

Promoting Sustainable Desert Ecotourism  
Development in Saudi Arabia By Incorporating  
Design Guidelines for Families in Desert Environment

by

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## ABSTRACT

Ecotourism is defined as a traveling distance where tourist interact with environment and enjoy nature. It is a market segment in the tourism sector that can provide several benefits if managed properly. Although ecotourism can provide economic benefits for Saudi Arabia, there is not enough attention granted to ecotourism facilities and services in desert sites. The current study attempts to fill this gap by aiming to explore families' perceptions of environmental desert settings that support their ecotourism needs and to identify opportunities to develop services, expand activities areas, and infrastructures. Ultimately, this study addresses families' ecotourism needs for the promotion of sustainable desert ecotourism development that is inclusive to most Saudi tourists. This study uses qualitative research methods, including observations, surveys and interviews of families who have visited Saudi Arabian deserts between December 2019 and March 2020. The findings are analyzed and translated into a set of design guidelines for existing and for new sustainable ecotourist sites within Saudi Arabian desert environments. The implications of this study are two-fold: to (1) educate the design industry to take into account ecotourism visitors' perceptions of environmental settings and infrastructures needs without compromising its natural resources; and (2) highlight the value of sustainable ecotourism so that decision makers take an action to ensure stability of the growing market demand of desert tourism. This study concludes with a discussion of findings reached that can promote more sustainable ecotourism experiences at Saudi Arabian desert sites.

Keywords:

Saudi Arabian desert, ecotourism activities, environmental settings.

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# TABLE OF CONTENTS

	Page
CHAPTER	
1. INTRODUCTION .....	1
1.1 Introduction.....	1
1.2 Significance & Justification.....	6
1.3 Goal & Objectives.....	6
1.4 Scope & Limitations.....	7
1.5 Problem statement.....	7
1.6 Operationalization Terms.....	8
2 REVIEW OF LITERATURE .....	9
2.1 Introduction .....	9
2.2 The Gulf and Arabian Desert Environment, Saudi Arabia.....	10
2.2.1 Geophysical setting of the Saudi Arabia.....	10
2.2.2 Saudi Arabian Desert.....	21
2.3 Ecotourism Definition.....	16
2.3.1 Ecotourism Characteristic and principles.....	18
2.3.2 Ecotourism Users.....	20
2.3.3 Ecotourism Activities.....	21
2.3.4 Ecotourism programmers.....	22
2.3.5 Ecotourism challenges.....	26
2.4 Sustainable Tourism Definition .....	28
2.4.1 Sustainable Tourism challenges .....	29
2.5 Environmental Settings .....	30



2.6	The Case study .....	31
2.7	Potentials for Sustainable Ecotourism Development in Saudi Arabia desert.....	32
3	METHODOLOGY.....	41
3.1	Introduction.....	41
3.2	Research Topics.....	42
3.3	Research Questions.....	42
3.4	Research method -Survey .....	45
3.5	Sampling Strategy.....	45
3.6	Data collection and analysis.....	46
3.7	Institutional Review Board.....	47
4	RESULTS .....	48
4.1	Introduction.....	48
4.2	Tourist Socio demographics.....	49
4.3	Level of Education.....	49
4.4	Age.....	50
4.5	How vacation is organized.....	52
4.6	Period of Vacation .....	53
4.7	Season.....	54
4.8	Desert Destinations in Saudi Arabia .....	55
4.9	Trip partners .....	55
4.10	Number of Visitors.....	56
4.11	Source of information about deserts .....	58
4.12	Previous Visits to Saudi Arabia Desert .....	58

4.13	Activities Practiced in Saudi Arabia Desert.....	59
4.14	Perception of Saudi Arabia Deserts as a Destination .....	61
4.15	Desert Activities .....	62
4.16	Current Situation in Saudi Arabia Deserts Site.....	66
4.17	Separating the Desert Activities and Services for Men and Women.....	72
4.18	Tourist Services That Visitors Would Like to Have in the Saudi Arabia Desert Site .....	72
4.19	Important in Saudi Arabian Desert Decision Making.....	74
4.20	Suggestions for the Saudi Arabia desert Ecotourism Development.....	74
5	DISCUSSION.....	75
5.1	Introduction .....	75
5.2	General discussion.....	75
5.3	Design Implications.....	79
5.4	Recommendations .....	81
5.5	Design Guidelines Recommendation .....	82
5.6	General Conclusions.....	83
5.7	Considerations for Future Studies .....	83
	REFERENCES.....	85
	APPENDIX	
A	APPENDIX: CONSENT FORM .....	88
B	APPENDIX: SURVEY QUESTIONS .....	90
C	APPENDIX : RB APPROVAL .....	97

## LIST OF TABLES

	Page
Table	
1: Climatic Conditions of Desert Zones in KSA.....	13
2: Perception about the Saudi Arabian desert activities.....	63
3: Perception about the Saudi Arabian desert activities.....	64
4: Current Situation of Infrastructure in Saudi Arabia Deserts Site .....	66
5: Current Situation of Facilities in Saudi Arabia Deserts Site .....	67
6: Current Situation of Way fining in Saudi Arabia Deserts Site.....	68
7: Current Situation of Social Abilities Saudi Arabia Deserts Site .....	68
8: Current Situation of Aesthetics features Saudi Arabia Deserts Site .....	69
9: Current Situation of Wellbeing and Health in Saudi Arabia Deserts Site.....	70
10: Current Situation of Personal Life in Saudi Arabia Deserts Site.....	71

## LIST OF FIGURES

	Page
Figure	
1: The conceptual framework.....	10
2: Boundaries regions of Saudi Ariba.....	11
3: Black areas showing the deserts in Saudi Arabia as defined by ecolodge guideline .....	12
4: A tomb at the Qasr al-Bint Necropolis in Mada'in Saleh.....	15
5: How the development of sustainable tourism heritage village in Al-Ula city achieves Saudi 2030 Vision.....	16
6: The campground sections. ....	25
7: Camp site in the past in Saudi Ariba desert. ....	31
8: Campsite in desert of Saudi Arabia. ....	32
9: The kids with the camels. ....	33
10: Camp Site with two sections. ....	33
11: Tent from inside.....	34
12: Dakah. ....	34
13: Alarishah. ....	35
14: Passageway. ....	35
15: Playground Area. ....	35
16: Kitchen cabin. ....	36
17: Restroom cabins. ....	36
18: The second men section. ....	36
19: Pictures of the desert nature. ....	37

20: Campsite at night time. ....	37
21: Second-level conceptual framework. ....	40
22: Study Participants by Gender and Nationality. ....	49
23: Study Participants by Level of Education. ....	50
24: Participants age ranges.....	51
25: Vacation Organized.....	52
26: Period of Vacation.....	53
27: Showing preference for weather in planning a vacation. ....	54
28: Desert Destinations in Saudi Arabia. ....	55
29: Trip Partners. ....	55
30: Number of Family Members in Trip. ....	56
31: Source of information about deserts tripe. ....	57
32: Previous Visits to Saudi Arabia Desert. ....	59
33: Activities Practiced in Saudi Arabia Desert. ....	60
34: Perception of Saudi Arabia Deserts as a Destination. ....	61
35: Separating the Desert Activities and Services.....	72
36: Tourist Services That Visitors Would Like to Have in the Saudi Arabian Desert Site.....	73
37: Important to Saudi Arabian desert decision making.....	74

## CHAPTER 1

### 1. INTRODUCTION

#### 1.1 INTRODUCTION

The Arabian desert is the fourth largest desert in the world. In fact, more than half the land in Saudi Arabia is desert. Deserts are one of the main areas where sustainable ecotourism can be maintained. Given the fact that people are historically connected with their lands, it is common for families in the Arabian Peninsula to go camping to experience the simple peaceful life their ancestors had.

Saudi Arabia's economy is the largest economy in the Middle East. Presently, the economy of Saudi Arabia is mainly based on oil and gas. However, the government of Saudi Arabia is striving to diversify its fossil fuel-based economy by promoting other economy segments including tourism. Thus, in 2016, it launched its 2030 Vision that focuses on further improvement of the economy by investing in the tourism sector. Additionally, the government has promised to dedicate resources to facilitate the access of tourists by lessening its rules on the renovation of its historical sites ("Media Center," 2019).

In addition, Saudi Arabia has a vast collection of cultural heritage sites and natural monuments which attract visitors from various parts of the world. Hence, the country is finding new ways and techniques to cater to the needs of the visitors by increasing and improving tourism opportunities. The Saudi Arabian government has constructed hotels and resorts to provide tourists with access to the best places that are closer to nature in different parts of the country (Burns, 2007). In 2003, a commission created by the Saudi government to evaluate the tourism sector announced its domestic tourism extension plan including ecotourist admittance to certain sites (Seddon & Khoja, 2003).

Supporting the idea that local communities can realize financial gains from the profits of economic returns of ecotourism-based projects, a research study completed by a Community Conservation Warden in the Gambia, West Africa, discusses that most participants recognize the benefits of ecotourism as a direct economic benefit from ecotourism (Wally, 2001). According to Wally (2001), the research involved in the study, people support of conservation will increase when they recognize the benefits of ecotourism.

Experiencing the natural beauty of deserts, camping on high peak cliffs, and many other adventurous activities have become the center of attraction for visitors from all around the world. Families like to go to the sustainable ecotourism in the Saudi Arabian desert area because there are several outcomes to local populations and has a neutral effect on the environment. One of these outcomes is that families with their children are able to benefit from ecotourism in the desert. Children always have a curiosity to discover their surroundings, and ecotourism enables them to interact with the natural desert environment. As defined by Weaver, (2001) “Ecotourism is form of nature-based tourism that strives to be ecologically, socio-culturally, and economically sustainable while providing opportunities for appreciating and learning about the natural environment or specific elements thereof” (Weaver, 2001, p.105)

Ecotourism constitutes the peak choice among popular tourist options across Saudi Arabia. In 1999, a study examined the qualitative aspects of the wilderness experience as a source of spiritual inspiration. The resulting research found that the amplexness of the landscape and the awareness of the sheer powers of nature were found to inspire positive interactions, as expected. The results of this study indicated that travel groups believe that a few days of vacation in the wild will provide both psychological and spiritual benefits

(Fredrickson & Anderson, 1999). Furthermore, the definition of ecotourism includes exposure to sustainable travel, environmental protection, and local communities (Bulatović & Rajović, 2017). “Travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas” (Ceballos-Lascurain 1987, p. 14). Ecotourism also focuses on reducing the consumption of natural resources while trying to provide maximum benefit to both the natural environment and local people (Cobbinah, 2015). There is a need to work in favor of ecological tourism development in South Arabia to better understand the local habitants, its flora and its fauna.

Generally, an ecotourism site is an open area for campgrounds set up with temporary structures such as fabric tents, shelter for services and facilities (for example, toilets and kitchens). When travel groups go to desert, they tend to stay there for a long day or a few days. However, it is harder for families to stay in the desert for similar time periods because the lack of proper resources and infrastructures. Deserts campers usually prefer uphill areas to set up their camps as a safety measure, to enjoy the breeze and avoid air turbulence. They may also use a specific place for camping that has proper facilities, is close to city, has services stations for families and has proper signage, to improve ease of access.

As the middle-class size of population and access to technology started to increase, ecotourism became one of the most preferred family getaways. In part, this is due to several factors including the increase in disposable income, easier access to information, better travel and accommodation facilities, and upgraded access. More people are now able to spend their leisure time by traveling to new and exciting locations



(Al-Sulbi, 2010). Tourists now have the ability to spend time in peaceful environments and avoiding the busy city life. Currently, many families choose to spend their winters and springs in the desert whether they go there for enjoying nature and various activities or to reminisce about the old days with their grandparents. Many exciting activities are offered at the deserts such as caravans, camping, trekking, hiking, discovering new places, and other adventures. Ecotourism offers tourists an innovative experience that is closer to nature by preserving the cultural heritage and the natural environment simultaneously (Mehta, 2005).

Moreover, being in nature provides health and psychological development of children when they are exposed to nature and discusses the crucial importance of nature to the growing physical body and psychological health of children (Louv, 2005) Thus, desert ecotourism development works through providing access to better environmental settings for the tourist families along with ample necessities offered on their trips to Arabian desert. Despite all benefits of ecotourism in Saudi Arabia mentioned, there are some challenges worth noting. One challenge is the suffering of the eco-system in the Arabian Peninsula due to the creation of the Suez Canal that connected the Red Sea to the Mediterranean Sea while disconnecting Africa from Asia. This has resulted in an unbalanced ecosystem, which has placed a wide number of wildlife in danger. Another challenge is the excessive and unpermitted hunting of exotic endangered species. In addition to these two challenges, unforeseen weather issues, such as sandstorms, blinding sun, and intense heat can present obstacles. Due to these difficulties, tourists are often hesitant to travel to these areas, but over time, and with the advent of technological advancements, the Saudi Arabia tourism industry has worked closely with the government to fulfill the basic needs of the tourists who chose to pursue ecotourism (Brdese, 2013).

This study aims to identify environmental settings and infrastructures that are more inclusive of the Saudi Arabian population to provide opportunities for offering an ecotourism awareness for design firms, government tourism offices, and investors. In this research articulates a significant set of guidelines that help provide deeper insights into development of desert ecotourism sites. This study employed mix method approach. The study included online surveys answered by one hundred thirty-six tourist participants (n=136). Furthermore, this study combines two-fold significant contributions: first, to develop design guidelines to educate the design industry to take into account tourist perceptions to promote ecotourism activities in desert environments; second, to raise awareness of economic growth through sustainable ecotourism. Chapter 1 presents an introduction, a conceptual framework of the study, objectives, as well as the scope and limitations of the research. In addition, Chapter 2 examines the literature review of the conceptual framework focusing on three main elements; ecotourism, sustainable tourism, and potentials for sustainable ecotourism development in Saudi Arabia deserts. And, it introduces one case study of sustainable ecotourism in Saudi Arabian deserts. Furthermore, Chapter 3 explains the research methodology, research questions, method of data collection and analysis, and the sampling strategy. Moreover, Chapter 4 includes data analysis and findings. At last, Chapter 5 discusses the findings of the study and presents design guidelines in order to ensure meeting the greatest preponderance of desires and needs of tourist families with the facilities provided to them by the ecotourism industry in the Saudi Arabia deserts. This research focuses on: (1) providing insight on the Saudi Arabia desert area and its ecotourism development, (2) understanding tourist perceptions on how they enjoy the desert, and (3) crating design guidelines that address the environmental ecotourism and tourists needs.

## **1.2 Significance | Justification**

This study is significant for several reasons. Sustainable ecotourism development exhibits substantial promises of growing into a flourishing economic sector and ensuring ecologically sustainable development. Sustainable tourism can apply to all forms of tourism. The underlying emphasis is the application of sustainability principles relating to economic, environmental, and socio-cultural aspects. Saudi Arabia needs to integrate nature- and human-centered perspectives to maintain sustainable ecotourism at the national level. It has been established that in general leisure travel can meet various human needs. However, scant literature on tourism motivation has focused on developing nations and Islamic culture. In addition, this research investigates preferred environmental settings, activities, tourist services, and infrastructures for families seeking ecotourism in the Saudi Arabian desert environment.

## **1.3 Goal | Objectives**

The main goal of this research is to understand the preferences of families for physical activity environments and preferred environmental settings while experiencing ecotourism activities in the Saudi Arabia desert.

The main objectives of this study are:

- To analyze the preferences related to the environmental settings of tourist families need that allow them to enjoy with ecotourism activities in the Saudi Arabian desert area.
- To investigate the conceivable elements and criteria that helps to develop sustainable sites ecotourism in the Saudi Arabia desert area.
- To provide design considerations to contend with the planning and designing of desert ecotourism facilities that aims to protect the desert

environment from deterioration.

- To examine respondents' preferences regarding activities and programming of tourist attractions to be developed in the Saudi Arabian desert.

#### **1.4 Scope | Delimitations**

In this study, user perception is a key because it helps in identifying what actions need to be taken in order to maintain a sustainable ecotourism site. The specific cohorts are comprised of tourist families; men and women, ranging in age from 18 to 60 years. Furthermore, this study is delimited to an online survey distributed among the families in Saudi Arabia. The main language used in the survey questions and responses is Arabic language that is translated later to English to fit this research; however, in a number of instances, the culture of Saudi might not be translated precisely to English. In addition, this study is limited to the regular tourist families who visited the Saudi Arabian deserts sites between 2019 and 2020. Limitations also involve geographical restraint of the study by the specific study location the Saudi Arabian desert that can be considered as an ecotourism site.

