



## SUSTAINABLE MOBILE HOME UNITS TOWARD SUSTAINABLE TOURISM TRANSPORTATION IN SAUDI ARABIA

Amira Abouelela\*

### Abstract:

Sustainable mobile home units offer opportunities to promote environmental conservation and sustainable development and sustainable tourism, also the quality of life involves maintaining the natural environment. The concept of sustainable tourism development has become almost universally accepted as a desirable and politically appropriate approach to tourism development. Saudi Arabia's recent decision to welcome select groups of travelers to the Kingdom affords a thrilling opportunity to those seeking a truly unique travel adventure. In an age of eco-tourism mobile home units have become one of the main means of transportation in the seasons of camping, internal travel, and going out to the land and the beach, as they meet all the basic needs of the owners. The problem of the study lies in not available of sustainable mobile homes dedicated to serving domestic tourism in Saudi Arabia due to a lack of cultural awareness about sustainable tourism transportation and its importance. This study aimed to raise the knowledge level attitude toward sustainable development through sustainability mobile homes units. And to reveal the reality of the views of the beneficiaries of Saudi society about mobile home units and their use in spending holidays and wilderness travel trips. The researcher used the descriptive analytical method to study and analyze the opinions, needs, and suggestions of beneficiaries and respondents on the electronic questionnaire. The researcher used a five-point Likert scale to measure the responses to the questionnaire items and reached several conclusions, including that the interior design of the mobile home unit has an effective role in achieving the efficiency of the aesthetic and functional side of the unit, the necessary of achievement of sustainable interior design principles in the mobile home unit to reach the quality of the internal and external environment of mobile home units.

**Keywords:** Sustainable Tourism Transportation; Sustainable Mobile Homes; Recreational Tourism; Caravan; Camping; Sustainable Development; Domestic Tourism.

---

\*Associate Professor, Art Education Department, College of Education, King Faisal University, P.O Box Al-Ahsa, 31982, Kingdom of Saudi Arabia, Email: aabouelela@kfu.edu.sa

**\*Corresponding Author:** Amira Abouelela

Associate Professor, Art Education Department, College of Education, King Faisal University, P.O Box Al-Ahsa, 31982, Kingdom of Saudi Arabia, Email: aabouelela@kfu.edu.sa, 0000-0002-2814-8045.

## 1. INTRODUCTION

In the modern era, tourism in many African countries such as Tanzania, Kenya, South Africa, Egypt, and others is based on organizing safari trips, related services, and large nature reserves for animals for this purpose. The concept of safari has also expanded to include cruises, as well as trips in other parts of the world other than Africa, but it is related to trips that include the natural sites of wild animals in general, or those target environments with special natures of life. The idea has become so attractive in the last two decades at some countries have created a special environment to organize such trips. In the United Arab Emirates, for example, you find some sites that are marketed for desert safaris and camping, and you also find some sites that are designed in the patterns of Asian and African forests, and imports are imported. Wild animals to live in and become an attractive tourist stop. Other countries have begun to pay attention to this type of tourism, and a good percentage of tourists coordinate with local people to organize desert trips and camping, as we see in the Empty Quarter desert in Saudi Arabia, among others. [1][2].

Saudi Arabia is a nation with a long history and remarkable resource diversity. According to frequent travelers, the kingdom of Saudi Arabia boasts the most natural resources of any nation and the most beautiful landscapes. Saudi Arabia is the second biggest tourist destination in the middle east with over 16 million visitors per year although most tourism still largely involves religious pilgrimages, there is growth in the leisure tourism sector. [3] Saudi society is a natural lover of safari trips. Rather, it is an inherited matter that its members have passed down from generation to generation. Regarding tourism trips, specifically wild safari trips, they explained that there is a pattern of these wild trips

that European travelers and explorers started in Africa in the eighteenth century, with the aim of tourism and enjoying the wilderness and camping lifestyle that is linked to a certain style of clothing, charisma, and eye-catching paintings. They indicated that "safari trips" have a special style, and this type of trip developed with time and expanded the scope of its sites until it included sea and air trips, as a special character that characterizes these trips in line with the natural and different terrain. Tourism is "a set of activities carried out by a person traveling to a place outside his/her usual environment for at least one night, but less than a year, and whose main purpose of travel is other than the exercise of an activity remunerated from within the place visited". Moving from one place to another for at least one night but not more than a year for non-economic activities is considered tourism. [4]

Tourism is the commercial organization and operation of holidays and visits to interesting places, In addition, to travel for pleasure or business, spending time away from home in pursuit of recreation or relaxation. [5] Safari trips attract thousands of tourists because of the great opportunities they provide to enjoy, based on what is contained in the picturesque nature and wildlife in all its details. The latest tourism statistics in 2017 indicate that about 25% of tourists visiting the Red Sea take desert safari trips, which leads to its recovery and transformation from desert to a tourist attraction for adventure enthusiasts and safari enthusiasts. The Kingdom of Saudi Arabia witnessed a huge tourist turnout in 2021, according to the world population review report, which received more than 13 million tourist visitors, and the percentage is expected to reach its peak in 2022, as the Kingdom seeks to attract the largest number of tourists next year, as it develops a plan to receive about 50 million visitors.[6]



**Figure 1.** shows Adventures and safari trips in the desert of Saudi Arabia.(1) Riyadh <https://www.sa2eh.com/>(accessed on 1 November 2022).(2) <https://www.alroeya.com/>(accessed on 1 November 2022).(3)Elephant Mountain <https://www.arrajol.com/content/266991>(accessed on 1 November 2022).

A trip taken for leisure, business, or recreation that is often brief in duration is referred to as tourism. The term "tourism" is frequently used to describe

international travel, although it can also apply to domestic travel. Tourists are persons who "travel to and remain in places outside their typical

environment for not more than one consecutive year for leisure, business, and other objectives," according to the World Tourism Organization (WTO). [3] The foundation of global tourism development is thought to be tourism awareness. International interest in sustainable tourism issues and their protection has increased over the past ten years, particularly in recent years when managing tourism resources and facilities and protecting and developing them have been top priorities in many countries' policies and regional cooperation. The goal of sustainable tourism is to strike a balance between the demands of tourists, the environment, the local population, and business. The Kingdom of Saudi Arabia is currently seeing an increase in cultural, scientific, and social awareness, which gives tourist resources a strong incentive to maintain and preserve them. As a result, this trend directly affects the way of life and way of thinking of its residents. [7] Transport is a major sector of the global economy (United Nations Environment Programme, 2017). Road transport accounts for more than 60 million direct jobs worldwide. The transport sector is a key player in advancing the 2030 Agenda for Sustainable Development. But it also has negative impacts on the environment and health. Humans are a major cause of greenhouse gas emissions (GHGs) that cause climate change, air and noise pollution, acid rain, crop failure, natural resource depletion, and waste generation. As environmentally sustainable transportation reduces greenhouse gas emissions and air pollution, increases transportation safety, and contributes to improving people's health outcomes through sustainable transportation. It also contributes to achieving the Sustainable Development Goals (WHO, 2018) Emphasizing the essential links between transport, health, and the environment. [53]

Mobile home living has not met the expectations of early forecasters, but the number of people living in mobile homes has been increasing year on year. Beginning in 1958, the Mobile Home Manufacturing Association estimated that nearly 3,000,000 people lived in mobile homes, plus 100,000 were sold. New mobile home annually. Currently, there is an increased demand for mobile homes and modular buildings as an economical environmental alternative. [8] Mobility, sustainability, and flexibility concerning private homes are becoming increasingly important. [6]

There is growing interest in the concepts of sustainability, sustainable development, and sustainable transport. Sustainability reflects one of the most fundamental human desires supported by

virtually all philosophies and religions: to create a better future world. sustainable transportation is to ensure that environmental, social, and economic considerations are factored into decisions affecting transportation activity." Sustainable transportation planning requires public involvement because sustainable development reflects a community's values, the public must be effectively involved at each stage of the planning process. sustainable transportation often involves changes in community design and residents' behavior. [9] Mobile home units are a significant, but understudied, source of housing in the United States. These called manufactured homes with mobile homes or trailers, are housing units built in factories originating as travel trailers in the 1920s, mobile homes emerged as a major source of permanent, single-family housing during the post-World War II housing boom. [10]

### 1. Literature Review

There are many recent literature reviews in the field of sustainable tourism and mobile home units. In this study, we reviewed several studies that benefited from its most prominent features. It should be pointed out that the reviewed studies were published between 2003 and 2021 in several countries, indicating their temporal and geographic diversity. In the following, we present a summary of these studies, then we explain what the current study offers by identifying the differences between it and previous studies, and finally note the aspects of previous studies that benefit the current study.

Liu (2003) pointed out the increasing field of research on sustainable tourism, and he defined tourism development (1994) as a dynamic process of matching tourism resources with the demands and preferences of actual or potential tourists, noted the definition of 'sustainability', which implies the significant role of states in preparing steady progress in living conditions for generations to come. his paper is a brief critique of some of the weaknesses in the sustainable tourism literature. it explores six issues that are often overlooked but must be addressed in research: the role of tourism demand, the nature of tourism resources, the imperative of intra-generational equity, the role of tourism in promoting sociocultural progress, the measurement of sustainability, and forms of sustainable development. [11]

Cernat, L., & Gourdon, J. (2011) aimed to provide a unified methodology to assess tourism sustainability, based on a number of quantitative

indicators. The proposed methodological framework (Sustainable Tourism Benchmarking Tool – STBT) will provide a number of benchmarks against which the sustainability of tourism activities in various countries can be assessed. A model development procedure is proposed: identification of the dimensions (economic, socio-ecologic, infrastructure) and indicators, method of scaling, chart representation, and evaluation of three Asian countries. This application to three countries shows us that a similar level of tourism activity might induce different sorts of improvements to implement in the tourism activity and might have different consequences for the socio-ecological environment. The heterogeneity of developing countries exposed in the STBT is useful to detect the main problem of each country in their tourism activity. [12]

Sarfraz et al (2015) This paper aimed to study the progress of research on sustainable tourism and to outline and identify the key disciplines, journals, articles, and authors. This is carried out through a wide, in-depth, and structured examination of published scholarly papers. In recent decades, sustainable tourism has been one of the most significant subjects among academics and practitioners. In this paper, a classification scheme and a comprehensive literature review are presented in order to clarify, categorize, and interpret the current research on sustainable tourism definitions and applications. The classification scheme for this review contains 132 scholarly papers from 47 journals since the year 1993 up to 2013 categorized into 14 application areas. The five major topics are paradigm, sustainable tourism development, market research and economics, policy-making, and infrastructure. The researcher hopes through his research that this paper provides the needs of researchers and practitioners with easy references for sustainable tourism and its definitions and applications, and also presents future research opportunities. [13]

Abdelslam (2017) pointed to environmentally responsible or sustainable design has become a fundamental issue in the field of Interior Architecture and other disciplines. but the implementation of sustainability in the practice of Interior Architecture is still limited, especially regarding the selection of eco-friendly materials. A classification system for the usage of eco-friendly materials in Interior Architecture was developed to achieve a higher level of sustainability in the construction industry. The study included developed guidelines, derived from

the analysis of the LEED Green Building Rating System and various studies in literature, regarding choosing eco-friendly materials to provide a cleaner and healthier environment. in addition to reducing consumption of natural resources. [14]

Voineagu (2018) pointed to the design of a caravan, taking into account namely functionality, and comfort of the unit. With the goal of generating a lower cost, through a focus on making the internal space as efficient as possible, making as many multifunctional components as possible, and choice of the right materials in the interior design and furniture.

