


The Rules of Recycled Interior Design and Its Effects on the Spaces' Value in Shopping Centers



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ABSTRACT

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Interior spaces, designed for diverse human activities, are increasingly aligned with sustainability principles, reflecting a shift towards environmentally responsible design practices. Central to this paradigm is the integration of recycled materials within interior design motifs, a trend gaining traction among design professionals and corporations alike. This approach employs various sustainability methods, with recycled material utilization being particularly prominent. Public sentiment is polarized, with supporters and detractors weighing the safety, quality, and aesthetics of recycled materials in design. Amidst this dichotomy, a clear set of guidelines for employing recycled elements in interior design remains elusive, particularly within the retail context of shopping centres. This omission, primarily underpinned by an overreliance on aesthetics, constitutes the research gap addressed herein. The present study delineates a comprehensive framework for the application of recycled materials as fundamental components of shop interior design, predicated on usage levels, material types, and design principles. Pursuing a qualitative methodology, this investigation harnesses survey data and observational checklists, with a theoretically purposive sample of 312 users' selected post covert-tracking observations within the commercial setting. Findings indicate robust user satisfaction with recycled materials at the furniture and decoration level, with a notable 79% affirming a preference for aesthetically-driven recycling purposes. Furthermore, a significant consensus (85%) emerged regarding the adoption of recycled materials for functional elements such as shelves and tables. Structural and rehabilitative applications of recycled materials, however, garnered interest predominantly when aligned with the shop's original design theme. Analysis of 12 international cases revealed a diverse utilization rate of source materials, predominantly wood (32%), iron (35%), and rubber (21%), with lesser extents of plastic (5%), cardboard (4%), and others like glass and cement (3%). In summary, the developed guidelines encapsulate two thematic dimensions: industrial interior design and stylistic elements, enhancing the creative potential of recycled materials within commercial interiors. These guidelines serve as a blueprint for designers, advocating for sustainability without compromising on aesthetic or functional quality.

1. INTRODUCTION

The design of retail spaces within shopping centres is increasingly engineered to enhance brand visibility and attract consumer attention. Such environments typically leverage design principles that incorporate distinctiveness and novelty through unconventional elements, colour themes, and innovative design concepts. A juxtaposition of recycled objects within the modern milieu of shopping centres presents a stark contrast to traditional modern and classic design aesthetics. This contrast is strategically employed to create focal points that enhance brand presence within these commercial spaces. Commonly repurposed materials, such as tyres and tanks, are integrated into shop designs for their functional and aesthetic appeal, serving as a unique strategy to garner customer interest.

However, the integration of recycled materials into interior design raises concerns regarding design quality, aesthetic appeal, safety, and ultimately, user satisfaction. These concerns may adversely affect the goal of attracting customers, thus presenting the research problem: a lack of a clear methodology for utilizing recycled materials in interior design to optimize user satisfaction. As such, the primary research question posed is: "What methodologies and rules can be applied when using recycled materials in interior design to enhance user satisfaction in terms of quality and aesthetic appeal?" This is supported by subsidiary questions, including: "Which materials, elements, or objects are amenable to repurposing in shop interior design?", "How can the use of recycled materials in interior design contribute to improved user satisfaction on quality and aesthetic grounds?", and "To what extent does the interior design of shops utilizing recycled

and reused materials impact user satisfaction?" The objectives of this study are fourfold:

- find out a guideline for using recycled materials as elements in the interior design considering users' satisfaction in safety, quality, and aesthetics.
- determined the recycled materials that can be used in the interior design of the shops.
- highlighted the main function of recycled materials as elements in the interior design of the shops.
- identify the best-recycled materials that are used in the decoration of the interior space of the shops in considering the high satisfaction level of the users.

The interplay between interior design and user satisfaction serves as a metric for evaluating these spaces, reflecting the users' positive response when their needs are met [1]. This study focuses on the use of recycled materials—ranging from wood, plastic, rubber, steel, textiles, and beyond—that can originate from everyday objects such as tanks, tyres, containers, bicycles, car parts (Figure 1), boxes, or any other items that can be repurposed to functional or aesthetic effect in the design of retail spaces (Figure 2).



