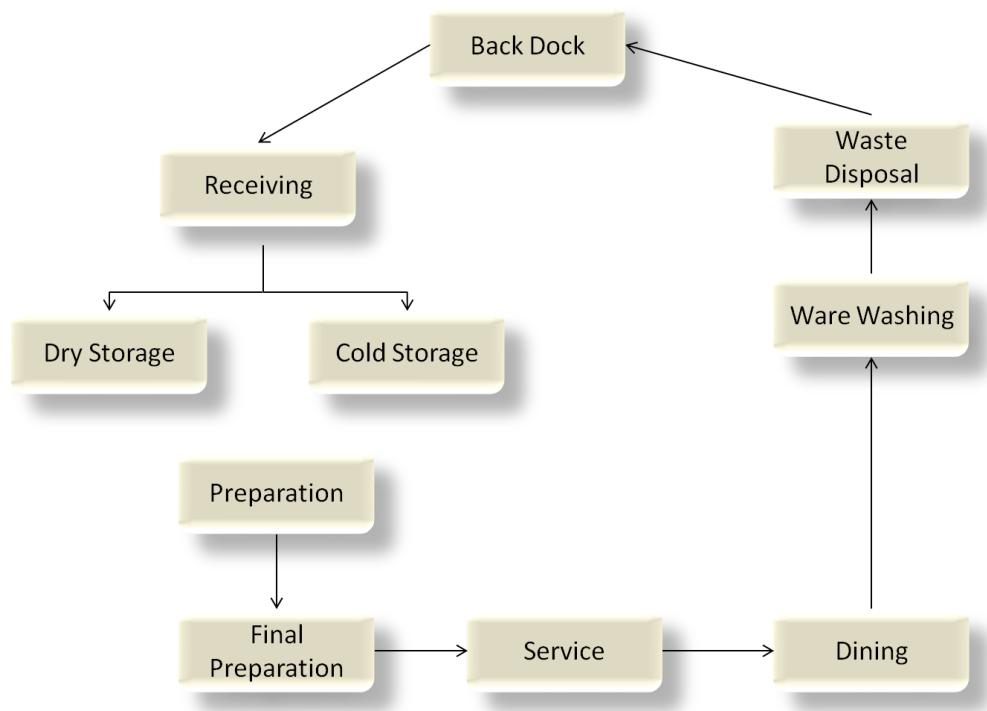
2.3.7.1.4 Flow pattern in spaces

The perfect layout design provide “straight-line” or “circular-flow” which is unidirectional. These types of design decrease the flow-crossing pattern as described before. The restaurant elements and layout should flow logically so the customers don’t retrace their steps (Durocher, 2010).

For instance, the reception should be located near the entrance that directs each customer either to the bar or dining area. Also in the back of the house the flow should move as much as possible in the straight line from receiving to final preparation also from there to tables and return the dirty dishes to ware-washing area.

As Brichfield mentioned in his book "Design and layout of food service facilities", the food movements in the course of a food service facility must follow logical sequences, which starts by receiving and ends by waste disposal and as long as both of these functions (receiving and waste disposal) are located in the back of the house it appropriate to say this flow is designed according to the circle of food movements in all restaurants (Table 9).

Table 9: Flow of materials and staff in food services operation (Brichfield, 2008).



One of the key for designing a successful restaurant is to minimize the cross between customers flow pattern. Generally, flow patterns are available for customers, staffs, tableware, food and services and it should be considered in first steps of design

programming (Fig 13-15). The flow planning also should be considered in entrance and parking area as well. “An important goal of VE (Value Engineering) is to optimize flow in terms of proximity, volume, speed and direction” (Durocher, 2010).

The following figure (13) shows that there is no major congestion between customers while they are entering and exiting from dining area to restroom and salad bar. These congestions must decrease as much as possible that customers and staffs can move easily in the restaurant.

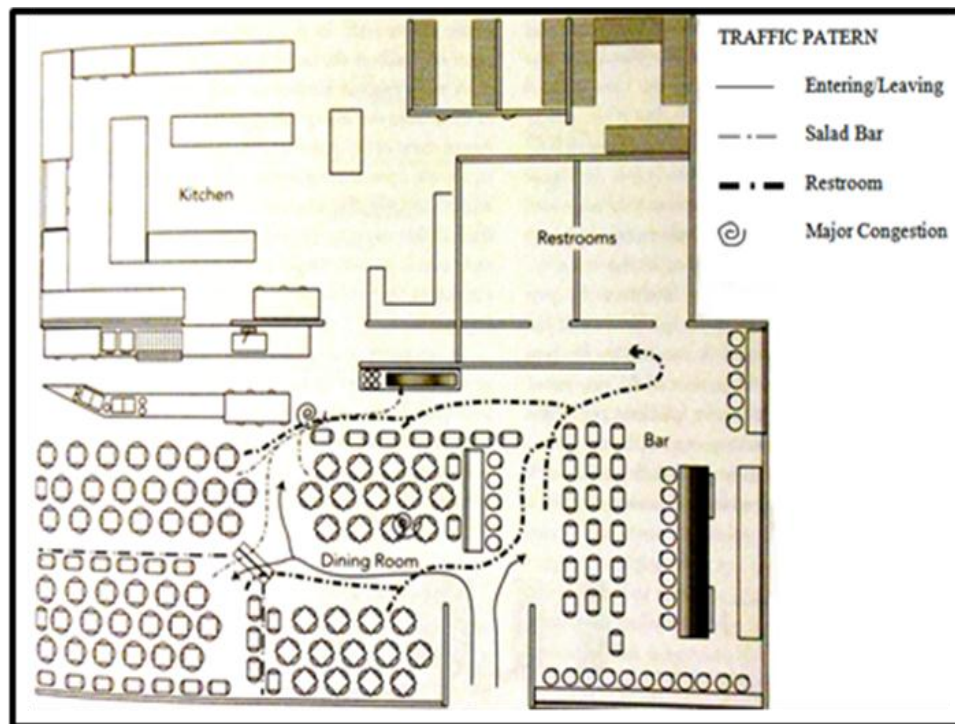


Figure 13: Ccustomers flow patterns (Durocher, 2010).

Plans should be design in a way to support the logical flow to and from the different areas and spaces. Therefore designing the main aisles and side aisles according to the shape and size of the room can help to achieve this aim. Any design issue in this matter can cause catastrophe for both diners and workers in the restaurant. The aisles wide should be enough for the people that like to move along them at a time. It

should be approximately between 0.91 to 1.22 m or 3 to 4 ft, on the other hand, should provide sufficient amount of waiting area can reduce the passage for people to pass through the aisles (Almanza & Kotschevar , 1985).

Following table (14) shows the major movements of waiters in the restaurant from dining area to dish washing area and from salad bar and final preparation to tables. This flow can create congestion between salad and from the various bar, dining area, dishwashing area and final preparation so the architecture and interior designer must design the restaurant in a way to decrease these congestions in the plans as much as possible.

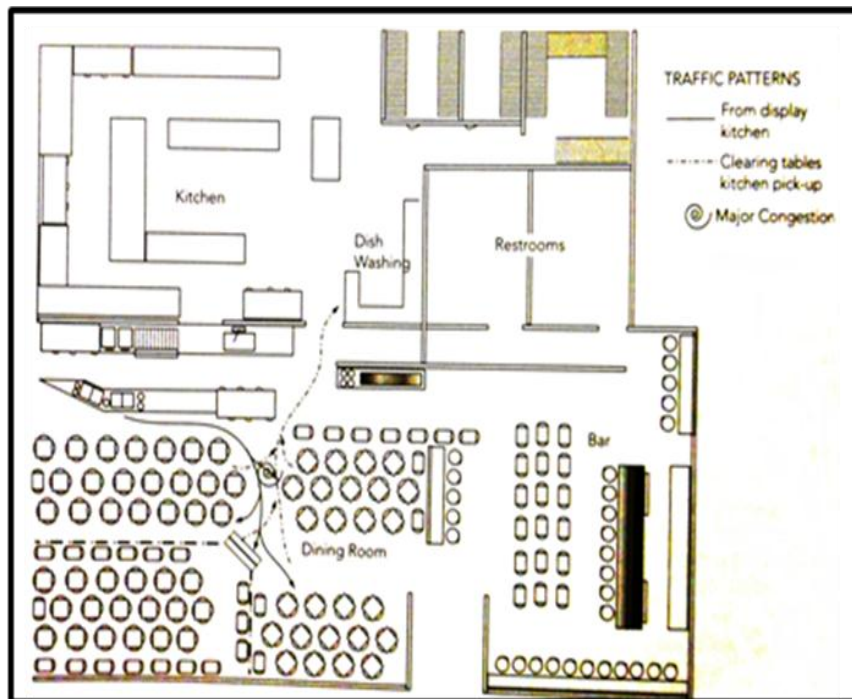


Figure 14: This diagram showing the flow of staff in the restaurant (Durocher, 2010).

All the point from picking up the food to serving, it should be according to the path (aisles). The proximity of this path should be as short as possible for both diners and servers to increase the performance and decrease the frequency of travel. As it was mentioned in previous part sufficiently wide for aisles is reducing the traffic and pro-

vides wider aisles can also help those with wheel chairs (Almanza & Kotschevar, 1985).

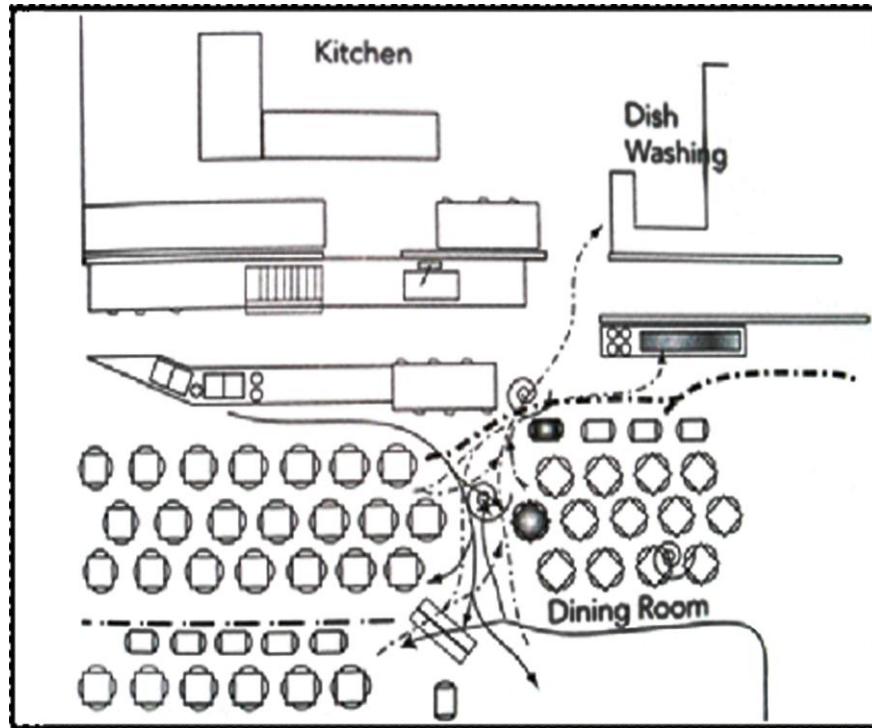


Figure 15: This diagram showing the choke points (Durocher, 2010).