#### **1.5 Problem statement**

This study aims to identify chapter 1 presents an introduction, a conceptual framework of the study, objectives, as well as the scope and limitations of the research. In addition, Chapter 2 examines the literature review of the conceptual framework focusing on three main elements; ecotourism, sustainable tourism, and potentials for sustainable ecotourism development in Saudi Arabia deserts. And, it introduces one case study of sustainable ecotourism in Saudi Arabian deserts. Furthermore, Chapter 3 explains the research methodology, research questions, method of data collection and analysis, and the

sampling strategy. Moreover, Chapter 4 includes data analysis and findings. At last, Chapter 5 discusses the findings of the study and presents design guidelines in order to ensure meeting the greatest preponderance of desires and needs of tourist families with the facilities provided to them by the ecotourism industry in the Saudi Arabia deserts.

### **1.6 Operationalization Terms**

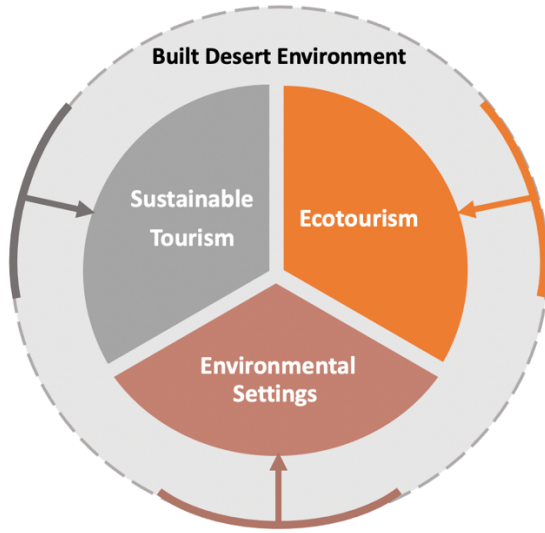
- I. Ecotourism. Ecotourism focuses on responsible travel to natural areas so as learn about the natural beauty and diversity of the areas with the main goal of generating income for the local communities and promoting sustainable development.
- II. Sustainable development. It is a development mechanism through which the current generation satisfies its needs while ensuring that resources are not depleted to cater for the needs of the future one.

## CHAPTER 2

### 2.1 Introduction

Ecotourism does not only indicate mechanisms adopted to generate income for people living in a protected area, but it also can incorporate mechanisms to ensure that the ecotourism activities are ecologically sound and sustainable. This chapter introduces the conceptual framework of the current study to define the scope and areas upon which the study is focused. (Figure 1) illustrates the conceptual framework used to visualize the three elements of this research. Section 1 introduces the definitions of sustainable tourism, Section 2 introduces Ecotourism as defined by many scholars in the literature review, and Section 3 describes the Environmental setting in existing sustainable ecotourism sites in Saudi Arabian desert.

Within the context of this study, ecotourism is the kind of travel that helps to maintain environmental resources with consideration to culture, community, and conservation; while sustainable tourism is the element that helps create good tourist experiences, including enjoyable activities and natural settings that satisfies the users' needs without compromising natural resources. Environmental settings comprised of built areas that include facilities, services, and infrastructural elements such as: built sitting areas, activities sites, restrooms, and technical services. Therefore, the sum of these three elements will provide guidelines to build sustainable ecotourism environments for families interested in spending time in the natural desert.



**Figure 1:** The conceptual framework

## **2.2 The Gulf and Arabian Desert Environment**

### **2.2.1 Geophysical setting of the Saudi Arabia**

Saudi Arabia is a country in the southwest of Asia, and it is the largest country of the Arabian Peninsula. The location of Arabian Desert is ideal for tourism because it shares the borders with many Gulf countries such as the Gulf of Oman and the Persian Gulf in the east and northeast. Similarly, to the south and southeast by the Gulf of Aden and the Arabian Sea and in the west, there is the Red Sea, see Figure (02-02).

Most of the desert area lies within the kingdom of Saudi Arabia, with its land having only 1% suitable for cultivation and the rest being barren (Ryan, & Stewart, 2009).



**Figure2** :Boundaries regions of Saudi Ariba. (Al-Sulbi,2010)

. Deserts can be differentiated into hot deserts and cold deserts. Similar to Bryce Canyon in Utah in United States, the Saudi Arabian desert is classified as a hot dessert. Its characteristics include temperatures that usually rise to very high levels during the day and drop at night, while the temperatures in cold deserts usually can become extreme with more temperature variability than found in the hot deserts. In many respects, cold deserts are quite similar to hot desert environments; however, it sometimes even snows in the cold deserts.

The majority of the Gulf States share their borders with the Arabian Desert that provides ideal sites for ecotourism. The United Arab Emirates (UAE), Qatar, Kuwait, Iraq, and Jordan also touch the huge desert of Saudi Arabia (Al-Sulbi, 2010).



### 2.2.2 Saudi Arabian Desert

The Kingdom of Saudi Arabia covers 2.24 million km<sup>2</sup>. The Supreme Commission for Tourism (SCT), Kingdom of Saudi Arabia, has engaged tourism stakeholders to prepare for the three ecolodge models: desert, mountain, and coastal ecosystems (Mehta, 2005). Thus, to avoid uncontrolled ecolodge development, the commission established design and planning guidelines for developing ecolodges (Mehta, 2005). As (Figure 03) illustrates, the desert ecolodge covers a significant portion of the country.



**Figure 3:** Black areas showing the deserts in Saudi Arabia as defined by ecolodge guidelines

There are two distinct zones of desert regions of the Kingdom of Saudi Arabia.

Each zone has its unique climatic conditions. (Table1 )below illustrates the two zones.

	Zone 1	Zone 2
	<b>The arid central and north central regions of the Arabian Peninsula.</b>	<b>The harsh desert area of Rub' al Khali.</b>
<b>Average high temperatures</b>	41° C to 46° C (106° F to 115° F)	42° C to 47° C (108° F to 117° F)
<b>Average low temperatures</b>	8° C to 2° C (46° F to 36° F)	7° C to 1° C (45° F to 34° F)
<b>Average humidity</b>	45% (Winter), 18% (Summer)	40% (Winter), 15% (Summer)
<b>Average annual rainfall</b>	35mm to 100mm (1.5 to 4 inches)	20mm to 40mm (1 to 2 inches)

**Table 1:** Climatic Conditions of Desert Zones in KSA

In the arid central and north central region, Zone 1, the average high temperatures range from 41° C to 46° C (106° F to 115° F), while the average low temperatures range from 8° C to 2° C (46° F to 36° F). The zone further receives an average annual rainfall that ranges from 35mm to 100 mm. Zone 2 covers the harsh desert of Rub' al Khali. This desert area records average high temperatures of 42° C to 47° C (108° F to 117° F) and average low temperatures of 7° C to 1° C (45° F to 34° F). While the arid regions have an average humidity of 45% during winter and 18% during summer, the desert area of Rub' al Khali has an average humidity of 40% during winter and 15% in summer seasons. The desert region is also drier as it receives an average annual rainfall of 20mm to 40mm (1 to 2 inches) (Mehta, 2005). A common observation pertains to the harsh conditions found in both zones. In addition, the inter-annual temperature variations across the country tend to be low with regular seasonal changes. However, mean ambient temperatures often vary considerably between various areas as they range from 18oC mainly in the far northwest and rise to 31oC in the southwestern coastal region. Temperatures of 40-50oC have been recorded in the Peninsula (Seddon, 2000). Predominantly, most Arabian desert conditions

are characterized by extreme heats during the day and temperature drops at night. Therefore, it is very important to clearly understand the climatic changes for ecotourism planning. The aerial view of the desert shows a vast region of light-colored sand territory with few mountains and lava flows that are black in color along with reddish desert mounds that extend toward a huge distance. The season and the climate vary around the area. Most of the time, camels can be found in the areas where there is little availability of water. However, there are also a few patches where vegetation can be seen (Al-Sulbi, 2010).

As Watts and Al-Nafie (2013) observe, the sand seas of Saudi Arabia are renowned but scantily explored in tourism circles. The sand seas cover vast areas of mostly stable sand standing a few hundred meters above their surrounding land. The sand seas cover almost a third of the Arabian Peninsula's interior with the largest one, Ar Rub'Al Khali, extending more than 640,000 km<sup>2</sup> and covering a landmass that is 2.62 times the size of the United Kingdom. Traditionally, these deserts have been challenging to access by outsiders. Even now, scientific explorers rely on Bedouin groups as guides (Watts & Al-Nafie, 2013). Saudi Arabia encompasses different arid conditions. Its western Highlands are mainly semi-arid while the northern and central steppes have arid conditions. The hyper-arid regions are located mainly in Rub' al-Khali.

The city of Al-Ula in Saudi Arabia is renowned for its association with a unique natural desert with cultural heritage. According to Alshammaa (2019), the city is in the northwestern region of Medina. The city has become a tourist destination because of the adventurous natural desert mountainous landscape. The city is surrounded by mountains that have experienced soil erosion and manifest a striking natural appearance that has considerable potential as a natural tourism resource that Saudi Arabia can exploit. The

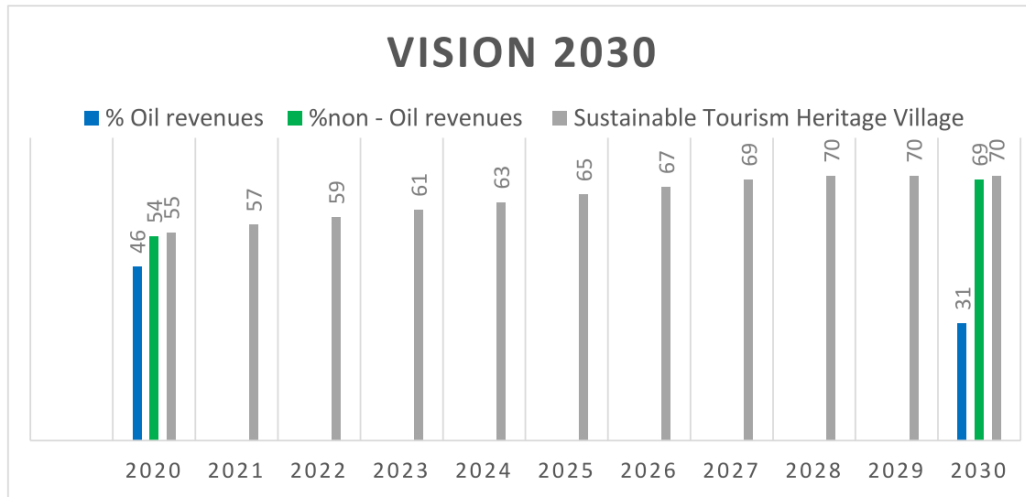
geological features that make Al-Ula Governorate unique are multiple sedimentary rocks, igneous rocks, metamorphic rocks of varied sources, and the varied compositions of minerals that can be used in building materials. The vast groundwater reservoir contributes to the area's highly fertile volcanic soil (Alshammaa, 2019). The geological construction unit of Al-Ula city stands out for its diversity of mountainous ranges of natural scenery.



**Figure 4:** A tomb at the Qasr al-Bint Necropolis in Mada'in Saleh. Credit, (Denton, 2019)

Opportunities to diversify the economy and promote tourism exist. However, the city does not have cultural heritage such as Mada'in Saleh as seen in (figure 04), or enough entertainment and accommodation facilities to handle increased tourist arrivals despite its distinguished stature as a tourist attraction (Alshammaa, 2019). In its 2030 vision, Saudi Arabia seeks to diversify its economy from its present reliance on oil by strengthening other economic sectors. In a study on the contribution that a sustainable

tourism heritage village in Al-Ula city can make, Alshammaa (2019) shows that the tourism sector is one of the pillars to consider. However, (Figure 2) shows that sustainability is a priority in the sector, and tourism projects should be sustainable.



**Figure 5 :** How the development of sustainable tourism heritage village in Al-Ula city achieves Saudi 2030 Vision (Alshammaa, 2019)

According to (Figure 5):, the emphasis is on reducing the reliance on oil revenues. The figure shows that such projects can lower oil revenues by almost a quarter from 2020 to 2030. Increments in other sectors can supplement the declines in non-oil revenues during the same period. Over time, the increased non-oil revenues are likely to be accompanied by gradual increments on revenues from the sustainable tourism heritage village.

### 2.3 Ecotourism Definition

Ecotourism is essentially defined as responsible travel to natural tourist sites that improve the local living standards and protect the natural environment. Yet, Cheia (2013) observes that there are varying definitions of ecotourism. For instance, the Ecotourism Association of Australia defined the concept as ecologically sustainable tourism meant to

protect the natural environment and promote awareness and conservation of cultural elements (Cheia, 2013). As defined by Weaver, (2001) “Ecotourism is form of nature-based tourism that strives to be ecologically, socio-culturally, and economically sustainable while providing opportunities for appreciating and learning about the natural environment or specific elements thereof” (Weaver, 2001, p.105) In general, there is a consensus that ecotourism has to be sustainable, and that everyone involved (the authorities, locals, tourists, and companies) need to cooperate.

In 2005, the United Nations World Tourism Organization (UNWTO) together with the United Nations Environment Program (UNEP) identified sustainable tourism as “tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities” (UNEP &UNWTO, 2005, p.11-12). According to Gajdošík et al., 2018, sustainable tourism is one of the most significant forms of tourism that can be applied in all types of tourism with various destinations. Moreover, sustainable tourism is seeking to adopt principles that meet with the local population and the cultural, environmental and economic properties of tourism development. Consequently, it focuses on the conservation of environmental resources, maintaining essential ecological processes, as well as helping to conserve such entities as natural heritage, socio-culture, and biodiversity (Gajdošík et al., 2018). Therefore, ecotourism is considered as a fundamental component of sustainable tourism (Al-Sulbi, 2010).

The concept of ecotourism has often been misused, which raises the need to clarify it (Björk, 2000). According to Björk (2000), although ecotourism is different from nature tourism, farm tourism, or adventure tourism, it does constitute a unique form of tourism which has become common because it increases awareness of the fragility of the

environment, its need for improved management, and the increasing awareness that there is a beneficial relationship between good ecology and good economy. Confusion over what ecotourism entails arises because of the common misuse of the concept. Salama (2001) acknowledges the confusion brought about by the emerging types of tourism that provide tourists a sense of nature. Salama said "more and more tourists are increasingly abandoning traditional vacation for a new type of tourism that gives them the sense of nature. Trekking in mountains, bird watching, archaeological digs, desert and photo safaris, and scuba diving are all new types of vacation that attract tourists to travel to relatively remote and unspoiled areas. This type of travel is referred to as nature-based travel, ecotourism, or environmentally sustainable tourism" (Salama, 2001). In addition, Järviluoma (1992) defines the concept ecotourism from his perspective that it is "small scale developed by local people and based on local nature and culture" (p. 118) and emphasized its importance of respecting the capacity of environmental and social carrying capacity within a tourist destination.

Three unique elements define ecotourism. The first element is the closeness with nature and people from specific cultures. The second element concerns choosing forms of tourism that prioritize impoverished communities over large tourism companies. The third element includes a focus on limiting the impact that travel has on the environment (Rinzin, Vermeulen, & Glasbergen, 2007). The emphasis on one of the elements in different definitions.

### **2.3.1 Ecotourism Characteristic and Principles**

It is necessary to differentiate ecotourism from mainstream, market-driven nature tourism. Ecotourism should be small in scale, responsible, and controlled. Its emphasis is on conservation, active community participation, and traveler responsibility. Serra (2007)

presented the characteristics that make ecotourism distinct. The concept is based on conscientiously ensuring that the behavior of visitors will have minimal impact on the environment. The requirement prompts the need to limit the number of people visiting tourist sites.

Moreover, ecotourism is sensitive to the local culture and biodiversity. Thus, it should include measures in support of local conservation efforts. The benefits to local communities should be sustainable. In ecotourism, unlike mainstream tourism enterprises, the local population participates in making decisions and local people are mainly employed to operate the businesses. The local population's emphasis arises because ecotourism should be a platform that enables the locals to engage in their traditional practices to educate themselves as well as visiting travelers.