Figure 1. Car parts used in the seating area in KIA Company in Duhok branch, Iraq
(Source: Captured by the researcher)



Figure 2. Rubber tyres and bicycle wheels are used in the interior design of shops in Burnaby, Canada

2. LITEARTURE REVIEW

There are various key principles of designing the interior space of shops within shopping centres to create an attractive and functional interior design to attract users and highlighted the brand. These principles can vary depending on brands, target users, and function types. However, some of these

principles have a role in the aesthetic and satisfaction factor [2, 3], such as: the layout of the space, visual steps, the balance between natural and artificial lighting, atmospheric theme, comfortability, accessibility, circulation, attraction points, window and entrance elevation, and flexibility.

2.1 Application of recycled materials in interior design

Sustainability and searching using renewable materials in urban architecture and interior design is the most interesting topic by the researchers due to their effects on the users' life [3]. There are a few types related to the term “recycle” in the design of interior space.

2.1.1 Waste materials

The first type referred to sustainability and recycling the waste materials such as wood, plastic, paper, and construction materials. The materials used in the interior design after physical, mechanical, and chemical treatments of the elementary materials [4]. The recycled material can be a construction material or elementary material for finishing and furniture of the interior space. The waste materials of construction and demolition can be recycled to use in new projects, which faced various kinds of enablers and barriers for recycled construction and demolition [5]. Studies related to produced recycled materials discussed the best way of using recycled materials such as plastic is reformed as interior design elements (Figure 3) (furniture, finishing, shelves, or partitions) and used in the decoration more than functional elements [6].

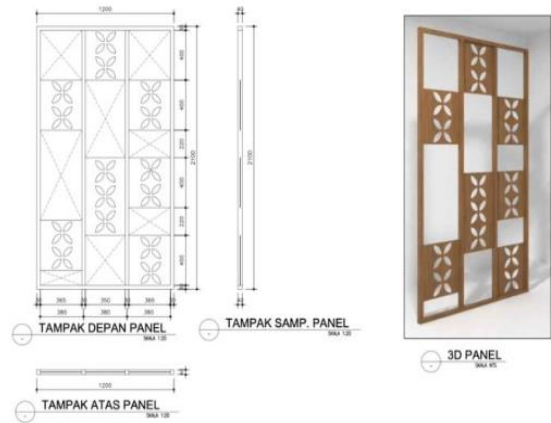


Figure 3. Partition is produced using recycled plastic (Marsahala et al. [7])



Figure 4. Recycled plastic waste as pavement blocks (Agyeman et al. [8])

Moreover, waste plastic materials are used to produce pavement blocks (Figure 4) and tiles as finishing materials, which have an impact on the social, economic, health, and safety challenges to use this type of recycled materials in the cities [7].

Al-Hadidy et al. [9] mentioned that Waste Powder Material (WPM) produced from mosaic tiles polishing as a sustainable filler in asphalt mixture, which is another type of using recycled materials in the construction process. Moreover, many recycled materials can be used in construction and strengthen the buildings such as Carbon Fibre Reinforced Polymers (CFRP) [8].

2.1.2 Waste objects

The second type is referred to using waste objects after modifying in shape, colour, and function. The modification rate of the waste materials that can be used as interior design elements is between 30% and 75%. However, some of these materials affected the quality of the design especially in the shops, because of the psychological and economic impacts on users thinking. The important criteria to select the material is according to function needs. The recycled materials used in the hospital interior and the shopping mall should be different due to the sterilization of the function needs [2]. There is a challenge to select the recycled material in the creating of interior design because the intersection with the creativity idea of the designer, which need to think in three directions of selection (objects function, overall aesthetic, and interior space function). Furniture produced from waste face the problem of aesthetics and performance quality of the furniture, which should be considered [3, 10, 11].

Various recycled objects can be creatively used in the design of interior space of shops or any functional space as versatile decorative elements. Some object is parts of home life such as, glass bottles, mason jars, and tin cans, which usually reused as vases, holders, candle holders, plant pots, light holders, or decoration elements arranged on the shelves. Moreover, vintage suitcases used to create unique side tables or storage units, to decorate pieces on shelves, or used as stands for displaying plants or artwork in the interior spaces of commercial or residential buildings. Some shops used wine corks after collected and glued together to create creative and eco-friendly back wall, bulletin boards, or coasters [12, 13].

