A Proposed Design To See A Contemporary Design For An Affordable Housing For The Saudi Family In The Light Of The Kingdom's Vision 2030

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Introduction:

Housing and houses issues in general, and affordable houses in particular, have achieved the concerns of the community and the international community, where the most results and recommendations whether for research or conferences were the necessity of providing housing and affordable houses for all, in addition to considering it an important issue in the well-being of the inhabitant in all social, economic, psychological and financial aspects, in addition to being an essential part at all local, national and international levels. (Mahdi, DT)

Affordable and sustainable housing is considered the one that meets the residents' needs and requirements without affecting the thinking of the next generations, and that in terms of influencing the fulfillment of their housing needs and the requirements for the affordable and sustainable housing, such as the social, economic and environmental requirements that are strong and interconnected.

Affordable and sustainable housing aims to achieve that sustainable development to reduce the environmental impact of housing so that it leads to long-term benefits independently, so that sustainable housing and the practice of the actual application of the principles are strong basics in the process of designing

affordable housing as well as the materials used in construction.

The need for environmentally sustainable housing is considered the largest issue in the affordable housing sector, because improvements in the environmental performance of housing such as improving energy efficiency and providing benefits of continuous economic importance especially for the low-income families.

Providing safe and affordable housing is one of the most important necessities that the family needs in any society, because the unsuitable housing does not allow a person to be a productive member in the society, and in the case of non- existence of the suitable housing, the family is negatively affected, where the children in the family are not able to grow, educate and learn in the right and proper manner, and so that the family becomes suffering from an insecure and unstable imbalance in its life, so in order to be able to solve its problems, especially the housing problem for all segments of society, where attempts to confront the rest of the problems, especially social ones, will remain ineffective, and a society is considered to be living in problems of poverty, negativity, ignorance and disease.

Affordable housing in the global and local literature expresses the affordable housing that it has very many meanings and concepts and multiple and different

connotations depending on the fields of specialization, where most researchers tend to link the concept to the economic aspect, for example, as a basic factor for family income and the extent of its ability to spend on housing, then come after that the other humanity and societal aspects, which it must be achieved, especially with affordable housing projects. Some researchers confirm the importance of highlighting the humanity aspects that aim to preserve the right of the individual, family and society in their future development, then other economic matters in the second place. (Abd Al-latif, Alforteh, 2004 AD)

As Alsery sees, (2001 AD) that providing housing is an important way to preserve the human soul, money and offspring, in addition to considering it a shelter to protect soul and money so that it becomes a very important requirement when it is to provide shelter and to remove the embarrassment of its residents and it is an improvement thing when it is needed to provide the possible means of comfort in addition to the extent what the housing provides of basic facilities, such as water, electricity and other necessary requirements, in addition to supplements of the reasons of comfortable in satisfying the improvement needs.

The study of housing for the family itself and its impact on family changes is an attempt to contribute to providing important solutions in human life, they are, house and the family as two complementary concepts, it is impossible to talk about the first without addressing the second and vice versa. Working on designing a type of affordable housing that is characterized by flexibility and the ability to change some parts of it, and exploiting some parts and benefiting from them in facilitating movement inside the house, especially for the family that

contains the elderly, where the family adjusts its form and content to be suitable to the conditions of its social life, so it has a certain type of construction during the life of the family itself, then they knowing a second form of construction when the family members marry and the house takes another type of the flexible building and manages its economic and social life as its wishes and wants, this is how the family housing is based on this transitional system in facilitating family life.

Where the idea of acquiring and owning a house is always on the family's dream list and for what it provides for psychological, social and economic stability, So that the family's ownership of the house results in functional benefits and economic returns, and it is the most important and most valuable thing that the family owns in its life, which is the most important and most valuable thing that the family owns in its life. Therefore, the interest of providing adequate housing is necessary for development in its economic and social aspects, especially since obtaining the suitable housing consumes a large part of the family's spending, therefore, we find that facilitating access to affordable housing is one of the most important elements of the development, social and political works all over the world.

Research problem and its questions:

While providing of the suitable numbers of housing units is necessary to meet the demand for housing and fill the imbalance of health tasks and responsibilities faced by the countries of the world, especially that the family wants to obtain adequate housing that is one of its humanity rights, which countries in the world are working on hard for its citizens to obtain these affordable housing units and this In addition to the government of the Kingdom of Saudi Arabia, represented by the

Custodian of the Two Holy Mosques, King Salman bin Abdulaziz, and his Crown Prince, Prince Mohammed bin Salman, is working to provide housing and take full care of it as an aspect of development and through the economic vision 2030, which is working to provide the suitable housing in terms of the health, social and economic aspects.

Due to the continuous increase in the demand for housing, and that because the majority of the population of the Kingdom is of young age groups, which means a high rate of formation of new families and consequently an increase in the volume of demand for housing, it is necessary to continue to work on providing housing to meet future needs, but in an easy way that is commensurate with the real needs for the family and within their easiness financial ability, especially since the composition and size of the Saudi family and some of its traditional characteristics have changed from the compound family to the single family or the nucleus, so the idea of an affordable housing that fulfills the needs of the family, and which is economic and inexpensive in its construction, operation and maintenance, and which limits the rate of land consumption and the consequent increase in implementation costs of the infrastructure of facilities and services for the residential areas, especially that the price of the land and the cost of developing the location are the two most influential factors on the rate of rising prices in housing in most major cities in the world. Therefore, the research questions can be formulated as follows:-

1- How is affordable housing provided to the Saudi family?

2- How affordable housing can be provided to solve the problem of exploiting wasted areas and spaces?

3- How can an innovative proposal for affordable housing be designed appropriate with the requirements of the age for the Saudi family in light of the Kingdom's Vision 2030?

4- How to dispense with the extra spaces for movement and take advantage of them in facilitating ease of movement for the elderly?

Research objectives:

1- Identifying the suitability of the affordable and innovative designed housing for the Saudi family.

2- Innovative proposed design for affordable housing that suits with the requirements of the age for the Saudi family in light of the Kingdom's Vision 2030.

3- Eliminating the extra spaces for movement and benefiting from them in facilitating the easiness of movement for the elderly.

4- The extent of diversity in creating the proposed design for the affordable housing for the Saudi family.

Research importance:

1- Designing an innovative proposed for affordable housing that suits with the requirements of the age for the Saudi family in light of the Kingdom's Vision 2030 AD.

2- Shedding light on how to take advantage of the design in dispensing with the extra spaces for movement and benefiting from them in facilitating the easiness of movement for the elderly.

3- The extent of diversity in creating the proposed design for the affordable housing for the Saudi family.

4- The extent of suitability of the affordable and innovative designed housing for the Saudi family.

Research hypotheses:

1- There are statistically significant differences among the five designs in the general form according to the specialists' opinions.

2- There are statistically significant differences among the five designs in the mastery of the design according to the specialists' opinions.

3- There are statistically significant differences among the five designs in the harmony and consistency of colors according to the specialists' opinions.

4- There are statistically significant differences among the five designs in uniqueness, innovation and creativity according to the specialists' opinions.