Previews figure shows choke points (where the paths crossing each other) the path of customers and staff cross each other it is better to avoid the choke points. The flow of staff in the restaurant and by shorting the flow of food from kitchen to dining area and service area and from there to dish washing it is possible to increase the serving speed and minimize the energy lost.

In some cases, controlling the traffic and saving energy is not possible, unless some communicational equipment like signal system or phone placed. Also the use of conveyors can be useful for delivering the food and removing the dishes and soiled (Almanza & Kotschevar, 1985).

2.3.7.1.5 Directions

Top executives that make a choice of organizational principle would strive and resolve the direction that could take to accomplish it. Dis-purpose and direction shapes how the organization is design and manage (Daft, 2008). Geographical directions are one of the most significant factors in all architectural plans. It can have direct effect on users and customers comfort, also it influence on the weather temperature of inside the building.

As Asst. Prof. Dr. Ozay (2012) mentioned, it is better to place the kitchen in the north direction of the plan, where as dining and sitting area is better to locate in the south and east to catch a better light. Those space like storage and lavatory which does not need the natural light are better to place in the west side (light of west direction is direct and can harm the users). Also stated that, if dining area used in west and east side of the building, it is better to use some vertical devices (shading element) to control the light and temperature, especially in summer time.

2.3.7.1.6 Disable Group

Since 1990 ADA (American with disability) provides access for disable and handicapped people to public spaces (Durocher, 2010). One of these spaces is restaurants which count as public accommodation.

Restaurant design should be in a way that makes easy access to both dining area and lavatory by using ramp. According to the ADA, probable accommodations contain the providing work areas, which are accessibility of wheelchair, with placing the ramp and acquiring specific equipments such as brail device and telephone handset in lavatory (Stipanuk, 1992).

Chapter 3

ANALYSES OF SELECTED RESTAURANTS IN GAZIMAĞUSA; NORTH CYPRUS

3.1 Method of Selecting Restaurants in Gazimağusa; North Cyprus

Related to the general terms, this thesis is based on a qualitative research methodology according to the following research methods. The data which are collected for this study is according to the documentary research (Internet post ,journals, research centers, Books) and inspection survey (observation, sketches, photos) and some interviews which are used to gather information for the selected restaurants such as Californian, Palm House, Temel Reis, D&B and Funky Buddha in Gazimağusa; North Cyprus. The restaurants which are selected for this thesis and used for the case study, are the restaurants that have enough accessibility and availability to their information, while they are having acceptable architectural designs. These restaurants have a capacity of serving food to 130-450 people at the same time while It is size is between 450-5500 square meter. Because of the limitation of well design restaurants in Gazimağusa, there are a few restaurants that can be chosen for this study. In this research, some of these restaurants selected for examination, according to the standards can count as casual and fine dining restaurants. However, the information gathered are used for important factors in restaurant design. The important factors for restaurant design can count as Lightening design, Colour design, Sound and acoustic design, Heating- cooling and ventilation design, Material design, Exterior space design and restaurant layout design. Moreover, the major point of focus lays at the restaurant layout design for this research. Furthermore the restaurant layout design have

sub layers such as, proximity between spaces, size of the space, sequences of the space, relationship between functions, flow pattern, directions and the design for the disable groups. These items will be used to analyze each restaurant individually thorough the help of graphs, bubble diagrams, charts and pictures, the analysis conducted resulted with having an acceptable design and design problem. The final layout analysis table (25-26), illustrates the percentage of acceptable design and design problems for each individual space of all stated restaurants. After reaching the desired percentage of acceptable design and design problems, (acceptable designs are all corresponding with design standards which makes it acceptable while the design problems are not according to the standards) for each particular restaurants space, there would be a chart (27-33) to gather all the restaurant illustration according to the individual layout factors, these charts (36) leads to the knowledge of the final layout design which shows the final classification of the selected restaurant according to the best result.

3.2 Analysis of Selected Restaurants in Gazimağusa; North Cyprus

In this chapter, these restaurant would be analyzed in terms of their layouts. In following part, these layout analysis will examine by some charts, graphs, photos and bobble Diagram.

3.2.1. Californian Gold Restaurant

This restaurant is one of the fine dining restaurants in Gazimağusa, which is situated in İsmet İnönü Boulevard. The building was built during the British period (1678-1960); and then in 2010 it was adopted for reuse as a restaurant. The designer renovated the building without fundamentally changing the façade of it. This restaurant is approximately 5500sq/m both closed space and open space plus garden

and parking, with and one floor with ability of serving approximately 450 customers at a time.

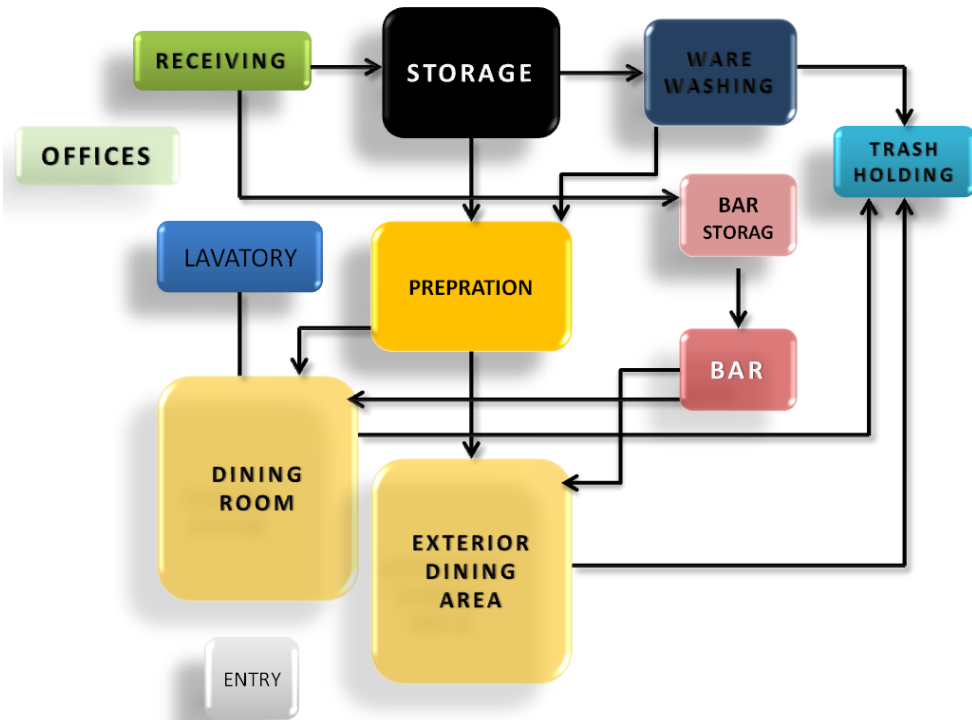
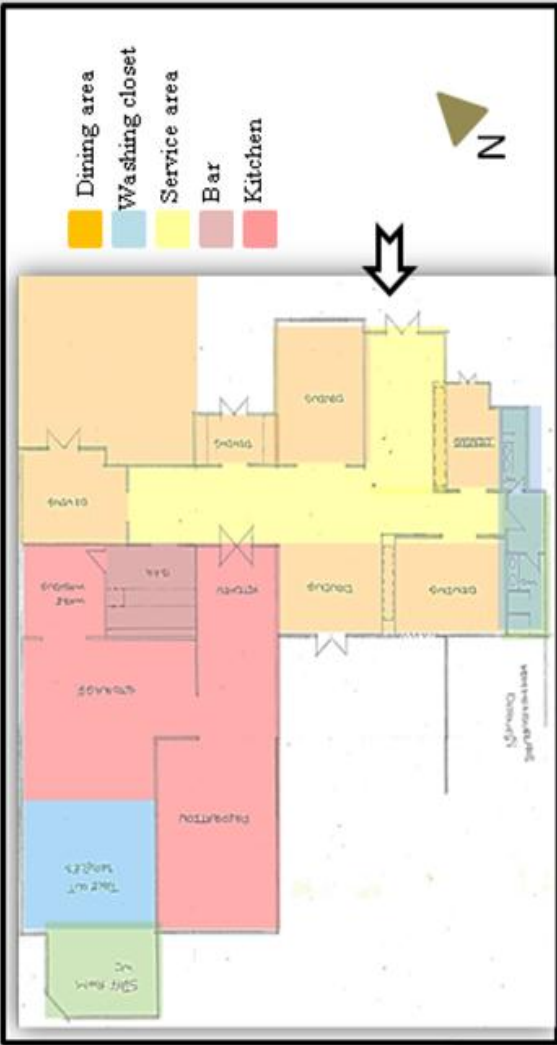






Figure 16: Bubble Diagram of Californian Gold restaurant (year 2011-2012).






As shown in Fig.16, the organization of this restaurant is centralized. Service area is one of the significant functions in restaurants which is connecting spaces to each other. Here it can be seen that service area is at the centre of all other functions. Therefore it may provide high accessibility. As a result, it could be said that this restaurant has acceptable layout organization in terms of functional placement.

Table 10: Californian Gold, Analysis on restaurant layout design according to 2011-2012.

INVESTIGATION ON RESTAURANT LAYOUT DESIGN	
<p>GENERAL INFORMATION</p> <ul style="list-style-type: none"> •NAME OF THE RESTAURANT: Californian Gold •LOCATION OF RESTAURANT: I sm et inonu boulevard, Magusa, Cyprus. •SIZE OF THE RESTAURANT: ~5500 sq/m •NUMBER OF THE FLOORS: one floor •PERIOD OF THE BUILDING: British Period •DATE OF CONSTRUCTION: 2010 Date of adopted and re-use as Californian Restaurant •ARCHITECT NAME: Anon 	 <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="1077 1288 1324 1892">  <p>MAIN ENTRANCE FAÇADE VIEW</p> </div> <div data-bbox="1077 940 1324 1276">  <p>BAR</p> </div> <div data-bbox="1077 593 1324 929">  <p>DINING AREA</p> </div> <div data-bbox="1077 235 1324 582">  <p>DINING AREA</p> </div> </div>

In Tab.11, functional organization, size of the space, sequences of the space, relationship between functions, flow pattern, directions and the design for the disable groups are analyzed. Different functions that are kitchen, lavatory, dining area and exterior spaces examined by their sizes, sequences, relationship, flow pattern, direction and disable groups. In the following table (11), it can be seen that total size with both parking area and garden of this restaurant is approximately 5500sq/m. Without garden and parking area, total size is approximately 3500sq/m. According to this area, 50% of this restaurant, which is approximately 1750sq/m allocate as dining area, which is appropriate (table 6).





Table 11: Analysis of Layout Design of Californian Gold Restaurant (year 2011-2012).

Function	kitchen	lavatory	Dining area	Exterior spaces	Problem explanation
Analyses The Layout Design Californian Restaurant” Customer places ~450 people ~5500sq/m +parking &garden					
Sizes	~212 m ²	~25m ² 2 toilets for women 1 toilets for men	Interior dining ~250 m ² Exterior dining ~1500 m ²	~5000 m ²	The toilets should be more then 3 for men and more then 4 for women.
Sequences	Acceptable design	design problem	Acceptable design	Acceptable design	The lavatory door is in direct view of diner.
Relationship	Acceptable design	Design problem	Design problem	Acceptable design	The dining area doesn’t define well. The dining table is close to lavatory. There is dining table close to entrance in walkway area.
Flow pattern in space	Acceptable design	Design problem	Design problem	Design problem	There is congestion between customers (dining area to lavatory) and staff (kitchen to dining area).
Direction	West Direction, incorrect	East Direction, incorrect	East, West and North Direction, acceptable (Open Plan)	East, West and North, acceptable (Open Plan)	There are some correct and incorrect directions in this restaurant.
Disable group	Acceptable design	design problem	Acceptable design	Acceptable design	There is not any special lavatory design for disable people.

