



**THE IMPACT OF COLOR IN INTERIOR DESIGN SPACES OF FOOD  
COURTS IN SHOPPING MALLS**

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THE IMPACT OF COLOR IN INTERIOR DESIGN SPACES OF FOOD COURTS  
IN SHOPPING MALLS

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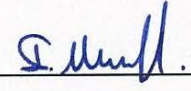
**Title of the Thesis: The Impact of Color in Interior Design Spaces of Food Courts in Shopping Malls**

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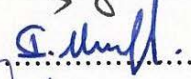

  
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## **ABSTRACT**

### **THE IMPACT OF COLOR IN INTERIOR DESIGN SPACES OF FOOD COURTS IN SHOPPING MALLS**

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The interior design is the place created from all sides and handling the different surfaces within the place that include flooring, ceilings, walls, furniture and accessories which ensure the comfort of users to perform their functions with less effort, high efficiency and affectivity. The importance of the research considers an attempt to verify the extent of touching the psychological effects of colors on visitors and staff of food courts in shopping centers and their benefit from both parties. As well as, this study aims to identify colors which are used in designing the food courts of the shopping centers through local cases in Ankara city and identify them truly to know if they deploy the right colors that are suitable with the psychological and interest of visitors who use these spaces including beneficiaries and staffs. Also, it considers an important step to understand the interior spaces and the psychology of their users.

Also, the study aims to collect information and analyze them to extract solutions and suggestions that achieve greater understanding for colors and how to employ them correctly with the spaces that used by them.

Moreover, the research used descriptive and analytical approaches by describing and analyzing the colors impact and creating electronic questionnaire to access to different opinions and results in these shopping centers by several shopping centers in Ankara city that frequented by the city population and foreigners. The research concluded to review the more important results and suggested number of recommendations to upgrade the chromatography dimension and improve the using of colors in shopping centers.

**Keywords:**

Color theories, Architecture space, Color impact, People perception, Food courts,

## ÖZ

### **ALİŞVERİŞ MERKEZLERİNDEKİ YEME-İÇME KATI İÇ MEKANLARINDA RENK ETKİSİ**

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İç mekan tasarımı kullanıcıların daha az çaba ve daha yüksek verimlilik ve etkililikle işlevlerini yerine getirebilmeleri için, rahatlık sağlayan döşeme, tavanlar, duvarlar, mobilya ve aksesuarlar içeren bir yerin değişik yüzeylerinin oluşturduğu alandır. Araştırmanın önemi, renklerin alışveriş merkezlerindeki yiyecek alanlarında çalışanların ve ziyaretçilerin üzerindeki psikolojik etkilerinin boyutları ve her iki taraf için de faydalarının araştırmasına dayanmaktadır. Bu araştırma aynı zamanda Ankara şehrindeki yerel örnekler üzerinden alışveriş merkezlerindeki yiyecek alanlarının tasarımlarında kullanılan renkleri tanımlamayı ve faydalanıcılar ve çalışanlar gibi bu mekanları kullanan ziyaretçilerin psikolojileri ve ilgileri doğrultusunda bu alanlarda doğru renklerin kullanılıp kullanılmadığını anlamayı amaçlamaktadır. Bununla beraber, araştırma iç mekanları ve kullanıcılar üzerindeki psikolojik etkilerini anlama noktasında önemli bir adım olarak görülmektedir. Araştırma ayrıca renklerin daha iyi anlaşılması bakımından çözüm ve öneriler

geliřtirmek için bilgi toplamayı ve bu bilgileri analiz ederek renklerin mekan içerisinde en doğru řekilde nasıl kullanılacağıının anlaşılmasını amaçlamaktadır.

Buna ek olarak, arařtırmada Ankara řehrinde řehir halkı ve yabancılar tarafından sıklıkla ziyaret edilen çeřitli alışveriş merkezlerinde farklı düşünce ve sonuçları elde etmek için hazırlanan elektronik anketler oluşturularak, renklerin etkilerini analiz ederek ve tanımlayarak betimsel ve analitik yaklaşımlar kullanılmıştır. Arařtırma tasırının renk boyutunu geliřtirmek için bir takım önerilerde bulunarak ve alışveriş merkezlerinde renklerin kullanılmasının geliřtirilmesi için önemli sonuçları gözden geçirerek sonuçlandırılmıştır.

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## **CHAPTER 1**

### **INTRODUCTION**

The psychologist's scientists enable to determine the relationship between a favorite colors of a person, which reflects his personality and reveal his tendencies, attributes, temperament, and spirit dominant of him and between his states of health. Also, the scientists have explained that colors surrounding human affected directly on his psychological condition.

During the development of interior design profession witnessed in various fields, it's time to highlight the impact of colors and their effects in shopping centers as an essential factor in creating the right environment for individuals. So, it is necessary to study the impact of color in designing the commercial food centers,

#### **1.1 Aim of the study**

##### **1.1.1 The Research Importance**

The research importance is representing by the following:

- Investigating the extent of touching the colors impacts of color in the public buildings and especially the food spaces within the example of the shopping centers in Ankara city. Colors have noticeable impact on the human psychology and productive ability. Also, the colors effect on mode, health, affectivity and have great importance in assisting healing of diseases. As well as, some colors give joy, pain or muse and so on. Furthermore, the colors can give the warmth, heat or any other feeling as required by the function of the place.
- The food court in shopping centers is not just food hall but it is place for entertainment and spend funny times in atmosphere surrounding by a warming

intimacy.

- Ankara has chosen as a case study area because urban progress in Ankara city and especially by the tourism projects, public services and restaurants against the lack of specialization in applying these studies and important standards in choosing of colors.

### **1.1.2 The research Goals**

The study mainly aims to impact of color use in food courts with the aid of analyzing of colors used in food spaces in Ankara shopping malls by taking study cases inside the city and identify them physically. Then, making analytical studies to know if the colors that deployed in these spaces suit with the psychological and interest of these spaces beneficiaries. This issue considers an important step to understand the buildings and the physic of their users. As well as, the study aims to identify the colors semantic structure, expressionism, rhetoric and their impacts in the architecture. Also, collecting the information and analysis been extracted from the psychical studies to come out by solutions and hypotheses that achieve greater and better understanding for colors and how to deploy them regularly. Finally, take advantage of color as an element with expressive content in forming the entrances and exits of the architecture and there are another goals representing by the following:

- Finding optimal standard to choose the suitable colors for the whole constituent elements of the food space in the shopping center.
- Avoid the common mistakes in suiting and choosing of colors in these spaces.

### **1.1.3 Research Problem**

The research problem is representing by the following question:

Did the impact of colors in designing the food courts in the shopping centers at Ankara city? What are the standards which through we can achieve and take into account the previous goals?

#### **1.1.4 The Research Hypothesis**

The research starts with the suggestion as a hypothesis is based on answering negatively on the previous question, that were not taken into consideration on the psychological impact of colors in designing the food spaces at the shopping centers which are not suiting with the function of each space, the interaction of users inside these spaces and there are considerations must be taken into account to achieve the previous considerations.

#### **1.1.5 Research Methodology**

The research methodology is based on studying the psychological impact of colors on their users through access on related literature resources, books, articles about the study subject of colors and their impacts. Also, the research has used descriptive and analytical methodology by describing and analyzing the chromatography influence of food space inside the shopping centers and extract sample to use colors inside these spaces. As well as, study resorted to collect data through questionnaire as assistance tool to monitoring the opinions of the interested people, describe and analyze these opinions to support this study.

#### **1.1.6 Scope of the Study**

The study limits on use the impact of color in food spaces with a case study made in Ankara 3 shopping malls. The shopping centers that been chosen are Cepa, Armada and Ankamall. Online questionnaire is administered among many asked, 40 people answered and evaluated.

### **1.2 Structure of the Thesis**

The thesis consists of five chapters. The first chapter is the introduction. The second chapter is the color theory which dicusses some concepts about colors and color theories. In the third chapter, the architectural space in public shopping malls are duscused. The fourth chapter is the case study where the results are discussed and evaluated. In the last chapter which is chapter five, the conclusion about the study and suggestions for further research are stated.

## **CHAPTER 2**

### **COLOR THEORY**

The color theory is considered one of the more important topics where the basis of design starts. Moreover, the color study, its impact and features helping to determine the mechanism of employing and using it in the space. Through the scientific progress and the diversity in the use of raw materials and their colors and types, the theory of colors is not enough anymore in order to determine the identity of the design and that lead to the emergence of the internal design that aims to draw features and general characteristics to the design that defer according to the culture, natural conditions, general taste and the use of colors and their degrees. This chapter contains a set of theories that discussed the colors in general and about the interior design in practical, in addition, this chapter also discussed the scientist look to use of color.

#### **2.1 Color Theories in Interior Design**

The color is defined by the physicists as the beam that reflected from the objects to the eye, or it is the physiological impact on the retina which caused by material or by the colored light. Also, it is sense that has no any exist outside the nervous system for the whole organism and especially of the human being (Alharstani, Aalboni, 1998). The surfaces and things have the property of soak up some rays of the light and reflection for some of them to different trends towards our eyes. Also, the surface will acquire the color that he reflects it. For example, some surface may seem as red, as a result of the incident light on it will absorb different colored radiations that find in the light except the red radiations that has reflected them to our eyes. Furthermore, the eye will transport that color to the brain through nerve fibers that belong to the red color and that will generate the sense of this color. Some surface may be called white if it reflects to the whole directions

without any absorption. Moreover, some surface may be called black if it sucks the whole radiation that received them from the light (Ibrahim Damka, 1983). Color is determined by standards and values (see Figure 1) through which we can recognize the color which are:

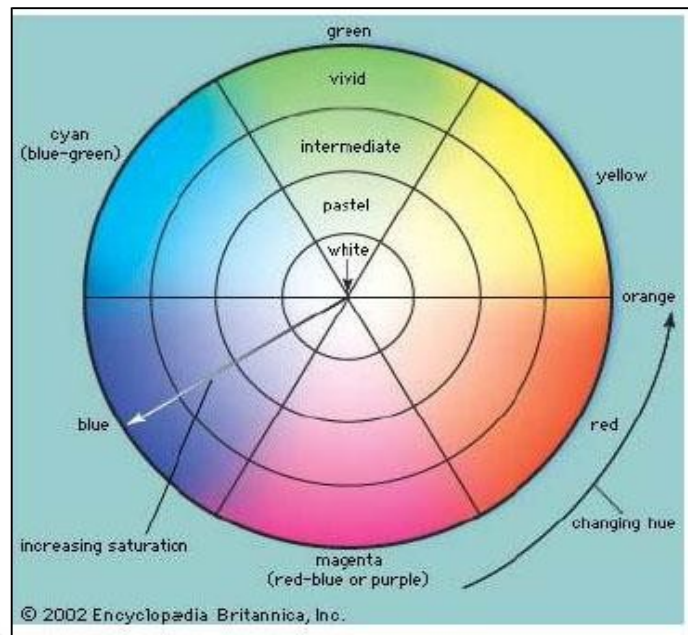


**Figure1:** Specify Color Standards

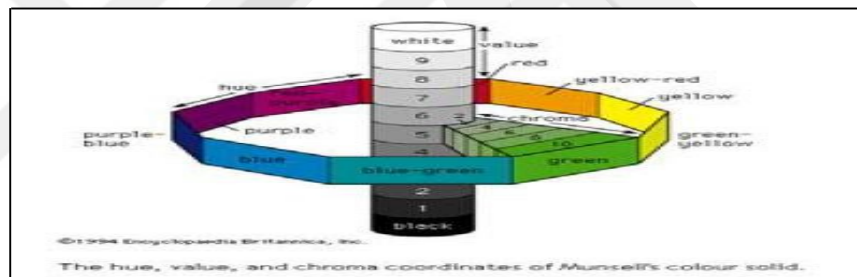
- **Hue:** Is the character that give us the ability to distinguish or to differentiate between the colors “red, green and orange”, when mixing two colors red and green we get orange and this considered change in the color hue.
- **Value:** it is the relation between the bright and light color meaning green light and dark green and take different values towards the bright and dark.
- **Saturation:** It is the color characteristic in terms number of atoms colorimetric in the area and determined as much mixing by white or black color as in Figure 2 and Figure 3 (JOHN F. PILE, 1997).

There are three conditions for color lack saturation:

- Lack of saturation for mixing the originality of the color as much of white and this case said that the color has alleviated and become light or pale.
- Lack of saturation for mixing the originality of the color as much of black and this case said that the color has canopies or become darker or swarthy.
- Lack of saturation for mixing the originality of the color as much of gray and this case said that the color has become dusky or darker (Berns, Roy, 2000).



**Figure 2:** Graph to Degrees of the Hue and the Value of Color



**Figure 3:** The Color Circle and Two Arrows One for the Saturation and the Other for the Hue

In the nature science, the color has identified by three connotations which are:

- **Wavelength:** Newton has discovered that the whole colors present in the light. If a white beam has been passed through prism of glass, this white beam will be degraded to a range of seven colors known as the spectrum colors. Also, the spectrum colors start from violet rays then, indigo, blue, green, yellow, orange and red in the other side as showed in Figure 3 (David L. Mac, 2000). As a result, to the refraction phenomenon, the rays occur in their original colors and called the Spectrum Seven Colors.

Moreover, the colors may characterize according to their waves length because for each original color there is special length and the violet rays have

shorter visible wavelength compared to other rays and the visible rays are not considered the longest wavelength. Furthermore, there are another radiation which are not seen in the human eyes such as the ultraviolet waves and the infrared waves.

- **Purity Factor:** It is the ratio between the color and amount of white in it.
- **Luminance factor:** It is the amount of transported and reflected light to our eyes from these colors.

Previously the scientist Newton has demonstrated that light is the origin of color. Later, it is proven that the white color can be analyzed to its original colors and these colors can be combined together in order to get the white light because when there is a light there is colors. The colors theory has been established before twentieth century according to the pure or optimal colors, which defined by sensory experiments rather than physical variables. However, this lead to mistakes in the principles of the traditional of color theory which can be corrected in the modern models.

The color theory depends on a set of variables that associated to color and it's applied and design use that connected to the concept of visual perception of human, his physiological vision and his intellectual trends and everything associated to the psychological concepts, and these concepts include the primary colors, warm and cold colors and color harmony (David L. Mac, 2000).

### **2.1.1 Primary Colors**

They are three colors each one of them identify different hue and mixing them give use all the other color characteristics and consisting of two groups:

- **Printers Primaries:** Consists of red, yellow and green colors.
- **Light Colors:** Consists of red, yellow and green colors.

### **2.1.2 Warm and Cold Colors**

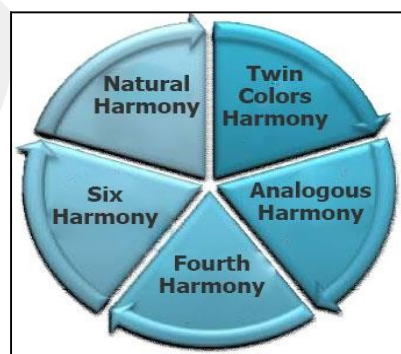
The colors in Semites impressionists' researches (in the second half of the nineteenth century) have been divided into warm and cold colors according to the impression that comes from the sense of the viewer. Furthermore, the blue color and

its derivatives is belonging to the cold colors and the red and its derivatives is belonging to the warm colors, whereas, the white and black colors are considered the neutral status between the warm and cold (Ali Thuwaini, 1963).

### 2.1.3 Color Harmony

It can be defined as the good arrangement for the constituent elements as in explained in Figure 4. Moreover, in the visual experience harmony seeks to create a beautiful scene can be seen by the eye through basic theories which are:

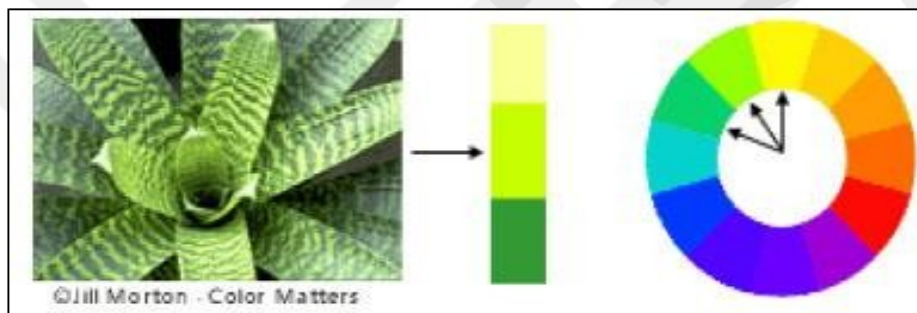
- **Twin Colors Harmony (Complementary):** It is consisting from each two opposite colors in the colors circle as showed in Figure 5.
- **Analogous Colors Harmony (Triadic):** It is the set of contiguous tricolor in the color circle and the lines connected between them configuring equilateral triangle as in Figure 6.
- **Fourth Colors Harmony:** It is the quotient from a set of four opposite colors in the color circle, when two opposite colors axis are perpendicular with the axis of the other two colors.
- **Six Colors Harmony:** It is similar to the quartet harmony, whereas, it consists from six colors corresponding with each other in the color circle and as a result constitute hexagon shape based on the circumference of the circle (Ibrahim Damka, 1983).
- **Nature Colors Harmony:** The Nature provides us with many examples of harmonious color groups. Also, these group configure a reference to create related systems of colors as in Figure 7.