Additionally, structures associated with ecotourism mostly adopt particular attributes such as low-impact facilities in design and construct. Further, in order to be sustainable, there should be sound sewage and waste management system in place, as well as energy and water-saving mechanisms (Serra, 2007). Several principles underlie the pursuit of eco-tourism. The primary principle is the minimization of the negative impacts on both nature and culture of a tourist destination. It is also meant to educate travelers on the benefits of conservation. Another principle is the emphasis on the significance of operating responsibly by cooperating with local authorities and populations to address local needs and conserve the environment. Eco-tourism is also based on the principle that collected revenues would be directed to conserving and managing natural and protected areas (Wood, 2002). Care is essential to maximize economic benefits to local communities and businesses neighboring the natural and protected areas. Eco-tourism is informed by social and environmental baseline studies and long-term monitoring



programs meant to evaluate and to reduce the impact on local environment and culture. Moreover, tourism development should not overwhelm social and environmental limits of tolerable change determined by researchers and local residents (Wood, 2002). The infrastructural development should therefore suit the environment through minimal use of fossil fuels, wildlife, and indigenous plant conservation, and consistent with both natural and cultural environments.

### **2.3.2 Ecotourism Users**

The two main groups of users are responsible travelers who are a direct user of an ecotourism system and the destination tourism organization which refers to the workers responsible for the ecotourism site. The two groups are considered the users because they both benefit from the ecotourism site (Talsma & Molenbroek, 2012). Ayachi and Jaouadi (2017) show that one of the reasons behind the limited popularity of ecotourism is the negative connotations that tourists often associate with ecotourism. Most tourists mainly engage at leisure and social levels rather than at the environmental level. As Gajdošík, Gajdošíková, and Stražanová (2018) observe, residents' perceptions and support are vital because the residents are a vital part of the destination. Ecotourism is a niche market serving particular interests of specific tourists. The concept has been recognized just in the last two decades and cannot be compared with cultural tours. Its emergence is attributable to the growing popularity of conservation ethic (Beeton, 2000). According to Ayachi and Jaouadi (2017), environmental enthusiasts are mainly the primary ecotourism targets. They are responsible and aware of their actions and the fragile nature of the ecological, cultural, and social balance. They avoid destabilizing the natural or conserved settings. The primary beneficiaries of ecotourism should be indigenous community or host societies who should be empowered economically, socially, psychologically, and

politically. Their participation cannot merely be characterized as passive. Thus, they should be part of decision-making to ensure the benefits of ecotourism directly or indirectly accrue to them and their communities (Ayachi & Jaouadi, 2017). However, governments and multilateral organizations assume vital roles in facilitating ecotourism to develop indigenous communities.

### **2.3.3 Ecotourism Activities**

Multiple activities in ecotourism are also found in other traditional forms of tourism. Some ecotourism activities include bushwalking, bird watching, night walks, camping, wildlife viewing, wildflower viewing, special interest scientific tours, and mountaineering. Tourists who engage in any ecotourism activity, even if it is a portion of their holiday, qualify as ‘ecotourists’ for undertaking activities or showing interests in ecotourism’s concepts and ethics. This category of tourists is known as “soft ecotourists.” Those who spend most of their holidays on ecotourism activities are referred to as “hard ecotourists” (Beeton, 2000).

Saudi Arabia provides multiple ecotourism opportunities. Popular ecotourism activities in Saudi Arabia include desert treks and hill trips (Ayachi & Jaouadi, 2017). According to Steeg (2018), some of the other ecotourism activities include wind boat diving at the desert, desert walking, desert visiting using hot air balloons, visiting camel breeding centers, and observing the stars. Ayachi and Jaouadi (2017) show the archeological sites, traditional villages, ancient cities, and urban lives are mainly the primary tourist locations. Bedouin villages are the only sites that receive a notable number of foreign tourists. In 2008, Al Jukhaidib conducted a study that investigates the tourism interaction with the potentials and capabilities available in the Qassim region (Al-Jukhaidib, 2008). The results indicated that camping in desert areas is one of the most

popular tourist activities in Saudi Arabia and it is one of the activities that recorded a high rate result, especially since this moves them from the complexity of urban life to simplicity and relaxation of desert life (Al-Jukhaidib, 2008). The season of camping activity always takes place between the winter and spring seasons, and in response to this, the operations of organizing desert camps have been activated relatively recently (Al-Jukhaidib, 2008).

Below are some of the activities that can be performed in Saudi Arabia (Ver Steeg, 2018):

- Experiencing the wildlife
- Walking at desert and salt desert
- Wind boat driving at the desert
- Visiting camel breeding centers
- Desert visiting by hot air balloons
- Observation of the stars
- Purchasing handicrafts
- Visiting monuments and shrines
- Mountain climbing
- Desert camps
- Cultural events

#### **2.3.4 Ecotourism programming**

Studying the emergence of an ecotourism philosophy requires examining some fundamental assumptions about the ecotourism site in terms of the environmental context, human activity, human nature, and human relationships. These extend to questions over what leisure means to individuals and society. The philosophy upon which leisure is

based reflects the acceptance that leisure is an integral part of life and the degree to which it serves individual needs relating to happiness, accessibility, means-end relationship, freedom, equity, and individual rights. The philosophy that an agency adopts directly reflects the values of that entity (Fennell, 2014). Ecotourists uphold values such as harmony, recycling and multiculturalism, biodiversity, and integrity more than other tourists.

The basis of starting an ecotourism program and continuing with it includes an understanding of participant needs and resource assets. Individual needs and assets evolve, and this necessitates periodic assessment to ensure the program is both timely and efficient (Mieczkowski, 2018). Ecotourism service providers should engage with specific needs emanating from their organizations, tourists, and the community. The needs are filtered based on the overall requirements of the ecotourism operation and the different sources of need. The consequent philosophical orientation of service providers operationalizes the needs through various program priorities that serve as the basis of ecotourism programs. Thus, the initial step in creating any ecotourism program includes identifying the most relevant particular user needs (Mieczkowski, 2018). Service providers aim to satisfy and exceed participant expectations by developing programs that will meet their needs. Once they identify the most germane needs of the users, service providers develop a program designed to meet or exceed the participants' expectations. According to Mieczkowski 2018, defined structure with five elements:

1. **The programme areas:** Ecotourism programme areas are spaces for outdoor recreation that include ecotourism activities that serve as the basis of the programme. Ecotourism programme areas in desert would include, for

example, outdoor recreation, walking at desert and salt desert visiting camel breeding centers, observation of the star.

2. **The programme format:** Ecotourism experience are organize in different format such as: individual group, families group, trips ,special events ,club . One of several different programme formats such as: trip that will be managed ecotourism service providers the format assists tourism guides and staff in performing at the level they consider comfortable. Examples of programme formats applicable in conventional recreation context identify special events, competitions, club, and special interest groups, desert trips and outings, drop-in, outreach, and service opportunities.
3. **The programme setting:** Despite the popular association of ecotourism with wilderness settings, it also extends to rural and urban settings. Thus, settings should match with sub-settings such as aerial, terrestrial, marine, freshwater, or a combination of any of these.
4. **The programme mobility:** The section categorizes the forms of transportation into either motorized or non-motorized. Examples of motorized transportation are helicopters, powerboats, and cruise lines. The non-motorized options include balloons, canoes, rafts, and snowshoes.
5. **The programme lodging:** Accommodation is a vital aspect of ecotourism. Thus, it is necessary to state the choice of accommodation built into the programme. These include two units that have a non-fixed roof, such as: tents, tepees, and caves. These accommodations can also include a fixed roof such as: motels, resorts, recreational vehicles, ecolodges, ranches, huts, houseboats, and tree houses.

Identifying the elements guides in establishing the magnitude of the available options.

The literature of ecotourism activities mainly focused in engaging to the locals in ecotourism which is important and need it. However, based on the case study photos of the desert site analyzes that the researcher has visited between 2016 to 2019, the following of structures are equally relevant.

### The programming of campground in desert area:

The campground for each family contains two sections; however, the two sections have a similar zone, the difference is that one of them is surrounded by a fence to maintain the privacy and safety of the women and children. The campground sections involved two tents, Dakah, Alarishah, kitchen cabin, and two cabins for bathroom as seen in the following (figure 6).

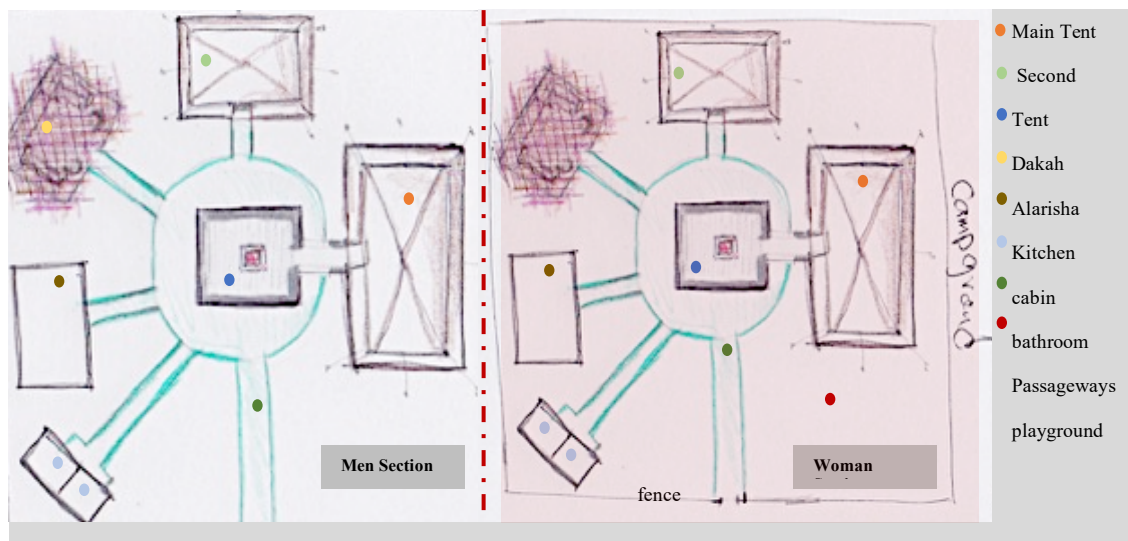


Figure 6: The campground sections .

- **Main tent** for sitting and performing some activities. It is used as the living room and is usually made from goat and sheep leathers which

gives the tent an ability to absorb the rainwater and prevents it from diffusion inside the tent.

- **Second tent** is for storing luggage and sleeping
- **Dakah** is an elevated seating area for gatherings on the floor with Arabic seating style, and it has a fireplace in the middle that can be used not only as a heating source during winter season but also to cook and make Arabic coffee or hot drinks.
- **Alarisha** is another seating area for gathering that is used during the afternoon because it is shaded by a traditional design of palm fronds.
- **kitchen cabin** is usually made of solid wood or aluminum material. It is equipped with small refrigerator, stoves, and washbasin.
- **Two cabins for bathroom** are also made of solid wood or aluminum material. The water for restrooms and kitchens for washing and cleaning purposes is provided from a storage tank in the site.
- **A playground area** is equipped with slides, swings, and perhaps small tents for children to play and enjoy their time.
- **Passageways** connect all the zones to make it easy to move among them with design considerations for people with disabilities.
- **Lighting** Portable generators are used to light up the campground as well as other appliances in camp site.

The researcher shows that design of programming in desert camp site adopts a defined infrastructure including those important elements to address people needs and desires.

### **2.3.5 Ecotourism Challenges**

Various challenges often hamper ecotourism. According to Ayachi and Jaouadi (2017), promoting ecotourism in the Saudi Arabian desert is challenging because of the inadequate infrastructural facilities necessary for the sector to thrive. There are no reliable roads, accommodation facilities, well-trained nature guides, strategic plans, awareness programmes, and approaches to establishing community consensus among other necessities. Apart from the limited infrastructure, ecotourism can be counterproductive (Ayachi & Jaouadi, 2017). There are concerns that ecotourism development and operations could threaten ecosystems and biodiversity. Effects such as habitat loss and degradation and loss of rare species can particularly be detrimental to the overall tourism industry.

Another challenge to ecotourism relates to the environmental damage already done and ongoing. Globally, any rural productivity and wildlife are under significant threat from overgrazing, wood gathering, and recreation. The emergence of sophisticated weapons and vehicles that can reach all terrains has facilitated poaching even in the previously inaccessible regions (Seddon, 2000). Furthermore, environmental damage has led to the impoverishment of natural vegetation in the Saudi Arabian rangelands in recent decades.

Saudi Arabia is overwhelmingly conservative, and it is known to impose strict laws for residents and nonresidents. Recent studies show that the tourists often comply with these societal rules while traveling there (Mufeed & Gulzar, 2014). The government of Saudi Arabia tries to provide tourists with vast innovative ecotourism opportunities while maintaining the conservative norms (Mufeed & Gulzar, 2014). According to Gholipour et al (2014), visitors open-mindedly and understandably abide by these laws and still enjoy



a unique tourist attraction based on sustainable ecotourism practices. Their study shows that Western visitors were thrilled to witness the untouched archaeological treasures of Saudi Arabia.

Instances of inequality foster an indigenous perception that relationships with tour operators are intrinsically exploitative. Thus, frontier resource conflicts are likely to arise as local populations and tourism operators compete for resource access (Coria & Calfucura, 2012). Most of the benefits in key ecotourism sectors go to stakeholders rather than the local community.

The sensitive nature of the area complicates the reliance on ecotourism to solve issues faced by protected areas. The inherent sensitivity is unavoidable because increasing levels of tourism will inevitably affect the areas (Seddon, 2000). Tourism, directly and indirectly, affects protected areas, and the economic, social, and environmental consequences may persist.

## **2.4 Sustainable Tourism Definition**

Sustainable development is now a commonly accepted notion in the public and business sectors. It refers to the development designed to satisfy the current generation's needs in ways that ensure that future generations will also have the resources to satisfy their needs (Higginbottom, 2004). Sustainability has also become the dominant paradigm for the tourism industry. Varied definitions of sustainable tourism exist. As Swarbrooke (1999) defines, sustainable tourism as a broad and frequently ill-defined area encompassing multiple tourism systems. Swarbrooke (1999) describes ecotourism as a form of tourism to satisfy locals' and tourists' needs and those of the tourism sector without damaging the ability of the environment to satisfy the needs of future generations. In order to understand sustainable tourism clearly one needs to understand

the meanings of sustainable practices. Sustainable practice means maintaining the ecological balance to protect natural resources (Al-Sulbi,2010). On the other hand, tourism includes recreational activities, transport, shopping, accommodation and nourishment for leisure. However, working on tourism and sustainability together is known as sustainable tourism (Al-Sulbi, 2010). This modern concept focuses on exploring new places with minimal or no negative impact on the environment (Zamani-Farahani & Henderson, 2009). Ultimately, sustainable tourism works to benefit the economy, environment, and society as a whole.

#### **2.4.1 Sustainable Tourism challenges**

Challenges facing sustainable tourism are diverse, and most of them apply in Saudi Arabia. The main hindrance is the limited inherent tourism potential. Inadequate resources are accompanied by limited knowledge and awareness. This lack of awareness regarding tourism's potential contribution constrains the value the country can extract from it. The consequent limited technical know-how leads to weak promotional engagements. Limited awareness is a common concern since tourism is a relatively modern industry (Dabour, 2003). The narrow experience in marketing tourism sites implies that the limited mass media exposure and publicity promotion are likely to impede sustainable tourism.

Achieving the ideals of sustainable tourism will remain a challenge as long as the society exploits ecotourism. In Saudi Arabia, the term encompasses almost every kind of recreational activity occurring in natural settings, even if it does not meet the common conditions necessary for the ecotourism label to be applied. Groups of people perceive landscapes differently (Seddon & Khoja, 2003).

Another challenge to consider is the disruption in cultural norms. The hospitable but conservative Saudi population is significantly influenced by unique social customs and values associated with tribal communities living in isolated or remote areas. Introducing ecotourism to those communities is also likely to introduce cultures that are unacceptable to them (Al-Sulbi, 2010). Therefore, developing sustainable tourism may take time since the involvement of the locals should be gradual. Select training programs may be necessary.

## **2.5 Environmental Settings**

The desert settings of Saudi Arabia entail oases, indigenous inhabitants, protected regions, ancient vegetation, wildflower floral habitats, outstanding geological features, caravans, desert trekking, and diverse climatic conditions (Coria & Calfucura, 2012). Within all these vast reservoirs, opportunities can be provided for opening campground accommodations, romantic viewpoints, stargazing journeys, trekking, hiking, and the like (Ryan & Stewart, 2008). Service providers, tour operators, and travel agents will all flourish with the implementation of such environmental settings (Kirstges, 2018).

Within the context of this study, environmental settings refer to site infrastructure and designated spaces for services and activities. Camping as experience has evolved rapidly during the last few decades in Saudi Arabia. In the past, families travel deep into the desert, and they usually set up their accommodations by themselves (figure 7). These several days trips became an unpleasant experience especially for the younger generations who expect higher living standards. Currently, people gather in pre-made camps on the deserts that can bring people closer to nature without compromising their essential needs. Modern campsites are built in strategic locations that consider different variables such as the distance from the city, wind current, and proximity to nearby

activities. Deserts activities include sand baths, beach buggy rides, camel rides, seasonal truffle and mushroom hunting, and tea making using exotic calming herbs found in the desert.