Kitchen is approximately 212sq/m, that means, 6% of total size in kitchen of this restaurant. According to the Tab.6 total size of kitchen should be approximately 30%, so with this result, it could be said that the kitchen area of the restaurant is less than standard size.

Lavatory is approximately 25sq/m in this restaurant (two for women & one for men). According to the population of this restaurant, which is approximately 450, the numbers of toilets are less than standards. Refer to Table 5; they should be more than four for women and more than three for men.

Table 12: Analysis of the Layout Design according to proximity (year 2011-2012).

Analyses The Layout Design Californian Restaurant"					Problem explanation
Functions	kitchen	lavatory	Dining area	Exterior spaces	
kitchen proximity	–	de≤20m (staff lavatory)	Interior dining di≤20m Exterior dining de≥30m	de≥30 m	proximity is too much between exterior dining and kitchen.
lavatory proximity	di≤20m (staff lavatory)	–	Interior dining di≤20m Exterior dining de≥30m	de≥30 m	proximity is too much between exterior dining and lavatory.
Dining area proximity	Interior dining de≤20m Exterior dining de≥30m	Interior dining de≤20m Exterior dining de≥30m	–	Interior dining de≥30m Exterior dining de≤30m	proximity is too much between exterior dining and kitchen.
Exterior spaces proximity	de≥30 m	de≥30 m	Interior dining de≥30m Exterior dining de≤30m	–	The proximity is too much between exterior dining to kitchen and lavatory.
"d" is counting as proximity between spaces "di" is interior dining and "de" is exterior dining.					

Due to the literature reviews and interviews by the professionals in the subject matter it is found that, there is no specific rule for the proximity between spaces in the restaurant. The importance is to serve the food at an appropriate time with proper

temperature. The data, which collected according to the proximity in restaurant layout design, can lead us to reaching the minimum and maximum proximity. Due to this, minimum proximity became 10 meters and maximum proximity 30 meters while proper proximity can be changed according to the situation of restaurant. For instance, using elevator instead of stairs for serving food can change the time and proximity.

The proximity between kitchen and dining area is one of the most important factors in restaurant layout design. These proximity should organize according to the area's square meter and population. If kitchen were too far from dining area, it can cause some disadvantages like timing, service delay and costumers dissatisfaction. Furthermore, if these proximity were too short, it can cause noise, smell and similar problems.

According to table (12), this restaurant has some proximity like, less than 20 meter between dining and kitchen for interior space and more than 30 meter for exterior dining area. The exterior space is too far from the kitchen which can create some issues as noted before.

Nonetheless, in interior space, most of the proximity are acceptable and suitable except for some few dining tables, which are close to the kitchen than again can have some other problems such as noise and smell. Proximity between the other spaces are significant as well.

The proximity between dining area and lavatory should be mentioned, because it can affect the costumers, and it can cause smell, noise and uncomfortable situation for

diners. Therefore, this proximity should be designed carefully. In this restaurant, the proximity between dining area and lavatory is divided into two categories, one is the proximity of interior dining, and other is exterior dining. Interior dining and lavatory are maximum 20m far from each other; it means that this proximity is appropriate proximity.

As it mentioned before in Tab.11, some parts of dining area is too close to the lavatory, which can create uncomfortable situation. About the exterior dining, it can be note that, the proximity between exterior dining and lavatory is more than 30m, which is too far from each other.

3.2.2. Funky Buddha Restaurant

This restaurant was one of the Casual dining restaurants in Gazimağusa during 2010-2012, which was located in Cahit Sıtkı Tarancı street. The building was adopted as a restaurant and designed according to the Modern style; in 2010. This restaurant was located at the center of the city, so designer tried to reflect the view of the city inside of the restaurant. For this reason, designer used large opening for this place to create a reflection of outside view to inside. In addition, this restaurant has exterior dining in two sides of the building, which are multifunction for different events.

Because of the design concept of this restaurant, it can be assumed that designer tries to provide a casual atmosphere. This restaurant is approximately 420sq/m and one floor with ability of serving approximately 170 customers.

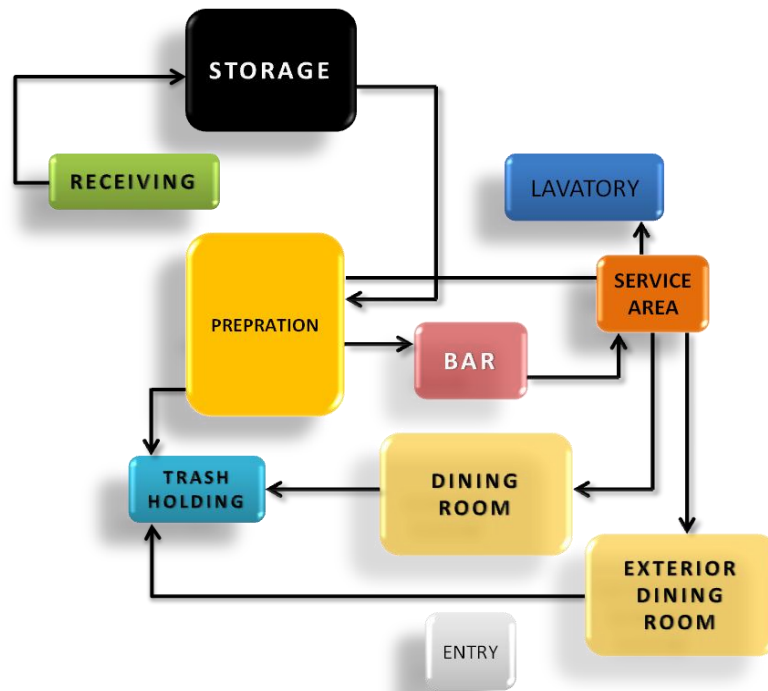


Figure 17: Bubble Diagram of Funky Buddha restaurant (year 2011-2012).

As shown in Fig.17, the organization of the restaurant is centralized around the bar. Perhaps it can be mentioned that the emphasis of the whole restaurant is towards the bar. However, the service area is better to be situated at the center for easy accessibility.

The lack of service area in a restaurant can cause major problems for both customers and guests. Locating the bar closer to the kitchen would facilitate the service of guest demands. The lavatory is located in a position whereby guests cannot have visual access but easy access to it.

Table 13: Funky Buddha, Analysis on restaurant layout design according to 2011-2012.

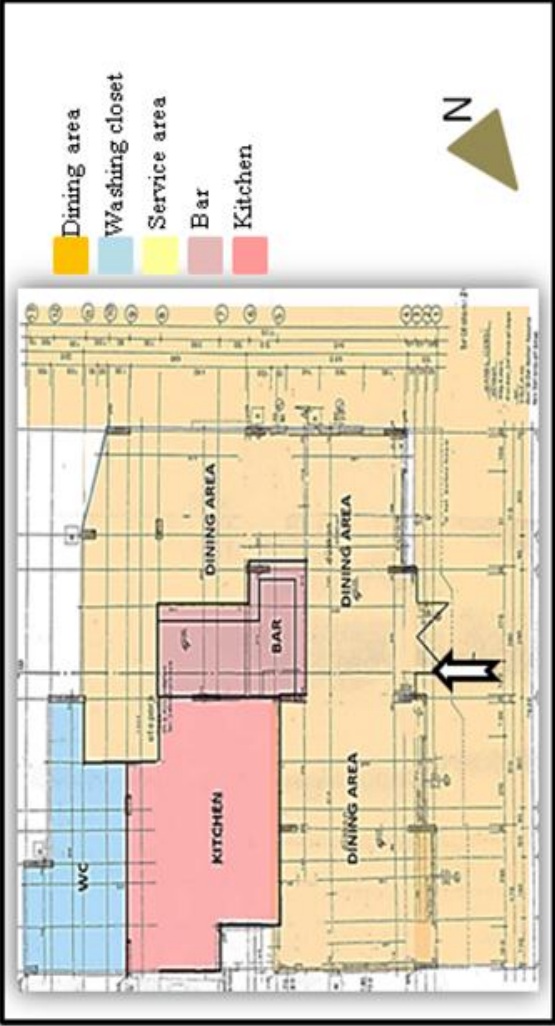









INVESTIGATION ON RESTAURANT LAYOUT DESIGN			
<p>GENERAL INFORMATION</p> <ul style="list-style-type: none"> •NAME OF THE RESTAURANT: Funky Buddha •LOCATION OF RESTAURANT: Çahit Sıtkı Tarancı street, Magusa, Cyprus. •SIZE OF THE RESTAURANT: ~420 sq/m •NUMBER OF THE FLOORS: One floors •PERIOD OF THE BUILDING: Modern period •DATE OF CONSTRUCTION: 2010 •ARCHITECT NAME: Yilmaz Ertuğrul 	 <p>The floor plan diagram shows the layout of the restaurant. It includes a legend with color-coded areas: Dining area (yellow), Washing closet (light blue), Service area (yellow), Bar (pink), and Kitchen (red). The plan shows a central kitchen area, a bar area, and several dining areas. A north arrow is present in the top right corner.</p>	 <p>A photograph showing the interior of the bar area, featuring a white bar counter and stools.</p>	<p>BAR</p>
 <p>A photograph showing the exterior of the restaurant building, featuring a modern facade with large windows and a sign for 'Funky Buddha'.</p>	<p>MAIN ENTRANCE FAÇADE VIEW</p>	 <p>A photograph showing the interior of the dining area, featuring tables and chairs.</p>	<p>DINING AREA</p>
 <p>A photograph showing the interior of the kitchen, featuring stainless steel equipment and a clean environment.</p>	<p>KITCHEN</p>		

Table 14: Analysis of Layout Design of Funky Buddha restaurant (year 2011-2012).

Analyses The Layout Design Funky Buddha Restaurant Customer places ~170 people ~420sq/m interior and exterior space					
Functions	kitchen	lavatory	Dining area	Exterior spaces	Problem explanation
Sizes	~42 m ²	~30 m ² 2 toilets for women 1 toilets + 1 urinal for men	~235 m ² Interior dining ~113.5 m ² Exterior dining	~113.5 m ²	The kitchen sizes is less then enough.
Sequences	Design problem	Acceptable design	Acceptable design	Acceptable design	There is no sequence definition for the kitchen + there is no service door in the kitchen.
Relationship	Design problem	Acceptable design	Acceptable design	Acceptable design	The kitchen doesn't have separate spaces for functions so their relation is not correct.
Flow pattern in space	Design problem	Acceptable design	Acceptable design	Acceptable design	There is major congestion between restaurant staffs in kitchen, also between customer and staff in delivery time in front of the house.
Direction	North east Direction, Correct	East Direction, Incorrect	South and West Direction, Correct	South and West Direction, Correct	Except lavatory which is better to locate in west side, all the other directions are acceptable and correct.
Disable group	Design Problem	Design problem	Acceptable design	Acceptable design	There is not any special lavatory for disable people. There is no any service door in back side of the house.





In table above, it can be seen that total size of this restaurant is approximately 420sq/m. According to this area, 82% of this restaurant that is approximately 348sq/m allocate as dining area, which is not appropriate (table 6).