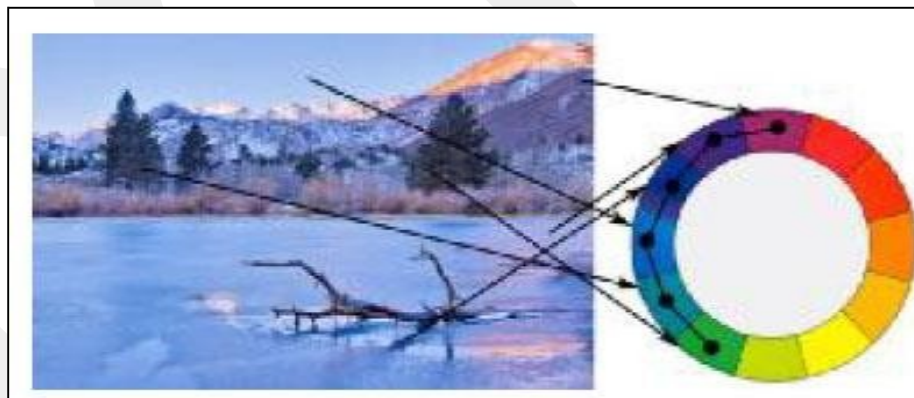
**Figure 4:** the Color Harmony



**Figure 5:** the Twins Color Harmony (Ibrahim Damka, 1983)



**Figure 6:** the Analogous Color Harmony

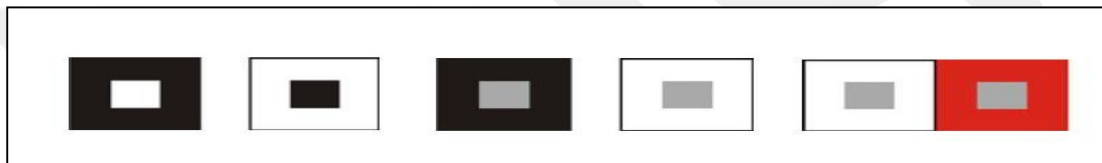


**Figure 7:** the Natural Color Harmony

## 2.2 Color Contrast

Contrast can be defined as the intensity and clarity of colors among them. Moreover, the contrast takes multiple forms. However, the recipes of contrast are

weakening when moving to a subset of third degree colors and so on. Also, there is a contrast according to the gradient of the color value or according to the color saturation and it may be between the cold and warm colors (Robert Jila Maskoot, 1990). The contrast is associated by a phenomenon called the visual spread phenomenon, for example, the white area on black square space that seems to the viewer greater than the real area and conversely the black area on white space seems smaller than the real area as in Figure 8 . Also, the contrast is associated with a phenomenon regarding to the value and the saturation of the color, for example, the gray area on white space that looks brighter from the gray area on black space as in Figure (9). Moreover, the gray area clearly tends to the space color as in Figure (10) (Ismail Shawki, 2001).



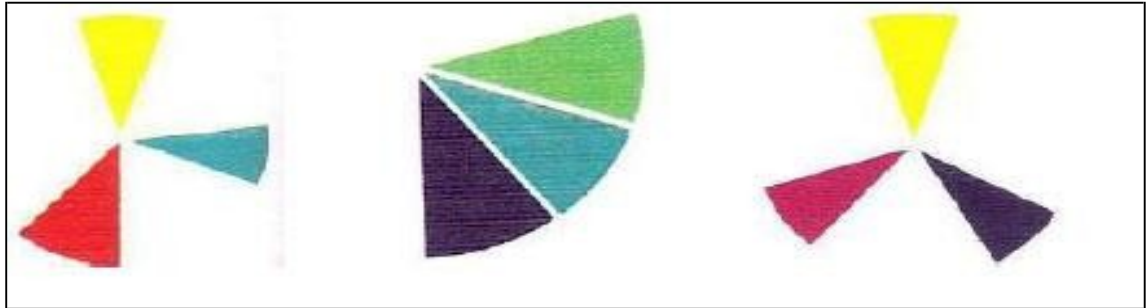
**Figure 8:** the contrast through black space inside greater area and vice

**Figure 9:** the contrast through Gary space inside black and white

**Figure 10:** the contrast through Gary space inside

### 2.3 Color Compatibility

A chromatically configuration has achieved compatibility, if it has well influential affection on eye and self as Figure (11, 12 and 13). In the color circle, we see that the basic three colors represent the triangular compatibility of colors. Furthermore, the compatibility is the basic character for a set of two colors, and it may come from adjacent colors in the color circle and sometimes from a gradient of colors for one type of color or it may be between the opposite and complementary colors, which is called the contrast (Rabih Al-harstani, Michel Pony, 1998).



**Figure 11:** Triangle Compatibility for Basic Colors

**Figure 12:** compatibility of overtaking colors

**Figure 13:** contrast between main color and two colors

Also, another color can be added with the compatible previous colors such as the red color. In addition, there is the chromatography compatibility colorimetric Group Monochrome. Furthermore, the color compatibility may be in the use of colors adjacent to each other's in the color circle in the use of both hot and cold colors. Finally, the previous theories of colors is considered the basic of many designs in the design world generally and the internal design specially, where the designer through that aims to set a clear and comfortable vision by the user eye, and that will reflect a positive impression in the self (Mark, Fairchild, 2011).

## 2.4 Color Circle

The colors circle (see Figure 14) is considered the scientific way to study the colors and give us the ability to learning how to mix the colors with each other. Also, many scientists have arranged the colors through multiple and different colors. However, the simplest and common arrangement is carried out by Johannes Etienne on the colors circle which has twelve colors that consists from basic colors (primary), secondary colors and trilogy colors (derived) (Ismail Shawki, 2001). Also, there is another basic circle with ten colors, which is Munsell's way to arrange colors and includes five basic colors and five composed colors (see Figure 15) as follows:

- The basic colors: yellow, green, blue, purple and red.
- The composed colors: it is mixed from each two basic colors as myntioned by Munsell which are:

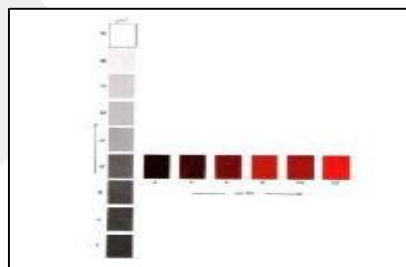
- Red bluish which consists of red with purple color.
- Violet color which consists from red and blue color.
- Orange color which consists from red and yellow color.
- Green reagent which consists of yellow and green color.
- Turquoise color which consists of blue and green color.



**Figure 14:** Color Circle

#### 2.4.1 The Color System to Scientist Munsell

Color gradation (as showed in Figure 15), color value, color intensity and the relations between them. The circular group represents the color gradation in the appropriate succession and the central column refers to the top balance. Also, the ways that refer to the out from the center show growing steps to the intensity power as indicated by the numbers (Rabih Al-harstani, Michel Pony, 1998).

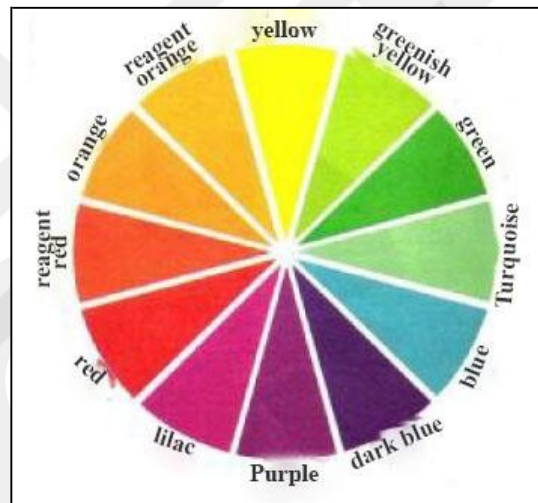


**Figure 15:** The Color Intensity and Gradient by Six Intensities and Eight Gradients

## 2.4.2 Shevral Circuit to Regulate Colors of the Twelve-Color

It consists of three basic colors (see Figure 16) red, yellow and blue. The other colors are produced through mixing two adjacent colors by different ratios which is:

- Between the red and yellow (reagent Red-orange, reagent orange). Also, these colors are considered complementary to the third basic color which is the blue.
- Between the yellow and green (Greenish yellow, Green turquoise). These colors are completing the red color.
- Between the red and blue (Dark Blue, purple, lilac) and these colors are complementary to the yellow (David L. Mac, 2000).



**Figure 16:** Circuit with Twelve Colors

The colors between yellow and red and some extension of red and blue are called the warm colors, whereas, the group of colors between yellow and blue and some extension of blue with red are called the cold colors (see Figure 17). The reason of naming belongs to psychological and physiologist factor (Al-harstani, Aalboni, 1998).

The color circle leads us to the colors and their supplements. According to the circle diameter, we notice that whenever the hot color incline to the cold whenever the corresponding color tends reverse to the heating. We can take advantage from that in finding the opposite and coordinate colors with each other during the coloring process. In spite of that the white and black paints are not considered real

colors but when add them to colored paints they are generating spaces and shadow color. Also, adding the black color to a colored paint they are generating shadow, whereas, adding of white color is generating cleanness.



**Figure 17: Hot and Cold Color**

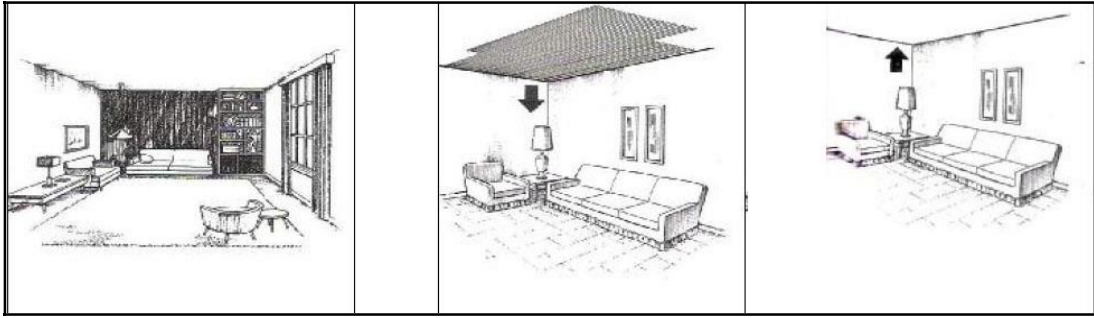
## **2.5 The Psychological Impact of Colors**

The contemplating in universe was and still the main source of inspiration for theories of science reached by scientists. As well as, the environment around us is full of creatures which vary in their characteristics and colors. Furthermore, the colors in their types and impacts are leaving the feeling of comfortable, anxiety, warming and cold in the human soul. Thus, the study in colors and ways of take advantage from their impacts in design and the psychological treatment have extended as play an important role in the psychological impact of human.

This chapter contains a study on the psychological effect of colors humans. Also, it contains the scientific miracle of color in psychology. In addition, talk about the energy of colors and how colors are impacting on human treatment when effect by some diseases. Finally, this chapter will talk about the impact of colors on human behavior.

### **2.5.1 Colors in Psychology**

Colors have great impact on the psychological status of human where some of them are relieve the soul and the others are disturbing it.



**Figure 18:** the long rooms look shorter when the episodic rooms that define them are prominent and dramatically visible (Al-harstani, Aalboni, 1998)

**Figure 19:** the dark colors give heaviness sense, the room appear like less rose when the ceilings are dark (Al-harstani, Aalboni, 1998)

**Figure 20:** gives a sense of lightness and the rooms appear look like higher than the dark walls and the light ceilings (Al-harstani, Aalboni, 1998)

Also, colors can give us the feeling of happiness, sadness and depression. Generally, floodlights are exciting the glamour and they are more dynamic than dark colors which are considered as more rigid. Furthermore, the color has indirect impact because of its psychological effect in expanding and narrowing the rooms (see Figure 18, 19, 20). As well as, due to its spatial effect in limiting and liberating by closing to direct object by actors emanating from different colors. Moreover, orange color in this area has a great rush of power following by yellow, then red, green, purple, blue, and blue leaning to greenness and violet (cool colors with static reaction which have no weak impulse). The colors with great impulse are suitable only the narrow areas, whereas, colors with low impulse are on the contrary which are suitable the large areas (Al-harstani, Aalboni, 1998).

### 2.5.2 Cold and Warm Colors

Cool colors like blue, green and purple create a relaxing environment and do not overpower other colors or over-stimulate the human mind. They give the impression of receding in space, so they are used to make scenes appear larger, especially in interior design. Because they are calming, they work well as background colors or for creating placid scenes in art such as calm water or a blue sky. In contrast, warm colors, including red, yellow and orange, are loud and

overpowering. They have a higher saturation and are used to make things stand out or to make a statement.

Warm colors refer to the colors that reminds one of the sun, sunset or of daytime. Examples of warm colors are red, yellow and orange, and these colors are referred to as such because they resemble fire and evoke feelings of warmth. Cool colors include shades of blue, green and violet, and the colors are said to remind one of cool things like water or grass.

The naming of colors slash to red maybe back to blood or fire color which are the source of life and heat. Due to the fact that cold colors are inspired the calm. However, we do not care about these names accept deeds because this have a great impact on choose the suitable colors in the right places and for later envisaged purpose, whether, it is an architectural or decorative pursuance aimed on certain aspects (Al-harstani, Aalboni,1998).

#### a) Warm Colors

The warm colors increase the effectively, revive and excite some times.

- **Warm flood lights colors:** have an impact on a top because they revive the soul; at the side gives the sense of warmth; in the bottom soften and raise.
- **Warm Dark Colors:** have an impact on a top, so that they give insulation feeling, greatness; at the side cover; in the lower provide steps and cohesion.

#### b) Color colors

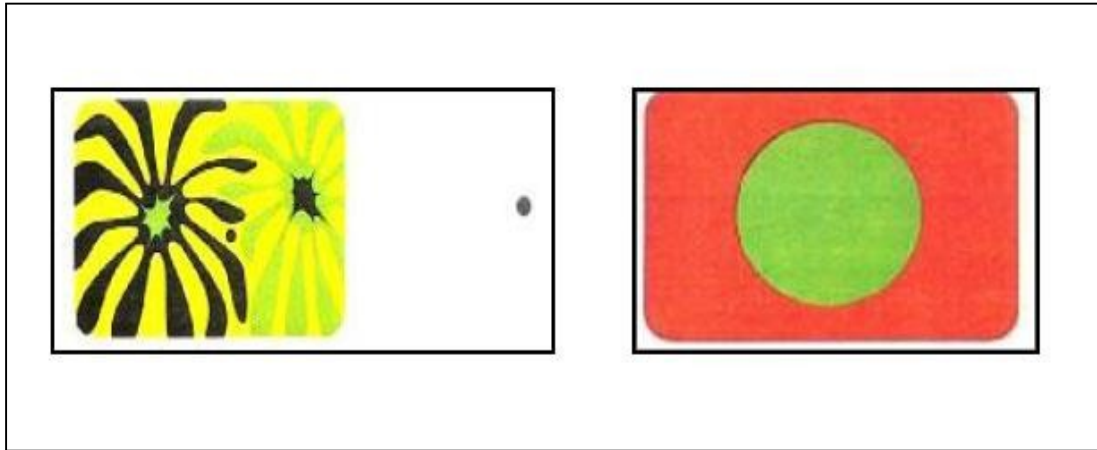
Lead to relax, calm down, and increase the intimacy.

- **Cold Floodlights Colors:** on the top have glittery influence and comfortable; at the side, lead; and the lower make the level fresh and incite sprinting.
- **Cold Dark Colors:** on the top give the sense of threat; at the side, give sense of cold and sadness and in the bottom give sense of heavens and attraction (Al-harstani, Aalboni, 1998).