Research Methodology:

This study depends on the descriptive-analytical approach and the experimental approach. As for the descriptive-analytical approach, it is based on the study of reality or the phenomenon, and it is concerned with describing it accurately and expressing it qualitatively or quantitatively. The qualitative expression describes the phenomenon and explains its characteristics. As for the quantitative expression, it gives a numerical description that shows the amount or size of this phenomenon and the degrees of its correlation with other phenomena. (Obeidat and others, 2016 AD)

Experimental research does not stop at merely describing a situation or specifying a situation and its activity is not limited to observing and describing what exists, but rather it deliberately treats certain factors under precisely conditions in order to verify how a certain condition or event occurs, and to determine the causes of its occurrence. Experimentation is a deliberate and accurate change of the specific conditions of an event, and the observation and interpretation of the resulting changes in the event itself.

Research limits:

1- A proposed affordable housing whose rooms are limited to living rooms, a reception room, a salon, a reading library, and service areas.

2- Computer program for design (3D MAX, Photoshop).

Research tools:

1- Computer drawing program (3DMAX10), which works on designing the three-dimensional shapes and showing them in four panels. Photoshop, which works on coloring the shape and giving it certain raw materials.

Research terms:

1- Housing:

Housing is defined as the shelter that a human resorts to to live in, and this shelter includes all the necessities, facilities, equipments, tools and devices that he needs and uses to ensure health and the social, psychological and mental happiness for him and for the family. (Al-Qahtani, 2008)

2- Affordable Housing:

The housing that achieves the standards of affordable housing, and which is related to the segment of society that suffers from the problem of providing housing, Housing Stressed People, which the American housing strategy defined as the population segment of the society located in the lower part in terms of the total income of the family and who pays 30% or more of this income to meet the housing need,

(Eringkarel, 2003). Affordable housing is also known as the housing that achieves the necessary interests of the individual and his family and meets the family's minimum needs for shelter at a reasonable cost commensurate with its income in the current time and in the foreseeable future (Mahdi, DT)

Affordable housing is the one that suits with the needs of a wide group of middle-income families with remaining their ability to meet the basic costs of living and taking into account the multiple and complex needs of some families with the need to observe the quality standards. This affordable housing is suitable in terms of size; location and ease of obtain, in addition to the integration with the diverse local community and facilitating maintenance and transportation operations.

The researcher defines the affordable housing procedurally as: the sustainable affordable housing is one that meets the needs and requirements of the current generation without prejudice to the ability of the next generations to meet their housing needs and demands. Affordable and sustainable housing has strong and interconnected economic, social and environmental components.

Related Studies:

Abdul Majeed, Abbas (2015 AD) study entitled: The role of smart growth principles in the affordable housing, as it was one of the most important objectives in determining the relation between the principles of smart growth and the affordable housing, where affordable housing is associated with providing decent housing for middle-income families. The human defined the affordable housing as the one that meets the needs of incomes that grades to medium, while smart growth is considered the development of a set of principles to solve the problem of urban

expansion to reach solidarity residential neighborhoods that support affordable housing and the multiplicity of options available for housing and achieve the environmental, social and economic aspects. The research problem was represented in the existence of a knowledge gap about the impact of the principles of smart growth on the small scale in the costs of affordable housing, and the results showed the clear discrepancy in the extent of achieving the multiply options of the affordable housing.

The study (Allbee, 2015) quoting Mahdi, (DT): It is a type of housing that is able to provide safe and easy options for residents and at all levels of income, It works to meet the need in the sense of providing affordable options for middle-income families, what indicates the need for external intervention and support is mostly the support of local governments that are more flexible in using their resources to meet the needs of families, accordingly, affordable housing is linked to reducing costs through design aspects related to simplicity of design, adaptation and flexibility with the speed of implementation and construction, in addition to studying the location and the environment of the building, isolating parking lots from residential units, and relying on the public transportation. And strategic aspects related to state financing and increasing housing densities.

Valdez study (2014 AD): It referred to the link between smart growth and affordable housing through its principles that are related to land uses and housing patterns, where it referred to the principles of smart growth represented by multiple housing options that provide housing for different incomes and provide job opportunities for different categories and high urban density to prevent urban spread and preserve the open space and sustainable development to

preserve the environment and reduce the sizes of housing units and economic opportunities where economic incentives help to meet the demand for Housing and architectural diversity. Architectural diversity is linked to heritage neighborhoods that create their unique identity, as the study indicated to the principle of multiple housing options and increasing densities in addition to the principle of urban full for single and multi-family housing development, which included a set of mechanisms that focused on the inclusion of available , flexible, corner and courtyards units in development, in addition to supporting the development of small units, the multiplicity of housing units, and taking into account transportation, also increasing the production of housing units, and accelerating the review of plans and providing financial subsidies to low-income categories, and did not address the costs of the affordable housing. Accordingly, intelligent growth is linked to three scales: large, medium, and small, with regard to the small scale, it is at the level of residential neighborhood, in addition to its association to preventing urban expansion and planning, and the principles of smart growth that are associated to the affordable housing. Most of the literature that it represents pointed to the densities increase, the multiplicity of housing options, urban full, activate the existing residential neighborhoods, mixed use with a sense of residential neighborhood, multiple transportation options, pedestrian movement, and preservation of the open space. Also, not all studies dealt with the costs of affordable housing.

Aljamil Study (2014 AD): This study refers to a set of design characteristics to make housing affordable, which is achieved through the adaptation strategy.

As Turei (2014 AD) study defined: Affordable housing is a type of housing that does not exceed 30% of the annual income for renting or buying a house, and it is the housing that based on taking into account the changing of housing needs over time, and it provides the latest and best what can be possible of information to become a part of the main infrastructure in the state.

Dabayeh Study (2013 AD): The study refers to the relation of housing to the sustainable development in its three dimensions (economic, environmental and social) and emphasized the relation of affordable housing to the sustainable development with regard to the economic, environmental and social dimension. Also, the study emphasized on the relation of the affordable housing with the sustainable development, with regard to the economic dimension the study emphasized on the increase in densities, as for the environmental dimension, it emphasized on the easiness of access and preservation of resources while supporting the movement of the facility and public transport, in addition to the enablement strategy that provides financing and services for the affordable housing.

Corcas study (2012): Corcas' study emphasized on the role of finance in providing the affordable housing for low-income families, in addition to the role the state plays to improve housing and provide adequate housing.

Quetz study (2008 AD): The study indicates that smart growth includes three measures represented by the small scale that works to activate the residential neighborhoods and the individual neighborhoods in terms of design and the medium scale that includes the planning laws, land use laws, transportation, housing preservation and open space. And the large scale that includes a set of strategies which deal with the natural territory, community

participation, and resource sharing and includes the boundaries of urban growth.

The study of Abdul Latif and others (2007 AD): The study aimed to provide the affordable housing through the place and time. What concerns time requires the speed of completion of the project in relation to its size and understanding the nature of the executed project, while what concerns place requires studying the environment surrounding the location or building at the local and regional levels.

Idris study (2004 AD): The study aims to reduce the cost at the location level by studying the location and the best orientation of the housing units, which is related to reducing the cost of energy, in addition to emphasizing the vertical expansion instead of the horizontal, while at the level of the housing unit, the study emphasized the importance of simplicity in the design and the use of the highly sustainable materials and the adoption of inexpensive systems.