According to table (6) the standard dining area should be approximately 50%, with this knowledge, the size of dining area of the restaurant is more than standard. This result makes other functions to be less than appropriate size, so it could cause some problems. These problems can affect the size of kitchen and make it smaller in this case the back of the house cannot support the front of the house.

As a result, kitchen service cannot handle the amount of customer and it can cause disorderliness in kitchen. In this restaurant, the size of kitchen is approximately 42sq/m, which is equal to 10% of total size. According to Tab.6 this size is less than standard which should be approximately 30% of total size. Lavatory is approximately 30sq/m in this restaurant (two for women, one for men & one urinal).

The total size of lavatory should be 20%, according to the population of this restaurant, which is approximately 170, the numbers of toilets are less than standards. According to Table 5, the number of toilets is standard.

Table 15: Analysis of the Layout Design according to proximity (year 2011-2012).

Analyses The Layout Design Funky Buddha Restaurant					Problem explanation
Functions	kitchen	lavatory	Dining area	Exterior spaces	
kitchen proximity	–	de≤20m	Interior dining di≤20m Exterior dining de≤20m	de≤20 m	Acceptable design
lavatory proximity	di≤20m	–	Interior dining di≤20m Exterior dining de≤20m	de≤20 m	Acceptable design
Dining area proximity	Interior dining de≤20m Exterior dining de≤20m	Interior dining de≤20m Exterior dining de≤20m	–	Interior dining de≤20m Exterior dining de≤10m	Acceptable design
Exterior spaces proximity	de≤20 m	de≤20 m	Interior dining de≤20m Exterior dining de≤10m	–	Acceptable design
“d” is counting as proximity between spaces “di” is interior dining and “de” is exterior dining.					

In this restaurant, the proximity between dining area and kitchen is less than 20 meter for both interior and exterior. These proximity are appropriate, especially for exterior dining area. Interior dining area also has the proper proximity with kitchen; but in some part this proximity It is decreasing, which is too close to the kitchen.

As mentioned before in previous case study Californian Gold restaurant, the proximity can cause some issues like smell, noise and hygienic problems. The proximity between dining area and lavatory is less than 20 meter for both interior and exterior dining area, which is acceptable according to standards. It cannot create any uncomfortable situation for costumer.

3.2.3. Palm House Restaurant

This restaurant is another example of the casual dining restaurants in Gazimağusa, which is located in Nadir Street, Palm Beach area. The building is also designed according to the Modernist style and it was adopted to be a restaurant in 2011.

Palm House restaurant located at the eastern side of the city and surrounded by the sea from three sides, with this opportunity for the designer to use maximum view of the sea by using glass instead of wall and sitting area outside.

According to the designer of palm house restaurant Ms.Güldal Aydınli (2012), they tried to combined the traditional Cypriot style with British style in this restaurant to create a friendly and warm atmosphere for diners. In addition, this restaurant has exterior dining in three sides of the building, to achieve the 270° panorama view of the sea. Because of the design concept of this restaurant, it seems that, designer tried to provide a casual atmosphere that could be appropriate for all type of customers. This restaurant is approximately 450sq/m and designed in one floor with ability of serves approximately 130 customers at a time.

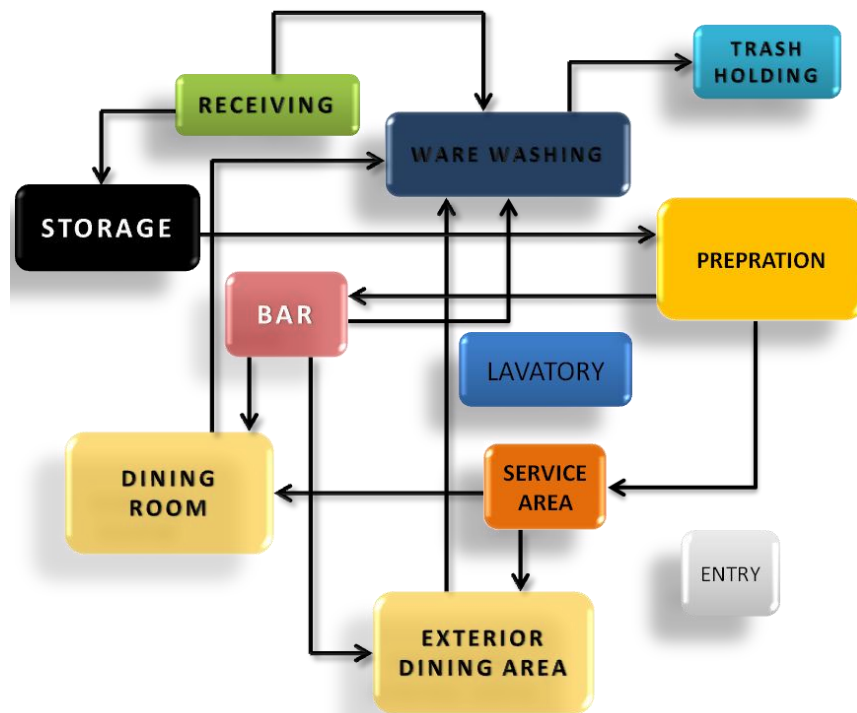


Figure 18: Bubble Diagram of Palm House restaurant (year 2011-2012).

The Fig.18 shows the positioning of the bar, which is directly accessible to the service area and the kitchen, well situated; added that the well located lavatory which is not visible to the guest but properly accessible to guest users is another advantage of this plan organization.

Furthermore, the service area is centralized and the dining area is situated all around it, with such a plan that staff can easily have access to serve the customers faster and easier.

Table 16: Palm House, Analysis on restaurant layout design according to 2011 -2012.



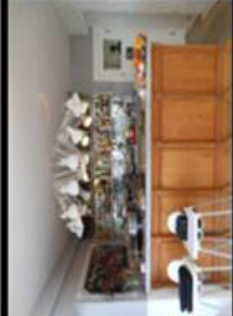







INVESTIGATION ON RESTAURANT LAYOUT DESIGN	
<p>GENERAL INFORMATION</p> <ul style="list-style-type: none"> •NAME OF THE RESTAURANT: PALM HOUSE •LOCATION OF RESTAURANT: Nadir street, Mağusa, Cyprus. •SIZE OF THE RESTAURANT: ~450 sq/m interior and exterior space •NUMBER OF THE FLOORS: One floors •PERIOD OF THE BUILDING: modern period •DATE OF CONSTRUCTION: Redesign in 2011 •ARCHITECTURE NAME: Guldan Aydinli 	 <p>MAIN ENTRANCE FAÇADE VIEW</p>
	 <p>BAR</p>  <p>DINING AREA</p>  <p>KITCHEN</p>

Table 17: Analysis of Layout Design of Palm House restaurant (year 2011-2012).





Analyses The Layout Design Palm house restaurant Customer places ~130 people ~450 sq/m interior and exterior space					
Functions	kitchen	Lavatory	Dining area	Exterior spaces	Problem explanation
Sizes	~27m ²	~6 m ² 1 toilets for women 1 toilets for men	~160 m ² Interior dining ~202 m ² Exterior dining	~243 m ²	The kitchen sizes is less then enough. The lavatory for each men and women should be 2 for each one.
Sequences	Acceptable design	Acceptable design	Acceptable design	Acceptable design	Acceptable design
Relationship	Design problem	Acceptable design	Acceptable design	Acceptable design	The kitchen doesn't have separate spaces for functions so their relation is not correct.
Flow pattern in space	Design problem	Acceptable design	Acceptable design	Acceptable design	There is major congestion between restaurant staffs in kitchen.
Direction	South Direction, Incorrect	West Direction, Correct	North, East and West (Acceptable)	North, East and West (Acceptable)	There are some incorrect directions in this restaurant, but because of the see view and location of this place, designer, preferred to use these directions.
Disable group	Design Problem	Design problem	Acceptable design	Acceptable design	There is not any special lavatory for disable people.

According to table above, it can be said that, total size of this restaurant is approximately 450sq/m. According to this, 80% of this restaurant, which is approximately 362sq/m allocate as dining area, which is not appropriate. The standard dining area should be approximately 50%, with this knowledge, size of dining area of this restaurant is more than standard (Table 6).

As mentioned previously in the case study of Funky Buddha, the result makes other functions to be less than appropriate size, so it can cause some issues. These set back can have effect on the size of kitchen and make it smaller.

As a result, kitchen service cannot handle the amount of customer and it can cause traffic in kitchen. In this restaurant, the size of kitchen is approximately 27sq/m, which is equal to 6% of total size. According to Tab.6 this size is less than standard which should be approximately 30% of total size. As Mert Yilmaz (Director Manager of restaurant) noted, it is planning to increase the size of kitchen by adding the unusable flat to the kitchen of this restaurant, which is located behind of it. Lavatory is approximately 6sq/m in this restaurant (one for women, one for men). The total size of services should be 20% according to the population of the restaurant. The size of lavatory is less than standard in this restaurant, because it is occupied only 1.5% of total size. According to the total size of the restaurant, two toilets for both men and women should be considered.

Table 18: Analysis of the Layout Design according to proximity (year 2011-2012).

Analyses The Layout Design Palm house Restaurant					Problem explanation
Functions	kitchen	lavatory	Dining area	Exterior spaces	
kitchen proximity	-	de≤10m	Interior dining di≤10m Exterior dining de≤20m	de≤20 m	Acceptable design
lavatory proximity	di≤10m	-	Interior dining di≤10m Exterior dining de≤20m	de≤20 m	Acceptable design
Dining area proximity	Interior dining de≤10m Exterior dining de≤20m	Interior dining de≤10m Exterior dining de≤20m	-	Interior dining de≤20m Exterior dining de≤10m	Acceptable design
Exterior spaces proximity	de≤20 m	de≤20 m	Interior dining de≤20m Exterior dining de≤10m	-	Acceptable design
"d" is counting as proximity between spaces "di" is interior dining and "de" is exterior dining.					

In this restaurant, the proximity between dining area and kitchen is less than 10 meter for interior and less than 20 for exterior dining. These proximity are appropriate, especially for exterior dining area. However, interior dining is closer to the kitchen in some parts.

As noted before, this proximity can cause some uncomfortable situation like smell and noise. The proximity between dining area and lavatory is less than 10 meter for interior and less than 20 meter for exterior dining area. The proximity is proper for outside dining, but since some interior dining tables are too close to the lavatory it is not appropriate for interiors.

3.2.4. Temel Reis Restaurant

This restaurant is another example of the fine dining restaurants in Gazimağusa, which is situated at the center of the city in Eşref Bitlis street. This building adopted to be a restaurant in 1992.

This restaurant has exterior dining in two sides of the building, to achieve the view of the city. Perhaps, designer tried to use the natural elements like wood to give the sense of nature to the users. This restaurant is approximately 950sq/m and one floor with ability of serving approximately 250 customers at a time.