### 2.5.3 The Impacts of Neighboring Colors with Each Other

One of the most important points that we have to take care about it in colors, there is no importance in the color itself and the most important matter is collecting different colors with each other. Thus, the human eye sees the color is not the same or itself but in its relation with the medium where it is (i.e. its environment).

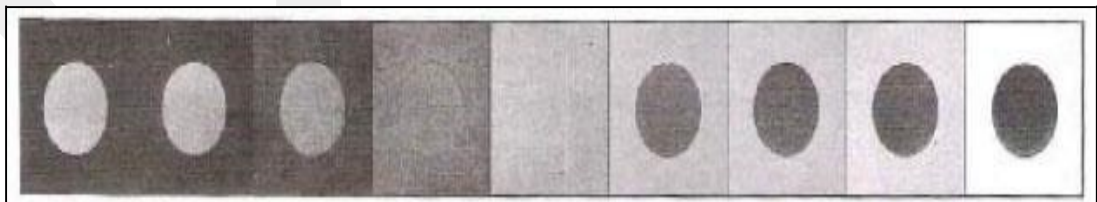
Also, the psychologists have proved that people who have colors blindness, they are not blind about one color but about two to four colors and the eye sensitive to colors not in singular but in pair. Also, that can be explained in the familiar process which is Meta image. Thus, if you look to a color for thirty seconds and then you looked to a white page you will see the complement to that color; another proof for that, when the eye sees a specific greased goal it will call the complement of that color in its environment as showed in Figure 21; for instance, if you put a chair in front of neutral revealed backdrop, the human eye sees a tinge of red color in that backdrop. Also, if you put two main colors next to each other, they seem as they effected by the deleted color as you put the red color next to the blue color it will take yellow area. Furthermore, if two opposite or complement and too heavy colors and they have the same value against each other been used, they will be incompatible and causing tired fluctuation as in Figure 22, whereas, when conflicting colors next to each other or one of them against the other are used and have great differences in their values, the colors will remain their places but they are not inconsistent. As well as, when colors are mixed in homogeny with an average value against each other are used, they will tend to socialize with each other. However, on a certain distance the difference will be invisible (additional spatial fusion) and this is considered the basic for the majority of Shaiboy schemes. Nevertheless, when colors are stockpiled not only the gradient is effected but the value will effect too (Al-harstani, Aalboni, 1998).



**Figure 21:** if we take a look on the black point that locates under the center for thirty seconds, then, we look to the black point on the white space to the right, so the focus on one color will decrease the sensitivity of color towards the color

**Figure 22:** color with equal value and density are inconsistent when placed next to each other which cause the oscillation

The change in value can be noticed when gray circle is putted on white background. Whenever we add the black to the background and became increasingly darker, the gray circle will become reveler and show its ability to make colors reveler or dark according to the coordinating value of the adjacent or rear color. Moreover, if we put the black and white next to each other, the white will appear whiter and black will appear blacker. Colors that strongly mix with each other will hide something and contrasting colors will highlight something. The facts about colors have many applications in the architecture and other arts as explained in Figure 23 (Al-harstani, Aalboni, 1998).



**Figure 23:** in gradient from black to white, the small circles are all identical in terms of scale but show as the eye does not see the color alone

#### 2.5.4 The Effect of Light on Colors

Without light there is no color and the light in its two types natural and artificial is an important element in the structure of any room, the carpet seems deeper, fabrics seem more luxury, metals take loved shape, wood become softer, the general atmosphere become more dramatic or warm and give the intimacy. Moreover, the more interesting issue when designing the color of a room is to focus on the type and quantity of light which enters the room. The quantity of color that enters the room depends on the number and size of windows to that room, room with few or small windows that let only few amount of colors to enter must contain on colors that reflect the light, whereas, the room with large distance of windows become more splendor if contain on dark colors that absorb some lights which reduce the flare. Table 1 shows the percentage of reflected light from the commonly used colors (Berns Roy, Billmeyer and Saltzman's, 1999). In order to ensure entering the necessary of natural light and at the same time to avoid the flare, we should plan any color for a particular place within the relationship of the reflective properties of the assist in this place and specifically for the objects which from the background. For instance, the black walls absorb the bulk of the light, whereas, the white walls reflect the bulk of it. As well as, this applies on the impact of floor mats, where the dark carpet with non-glossy surface make the room opaquer than if the floor has carpeted by rags that reflect the light.

Furthermore, the type of natural light also depends on the direction that come from. Also, it depends on the time of daytime, where the light comes from north is characterized by cold, light from east is warmer than light from north but it is colder than afternoon warm light that comes from south and west. However, the quality of light is not varied only according to the compass that come from but it varies also depending on the time of the day, where the light come from west in late afternoon times contains a lot of red light. Due to these differences, the wisdom is to use the warmer colors in the rooms which contains cold light and use the cooler colors in the rooms exposed to sunlight from the south and west directions. As the quality of light differs during the day, it is desirable to carefully choose the colors and observe them during varies times of the day (Palmer, 1999).

**Table 1:** The percentage of reflected light from some colors (Palmer, 1999).

<b>Color</b>	<b>The percentage of reflected light</b>
<b>White</b>	<b>89%</b>
<b>Ivory</b>	<b>87%</b>
<b>Sky Blue</b>	<b>65%</b>
<b>Flood light Gray</b>	<b>63%</b>
<b>Yellow Dark</b>	<b>62%</b>
<b>Floodlight Green</b>	<b>56%</b>
<b>Nutty Brown</b>	<b>16</b>
<b>Black</b>	<b>2%</b>

Through the above and through the knowledge of the designer in the internal architecture to the concept of color and its theories been adopted what is called Color Scheme which is a set of colors that designer finds it as a suitable to particular internal space for general standards and foundations which associated to the dimension of functional and aesthetic space. It should be noted that the study of colors, their theories, different impacts and their study methods are considered relatively modern study. So, the most studies in internal design in the old centuries do not contain this understanding about color and their theories as a result of that, the colors have used according to the whims and personal tastes or according to the glitter, semantic or symbols of colors as them relates to the belief, religion and popular traditions for each region that has the same traditions. Hence, the color leads a vital role in the internal space, as it works on highlighting the furniture elements and their relation in the configuration content floors, ceilings and walls in the space. As well as, the color takes an important place in all our activities in

general and special life. So, the effect that colors cause in space reflect on the censoring and muscular feeling of humans (Mustafa Ahmed, 2001). The following are the most important psychological effects of colors on the most important internal spaces:

## 2.5.5 The Use of Color in Different Environments

### A. Public Spaces

- **Food spaces:** The red color has a characteristic that it mimics the desire, so it is useful to be used in the food rooms as in Figure 24, whereas, the blue and green colors give the human a sense of calm, comfort and love of life, as they the colors of nature so it is suitable to use them in the bed rooms as showed in Figure 25. In another hand, the yellow and orange colors are the energy colors, so, it is useful to deploy them in most vital spaces, such as, the living rooms and the preparation food places. Also, the light orange is the role of positive motivation and thus can be the dominant color in the office room.



**Figure 24:** the use of warm colors in food spaces confer warm



**Figure 25:** the use of sober colors like the blue color confers a calm and comfort in

Generally, they represent all the non-residential places, such as, the commercial buildings, shops, restaurants, the cultural and the regional buildings, healthcare centers and hospital, governments buildings and embassies, and we shall review some of these spaces:

- **Restaurants and Cafés:** They are often use the warm colors in dining halls, where the pink and orange colors are used because they have an effective impact in the digestion process (Figure 26).



**Figure 26:** the Use of Warm Colors in the Dining Halls to Confer a Warm to the place

- Cultural and Educational Spaces:** The cultural and educational spaces differ from each other in terms of activity for each functional space, universities, libraries, cultural centers, museums, music lobbies and theaters, in addition to the difference of ages from who use that space adults, youths and children. Generally, the emphasis in the cultural and educational spaces on the set of harmonious colors that do not cause distracting the mind such as violet and others but lead to stimulate the mind and inciting on thinking. So, the lights colors are used which little stepped down toward the warming and the white surfaces are avoided which cause boredom and severe repercussions dazzling. As well as, the colors with high contrast are avoided especially in classrooms and libraries as shown in Figure 27 (Yahya Hamouda, 1977).

It is worth mentioning that warm and cold colors play an important role in our feeling by cold and warm though this feeling is psychological and not physiologically, so, this case is employed to use the cold colors in the internal spaces and the warm colors in the internal spaces at the navy side for suggestible and simulate to the moderately of weather.



**Figure 27:** the Confirmation Newly On Spaces with Warm Colors to Give an Incentive Affirmative

- **Commercial Spaces:** In the shops and commercial places, the focus on use specific colors according to the type of exhibits as in Figure 28, though the focus mostly on use the warm and shiny colors to attract people toward the shops and exhibits. Furthermore, the cold colors are used particularly to give the sense of emptiness and widen.



**Figure 28:** the Contrast of Warm with Cold Colors in the Commercial Shops to Achieve the Attracting Factor

A team of scientists discovered devices and tools through which recording all the reflections which are issued from the human psychologically or physically under the impact of colors, turned out that colors according to their types have impact on human, representing by accelerating heartbeat, rotation movement of eyelids opened and closed, increase the susceptibility of cease to conduct heat and electricity by increasing its moisture and sweet secreted, differences in the breathing movements and differences in the graphs that registering the activity of brain. Some studies have discovered important results about this topic; in 1878 the scientist (D, B Ghaldiala) the scientific principles that explain why and how that different colored rays have various treatment impacts in the organism.

In 1933 and after years from the research Ghaldiala published (encyclopedia of the art of spectral measurement) which is considered a masterpiece in the color therapy field. Furthermore, the theories that have developed are derived from Ghaldiala work, where he emphasized that colors of chemical activities are in eight frequency groups.

- The German scientist Mendel in 1980 authored a scientific encyclopedia about the basic and the complementary colors to each other and how to treating by them through various treatment devices called the natural treatment devices by the colored rays. Also, the German scientist has identified six colors for the treatment process which are red, yellow, blue, orange, green and violet. The modern sciences also showed that the correct use of colors can increase the focus, activity and the ability to understand, learn and remembering round 55 to 78%. Also, another study conducted in 1982 in the College of Nursing, San Diego has been exposing 60 women at the median age are suffered from rheumatoid arthritis to the blue color for 15 minutes have felt in marked improvement in the severity of pain which eased to a large extent than before.
- Another study conducted in 1990 which included the highlight of red lights on the eyes of many patients who are suffered from Migraine in the onset of the disease and 93% from them are partially recovered as a result of this treatment and therapists attributed the reason, that red color is increasing the arterial blood pleasure and dilates blood vessels. Furthermore, the experiments are showed that colors have an impact on our sense by heat, where a study has conducted in Norway by a number of scientist, they discovered through it, that the existence of people in room painted by blue color will enforce them to increase the central heating indicator into higher three degrees than individuals setting in a room painted by red color. Other studies are showed that lightness darkness of colors in their gradients effect in our perception by time and our ability on concentrate and remember.
- The dermatologist in Boston Medical Center in the United States revealed that the package of blue color might bring the youth freshness to the skin and increase the face glamorous and beauty.

Also, the scientists in Boston Center explained that damaged cells are subject to this interaction that cause their separation and fallen for a week to be replaced by new and healthy cells. Also, they pointed that its results are not dramatic as a result

of resurfacing the skin by laser but its duration of recovery is shorter and it is considered an alternative in the same quality of peels process and it might be better because it is simplest, less aggressive and painful. Moreover, experts pointed that this technology that anti-aging is very expensive, where the cost of one session is about 800 dollars and its side effect is not clear yet because it is new technology (Mohammed Al Sakka, 1999).

The effect of colors is not only limited to humans but it is extended to take farther impact, where some animals and plants have responses to colors; some experiments have proved that if chicken exposed to artificial colored light, it whitens quickly more its usual speed, earthworms attracted by the red colors and the biting insect legless from a platoon of 44 like red, orange and yellow colors and escape of blue, violet and green colors. Also, butterflies like colors especially blue, green and violet, whereas, the flies like all colors except the blue color and it is alienating from it, and for this we find the rooms that painted by blue colors are almost devoid of the flies. Moreover, we find that every organ, muscle and bone in our body has specific pulse and the color that corresponds with this frequency will be selected. Also, if the pulse frequency has been changed in any part of the body, it would result in disease which can be cured simply by supplying the part with variable pulse in its suitable color. As well as, if we try to formulate this relation in another way, we find that every organ in the human body has specific color, where heart has red color, the liver has reddish brownish color and the lung color tends to gray.

Where our body from inside are colored and this is not assumption but it is a fact has been proven by the science of surgery and anatomy after viewing the human body from the inside and proved that internal organs are colored. Consequently, the cured by colors depends on supplying the human body and its different regions and specifically the diseased regions by suitable colors until achieved the healing. Furthermore, supplying the human body by energy that found in the colors does by many methods, the simplest one the expose to the color treatment rays itself or to eat the foods which their energy and color are corresponding with the color and the energy of the organ to be cured (Mohammed Al Sakka, 1999).

### **2.5.7 Colors from Psychological Aspect**

The colors effect on the psyche of the human both if they like or not. Thus, the recovery of the eye effects on the nervous system as we well clarify at the next steps in details the effects of the different colors.

#### **A. Green Color**

The green color represents the color of nature, growth and balance and expresses the harmony of things around us, it can also be used as a symbol of peace. In terms of energy it represents a color with median energy and pulse where its capacity is 3500 angstroms. The energy of this color is 100% positive and known to be capable of absorbing all the negative colors from all animate and inanimate objects which exposed to it. Proof of this is that the depressed or sad human when sits in a place full of tries and green plants, his depression is disappeared and become happy and energetic. Also, it is well known that Egyptian is the first humans who has used the colors in the treatment and the green color had a special place with them, where they used it as a cover for the body of the Pharaoh after being embalmed and then covered the embalmed by green color and been putted in the first third of tomb as a figure of pyramid. Since according to the science of Alfong Shui or the energy of the place that pyramid shape works to concentrate and collecting the energy inside it. The first part of the pyramid top with highest concentrated energy and we should observe the wisdom of that. Embalmed body put in place with high energy and covered it by color with high and balanced energy, this behavior did not come without knowledge and study. The energy in the green color is positive and devoid of all the negatives. Furthermore, the green color is suitable in bed rooms because it helps to calm and relax and these qualities are required until the person sleeps comfortably and without tiring. However, the green color is not suitable in the work places which require to body and mind effort because this color helps to sense of relax and peace (Mohammed Al Sakka, 1999).

## **B. Red Color**

The red color has the highest energy in the colors and refers to the power, vitality, represented by fire and capacity is 6500 angstroms. Also, it is the only color that cannot be used in the bed rooms because the bedroom is a place to relax. It is not recommended to use the red color and advised to use other colors such as blue, green and earth colors. Thus, the person who sleep in places full of red colors he will suffer from insomnia, nightmares and bad dreams. The red color is most suitable to the children play places and to the places that need activity and vitality to accomplish the work, which also, indicates to the hospitality, ambition and emotion. So, we note that famous restaurants depend on using the red color in their decorations where it is used as a color for tablecloth and roses.

## **C. Yellow Color**

It is the earth color and expressed the solidity and the power of the mind. The yellow color carries the magnetic currents wave which we breathe it and excite us and the nerves in the body will be activated, simulate the supreme mental processes, generates the energy in the muscles and enhances the skin, cleans and treats the burns.

Also, it is used for all cases of rheumatism and arthritis because it helps on decomposition of limestone deposits that are deposited in the joints. Furthermore, in case of decreasing the rays of this color in any part of the body that leads to partial or total paralysis, so, it is the more suitable color to treat this case. Always advisable to sit down and behind us a piece with yellow color especially for those who work in written work because it helps on creativity in writing. Also, it is preferable to use it in places where the family gathered and the bedrooms because it helps on decrease the energy which resulted on relaxing and comforting process and increase the feelings of responsiveness and air of domestic compassionate (Mohammed Al Sakka, 1999).

#### **D. Blue Color**

The heavenly reflects the nobility of morality and idealism in piety. The bright blue refers to the sincerity and loyalty. Also, the blue color is the color serenity, calm and very much suitable in bed rooms and resting places because it reduces the feeling of anger and removes the pressure of life. The blue color is suitable for meeting rooms with too much wrangling because it helps on reduce and comfort them.

Innately, we find that people who suffer from pressure and worry situations resort on inhalation sea air and their problem will really eliminate and the real reason of this is that wave action in the sea in addition to its blue color assists on pull the negative energy, replaces it with positive energy and renewal the energy in the areas surrounding the sea.