The study made a contribution to the researcher to design a caravan that has a dynamic exterior shape with lightweight that allows for lower fuel consumption. It has a very small space, but the internal functions have been carefully considered without neglecting the internal comfort of the unit. The unit's design has a simple, modern, multifunctional design. [15]

Alfuraty (2020) indicated that the process of designing interior environments witnessed a shift in design strategies aimed at providing healthy and sustainable environments, through the selection of environmentally friendly building materials and appropriate design solutions in interior spaces. He referred to the most important criteria in selecting materials and products such as low footprint and environmental impact, high and easy maintenance, durability, budget, comfort, safety, and flexibility. The study also aimed to explore the role of interior designers and users in promoting the concepts of sustainability through the correct selection of materials to preserve the environment and achieve the optimal interaction of users with surrounding spaces. The results showed that the process of enhancing and improving interior environments with sustainable materials is a shared responsibility of both interior designers and users to achieve the health and well-being of its occupants, for a better and more sustainable future. [16]

Ashour et al (2021) pointed out the importance of the interior environment as the place where people spend nearly 95% of their time in, the research emphasized the importance of sustainable interior architecture because of its potential to conserve energy and its impact on the satisfaction and comfort of users, in addition to enhancing their physical and psychological health. Due to the lack of there is no comprehensive review of the literature on this topic. the researchers had the first

step toward addressing the present gap, by providing a two-decade (2000–2021) systematic review of the relevant literature that investigates a total of 51 publications. Furthermore, a scientometric analysis was conducted, and the co-citation and co-occurrence of journals and keywords were analyzed to illustrate the scientific landscape. [17]

Berizzi, Carlo, et al (2021) This paper highlighted outdoor tourism as a form of outdoor holiday which is growing rapidly today, and it is a form of tourism for its immediate relationship with the landscape. Outdoor tourism today represents a growing percentage in the tourism sector, in which mobile homes are the real players. Despite the considerable use of this product in open-air accommodations located in relevant landscapes, there is still no sensitivity to the constructive approach and in the choice of materials in terms of sustainability. The study provided some practical strategies to introduce the ecological theme in the mobile home for the tourism sector. and the study aimed to analyze the production system of mobile homes in order to introduce alternative materials and the possibility of a product being sustainable both economically and environmentally, healthy, and well-integrated with the landscape. [18]

By reviewing literature reviews, we note that the current study agrees with previous studies on the main topic and its general objective is that it differs from it in several aspects that this study seeks to address, namely:

- The research problem included the reality of the views of the beneficiaries of the Saudi society about the mobile home units and their use in spending holidays and wilderness travel trips.
- This study used the descriptive-analytical method in collecting real information about the role and effectiveness of the interior design of mobile home units in achieving the efficiency of the aesthetic and functional side of the unit.
- The appropriate tool was chosen, a questionnaire, to survey a sample of King Faisal University faculty members, students, employees, and the Saudi community on their opinions about mobile home units, and the required data were collected through their responses to the questionnaire and benefit from their opinions and recommendations.
- The researcher benefited from previous studies on the points related to sustainable tourism, and sustainable materials providing a healthy and sustainable environment, the most important criteria in selecting them. In addition to the design standards and instructions of mobile

homes units (caravan), taking into account the internal functions designs, and comfort of the mobile home units.

## 2. Problem Statement

The Kingdom of Saudi Arabia includes many tourist places where safari trips can be organized. Due to its wide desert and distinctive picturesque mountains, it is a major destination for safari tourism in the region. Since mobile home units (caravans) are mainly suitable in desert areas, where the problem is that sustainable mobile homes are not optimally available for wild domestic tourism services in the Kingdom of Saudi Arabia due to the lack of cultural awareness about sustainable tourism transportation, its importance, and the general orientation towards preserving the environment. Sustainable tourism is the vision of the Kingdom of Saudi Arabia 2030. It is also noted that the idea of traveling using mobile home units is not common in the Kingdom of Saudi Arabia, such traveling by plane or car, which requires knowing the concept of sustainable mobile homes and their advantages and adopting them as a means of transportation on land travel trips inside Saudi Arabia.

## 3. Study Objectives

The current study aims to:

- Develop the interior design of mobile homes toward better sustainability.
- Choosing the best sustainable materials in mobile home interior design to reduce outdoor accommodations' environmental impact.
- Confirm the principle of sustainability in the mobile home units needed for domestic transportation trips.
- Raise knowledge level attitude of sustainable development through sustainability mobile homes units.
- Contribute to achieving the dimensions of sustainable development through sustainable mobile home units.

## 4. The importance of Study

The importance of the study is due to

- The importance of designing comfortable, sustainable, and economical mobile homes for domestic tourism transportation in Saudi Arabia.
- Guide people toward sustainable transportation and its importance.
- Encourage designers and the design process steered to design and built sustainable mobile home units.
- Cultural of sustainable design can positively affect people's behavior and leads to a raised

social and moral awareness of sustainability and sustainable transportation.

### 5. Study Limitations

**Time:** The second semester of the 2022–2023 academic year was chosen to implement the study tool. **Sample size:** the study was limited to a random sample of King Faisal University employees, students, and the Saudi community. **Location:** Al-Ahsa City. **Subject:** Sustainable Mobile Home Units for Safari Tourism in Saudi Arabia.

### 6. Study Questions

The research seeks to answer the following research questions:

- What is the reality of the views of the beneficiaries of the Saudi society about the mobile home units and their use in spending holidays and wilderness travel trips?
- Does the interior design of mobile home units have an effective role in achieving the efficiency of the aesthetic and functional side of the unit?
- What are the design considerations of mobile homes?
- What is the future of sustainable mobile homes?

## 7. MATERIALS AND METHODS

**Table 1.** The 5-point Likert scale

Response	strongly disagree	disagree	neutral	agree	strongly agree
Degree	1	2	3	4	5

Mobility and tourism are strongly interlinked. As formulated in the definition of the World Tourism Organization (UNWTO) Tourism necessarily



The researcher used the descriptive analytical method to study and analyze the opinions, needs, and suggestions of beneficiaries and respondents on the electronic questionnaire which was answered by an exploratory sample of King Faisal University faculty members, students, employees, and the Saudi community.

### 9. Study Tool

The appropriate tool was chosen, a questionnaire, to survey a sample of King Faisal University faculty members, students, employees, and the Saudi community on their opinions about mobile home units, and the required data were collected through their responses to the questionnaire. The questionnaire was divided into five main sections, each consisting of a set of phrases. The researcher used a 5-point Likert scale to measure responses to the questionnaire items, which is widely used in most fields of science to measure tendencies, desires, and attitudes, as well as to measure behaviors and preferences in psychological tests. [19]. It is scored from 1 to 5, with 5 indicating “strongly agree” and 1 indicating “strongly disagree,” and the scores were used to calculate arithmetic indicators and averages by computer analysis programs to derive results from questionnaires and research. The scale in this study is shown in Table 1.

entails the movement of people (UNWTO, 2020). [20]

**Table 2.** shows Safari tourist places in Saudi Arabia.

No	problems	Figures
1.	Safari Nova in Riyadh Safari Nova appears to visitors as a world of stillness and calms away from the noise of Riyadh. The plains are adorned with the sight of giraffes, egrets, and ostriches roaming the sand dunes of its golden deserts.	
2.	Touqi Valley The area of Touqi Valley in Riyadh Governorate is one of the distinctive places where safari tourism can be practiced. It is a long valley with a wonderful mountainous nature, with rocks and trees. The canyon is 100 km long and has a slope of 0.2 miles per kilometer.	

## 3. Edge of the World in Riyadh

The Edge of the World in Riyadh is one of the distinctive safari places in the Kingdom of Saudi Arabia, and it is an ideal tourist destination, which is the edge of the end of the Tuwaiq mountain range extending from the Kingdom of Bahrain to Saudi Arabia.



3

## 4. Fifa Mountains in Jizan

It is a group of charming mountains wrapped around each other, to appear to you in the form of a single mountain that takes a pyramidal shape and is characterized by the presence of green spaces and slopes that allow the practice of rugged sports and mountain climbing.



4

## 5. Al Wabah Crater in Taif

It is one of the natural wonders of the Kingdom of Saudi Arabia. It is a deep hole and is considered the largest hole in the Middle East. In the middle of it, there is a white layer formed by rain whose water collects at the bottom of the crater, the crater is located 254 km to the west of Saudi Arabia, near Taif.



5

## 6- Hawara Al Ula Mountain

It is one of the most beautiful landscapes that travelers can see. As it is a large mountain with a soft and smooth texture that makes it distinctive and looks beautiful, it is located in the Al-Hajar desert area, where many activities can be practiced around it.

**Figure 2.** (6) shows Al Ula mountain.

<https://www.viewsaudi.com/ar/alhwara-rock/>

(Accessed on 1 November 2022).



6

## 7- Al Souda Park in Abha

One of the famous tourist areas in Saudi Arabia. it is characterized by its picturesque nature that combines valleys, trees, and mountains covered with dense green plants, and vast green spaces extend. [13] **Figure 3.** shows Safari places in Saudi Arabia (1) (2) (3) (4) (5) (7)

<https://al3arabi.com/>(accessed on 20 October 2022).