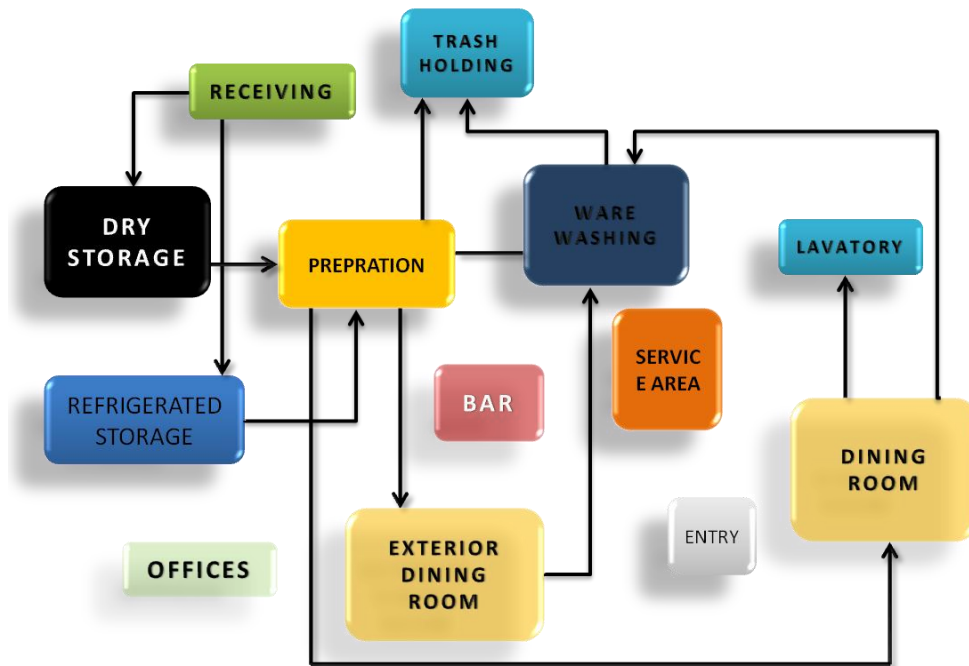


Figure 19: Bubble Diagram of Temel Reis restaurant (year 2011-2012).

Fig 19, illustrates that both the kitchen and bar is closer to the service area, which makes service to the guest quicker and easier. In other words it can be said, that the plan is centralized around the service area.

Moreover, the position of the lavatory is the first line of sight (visual access) when entering the restaurant. By this accessibility, the customers could observe the view of the lavatory and smell, which causes discomfort for interior dinners. The office is situated in a way, which has control over the interior and exterior areas of the restaurant.

Table 19: Temel Reis, Analysis on restaurant layout design according to 2011-2012.

INVESTIGATION ON RESTAURANT LAYOUT DESIGN	
<p>GENERAL INFORMATION</p> <ul style="list-style-type: none"> •NAME OF THE RESTAURANT: TEMEL REIS •LOCATION OF RESTAURANT: Eşref Bitlis Street, Magusa, Cyprus. •SIZE OF THE RESTAURANT: ~ 950 sq/m interior and exterior space without parking area. •NUMBER OF THE FLOORS: One floors •PERIOD OF THE BUILDING: Modern Period •DATE OF CONSTRUCTION: 1992 •ARCHITECTURE NAME: Levent Company 	
<p>MAIN ENTRANCE FAÇADE VIEW</p>	<p>BAR</p>
<p>DINING AREA</p>	<p>KITCHEN</p>

Table 20: Analysis of Layout Design of Temel Resi restaurant (year 2011-2012).





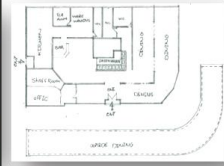
Analyses The Layout Design Temel Reis ~250 people ~950sq/m interior and exterior space without parking area.					
Function	kitchen	Lavatory	Dining area	Exterior spaces	Problem explanation
Sizes	~129.25 m ²	~25m ² 1toilets for women 1 toilets + 1 urinal for men	Interior dining ~225 m ² Exterior dining ~240 m ²	~563 m ²	The toilets should be 3 for men and 4 for women.
Sequences	Acceptable design	Acceptable design	Design problem	Acceptable design	The lavatory is almost in front of entrance and also has view to some dining tables.
Relationship	Acceptable design	Acceptable design	Design problem	Acceptable design	Although there is partition in front of lavatory , still there are some parts in dining area that has direct view to lavatory.
Flow pattern in space	Acceptable design	Acceptable design	Acceptable design	Acceptable design	there is congestion between staff and customers between the entrance and inside green area.
Direction	North-east, Correct	East, Incorrect	North, West and south, Correct	North, West and south, Correct	Most of the directions of this restaurant is correct.
Disable group	Acceptable design	design problem	Acceptable design	Acceptable design	There is not any special lavatory design for disable people.





Table 20, shows that total size of this restaurant is approximately 950sq/m. According to this area, 48% of the restaurant, which is approximately 465sq/m allocate as dining area, which is appropriate. The standard dining area should be approximately 50%. With this knowledge, the size of dining area of this restaurant fits to the standard (table 6).

The size of kitchen is approximately 130sq/m, which is equal to 13% of total size. According to Tab.6, this size is less than the standard which should be approximately 30% of total size.

Lavatory is approximately 25sq/m in this restaurant (one for women, one for men and one urinal). According to the population in the restaurant which is approximately

250, the numbers of toilets are less than standards. Refer to Table.5; they should be more than four for women and more than three for men.

Table 21: Analysis of the Layout Design according to proximity (year 2011-2012).

Analyses The Layout Design Temel Reis Restaurant					Problem explanation
Functions	kitchen	lavatory	Dining area	Exterior spaces	
kitchen proximity	–	de≤20m Staff lavatory	Interior dining di≤30m Exterior dining de≤30m	de≤30 m	Acceptable design
lavatory proximity	di≤20m Staff lavatory	–	Interior dining di≤20m Exterior dining de≤30m	de≤30 m	Acceptable design
Dining area proximity	Interior dining de≤30m Exterior dining de≤30m	Interior dining de≤20m Exterior dining de≤30m	–	Interior dining de≤30m Exterior dining de≤30m	Acceptable design
Exterior spaces proximity	de≤30 m	de≤30 m	Interior dining de≤30m Exterior dining de≤30m	–	Acceptable design
“d” is counting as proximity between spaces “di” is interior dining and “de” is exterior dining.					

In this restaurant, the proximity between dining area and kitchen is less than 30 meter for both interior and exterior dining. These proximity are not appropriate especially for exterior.

When the proximity between kitchen and dining area is about 30 meter or more, this may cause some problem like delay in service with unsuitable temperature for the food. Moreover, it may decrease the performance of the waiters.

The proximity between dining area and lavatory is less than 20 meter for interior and less than 30 meter for exterior. This proximity is proper for both interior and exterior

dining; but since some interior dining tables are, too close to the lavatory it is not conducive for interior one.

3.2.5. D & B Cafe

This restaurant is another example of the fine dining restaurants in Gazimağusa, which is situated in Muzaffer Ersu Street, wall city of Gazimağusa. This restaurant is located in front of the "St. Nicholas" Cathedral, which changed to be a "Lala Mustafa Paşa" mosque after that. The building itself is made in 1989 and after that it is adopted as a restaurant. This restaurant has exterior dining in front of the historical building, to achieve the view of this heritage.

The large windows and opening in facade of the building could be the designer idea to reflect the historical atmosphere of outside to the interior diners. In general terms this restaurant is approximately 700sq/m and three floors with ability of serving approximately 200 customers.

The Fig.20 illustrates the ground floor, a unit of the service area, positioned in a way that it can accommodate kitchen and bar. The kitchen, bar and dining are closely related and servicing each other. On the other hand, another major service area is properly positioned in a way that it serves to the dining areas. This includes both the dining areas (interior, exterior), bar and kitchen areas of the restaurant. The major service area as mentioned is centralized and because of this, it made the restaurants' service process faster and more flexible.

At the first floor, the service area that is connecting both the ground floor and the first floor, also connects the dining areas to each other and lavatory. The office is located at the first floor and can have control over both the second and ground floor.

At the same time, the office has visual access to the exterior area for proper administration. The service area is connecting the floors together but has more functionality for the bar area which includes food service area.

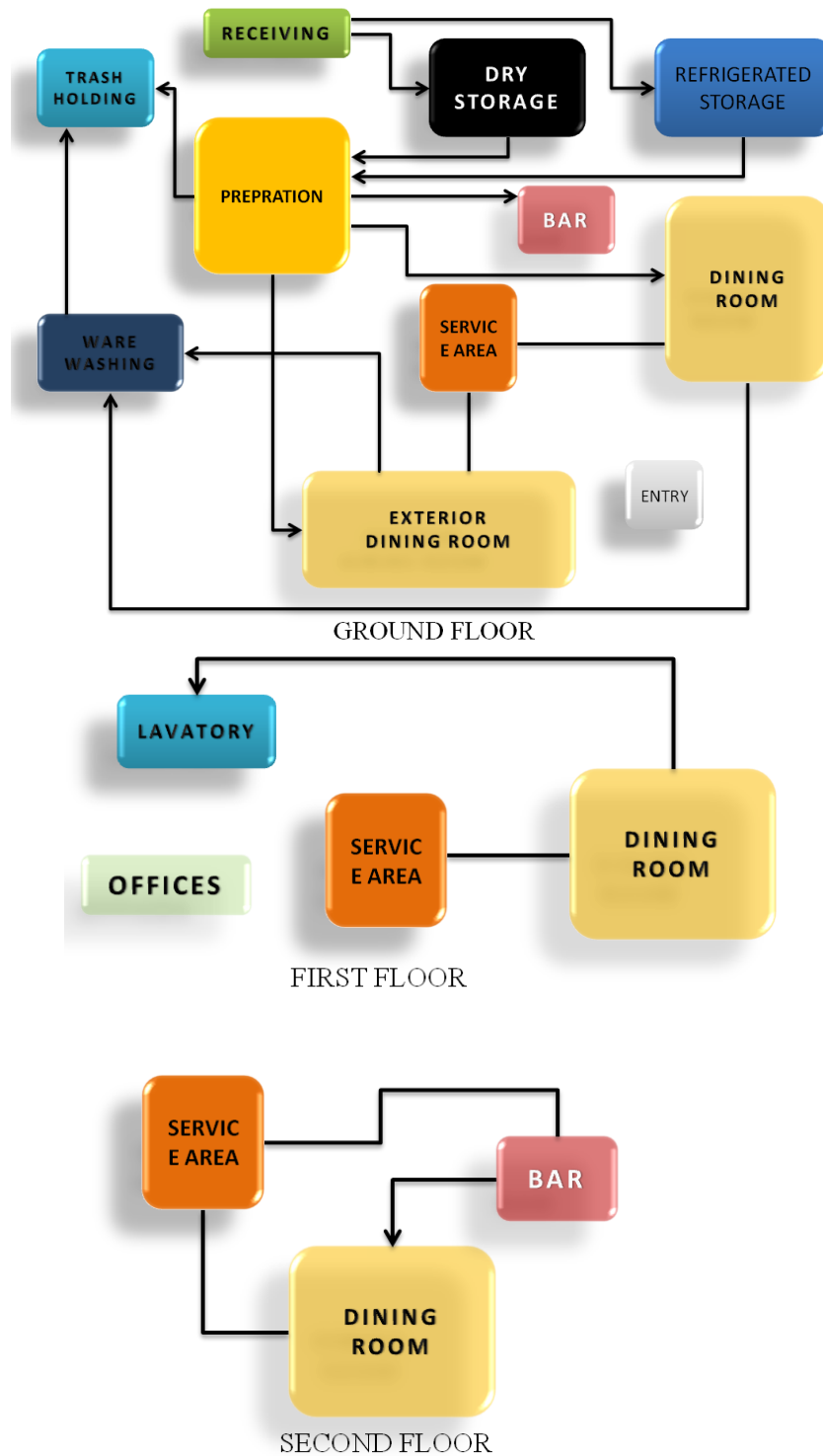


Figure 20: Bubble Diagram of D&B restaurant (year 2011-2012).