Cooley study (2002 AD): The study referred to the relation of affordable housing with smart growth through residential neighborhoods that achieve the principles of smart growth and to provide affordable housing through the government's adoption of laws so that new developments include affordable housing. The principles represent the combination of residential, commercial and office building aggregates to bring housing closer to work and reduce transportation costs, In addition to residential neighborhoods with multiple options and housing opportunities, in addition to the pedestrian-friendly neighborhoods, this is achieved by providing businesses and services within walking and treating the roads leading to them, thus, the feeling of the place and the residential neighborhood because it provides an environment for social interaction with the strengthening of

identity in the residential neighborhood and the activate the residential neighborhoods through rehabilitation policies and making use of historical buildings and encouraging community participation and benefiting from the residents' experience, thus achieving affordable housing.

The study of Daniel (2001 AD): The study aims to the main objective of smart growth and the preservation of residential neighborhood is to limit the spread of residential developments and the development of commercial tapes on arterial roads and extension outside cities and villages. Therefore, smart growth calls for high-density, pedestrian-oriented, mixed-use development, cities, and suburbs surrounded by agricultural lands and open spaces.

Karen's (1999 AD) study: The study indicated that affordable housing is one of the goals of smart growth that it achieves through its principles that presented in increasing densities, mixed use, cohesion, balance between housing and business, and rehabilitation of existing structures. Regarding the increase in densities, there are references to the term urban containment that is directly proportional to it. As for the mixed use that includes urban activities such as housing, industry and trade, it links affordable housing with smart growth by providing the affordable housing through mixed use developments, in addition to higher density neighborhoods. Increasing housing densities near commercial centers and encouraging urban full housing, in addition to defining the centers and edges of residential neighborhoods and the multiplicity of housing options.

Accordingly, Karen's study emphasizes smart growth housing, which is either outside the city or inside it, with an emphasis on the principle of increasing housing densities through urban

containment, urban full, mixed-use developments, and multiple housing options. And it did not address the issue of affordable housing costs.

This is in addition to the fact that all the studies are linked with the current study in the process of design the affordable housing for the Saudi family so that the easy and comfortable design is designed in the light of the 2030 vision.

The theoretical framework:

Modern considerations of the sustainable affordable housing, where safety is found and include the physical characteristics to facilitate passive monitoring for protecting from crimes reduction through designing the techniques as well as the safety of residents in neighborhoods, also as awareness of life, which is the general welfare and quality of the place where it is represented by housing and neighborhood designs based on designs at high quality levels in addition to health, which is the material form of housing and neighborhoods capable of creating healthy communities, physically and socially. So, the effectiveness of walking within the neighborhood to reach the basic services such as schools and shops has health benefits. Health considerations are considered as the most important driving forces for development, such as sewage, ventilation, noise protection, structural safety and fire safety in buildings. It also means access to sufficient green spaces and types of open areas that are closely related to the type and structure of the residential public administration. (Turkish, 2010 AD)

Affordable sustainable housing aims to achieve sustainable development and reducing the environmental impact of housing where it leads to long-term benefits. The sustainable housing discourse and practice on the actual application of the principles focus on the solid foundations in housing design and the materials that used in construction, and recently, sustainability in housing projects has become associated with the trend towards the intensive urban and that the need for environmentally sustainable housing is the largest in the affordable housing sector, because improvements to the environmental performance of housing such as improving energy efficiency and providing continuous economic benefits for low-income families, these families spend a greater proportion of their income on facilities and they are least likely to be in a position to tolerant energy efficiency improvements without assistance.

Improving the ability to tolerant the principles of sustainable affordable housing is considered one of, as it is reflected in effective policies at the national level of the state and local government levels, and it is represented in sustainable urban transport by encouraging the use of public transport and adopting the sustainable transport such as trains, for example, to reduce the movement of personal cars with easy arrive to work near the house and transport contract and sustainable urban management and sustainable urban construction, which includes all resources, energy, demolition waste and design , in addition to the sustainable urban design, which includes land, urban sprawl and density of land using .

As for housing, it is mentioned by (Armstrong, 2001), quoting from Mahdi, (DT) that the basic biological needs that are important for survival, and even if the physical needs are the basic needs that all individuals share, such as food, breathing, sleeping and protection from enemies, and the need for safety and reassurance depends on the amount of satisfaction achieved by physiological needs is the task of the individual, where he seeks to achieve

security and reassurance for him and his children He also seeks to achieve security at work, whether in terms of securing income or protecting it from the dangers resulting from work, and that the individual's feeling of not achieving this need will lead to his mental and psychological concern, which affects his performance at work, therefore, management must realize the importance of the security need for the worker to create a spirit of creativity among the workers.

In addition, the basic needs of human survival are characterized by being innate, and they are considered as the starting point in reaching the satisfaction of other needs, and they are general for all humans, except that the differences are due to the degree of satisfaction that required for each individual according to their needs, and that the work that achieves these needs to a certain extent will be the subject of acceptance and satisfaction from the workers.

Housing is the place where the individual is happy and fulfills his daily needs, and it is the place where basic cultures, components of customs and language are preserved, and it is the place where the individual feels respect of others, loyalty, sincerity, honesty and satisfying the daily needs of food, drink and clothing, in addition to considering it a source of giving and loyalty and practicing different hobbies. It is also the place designated for the comfort of its residents and securing the basic requirements of their lives such as food, drink and clothing, to satisfy the basic needs of the individual and the family. (Khanfar, 2000 AD)

As well as the social needs are that the social human by nature desires to be loved by others through his belonging to others and his participation with them in their principles and slogans that determine the course of their lives, and that the work

that the worker engages has an opportunity to achieve this need by forming friendly relations with the workers who work with him. Studies have shown the work atmosphere that cannot satisfy these needs leads to a psychological imbalance among the workers and then to work problems that lead to a low production and high rates of absenteeism and leaving work, and this makes the organizing fail in achieving its goals.

And the worker's feeling of confidence and obtaining appreciation and respect from others makes him feel his position, and this need makes the individual feel the importance and the value of what he has of potentials to contribute to achieving the project's goals, and for this it is considered one of the manager's jobs that the managers who focus on the needs of appreciation as a test for the motives of workers achieving the goals of their projects, unlike those who reduce the individual's capabilities in this organizing, and this makes the benefit from it limited and creates problems between the individual and the organizing and also the need for a sense of self. The need for appreciation is divided into two parts, one of which is the need for respect from others and the other is the need for self-respect. The need for appreciation is equivalent to the need for self-respect, trust, authority and respect from others.

Zahran, (2002 AD), quoting from Mahdi (DT), mentions that the individual tends to know, confirm and achieve himself out of the need for appreciation, prestige, recognition, independence, self-reliance and showing the authority over others, and the desire for leadership and this drives to achieve the prestige and social value, and this need always pushes people to join groups to achieve value, status, social value, recognition from others and social success. The need includes to

confirm, achieve, and self-improvement, the need for the normal growth, overcoming obstacles, working towards a goal, and knowing and directing the self.

Self-realization is the achievement of the individual's higher aspirations, and that a human becomes what he wants to be, and it is the stage in which a human reaches a distinct degree from others and becomes has an independent entity. The need for exploitation is one of the most important components of this need, as it appears since childhood and develops with age, and thus he has the freedom to carry out works and thus exploits what he has of individual talents and capabilities.

While the functional elements of the housing are considered where the entrance is considered as the first part that meets the individual when entering the house, and from it the visitor makes the first impression about the housing, its environment, design, and personality, and the personality of the individuals who live in the house, its individuals and their habits, thinking and traditions.