When we talk about all colors, their characteristics apply on all different degrees of colors with varying in their strength, for instance, navy blue acquires the characteristics of blue color with recipe to the characteristics of black color and whenever the degree of the color tended to gloom and specifically the navy color, the sense of sad of the person will increase (Mohammed Al Sakka, 1999).

#### **E. Violet color**

It is the color of calm, it is preferable to be used in the water cycles and bathrooms, the frequent exposure to this color will increase the sense of sad. Also, it is the color of self-respect and honor (Mohammed Al Sakka, 1999).

#### **F. Orange color**

The orange color refers to the energy, the light orange refers to the health and vitality and the dark of it refers to the vanity. The rays of orange colors are used in the cases of exhaustion and fatigue, to treat the kidney stones and gall bladder and the treat of acute abdominal cramps and muscle spasms. The orange color is derived from the red and violet colors with different ratios and it is preferable in food rooms and corridors because it is welcome color and helps on digestion

(Mohammed Al Sakka, 1999).

### **G. White and black color**

The white is the reflection for the whole colors, whereas, the black is the absorption for the whole colors. The white color is used with the other colors because it helps on achieve the balancing for all the color that associated to it, whereas, the frequent exposure to the black color increase our feeling by grief.

Finally, it is preferable that human should leave himself on his nature by choosing the colors that expose or deal with them in his clothing, food and home because human body tends to compensate the shortfall of energy automatically and this explains our behaviors and preference to eat a particular food without other or wear fashion with certain colors. Also, the vitamins are connected by colors, where we find that food with yellow or green colors such as such lemons and pears are rich with vitamin (c) and the food with red colors such as tomatoes are rich with vitamin (b21) or compound. Also, the yellow foods are rich with specific vitamin, the foods with dark blue are rich with vitamin and the violet foods are rich with vitamin. To sum up, we would like to point out that therapy by colors as a treatment method does not require to en effort to learn it and it is usefulness lies in that it helps us to communicate with ourselves and our energies and allows us to response with all things around us and with our feelings as well (Mohammed Al Sakka, 1999).

#### **2.5.8. The Effects of Colors on Human Behavior**

The color has effect on the body, soul and mood. Also, the color elevates the spirit and nourish the nerves, relive the sense and has clear impact on our daily life, there are some that sends self-pressure and happiness. Also, it is a matter of boredom and confusion, there are some what motivates and others what frustrates. As well as, there are what suggests warmth and others what suggests the cold. Color is a vital for human and color radiate aura around the human and this aura cannot be seen by the human eye accept for private individuals. Furthermore, the aura is extended to four feet and in the self-enlightened stretching several yards.

The colors which appeared in the center of the aura has specified interpretation and the persons who studied this phenomenon can discover several facts that belong to this aura just in one look. Many researches have proved that blue, green and white relax the muscle and bring the calm, relax and sleep. So, the colors institute sees that roses and flowers in the patients' rooms vary according to their conditions. If the patient needs to calm and comfort we will select to him the light pastel colors like blue and green, whereas, if the patient needs to be activated we will choose to him the warm colors such as the red colors (Ahmed Hegazy, 1995).

## **2.6 Summary**

At this chapter we have discussed colors and their effects on the human behavior, activities and reaction towards the different colors in different environments. Thus, each color is associated by moving certain senses at the human and affect him positively or negatively in direct way. As well as, we clarified which colors can be used in specific places and which of them cannot be used according to certain characteristics of that place and the characteristics of colors.

## CHAPTER 3

### THE ARCHITECTURAL SPACE IN SHOPPING MALLS

Commercial and marketing centers are no longer today as it was in the past where they have not been constructed basically for only to get ride from the leisure time or to just buy products of shoes, clothes and electronic parts but they became of the most attracting locations for different ages of visitors and fulfill their needs and desires. One of the most places that attract customers are the food courts. Thus, special attention must be paid in the food courts and must be decorates with colors suit public tastes. So that, customer can spent the greatest time in the food courts and will be the comfort centers for the customers after finishing the shopping process or even sharing the family or friends in the meal and spend good times. Therefore, the design of the food courts must be taken into consideration by the architect and designers during the design process of the shopping malls.

#### 3.1 The Principle of Architectural Space and Its Importance

The space is the basic architectural principles and it is the container that accommodates events and through it individuals practiced their activities, celebrations, rites and expressing their opinions, thoughts and their mode of life. The historical tracking shows us the importance and the vitality of the space role in the previous civilizations and the extent of its impact on configuring our society and their feeling in affiliation to the place and their collective freedom of thinking. Also, the architectural space can be defined as “a part of the general space has been deducted in special determinants which make it fit for the human to practice in it his special life activities. The kinds of activities and their performance depend on the type of truncated portion, size, body design and its relation with the surrounding space” (AL-HASAN, 2001). This is the definition which is basically

associated with the components statement of the architectural space, design method, configure the interior body and the reflection of all of that to the exterior architectural body of the building or also, its reflection on sense of space.

In another hand, there is no dispute that space is the core of architectural configuration and some of architectural pioneers has expressed on that such as Frank Loyd Wright who said that “the interior space is the truth of the building” (AL- HASAN, 2007). As well as, we find that the concept of architecture in its interior space is clear in the concepts and principles of global style (AL-HASAN, 2007). If you look to the architecture as spaces produce bodies of buildings or bodies to the building divided internally into spaces. As a results, both of them ensure that the interior space is the basic because it contains the function which distinguishes the architecture from other types of arts such as sculpture art.

According to the previous concept of space, we find that the space delimiters has a major and exciting role on how to design the space beside the sense of space body. We can say that the changes at these delimiters even with less changes will produce different architectural body. The evidence on that, we cannot say that changes in walls of any space and even if it is in the meeting room from flat surfaces to the circular surfaces will make the overall body of the space will change entirely. Also, the style of hall brushes may change and as a results the sense inside it will change too. Simpler than this, if the color of wall has changed in a room with hall surfaces in order to change the sense inside this room with a room that is match with it in everything except color. Thus, the body of the space and the sense of it is changing in size and shape that been done to change the components and elements of this space (AL-HASAN, 2007).

### **3.1.1 Architectural Definition of Space**

Ching has delimited the group of anchor and horizontal determinants to identify the architectural space; which classify them to floors and ceilings as a horizontal determinants and anchor menus and walls to delimiters anchors (AL-HASAN, 2007). So, these delimiters have been classified within a number of dimensions as follows:

### **1. First dimension: (the anchor level of a wall)**

Which is a basic element to identify the architectural space and this level varies in the space to be also as the animated cutouts.

### **2. Second dimension: the horizontal level (floors)**

What been identified as several of construction elements in terms of construction materials and different types of finishes.

### **3. The third level: the horizontal level (the ceiling space)**

Which has the same characteristics of floors in the architectural space.

### **4. The fourth dimension: furniture and accessories**

It includes all the components of the interior architectural space in terms of brushes, furniture elements to other contents which reflect the function of space (class space: blackboard, seating, demonstration tools to other).

### **5. The fifth dimension: function and activity of the space**

Interior spaces include multiple functions and there are multiple functions and activities can be done in the interior space such as educational and entertainment activities [sport, plays, music to other]. Thus, multiple functions and activities which done by human and need to interstitial space. The interior space has multiple functions such as health function (hospitals in their levels and types) educational function (schools- universities in their levels and types) and so as consider an architectural space. So, we find the architectural engineer is effected by these functions to ideating architectural design creativity through which human satisfy his multiple needs through space system which reflect his different sense of comfort, sometimes happy, thrills, dazzling or awe and reverence in other times to another sense which generating as a result to the movement in that spaces. So, the architecture creates a movement in the space to perform multiple need and functions (George, 2006).

## **6. Sixth dimension: time**

In simpler shape, this is the time that user uses it in the movement inside the space. Also, it is the time that it takes to setup the architectural configuration. As well as, it is the future time that is used by the origin design and this creation should reflect the needs and the future vision. Furthermore, it is the time that first architecture respected it and calculated it as accurate as possible. Also, it is the time surrounding the building and the relation of times change in summer, winter, morning and evening with the use of architectural design vision. Moreover, it is the time movement does it take by a user on the successive external spacing and the affection done by this movement of visual effects sensory on the user of space system (George, 2006).

### **3.1.2 Architectural Cognition**

- **Visual perception and comprehension**

There are three main function of mind which are cognition, understanding and listening and actually they are the elements of one operation because the mind which cognate the nature is itself which understand and enjoy in it. The mere of realize the thing is an evidence on understand and enjoy in it even in much of beauty because if the thing is not suitable to our property it will stay unrealizable (George, 2006).

- **The Concept of perception**

The perception is testing the surrounding automatically through the senses. So, it is the process which through human testing its surrounding automatically. The result of this process is distinguishing colors, smells, voices, permanent and moving object in someplace. Also, it can be said that perception points to the process that interpret sensory thrill which sense expose to organized experience. Furthermore, it is just like in psychology the response of human to foreign exciting (Antoine, 1987).

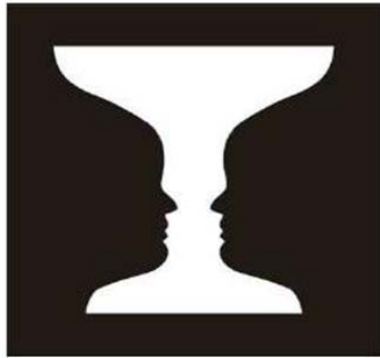
- **Realizing Form**

The sensory input that human receives them intervention his consciousness as sizes, styles and forms. So, the human is not realizing the surrounding world as a colored spot, variations in sparkles or voices with different heights by he sees houses, walls, trees, hears the car horn, occurrence of feet and words. Thus, we realize things and adapt with them and realizing things are raises a complex issue in psychology. The visual realizing is assuming lighter image to the perceived on retina as a style of signal continuously change and the capacity of exciting change frequently from part to part in the retina and different things that available in the visual field is producing different levels of exciting. So, how these complex components of exciting that existed in the retina lead to realize the surrounding of things and subjects which is relatively stable and rich in its varies? This is the problem which focused by the study of shape realization.

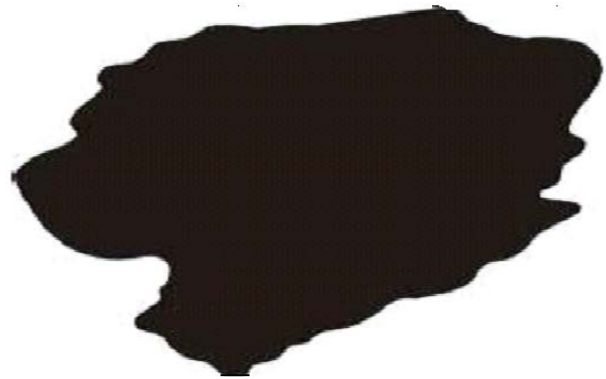
- **The image and background in realizing the shape**

Identify the image on some background is the basic operation in realizing shape. We see the things and shapes in our daily experience prominent above the background. Paintings hang on the walls and words are visible on the page and in both cases we realize the painting or words in the image, whereas, the wall and the page are considered as some background. The ability to realizing shape from its background as basic process in each shape realization (Antoine, 1987). Figure 29 when considering it explains the form of the dark area and this area may not look like any region has been seen previously but it realizes it. However, it is a form which is independent from its background, image has some figure and takes the recipe of something, whereas, the background tends to shapeless. Also, the background seems to take a continuous stretch behind the image, so, this last one seems in other word closer to us from the background. Figure 30 shows the relationship between the image and the background. He may see the image as a vase or he may see it two sides faces of females. When he saw the vase he realizes the light-color region as image above dark

background and rarely to realize the vase and the two sides faces at the same time.



**Figure 29:** the Figure and the Background



**Figure 30:** Realizing the Relationship between the Image and the Background

The relationship between the image and the background is existed in the other types of perceptions such it is existing in the visual perception. The human realizes the words against him as image above background of voices and other noises and realizes the smell of perfume such as image above background of odorless air or loaded by other smells (Antoine, 1987).

### 3.1.3 Recognize the Place

The things that we see, hear and touch is placed in somewhere so it occupies special location according to our bodies. We consider the location of things in someplace is certainly matter and we face difficulty in imaging small world not the spatial world. Furthermore, when we stop to consider how living organism work on behaving suitable behavior in the place. Moving within three dimensions and identify the location of things in amazing accuracy, we quickly discover the complexity to realize the place and the requirements to the higher constructional and synthetic activities for the realizer.

**The sense systems in realizing place:** Human highly dependence on his eyes in his spatial adoption carries on equation between the spatial and visual world. The visual systems are basics in human spatial directions but they are not unique because human hear, touch and the movement systems help in identifying the

things locations in someplace (Antoine, 1987).

### **3.2 The Concept of Public Buildings and Shopping Malls**

Generally, the shopping centers play an important role in the life of consumers where they became not only a shopping centers but also social and entertainment centers to different social activities. The shopping centers include many departments and including playing places for children and entertainment. In addition, they consider places for promotional and advertising activities. So, it must be mention to the roles of the commercial centers in our daily lives. During the years the thought of the shopping centers are done and developed to include more services which include the entertainment and eating services.

#### **3.2.1 Food Courts of the Shopping Malls**

The restaurants are considered basic elements in the design of any shopping malls which increase these centers magnificence and beauty. So, the food courts are configured an important element to be near to the tourists and shopaholic especially when the person spend long times in the shopping. These food courts or restaurants must provide various dishes including the popular, antique and modern dishes to open the pioneers' appetite to turn them back.

Despite the existence of the food courts in the shopping centers, the existence of the food courts and restaurants must be near of the people at these places to guaranty their continuous.

#### **3.2.2 The Characteristics and Design Consideration of the Food Courts**

The food courts give the people the choices of sharing the meals with family, relatives and friends. As such, the food courts of the shopping malls are always the main reasons to visit the shopping centers. The food courts locate at the last floor of the shopping centers. So, there is a need to the customers to reach them by passing the whole floors and this increase the shopping opportunities. As well as, the food courts lead to increase the overall selling because they provide panoramic views on what is available in the last floors. The food courts at most of the shopping centers able to fulfill the tastes of the whole families in the same time and

be accessible to everyone. The food courts are always absorbed directly in the shopping centers also they are an effective repository in terms of the cost with many kitchens, foods and entertainments.

### 3.3 Service Buildings-Restaurants and Evolution

The restaurant can be defined as” public place for joint feeding and capable of receiving and serving many people quickly”. So, at this concept the restaurant be one of the modern places (Kinsara, 2012).

- **In the past** there were places look like the current restaurants but their public character makes them similar to food shop more than the real restaurant. The lack of suitability to restaurants which belong to people within high social class are due to many reasons as technical, financial and social reasons and especially to the lack of developing means of individual and public transportations and to the security lack of those people, whereas, there were groceries which supply people by food and provide sleeping places too.
- **In Middle Ages** the motel is increased according to develop the trade and the movement roads and their pioneers were traders, students and visitors who ask the food too.
- In the nineteenth century in city and crowded places restaurants and hotels are built which are especially processed to help travelers, business men and families. In the beginning, the restaurants are built to be complement to hotels or recreation places. Later, they are begun to take shape and special mode. When the process of creation independent restaurants is confirmed, the construction, distributive and financial problem of restaurant occurred. However, there were more than one expected solution according not to just fulfill the needs of strangers’ people but to fulfill the needs of different level of populations who live in the city (employees, students, concerned and singulars). Restaurants regardless of the type are made of (Kinsara, 2012):  
— Entrance, reception and queries.

- Main hall.
- Service suite.
- Accounting and service.
- Stores and courses.

The entrance of the restaurant as Astite said should be clear and distinct with suitable size and the the same to the entrances of ration needs and loads. While, the food hall should take the characterization of recipe spaciousness and breadth. Also, in case of increase the requests on specializing the area it must meet the needs and accommodate the large numbers who may occur in one time through the times of occasions (Kinsara, 2012).

### **3.4 The Standards of Selecting Colors in Designing Food Courts and Accessories**

#### **Factors Influencing Color Selection**

There are multiple factors effect on colors selecting, include:

##### **The space function:**

The function of place selecting effects directly of color selecting which belongs to space that in turn effects on the performance and comfort of users whether they are workers or customers.

##### **The space area**

The most important factors which effect on color selecting is the space area in order to determine the color degrees accurately as work on optical widening or vice.

##### **The age group of users**

The used colors vary according to the group age of users, where the colors used in spaces for children differ from the young and elderly.