Table 22: D&B, Analysis on restaurant layout design according to 2011 -2012.

INVESTIGATION ON RESTAURANT LAYOUT DESIGN		
<p>GENERAL INFORMATION</p> <ul style="list-style-type: none"> •NAME OF THE RESTAURANT: D&B •LOCATION OF RESTAURANT: Muzaffer Ersu Street, Magusa, Cyprus •SIZE OF THE RESTAURANT: •NUMBER OF THE FLOORS: Three floors •PERIOD OF THE BUILDING: modern period •DATE OF CONSTRUCTION: Redesign in 2010 •ARCHITECTURE NAME: Tarkan Oktay 		
		<p>BAR</p>
		<p>DINING AREA</p>
		<p>KITCHEN</p>

Table 23: Analysis of Layout Design of D&B restaurant (year 2011-2012).





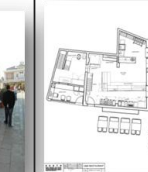




Analyses The Layout Design D&B restaurant Customer places ~ 200 people ~ 700sq/m interior and exterior space.					
Functions	kitchen	Lavatory	Dining area	Exterior spaces	Problem explanation
Sizes	~117 m ²	~30m ² 2 toilets for women 2 toilets + 2 urinal for men	Interior dining ~200 m ² Exterior dining ~150 m ²	~200 m ²	Acceptable design
Sequences	Acceptable design	Acceptable design	Acceptable design	Acceptable design	Acceptable design
Relationship	Acceptable design	Acceptable design	Acceptable design	Acceptable design	Acceptable design
Flow pattern in space	Acceptable design	Acceptable design	Acceptable design	Acceptable design	Acceptable design
Direction	South Direction, Incorrect	South Direction, Incorrect	North, East and West (acceptable)	North-east, (Acceptable)	Most of the Directions are Incorrect, but, because of the historical building which located in front of this restaurant, designer tried to use this view.
Disable group	Acceptable design	design problem	design problem	Acceptable design	Lavatory located in second floor which is connecting only by steps to first floor so disable people can not use it, beside There is not anyspecial lavatory design for disable people. And there is no ramp to inside the building for disable people.

Table 23 shows that, total size of this restaurant is approximately 700sq/m. The dining area is approximately 350sq/m of the total size, which is 50%, this percentage is appropriate according to the standards (table 6).

The size of kitchen is approximately 117sq/m, which is equal to 17% of total size. According to Tab.6, this size is less than standard which should be approximately 30% of total size. Lavatory is approximately 30sq/m in this restaurant (two for women, two for men and two urinal). According to the population at the restaurant, which is approximately 200, the numbers of toilets are lesser than standards for women, refer to Tab.5; it should be more than four.

Table 24: Analysis of the Layout Design according to proximity (year 2011-2012).

Analyses The Layout Design D&B restaurant					Problem explanation
Functions	kitchen	lavatory	Dining area	Exterior spaces	
kitchen proximity	–	de≤20m Staff lavatory	Interior dining di≤30m Exterior dining de≤20m	de≤20 m	Acceptable design
lavatory proximity	di≤20m Staff lavatory	–	Interior dining di≤20m Exterior dining de≤30m	de≤30 m	Acceptable design
Dining area proximity	Interior dining de≤30m Exterior dining de≤20m	Interior dining de≤20m Exterior dining de≤30m	–	Interior dining de≤30m Exterior dining de≤10m	Acceptable design
Exterior spaces proximity	de≤20 m	de≤30 m	Interior dining de≤30m Exterior dining de≤10m	–	Acceptable design
“d” is counting as proximity between spaces “di” is interior dining and “de” is exterior dining.					

In this restaurant, the proximity between dining area and kitchen is less than 30 meter for interior and less than 20 meter for exterior dining. These proximity are not suitable, especially for interior; but designer solve this problem by using an elevator for serving food.

The proximity between dining area and lavatory is less than 20 meter for interior and less than 30 meter for exterior. These proximity are proper for both interior and exterior dining because both of them are far from lavatory so it could lead to uncomfortable situation for users. It could be mention that, in most case studies, the owners prefers to have large dining area to accepting more costumers while, in the service area as kitchen and lavatory lack of area is observable. It is proper to say that this issue is happening in order to earn more revenue.

3.3 Final comparative analysis of Selected Restaurants

In Tab.25, all the data which are collected from the restaurants in terms of layout designs (size, sequence, relationship, flow, direction and disable group) are put together to reach a result. The percentages shown are the outcome of acceptable designs and design problems. For example, the size of the kitchen in Californian restaurant is not acceptable while the size is acceptable in D & B restaurant. On the other hand, flow pattern of Californian restaurant's kitchen is correctly shown by “√” ; but this pattern is not acceptable in Funky Buddha and Palm House restaurants which is revealed by “×”.

Table 25: Final Table of Layout Analysis.

	Size			Sequence				Relationship				Flow				Direction				Disable Group				Percentage					
	K	L	D	K	L	D	E	K	L	D	E	K	L	D	E	K	L	D	E	K	L	D	E	+	-				
Californian	×	×	√	√	×	√	√	√	×	×	√	√	×	×	×	×	×	×	√	√	√	√	√	×	×	√	√	52%	48%
Funky Buddha	×	√	×	×	√	√	√	×	√	√	√	×	√	√	√	√	×	×	√	√	×	×	√	√	65%	35%			
Palm House	×	×	×	√	√	√	√	×	√	√	√	×	√	√	√	×	√	√	√	×	×	√	√	65%	35%				
Temel Reis	×	×	√	√	√	×	√	√	√	×	√	√	√	√	√	√	×	×	√	√	√	√	√	×	×	√	√	73%	27%
D & B	√	×	√	√	√	√	√	√	√	√	√	√	√	√	√	×	×	√	√	√	√	×	×	√	78%	22%			

K: Kitchen √ : Acceptable design
L: Lavatory × : Design Problem
D: Dining Area
E: Exterior Area

The final percentages of the results explored from the sum of the acceptable and in-acceptable results. For instance, Californian restaurant has 12 acceptable and 11 in-acceptable results. This means that if all the results are 23, 12 can be the 52% of whole for acceptable and 48% for inacceptable results.

Chapter 4

CONCLUSION AND FINDINGS

Layout design of restaurants is planned to be a resource for professional hospitality, architectural and interior designers, architectural students and professional designers which are dealing with design projects. Although professional designers, who wish to know more about the food service design process, should begin with design principles and layout design.

To realize the best physical arrangement of layout design, designer must think about the type of the restaurant and important factors of the layout and choose the most acceptable layout for each restaurant. The best method for improving the space organization and quality is connecting and placing the functions in terms of acceptable layout design in restaurant plan.

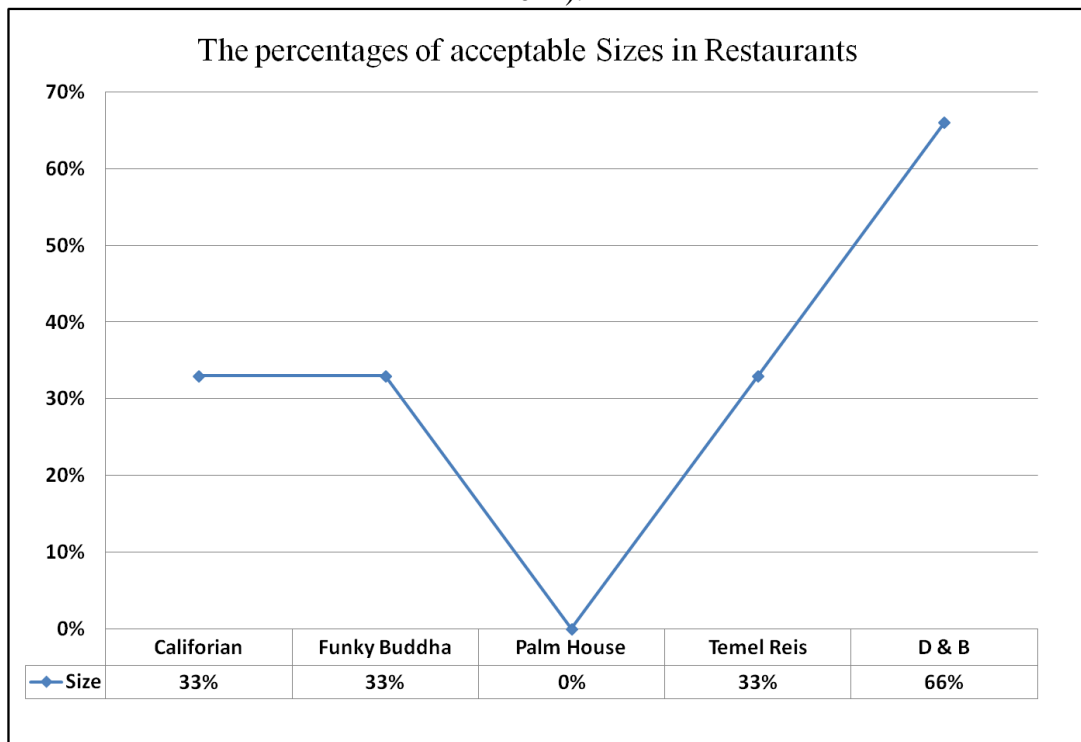
Several advantages of layout design is gained from a correctly planned and designed organization for both users and staffs. As a result, professional designers realize that layout design is as important as other factors in designs like interior design. In fact the professionals make efforts to creating an appropriate restaurant layouts.

In this research, the importance of layout design analysis are evaluated individually. As a result, it explored that some of the restaurant can have layout design problems, which could affect indirectly the atmosphere, amount of sales, customers and staff satisfaction.

According to the evaluations (tables 10-24), which is shown in the previous chapter, the layout value of the restaurant are explored by some charts (tables 25-26). The selected restaurant could be categorized according to the results which is taken from the outcome of acceptable percentages.

The following Tables (27-33) show the results of the evaluation and analysis in terms of quality structure of the layout categories.

Table 27: The percentage of acceptable sizes in selected restaurants (year 2011-2012).



The Tab.27 illustrates the given percentages of various selected restaurants in Gazimağusa. Percentages are given to point the various levels of satisfaction according to the sizes of the listed restaurants.

The diagrams displays D&B restaurant has the most acceptable sizes (66%) while Palm House with (0%) has an unacceptable size layout.

Table 28 explores the acceptable sequences of well designed restaurants. The table illustrated with a given percentages to show the level of acceptability.

Palm House and D&B restaurants both have the same amount of percentage ratio of acceptable sequences (100%) while the rest such as Californian, Funky Buddha, Temel Reis restaurants are all having a 75% sequencing ratios.

Table 28: The percentage of acceptable sequences in selected restaurants (year 2011-2012).