Ra'afat (2003 AD) mentioned that the housing usually consists of an entrance reach to the reception and to a (living, guests, dining, bed) rooms. The functional elements of the housing are considered within basic groups that organize their work, and most of them depend in its classification on the human relation with the spaces, so it makes of them public spaces (such as the guest room), and semi-public spaces (such as the living room), or private spaces (such as the bedroom), and others depend on the nature of the activities that take place within the spaces as a basis for distinguishing between them, there are servicing spaces such as the entrance and the kitchen, and others such as the living room.

The entrance to the house is one of the things that must be taken care of, because the entrance is the first thing that meets who enters the house and gives the initial picture of the rest of the house parts. The entrance of the house can be divided into two sections, the first section is the external entrance: that is, before entering through the door of the house, and in the night hours only, lighting is used at the door, if it found, as well as on both sides of the door or hanging to give a general light to the entrance before entering the house, and a hidden and quiet aesthetic lighting can be added among the garden plants to highlight their beauty at night, and It is possible to make it colored hidden lighting. While the second section is the interior entrance, that is, after passing the entrance door to the house, and there are many types of lighting that are often determined according to the design of the structural entrance and its needs. One of the forms of lighting that can be suggested for the entrance is simple lighting consisting of a hanging chandelier from the top that gives general lighting to the place. It is also possible to place appliqués on the wall facing each other or on both sides of the mirror, or a rich painting that welcomes visitors and gives the entrance a very quiet and comfortable lighting. (Khanfar, 2000 AD)

The entrance contains many furniture units and that according to the available space, this furniture includes a table, a chair, a mirror, a shoe storage unit, a coat holder and a row of belongings, but it is important that these units are placed in an attractive way, because through the entrance the first impression is made of the residents of the family. Suitable lighting is chosen for the entrance, including hanging lighting, side lighting, or lighting focused on a particular view, especially in the adornment table and the mirror. Recently, some kinds of walls covers appeared such

as the marble covers, glossy ceramics, or using matte plastic paints. Often bright and light colors are preferred for the entrance wall because it feels joyful and pleasant upon entering in addition to a sense of wideness and spacious, therefore, it is necessary to provide the appropriate sources of lighting that inspire a quiet and adequate welcome for visitors without causing them inconvenience.

While the reception room in most of the housing reflects the taste of the owners and their financial capabilities, and it is the most common space in the house that money is spent on. It is also used as a meeting room and often this room is near the entrance and this room is located on an extreme side of the building, and that in order to facilitate the entrance to it independently of the building, and it is preferable to open an additional private door for this room, as for its dimensions, they vary according to the space of the house.

The living room is one of the most important units of the house, where the family spends most of the day and night, and the entrance leads to it through an open hallway or hung with a door to achieve more privacy. It is preferable that it has at least two natural directions, one to the north and the other to the east or south, in order to prepare the spaces for ventilation, also, with this direction, the winter sun is available in the morning or noon, with no entry of the sun in the summer. While the living room characterized with larger space, compared to the rest of the rooms, and is considered one of the most rooms able to multi-function and activities, it may be provided with a corner to receive visitors during the night, and it can become a place for ventilation or watching TV, or as a quiet place to read a book or magazine, and in other cases it may become a noisy room for

discussion or conversation, or as a play space for children supervised by parents.

The dining room is the place designated for eating, it is a special space in the case of the large area of the house, but in the case of a small area of the house, it can be attached to the kitchen or the living room and it is called in this case the dining corner. This space must achieve the complete privacy while eating and may be separated from the family's living space and the reception space by a fixed or movable partition such as a curtain, moving doors or a piece of furniture according to the desire of family members.

The bedroom is a place of rest, relaxation and restoration of vitality and activity, therefore, it must be characterized by a comfortable and intimate atmosphere, and its design and coordination must receive special attention. The individual spends most of the night and some hours of the day in the bedroom, nevertheless, the bedroom is the main axis in human life, that is, it is the starting point and the end point, the individual begins his day and returns to it at the end of the day. Often the number of bedrooms required is determined by the number of family members, their ages and genders, and it is preferable as much as possible that each family member has his own bedroom, so everyone needs a place to sleep, to store clothes and personal things, and to wear clothes.

It is preferable that the bedroom area be on a quiet side, in the north-eastern area, and next to it is the bathroom. The sleeping area is the most important part of the house because the individual is away from the outside world and sounds, which gives comfort and relaxation, and for the sake of privacy the bedrooms should be far from service, work and living spaces. And general lighting in the bedroom is necessary for public uses, such as wearing clothes or placing them in cupboards or

drawers, and beside it, local lighting is required next to the mirror to make make-up. A local light may be required next to the bed for reading or controlling the lighting of the room when the person in the bed. If the room is wide and is used for other purposes, such as studying or sewing, it is necessary to expand the lighting for those uses.

While the service area, such as the kitchen must be located directly after the entrance, because when the housewife arrives after the shopping process, she can put the purchases easily, also it is preferable to be close to the dining and living room and to the garden of the house in order to monitor the children while playing in it. (Khanfar, 2000 AD)

Where the kitchens are among the most important household spaces important for preparing food, and it may be used for eating (according to its area) and as it contains a lot of furniture and various devices that work on gas or electricity and other energy sources, which requires arranging and organizing these devices in their appropriate places for its area and the shape of its walls, and its slots and more, and a corner for children's play and amusement, a special section for maintenance and other activities.

In addition to the bathroom service, washing, toilet and showering activities are doing in the toilets, in which clothes are worn after showering, and towels, bathroom clothes and toiletries are stored. Some of those activities from a health aspect are clean activities such as washing and showering, therefore, it is possible to separate these activities from each other in two separate spaces, such as the bathroom

Vertical projection of the proposed design:

and the private toilet, especially in the house of the large family (Alowda, 2012 AD).

The practical framework:

The proposed solution for the affordable housing that designed for the Saudi family in light of the Kingdom's 2030 Vision is summarized in transforming the interior design of the house from the different large rooms in which the spouses live to a house designed to suit the spouses and their sons and grandchildren, for example, removing the high stairs that connect two floors and making the bedroom on the ground floor in the case of two floors, and in the case of one floor of the house, the size of the residential space is reduced by removing some walls or merging the rooms together or making a kitchen in the open style on the living room or canceling the idea of the presence of stairs in the house and taking advantage of some of the excess spaces in the house and exploiting them to increase the spaces that we can benefited from them in the affordable housing for the family.
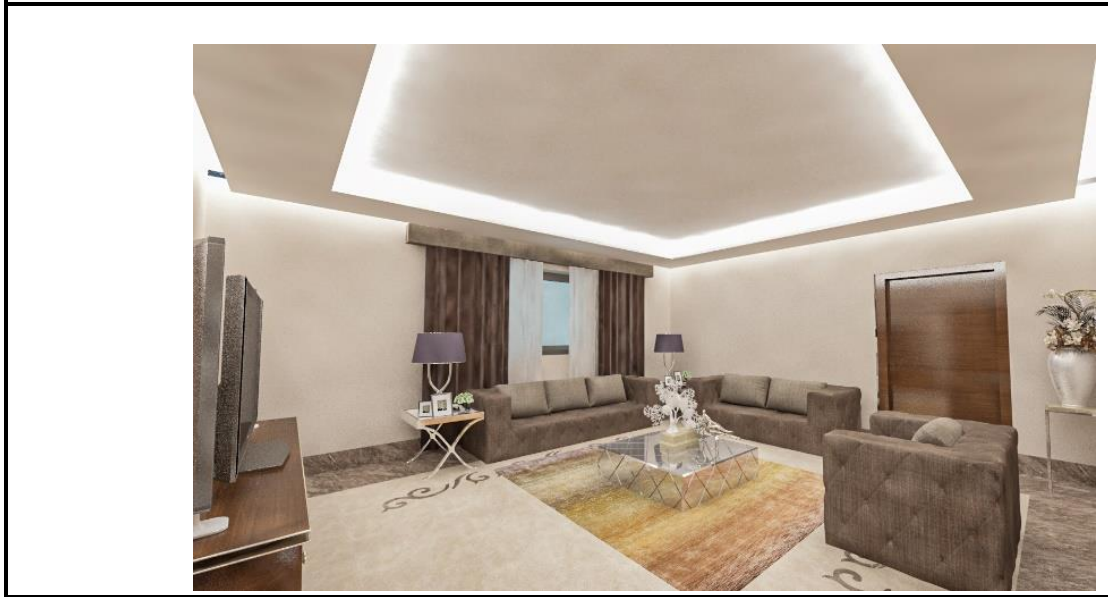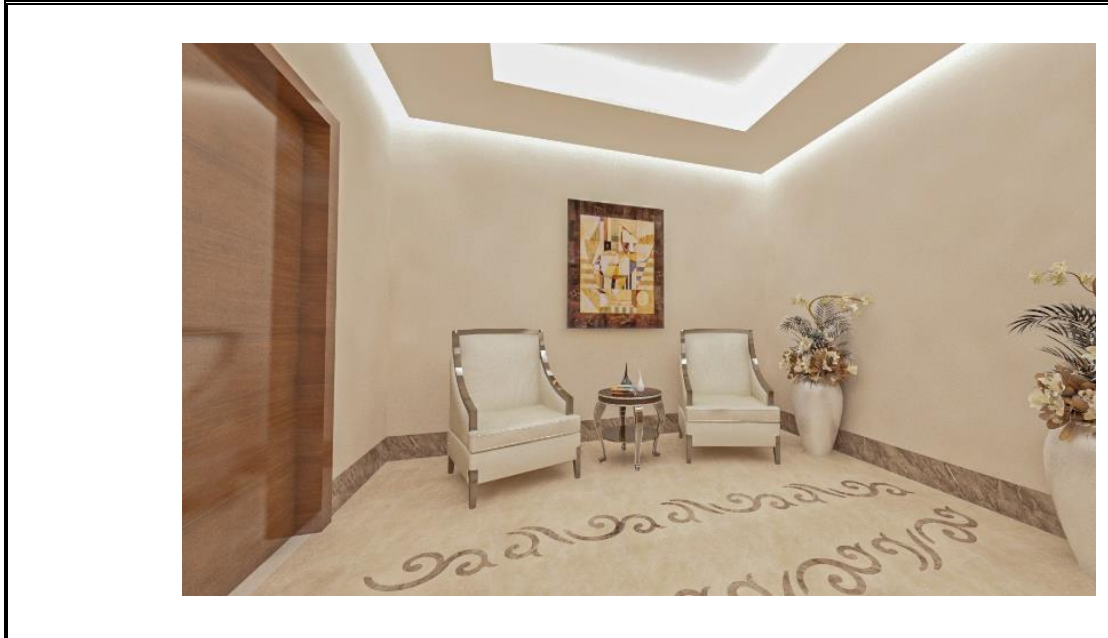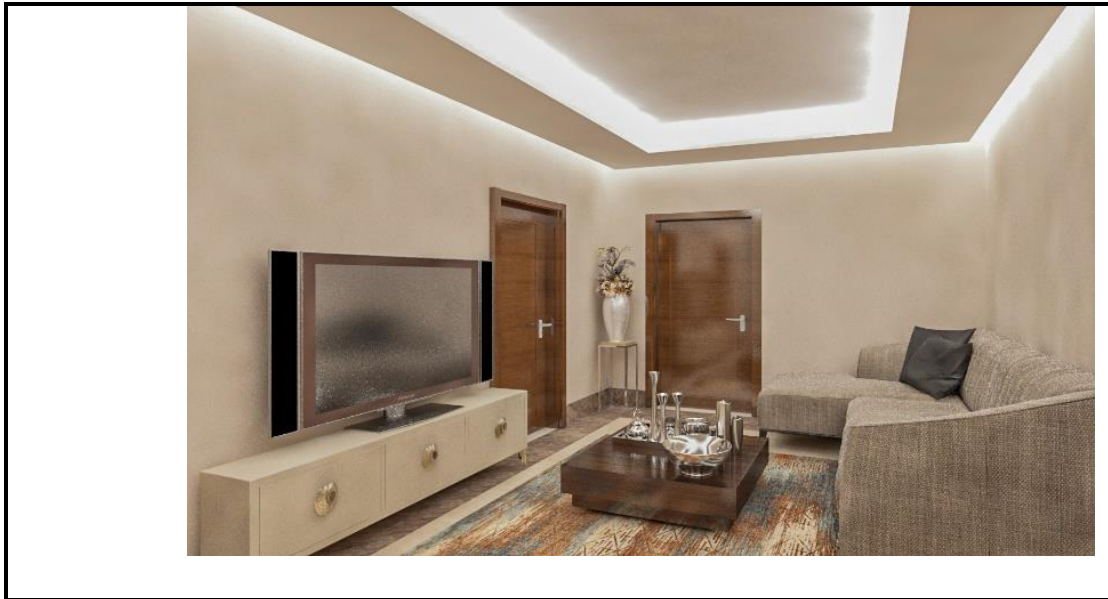
The proposed design:

The proposed solution for the affordable housing designed for the Saudi family in the light of the Kingdom's vision 2030 is summarized where the researcher designed a house using the 3DMAX drawing program that show the affordable housing designed for the Saudi family in light of the Kingdom's vision 2030, this designed and proposed house show the distribution of various furniture, and the utilization of the extra spaces in expanding the rooms, and take advantage of them in the designed places of services and get rid of the excess stairs and electric elevators.
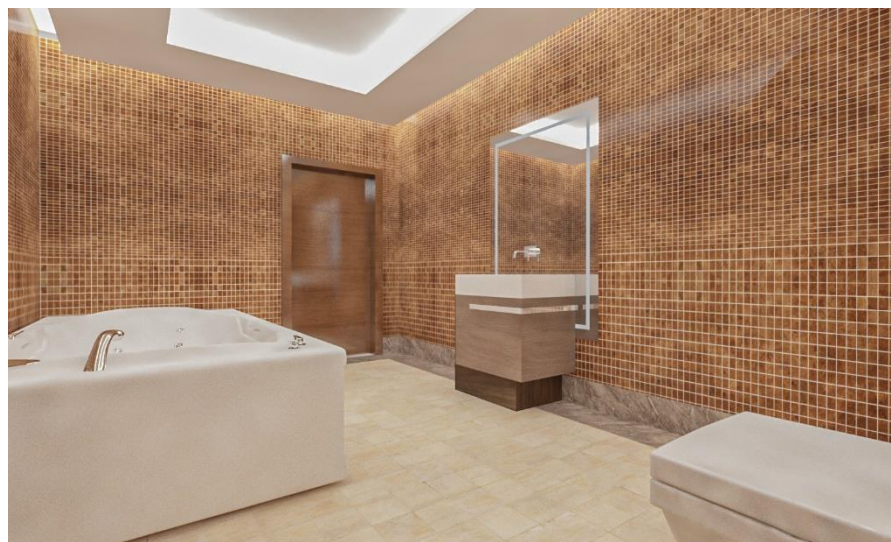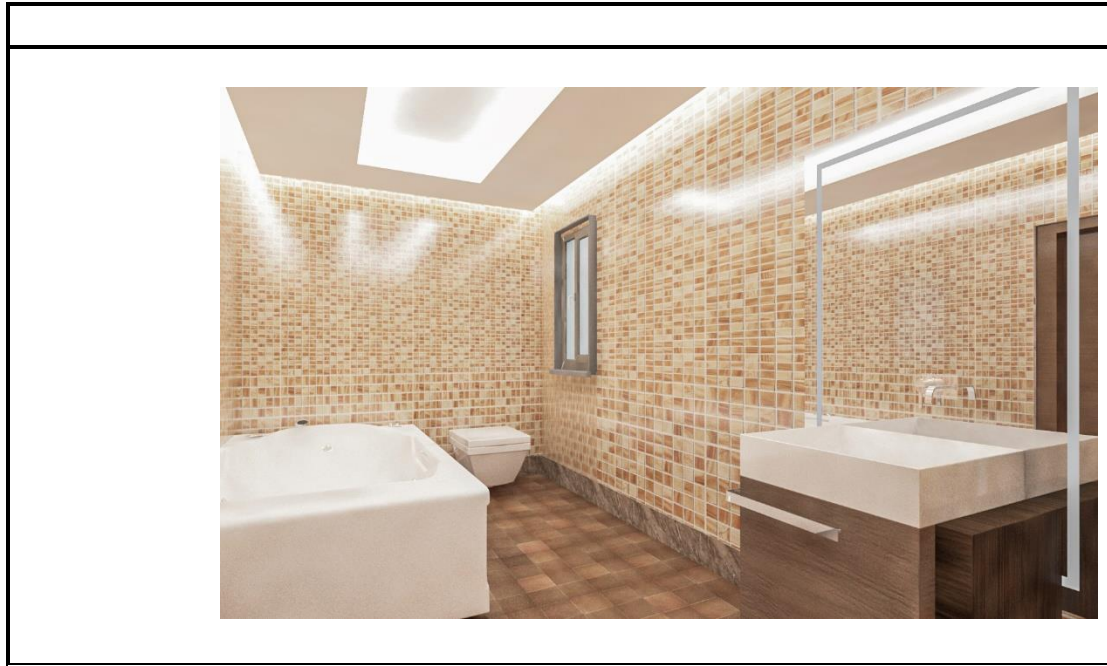
The proposed design form the interior:

Sincerity and Reliability

Sincerity of the questionnaire:
Sincerity using internal consistency between the total degree for each axis and the total degree of the questionnaire

Sincerity has been calculated using internal consistency by calculating the correlation coefficient (Pearson correlation coefficient) between the total degree for each axis (the general form- the mastery of the design- the harmony and consistency of colors- uniqueness, innovation and creativity) and the total degree of the questionnaire; and the following table shows this:

Table (1) values of the correlation coefficients between the total degree of each axis and the total degree of the questionnaire

	Correlation	significance
The first axis: the general form	0.889	0.01
The second axis: the mastery of the design	0.726	0.01
The third axis: the harmony and consistency of colors	0.951	0.01
The fourth axis: uniqueness, innovation and creativity	0.804	0.01

It is clear from the table that all the correlation coefficients are significant at the level (0.01) because they are close to the whole one, which indicates the validity and homogeneity of the questionnaire axes.

Reliability:

Reliability means the test accuracy in the measurement and observation, not a contradiction with itself, and its consistence in providing us with information about the examiner's behavior, and it is the ratio between the score difference on the questionnaire, which refers to the actual

performance of the examiner. The reliability has been calculated by:

1- Alpha Cronbach coefficient

2- Split-half method

Table (2) values of the reliability coefficient of the questionnaire axes

Axes	Alpha coefficient	Split-half
The first axis: the general form	**0.731**	**0.775 – 0.709**
The second axis: the mastery of the design	**0.864**	**0.908 – 0.832**
The third axis: the harmony and consistency of colors	**0.776**	**0.817 – 0.740**
The fourth axis: uniqueness, innovation and creativity	**0.913**	**0.956 – 0.888**
Reliability of the questionnaire as whole	**0.827**	**0.869 – 0.791**

It is clear from the previous table that the all values of the reliability coefficients: the Alpha coefficient, the Split-half are significant at the level of 0.01 and that indicates the reliability of the questionnaire.

There are statistically significant differences among the five designs in "the general form" according to the specialists' opinions.

To investigate this hypothesis, the analysis of variance has been calculated for the scores mean of the five designs in **the general form** according to the specialists' opinions, and the following tables show this:

Research results:

The first hypothesis:

Table (3) analysis of variance for the scores mean of the five designs in "the general form" according to the specialists' opinions

The general form	Sum of Squares	Squares mean	Degrees of freedom	Value of F	Sig.
Among groups	**2679.891**	**669.973**	**4**	**21.224**	**Sig. 0.01**
Within groups	**1420.516**	**31.567**	**45**		
Total	**4100.407**		**49**		

Table (3): shows that the value of (F) was (**21.224**), and it is a statistically significant at the level (0.01), which indicates the existence of differences among the five designs in **the general form**, and to know the direction of the significance, the test of LSD for the multiple comparisons was applied. The following table shows this:

Table (4) test of LSD for the multiple comparisons

The general form	Master bedroom & hildren's bedroom M= 49.412	Living room M=44.645	Office M=31.465	Reception M=37.061	The dining room M=41.260
Master bedroom & children's bedroom	-				
Living room	**4.767	-			
Office	**17.947	**13.180	-		
Reception	**12.351	**7.584	**5.596	-	
The dining room	**8.152	*3.385	**9.795	**4.199	-

** significant at 0.01   * significant at 0.05   without stars not significant
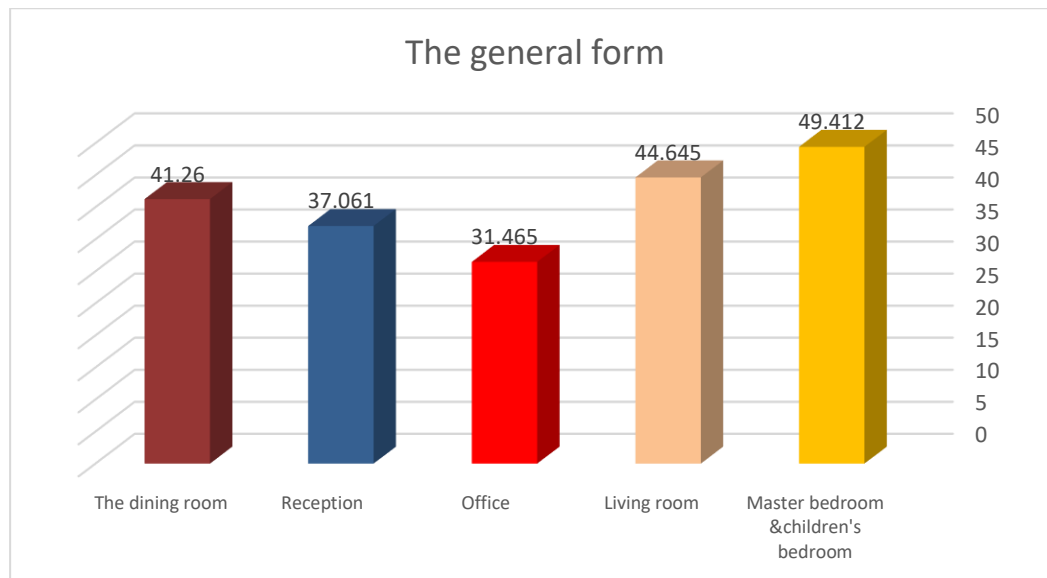

Figure (1) shows the scores mean of the five designs in "the general form" according to the specialists' opinions

From table (4) and figure (1), it is clear that:

1- There are statistically significant differences among the five designs at the significance level of 0.01, so we find that the master bedroom and children's bedroom was the best design in "**the general form**" according to the specialists' opinions, followed by Living room, then the Dining room design, then Reception room design, and finally Office room design.