Another type or waste objects are cars and bicycles parts or any mechanical objects which are used as furniture and decorative elements. The most common reused parts in interior design are tyres and wheels, which used in various kind, such as, "Tyre Ottomans", "Tyre Poufs", and "Tyre Seat" by adding a cushion or upholstered seat to create a unique ottoman or pouf style. Moreover, tyre used in the interior design functionally as a Coffee Table using a large tyre by adding a glass or wooden table top. Tyre Shelving is another type of reusing tyre by stacking and securing multiple tyres vertically or horizontally to create shelving units with adding wooden or glass planks between the tyres to create functional storage space. In the similar idea "Tyre Side Table" can be created by joining smaller tyres as a base for the table. Additionally, tyres used as bookshelf by arranging them in a creative pattern using bolts or stack to join the tyers horizontally or vertically depending on Designers' idea.

Bicycles parts is usually used in the interior design of the café, clothes, and electronic shops especially the old bicycles models. Moreover, Bicycle Wheels turned into unique chandeliers or wall decorations by adding string lights or

attaching small hanging plants to create a whimsical and artistic interior design. The use of bicycle parts in interior design is limited to decoration with few functional uses.

Waste and reuse Construction materials used in the interior design elements after modification and arrangement. The purposes of using construction materials are for decoration and functional uses such as, Wooden Pallets used with be disassembled and repurposed into various furniture pieces like coffee tables, bookshelves, seats, or even wall art, which add a rustic or industrial touch to your interior. The waste construction material can be in form of wood, plastic, and iron. Empty oil barrels are mostly used in the decoration of the interior space of shops and restaurants. Empty oil barrels can be repurposed in creative and innovative methods for interior design, which can be transferred into furniture as into unique interior design elements by cutting them horizontally or vertically to create seats, stools, coffee tables, or side tables. Some materials like fibre and cushions or glass tops for comfort and functionality. Moreover, the modified barrels work as storage by adding shelves or compartments to reform the barrels into cabinets or shelving units. Most of the interior designer that considering the sustainability and creativity in the design used iron barrels in the interior design to reflect the uniqueness, aesthetics, and functionality to the design. Therefore, Iron barrels converted be interior designers into stylish lighting fixtures, Planters, Bar or Beverage Station, Wall Art and Décor, space Dividers, and other forms depending on the designer purposes [14-16].

2.2 The impact of using recycled elements on the interior space quality

The interior design atmosphere of the shops in the shopping centres have a vital role in the brand marketing and attracting customers to involve into the space. It works as a focal point in the shopping centres to affect the users' decisions and movements in the shopping centres because the variety of the verity of choices that presented to customers. Sustainable interior design that applied green materials and recycled objects is part from the satisfaction criteria in the qualify interior design [14]. The new brands follow the way of designing the interior space as a strategy to attract users. The interior design that used recycled elements or furniture can affect the satisfaction level of the users. Users are varied in term of satisfaction, which safety, functional, and aesthetics are the main consideration of the users. The recycled materials can influence the value of the interior design positively or negatively. Many interior spaces designed following the recycled materials theme and convert the space to rubbish collection and users reject them such as the unsafe object with sharp edges or bad smile [17, 18]. Therefore, the treatments of the recycled materials should be prepared before constructing the interior space considering:

2.2.1 Safety

The objects and materials that reused in the design of interior space must be modified and treated to match the safety conditions. However, being kind towards nature, and using organic and non-toxic materials are the objectives for a safe environment in any space [15]. The using of waste materials in the design of interior space is one of the sustainable and friendly design methodologies, which force the design to achieve the safety and health needs of the environments. The furniture and interior design elements that created by recycled

materials should follow the process of cleaning, painting, repairing, modifying, and covered by fabrics to ensure the physical safety in term of removing the sharp and unsafe parts from these objects. Mostly, the users of recycled interior space not preferred using recycled furniture or elements and considered these objects for decoration and non-safe use. However, some users enjoyed using the recycled interior space as they feel the uniqueness.

2.2.2 Functional

Researchers and designers mention the purpose of using recycled materials as elements of interior design related to functional needs in addition to aesthetic values. Seats, tables, shelves, partitions, floor and ceiling finishing, lighting holders and covers, planet holders, cabinets, storages, and artworks. The recycled interior space included a few elements that can be used functionally, which affect the quality of the space in term of efficiency of using the space, especially in the shop's design because normally the economic factor has a role in the design and exploitation of the interior space. However, the interior design that used recycled materials functionally depends on these materials partially.