**Figure 7: Camp site in the past in Saudi Ariban desert (Alrashid-2007)**

## **2.6 Case Study**

The researcher identified two campground sites as case studies to analyze existing conditions and identify environmental settings of the desert site in Saudi Arabia. The researcher has visited these sites between 2017 and 2019. The desert site is located at Bar Almatar, 36 km away from Alkobar city, and families visit this site for a day or two.

As seen in figure (02-08), the campsite consists two sections: one for men and the other for woman and children, with a few tents for different purposes surrounded by a fence for the privacy and safety of children as well. Within the same campsite, some sites are luxurious and cost more money per night while others are simpler such as those shown in (figure 08). During the winter season, many families go out to the desert to spend some fun time together on a trip known by (Kashtah). This is the famous name for this kind of trip among people from the Arabian Gulf. During this type of trip, people usually go for a day trip, they get out early morning and stay until midnight. However, sometimes people might spend more time and sleepover for a night or two. Within the

Saudi culture, a family trip consists of three-generations: the grandparents, parents, and their offspring. The number of family members traveling for this type of experience can reach 30 persons. Together, they remember the old days for their grandparents and the way they used to live in the desert enjoying such a lifestyle.



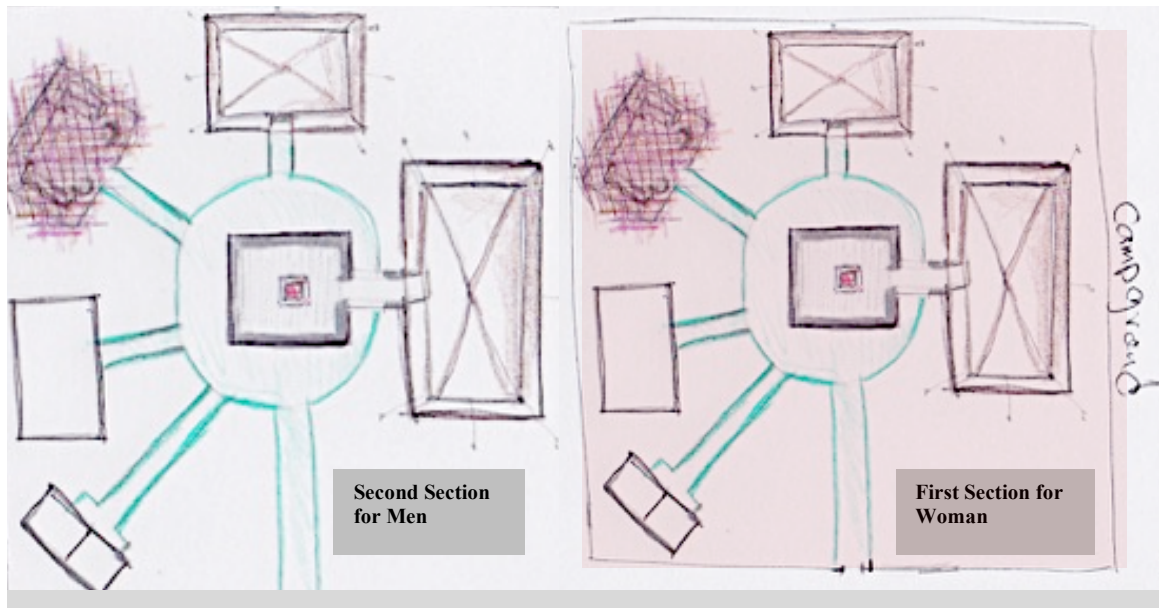
**Figure 8:** Campsite in desert of Saudi Arabia.

On the morning of December; 27, 2019, a family participating on this study went on a trip like the one that was mentioned above in the eastern part of Saudi Arabia. They reserved a campsite for the whole day. On their way to the camp, they were stopped by a group of camels with their herdsman. They spend some time with the children looking at the camels and taking some pictures. Then they completed their way to the camp, which was close to the camel ranch as seen in (figure 09).



**Figure 9:** The kids with the camels

The camp contains two sections as seen in (figure 10). The campsite is located in the Bar Almatar desert located in the eastern region of Saudi Arabia. The site is organized in two sections with similar zones for one group of family.



**Figure 10:** Camp Site with two sections

- 1- The first section is for women and children. This section is surrounded by a fence to provide some privacy. This section contains many different zones. As a rule of thumb, the biggest tent is used as the living room where most of the activities take



place. The far distanced tent is the one that is about 5 meters away from the main tent, and it is highly suitable for sleeping. This more remote tent is hand-made from goat and sheep leather, which makes it heavy. The chances of leakage in case of rain are unlikely because of the ability of the tent to absorb the water and prevents it from diffusion into the inside. The tent has Arabic inscriptions and motifs beside and has some windows for ventilation (figure 11).



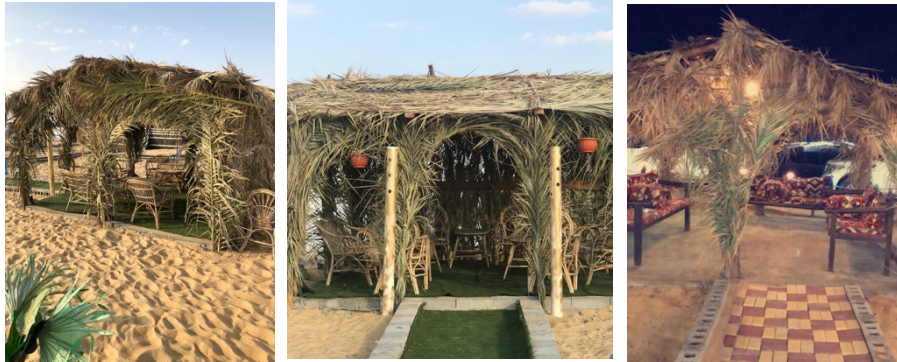
**Figure 11:** Tent from inside.

- (Dakah), as seen (figure 12) is an elevated place for night gatherings, and it has a fireplace in the middle that is used to warm up the place and could be used for making snacks such as baked potatoes.



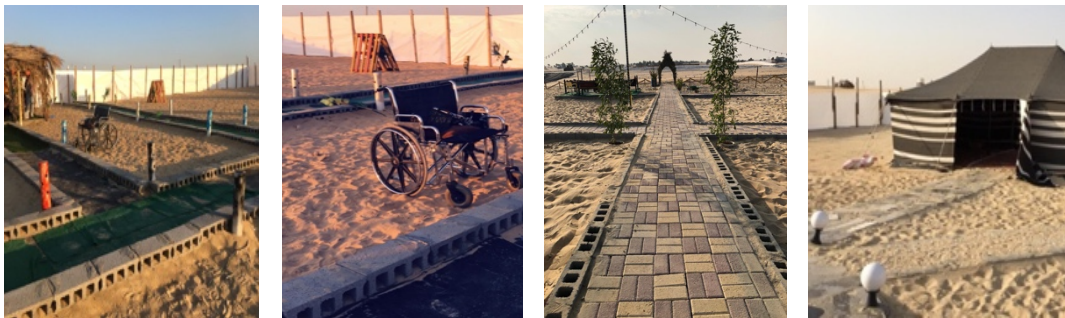
**Figure 12:** Dakah.

- Alarishah is another place for gathering that is shaded using palm fronds (figure 13).



**Figure 13:** Alarishah.

- Passageways connect all the zones to make it easy to move between them especially for wheelchairs. (figure 14).



**Figure 14:** Passageway.

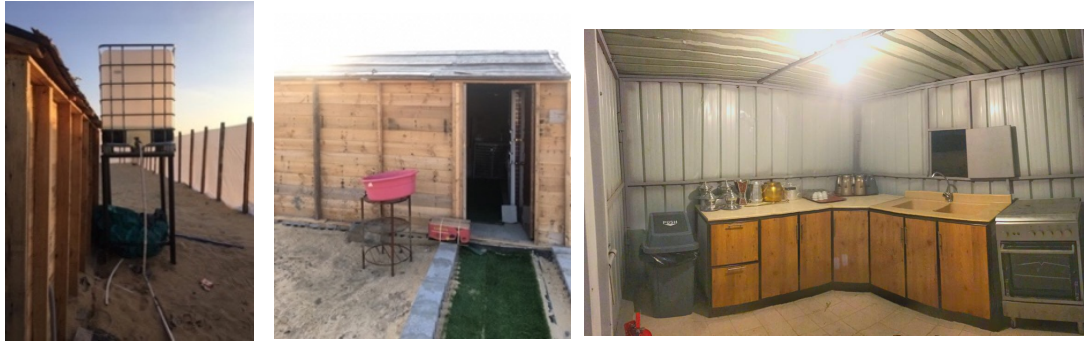
- A playground area that has slides and swings for kids to play in (figure 15).



**Figure 15:** Playground Area.



- The kitchen cabin were used for cooking (figure 16).



**Figure 16:** kitchen cabin.

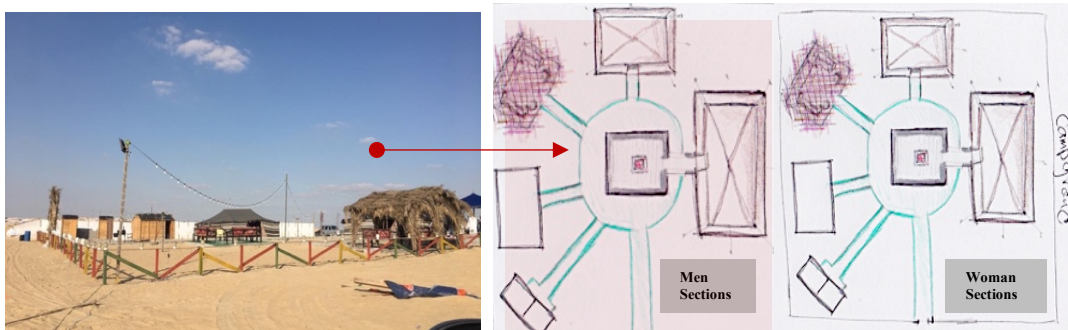
- Two cabins were used for restroom figure (02-15).



**Figure 17:** Restroom cabins.

- Finally, the camp is provided water to be used for washing and cleaning, and it is stored in tanks.

2- The second section is for men and offers less privacy than the women's one. Usually, it does not have fencing around it, and it has the same zones in the section for women and children as with the previous one (figure 18).



**Figure 18:** The second men section.

- In the early evening, the women were sitting in the (Alarishah) enjoying the beautiful weather under its shade. It was sunny and nice, and the children were playing with the sand in the playground. Some of the women were cooking lunch in the portable cabins that have all the main parts for a kitchen such as a small oven and a small sink for washing.
- Later on, when the sun is not as strong. they group went out of the camp to walk. Nearby, there was a sheep barn as seen in (figure 19). The children enjoyed interacting with the animals and playing around them until sunset.



**Figure 19:** Pictures of the desert nature.

- At nighttime, the family moves to the Dakah to build the fire and gather around to make Arabic coffee with some sweets. This time is devoted to social activities and games as seen in (figure 20)..



**Figure 20:** Campsite at night time.

- Around 10 p.m. is the time for dinner, and around midnight is time to sleep. If the site is close to the city, some of the family could decide to go back and others would stay over.

One of the interesting observations from the ecotourism sites visits is the scarcity of natural reserves which offers tourists more flexibility in planning their trips, for instance, in a desert faces scarcity of water that led people to be more prepared and flexible when they choose their desert distention. However, there is a need to provide sustainable environmental setting to the desert by supplying different facilities suitable for families and travel groups as well.

## **2.7 Potentials for Sustainable Ecotourism Development in Saudi Arabia Deserts**

One of the concepts explaining the desire of families to experience ecotourism is the push and pull forces. As suggested by the extant literature, the concept is based on the view that people travel either after their internal forces push them or after external forces pull them to their destination attributes. Thus, examining the push and pull stimulation can help in examining travel motivation (Bogari, Crowther, & Marr, 2003). Additionally, Bogari, Crowther, & Marr (2003) identify eight push factors including; (1) cultural value, (2) family togetherness, (3) relaxation, (4) interest, (5) utilitarian, (6) convenience of facilities, (7) knowledge and (8) economic factors; and (9) social , and nine pull factors. Including: (1) safety, (2) religious, (3) upscale, (4) leisure, (5) budget, (6) religious, (7) cultural/historical, (8) sport/beach activities; and (9) nature/outdoor factors.

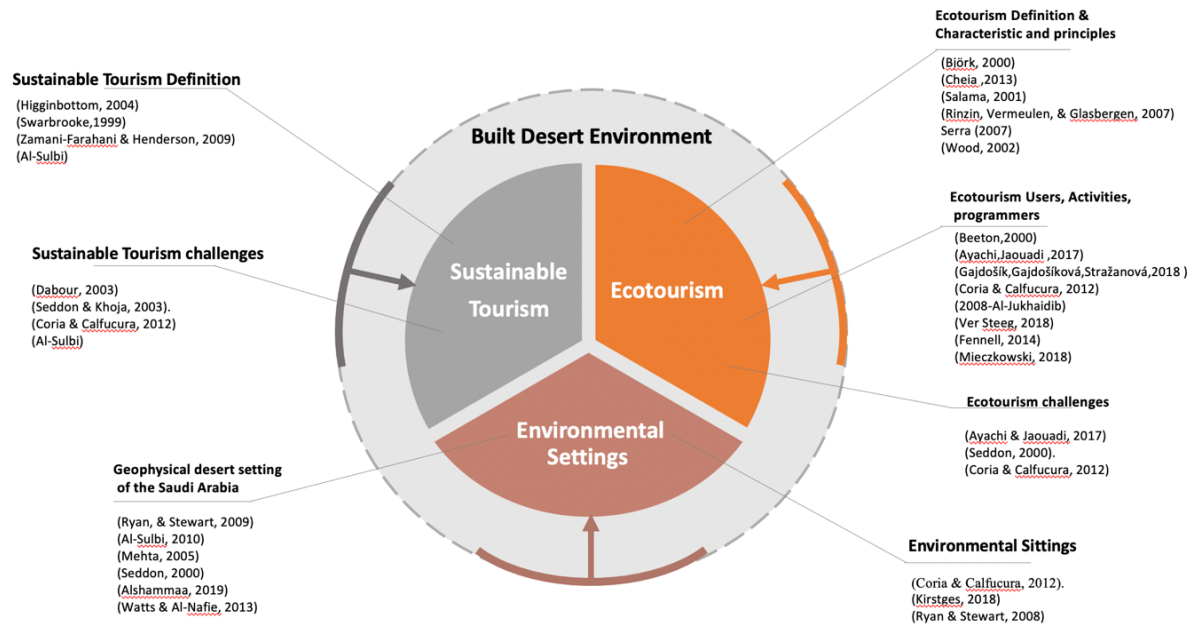
Saudi Arabia has the facilities to accommodate an increased volume of ecotourists. Al-Sulbi (2010) observes that KSA's unique position in the Muslim world implies that it is accustomed to handling millions of visitors annually. The millions of annual visitors present opportunities for ecotourism products. Further, the infrastructure

available to serve the pilgrims offers crucial bases for establishing a sustainable tourism industry.

Situational factors influence the environmental responsibility behaviors of tourists. If ecotourists find a clean and preserved tourism environment, they are likely to examine their environmental responsibility behavior (Xiaohong, 2019). The Saudi government should actively adopt measures that would promote perceptions of deserts being a place/destination for tourists. The government should demonstrate the way it seeks to interact with tourists. The aboriginal nature of relations in Saudi Arabia, religion, and the prevailing conservative culture are pertinent issues with a potential bearing on ecotourists' decision making (Ayachi & Jaouadi, 2017). Thus, the environmental protection policy of the identified tourist spots significantly influences tourists' behaviors.

Environmentally-friendly activities should be developed to encourage ecotourism in Saudi Arabia. Ecotourism can solve environmental damages associated with traditional tourism because it applies a holistic approach. The activities widen knowledge beyond natural scenery. Enhancing tourists' awareness of the relationships between living species in the ecosystem is vital to ensuring natural resource protection awareness (Utarasakul, Pradatsundarasar, & Thirakhupt, 2008). Tourists commit to saving and conserving nature when they appreciate the value of the natural environment.

According the findings of the literature review, (figure 21) that shows an informed conceptual framework with supportive citations.