7

## Terminology

### Sustainable Development

The concept of sustainable development is old, but as a term of recent origin, it dates back to the Conference of Nations United Nations on the Human Environment in Stockholm in 1972 and this term has become a link between the environment and social and economic development. [21] “Sustainable development has the capacity for stability, continuity, and communication from a perspective Its use of natural resources through a strategy based on environmental concepts and based on the axis of environmental balance. [22]

### Sustainable Tourism

Tourism that takes full account of its current and future economic, social, and environmental impacts, and meets the needs of visitors, industry, the environment, and host communities. Tourism can include basic transportation to the general site, local transportation, accommodation, entertainment, recreation, food, and shopping. It can be linked to leisure and business travel. There is a broad consensus that tourism development

Eur. Chem. Bull. 2023, 12( Issue 1), 1961-1984

must be sustainable. [20] [23][24]. Sustainable tourism, one that establishes a suitable balance between the environmental, economic, and socio-cultural aspects of tourism development, plays an important role in conserving biodiversity. It attempts to minimize its impact on the environment and local culture so that it will be available for future generations while contributing to generating income, employment, and the conservation of local ecosystems. Tourism that is economic, sociocultural, and environmentally sustainable. [25].

### Sustainable Transportation

A sustainable transportation system is one that allows people's basic access needs to be met safely and in a manner consistent with human health and the ecosystem, as transportation with a low environmental impact, and with equity within and between generations. It should also be affordable, operate efficiently, provide transportation mode choices, and support a vibrant economy. While reducing emissions and waste as well as reducing consumption of non-renewable resources, reduce

consumption of renewable resources to a level of sustainable return. [26]

### **Domestic Tourism**

It includes the movement of a citizen within the political borders of a particular state and is practiced by tourists who are residents of that state who are its citizens or residents. It is the tourism activity that is carried out by the citizens of the country between its different cities that are distinguished tourist attractions of all levels. or tourist attractions worth visiting. Encouraging domestic tourism also helps to stop the influx or exit of hard currency abroad as well It constitutes a real opportunity for those concerned with developing tourist places and raising their attractiveness. [27]

### **Mobile Home**

Mobile homes are housing units on wheels for seasonal occupation produced on an industrial level and placed within outdoor accommodation facilities. They have a usual dimension of  $8 \times 4$  m, can accommodate up to six people, and consist of a kitchen-living room, bedrooms, and toilet and are usually connected to a veranda. They are designed to be easily transported usually by truck or by tow The main characteristic of a mobile home is that they do not need any permanent foundations, therefore they are easily removable. [28] A mobile home is a prefab house built in a factory and not built in a specific location. The structure of the house is mostly made of iron or light wood and has frames for easy transportation. [29] [30] [31]. Is a prefabricated structure, built in a factory on a permanently attached chassis before being transported to the site (either by being towed or on a trailer). Used as permanent homes, or for a holiday or temporary accommodation, they are often left permanently or semi-permanently in one place but can be moved, and may be required to move from time to time for legal reasons. A dwelling structure built on a steel chassis and fitted with wheels is intended to be hauled to a usually permanent site. Using sustainable materials in mobile homes means using resources consciously and positively affecting states and the world's balance by providing natural environmental, economic, and social benefits. natural, recycled, and recyclable materials can all be considered eco-friendly. [32]

### **Caravan**

In legislation 'mobile home' and 'caravan' are synonymous and defined as 'any structure designed or adapted for human habitation which is capable of being moved from one place to another

whether by being towed, or by being transported on a motor vehicle or trailer, and any motor vehicle so designed or adapted'. It is a recreational transport vehicle that represents a form of free accommodation and is considered more comfortable compared to tent or camping facilities. [33]

A caravan is any building designed for human habitation that can be moved from one place to another. The term "caravan" applies to mobile caravans, mobile homes, stationary caravans, two-unit mobile homes, and park houses. It refers to any building that is designed for accommodation and can be transported by road, whether it is one or two sections. [34]

It is a trailer towed behind a road vehicle to provide a place to sleep which is more comfortable and protected than a tent. It provides the means for people to have their own home on a journey or a vacation, without relying on a motel or hotel, and enables them to stay in places where none is available. [35] [36]

### **Camping**

Is one of the outdoor activities that people have practiced since ancient times. It is a recreational activity. It means a flexible and mobile residence with direct contact with nature, away from traditional daily life, and meeting with normal life, in addition, it is a recreational tourism activity or nature-based travel. [55]

### **Safari**

Is a type of wilderness journey that European travelers and explorers started in Africa in the eighteenth century, usually with the help of local African guides, for tourism, watching wild animals, enjoying the African prairies, and a camping lifestyle, around which a subculture was established as one of the types of scouting tourism. [1][2]. People use mobile homes to travel for vacations, which is a motorized cars designed primarily for camping and travel, and some of these homes have their driving force, and others are pulled by a car or truck, and of different types of these mobile homes, but their length does not exceed 40 feet Approximately 8 feet wide and 12 feet in total height, these mobile homes are just like real homes but in a smaller size that contains a living room, furniture, a kitchen, and all the utensils a person might need on their journey. [37]

### **Sustainable mobile home units' design**

Sustainability is one of the most important sources for the development of this kind of nature-based



mobile home tourism. [56] Caravan tourism is characterized by its appropriate structure to take into account nature and the tendency to be sustainable different from many other types of tourism. [57] The main content is about the interior design and layout, construction, and sustainable development of mobile houses. there is huge potential for mobile houses in the future. Mobile houses occupy a smaller area, are more environmentally friendly, and are easy to take care of. [38] Sustainable building constitutes “responsibility for establishing and sound environmental management based on efficiency and environmental resources.” The design of sustainable buildings aims to reduce their impact on the environment by paying attention to energy and resource efficiency, and includes the following points:

- Use of renewable resources and energies.
- Enhancing the natural environment.
- Eliminate or reduce the use of toxins. [39]

#### **Benefits of sustainable transportation (mobile homes)**

Considering the benefits of sustainable mobile homes could help toward goals of environmental sustainability.

There are multiple benefits of sustainable mobile homes and they can be divided into four groups.

##### **- Environmental benefits**

Existing sustainable homes, in general, help in reducing environmental footprints, avoiding about 200 million tons of CO<sub>2</sub> emissions per year, and the pressure on environmental components such as water, air, and soil. [39] Therefore this type of sustainable mobile home is designed to reduce greenhouse gas. emissions, save water, and energy, and reduce waste during construction and the unit’s lifetime. In addition to water efficiency, sustainable mobile homes manage water in a more effective and environmentally friendly manner. Reduced waste: using renewable sources and sustainable materials to construct sustainable mobile homes minimize waste generation. [40] The use of sustainable mobile homes will reduce the demand for non-renewable energy sources (fuel and petrol). [54]

##### **- Social benefits**

Sustainable mobile home units' use of sustainable materials, safer building materials, design, and components increases the quality of life of individuals and the community and also helps to provide flexibility and comfort for people of varying abilities and at different life stages, including children and people with limited

mobility. Increasing users’ productivity through qualities such as better indoor air quality, and effective noise control mechanisms can improve performance and enhance productivity. [41] Help create a sustainable economy by minimizing the usage of fossil fuels, which will lessen economic emissions.

##### **- Economic benefits**

Mobile home units are designed to save money during construction and over the lifetime of the house. Careful planning avoids the need for major future renovations and reduces energy use, water use, and maintenance costs. [42] In addition, new employment can be created through Mobile home unit manufacturing factories.

##### **- Health benefits**

Improved health and better quality of life: sustainable mobile homes do not emit harmful gases that will affect human health. Therefore, utilizing these homes during transportation will improve people’s health and quality of life. [54]

#### **Sustainable Interior Design of Mobile Homes**

The community has become increasingly aware of the importance of environmentally responsible buildings and the importance of sustainable interior design. This resulted in the incorporation of sustainability principles into their interior designs. Where the effective role of interior designers in environmental sustainability is evident through the selection of materials to be used in the design and their impact on the beneficiaries and users from an environmental point of view. Designers follow the principles of sustainable interior design and sustainable materials which are determined based on a number of concepts that depend on the values of energy consumption, pollutant emissions, an abundance of materials, their renewal and durability, and the economic effects of these materials, as these materials have a positive impact on society and the environment, to reduce the negative environmental impact on society toward a more sustainable future.

The choice of materials is an important matter in the interior design of the mobile home units, as the materials are the main component of the elements of the interior spaces of the mobile unit and help in achieving the various design ideas. [16] Sustainable materials are selected in the interior design of the mobile home units in proportion to the functional aspects and according to certain characteristics determined by the standards of

factors to reduce negative impacts on the environment.

The characteristics of sustainable materials are:

- Locally made materials help achieve harmony and connection with the surrounding environment, which leads to support for the local product and the association of design with the local identity. [43]
- The materials should be durable, so the materials chosen in the design must contribute to achieving the internal sustainability of the required space.
- Upcycled materials so that the material can be used for the same original purpose or for another different purpose, which helps to save time, money, and energy. [44]
- Recycled materials, that is, the reuse of materials again, but in a different way than they were originally. [46]

### **Principles of Sustainable Interior Design**

#### **- Energy efficiency**

Architects and interior designers consider how to improve energy efficiency in the building by reducing the amount of energy needed for lighting and heating in addition to operating appliances and others by providing renewable energy. As energy consumption has a major role in the emission of greenhouse gases in the world. Picking the right colors saves energy spent on lighting. Lighter colors reflect more light, and using reflective surfaces increases the amount of light in a room by bouncing it around, which leads to decreasing dependency on artificial lighting. control heating and lighting control systems help users how to use space energy more efficiently and economically.

#### **- Low environmental impact**

It's very important to pick materials and products with the lowest environmental impact. Organic materials (e.g. wood, wool, natural stone) we mustn't forget that natural resources need to be treated responsibly. Choose quickly renewable (fast-growing bamboo) materials that are extracted in an environmentally responsible way. In addition to assessing the environmental impact of the selected materials throughout their entire life cycle from the beginning of extraction, production, transportation, and processing, all the way to how they are disposed of after use.

#### **- Environmentally friendly materials**

Eco-friendly materials are materials that do not harm the environment as they are largely made of

recycled materials. Examples include easily accessible eco-friendly products that can be used in the interiors of mobile home units. Some products with environmentally friendly materials can also be used, such as cloth shopping bags, recycled toilet paper, environmentally friendly cleaning products, LED light bulbs, and energy-saving appliances.