2.2.3 Aesthetics

The aesthetic factor in the interior design is important to attract users to involve in the space. Therefore, using waste materials as interior design elements is a critical process, because the designers must balance between the original function and look of the waste materials and between the new look and function of the modified waste materials. Moreover, the principles of aesthetics should be considered in the process of transferring these materials to be part of the interior space. Researchers argue that some interior spaces lost their aesthetic value because of the use of the waste materials with few modifications, which led to creating an interior space with an ugly and unclean interior atmosphere. Therefore, the quality of interior design is affected by sustainable design and recycled materials [11, 14].

In conclusion, the previous studies mentioned the importance of selecting the right materials (recycled) to design the space. Moreover, the recycled materials can be in two types, daily used object and recycled materials with modification. However, the level of modification is very important to allow the designer from using these recycled objects in the functional and aesthetic purposes. Safety, aesthetic, and function are the most significant factors in the successful design, which can used as part of decoration, furniture, and materials to construct the interior spaces.

3. CONCEPTUAL FRAMEWORK

The current study focuses on the effective method of using recycled materials in the interior space of the shops to achieve the function and aesthetics criteria of users. The rules of using these materials as interior design elements follow the process and level of modification and users' satisfaction level to create a qualified interior space (Figure 5). The modification levels of recycled materials influence the functional, aesthetic and safety factor directly, which is affect the interior space's value by affecting the users' satisfaction for using the interior space as decoration part, furniture, or/and materials.

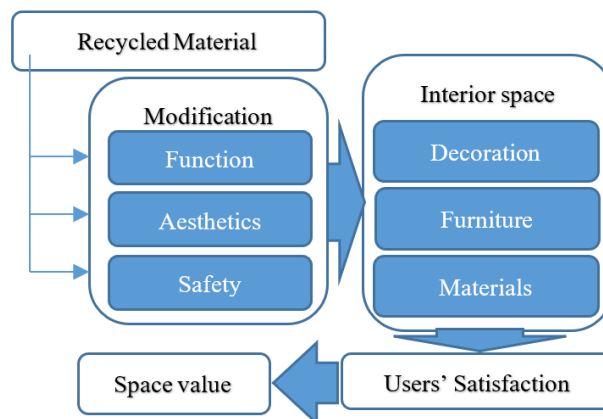


Figure 5. The conceptual framework of using recycled materials and its effects on the space value (Source: The researcher)

The framework of the study simplified the relationships between the recycled materials types and modification and interior design components. Moreover, the impact of these relations on the value and quality of the design.

4. METHODOLOGY

The quantitative approach applied in the current study supported by the visual and Formal analysis of international interior design. The analysis of the samples applied the factors of recycled materials types, level of modification, function, and aesthetic values. The analysis applied visual observation and checklist sheet including the three levels of analysis. Moreover, the purposes of the designers mentioned in each analysis to construct the idea of using recycled materials in the interior design process (Table 1). The sampling method is the purposeful method to select international designs that applied sustainable and recycled materials. The sampling method considered three criteria, the first is to be known by the Impact, successful, mentioned by designers and researchers according to the perfectly used of recycled materials. The second criteria are the availability of interior design images and accessibility to the information of the design. The last criteria are including at least two types of using recycled materials as elements, furniture, or/and modified materials. Moreover, the Survey as second type of data collection conducted in shopping centres in Iraq using structural methods. The survey follows the 5-point Likert scale using satisfaction value as most of the previous studies related to the satisfaction and measuring the quality of the interior space applied this type of survey in order to in-depth understanding of the user's evaluation. The questions directed to the users inside the shops in a shopping centre in Iraq at (Golden Mall) Mosul, (Family Mall) Duhok, (Family Mall) Erbil, and (Al-Mansour Mall) Baghdad. The sample size was 312 users selected using theoretical purposeful sampling from inside the shops after cover-tracking- observation of the users to confirm reaching valid answers as the selected survey participants already experienced the recycled interior space. The respondents selected according to criteria of showing interested and interacted with the interior design of the shops by capturing photos, steering to the recycled materials, or asking the owners about the recycled materials in the interior design.