**Figure 21:** Second-level Conceptual Framework.

## CHAPTER 3

### METHODOLOGY

#### **3.1 Introduction**

The study seeks to examine the type of ecotourism infrastructures, as well as the preferred environmental settings for families visiting the desert and the activities, that will attract the sustainable ecotourist in Saudi Arabian deserts. The study aims to compile the findings to create guidelines for establishing more sustainable eco-tourist sites in the deserts. To this end, the study is developed in line with the assessment presented in the literature review that has examined existing tourism practices in the Kingdom.

The study applies on online surveys to collect quantitative as well as qualitative data from tourist families about their preferences regarding the built environment settings, and the programming activities and infrastructure in the desert. Surveys are used because they serve as a systematic method for collecting information from a sample of members to measure people's characteristics (Grove, 2004). In addition, surveys are selected because they allow for the collection of data from a wide variety of characteristics within a population and are a representative cross section of the target audience, which are tourists in the current case (Jansen, 2010). Moreover, the application of surveys that refers to a study using a representative sample as data collection technique is instrumental in the case of tourism. This largely stems from its greater flexibility because of the ability to ask participants using a standardized questioning procedure, hence being able to gather their own opinions or perspectives (Creswell, 2009). Thus, the selected data collection method provides firsthand information for valid findings that are applicable for managing desert sites.

### **3.2 Research Topics**

The study aims to comprehend family habits in desert environments and how they relate to desert activities, as well as the understanding of what constitutes an entertaining ecotourism environment in the Kingdom. The analytical aspect further aims to showcase the elements that tourists need to have in the desert sites. Analytical aspect is instrumental because it can contribute to strengthen and develop a vibrant tourism industry in Saudi Arabian deserts. The final result of the research contributed to the creation a set of guidelines for ecotourism projects in desert environments, while considering the interests of the tourists by providing services that meet their travel expectations and satisfy their needs. The study illustrates the application of the following steps for the research: presentation of the research topic, research questions, and methods that are provided to best explore in order to accomplish the stated aim.

### **3.3 Research Questions**

#### **1) How can sustainable site ecotourism in Saudi Arabia deserts be improved?**

Limited research investigates ecotourism improvements in Saud Arabian desert. The International Ecotourism Society (TIES) 1991 defines ecotourism as “responsible travel to natural areas that conserves the environment and improves the welfare of the local people.” Ecotourism can be described as a recreational activity that manages trips to areas with appealing natural resources, and which allows tourists to have a good time while simultaneously protecting the natural environment. The ecotourism definition comprises two of the important pillars: conservation and development. Both focus on the conservation of natural environment resources and development of the economic and infrastructural growth (Ross & Wall, 1999). The investigation seeks to use techniques that are key to

developing sustainable sites for ecotourism, including environmental settings, ecotourism activities, spaces, and services that support tourist attraction.

## **2) What are families' preferences for environmental settings while participating in ecotourism activities in the Saudi Arabia desert?**

Because of the structure of this study, the researcher has a better chance of understanding the kind of activities families prefer in tourist attraction points, desert features that hold these activities, the type of spaces families need, as well as how these spaces should be connected to each other. In addition, understanding the environmental settings that serve site infrastructure, designated spaces for services and activities, and the programming of the physical spaces. The tourists' perspectives of their experiences, and their thoughts about environmental setting, can lead to determining what is important and needed in the desert site. This question can be completed and used alongside with other data and models to create visualizations that are easier to understand and evaluate for current and future researchers.

## **3) What ecotourism activities and tourist services do families engage in while in the Saudi Arabia desert environment?**

The researcher aims to showcase a deeper understanding of the type of activities in which tourists engage at desert tourists' centers. The activities are then incorporated with their preferences regarding factors such as desert nature appreciation, infrastructure in the arid area, and which services are offered, among other features that have been praised by visitors. However, the question expands its scope as it aspires to delve further into ecotourism development in the desert. Additional features that serve as key elements of attraction include factors that have been considered by designers in visualizing the desert better to tourists based on their perspectives. Furthermore, it is apparent that family visits



to the desert for recreation are no longer a new activity. Family tours that include children may be held outside working hours. Hence, based on a tourism perspective, families, especially those accompanied by children and women are filled with a variety of activities that entail a series of objectives and participation for all. Contrastingly, tours that involve men may take another approach, such as combinational models. Put differently, package tours are preferred because they can accommodate fewer people (Jaafar & Maideen, 2012). Tours that involve women and children, as well as men are all important because they involve extensive prearranged packages that can be enjoyed by all.

#### **4) What kind of spaces do families occupy in the Saudi Arabia desert environments?**

Researchers can also lend support to their investigation by examining the types of sites that tourists prefer in the desert, according to Reichel, Uriely, & Shani, (2008). It is important to take respondents' preferences into consideration to come up with several suggestions related to the tourists' attractions space. The results reveal that the participants prefer the combination between opposing concepts such as natural sites combined with simulated attractions, and tourism development with environmental conservation in the desert sites (Reichel, Uriely, & Shani, 2008). The approach is also applicable in cases in which the types of facilities and infrastructure are essential for formulating research models. On the whole, the approaches are required by researchers for developing effective programming and creating meaningful experiences. "Regional Tourism Development Strategies need to identify areas within the region that are going to host specific tourism form in order to facilitate monitoring and measure indicators of sustainability." (Al-Sulbi, 2010, p. 212).

### **3.4 Research Method – Survey**

The study involved online surveys using a sample of tourists to measure population family-preferred. A survey Was undertaken to identify the preferences of tourist families in the Saudi Arabian desert sites. The study was conducted during winter season between January 2020 till February 2020 at this particular time because the desert activates, trip and camping season starts at the beginning of the winter season in Saudi Arabia. The participants in this study were self-reported from tourists who had visited Saudi Arabia. Surveys were distributed through social media applications including WhatsApp, Twitter, and Facebook. The participants selected for this study comprised tourists who visit the Saudi Arabian deserts. One hundred thirty-six tourists participated in the survey (n=136), and they completed 21 questions about their experiences at the Saudi Arabian deserts. The survey questions included 11 multiple-choice questions, seven open questions, and three rating scale from 1-to-5 questions; in total, the questions could take about 17minutes to complete. The first part consists of questions about tourist socio-demographics. The second part is about their trip characteristics. The final part concerns their opinions on ecotourism and sustainability.

### **3.5 Sampling Strategy**

One aim of this study is to gather opinions and experiences of particular Saudi Arabian desert tourist families; thus, a voluntarily sampling served as the main sampling strategy. A majority of the sample was done on a self-volunteer basis by disseminating the survey through social media at various applications such as: WhatsApp, Instagram, Snapchat, Twitter and Facebook and capacitated by the Typeform website from which each participant needs to complete the survey. The survey link was posted through social media on a daily basis for one month. The researcher reached out to Saudi Arabia influencer who

has 700,000 followers to distribute link of survey in her Twitter and Snapchat account. In addition, the researcher attempted to distribute it the survey among participants of various majors, genders, ages, and school years in order to not skew the data ensuring the sample is representative of the studied population segment. The online survey method used to obtain tourists' opinions to understand their needs and desires that allowed the researcher to delve deeply into tourists' perceptions of their environments and how to develop Saudi Arabian desert sites the sake of enjoyment.

### **3.6 Data collection and analysis**

To identify the preferences of tourist families within Saudi Arabian desert environments, this research applies a mixed method approach. The qualitative approach will aid in understanding the meanings that people take from their individual or group experiences and applied toward a human or society (D. Creswell and J. Creswell, 2018). In addition, it will help in determining the design guidelines and recommendation suggestions. The quantitative approach was applied to identify the desert tourist preferences within the context of ecotourism. Qualitative Data was collected and analyzed to find reoccurring words and commonalities. Then, thematic coding was used to summarize the collected characteristics and ideas into specific categories (Miles, Huberman, & Saldana, 2013). This approach allows a researcher to conduct essential qualitative analyses of the existence of specific themes that are mapped in a diagram. All identified themes that highlight the tourist's preferences will form the basis for building the design guidelines. The statistical data resulted from the survey was analyzed using the Type form website. In addition, the average of the total preferences was calculated using Excel software.

### **3.7 Institutional Review Board**

The current study was submitted to the Institutional Review Board (IRB) in January of 2020 (see Appendix A) . Tourists will first read and sign a consent form containing some information about the topic of research (see appendix B).

## CHAPTER 4

### 4 RESULTS

#### 4.1 Introduction

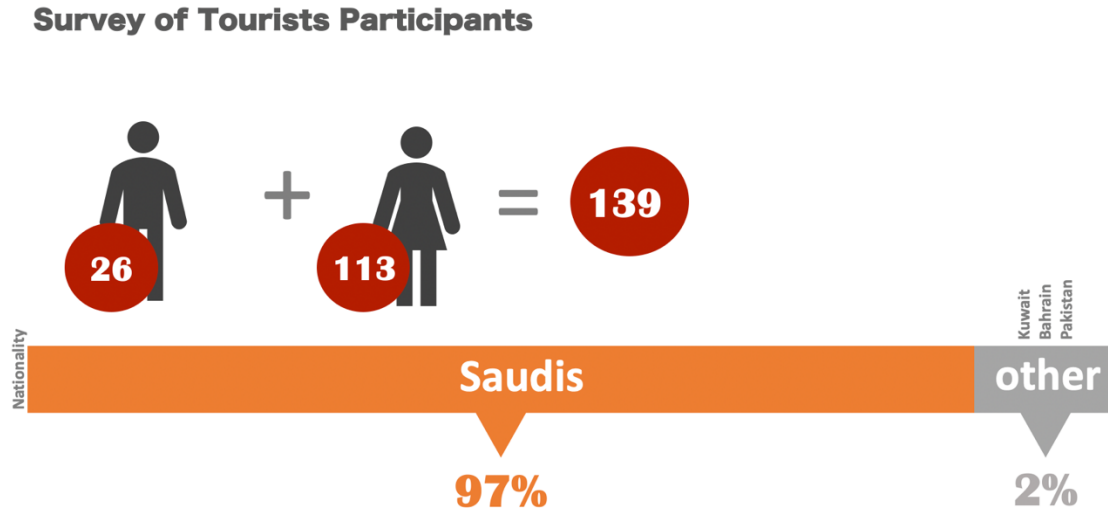
Chapter 4 presents the findings from the research methods presented in chapter 3 and aims to present the results for the objectives outlined in chapter 1. The objectives include the analysis of tourist families' preferences related to the environmental settings and family needs in the Saudi Arabian desert, the identification of elements and criteria that are used when developing sustainable eco-tourism sites in the region. These findings inform design considerations for planning desert eco-tourism facilities for families. Additionally, the chapter provides findings on the respondents' preferences regarding activities and programs for eco-tourism attraction sites in the Saudi Arabia desert. The chapter provides a critical analysis of findings from the survey data results from the 139 respondents. As further analysis, the chapter divides the findings into three categories which include 21-questions survey that was used to analyze tourist families' preferences and measure tourist' satisfaction. The first four questions concern (1) tourists' socio-demographics: gender, nationality, age and education level. The second part of the survey (questions 5 through 9) is about trip characteristics: vacation planning, length of stay and Seasonal preferences, number of travelers, and activities' types. The third part from (questions 14 to 21) investigate tourist's opinions about eco-tourism sustainability in the Saudi Arabian desert: to measure tourists' satisfaction about Saudi Arabian deserts as a trip destination, environmental setting, activities, and services in the Saudi Arabian desert.

## Part 1 Characteristics of Survey Participants

### 4.2 Tourist Socio-demographics

Gender and Nationality:

A total of 139 tourist participants completed the online survey that consists of 21 questions. The respondents included 26 males and 113 females. In terms of nationality, 97% of the participants (135 out of 139) were from Saudi Arabia and the rest was from, Kuwait, Bahrain and Pakistan, as indicated in (figure 22) titled Study Participants by Gender and Nationality.

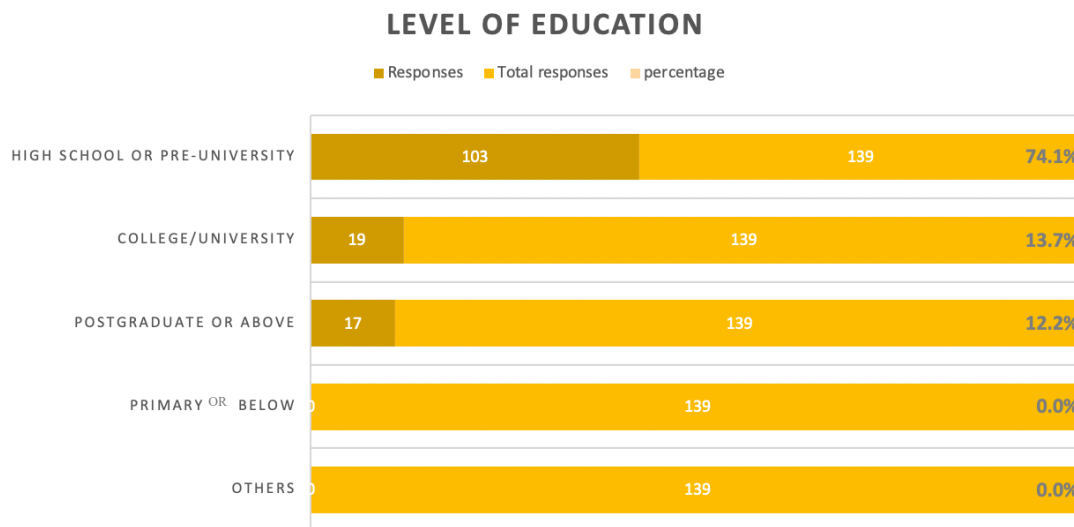


**Figure22:** Study Participants by Gender and Nationality

### 4.3 Level of Education

The level of education and age are some of the factors that affect the likelihood of being potential tourists. Usually, people with college degree or higher have better chances of exposing to different cultures which make them more open to explore unfamiliar places. Several studies indicate that most international tourists have college-degree or higher. However, local tourists have different tendency with more normalized distribution. In this study, the level of education was registered as high school, pre-

university, or primary. Out of the 139 participants, a total of 103 had high school or pre-university education. This represented 74% of the study group. 19 respondents identified themselves with college/university level education. They represent 13% of the study group. Besides, 17 respondents held a postgraduate and above level of education. This cohort represented the remaining 12% of the study population. In (figure 23) shows the results as provided in the survey.

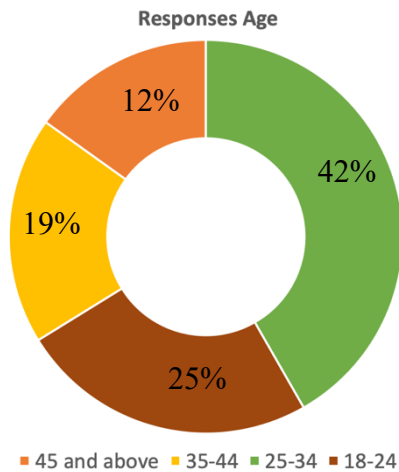


**Figure 23:** Study Participants by Level of Education

#### 4.4 Age

Age is yet another critical tourist socio-demographic factor for consideration in ecotourism studies. As reported by Naar and Schneider (2016), there is a significant relationship between cognitive age and travel behaviors, and that people with a cognitive age younger than 55 years tend to participate in more active outdoor travel activities than those above this age. In (figure 24) presents the age of the participants in the study. The age range for the 139 participants was 18 to 60 years. The researchers created four cohorts as follows: 18-24, 25-34, 35-44, and 45 and above years. The most significant proportion of tourists fell in the 25-39 age group cohort at 59, a 42%. this was followed by the 18-24

age-group at 36, representing 25% of the total number of participants. The third group was the age 35-44 at 27, representing 19% of the total number of participants in the study. The last category was age 45 and above at 17, representing 12% of the total number of participants.