#### **- Waste reduction**

Interior designers have a great responsibility to act sustainably when it comes to reducing waste. The field of interior design is witnessing a growing interest in the need for sustainability Away from the "old" items. Interior designers can help reduce the depletion of natural resources by opting for synthetic materials design through recycling and reuse. rather than throwing that was made from recycled waste or can be renewed/recycled at the end of their life cycle when they are spent or people grow tired of them.

#### **- Longevity and flexibility**

Interior designers must take into account the life span of the materials they will use, especially for floor materials that suffer a lot of wear and tear. So that the implemented design is durable and durable for long periods, better characterized by quality, simplicity, and functionality. Interior designers must consider the flexibility of spaces to suit the changing needs of the people who use them. One of the factors of longevity is the principle of flexibility in the design of spaces. Investing in elements and materials that are sturdy, durable, and easy to clean or replace means that fewer renovations will be needed.

#### **- Healthy environments**

Considering the health of an environment should be at the top of the interior designer's priority list. There are several factors to keep in mind when designing healthy spaces, such as air quality, heating, ventilation, lighting, and acoustics. Indoor air pollution is one of public health's five biggest environmental threats. Indoor air pollution is the result of products and materials with high levels of toxic emissions. To improve indoor air quality, it's important that the air in a room can regularly circulate and remain fresh. Exposure to natural light is another beneficial aspect for both physical and psychological health. This is especially relevant for workplaces, as natural light reduces stress and increases productivity. [47]

#### **- Incorporating double glazing into the design**

The installation of double glazing in the interior design offers environmental benefits and lower costs. It helps the mobile home unit to be better insulated and warmer, plus reduces condensation, reduces energy consumption, and helps with efficient acoustic insulation. [48]

### Traveling in a mobile home unit






Traveling with mobile home units is a way to travel with fewer rules, more adventure, lower cost, and better for the environment. built at one facility, in a controlled environment, with reliable quality and safety standards. mobile home units have all the comforts of our own homes, modern units, Innovative with multiple interior and exterior designs, sizes, and materials. Traveling in mobile home units gives a sense of freedom and privacy, a sense of routine and daily order, as the unit provides the needs that users need for it,

which makes them feel stable, calm, and reassurance due to the provision of their requirements during travel.




### Advantages and Disadvantages of Traveling in mobile home units

Is characterized by simplicity and freedom and allows you to see places in a new and interesting way while on the go, as well as at a lower cost. Mobility to spend trips and vacations by them helps to reduce environmental damage resulting from aircraft emissions and reduces environmental damage. Good environmentally friendly mode of transportation. It removes the hassle and stress of getting to and from the airport and the hours of travel, providing more hours of relaxation. Caravans are a second home as a temporary residence with a flexible style that allows spontaneous travel on holidays or at any other time. shown in Table 3,4.

**Table 3.** shows the advantages of traveling in mobile home units.

No	Description	
1.	Flexibility	-Traveling with a mobile home does not depend on reservations, fixed dates, or check-in / check-out hours and it is not mandatory to follow an exact route. In addition, mobile homes can be parked in many locations, possibly staying the right night for free.
		
2.	Reduced costs	-The mobile home can provide basic needs at a much lower price. it is not only talking about the house itself, but also about the land, which has a significantly reduced size and, implicitly, price, in addition, saving from paying for utilities proves useful in need of a temporary home.
		
3.	Less is more	-Using the mobile home help in developing a new life philosophy. Living for a short time in a small space automatically involves the adoption of minimalism and smart spaces with fewer objects, but of high quality and with more uses. Living in a mobile house leads to orderly and giving up unnecessary objects.
		
4.	Availability	-Availability of all daily and functional needs in the mobile home. A sense of interior comfort in the mobile home is designed so that it is n to not affected by external weather changes, commensurate with cold.
		
5.	Sustainability	-Many new mobile homes, are made of recycled materials and use renewable energy with the help of roof-mounted solar panels.
		

**Table 4.** shows the disadvantages of traveling in mobile home units.





No	Disadvantages	Description
1.	Limited space	-The interior space in mobile homes is limited, not exceeding ten square meters of the space of an ordinary home, and more than one function may share one place, such as sleeping and living.
		
2.	Low speed	-choosing to travel with a mobile home, the duration of the trip will increase. In addition, the difficulty of finding a parking space.
		
3.	Limited comfort	-living in a mobile home has less privacy.
4.	Low life usage	-Mobile homes must be protected in the cold season, also constantly maintained and checked.
5.	Seasonal use	-There are more high-performance mobile homes on the market, with facilities such as underfloor heating, which allow use during winter. However, restricted using them to the warm season. [48]
		

### Types of mobile home units

The design of the caravan has evolved, although its main function has not changed. The aesthetic and functional aspects must be present in the interior and exterior design of the caravan, in addition to achieving the quality of the interior environment of the caravan, because of its positive impact on the beneficiaries and occupants of the

unit. Many types of caravans differ in terms of size from large to medium and small, according to the requirements and budgets of the beneficiaries, the level of interior design also varies from simple to a variety of modern technologies applied within the unit, and other factors and there are a large variety of caravan models available the most prominent types are shown in Table 5. [15]

**Table 5.** shows the types of mobile homes

No	Types of mobile homes	Figures
1.	<p><b>Trailers or caravans</b></p> <p>They are small mobile homes that can be towed behind the vehicle and are luxuriously and elegantly designed. This type may range from 3 to 10 meters in length and have sufficient amenities for daily use. For example, (toilet, shower, refrigerator, gas stove, oven) and more amenities and luxuries, some of these mobile homes use solar energy.</p> <p><b>Figure 4.</b> shows Trailers as a type of mobile home. (4)<a href="https://www.blackcountrycaravans.co.uk/">https://www.blackcountrycaravans.co.uk/</a> (accessed on 23 October 2022).</p>	 <p>4</p>
2.	<p><b>Pop-Top Caravans</b></p> <p>The Pop-Top Caravan consists of a standard caravan body with an extendable canopy that rises to provide more headroom. An advantage of this design is the ability to reduce the frontal area of the caravan while towing. This helps reduce towing resistance and improve the fuel consumption of the towing vehicle. This type of mobile home is fuel efficient, easy to tow, and easy to store in the garage. [53]</p> <p><b>Figure 5.</b> shows Pop-Top Caravans as a type of mobile home. (5)Ray Pop Top   Avan Campers Caravans &amp; Motorhomes (accessed on 23 October 2022).</p>	 <p>5</p>
3.	<p><b>Camper Trailers</b></p> <p>This trailer is one of the most widely used mobile homes; It is convenient and easy to pull out, it is light, easy to handle and set up, and does not take up much space in storage, you can convert it into a caravan with wheels and tow it to a beautiful place for a wonderful vacation, this type of mobile home is suitable and fully equipped while traveling as gas stove, sink, refrigerator and tables in addition to its spacious space.</p> <p><b>Figure 6.</b> shows Camper Trailers as a type of mobile home. (6)<a href="https://www.jayco.com/rvs/travel-trailers/2018-eagle-travel-trailer/">https://www.jayco.com/rvs/travel-trailers/2018-eagle-travel-trailer/</a>(accessed on 23 October 2022).</p>	
4.	<p><b>Motorhomes</b></p> <p>This type of mobile home has the same features as trailers, it is made for vacation throughout the year and has the necessary facilities such as a toilet, air conditioners, etc., which makes it very comfortable and suitable for long trips and differs from the rest of the types with its ability to drive It is not required to be towed with another vehicle and is easy to drive. [14]</p> <p><b>Figure 7.</b> shows Motorhomes as a type of mobile home. (7) <a href="https://www.swiftgroup.co.uk/motorhomes/">https://www.swiftgroup.co.uk/motorhomes/</a>(accessed on 23 October 2022).</p>	 <p>7</p>




### Layout Solutions of Mobile Home Units.

The caravan is designed by identifying the needs of the beneficiaries of these units, as the main requirements must be provided for the unit to include all internal functions and services in order to achieve the design and functional comfort. There are mandatory requirements related to technical functionality, safety, and comfort that

must be considered in the design of it as it must be equipped with a bathroom, living space, dining space, and bedroom. The design of the mobile home unit must take into account the quality of freedom and flow of movement with a sense of comfort and lack of stress, the provision of natural and artificial lighting sources, and the enjoyment inside the unit through its aesthetic and functional

interior design that fulfills both the mandatory requirements and the desires. shown in Table 6. [50]

**Table 6.** shows the types of Layout Solutions motorhomes.

No	Layout Solutions	Figures
1.	Dimension Length: 7.40 m Width: 2.32 m Height: 2.90 m	 <p><b>Figure 8.</b> shows the layout solution (floor plan +sleeping area+kitchen (8)<a href="https://www.capron.eu/lang/en/Produkte-Carado-">https://www.capron.eu/lang/en/Produkte-Carado-</a> (accessed on 25 October 2022).</p>
2.	Dimension Length: 6.36 m Width: 2.05 m Height: 2.70 m	 <p><b>Figure 9.</b> shows the layout solution (floor plan +sleeping area+kitchen (9)<a href="https://www.capron.eu/lang/en/Produkte-Carado-">https://www.capron.eu/lang/en/Produkte-Carado-</a> (accessed on 25 October 2022).</p>
3.	Dimension Length: 5.95 m Width: 2.32 m Height: 2.90 m	 <p><b>Figure 10.</b> shows the layout solution (floor plan+sleeping area+kitchen (10)<a href="https://www.capron.eu/lang/en/Produkte-Carado-">https://www.capron.eu/lang/en/Produkte-Carado-</a> (accessed on 31 October 2022).</p>

### Security and safety standards requirements for mobile home units

One of the most important safety criteria for mobile home units is balance because some are unbalanced while driving, which causes many accidents. Loads must also be distributed in the parts of the unit, and the back of the unit should not be long so that it is not easy to overturn, and all these matters must be taken into account, as well as the integrity of the unit's chassis and the integrity of the connection and welding points of the entire mobile home unit. Security and safety factors must be present within the mobile home unit to protect users and to consider extremely hot places to avoid the effect of heat on the electrical circuits inside.

### 10. DISCUSSION

This section includes the following: a presentation and discussion of the results related to the questionnaire filled out by employees of King Faisal University, students, faculty members, and the Saudi community, data analysis related to the responses about the reality of the views of the beneficiaries about the mobile home units and their use in spending holidays and wilderness travel trips, and the process of identifying the

consistency and compatibility among the respondents' opinions about the questions and clarifying them.