Table 1. The visual analysis of cases of recycled interior space

| | | | | | | |
|----------------------------|--|--------------|------------|------------|-----------|---------|
| Case No. | Case Name | | | | | |
| Function Type | Images | | | | | |
| Materials Category | Construction | | mechanical | | Home life | |
| Recycled Materials | wood | Plastic | iron | rubber | carton | other |
| Modifications Type | Reproducing materials | | | | Modify | |
| The Purpose of Use | functional | | | Decorative | | |
| Functional Elements | shelves | Chair | partition | table | holder | cabinet |
| Decorative Elements | Artwork | Wall pattern | Ceiling | ornaments | Other | |
| Designer Concept | Observing the designers' main purposes of using recycled objects | | | | | |

(Source: The researcher)

Table 2. Survey questions sheet using satisfaction 5-point Likert scale

| Sample No. | Age Purpose | Gender | User type | individual Staff | group tour | other |
|--|---|--------|-----------|------------------|------------|-------|
| 1-Function scale | | | | | | |
| 5-very unsatisfied 4-unsatisfied 3-neutral 2-satisfied 1-very satisfied | | | | 1 | 2 | 3 4 5 |
| 1.1 | To what extent do you agree that waste materials used in interior design can meet functional needs? | | | | | |
| 1.2 | Do you satisfy with using recycled materials in the interior design to serve the function in the shops? | | | | | |
| 1.3 | How satisfied you are with using chairs designed with recycled materials in the shops | | | | | |
| 1.4 | Do you agree to use recycled material functionally all-over the interior space of shops? | | | | | |
| 1.5 | How satisfied you are with dealing with selves in a shop designed depending on recycled materials? | | | | | |
| 1.6 | To what extent you are satisfied to use furniture created by waste materials in the shop's space? | | | | | |
| 1.7 | Do you agree that interior elements made of recycled materials can efficiently functionally for the shops? | | | | | |
| 2- Aesthetic scale | | | | | | |
| 2.1 | Do you satisfy with using waste materials in the design of the shop's space? | | | | | |
| 2.2 | To what extent you are aesthetically satisfied with the high rate of modification of the waste materials in the interior design of shops? | | | | | |
| 2.3 | Do you think that recycled interior design can reflect aesthetic values? | | | | | |
| 2.4 | How satisfied you are with using recycled materials as decorative elements in the interior space? | | | | | |
| 2.5 | Can you give a value of satisfaction for interior design carried the concept of recycled elements in the overall space? | | | | | |
| 2.6 | The beauty of the interior design can be affected negatively by the level of using recycled interior elements. | | | | | |
| 2.7 | Do you think strange interior design elements can reflect a positive aesthetic value? | | | | | |
| 3- Safety scale | | | | | | |
| 3.1 | Do you agree that interior design elements made of waste materials can affect the safety level of the space? | | | | | |
| 3.2 | How satisfied you are with using recycles furniture in the interior space of shops in terms of safety? | | | | | |
| 3.3 | Do you think that recycled materials can affect the health value of the users because they could be not safe to use? | | | | | |
| 3.4 | Are you satisfied physically and mentally to use and enter an interior space that applied recycled materials in the design? | | | | | |
| 3.5 | To what extent you trust physically the recycled interior design elements that directly InTouch with users' bodies? | | | | | |
| 3.6 | Sharp and low modification levels of recycled materials affect your decision to use the interior space that included these recycled elements. | | | | | |
| 3.7 | Are you satisfied when buy some things arranged on the shelves or cabinet made of recycled materials? | | | | | |

(Source: The researcher)

The questions were presented in three groups of variables (Aesthetic, function, and safety) (Table 2). The questions created and developed following the research objectives and the formed according to the conceptual framework.

The analysis of the two types of data collected from survey and checklist applied statistical type depending on the most observed cases and the respondents' answers for each variable

(Aesthetic, function, and safety). Descriptive statistics analysis using the types of Mode (most frequent value), Range (difference between the maximum and minimum values), and Percentiles and Variance (measure of data dispersion) to identified the best methodology to design interior space with recycled materials.