**Figure 24:** Participants age ranges

### **Part 2 Trip Characteristics**

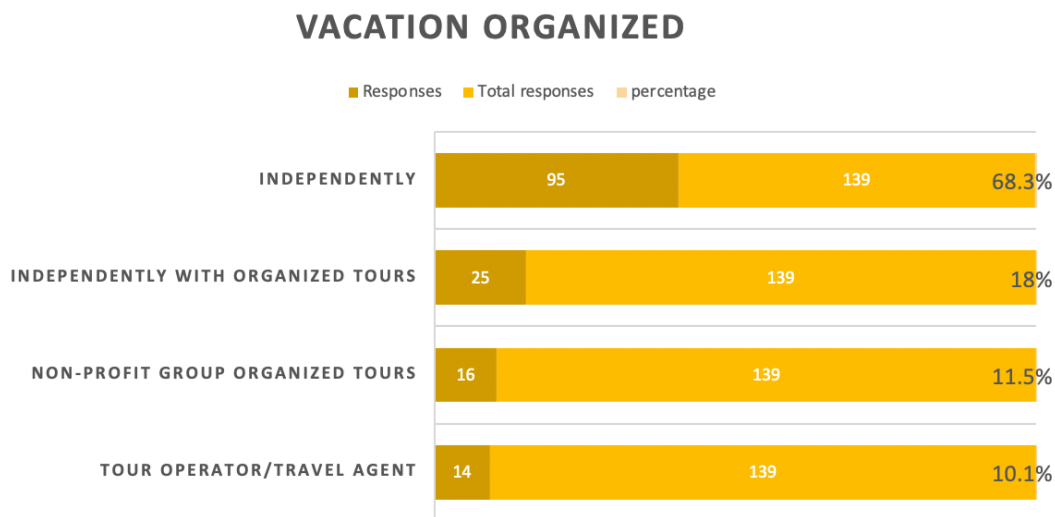
The study also explores trip characteristics to better understand why people would want to be eco-tourists in the Saudi Arabian deserts. As suggested by Popescu and Olteanu (2014), consumer behavior for tourists is often geared towards satisfying a series of requirements such as vacation destinations, accessibility, a promise of a unique experience, high-quality customer services, and an overwhelming desire to satisfy personal needs among others. Hence, trip characteristics must incorporate most of these elements, if not all, in order to give more tourists a reason to have the Saudi Arabian desert as a destination.



Hence, the survey included questions such as how the vacation was organized, the length of the vacation, seasonal preferences, desert destinations, travel companions, and source of information for the intended eco-tourism locations, among others.

#### 4.5 How vacation is organized

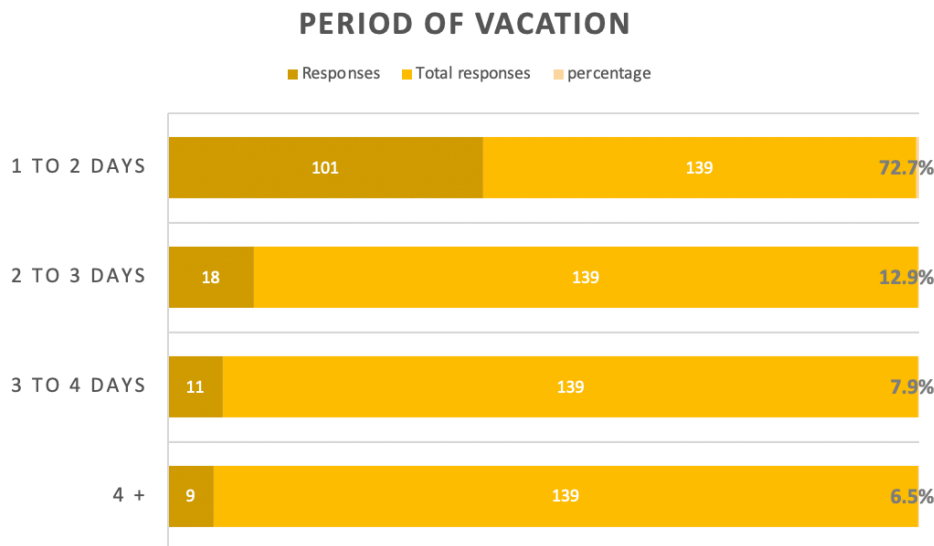
An important question that helps to understand the trip characteristics in the study is how the participants organized their vacation. In (figure 25) is a chart that shows how the respondents organized their ecotourism a past trips vacations such as for camping in the Saudi desert. The following outcomes are observable: most the tourists organize their vacations independently, as indicated by 95 of the 139 respondents, which translates to 68.3%. The second major groups of respondents (25 out of 139) were those who plan independently but travel with groups. These kinds of tourists usually participate in short trips that have some level of flexibility for individuals to change their plans if needed. A further 11.5% of the respondents use non-profit groups to organize their tours, while the remaining 10.1% relies on commercial travel agents to plan their trips.



**Figure 25:** Vacation Organized

## 4.6 Period of Vacation

The survey attempts to understand how long their ecotourism vacations within the Saudi Arabia desert lasted. In (figure 26) shows that, out of the 139 participants, a majority (n=101) reported that they prefer short vacations that last 1 to 2 days and this represents 72.7% of the respondents. 12.9% (n=18) preferred 2-3 days' vacations while 7.9% (n=11) indicated that their vacations often last 3-4 days. It is interesting to note that a minority (n=9) took four or more days for each vacation, and this represented 6.5% of the total respondents.

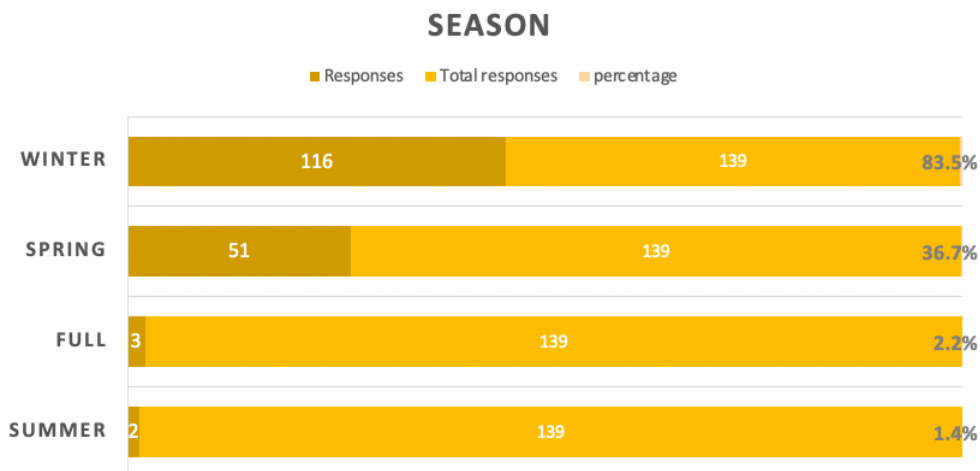


**Figure 26:** Period of Vacation

## 4.7 Season

Another fundamental trip characteristic of the study was the season for travel. In (figure 27) shows preference for weather in planning an ecotourism vacation to the Saudi Arabian desert. In a research conducted by Falk (2014), it emerged that the average sunshine duration and temperatures in the peak summer season impacted domestic

overnight stays positively and that the average precipitation had a negative influence on the number of tourists. Such inferences are also noted in the study, as 83.5% of the participants (n=116) preferred winter while another 36.7% (n=51) preferred spring. It is then not surprising that only 2.2% of the participants preferred fall (n=3) for their vacation in the Saudi Desert while only 1.4% (n=2) reported summer as their favorite vacation season. Some of the probable causes most tourists prefer winter over summer in the desert are the ability to overcome the severity of the winter weather by traditional measures (clothing and wood fire) and the difficulty to navigate through sand areas in summer. The data significantly suggests that due to the harsh temperatures of the desert region, tourists are only attracted to it when they are escaping from far more adverse weathers in their hometowns. Indeed, desert weather can be very intolerable, as noted by Miller (2017), who reports that hot and deserts such as Saudi's can have temperatures reaching 117 degrees Fahrenheit (49 degrees Celsius) during the day and up to negative 64.40 degrees Fahrenheit (18 degrees Celsius) at night.



**Figure 27:** Showing preference for weather in planning a vacation.

#### 4.8 Desert Destinations in Saudi Arabia

Another trip characteristic noted in the study was the destination. The table below provides the list of the most visited areas in the region as well as suggestions for other tourist destinations in (figure 28). The first three preferable destinations, Al- Thumama, Al-Azariah, and Al Nairyah, are considered as “Oasis in desert” and they are less than 100 km from highly densely populated cities especially Riyadh and Dammam. This finding suggests that having travel eco-tourist destinations within the proximity of 100 km is more important economically.

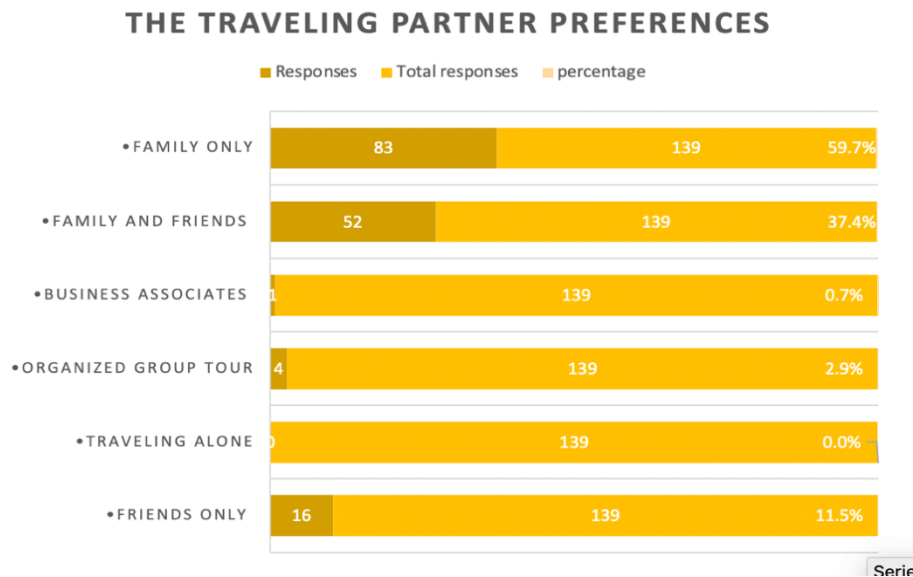


**Figure 28:** Desert Destinations in Saudi Arabia.

#### 4.9 Trip partners

Relationship between people traveling together for ecotourism destinations in Saudi deserts was another aspect of trip characteristic studied in the research. In (figure 29) is a chart that shows the results for the traveling partner preferences. The analysis of

the data collected indicates that 59.7% (n=83) preferred traveling with family members only, while 37.4% (n=52) preferred making the trip with family and friends. A further 11.5% (n=16) traveled only with friends, while 2.9% (n=4) made travel arrangements and traveled in organized group tours. Besides, 0.7% only traveled with business associates. Interestingly, not one participant preferred traveling alone.



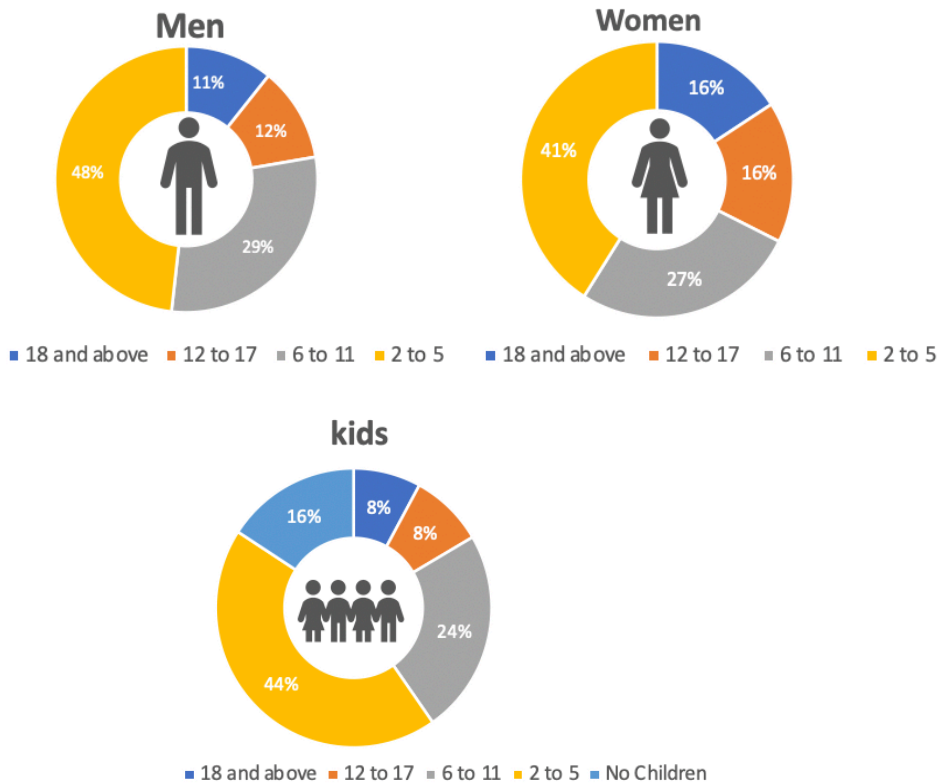
**Figure 29:** Desert Destinations in Saudi Arabia.

#### 4.10 Number of Visitors

In (figure 30) shows the number of people that traveled together in desert trips. These groups were further analyzed by gender and age. The average family group traveling together from the whole pool of participants is 21 members. On average, eight men and nine women were in each group, with the remainder of the members being minors. For 9 participants out of 139, the average trip members were 46 or above which is extremely high while 7 participants had 37-45 members per trip in average. Around 30 participants travel with family members between 25-36 while 50 participants had an

average of 13-24 members per trip. Besides, 43 participants had an average family member in a trip between 2 and 12.

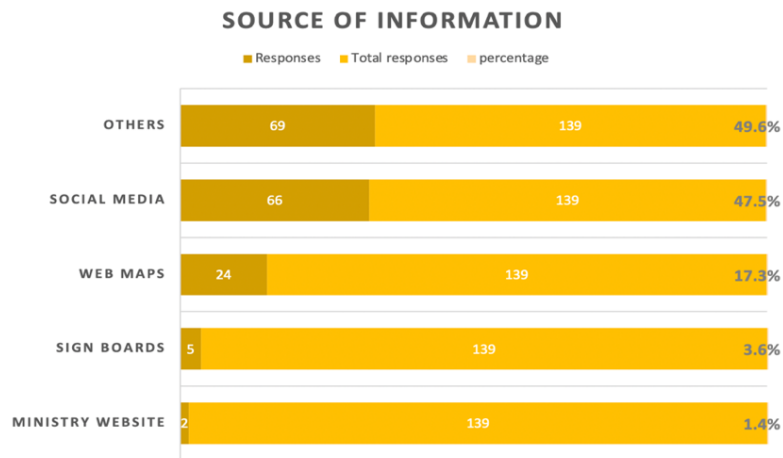
As seen in (figure 30), a pie chart presents the distribution of family members age associated with the gender of the participants. For male and female participants, the presence of toddlers (2 to 5 years) are above 40% in trips and family trips that consists only on family members who are 18 years and older is 16% for female participants and 11% for male participants. The distribution of the family members is somehow similar for both male and female participants which indicates both adults have similar purposes when they participate in a family trip.



**Figure 30:** Number of Family Members on Desert Trip.

#### 4.11 Source of information about deserts tripe.

The survey also examined the source of information about deserts trip and destinations. As seen in (figure 30), 49.6% of the respondents reported that they got their information from other sources (n=69) while 47.5% (n=66) got it from social media. Around 17.3% used web maps while 3.6% (n=5) and 1.4% (n=2) used signboards and ministry websites respectively.

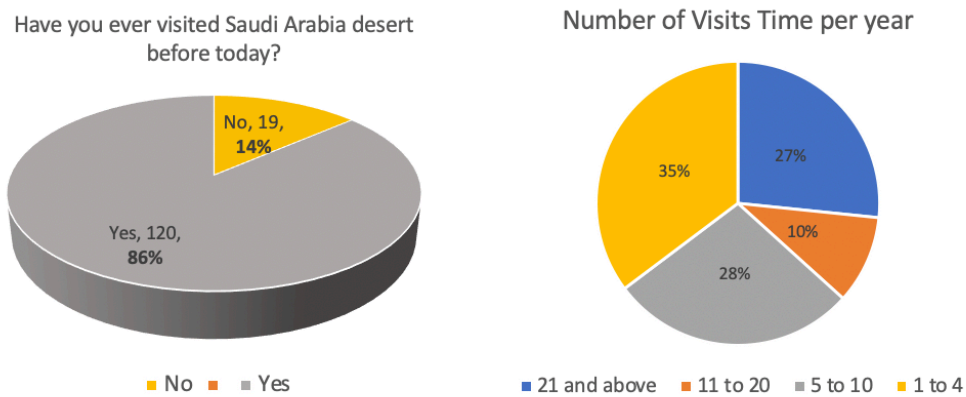


**Figure 31:** Source of information about deserts tripe.

#### 4.12 Previous Visits to Saudi Arabian Desert

When participants asked whether they had visited Saudi Arabia desert before, the vast majority (n= 120), which constitute 86% of the respondents indicated that they have visited the deserts for vacation at least one time. Only the rest of them (n= 19),14% of the respondents indicated that this was their first time traveling for ecotourism in Saudi Arabia desert (figure 32). The same Figure also provides a pie chart that illustrates the results of the number of visits to Saudi Arabia desert per year reported by the participants. 35% of the tourists completing the survey indicated they visit 1-4 times a year the desert for ecotourism, while 28% of the respondents reported between 5-10 visits a year. 10% of the surveyed participants reported visiting the Saudi Arabian Desert for

ecotourism between 11 and 20 times during the year, and 27% had visited the desert 21 and above times. The results indicated that those who had visited the Saudi Arabia desert before were more likely to participate in ecotourism than those who had not.