2- There are also differences at the significance level of 0.05 between Living room and the Dining room in favor of Living room.

The second hypothesis:

There are statistically significant differences among the five designs in "the mastery of the design" according to the specialists' opinions.

To investigate this hypothesis, the analysis of variance has been calculated for the scores mean of the five designs in **the** **mastery of the design** according to the specialists' opinions, and the following tables show this:

Table (5) analysis of variance for the scores mean of the five designs in "the mastery of the design" according to the specialists' opinions

The mastery of the design	Sum of Squares	Squares mean	Degrees of freedom	Value of F	Sig.
Among groups	1039.751	259.938	4	58.374	Sig. 0.01
Within groups	200.385	4.453	45		
Total	1240.136		49		

Table (5): shows that the value of (F) was (**58.374**), and it is a statistically significant at the level (0.01), which indicates the existence of differences among the five designs in **the mastery of** **the design**, and to know the direction of the significance, the test of LSD for the multiple comparisons was applied. The following table shows this:

Table (6) test of LSD for the multiple comparisons

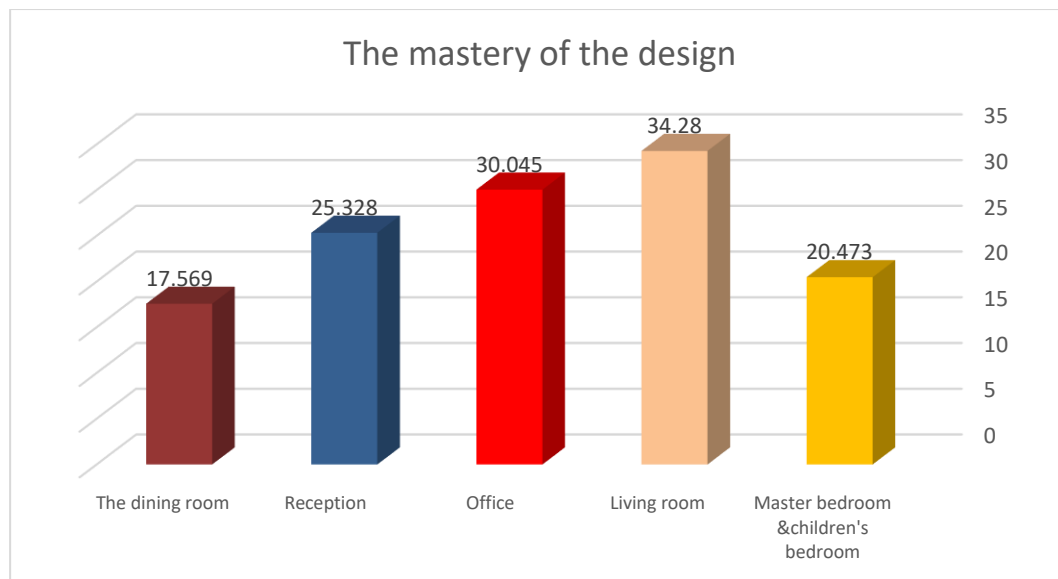| The mastery of the design	Master bedroom & hildren's bedroom M= 20.473	Living room M=34.280	Office M=30.045	Reception M=25.328	The dining room M=17.569
Master bedroom & children's bedroom	-				
Living room	**13.807	-			
Office	**9.572	**4.235	-		
Reception	**4.855	**8.952	**4.717	-	
The dining room	2.904	**16.711	**12.476	**7.759	-

Figure (2) shows the scores mean of the five designs in "the mastery of the design" according to the specialists' opinions

From table (6) and figure (2), it is clear that:

The third hypothesis:

1- There are statistically significant differences among the five designs at the significance level of 0.01, so we find that the Living room was the best design in "the mastery of the design" according to the specialists' opinions, followed by the Office room, then the Reception room design, then the master bedroom and children's bedroom, and finally the Dining room.

There are statistically significant differences among the five designs in "the harmony and consistency of colors" according to the specialists' opinions.

To investigate this hypothesis, the analysis of variance has been calculated for the scores mean of the five designs in **the harmony and consistency of colors** according to the specialists' opinions, and the following tables show this:

2- While there aren't differences between the master bedroom and children's bedroom and the Dining room.

Table (7) analysis of variance for the scores mean of the five designs in "the harmony and consistency of colors" according to the specialists' opinions

the harmony and consistency of colors	Sum of Squares	Squares mean	Degrees of freedom	Value of F	Sig.
Among groups	1886.755	471.689	4	42.066	Sig. 0.01
Within groups	504.591	11.213	45		
Total	2391.346		49		

Table (7): shows that the value of (F) was (**42.066**), and it is a statistically significant at the level (0.01), which indicates the existence of differences among the five designs in **the harmony and consistency of colors**, and to know the direction of the significance, the test of

LSD for the multiple comparisons was applied. The following table shows this:

Table (8) test of LSD for the multiple comparisons

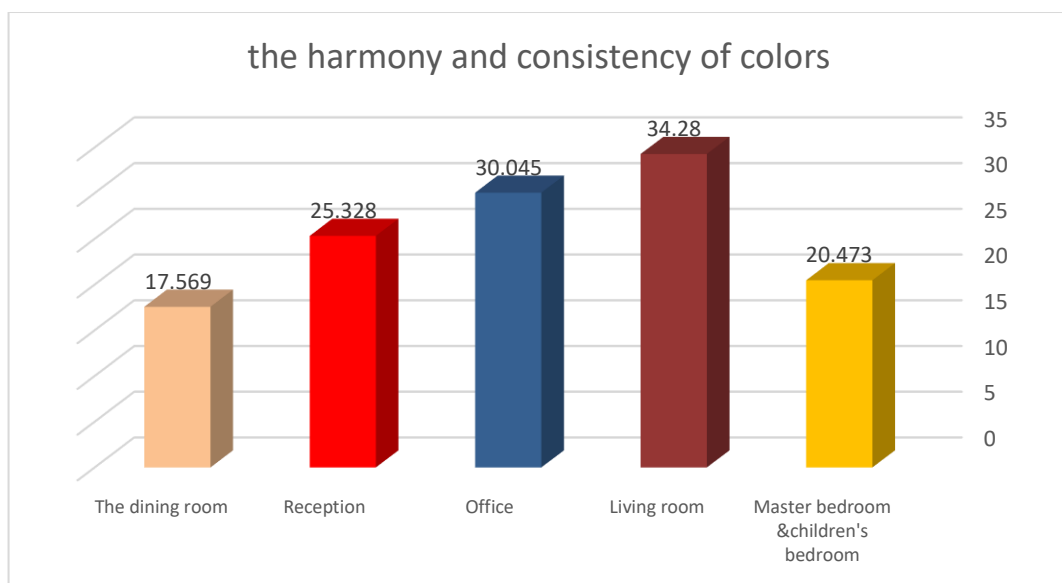| the harmony and consistency of colors	Master bedroom & hildren's bedroom M= 20.473	Living room M=34.280	Office M=30.045	Reception M=25.328	The dining room M=17.569
Master bedroom & children's bedroom	-				
Living room	****9.626**	-			
Office	****5.672**	***3.954**	-		
Reception	****15.608**	****5.982**	****9.936**	-	
The dining room	**1.966**	****7.660**	***3.706**	****13.642**	-