5. RESULTS AND DISCUSSION

The results from the observation sheet of the international interior design shops cases using the idea of recycled interior design shows that most of the cases were functionally used as furniture showrooms, café, and service shops, which are not included heavy and various types of things displayed. However, the shops included the idea of recycled material at rate of less than 25% of the overall design, which designers create a corner to display the recycled furniture and elements. While retailers for shoes and clothes used the idea of recycled in rate 90% of the design, which designers' purposes to display the theme of recycling as a main concept of the design, as shown in the Figure 6, which is the shop of "SoleRebels", in Barcelona. The shop for shoes displays using recycled shelves from wooden pallets including ropes, wheels and a U-shaped iron form. The shop was designed by "Dom Arquitectura & Asa Studio". The idea of the designers is to create an interior space with minimal resources, neutral colours and a sustainable theme [16].

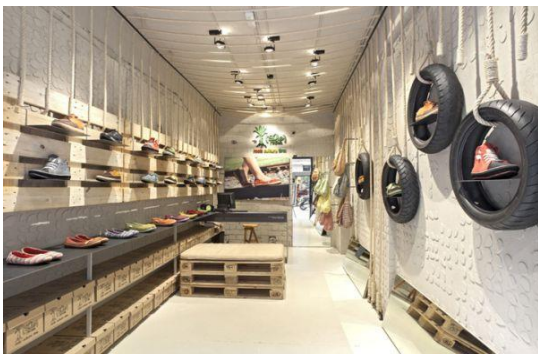


Figure 6. SoleRebels shop used the recycled materials theme [16]

Mostly, the shops used construction types of recycled materials such as wooden pallets, natural wooden sections, ropes, and various types of reinforcement and sheet steel and empty oil barrel. While the other shops used mechanical type of recycled materials such as cars and bicycles tyres and wheels. Moreover, parts of cars and bicycles are used in the design theme of the shops such as the KIA showroom in the Duhok branch (Figure 7). The home-life type is used mostly in café and restaurants and few in shops with considering safety as the study of Poveda [19] mentioned that green space and quality of space are necessary to evaluate as on of the SDGs. Moreover, One of target 2030 aims is to provide universal access to safe, inclusive and accessible, green and

public spaces [20] that can extended to the interior space as the important area that touch with users directly.



Figure 7. Coffee table and tyre poufs used in the waiting corner in the KIA showroom and service in Duhok branch (Source: Captured by the researcher)

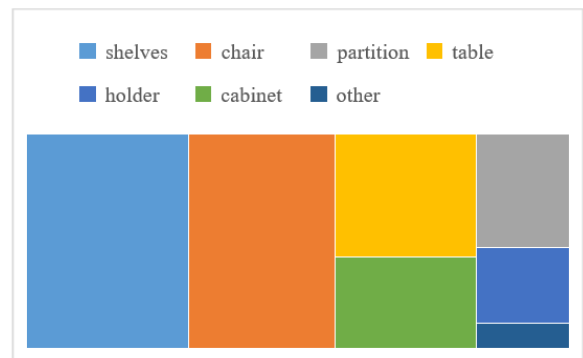


Figure 8. The results of using recycled materials in 12 cases (Source: The researcher)

The majority of source recycled materials observed in the 12 cases from international interior design are various in rate following the design purposes. In overall cases, wooden accounted for 32%, plastics for 5%, iron for 35%, rubber for 21%, Cartons 4%, and other types such as glass, cement, etc. for 3%. The result shows that the designers considered stability and durability in choosing of recycled materials applied in the interior design. According to the designers and design companies, the majority (83%) used recycled materials with high and medium levels of modification, which referred to the purpose of use. According to the results of observing the 12 cases, the purpose of use is quite near rate about 44% for functional users to 56% for decorative use. The functional elements observed in the cases are as follows rate (Table 3, Figure 8).

Table 3. The results of the case analysis depend on the availability of the recycled materials used at the functional level

| | Shelves | Chair | Partition | Table | Holder | Cabinet | Other |
|---------------|---------|-------|-----------|-------|--------|---------|-------|
| Case1 | 30% | 27% | 9% | 15% | 6% | 11% | 2% |
| Case2 | 61% | 14% | 0% | 12% | 5% | 8% | 0% |
| Case3 | 55% | 15% | 5% | 15% | 0% | 10% | 0% |
| Case4 | 15% | 35% | 10% | 25% | 5% | 0% | 10% |
| Case5 | 40% | 22% | 8% | 15% | 5% | 8% | 2% |
| Case6 | 55% | 15% | 0% | 15% | 0% | 10% | 5% |
| Case7 | 25% | 22% | 10% | 20% | 6% | 15% | 2% |
| Case8 | 33% | 15% | 12% | 15% | 7% | 14% | 4% |
| Case9 | 30% | 17% | 8% | 17% | 4% | 19% | 5% |
| Case10 | 60% | 10% | 5% | 10% | 4% | 11% | 0% |
| Case11 | 50% | 15% | 10% | 15% | 0% | 10% | 0% |
| Case12 | 15% | 25% | 10% | 19% | 10% | 15% | 6% |
| Final results | 39% | 19% | 7% | 16% | 4% | 11% | 3% |