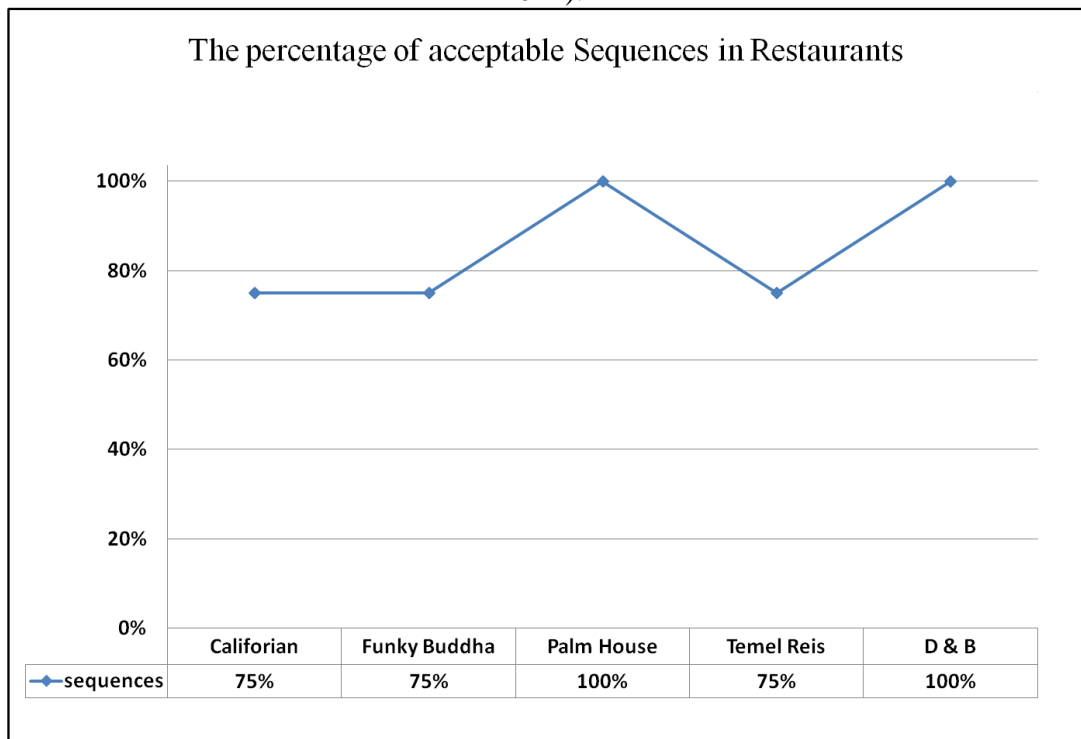


Table 29 points the acceptable percentages of relationship in restaurant. It shows D&B restaurant has the highest percentage ratio 100%, such that Funky Buddha, Palm House, Temel Reis restaurant are all in same percentage of 75% while Californian restaurants is the lowest in percentage ration with 50%.

Table 29: The percentage of acceptable relationship in selected restaurants (year 2011-2012).

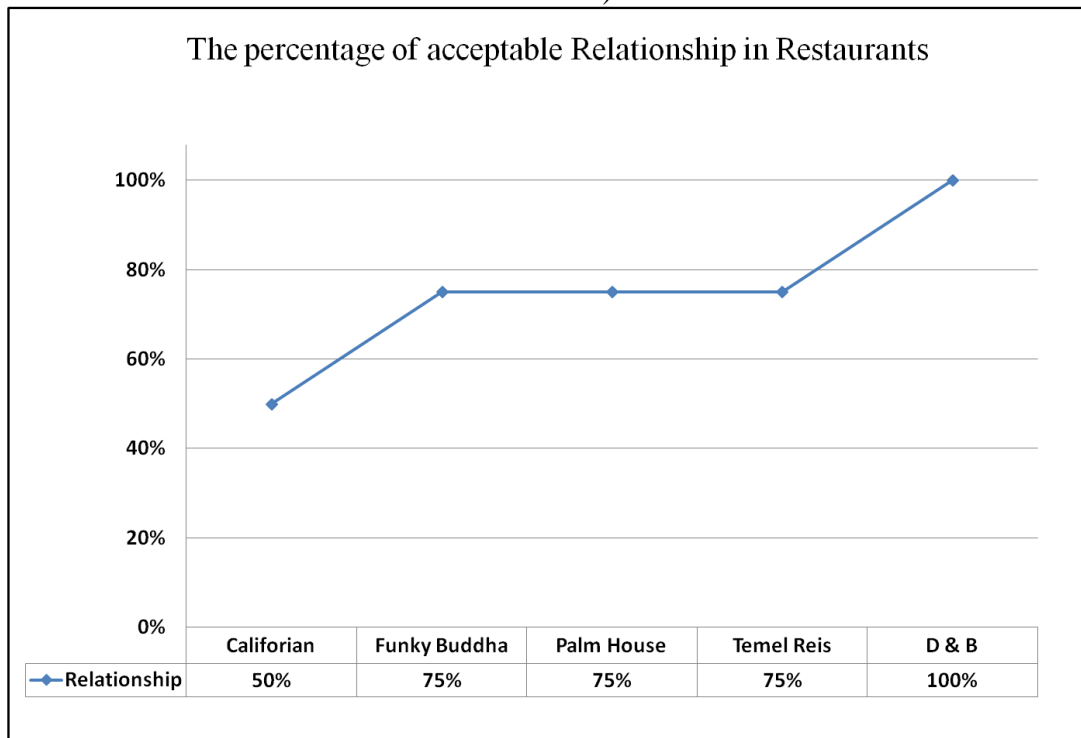


Table 30: The percentage of acceptable flow in selected restaurants (year 2011-2012).

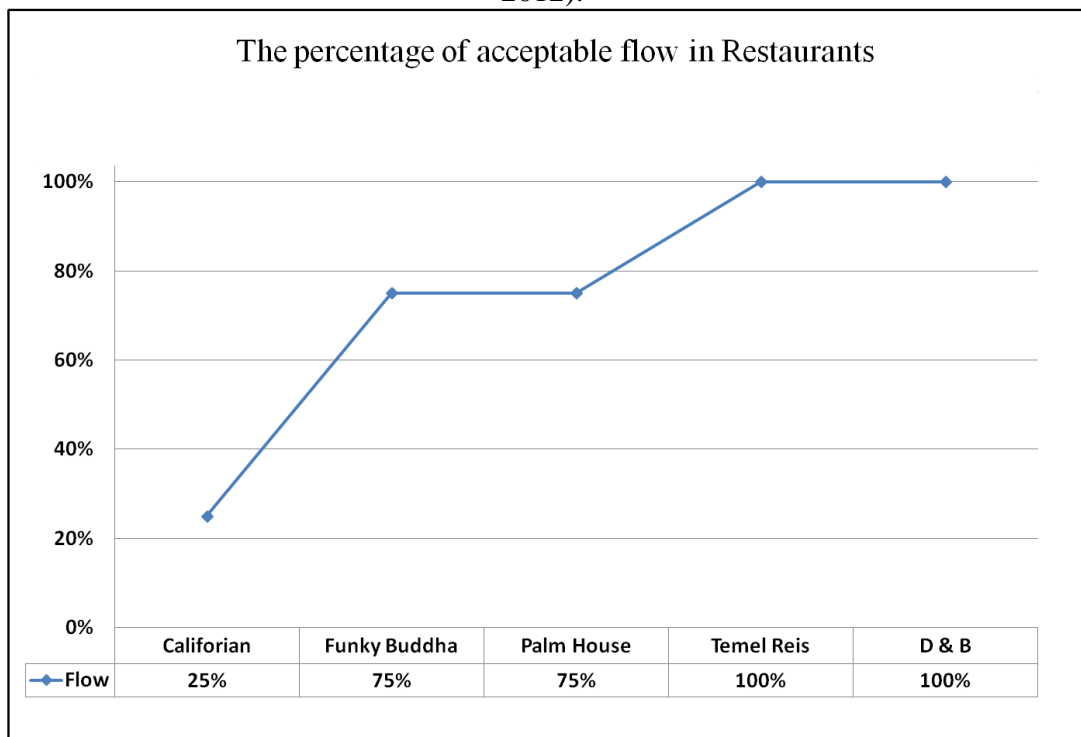


Table 30 illustrates the flow in pattern of the restaurants situated in Gazimağusa. The table presents that Temel Reis and D&B restaurants have the highest percentage ratio

(100%) than the other restaurants such as Palm House, Funky Buddha restaurants (both have 75%) as a flow pattern ratio. The lowest of them all is Californian restaurant with a 25% flow pattern.

Table 31 shows the acceptable direction of restaurants. It illustrates the given percentages of the following restaurants. Palm House, Temel Reis, Funky Buddha restaurants that have 75% acceptable ratio while D&B and Californian restaurants both have a acceptable direction percentage of 50% in the given description below.

Table 31: The percentage of acceptable direction in selected restaurants (year 2011-2012).

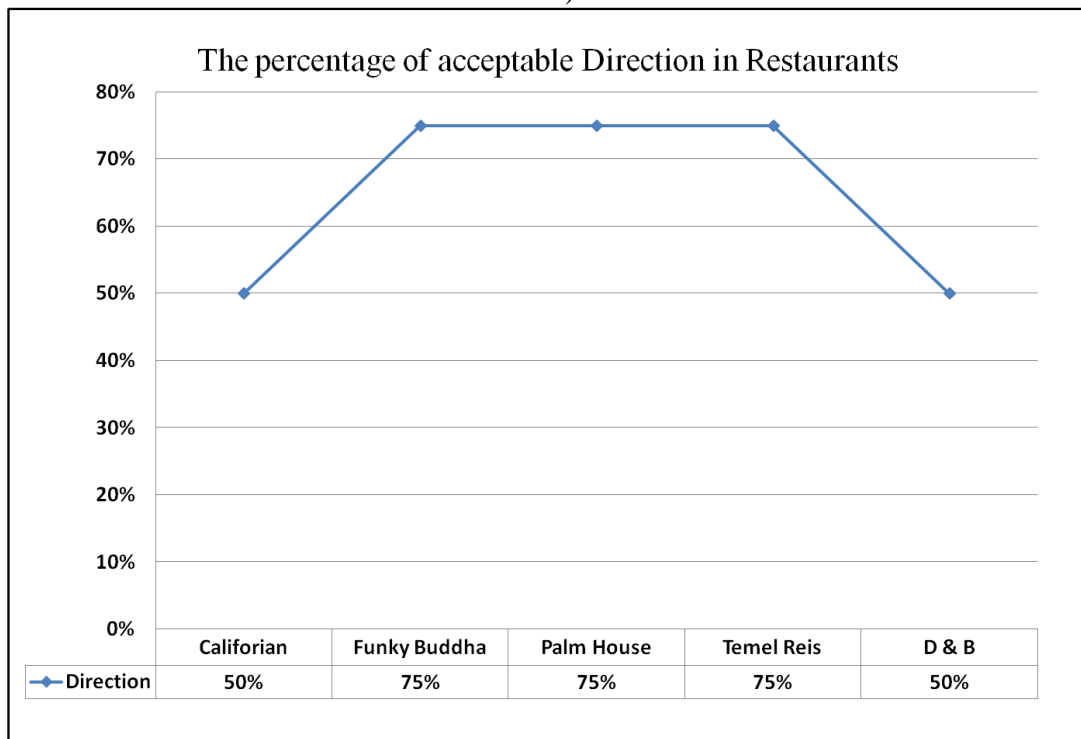


Table 32 presents the acceptable design percentage according to the disable group. This shows accessibility and percentage ratio in how user friendly is the restaurant for disable group. As a result, Californian and Temel Reis restaurants both have 75% while Funky Buddha, Palm House and D&B restaurants have 50% of accessibility for Disable group.

Table 32: The percentage of acceptable design for disable people in selected restaurants (year 2011-2012).