##### **The surrounding environment and the general atmosphere**

The surrounding environment of the place and its hot or cold atmosphere effect on colors selecting too in order to create the suitable atmosphere inside the space.

### 3.4.1 The Colors Elements in Food Courts

The elements in food spaces are categorized to fix and intimated elements.

The fix elements are:

- Walls, ceilings, columns and floors The animated elements are:
  - Various pieces of furniture such as tables, chairs, cutouts, plants basins, paintings and others.
  - Lighting in various types and forms.
  - Services tools which include dishes and placemats such as the food menus.
  - Employees' uniform.

### 3.4.2 The Psychology of Colors in Food Courts

The psychology exists in different walks of life both in organization and factories in order to encourage the employees and in the home because it builds relations and positive atmosphere between the family members. The colors psychology is the science which interpret the relation between the colors and people psychology. Some colors can effect on the moods of people and some colors can effect on the way the people look to you, while, another colors effect on the appetite to eat. The following analysis has been collected from the science of colors experts and feng shui science who are Cara Gallagher, Dana Claudat, Nancy Zeigler, Gina Mims and Judith Wendall by communicating with chancellor of food trade Jonathan Raduns in National Restaurants Consultants (MacArthur, 2013).

### 3.5 The Analysis of Colors Psychology in Food Courts

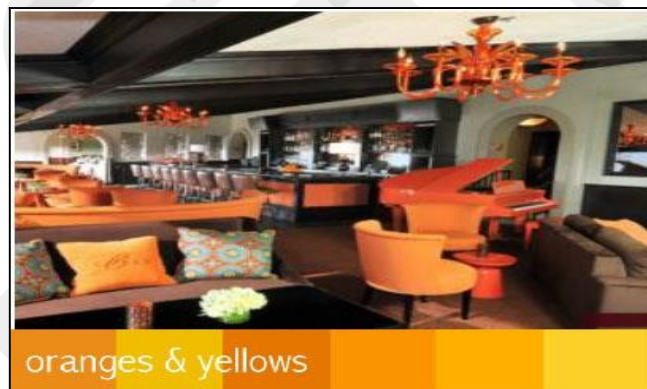
**Blue and purple lead to loss of appetite:** subconscious mind connects blue and purple to toxins. There are some Chinese health foods with the blue colors till now and the studies showed that they are decrease the appetite. In order to increase the customers and visitors, the blue color must be avoided as showed in Figure 31.



**Figure 31:** the use of Blue and Purple Gradients in food spaces (MacArthur, 2013)

**The yellow color:** reduces the customers stay inside the restaurants because it is considered annoying colors where it unnerving color, some fast food restaurants painting the walls with yellow colors in order to encourage people to leave the place when the demand is finished in order to provide a place for new customers.

**Red-Yellowish or Orange Color:** this color simulates the appetite and it is proved that the use of red or orange tables would make people eat more as shown in Figure 32.



**Figure 32:** the Use of Red-Yellowish and Orange colors in food spaces (MacArthur, 2013)

**Green and brown color:** the colors of relaxation and calm, people feel by contact with green nature and that what give them more of calm in green spaces. So, the use of green colors inside the food courts maybe a good idea as showed in Figure 33.



**Figure 33:** the use of gradients of brown and green in food spaces (MacArthur, 2013)

**The red color:** it is eye-catching color and that useful in desired to draw the attention to the food space but it is not recommended to use it frequently because it is unnerving color to the disturbing level and maybe it is a good idea to use it in the exterior of food spaces to draw the attention as showed in Figure 34. Taking into account the psychological impacts of colors in the food spaces increase the success possibility of an idea, the place development and the positive reaction from the place visitors. In spite of this important role of the color psychology in the space but there is no the wrong color in the use. However, this psychological concept helps to start working in the mechanism of suitable colors in the space which lead to create a colored system depends on harmony between colors and according to the nature and function of each place. Ziegler said who is one expert of feng shui science that “there is really no one measure which suitable to everybody” in the design and perception of colors in the food spaces but it must be a balance in this work. Also, Mims confirmed that “some people use their preferred colors which they like but the real key of success lies in study of colors theory to ensure that the used colors related to the idea of the place, type and services to suit the feelings of customers and not what suit the taste of the owner” (MacArthur, 2013).



**Figure 34:** Use of Red Gradient in Food Spaces Worldwide examples of fast food restaurants

The fast food restaurants or what is known the fast services restaurants are one types of the restaurants that based on providing the instant foods and provide a limited list of meals. The foods provided in the fast food restaurants are always belong to the western-style food. The meals are papered with high quantities and kept heated and be ready to provide when requested. The most known fast food restaurants in the world are Reesho, Burger King, Chicken Licken, Church's Chicken, Dunkin' Donuts, Hardee's, KFC and McDonald's. As well as, the fast food restaurants have high economic importance which through we can discover and determine the needs of the global customer, fulfill the needs and desires of the actual of the global customer, invent new products and the existence of an ability to enter them to the markets and provide in the suitable time, face the competition and outdo competitors, the coordination of marketing weaving elements and understand the global environmental legislations. While, the colors language is the faster communication language and excels on the words and figures because it directly addresses the feelings and emotions. Thus, the fast food restaurants are always taken the red and yellow colors because the psychologists see that the red color is of one of the most colors that stimulate the appetite and move the feelings of hunger which explain its connection with these restaurants. Furthermore, yellow color is considered the triggers of feeling happy and friendly with the place and people and its existence help on establishing a relation with the place which make you think to come back here



**Figure 35:** the Concept of Semi-Public Spaces (photograph taken by the author)

Also, the yellow color can be seen from far places and one of the clearest colors during the day. (Kinsara, 2012).

### **3.6 Color Choice of Each Restaurants types**

There much types of restaurants and food places and we may see different and multiple classifications for restaurants. Where restaurants are classified according to the menu food, type or to the methods of preparation or price. Furthermore, the method of serving food to customers help on identify the type of the food too (Kinsara, 2012).

- **Fast food restaurants**

These types of restaurants focus on two factors which are service speed and price reduction regardless on all other factors with noting the absence of cutlery (knives and forks), ceramic and glass dishes from tables because the food is eaten directly from the plastic dish or from the prepared cartoons for the single use and account paid in advance. An example of these restaurants are McDonald's, Hardees, Burger King, KFC, fast shawarma, Broasted and hamburgers as showed in Figure 36.

- **Fast Casual-Dining Restaurants**

They are restaurants contain tables and seats and offer fast food. The modes at these restaurants are informal and this type is somewhat similar to fast food restaurants but with better quality in terms of food and the general environment of the place. This type of restaurant is characterized by moderate prices to be in the medium region between the fast food restaurants and the luxury restaurants. An example on these restaurants are Fuddruckers Pizza Hut, Receb Usta restaurant which is showed in Figure 38 others.



**Figure 36:** Model for one of the Fast Food – KFC Restaurant (photograph taken by the author)

- **Casual Dining Restaurants - example HD restaurant ..**

These are restaurants which contain tables and seats and the mode inside them are casual but offer non-fast food. The menu items are varying (Garnish main dishes and sweets), medium prices and the account is paid after the end of the meal. As well as, the open buffet restaurants fall under this type.

An example on these restaurants are Steak House, Chili's, Applebee's, Friday's, and Receb Usta restaurant in Ankara as showed in Figure 37.



**Figure 37:** Receb Usta restaurant(photograph taken by the author)



**Figure 38:** Receb Usta restaurant - Casual Restaurant (photograph taken by the author)

- **Fine dining restaurants - example RECEB USTA.**

Restaurants with integrated services and the food menu contains meal courses or related meals. The decoration and modes are so important at these types of restaurants and there is always a seasoned Schiff in order to manage the restaurant in addition to professionals' waiters. An example on these

restaurants are hotels restaurants, which are restaurants with single branch. An example of these restaurants is Receb Usta restaurant which is showed in Figure 39 others.



**Figure 39:** Receb Usta restaurant, a Model for Fine Dining Restaurants(photograph taken by the author)

- **Family Style Restaurants**

These type of restaurants are characterized to have permanent menu items with permanent prices, where customer seat on joint tables to dining foods. These types of restaurants are spread in nineteenth century and began to recede now except in some rural places in the western world or in vacation lodges and East Asian nations. An example on these restaurants are Smoky Shadows Lodge, Sushi Bar, Noodles housesand Masa Başı as showed in Figure 40 (Kinsara, 2012).



**Figure 40:** Masa Başı Restaurant, a Model of Family Restaurant

- **Cafes**

All restaurants are existed in the world fall under one of the basic classification which are mentioned above except the following (Kinsara, 2012):

- **Cafes and Coffee Shops**

They are not considered restaurants but they are casual places to provide drinks, some kinds of food and especially breakfast, sandwiches and fast food prepared in advance and not prepared in the same place. The distinct thing in these places that place allows you to relax and socialize without the pressure on eating or other requests. If the place is offered hot meals on dishes and in higher prices it can be called Bistros and brasserie and it is a concept spread in France, Austria and Switzerland. An example of that Starbucks, Seattle's Best D. Kev and many others. As well as, in Ankara city there are number of coffee shops which are available in different places and in shopping malls. These coffee shops contain everything that make you feel comfort and enjoy your time with friend, wife or family.

An example of these cafes is the coffee shop that existed in Armada Mall in Ankara city which is showed in Figure 41.



**Figure 41:** Armada Mall, Carebean Coffee Shop

- **Cafeteria**

They are places offer food prepared in advance and presented in plastic or iron dishes and the services are done by the restaurant worker behind the

table. These places are always without tables and seats and if found, it will be high seats and joint tables. The types of foods are limited and confined by pastries and fast sandwiches.

Also, there are other classifications depend on type and the identity of the provided food such as Indian, Mexican, Japanese and others. As well as, in Ankara city there are number of cafeterias that attract you in their models and architectural designs such as Starbucks, Kocatepe Figure 42 shows an images of Kocatepe cafeteria.



**Figure 42:** Kocatepe cafeteria

### **3.7 Conclusive Remarks**

Restaurants differ in terms of their models and provided meals and types of individuals that can receive them. Where some restaurants are specialized to receive families and others are specialized for only men and women and each one of them provide different meals. As well as, cafes and cafeterias vary in terms of their customers, forms and models but all of them share but they share in one thing, which is that all of them has been specifically designed for the purpose of enjoy and spend nice times. We have made brief description about Masa Başı and Receb Usta in Table 2.

**Table 2:** Brief description about Masa Başı and Receb Usta restaurants (by author)

<b>Name and Location</b>	<b>The Function and food</b>	<b>Colors used</b>	<b>Opinion about the class</b>
Recep Usta	High Class Restaurants for families	Different degrees of earthen color – (Brown wood, grey, beige, White)	The design is attractive with subtle colors. Also, water element with wood structural elements makes it interesting and calming
Masa Başı	High Class Restaurants	Different degrees of white and beige colors	The colors used and available furniture with diversity of colors makes suitable to spend one's time inside it with friends and families.

## CHAPTER 4

### CASE STUDY

#### 4.1. Methodology of the Research

The methodology of this research depends on a survey that include questionnaire directed to two universities, Cankaya and Gazi Universities, as one of them is contains participants one of them is Gazi Government University with no school fee witere Çankaya foundation University has well to high school fees with probable well to do family students. Survey contains a questionnaire which was published on the web,

Results from questionnaire aims to find out the information about favior colors of participants and their preferences and opinions on who food courts shoud be designed espicialy color selictions, and who these colors effect both staff and costumers activities. Choosing two groups which have high and low incomes will show also who their selection can be effected by their economic level.

The different in economic level did not effect the selection of participants. They answered the qestionair in such manner which reflect only their favorits and personal preferences.

The research will be concentrated on to find out the users' color preferences in Food Courts.

It is also suggested that Gender, age, frequency of visit effects the choice. Also the effect of their favorite colors, design of the food court, and accordion to liceature the atmosphere of the food court is also important aspects which affect choice of color.

To find out the responses for above questions three different food courts from shopping mall are selected. The selection is made according to prominence of the food courts among students of Çankaya and Gazi University.

The three shopping malls in Ankara city which are Ankamall, Armada and Cepa. These shopping malls are chosen due to their design and highly preferred food

courts among Ankara citizens.

In the questionnaire we depended on the electronic survey “Survey Monkey” and the questionnaire is sent it to a set of students selected arbitrarily and the number planned to 120 persons in different disciplines, however only 40 of them replied the questionnaire.

The process of color choice is critical process and must be balanced in terms of colors their values and weights. Furthermore, multiple factors effect color choice and the most important one is the function, climate, color of the surrounding environment and the individual taste of the architectural work parties.

Moreover, the process of color choosing is inexpensive process and needs prior study only. The design and form of the interior environment for the place is one of the important factors that link human with the place and encourage people to visit the same place frequently means, more than one time. Also, the interior environment, colors, lighting that used in food courts in shopping centers are the important and effective factors to attract customers, however the taste of the provided food and service might be more important than the environmental character. This will be answered after the evaluation of the questionnaires.

## **4.2 Description of the site**

### **4.2.1 Ankamall**

The address of the shopping center is in Ankara, Gazi 06560 Yenimahalle and its geographic location is showed in Figure 43. Ankamall shopping center established in 2000 and covers many of global specialized shopping stores. In addition to the role of the cinema, the entertaining areas, cafes and food courts. Its total area is 278 thousands square meters for more than 300 store. The food court take the shape of space covered by glass as showed in Figure 44.



**Figure 43:** The Geographic Location of Ankamall



**Figure 44:** The Food Courts of Ankamall (by the author)

Where the ceiling is a dome of glass to take advantage of natural lighting and ventilation. In addition to use the industrial lighting in a part of the ceiling which is not covered by glass. The floor is one level and there are no levels which covered by parquet wooden with beige color. There are pillars which support the dome of glass and cover by glass with many colors such as yellow and green and contain directed lighting units. The furniture and most of the food courts are stable with white color and chairs with several colors such as red, yellow and green. In addition to the existence of comfortable seating places with gray color. Also, there are breaks specialized to seating and to split between one region to another. As well as, the food courts contain on some green plants distributed between the seating areas.

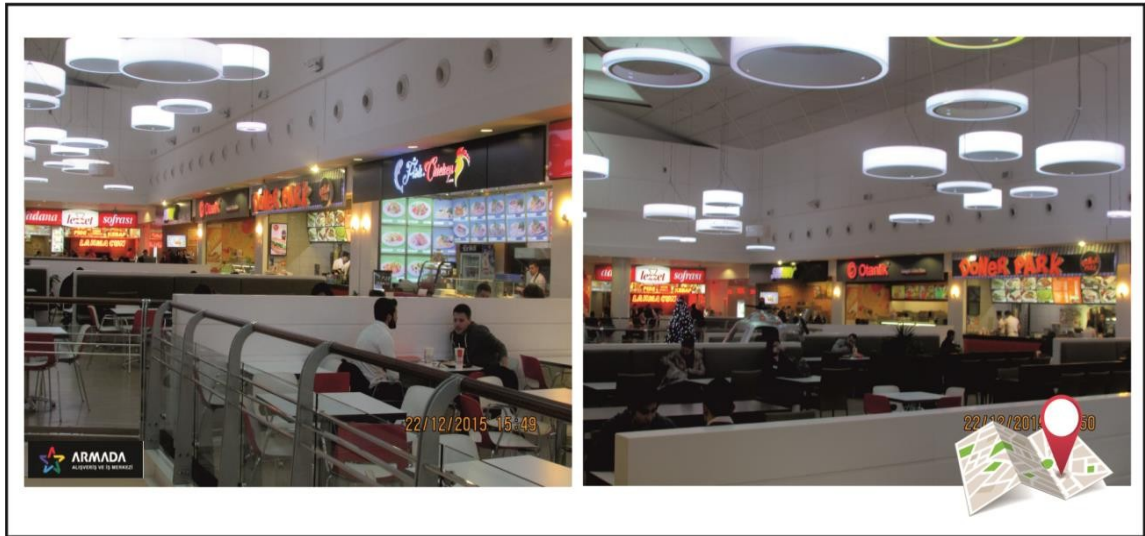
#### 4.2.2 Armada

The name of this shopping center is Armada locates in Ankara-Turkey. The geographic location of this shopping center is showed in Figure 45. Armada shopping center is considered one of the newest shopping centers in Ankara. The shopping center consists of 125 store which include cinemas and about 20 restaurants with food court locate in the third floor, established in September 2002. The height of the ceiling in the food court is about 6.5-7 meters. The colors used in designing the food courts which showed in Figure 46 include:

- The walls are painted in of white color.
- The ceilings which take the shape of shapeliness painted by the white color distributed by a set of lighting units.
- The floors separated to parts and most of them covered by wood “parquet” with beige color “light brown” that give the intimation of wood.
- The furniture color that includes tables and chairs most of them painted by white and green color and differ from some regions in order to the existence of comfortable sessions with deep brown color.
- The pillars are white and the glass is transparent.
- The existence of the most global restaurants with different colors such as McDonalds, Pizza Hut and etc.