Figure (3) shows the scores mean of the five designs in "the harmony and consistency of colors" according to the specialists' opinions

From table (8) and figure (3), it is clear that:

1- There are statistically significant differences among the five designs at the significance level of 0.01, so we find that the Master bedroom and children's bedroom was the best design in "**the harmony and consistency of colors**" according to the specialists' opinions, followed by the Dining room, then the Office room design, then the Living room, and finally the Reception.

2- There are also differences at the significance level of 0.05 between the Living room design and the Office room in favor of the Office room. Also, there are also differences at the significance level of 0.05

between the Office room design and the Dining room in favor of the Dining room.

3- While there aren't differences between the master bedroom and children's bedroom and the Dining room.

The fourth hypothesis:

There are statistically significant differences among the five designs in "uniqueness, innovation and creativity" according to the specialists' opinions.

To investigate this hypothesis, the analysis of variance has been calculated for the scores mean of the five designs in **"uniqueness, innovation and creativity"** according to the specialists' opinions and the following tables show this:

Table (9) analysis of variance for the scores mean of the five designs in "uniqueness, innovation and creativity" according to the specialists' opinions

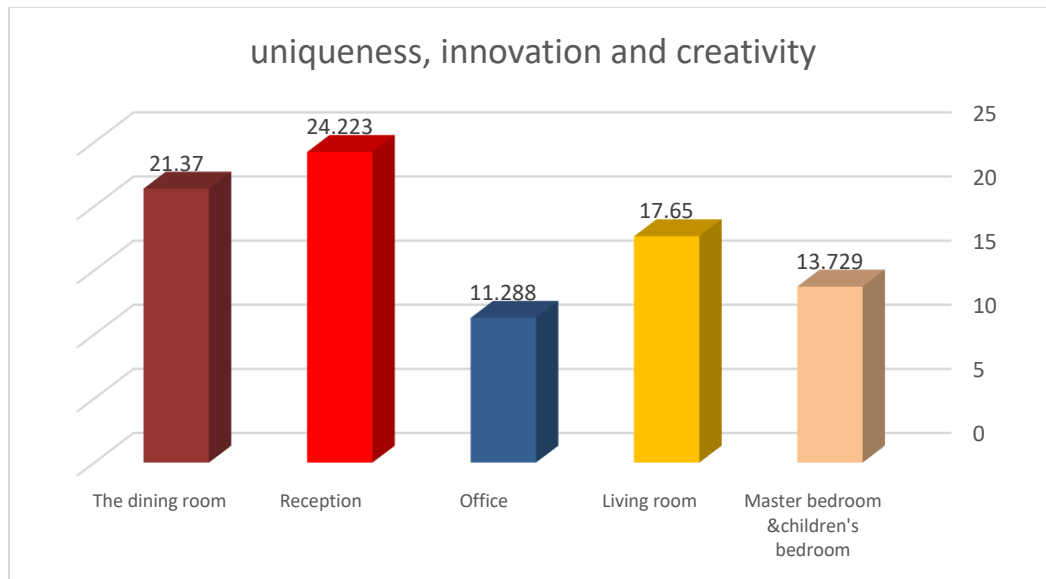| uniqueness, innovation and creativity	Sum of Squares	Squares mean	Degrees of freedom	Value of F	Sig.
Among groups	1660.545	415.136	4	34.157	Sig. 0.01
Within groups	546.913	12.154	45		
Total	2207.458		49		

Table (9): shows that the value of (F) was (**34.157**), and it is a statistically significant at the level (0.01), which indicates the existence of differences among the five designs in **uniqueness, innovation and creativity**, and to know the direction of the significance, the test of LSD for the multiple comparisons was applied. The following table shows this:

Table (10) test of LSD for the multiple comparisons

uniqueness, innovation and creativity	Master bedroom & hildren's bedroom M= 13.729	Living room M=17.650	Office M=11.288	Reception M=24.223	The dining room M=21.370
Master bedroom & children's bedroom	-				
Living room	*3.921	-			
Office	2.441	**6.362	-		
Reception	**10.494	**6.573	**12.935	-	
The dining room	**7.641	*3.720	**10.082	2.853	-

Figure (4) shows the scores mean of the five designs in "uniqueness, innovation and creativity" according to the specialists' opinions

From table (10) and figure (4), it is clear that:

1- There are statistically significant differences among the five designs at the significance level of 0.01, so we find that the Reception room was the best design in "**uniqueness, innovation and creativity**" according to the specialists' opinions, followed by the Dining room, then the Living room design, then the Master bedroom and children's bedroom, and finally the Office room.

2- There are also differences at the significance level of 0.05 between the Master bedroom and children's bedroom and the Living room in favor of the Living room. Also, there are also differences at the significance level of 0.05 between the Living room design and the Dining room in favor of the Dining room.

3- While there aren't differences between the Master bedroom and children's bedroom and the Office room. Also, there aren't differences between the Reception room and the Dining room.

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Research Summary

A proposed design to see a contemporary design for an affordable housing for the Saudi family in The light of the Kingdom's vision 2030

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Affordable and sustainable housing is considered the one that meets the residents' needs and requirements without affecting the thinking of the next generations, and that in terms of influencing the fulfillment of their housing needs and the requirements for the affordable and sustainable housing, such as

the social, economic and environmental requirements that are strong and interconnected.

Affordable and sustainable housing aims to achieve that sustainable development to reduce the environmental impact of housing so that it leads to long-term benefits independently, so that sustainable housing and the practice of the actual application of the principles are strong basics in the process of designing affordable housing as well as the materials used in construction.

The need for environmentally sustainable housing is considered the largest issue in the affordable housing sector, because improvements in the environmental performance of housing such as improving energy efficiency and providing benefits of continuous economic importance especially for the low-income families.

The research aimed to:

1- Identifying the suitability of the affordable and innovative designed housing for the Saudi family.

2- Innovative proposed design for affordable housing that suits with the requirements of the age for the Saudi family in light of the Kingdom's Vision 2030.

3- Eliminating the extra spaces for movement and benefiting from them in facilitating the easiness of movement for the elderly.

4- The extent of diversity in creating the proposed design for the affordable housing for the Saudi family.

The research found that:

1- There are statistically significant differences among the five designs in the general form according to the specialists' opinions.

2- There are statistically significant differences among the five designs in the mastery of the design according to the specialists' opinions.

3- There are statistically significant differences among the five designs in the harmony and consistency of colors according to the specialists' opinions.

4- There are statistically significant differences among the five designs in uniqueness, innovation and creativity according to the specialists' opinions.