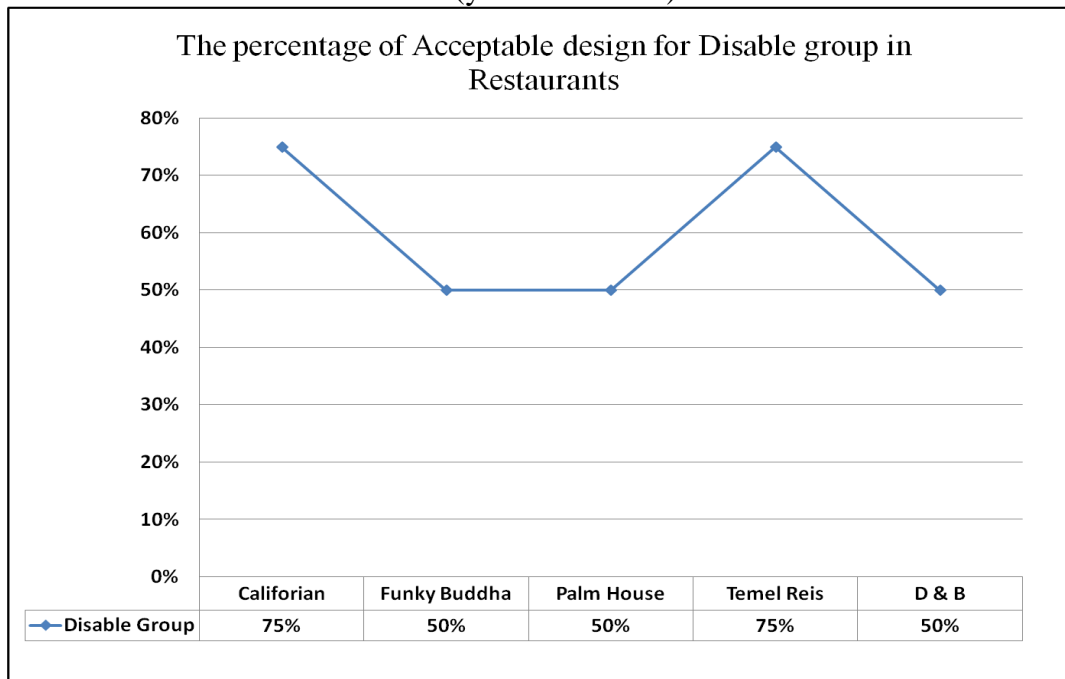


Table 33: The percentage of acceptable proximity in selected restaurants (year 2011-2012).

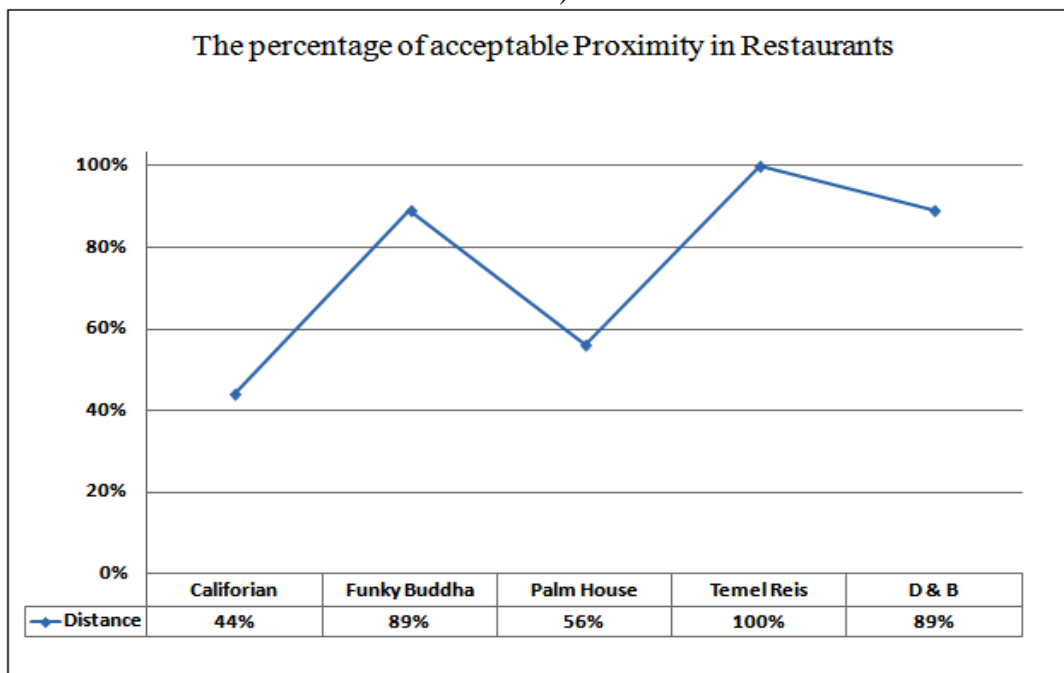


Table 33 illustrates the acceptable proximity of the restaurant from their different spaces for the satisfaction of both customers and staffs. According to the percentage ratio, Temel Reis restaurant is 100% while D&B and Funky Buddha restaurants are 89% and Palm House restaurant is 56% and in the lowest part is Californian with a acceptable proximity of 44%.

Referring to the percentages derived from the results, for layout designing, these restaurants can be classify as follow:

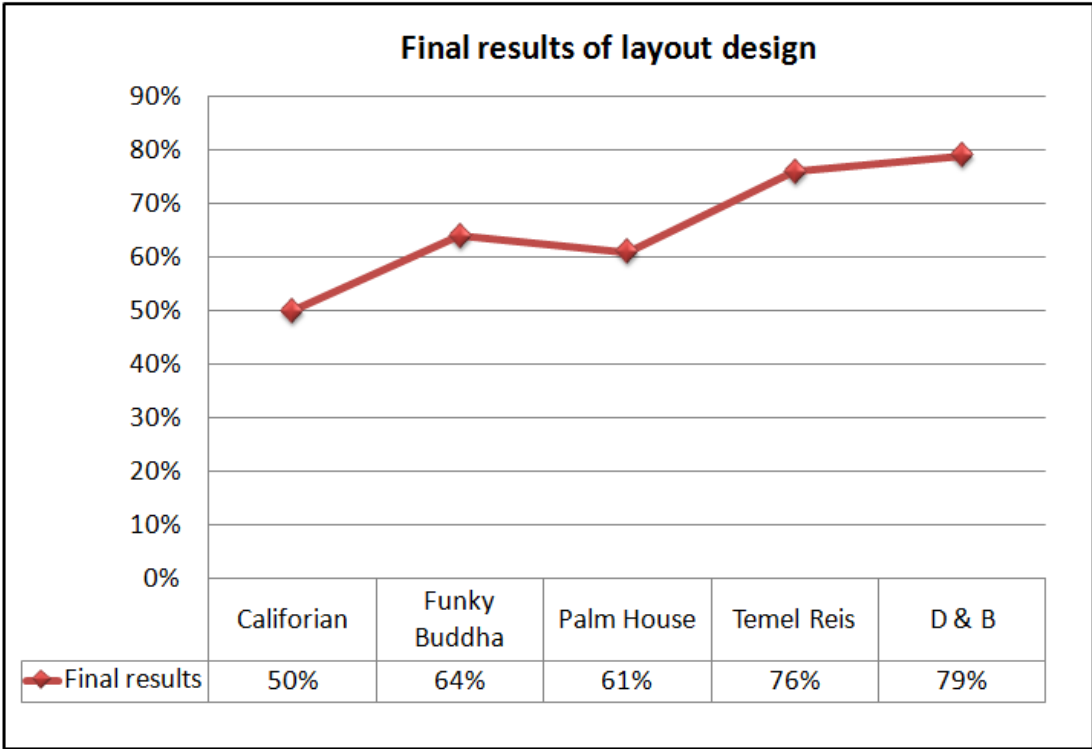
Table 34: The classification of positive percentages in selected restaurants according to different layout design factors (year 2011-2012).

Restaurants	Size	Sequences	Relationship	Flow	Direction	Disable group	Proximity	Total Positive Percentage
Califonian	33%	75%	50%	25%	50%	75%	44%	50%
Funky Buddha	33%	75%	75%	75%	75%	50%	89%	67%
Palm house	0%	100%	75%	75%	75%	50%	56%	61%
Temel Reis	33%	75%	75%	100%	75%	75%	100%	76%
D&B	66%	100%	100%	100%	50%	50%	89%	79%

From the table 34, it can be seen that the layout design of D & B restaurant has the most acceptable results with (79%) positive among all layout factors while Californian restaurant has the most unacceptable result with (50%) positive layout design.

Refer to the all of the percentages and classification of restaurants, the outcome may lead us to have the final classification of these case studies. Following table is the results of layout design in selected restaurants:

Table 35: The classification of positive percentages in selected restaurants according to all layout design factors . (year 2011-2012)



According to all result, final classification of restaurant can be classified as:

Table 36: The final classification of selected restaurants according to the best layout design (year 2011-2012).

Restaurants (Layout organization)	Percentage
1. D & B Restaurant	79%
2. Temel Reis Restaurant	76%
3. Funky Buddha Restaurant	64%
4. Palm House Restaurant	61%
5. Californian Restaurant	50%

According to all the factors of layout design in restaurants, D&B restaurant is 79%, which means that this restaurant has the most proper layout design through all cases.

Although the other restaurants like Californian has the successful design idea in interior architecture, still most of them do not have appropriate layout design, where as they may not have successful achievement in architectural design and customers satisfaction.

Regarding to the overall researches of this study, is achieved that there are number of factors that should be considered when allocating space in restaurants plan and dealing with a layout design in restaurants, the factors are:

1. Volume and type of services.
2. Amount of spaces and placements.
3. Number of customers.
4. Suitable circulation area and flow pattern.
5. Proximity and direction of the spaces.
6. Economical use of space.
7. Minimize handling service.

Moreover, the serving facilities is suppose to be planned in away to preserve the quality of the food, and serve the food as fast as possible in order to archive customer satisfaction, saving energy and time.

The successful restaurant design requires an acceptable layout planning design. The delegate of the owner and designers must be considered on the aims and objectives of the restaurant in terms of principles and regulations concerned in laying out restaurant design.

While this research would not qualify the food facilities design consultant, it intended to provide the necessary information for professional restaurant design projects.

In general, what have been learnt from this study is the importance of restaurant design, there are different considerations related to the restaurants design such as: lighting design, colour selection, sound and acoustic design, heating cooling and ventilation design, material selection in restaurant, outdoor space design and layout design). This study investigates on one of the most important factors in restaurant design, which is layout design and analyzing each aspect of it one by one. These factors are proximity between functions, sizes of each space, functional sequences and relations between areas in restaurants, flow pattern in space, directions of spaces and comfort of disable group. After all, it achieved that, each factors has effect on the satisfaction of customers and staffs thus, this reflect to the success of restaurant design. It is necessary to designing them according to the standards to achieve the needed satisfaction.

4.1 Recommendation for Further Study

Based on the research on restaurant layout design, a wider area can also be looked into in other to derive a consolidated and well-designed restaurant. Other various categories of a successful restaurant design from an architectural point of view i.e. lighting design, Colour selection, Sound and acoustic design, heating, cooling and ventilation design, Material design, Outdoor space design also need investigation. The listed categories can be analyzed one after the other in order to active the result in terms of general principal of restaurant design.

On the other hand, the layout design of other types of restaurants or social gathering spaces such as coffeehouses, cafe shops, pub, bars and etc can be analyzed in order to achieving a solidified guide line for both professional and students of architecture.

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