**Figure 45 :** The Geographic Location of Armada Shopping Center



**Figure 46 :** The Food Courts in Armada Mall (by the author)

#### 4.2.3 Cema

The graphical location of this shopping center is showed in Figure 47. Also, Cema shopping center is considered one of the newest shopping centers in Ankara where he established n 2007. Covering a total of about 172.000 square meter on the road leads to Eskişehir. The center of this shopping center configures a rectangular area. There are many materials have been used through it including the elements of siding and glasses. The food courts of this shopping center can be described as (as showed in Figure 48):

- Take one level.
- Separations which are used for the pillars and walls of stain steel.
- The focus on lighting in nice way where the lighting color changes from time to time.
- The food court is opened without separation and most of the furniture of tables and chairs have the same color and shape.



**Figure 47 :** The Geographic Location of Cepa Shopping Center



**Figure 48:** The Food Courts in Cepa Mall

### 4.3 Results

The questionnaire is considered one of the scientific research means that is widely used in order to get data or information relating to the condition of people, their affiliation and beliefs. A group of students and their families in Çankaya and Gazi universities (undergraduate and graduate students)

At the questionnaire we depended on the electronic survey “Survey Monkey” and it had been sent it to a set of students from two different universities and their number reached to 120 persons in different disciplines and the answers accumulated about 40 as shown in Table 5. The process of color choosing is critical process and must be balanced in terms of colors their values and weights. Furthermore, multiple

factors effect on color choosing and the most important one is the functional, climate, surrounding environments colors and the individual taste of the architectural work parties. Moreover, the process of color choosing is inexpensive process and needs prior study only.

The design and form of the interior environment for the place is one of the important factors that link human with the place and frequently on it more than one time. Also, the interior environment, colors, lighting that used in food courts in shopping centers are the important and effective factors to attract customers and their comfort in the space they are not the more importance because they come after the taste of the provided food and service.

**Table 3:** Number of questionnaires submitted, answered, and unanswered

	Number of answered questionnaire	Number of submitted questionnaire	Number of unanswered questionnaire
Çankaya University	27	70	43
Gazi University	13	50	37
<b>TOTAL</b>	40	120	80

The questions asked are prepared to find out the following topics:

1. Research Question is in Food Courts color is one of the important design criteria. (Q.11, 12, 13)
2. Also the effect of their favorite colors, (Q.1, 2, 3)
3. Design of the food court (Q.9, 10)
4. The atmosphere of the food court is also questioned. (Q.5, 7)

• **Answers for Q.1. What is Your Favorite Color?**

From Table 4, we can conclude that a third of people taking part at the questionnaire are preferred the white color followed by red color and then other colors.

**Table 4:** preferred colors and its percentage

<b>Color</b>	<b>Number of persons</b>	<b>percentage</b>
White:	13	32.5%
Red :	8	20%
Black :	5	12.5%
Blue :	8	20%
Yellow:	2	5%
Green :	2	5%
Purple :	1	2.5%
Grey :	1	2.5%

- Answers for Q.2. **Which Color Creates Feeling of Comfort in Food Courts?**

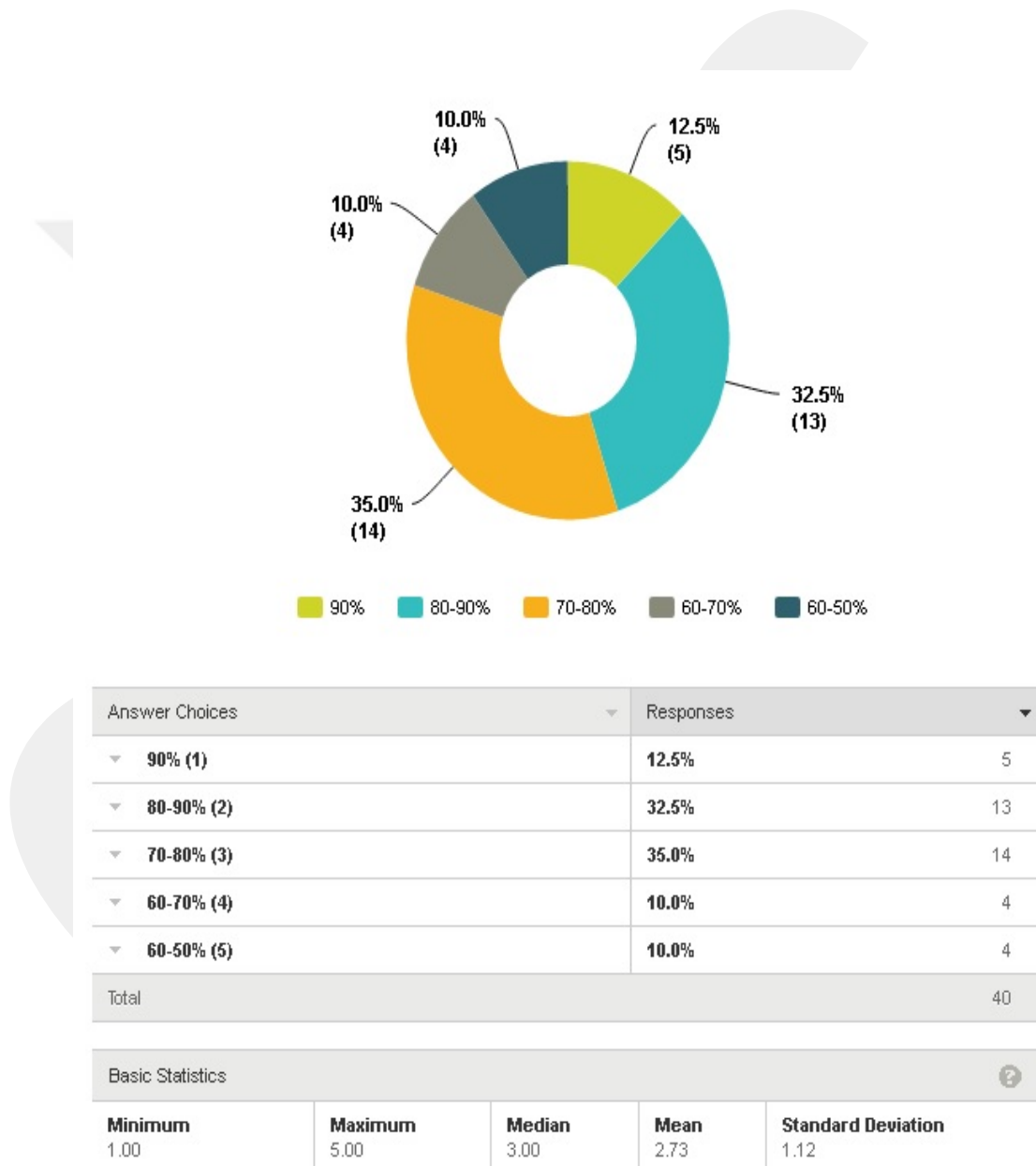
From Table 5, we can conclude that a third of people taking part at the questionnaire preferred the white color followed by red color and then other colors.

**Table 5 :** Percentage of Colors that Create Feeling of Comfort in Food Court

<b>Color</b>	<b>Number of persona</b>	<b>percentage</b>
White:	14	35 %
Red :	6	15 %
Black :	1	2.5 %
Blue :	3	7.5 %
Yellow:	3	7.5 %
Green :	1	2.5%
Purple :	6	15 %
Orange :	1	2.5 %
Pink :	1	2.5 %
Brown :	2	5 %

- Answers for Q.3. **What is your extent of knowledge in colors and their impact?**

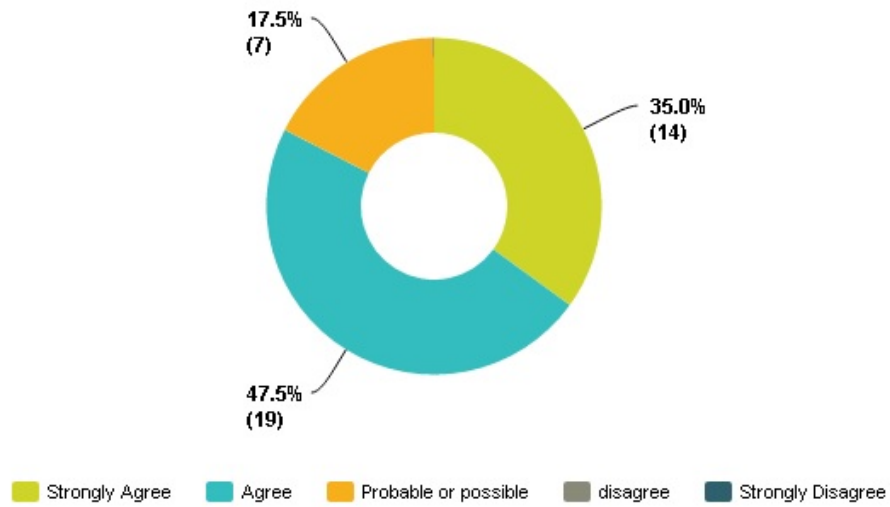
From Figure 49, we can conclude that this question has been answered by all the persons who participated at the questionnaire. Also, this question explains that persons participated at the questionnaire have no knowledge at color and their impact according to the rate that we got with standard deviation of 1.12.



**Figure 49 :** The extent of knowledge and their impact

- Answers for Q.4. **Do you think that colors have an impact on the affectivity and productivity of human?**

From Figure 50, we can conclude that persons who participated at the questionnaire agree that colors effect on affectivity and productivity of human with rate of 47.5%. As well as, 35% of person strongly agree that colors effect on productivity and affectivity of human. The standard deviation of this question is 0.70.



Answer Choices	Responses
Strongly Agree (1)	35.0% 14
Agree (2)	47.5% 19
Probable or possible (3)	17.5% 7
disagree (4)	0.0% 0
Strongly Disagree (5)	0.0% 0
Total	40

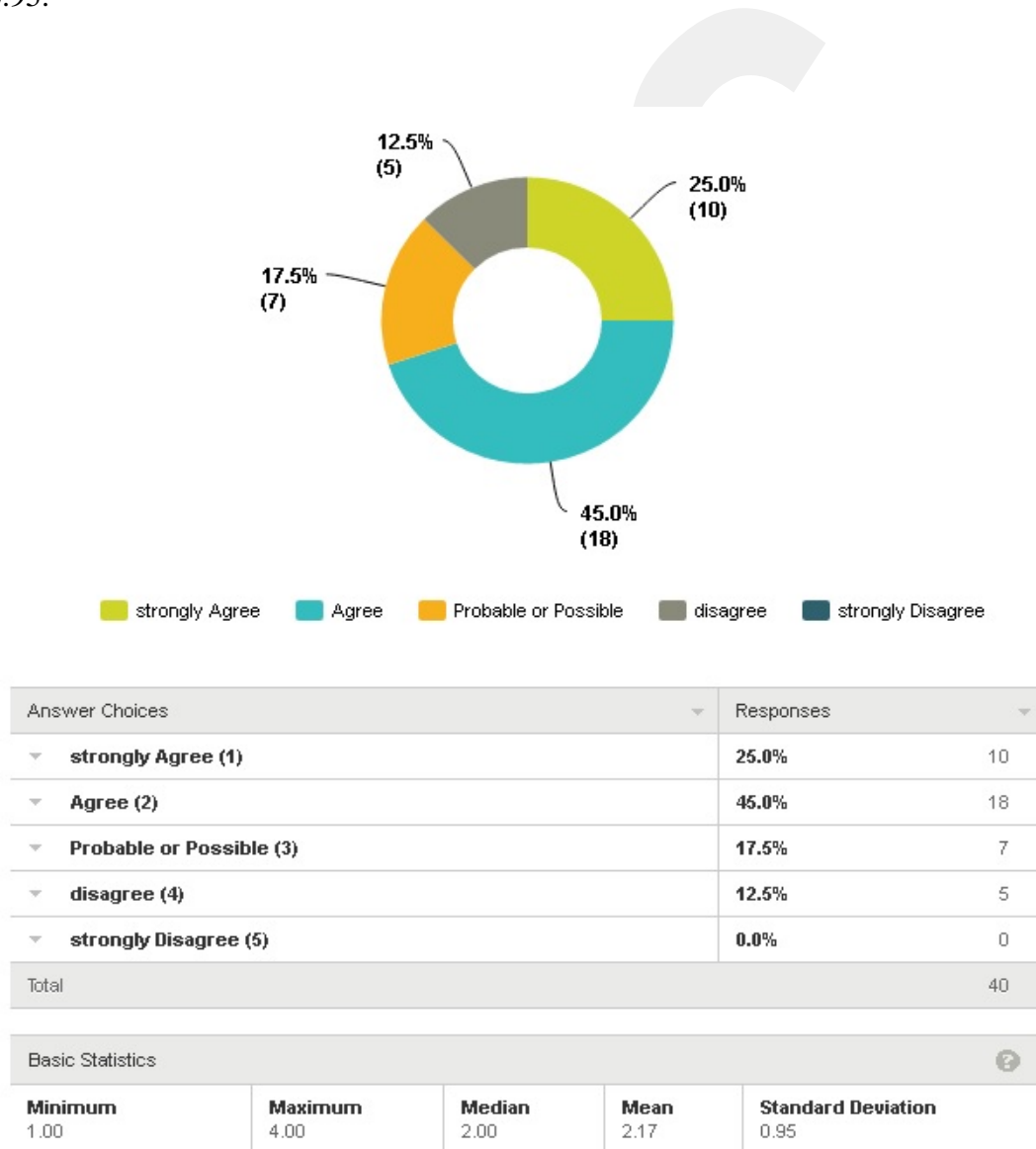
  

Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	3.00	2.00	1.83	0.70

**Figure 50:** The impact of colors on the effectively and productivity of human

- **Answers for Q.5. Do you think that colors have a relationship on customs and cultures of each country?**

Figure 51 shows that 45% of persons who participating in the survey agree that there is a relationship between customs and cultures of each country. Also, there are 25% of the persons in the survey strongly agree with the relationship between country and the colors that preferred inside it with standard deviation of 0.95.

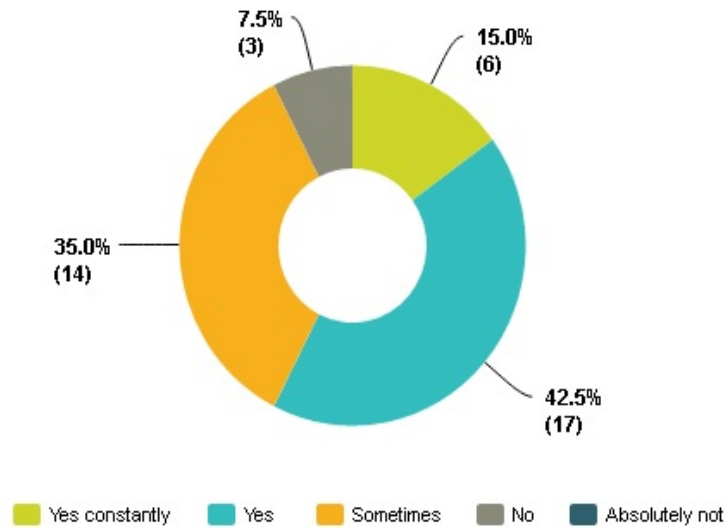


**Figure 51:** The Relationships of Colors on customs and cultures of each country

- **Answers for Q.6. Are you one of food courts attendees in the city of**

## Ankara?

Figure 52 shows that 42% of persons who participated at this survey are attending the food courts at Ankara city and 35% of them sometimes attend the food courts of Ankara city with standard deviation of 0.82.