The researcher carried out several procedures, as follows:

In the first step, an electronic questionnaire was designed and prepared to gather opinions on the reality of the views of the beneficiaries of the Saudi society regarding the mobile home units and their use in spending holidays and wilderness travel trips. The questionnaire was made up of four sections, with each section containing a set of phrases.

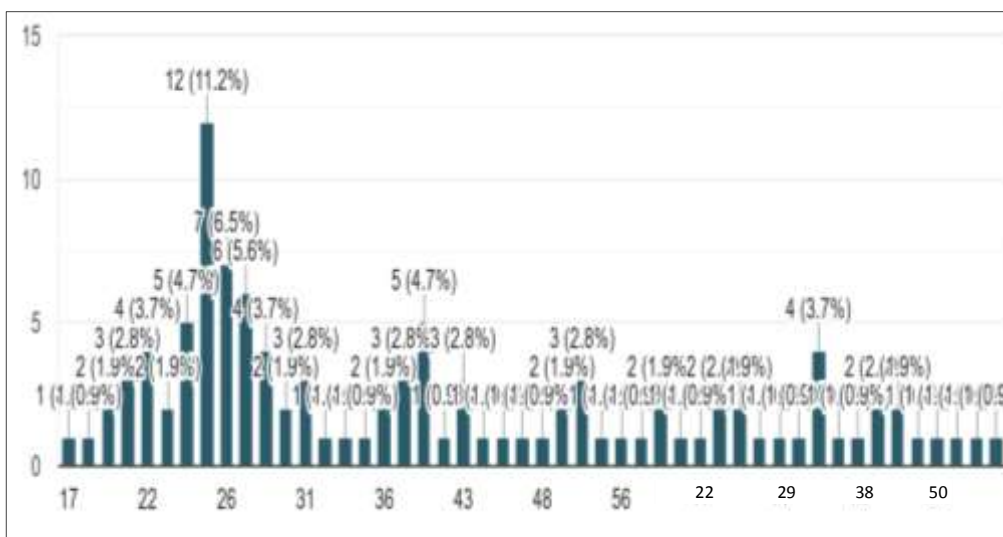
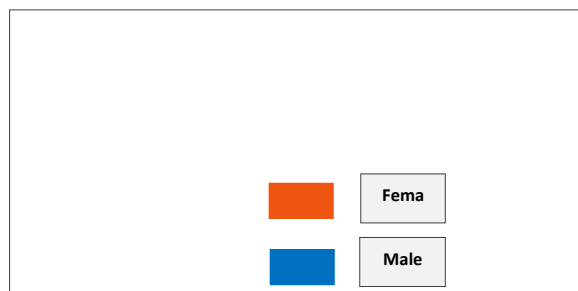
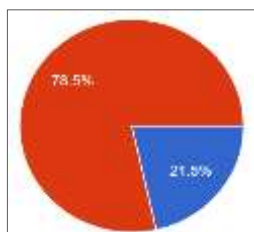
The Deanship of Scientific Research at King Faisal University was consulted to approve the ethics of the scientific research and agreed to send the questionnaire via e-mail to the beneficiaries.

In the second step, the researcher carried out the analysis by first determining the goal, which was to reveal the views of the beneficiaries of Saudi society regarding the mobile home units and their use in spending holidays and wilderness travel trips by analyzing the responses to the questionnaire. Next was determining the unit of measurement or counting to enumerate the

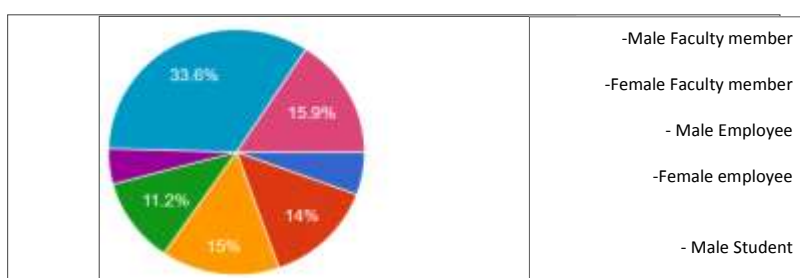
analysis categories, which was the frequency of responses to each question in each section. The total sample size was N = 150, and 107 responded to the questionnaire.

Study sample characteristics: The sample consists of the characteristics shown in the following figures 11, 12, and 13: Personal data (Gender-Age categories -Educational level):

**Figure 11.** Gender analysis of responses shows the number of male and female respondents.



**Figure 12.** Analysis of Age categories of respondents.



**Figure 13.** Analysis of the Educational level of respondents.

The following are the results related to the first question: **What is the reality of the views of the beneficiaries of the Saudi society about the mobile home units and their use in spending holidays and wilderness travel trips?**

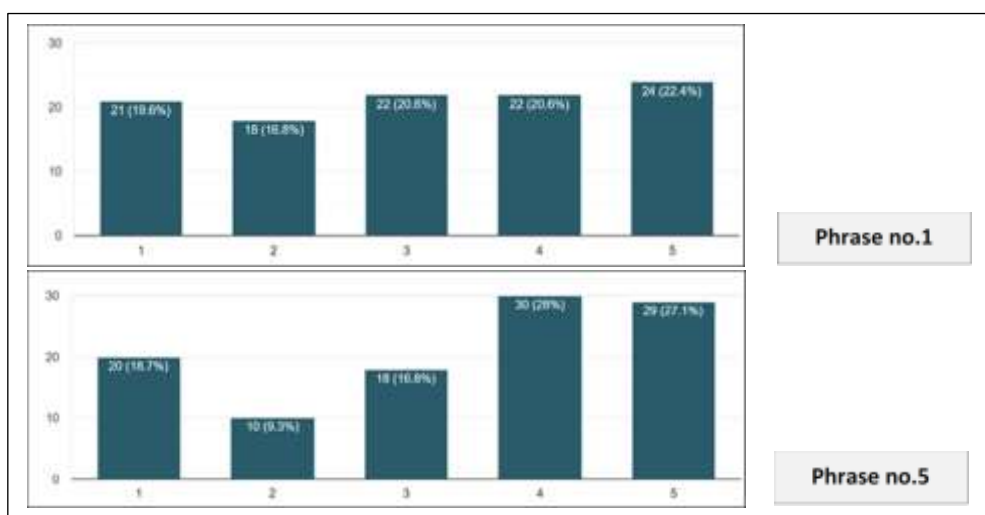
The statistical analysis of the 107 responses to phrase 1, shown in the second section of Table 7, indicates that 27.1% strongly agreed, 28% agreed, 16.8% were neutral, 9.3% disagreed, and 18.7% strongly disagreed as shown in Figure 14.

Through these responses, it can be seen that they were aware of sustainable development. From the statistical analysis of the 107 responses to phrase 5 in the second section, the questionnaire (Table 7) indicates that 22.4% strongly agreed, 20.6% agreed, 20.6% were neutral, 16.8% disagreed, and 19.6% strongly disagreed as shown in Figure 14. From this analysis, there was a convergence in the response rates by the participants in the questionnaire in the five levels, which is evidence of the lack of widespread awareness of traveling

in mobile housing units and the dependence of individuals on traveling by car as they used to.

**Table 7.** shows the frequencies of the second section (Sustainable development and sustainable transportation).

No	Second Section: Sustainable Development and sustainable transportation	SD	D	N	A	SA
1.	I know what sustainable development is.	20	10	18	30	29
2.	I know what sustainable tourism is.	20	11	24	31	21
3.	I know what sustainable tourism transportation is.	23	12	21	31	20
4.	I do safari trips inside Saudi Arabia.	33	16	20	20	18
5.	I prefer domestic travel for holidays by car.	21	18	22	22	24
6.	I feel exhausted from traveling indoors by car.	12	12	33	22	28
7.	I need to take time to rest and sleep during domestic travel.	12	14	12	31	38
8.	I prefer domestic travel using mobile home units for holidays and trips.	14	12	22	20	39



**Figure 14.** Analysis of responses to phrases 1 and 5 in the second section.

The statistical analysis of the 107 responses to phrase 1, shown in the third section of Table 8, indicates that 57.9% strongly agreed, 14% agreed, 10.3% were neutral, 4.7% disagreed, and 13.1% strongly disagreed as shown in Figure 15. Through these responses, it can be seen that they were aware of mobile home units. Although from the statistical analysis of the 107 responses to phrase 2 in the third section, the questionnaire (Table 8) indicates that 11.2% strongly agreed, 4.7% agreed, 4.7% were neutral, 12.1% disagreed, and 67.3% strongly disagreed as shown in Figure 15. From this analysis, it can be seen that A significant proportion of the respondents had not previously traveled using mobile home units in their lifetime although they know these units This is due to their unavailability in the local markets and the lack of awareness of the advantages of traveling with these mobile home units. From the

statistical analysis of the 107 responses to phrase 8 in the third section, the questionnaire (Table 8) indicates that 56.1% strongly agreed, 12.1% agreed, 14% were neutral, 6.5% disagreed, and 11.2% strongly disagreed as shown in Figure 16. From this analysis, it can be seen that The mobile home units are models with innovative and attractive designs for the beneficiaries from their point of view. From the statistical analysis of the 107 responses to phrase 11 in the third section, the questionnaire (Table 8) indicates that 41.1% strongly agreed, 23.4% agreed, 18.7% were neutral, 7.5% disagreed, and 9.3% strongly disagreed as shown in Figure 16. This analysis shows that convenient transportation items such as mobile home units became more in demand in the market due to the ever-increasing designs and ever-increasing growth of technology that makes this possible.