(Source: The researcher)

The rate of 56% of the cases used recycled materials and objects for enhancing the aesthetic value of the design as decorative elements for the walls, floors, and ceilings. The artwork and 3D-wall painting are the most decorative that used recycled objects (about 45%) in most of the 12 cases. While ornaments and patterns on walls and ceilings and partitions are the second-rate position (about 40%) in most of the 12 cases. The rate of 15% goes for other decorative elements such as plant containers and covering lighting elements. The results show that the aesthetic value of the recycled interior design is enhanced by the recycled decorative elements, which users reacted positively to it because it related to decorative poses more than functional dimensions. The recycled interior design elements reflect the overall theme of the interior design. The recycled elements in the most of 12 cases were modified and repainted to complete the image of the design. However, these modifications didn't cover the original shape and texture of the objects even after adding new materials such as glass, metal, or wood to the recycled object, for example, the rest table in the KIA motors shop Duhok branch, which used the engine as a base for the table with adding glass materials (Figure 7).

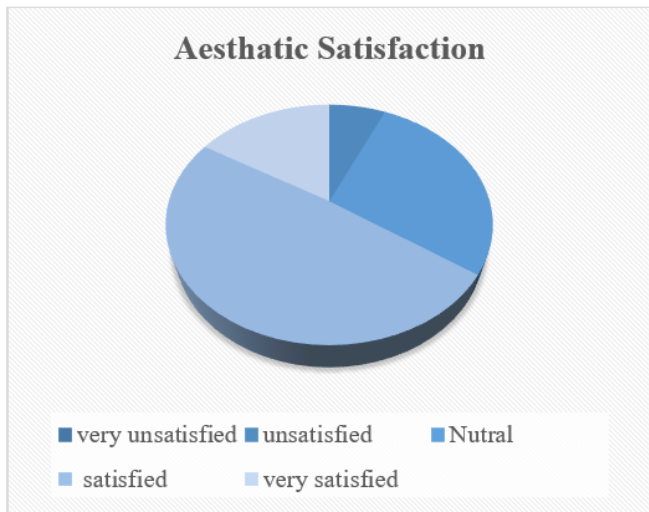


Figure 9. The aesthetic satisfaction rate of 312 samples (Source: The researcher)



Figure 10. The functional satisfaction rate of 312 samples (Source: The researcher)



Figure 11. The safety satisfaction rate of 312 samples (Source: The researcher)

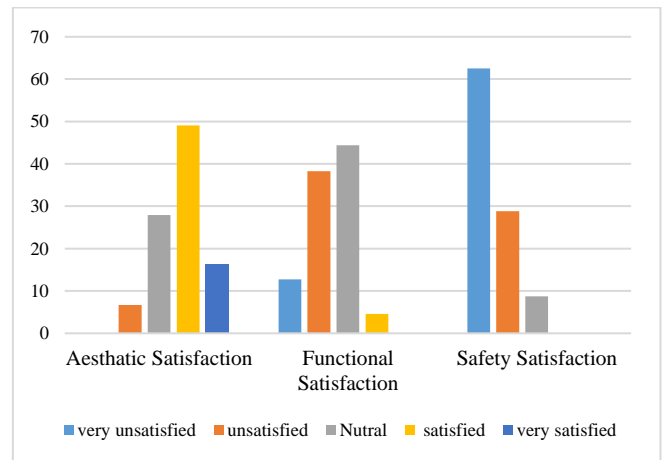


Figure 12. The satisfaction rate of 312 samples reacting for the Aesthetic, functional, and safety (Source: The researcher)