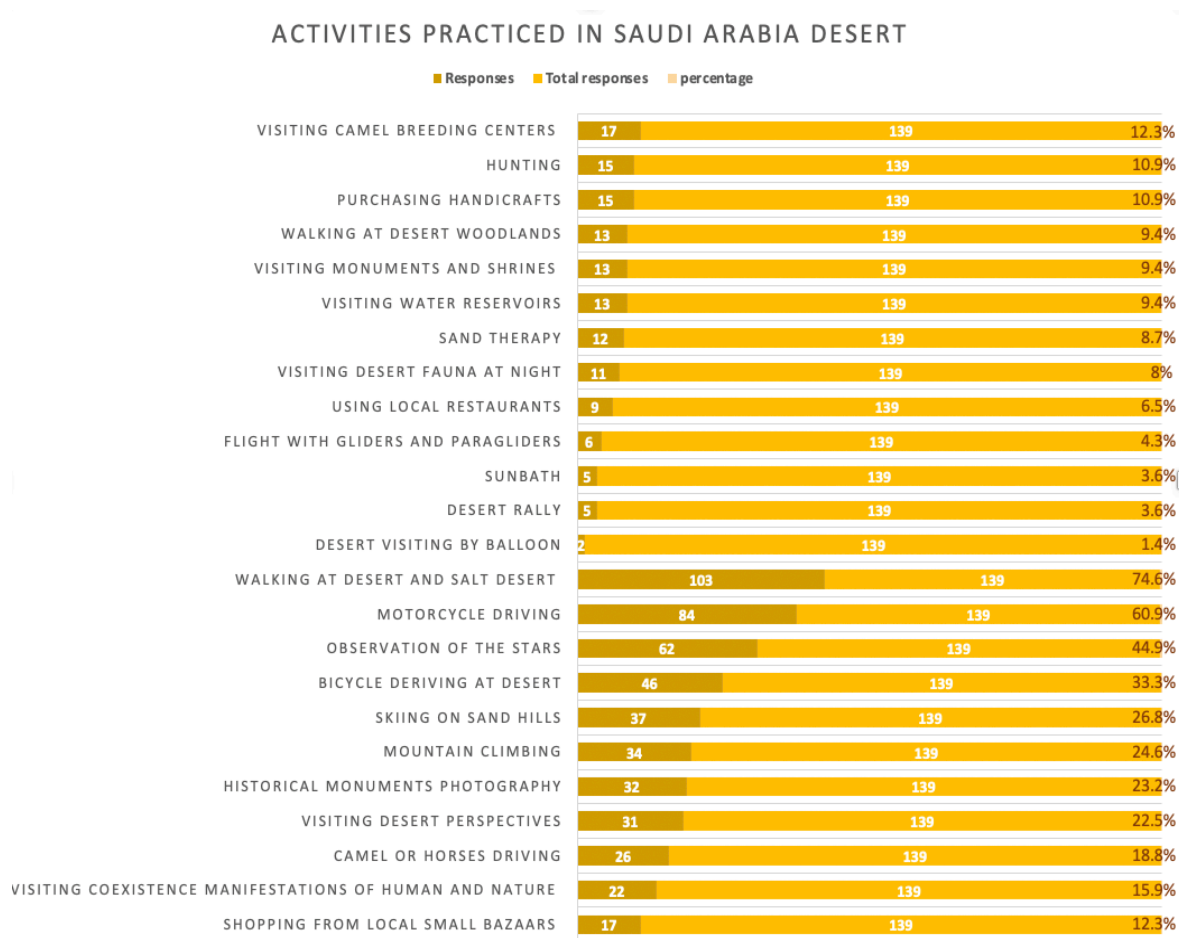
**Figure 32:** Previous Visits to Saudi Arabian Desert.

### 4.13 Activities Practiced in Saudi Arabian Desert

According to 74.6% of the respondents, the most common activities that they usually engage during their time in the desert includes walking at the desert and salt desert (figure 33). The second popular activity was motorcycle driving that accounted for around 60.9% of the respondents. The third popular activity was the observation of the stars with 44.9% listing it; and then the fourth popular activity was riding bicycles where 33.3% of participants is familiar with this activity. Around 20% to 26% of respondents that practiced activities were included skiing on sand hills, visiting monuments and shrines, mountain climbing, historical monuments Photography. Around 10% to 18% of participants are familiar with activities such as camel/horses driving, visiting camel breeding centers, shopping from local small bazaars, and visiting coexistence manifestations of human and nature. A less popular activities where only 6% to 10% of



respondents is familiar with are activities such as purchasing handicrafts, hunting, and walking at desert woodlands, visiting water reservoirs, visiting monuments and shrines, sand therapy, using local restaurants, and visiting desert fauna at night. The least popular activities where only 1% to 6% that the respondents involved in are sunbath, flight with gliders and paragliders, wind boat driving at desert, visiting camel breeding centers, and desert visiting by balloon

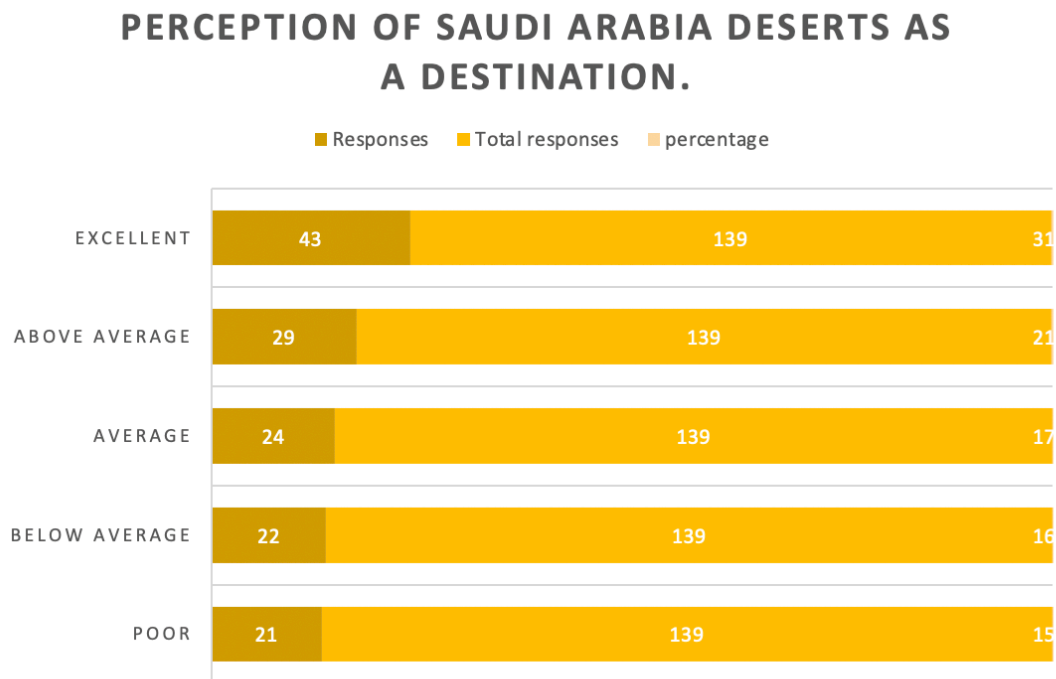


**Figure 33:** Activities Practiced in Saudi Arabian Desert.

### Part 3 Opinions about Ecotourism and Sustainability

#### 4.14 Perception of Saudi Arabian Deserts as a Destination

To understand opinions about ecotourism and its sustainability in Saudi Arabia, the participants were asked about how they would rate Saudi Arabian deserts as a destination (figure 34). Out of the 139 responses received, 31% (n=43) provided an “excellent” rating, while 21% (n=29) reported it to be “above average.” A further 17% (n=24) provided an average rating, while 16% (n=22) reported it to be below average. However, the remaining 15% (n=21) provided a poor rating, and these findings are provided in Figure (04-13).



**Figure 34:** Perception of Saudi Arabian Deserts as a Destination.

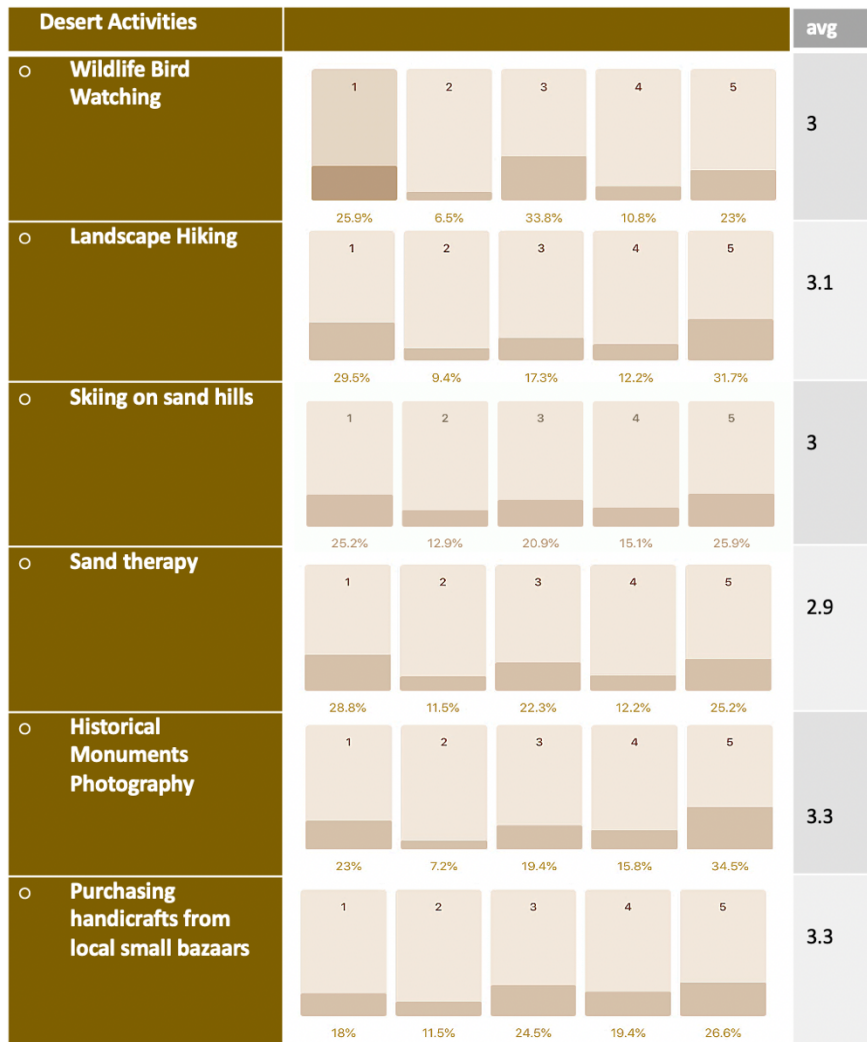
#### 4.15 Desert Activities

Table (2) and (3) provide a rating of the Saudi Arabia desert activities in order of importance to them now for some future tripe. Participants were asked to provide the rating of such activities as wildlife bird watching, landscape hiking, skiing on sand hills, and therapy, among other activities that attract tourists. The respondents were also asked to share their responses with their family members. Furthermore, they were to rate the activities in the order of importance with 1 being most important and 5 being least important.

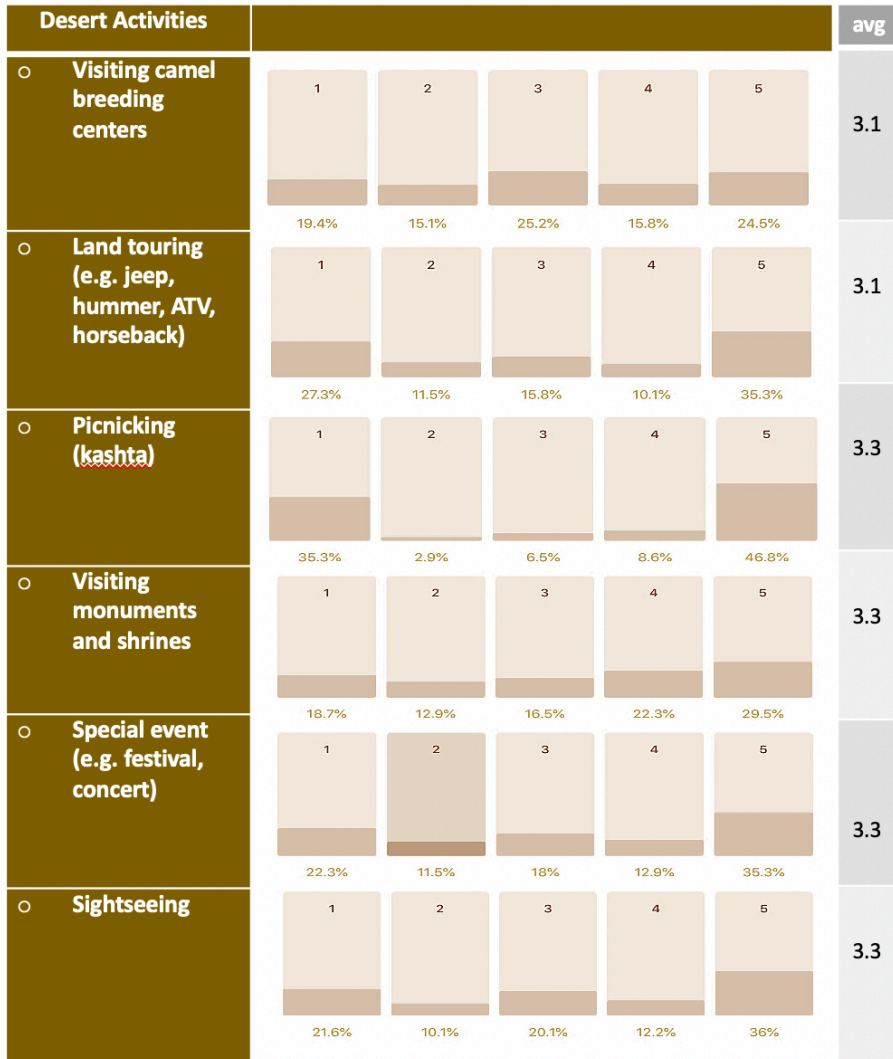
On wildlife bird watching, a majority provided an average rating of 3 (33%). 25% stated that it was the most important, while 23% reported that it was the least important activity during desert ecotourism. Interestingly, only 6% provided a rating of 2. Concerning landscape hiking, 29% provided a rating of 1, while 31% gave a rating of 5. 9%, 17 %, and 12.2% of the participants gave a rating of 2, 3, and 4 respectively. On skiing on sand, 28% gave a rating of 1, while 25% rated the activity at 5. 12%, 20%, and 15% provided a rating of 2, 3, and 4, respectively. Again, sand therapy was rated at 1 by 28%, while 25% gave a rating of 5. 11.5%, 22%, and 12% gave a rating of 2, 3, and 4 in that order (Table 2).

Another activity of interest was the photography of historical monuments in the desert. Ony 23% of the participants provided a rating of 1. 7%, 19%, 15.8%, and 34% gave a rating of 2, 3, 4, and 5, respectively. On purchasing handicrafts from small local bazaars, only 18% rated the activity at 1 while the majority (26.6%) provided a rating of 5. 11.5%, 24% and 19% made a rating of 2, 3 and 4 respectively. Visiting came breeding centers were rated at 1 by 19% of participants, 2 by 15.1% and 3 by 25%. Only 24% provided a poor rating of 5. However, land touring was rated at 5 by 35% while

picnicking, special event and sightseeing also got the same rating at 46%, 29.5%, 35% and 36%, respectively. In these mentioned events, only picnicking had a majority rate it at 1 (35%). The special event, sightseeing, visiting monuments, and land touring did not have any good rating as a majority of the participants provided a rating of 1 for these events at 22%, 21% 18% and 27% in that order. However, it is worth mentioning that for most of the events that the participants rated, only a rating of 1 (most enjoyable) and 5 (least enjoyable) dominated. Hence, if an activity was not very interesting, chances were that it was least interesting hence had a majority rate it as poor (5). Table (3).