Answer Choices	Responses
Yes constantly (1)	15.0% 6
Yes (2)	42.5% 17
Sometimes (3)	35.0% 14
No (4)	7.5% 3
Absolutely not (5)	0.0% 0
Total	40

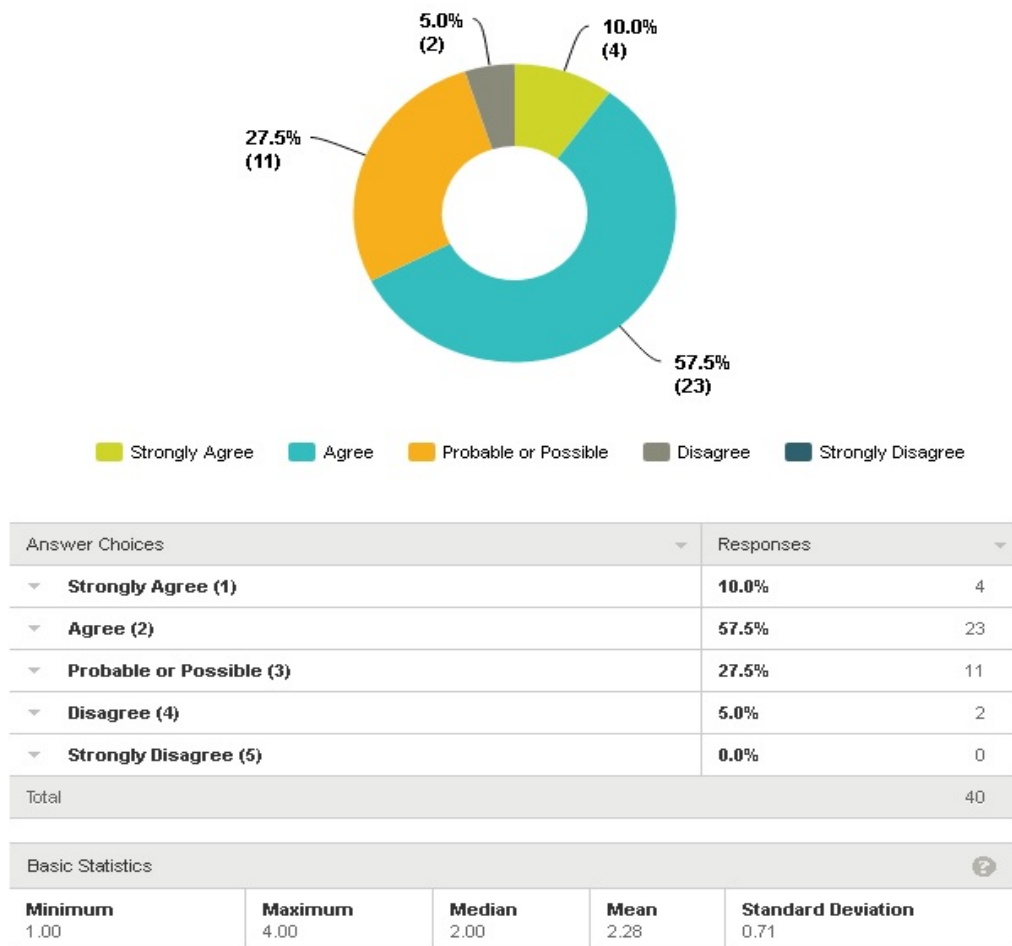
Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	4.00	2.00	2.35	0.82

**Figure 52:** The Rate of Persons Who Attend the Food Courts at Ankara City

- **Answers for Q.7. Does the use of colors in Ankara food courts are appropriate to the type of the nature of the service provided in the food courts?**

Figure 53 shows that 57.5% of people who participated at the survey agree that the

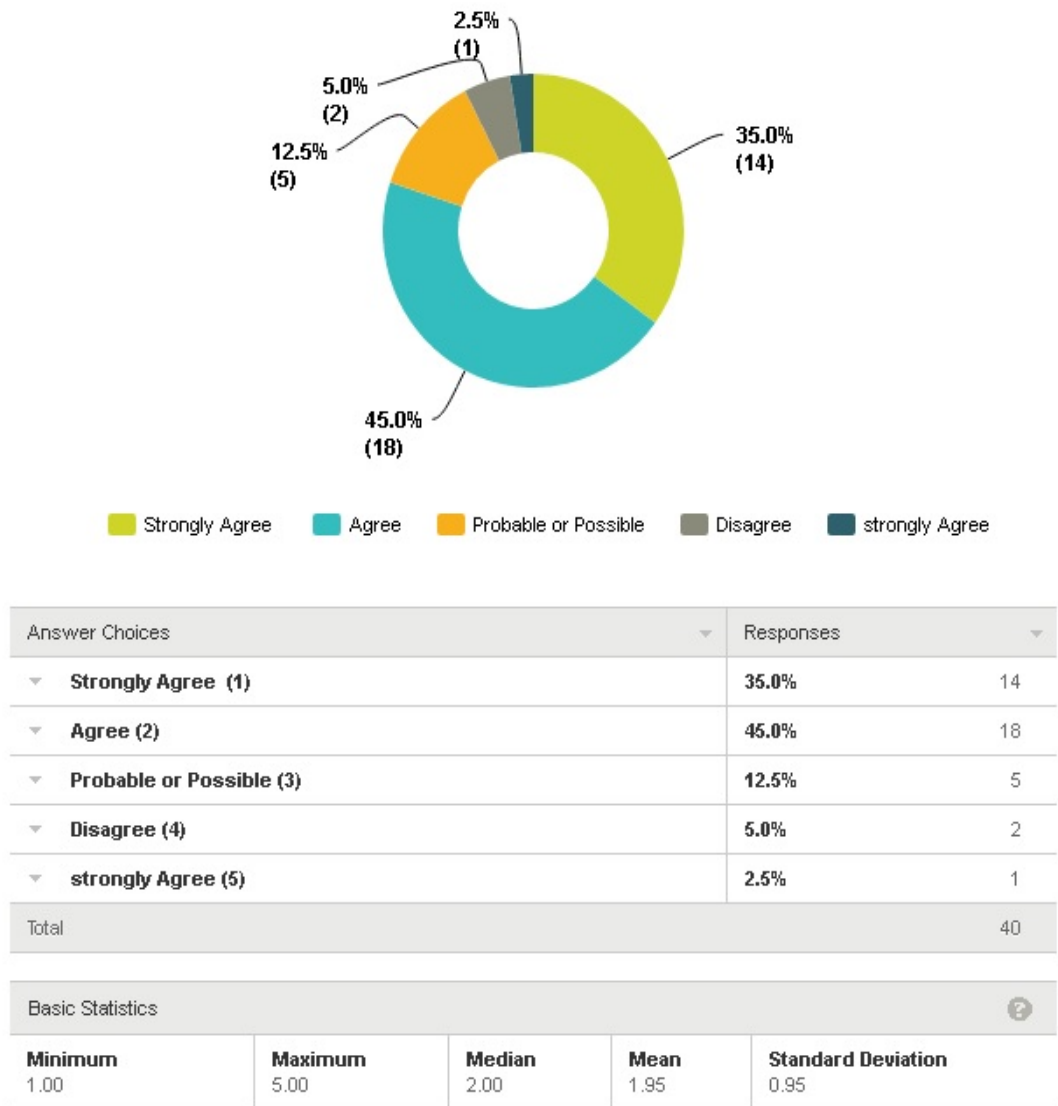
used colors in the food courts are suiting with the nature of the provided services and 27.5% of them see that the colors are possible to be compatible with the provided service with standard deviation of 0.71.



**Figure 53:** the compatible of the use of colors in Ankara good courts with the nature of the provided service

• **Answers for Q.8. Do you think that the basins of green plants is an important element in the design of food courts?**

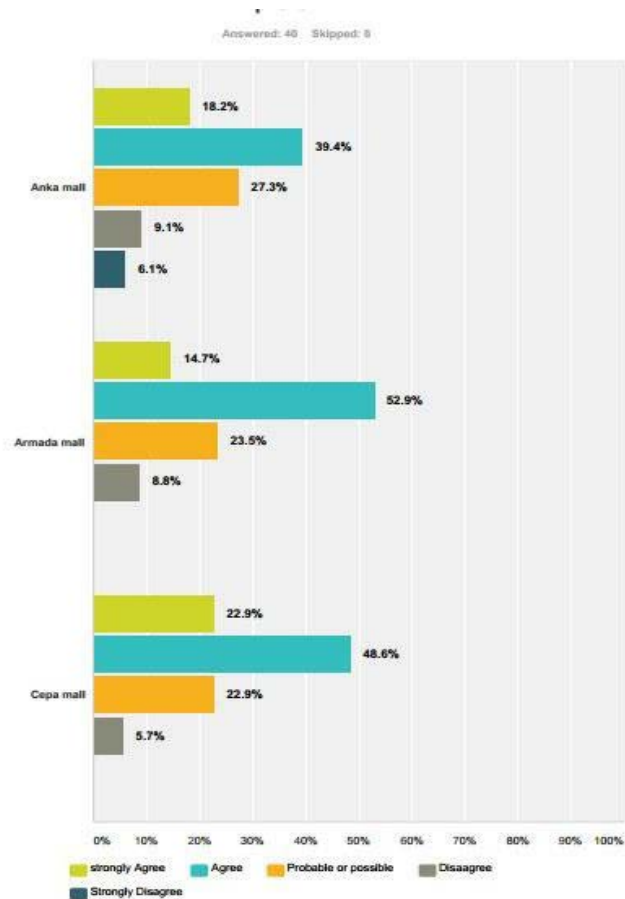
Figure 54. shows that 45% of people who participated in the questionnaire agree that the existence of basins of green plants are important in the food courts and 35% of them think it is possible to exist basins of green plants in the food courts with standard deviation of 0.95.



**Figure 54:** The importance of the existence of basins and green plants in the food courts

• **Answers for Q.9. Which food court shopping mall do you prefer?**

From Figure 55. We can conclude that the most preferable food court by the people participated in the questionnaire is Armada mall with percentage of 52.9% followed by Cepa mall with percentage of 48.6% and then Anka mall with percentage of 39.4%. Also, the standard deviation of Armada mall and Cepa mall is 0.82 and the standard deviation of Anka mall is 1.08.



	strongly Agree (1)	Agree (2)	Probable or possible (3)	Disagree (4)	Strongly Disagree (5)	Total	Weighted Average
Anka mall	18.2% 6	39.4% 13	27.3% 9	9.1% 3	6.1% 2	33	2.45
Armada mall	14.7% 5	52.9% 18	23.5% 8	8.8% 3	0.0% 0	34	2.26
Cepa mall	22.9% 8	48.6% 17	22.9% 8	5.7% 2	0.0% 0	35	2.11

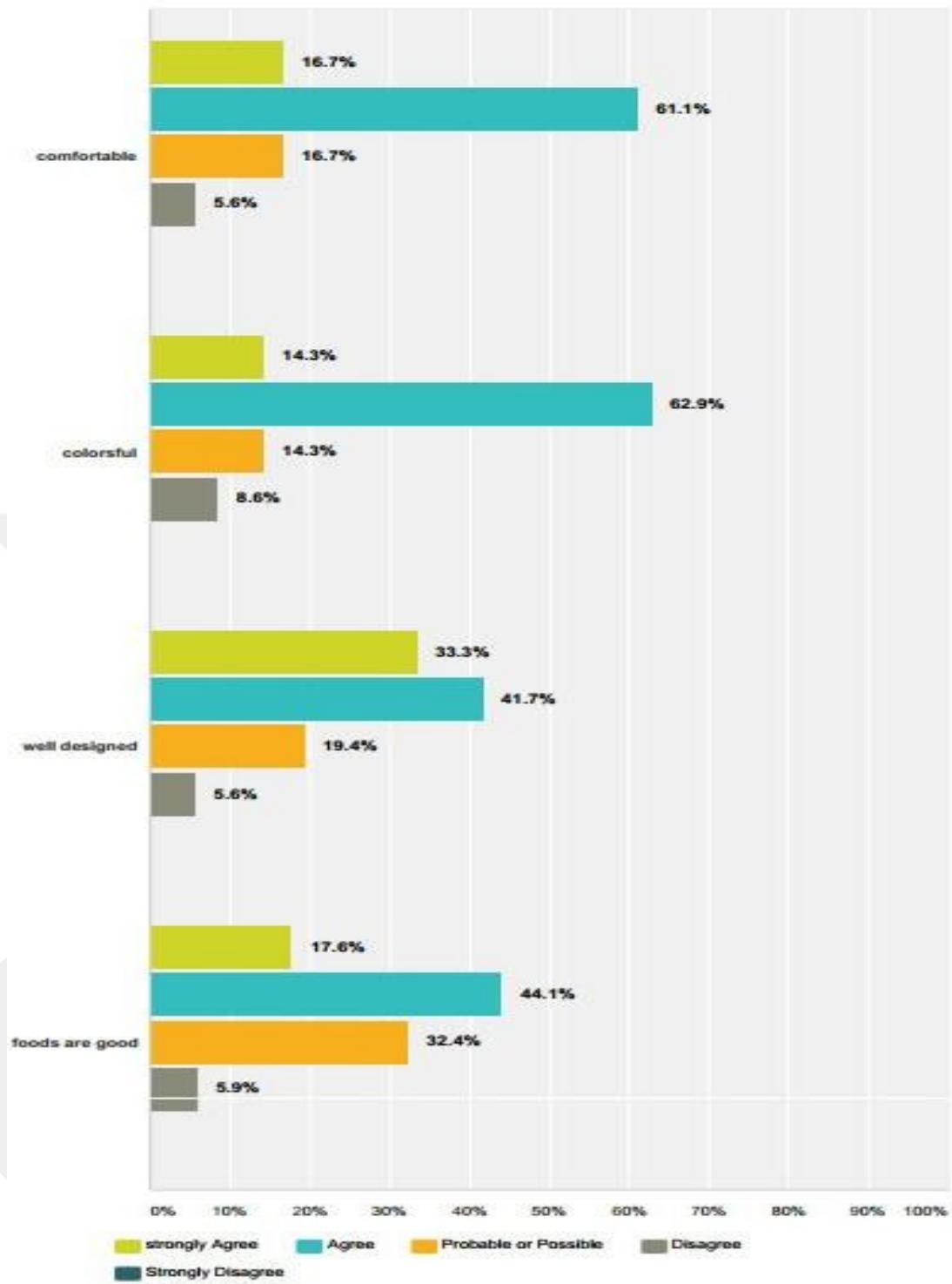
  

Basic Statistics						
	Minimum	Maximum	Median	Mean	Standard Deviation	
Anka mall	1.00	5.00	2.00	2.45	1.08	
Armada mall	1.00	4.00	2.00	2.26	0.82	
Cepa mall	1.00	4.00	2.00	2.11	0.82	

**Figure 55:** the most preferable shopping mall

- **Answers for Q.10 why do you prefer that food courts most?**

Figure 56 shows that the reason of the colorful what make Armada mall is proffered by the 52% of the people who participated in the questionnaire with standard deviation of 0.77%.



	strongly Agree (1)	Agree (2)	Probable or Possible (3)	Disagree (4)	Strongly Disagree (5)	Total	Weighted Average
<b>comfortable</b>	16.7% 6	61.1% 22	16.7% 6	5.6% 2	0.0% 0	36	2.11
<b>colorful</b>	14.3% 5	62.9% 22	14.3% 5	8.6% 3	0.0% 0	35	2.17
<b>well designed</b>	33.3% 12	41.7% 15	19.4% 7	5.6% 2	0.0% 0	36	1.97
<b>foods are good</b>	17.6% 6	44.1% 15	32.4% 11	5.9% 2	0.0% 0	34	2.26