On the other hand, the results of the survey with 312 users selected according to the purposeful sampling method show that around 79% of the users agree and show satisfaction with using recycled materials for decorative interior space, were they satisfied to use these materials for aesthetic purposes more than functional. This referred to the perception of users to the recycled materials. Usually, using recycled materials for functional purposes in a negative impact for the design because users understand that these objects is used objects and the owner use it functionally because of the cost. In contrast, the using of recycled materials and objects for decorative and aesthetic purposes is more acceptable by the users, because the users understand the purpose of using these materials to enhance the recycled design theme. The users of the interior design of the shops within shopping centres agreed and were satisfied (85%) to use the recycled materials as shelves and tables in overall level. While, the same number of users were very unsatisfied with using this material as chairs or any furniture that contact with the users' bodies because the feeling of unsafe. However, the use of waste material in the recycled theme of the interior space according to the survey is shown in the Figures 9-12. However, most of the recycled materials uses for shelve, chairs, and other furniture were used for decoration

and aesthetic purposes more than functional. Therefore, the users considered these material part from the interior design elements more than piece of furniture collected from rubbish, this explains why users prefer to use these elements in the interior design of shops in particular.

The results answered the research questions and reached the study objective by identifying the most significant materials, elements, and methods of using recycled materials and objects in the design of the interior shops with considering the aesthetic, function and safety in the use. The discussion of the results in the previous paragraphs can impact the designer and owners decision for using the recycled materials and objects in the interior design to create an integration and attractive space, which is part of the interior design aims to create a space that users feel comfort and attractive. Interior space is a place where users, function, and aesthetic needs must be reached to create successful interior design. However, using recycled materials and objects are acritical process and deep understanding of the process of modifying the recycled object should be considered to create a satisfied interior design.

6. CONCLUSIONS

The process of using recycled materials should considered the type of these material, level of modification, and the purposes of use to avoid the misunderstanding from the users. Moreover, the design must consider the safety, and aesthetic factors. The application of waste materials in the design of the interior space of the shops within shopping centres should follow a clear mechanism to reach the purposes of the design ideas. However, the availability of the plan and rule of using recycled materials as objects or furniture or any interior design elements can work in both directions, positively and negatively reaction of the users. The users are the main evaluator of the interior space because in shopping centres the users' desires for enjoying spending time (window shopping) as the results show. Therefore, the type of goods displayed in the shops and the way of displaying are the most affected factors in the shops in the shopping centres, which designers must consider that in the design idea of recycled and sustainable theme. According to the objective of the study, the conclusion presents the basic guideline to use the recycled materials as elements of interior design depending on the users' needs and requirements. Therefore, the guideline included two layers, the first layer is for partial used of recycled theme in the interior space, which designers can collect and focuses the recycled theme in a specific area in the design to display as focal point. The best area of using these materials in the partial layer is in the entrance and the façade of the shop, moreover, one of the corners can be used to apply the recycle theme, which is usually used as rest or waiting area. The elements used in the first layer are (chairs, tables, partitions, and artwork), which is mostly not included the original function of the shop and used to attract uses.

The second layer is to use recycled material as overall design. In this case, the designer must divide the type of using these materials. However, the rate between functional and aesthetic purposes are nearly the same, but the aesthetic purposes in the shops within shopping centre get more than the functional purposes about (10%). Therefore, the designers can mix the uses of recycled materials to serve as function and an element of beauty in the interior space. In this type (overall), the designer can use recycled materials such as construction,

mechanical and others to design the display tables, shelves, and wall elements. The theme in this type should be clear and focused, because the unclear theme will be understood as a scrap collection shop.

The satisfaction levels of modification for waste material to produce interior design elements is the average level, which waste material is modified by cleaning, repainting, covering with fabric, and adding new materials such as glass, metal, and wooden parts. However, high level modification is not recommended, which produced new objects such as walls, floor, or furniture object that are totally manufactured by waste materials. The study concluded that usually recycled materials are construction materials (oil barrels, wooden pallets, and iron bars), and mechanical parts such as (cars and bicycles wheel and parts, and pipes). While the home-life materials are (empty jars, ropes, and some electric devices). The designer can balance between these types according to the interior design theme and function in considering the level of modification to avoid the safety risk of recycled material. The study recommended to do research in the impact of high-level modification of recycled materials on the interior design value to understand the relationship between the modifying levels and its impact on the users' perception of the interior design.

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