**Table 8.** shows the frequencies of the third section (Mobile home units).

No	Third Section: Mobile home units	SD	D	N	A	SA
1.	I know what mobile home units are.	14	5	11	15	62
2.	You have traveled in mobile home units previously.	72	13	5	5	12
3.	Mobile home units are suitable for holidays and trips.	11	7	12	28	49
4.	The mobile home unit is suitable for permanent living.	30	19	31	16	11
5.	Mobile home units have no drawbacks compared to other modes of transportation.	19	21	42	10	15
6.	I can stay in the mobile home unit for a long period.	23	24	30	12	18
7.	Mobile home units have many advantages compared to other means of transportation.	8	6	19	32	42
8.	Mobile home units are models of products with visually attractive and innovative designs.	12	7	15	13	60
9.	I would like to participate in the design of my mobile home unit.	15	8	16	22	46
10.	I would like a mobile home unit with a comfortable modern design.	11	8	9	19	60
11.	Convenient transportation items are becoming a huge demand in the market due to the ever-increasing designs and ever-increasing growth of technology that makes this possible.	10	8	20	25	44

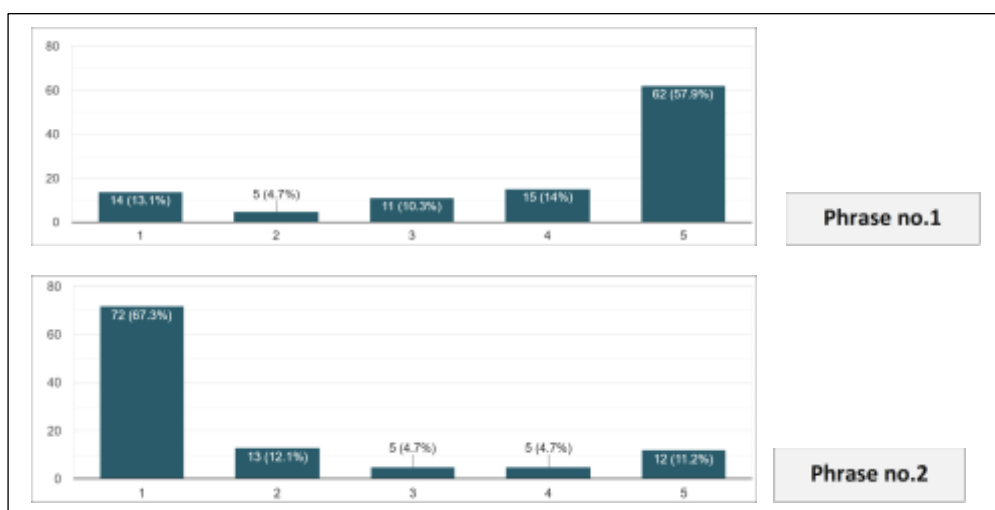


Figure 15. Analysis of responses to phrases 1 and 2 in the third section.

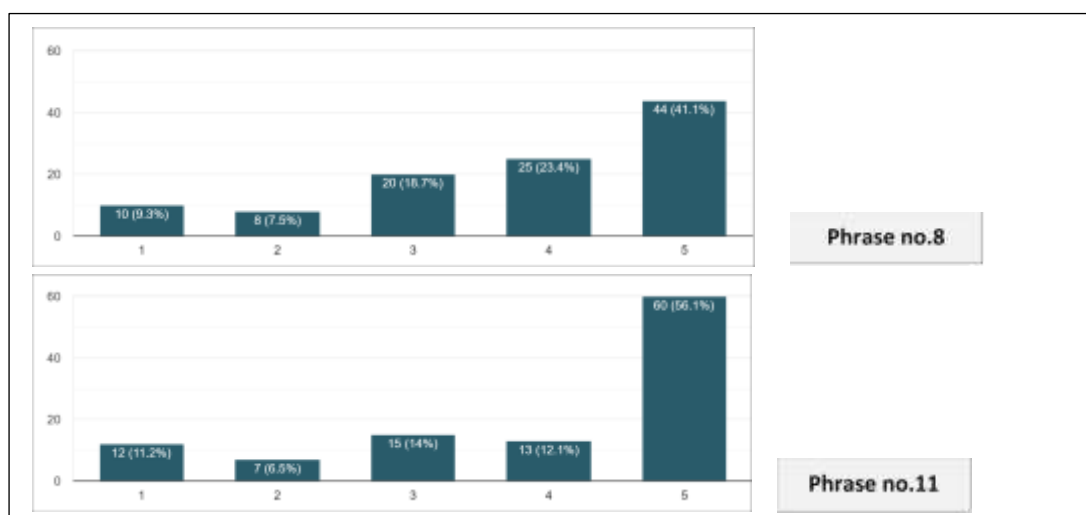


Figure 16. Analysis of responses to phrases 8 and 11 in the third section.

The following are the results related to the second question: **Does the interior design of mobile home units have an effective role in achieving the efficiency of the aesthetic and functional**

**side of the unit?** The statistical analysis of the 107 responses to phrase 4, shown in the fourth section of Table 9, indicates that 67.3% strongly agreed, 15.9% agreed, 5.6% were neutral, 3.7%

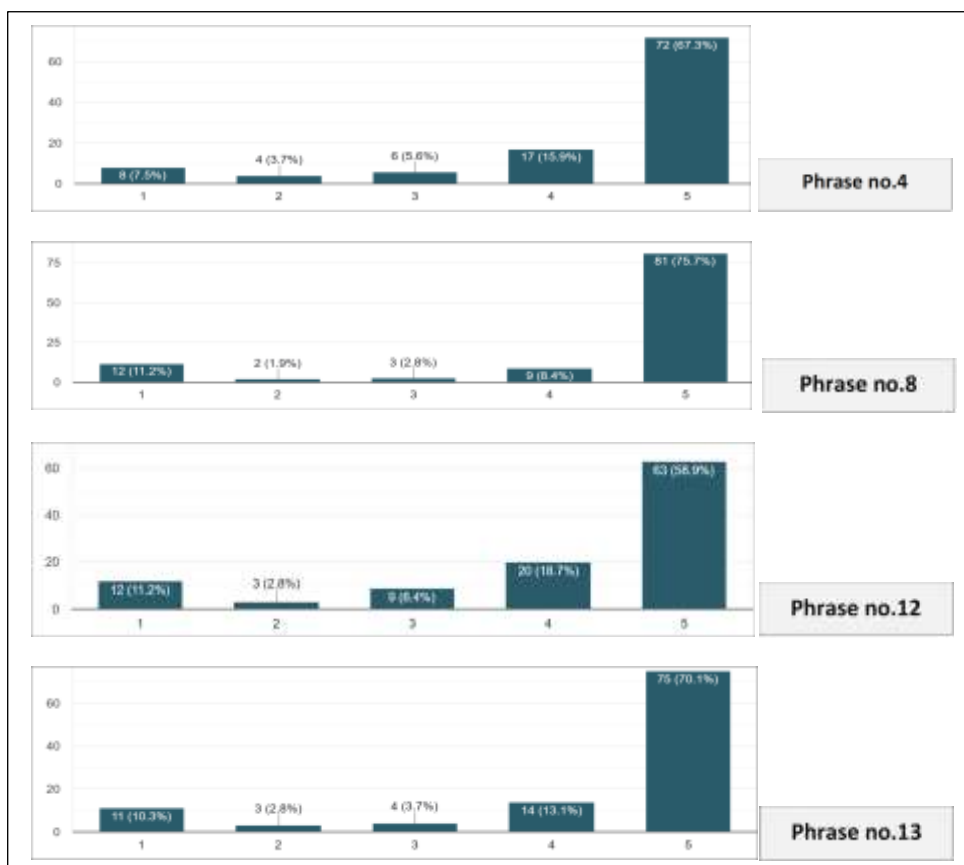


disagreed, and 7.5% strongly disagreed as shown in Figure 17. Through these responses, it can be seen the importance of the effective role of interior design in achieving the aesthetic and functional aspects of mobile home units. From the statistical analysis of the 107 responses to phrase 8 in the fourth section, the questionnaire (Table 9) indicates that 75.7% strongly agreed, 8.4% agreed, 2.8% were neutral, 1.9% disagreed, and 11.2% strongly disagreed as shown in Figure 17. From this analysis, there was a high percentage of those who agreed on the importance of the role of interior design in taking into account the basic needs of users in the mobile home unit (sleeping, living, kitchen, bathroom). From the statistical analysis of the 107 responses to phrase 12 in the fourth section, the questionnaire (Table 9) indicates that 58.9% strongly agreed, 18.7% agreed, 8.4% were neutral, 2.8% disagreed and

11.2% strongly disagreed as shown in Figure 17. From this analysis, it can be seen that the percentage of responses by participants strongly agree that the principles of sustainable interior design must be achieved (energy efficiency - longevity and flexibility - healthy environment - low environmental impact - waste reduction). From the statistical analysis of the 100 responses to phrase 13 in the fourth section, the questionnaire (Table 9) indicates that 70.1% strongly agreed, 13.1% agreed, 3.7% were neutral, 2.8% disagreed and 10.3% strongly disagreed as shown in Figure 17. From this analysis, it can be seen that the percentage of responses by participants strongly agree about the necessity of achieving the internal and external design quality of the mobile home units. This is due to its positive impact on the quality of the internal environment and its impact on users.

**Table 9.** shows the frequencies of the fourth section (Interior design of mobile home units).

No	Fourth Section: The interior design of mobile home units	SD	D	N	A	SA
1.	The sizes and types of mobile homes vary to suit the nature and number of users.	10	6	8	19	64
2.	The variety of mobile home layout solutions allows users to choose freely.	10	5	14	20	58
3.	The choice of the mobile home unit depends on the number of family members.	8	4	11	24	60
4.	The interior design of the mobile home unit has an effective role in achieving the efficiency of the aesthetic and functional side of the unit.	8	4	6	17	72
5.	The need to choose the design materials and employ them efficiently within the mobile home unit.	10	5	4	15	73
6.	The colors used play an important role in the interior and exterior design of the mobile home unit.	10	3	7	12	75
7.	There must be a variety of natural and artificial lighting sources within the mobile home unit.	9	3	6	12	77
8.	Providing the basic needs of users in the mobile home unit (sleeping-living-kitchen-bathroom).	12	2	3	9	81
9.	Taking into account the design dimensions of the furniture elements and providing movement paths in proportion to the unit area.	11	2	4	14	76
10.	Traveling with a mobile home unit provides privacy and security.	10	8	18	25	46
11.	The mobile home unit is suitable for different types of climates in general.	12	6	26	24	39
12.	Taking into account the achievement of sustainable interior design principles (energy efficiency - longevity and flexibility - healthy environment - low environmental impact - waste reduction).	12	3	9	20	63
13.	Achieving the internal and external design quality of the mobile home units.	11	3	4	14	75



**Figure 17.** Analysis of responses to phrases 4,8,12 and 13 in the fourth section.

- The results related to the third question:

- **What are the design considerations of mobile homes?**

To answer this question, the researcher presented the design considerations in mobile homes.

**The site:** The mobile home designers cannot locate the mobile home for the designed home. Because they don't know where a particular mobile home is.

**Size:** an important consideration is how many people will be using it.

**Bed:** Beds vary in size inside the mobile home and take many solutions between single and double beds, as well as where they are placed inside.