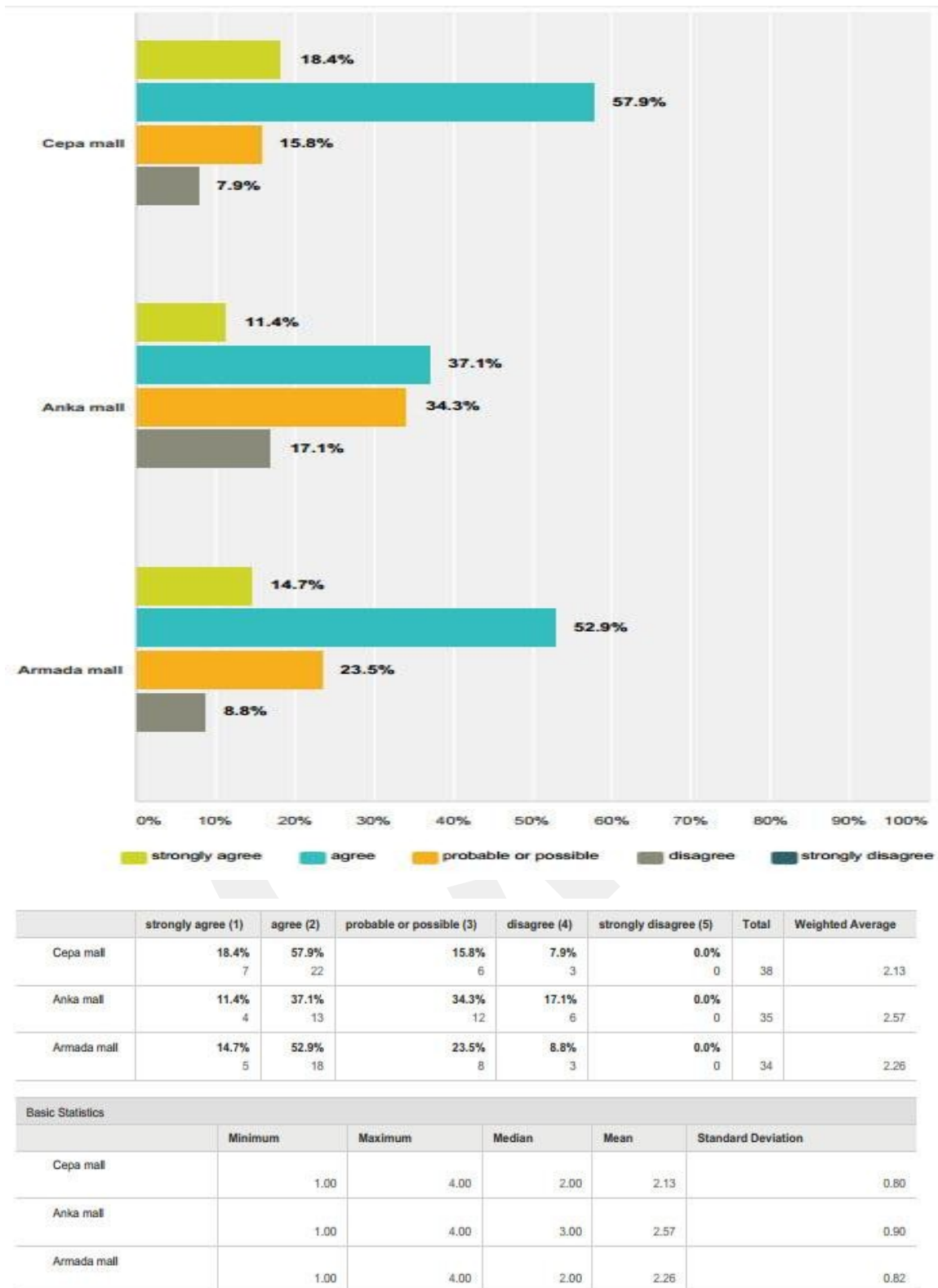
  

Basic Statistics					
	Minimum	Maximum	Median	Mean	Standard Deviation
<b>comfortable</b>	1.00	4.00	2.00	2.11	0.74
<b>colorful</b>	1.00	4.00	2.00	2.17	0.77
<b>well designed</b>	1.00	4.00	2.00	1.97	0.87
<b>foods are good</b>	1.00	4.00	2.00	2.26	0.82

**Figure 56: The More Preferred Shopping Mall**

- **Answers for Q.11. In the following pictures you will find three shopping malls food courts which food court is more colorful according to you?**

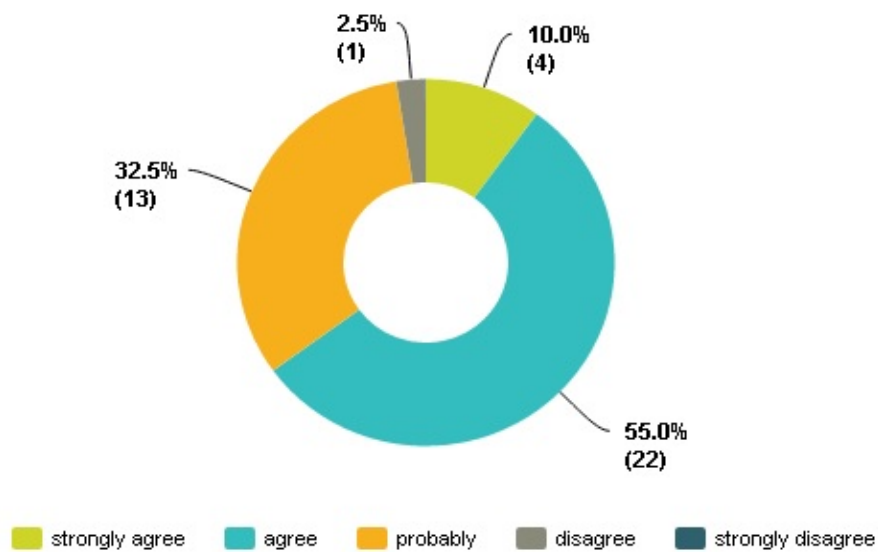
Figure 57 shows that the most colorful shopping mall according to the participant is Cepa mall with percentage of 57.9% and standard deviation of 0.80 followed by Armada mall with percentage of 52.90% and standard deviation of 0.82.



**Figure 57 :** The most colorful shopping mall according to the participants

- **Answers for Q.12. Before this questionnaire have you noticed that the mood color in food court design?**

Figure 58 illustrates the percentage of people who noticed the mood of colors at the shopping mall before this questionnaire. So, it is clear that 55% of people who participated at this questionnaire have noticed the mood of colors at the shopping mall at Ankara city with standard deviation of 0.67.



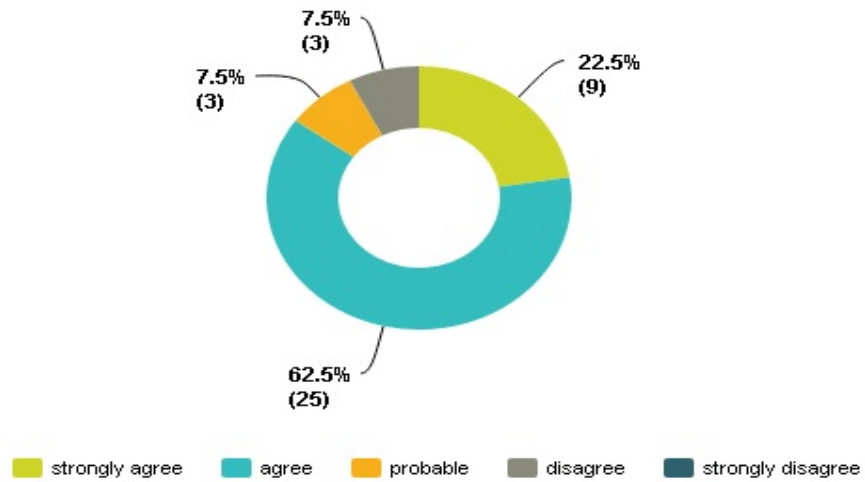
Answer Choices	Responses
strongly agree (1)	10.0% 4
agree (2)	55.0% 22
probably (3)	32.5% 13
disagree (4)	2.5% 1
strongly disagree (5)	0.0% 0
Total	40

Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	4.00	2.00	2.28	0.67

**Figure 58:** the percentage of people who noticed the mood of colors before this questionnaire

- **Answers for Q.13. Would you prefer to use color in food court design?**

Figure 59 shows that 62% of people who participated at the questionnaire are preferring to use colors at the food courts with standard deviation of 0.77. So, we can conclude that use of colors at the food courts are preferred by the most of people according to this questionnaire.



Answer Choices	Responses
strongly agree (1)	22.5% 9
agree (2)	62.5% 25
probable (3)	7.5% 3
disagree (4)	7.5% 3
strongly disagree (5)	0.0% 0
Total	40

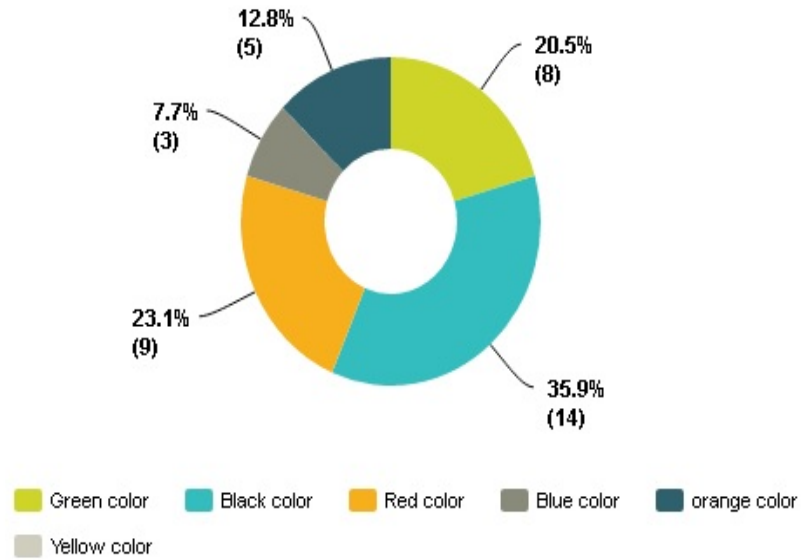
Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	4.00	2.00	2.00	0.77

**Figure 59:** the preferring to use colors at the food courts

- **Answers for Q.14. Which color combinations would you prefer do you think is suitable in food courts?**

Figure 60 shows the preferred color that suitable to be used at the food courts is the black color according to the opinion of the person who participated at this

questionnaire with percentage of 35.9% and standard deviation of 1.26 followed by red color



Answer Choices	Responses
Green color (1)	20.5% 8
Black color (2)	35.9% 14
Red color (3)	23.1% 9
Blue color (4)	7.7% 3
orange color (5)	12.8% 5
Yellow color (6)	0.0% 0
Total	39

Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	5.00	2.00	2.56	1.26

**Figure 60:** the preferred colors to be used at the food courts

#### **4.4.Discussion**

The survey has asked some question concerning general colors perception and their choice and their compatibility. And other questions for using colors in food courts.

According to the survey results, majority of people agree that color effect on productivity and affectivity of human. And half of student answered the questionnaire agree that there is relationship between colors and cultures of each country.

The researcher has observed that, colors like red and red white are the most used and preferred colors in food courts of shopping malls in Turkey. The opinion of the researcher of from the survey also, most people like and agree with the existence of green plants and consider it as important in food courts. After color dimension analysis of food courts in those three mall centers in Ankara and field visit and observation, the hypotheses of this research, which was that were not taken into consideration on the psychological impact of colors in designing the food spaces at the shopping centers, have been failed to be proved. This decision is in accordance with the results of the questionnaire

The results were that the chosen of colors in food courts were selected. And it takes in consideration the psychological effect of the used colors in food courts design within the functionality and services.

## CHAPTER 5

### CONCLUSION

From this research and for the analysis of data conducted from the survey, the following points can be concluded:

- The process of choosing colors in food courts should be balanced (from Q. 13,14).
- There are many factors effecting the color choice, the most important is the functionality of the space, sorounding enoveroment, and the architecture sense(from Q. 4,5).
- Shape and interior design of any place are important to connect visitors to these place and encourage them to visit this place again (from Q. 9, 10).
- The color choice and their suitability with place lighting and natural plants are one of the important factors to attract visitors and provide them comfortability inside food courts (from Q. 7, 8).
- There is a human perception in the important of colors using in food courts (from Q. 3).

From this research, important issues should be taken in consideration when designing food courts, like:

- Providing and taking care of green plants in food courts.
- Using colored ceiling and furniture in food courts spaces are more attractive for people.

It is necessary to submit the work of designing to architects and designers who specialist in designing interiors, because they have potential experience in color choice and design that suitable with the food courts in the shopping malls.

There should be a controlled study to find out the real color choice of the people by providing a space with colorful chairs for examples and ask people whether they like it or not. And in the change those chairs with natural colorful chairs and ask people whether the like those more or not. From this research, the real color choice of people can be donducted.

According to the study and answers of the participants there were some notes which are in the following points:

First, they have no good knowledge about colors and their effects on the space. Majority of them came to the same conclude which is that colors have a direct effect on productivity and human Psychological.

They agree that colors have a strong relation with traditions and legacy of each country.

Majority of them see that colors used in food courts in malls in Ankara city are suitable with nature of the services and places.

The study shows that majority of the participants prefer black and red colors which shows that they have no good ideas about colors and which are more suitable to food courts.

- Emphasis should be placed on the choice of colors carefully, in harmony with the general and functional nature
- It is important to note that it is necessary for shop owners to use the engineers of the decoration, Because they have more experience in choosing the colors and designs that surround the place..

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## APPENDIX A

### QUESTIONNAIRE

1. what is your favorite color?

2. which color creates feeling of comfort in food court?

3. what is your extent of knowledge in colors and their impact?

- 90%
- 80-90%
- 70-80%
- 60-70%
- 60-50%

4. Do you think that colors have an impact on the affectivity and productivity of human?

- Strongly Agree
- Agree
- Probable or possible
- disagree
- Strongly Disagree

5. Do you think that colors have a relationship on customs and cultures of each country?

- strongly Agree
- Agree
- Probable or Possible
- disagree
- strongly Disagree

6. Are you one of food courts attendees in the city of Ankara?

- Yes constantly
- Yes
- Sometimes
- No
- Absolutely not

7. Does the use of colors in Ankara food courts are appropriate to the type of the nature of the service provided in the food courts?

- Strongly Agree
- Agree
- Probable or Possible
- Disagree
- Strongly Disagree

8. Do you think that the basins of green plants is an important element in the design of food courts ?

- Strongly Agree
- Agree
- Probable or Possible
- Disagree
- strongly Agree

9. which food court shopping mall do you prefer?

	strongly Agree	Agree	Probable or possible	Disaagree	Strongly Disagree
Anka mall	<input type="radio"/> strongly Agree	<input type="radio"/> Agree	<input type="radio"/> Probable or possible	<input type="radio"/> Disaagree	<input type="radio"/> Strongly Disagree
Armada mall	<input type="radio"/> strongly Agree	<input type="radio"/> Agree	<input type="radio"/> Probable or possible	<input type="radio"/> Disaagree	<input type="radio"/> Strongly Disagree
Cepa mall	<input type="radio"/> strongly Agree	<input type="radio"/> Agree	<input type="radio"/> Probable or possible	<input type="radio"/> Disaagree	<input type="radio"/> Strongly Disagree

10. why do you prefer that food courts most ?

	strongly Agree	Agree	Probable or Possible	Disagree	Strongly Disagree
comfortable	<input type="radio"/> strongly Agree	<input type="radio"/> Agree	<input type="radio"/> Probable or Possible	<input type="radio"/> Disagree	<input type="radio"/> Strongly Disagree
colorful	<input type="radio"/> strongly Agree	<input type="radio"/> Agree	<input type="radio"/> Probable or Possible	<input type="radio"/> Disagree	<input type="radio"/> Strongly Disagree
well designed	<input type="radio"/> strongly Agree	<input type="radio"/> Agree	<input type="radio"/> Probable or Possible	<input type="radio"/> Disagree	<input type="radio"/> Strongly Disagree

strongly Agree     Agree     Probable or Possible     Disagree     Strongly Disagree  
 foods are good     strongly Agree     Agree     Probable or Possible     Disagree     Strongly Disagree

11. In the following pictures you will find three shopping malls food courts which food court is more colorful according to you ?

	<input type="radio"/> strongly agree	<input type="radio"/> agree	<input type="radio"/> probable or possible	<input type="radio"/> disagree	<input type="radio"/> strongly disagree
Cepa mall	<input type="radio"/> strongly agree	<input type="radio"/> agree	<input type="radio"/> probable or possible	<input type="radio"/> disagree	<input type="radio"/> strongly disagree
Anka mall	<input type="radio"/> strongly agree	<input type="radio"/> agree	<input type="radio"/> probable or possible	<input type="radio"/> disagree	<input type="radio"/> strongly disagree
Armada mall	<input type="radio"/> strongly agree	<input type="radio"/> agree	<input type="radio"/> probable or possible	<input type="radio"/> disagree	<input type="radio"/> strongly disagree

12. before this questionnaire have you noticed that they mood color in food court design ?

- strongly agree
- agree
- probably
- disagree
- strongly disagree

13. would you prefer to to use color in food court design ?

- strongly agree
- agree
- probable
- disagree
- strongly disagree

14. which color combinations would you prefer do you think is suitable in food courts

- Green color
- Black color
- Red color
- Blue color
- orange color
- Yellow color

XXXXXS  
GCPS

## CURRICULUM VITAE

### PERSONAL INFORMATION

**Surname, Name:** ELDALAL, WISAM

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### EDUCATION

Degree	Institution	Year of Graduation
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High School	Alaintifada	1994

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### FOREIN LANGUAGES

English, Beginner Turkish

### HOBBIES

Travel, Table tennis, Swimming, Fitness