**Comfortable Seating:** Seats should be comfortable. When selecting the materials needed to design and manufacture sustainable furniture, it is taken into consideration that they are from recycled or recyclable materials, and take into account for the possibility of dismantling and recycling parts after their useful life. [44]

**Lounge:** Two couches opposite each other are used for the beds as well, and they will provide a good-sized seating area during the day.

The U-shape lounge is probably the most practical of all the layouts. with a table in the middle, it is suitable for dining or games, and at night It can convert to bedding for sleeping.

**Kitchen and Bathroom:** It is necessary to consider the area of the kitchen and bathroom that fits into the interior of the mobile home, taking into account the appropriate size of the refrigerator.

**Internal Lighting:** Interior lighting is an important matter that must be provided in a good manner. Interior lighting must also be diversified to suit different times and activities (sleep - food - cooking - relaxing-reading).

**Good Ventilation:** Good ventilation must be provided inside the mobile homes, as it may be warm in hot weather. Its design takes into account that the windows are large and provided ventilation in the roof of the unit, which allows for good ventilation and removal of cooking and other odors.

**Air Conditioner:** The need to provide an air conditioner inside the caravan of a good type to suit the hot weather and the bright sunlight that

has an impact on the internal temperature of the mobile home.

**Electrical System:** A comprehensive electrical system must be provided in the mobile home unit, in addition to recharging systems that are powered by solar energy and electric current, to ensure that it can be recharged in a quick time.

Proper storage inside and outside the motorhome unit: Inside the caravans, there are different storage spaces to accommodate what needs storage, such as kitchen storage units in which many kitchen ingredients and supplies are stored. In addition, the idea of walking and moving in mobile home units requires the presence of chairs, external tables, and some equipment that needs to be stored outside so as not to affect the internal movement paths of the unit.

**Good Solid Construction:** The structure of the unit should be made of steel and galvanized so that it is protected from rust at the exposed parts close to the water tanks. [45]

The results related to the fourth question:

- **What is the future of sustainable mobile homes?**

To answer this question, the researcher presented data about the future of sustainable mobile homes.

The Future of sustainable mobile homes

The concept of a mobile home become increasingly popular since the 1970s. mobile homes were low-quality housing units with reasonable prices for people trying to survive, but with the development of technology, these homes spread and became of high quality, innovative designs, energy-saving, and a variety of sizes (not too small, and it shouldn't be too big) to fit Lots of families. [51] the difficulties posed by crowded urban areas by providing a smart mobility housing service that enables people to live flexible lifestyles while conserving time, space, and energy in an environmentally friendly manner. Also, the unique and sustainable materials used in the outside and interior design of the sustainable mobile home unit make it a healthy product for consumers. The innovative idea behind the sustainable mobile house unit of the future is that it has a small size and contemporary furnishings. The materials used internally and externally are chosen very carefully in proportion to the environment and its preservation, in addition to freedom and flexibility in interior design and outside design, with more creative and new design ideas other than traditional designs. systems with solar panels as an alternative solution that is more environmentally friendly, as shown in figure no. 18, the new concept of the future sustainable mobile house unit. [52]

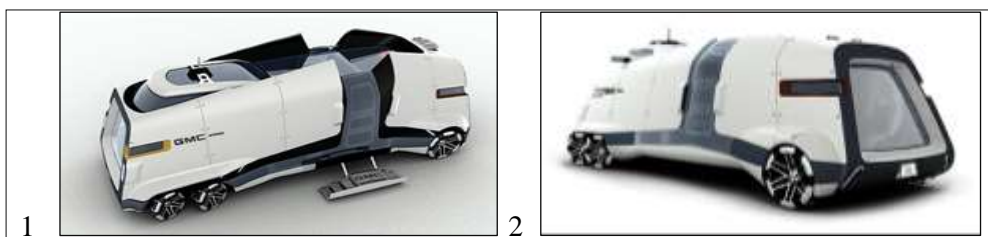


**Figure 18.** shows a model of a future sustainable mobile home unit.

<https://www.trendhunter.com/amp/trends/forfreedom-caravan>(accessed on 30 November 2022).

It is a mobile house unit made for city dwellers on weekend trips and vacations. Due to its compact size and ease of handling as a caravan thanks to its ability to be attached to a vehicle, it consumes less gasoline. It is made to readily adapt to the lifestyle

and is both internally and externally designed in a contemporary manner, as illustrated in figure No. 19. Its interior area is sufficient for the function needs of a mobile home unit.



**Figure 19.** shows the future of the mobile home. (1)(2)

<http://designappliance.com/editors-pick/featured/mobile-homes-the-future/5969>(accessed on 29 November 2022).

Mobile smart houses are strong, comfortable, safe electric caravans that are environmentally beneficial. Simple mobile homes have evolved into mobile smart home units that are full of

conveniences and ecologically sustainable. Also, to follow the overall tendency of many nations, as depicted in figure no. 20.



**Figure 20.** shows the future interior design of mobile homes.

(1)(2)(3)[https://www.instagram.com/p/CmoD0yCshUv/?utm\\_source=ig\\_web\\_button\\_share\\_sheet](https://www.instagram.com/p/CmoD0yCshUv/?utm_source=ig_web_button_share_sheet)  
(accessed on 14 January 2023).

### Attributes of sustainable future mobile housing units

- The mobile home of the future is a mobile lifestyle service module that can be integrated with the user's existing home, acting as an extension so that users can enjoy more flexibility on demand.
- The mobile home of the future contributes to addressing some of the problems faced by residents in big cities.
- That future mobile home units be environmentally friendly, self-sufficient and generally comfortable.
- The mobile home can be environmentally friendly and used as a power supply during disasters due to its mobility.
- Self-sustaining unit, using solar and wind energy. Rely on being self-sufficient, practical, and functional as possible.
- Mobile home units help reduce carbon emissions and preserve the environment.
- Some unique designs for the exterior of the mobile home units reduce heat loss and collect rainwater falling on its outer surface in the water tank, then it is filtered and reused again
- The future of mobile homes is when homes and cars are one.
- The mobile home is an alternative solution for those who cannot afford the high real estate prices. [52]

### 11. Recommendations

- Increasing cultural awareness about sustainable tourism transportation.
- Raise the level of environmental sustainability of interior designs in mobile home units. and achieve the health and well-being of beneficiaries, building a better and more sustainable future.

- Organizing an online exhibition that includes the best innovative designs of mobile homes, all the operational and design details, the materials used, and the prices of these units by displaying their different types and sizes.
- Encouraging interior designers and producers of sustainable mobile home units to adopt innovative design ideas that are commensurate with the climate and nature of roads in the Kingdom of Saudi Arabia, to provide security and safety.
- Increasing the education of beneficiaries about the advantages of using sustainable mobile housing units in transportation and domestic tourism trips.
- Supporting and developing these projects due to their benefits to serve the environment and society, and their prices are commensurate with users, whether they are ownership or rent.
- Orientation towards the development of environmentally friendly construction and design ideas that are characterized by energy efficiency for mobile home units.
- Providing sustainable tourist home units designed in accordance with the nature of the climate of the Kingdom of Saudi Arabia.
- The provision of sustainable mobile home units will benefit users by reducing travel expenses while increasing the aspiration to land tourism trips in Saudi Arabia.
- The application of the idea of traveling in sustainable mobile housing units will positively preserve the environment and society in general.
- Establishing special service parking lots for these mobile housing units, in which all the services needed by these units are available, such as sanitation, charging electricity, water, and maintenance, to provide security and safety for users during their travels.

- Tightening control over safety and security specifications and standards for mobile home units, internally and externally, to ensure safe use.

#### Funding:

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [Grant No. 2131].

#### Acknowledgment

The author acknowledges the Deanship of Scientific Research, Vice Presidency for Graduate

Studies and Scientific Research, King Faisal University, Saudi Arabia for the financial support under [Grant No. 2131].

#### Appendix A

Objective: Information gathering about Sustainable development and sustainable transportation.

Description: The results of the responses of the sample of faculty members, students, employees, and Saudi society members about this part of the questionnaire which consists of 8 phrases about their knowledge of Sustainable development and sustainable transportation.

**Table A1.** Sustainable development and sustainable transportation.

No	Sustainable Development and sustainable transportation	SD	D	N	A	SA
1.	I know what sustainable development is.					
2.	I know what sustainable tourism is.					
3.	I know what sustainable tourism transportation is.					
4.	I do safari trips inside Saudi Arabia.					
5.	I prefer domestic travel for holidays by car.					
6.	I feel exhausted from traveling indoors by car.					
7.	I need to take time to rest and sleep during domestic travel.					
8.	I prefer domestic travel using mobile home units for holidays and trips.					

#### Appendix B

Objective: Information gathering about the mobile home units.

Description: The results of the responses of the sample of faculty members, students, employees,

and Saudi society members about this part of the questionnaire which consists of 11 phrases about their knowledge and opinions in mobile home units.

**Table A2.** Mobile home units.

No	Mobile home units	SD	D	N	A	SA
1.	I know what mobile home units are.					
2.	You have traveled in mobile home units previously.					
3.	Mobile home units are suitable for holidays and trips.					
4.	The mobile home unit is suitable for permanent living.					
5.	Mobile home units have no drawbacks compared to other modes of transportation.					
6.	I can stay in the mobile home unit for a long period.					
7.	Mobile home units have many advantages compared to other means of transportation.					
8.	Mobile home units are models of products with visually attractive and innovative designs.					
9.	I would like to participate in the design of my mobile home unit.					
10.	I would like a mobile home unit with a comfortable modern design.					
11.	Convenient transportation items are becoming a huge demand in the market due to the ever-increasing designs and ever-increasing growth of technology that makes this possible.					

#### Appendix C

Objective: Information gathering about the Interior design of mobile home units.

Description: The results of the responses of the sample of faculty members, students, employees,

and Saudi society members about this part of the questionnaire which consists of 13 phrases about their needs and their aspirations about the Interior design of mobile home units.

**Table A3.** The interior design of mobile home units.

No	Fourth Section: The interior design of mobile home units	SD	D	N	A	SA
1.	The sizes and types of mobile homes vary to suit the nature and number of users.					
2.	The variety of mobile home layout solutions allows users to choose freely.					
3.	The choice of the mobile home unit depends on the number of family members.					
4.	The interior design of the mobile home unit has an effective role in achieving the efficiency of the aesthetic and functional side of the unit.					
5.	The need to choose the design materials and employ them efficiently within the mobile home unit.					
6.	The colors used play an important role in the interior and exterior design of the mobile home unit.					
7.	There must be a variety of natural and artificial lighting sources within the mobile home unit.					
8.	Providing the basic needs of users in the mobile home unit (sleeping-living-kitchen-bathroom).					
9.	Taking into account the design dimensions of the furniture elements and providing movement paths in proportion to the unit area.					
10.	Traveling with a mobile home unit provides privacy and security.					
11.	The mobile home unit is suitable for different types of climates in general.					
12.	Taking into account the achievement of sustainable interior design principles (energy efficiency - longevity and flexibility - healthy environment - low environmental impact - waste reduction).					
13.	Achieving the internal and external design quality of the mobile home units.					

**REFERENCES**

- "safari", Oxford English Dictionary. Archived from the original on 08 December 2019, Retrieved on 02 December 2014.
- "safari in English corpus, 1800–2000", Google Ngram Viewer, archived from the original on December 08, 2019, accessed on December 02, 2014.
- Mufeed, S. A., & Gulzar, R. (2014). Tourism in Saudi Arabia. *Global Review of Research in Tourism, Hospitality and Leisure Management*, 1(3), 167-178.
- ALI, Anis, et al. Travel and tourism: growth potentials and contribute to the GDP of Saudi Arabia. *Problems and Perspectives in Management*, 2018, 16.1: 417-427.
- STABLER, Mike J.; PAPTAEODOROU, Andreas; SINCLAIR, M. Thea. *The economics of tourism*. Routledge, 2009.
- H C Leindecker and D R Kugfarth 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **323** 012010
- Alhaj, B. A. (2017). Sustainable tourism in Saudi Arabia: factors affecting tourism awareness of Saudi citizens. *Journal of Tourism Research & Hospitality*, 6(4).
- LEINDECKER, Herbert C.; KUGFARTH, Daniel R. Mobile Tiny Houses–Sustainable and Affordable? In: *IOP Conference Series: Earth and Environmental Science*. IOP Publishing, 2019. p. 012010.
- Todd Litman (1999), "Reinventing Transportation; Exploring the Paradigm Shift Needed to Reconcile Sustainability and Transportation Objectives," *Transportation Research Record 1670*, Transportation Research Board (www.trb.org), pp. 8-12; at www.vtpi.org/reinvent.pdf.
- Rumbach, A., Sullivan, E., & Makarewicz, C. (2020). Mobile home parks and disasters: understanding risk to America's third housing type. *Natural hazards review*, 21(2).
- Liu, Z. (2003). Sustainable tourism development: A critique. *Journal of sustainable tourism*, 11(6), 459-475.
- Cernat, L., & Gourdon, J. (2011). Is the concept of sustainable tourism sustainable? Developing the Sustainable Tourism Benchmarking Tool.
- Zolfani, S. H., Sedaghat, M., Maknoon, R., & Zavadskas, E. K. (2015). Sustainable tourism: a comprehensive literature review on frameworks and applications. *Economic research-Ekonomiska istraživanja*, 28(1), 1-30.
- Abdelslam, W. A. A. (2017). Criteria for the selection of eco-friendly materials in interior architecture.
- Voineagu, N. (2018). COMFORT AND FUNCTIONALITY IN A CARAVAN DESIGN. *Journal of Industrial Design and Engineering Graphics*, 13(1), 35-40.
- Alfuraty, A. B. (2020, July). Sustainable Environment in Interior Design: Design by Choosing Sustainable Materials. In *IOP conference series: materials science and engineering* (Vol. 881, No. 1, p. 012035). IOP Publishing.

17. Ashour, M., Mahdiyar, A., & Haron, S. H. (2021). A Comprehensive Review of Deterrents to the Practice of Sustainable Interior Architecture and Design. *Sustainability*, 13(18), 10403.
18. Berizzi, C., Nirta, S., Terlicher, G. N., & Trabattoni, L. (2021). Sustainable and Affordable Prefabricated Construction: Developing a Natural, Recycled, and Recyclable Mobile Home. *Sustainability*, 13(15), 8296.
19. National Thesaurus for Author Names Identifier, NTA. Available online: <https://ntaugcnet.co.in/tag/likert-scale-in-researchmethodology/> (accessed on 13 December 2016).
20. "Sustainable development | UNWTO", [www.unwto.org](http://www.unwto.org), archived from the original on October 21, 2020, accessed on September 25, 2020.
21. Saleh Omar Falahi, Sustainable Development between the accumulation of capital in the north and the expansion of poverty in the south, *Journal of Economic Sciences and Management Sciences*, Setif, 2004, p.6.
22. Salama Salim Salman. The impact of international trade on sustainable development. Research presented at the Fifth Arab Conference on Environmental Management entitled The Economic Perspective of Sustainable Development: International Trade and its Impact on Sustainable Development, 2007, p. 53.
23. Peeters, P.; Dubois, G. (2010), "Tourism travel under climate change mitigation constraints", *Journal of Transport Geography*, 18 (3): 447–457, doi:10.1016/j.jtrangeo.2009.09.003.
24. Peeters P., Gössling S., Ceron J.P., Dubois G., Patterson T., Richardson R.B., Studies E. (2004). The Eco-efficiency of Tourism. Archived August 7, 2020, on the Wayback Machine website.
25. Donald E. Hawkins \* (2004) Sustainable tourism competitiveness clusters: application to World Heritage sites network development in Indonesia, *Asia Pacific Journal of Tourism Research*, 9:3, 293-307, DOI: 10.1080/1094166042000290682
26. Gilbert, R., Irwin, N., Hollingworth, B., & Blais, P. (2003). Sustainable transportation performance indicators (STPI). Transportation Research Board (TRB), CD ROM, 2003.
27. Yassin Boudraa. (2018). Ecotourism between economic and social importance and the challenge of preserving a sustainable environment. *Journal of the Human Sciences*, 389-402.
28. BERIZZI, Carlo.; Trabattoni, L. *Mobile Home per il Turismo All'aria Aperta, Storia Evolutiva*; Vicolo del Pavone Editore: Tortona, Italy, 2019.
29. Titles for Mobile Homes", AAA Digest of Motor Laws. Archived from the original on July 12, 2015.
30. "Wide mobile homes gave final approval", *News & Observer*, June 3, 2000, p. A3.
31. "Database of Mobile Home Parks in the United States", Archived from the original on July 30, 2018, accessed on February 17, 2009.
32. BERIZZI, Carlo, et al. Sustainable and Affordable Prefabricated Construction: Developing a Natural, Recycled, and Recyclable Mobile Home. *Sustainability*, 2021, 13.15: 8296.
33. Mann, M. (1961). Caravan Sites and Control of Development Act, 1960. *The Modern Law Review*, 24(1), 150-155.
34. WHAT IS A 'CARAVAN' 'MOBILE HOME'? (2023) Retrieved from <https://valuemobilehomes.com/what-is-a-caravan-mobile-home/>
35. "Folding Camping Trailer (fold-down): a towable RV". *Gorving.ca*. Retrieved 29 July 2009.
36. "Buying a trailer tent or folding camper". Retrieved 4 February 2011.
37. "Definition of Recreational Vehicle (RV)", *lawinsider*, Retrieved 1-7-2020. Edited.
38. DIAO, Zihang. *Transpods: Mobile Senior Living Community Design*. 2020. Ph.D. Thesis. Syracuse University.
39. Entec (2004) Study into the Environmental Impacts of Increasing the Housing Supply in the UK. Defra. Available from <http://statistics.defra.gov.uk/esg/reports/housing/default.asp>.
40. Defra (2004) Cross-Government Review of Water Affordability Report.
41. Spiegel, R., and Meadows, D. (2010). *Green building materials: A guide to product selection and specification*. Hoboken, NJ: John Wiley and Sons.
42. Sustainable house Retrieved from <http://www.gf.uns.ac.rs/~wus/wus09/Sustainable%20House%20web%20page.doc%202.htm>
43. Wastiels, L., & Wouters, I. (2008). *Material Considerations in Architectural Design: A study of the aspects identified by architects for selecting materials*.
44. McLennan, J. F. (2004). *The philosophy of sustainable design: The future of architecture*. Ecotone publishing.
45. Kang, M., & Guerin, D. A. (2009). *The characteristics of interior designers who*

- practice environmentally sustainable interior design. *Environment and Behavior*, 41(2), 170-184.
46. Principles of Sustainable Interior Design (2017) Retrieved from <https://econyl.medium.com/5-principles-of-sustainable-interior-design-b390503a5176>
47. How To Make Your Static Caravan More Environmentally Friendly (2022) Retrieved from <https://www.fir-view.co.uk/blog/how-to-make-your-static-caravan-more-environmentally-friendly/amp/>
48. Advantages and disadvantages of mobile homes (2021) Retrieved from <https://www.skia.ro/en/blog/advantages-and-disadvantages-of-mobile-homes/>.
49. Voineagu, N. (2018). CONSTRUCTIVE SOLUTIONS AND ERGONOMIC ASPECTS IN THE DESIGN OF A CARAVAN. *Journal of Industrial Design and Engineering Graphics*, 13(2), 23-28.
50. Future of Mobile Homes (2021) Retrieved from <https://arkdevelopers.net/blog/future-of-mobile-homes>
51. Freedom Caravan(2023) Retrieved from <https://www.tuvie.com/forfreedom-caravan-with-aerodynamic-design-for-urban-couple/>
52. De Leon, A. (2016). Improving caravan design by modelling of crosswind.
53. Harsdorff, M., Montt, G., Rius, A., Bonnet, A., & Luu, T. (2020). Jobs in Green and Healthy Transport: Making the Green Shift (No. ECE/AC. 21/8).
54. Abdel Wahed Ahmed, M. M., & Abd El Monem, N. (2020). Sustainable and green transportation for better quality of life case study greater Cairo–Egypt. *HBRC Journal*, 16(1), 17-37.
55. Bilim, Y., & Özer, Ö. (2021). No “Over”, Yes “Minimal”! Camp and Caravan Tourism. *Anais Brasileiros de Estudos Turísticos*.
56. Milohnic, I., & Bonifacic, J. C. (2014). Global trends affecting camping tourism: managerial challenges and solutions. In *Faculty of Tourism and Hospitality Management in Opatija. Biennial International Congress. Tourism & Hospitality Industry* (p. 380). University of Rijeka, Faculty of Tourism & Hospitality Management.
57. Hardy, A., & Kirkpatrick, J. B. (2017). Exploring the attitudes and behaviours of recreational vehicle users. *Journal of outdoor recreation and tourism*, 18, 100-104.