**Table 2 : Perception about the Saudi Arabian desert activities.**



**Table3:** Perception about the Saudi Arabian desert activities.

#### 4.16 Current Situation in Saudi Arabian Deserts Site

The study also aimed at understanding the current situation in the deserts that impacted ecotourism and sustainability. Features were grouped into infrastructure, facilities, way finding, social abilities, aesthetics, health, and well-being as well as personal lifestyles. Participants were then asked to rate the feature as either too little, about right, or too much in a rate of 1 to 5. They were then asked how they would want the same features in the future. This was also graded between 1 (want less) and 5 (want

more). Table (4) summarizes the findings for infrastructure, table (5) for facilities, and (6) for way finding.

In the table (4) on infrastructure, a majority 34.5% viewed public transportation poorly, and 60.4% wanted to see an improvement in the future. This finding was replicated in all other variables for infrastructure. For example, 36% of the participants rated parking lots poorly, and over 53% wanted an improvement in the future. On the built environment, 28.8% had an average rating for its current situation, while 27.3% rated it to be too little. On the other hand, 54.7% of the participants wanted more improvement in terms of the built environment in the future, although 19.4% had an average rate of 3. Interestingly, 53.2% were happy with the current situation of roads, while only 8.6% had a poor rating. About this feature, 54.7% wanted more of it in the future, while only 5.8% wanted less of it. Concerning lighting at night, a majority (41.7%) thought that the current situation was too little. Hence, a majority (61.2%) wanted more of this feature in the future.

avg	How do you rate the current situation?			Features of Saudi Arabian desert <b>Infrastructure</b>	How would you like in the future?			avg
	Too Little	About right	Too much		Want less	Keep as is	Want more	
4.1		Public transportation		2.5				
3.9		Parking lots		2.6				
4.1		Roads		2.8				
4.1		Built environment		2.7				
4.2		Lighting at night		2.2				
4.4		Restrooms		2.0				

**Table4:** Current Situation of Infrastructure in Saudi Arabia Deserts Site

In the table (5), the current situation of facilities such as hotels, restaurants, and places for purchasing handicrafts is rated to be too little at 33.8%, 42.4%, and 26.6%, respectively. A small percentage of participants think that the current situation on the facilities are too much with a rating of 5 at 9.4% for hotels, 11.5% for restaurants and 10.8% for bazaars where handicraft get purchased. On the other hand, only 4.3%, 7.2%, and another 7.2% of the participants want less of hotels, restaurants, and bazaars in the future in that order. It is also undeniable that many participants want an improvement in

facilities, as evidenced by 66.2%, 61.9%, and 45.3%, providing a rating of 5 for the need for more hotels, restaurants, and bazaars, respectively.

avg	How do you rate the current situation?			Features of Saudi Arabian desert Facilities	How would you like in the future?			avg
	Too Little	About right	Too much		Want less	Keep as is	Want more	
4.3		Hotels		2.4				
4.2		Restaurants		2.2				
3.8		Retail local handicrafts		2.6				

**Table 5 :** Current Situation of Facilities in Saudi Arabia Deserts Site

Table (6) provides results for wayfinding in the Arabian deserts. A score of 1 for too little is provided for the current situation of directional signs (39.6%), disabilities access (49.6%) and trails (30.6%). On the other hand, the participants want more of these features in the future. A rating of 5 is made for the need for more directional signs (66.2%), more disabilities access (71.2%), and more trails (66.2%). Only a small percentage of the participants made a rating of 1 (want less) for directional signs (5%), disabilities access (4.3%), and trails (5%).



avg	How do you rate the current situation?			Features of Saudi Arabian desert <b>Way finding</b>	How would you like in the future?			avg
	Too Little	About right	Too much		Want less	Keep as is	Want more	
4.2		Directional signs			2.8			
4.4		Disabilities access			2.2			
4.3		Trails			2.3			

**Table 6:** Current Situation of Way finding in Saudi Arabia Deserts Site

Table (7) presents the results for the rating of social abilities. The participants were asked to rate the current situation on interaction with residents as a rate of 1-5, one being too little interaction and 5 being too much interaction. The score was 30.9% (1), 13.7% (2), 32.4% (3), 10.1% (4) and 12.9% (5). Likewise, the participants were asked if they wanted a change in the future. 23% provided a rating of 1 for less future interaction with the residents. However, 10.4% provided a rating of 5 for the need for more interaction with the residents. A score of 2, 3, and 4 was made by 15.8%, 30.2%, and 11.5% of participants, respectively.

avg	How do you rate the current situation?			Features of Saudi Arabian desert <b>Social abilities</b>	How would you like in the future?			avg
	Too Little	About right	Too much		Want less	Keep as is	Want more	
2.9		Interaction with residents			2.6			

**Table7:** Current Situation of Social Abilities Saudi Arabia Deserts Site

In the table (8), rating for the need for authentic culture is captured. 26.6% provide a rating of 26.6% for the existence of too much of this feature, same as those who had a rating of 3. However, 48.9% of participants interviewed still wanted more of it in the future. Only 16.5 % rated the existing situation at 1. On the other hand, only 7.9% want less of it in the future.

avg	How do you rate the current situation?			Features of Saudi Arabian desert <b>Aesthetics features</b>	How would you like in the future?			avg
	Too Little	About right	Too much		Want less	Keep as is	Want more	
3.9	16.5%	26.6%	26.6%	Authentic culture	7.9%	19.4%	48.9%	3.2
	14.4%	15.8%	26.6%		9.4%	14.4%	14.4%	

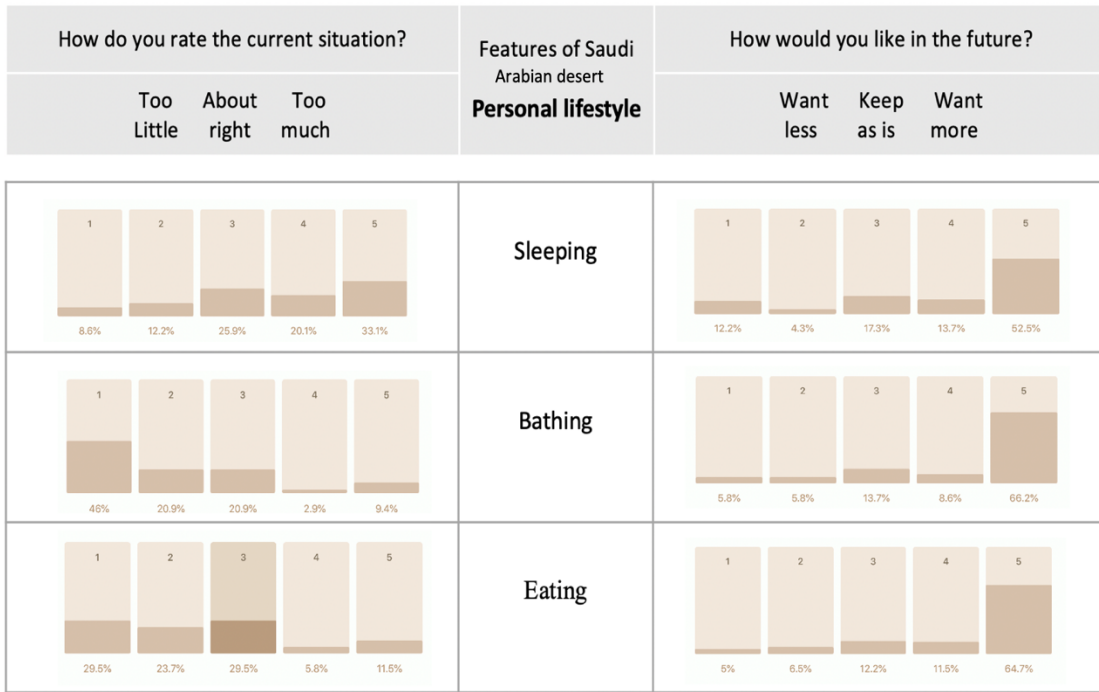
**Table 8:** Current Situation of Aesthetics features Saudi Arabia Deserts Site

On wellbeing and health, table (9) presents data on the current situation of the natural environment, air quality, cleanliness, and safety as well as future expectations from the tour participants. 27.3% think that the state of the natural environment is too much (27.3%), and a majority (52.5%) would even want more of it in the future. Air quality, 43.2% think that the Arabian deserts offer too much of it, while 26.6% think it is just about right. However, 46% would want more of it in the future, while those who want it kept as it is are 18.7%, slightly more than those who think that they might want less of it in the future (17.3%). However, on cleanliness, 59.7% have a rating of 5 for too much, and only 5.8% think it is too little. In the same spirit, 59.7% want the future of Arabian ecotourism to have more cleanliness, and only 5.5% think that they might want less of it. Regardless, safety is rated as tool title (1) by 23% of participants and at average (3) by another 25.2% of the study population. Hence, a majority (59%) would want more security in the future.

avg	How do you rate the current situation?			Features of Saudi Arabian desert <b>Health and Wellbeing</b>	How would you like in the future?			avg
	Too Little	About right	Too much		Want less	Keep as is	Want more	
3.6		Natural environment		3.8				
3.8		Air quality		3.7				
4.2		Cleanliness		4.2				
2.7		Safety		4.2				

**Table 9 :** Current Situation of Wellbeing and Health in Saudi Arabia Deserts Site

Table (10) shows results for personal lifestyle. On sleeping, 33.1% think that the current situation is too much, while 25.9% think that is about right. However, 52.6% would want to have more of this feature in the future. Also, a majority (46%) think that the current situation on bathing is too little, and a whopping 66.2% would want even more of it in the future. The same findings are also replicated on the eating feature, as 29.5% of participants think that the current situation offers tool little. However, the same parentage also thinks that the situation is just about right. Regardless, 64.7% of participants want to have more of the feature when they come visiting the desert in the future, and only 6% would want to experience less of it.

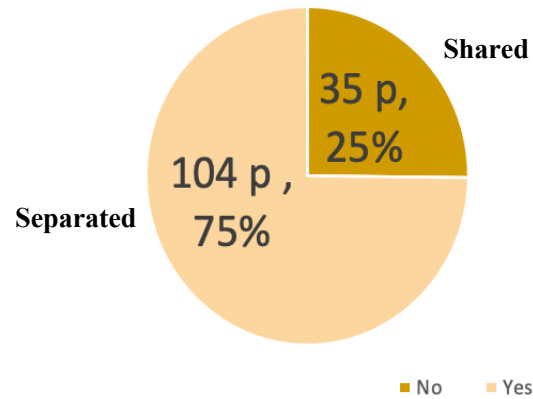


**Table 10 :** Current Situation of Personal Life in Saudi Arabia Deserts Site

#### 4.17 Separating the Desert Activities and Services for Men and Women

Participants in the study were asked whether they would prefer to have desert activities separated for both men and women. These activities included sand boarding, tours, camps, seating areas and concerts, trips, public services, sunbathing, camel and horse driving as well as sand skiing, among others. Figure (11) shows the results in a pie chart. Over 75% preferred to have separate facilities and activities for both men and women, while 35% were against the separation and preferred all activities and common spaces to be shared between the two genders. The participants prefer Separate activities and serves such as: sand boarding, land touring, sunbath, camel or horses driving, Sand skiing, camps, tours, seating areas in concerts, trips and public services

### Separating the Desert Activities and Services for Men and Women

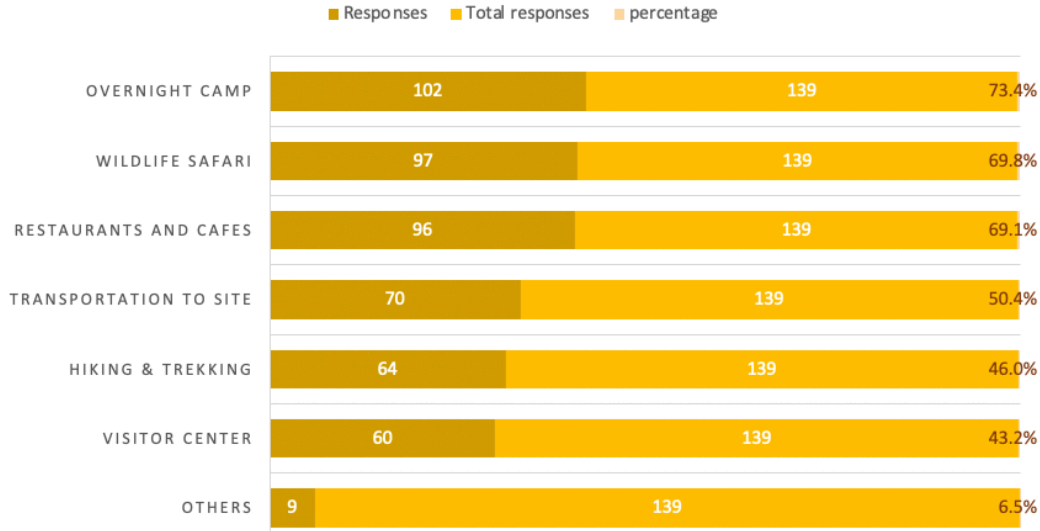


**Figure 35:** Separating the Desert Activities and Services.

#### 4.18 Tourist Services That Visitors Would Like to Have in the Saudi Arabia Desert Site

The participants were asked which tourist services they would prefer to have in the desert. In (figure 36) categorizes the results in terms of percentages and numbers of participants for each activity. 73.4% of the 139 participants (n=102) suggested overnight camps while 69.8% (n=97) suggested wildlife safaris. 69.1% suggested restaurants and cafes (n=96) while 50.4% (n=70) suggested transportation to site. Besides, only 46% (n=64) suggested hiking and trekking, while 43.2% (n=60) and others (n=9) suggested visitor centers and others, respectively. The participants suggested other services such as: interaction with residents (Bedouins) with practice their activities lifestyle with them in desert, Star-watching sites and mountain views.

## TOURIST SERVICES THAT VISITORS WOULD LIKE TO HAVE IN THE SAUDI ARABIA DESERT SITE

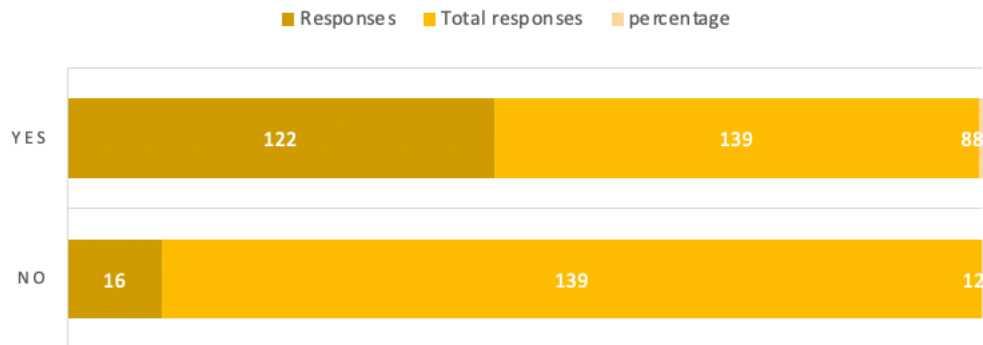


**Figure 36:** Tourist Services That Visitors Would Like to Have in the Saudi Arabian Desert Site.

### 4.19. Important to Saudi Arabian desert decision making.

Figure (37) shows results on whether participants viewed ecotourism in Saudi Arabian deserts to be relevant to be main intent or try a desert experience. 88% (n=122) answered in the affirmative, while 12% (n=16) thought that ecotourism was not necessary. According to 88% questionnaire respondents, they are supporting ecotourism because it helps them to touch nature with conservation of the desert environment, spreads the local culture in enjoyable way, a new exploration destination, encouraging them to interacting with residents of desert (Bedouins), develops services and facilities desert without compromising the current resources, discovering information and learning from nature of desert. supports a tourism sector, heritage and cultural environment that providing diversity of sources income for citizens, creating new experience and practice for desert tourists.

## IMPORTANT TO SAUDI ARABIAN DESERT DECISION MAKING.



**Figure 37:** Important to Saudi Arabian desert decision making.

### 4.20. Suggestions for the Saudi Arabia desert Ecotourism Development

The participants were asked to give some suggestions for the Saudi Arabia desert ecotourism development. 65% they suggested to increasing environmental awareness among the people in the desert, developing infrastructure, public services and facilities, protecting the wildlife and conservation areas, establish an ecotourism center for organizing trips with providers services to offer this type of tourism for individuals or family groups, Increase the ways to help communicate with desert residents.

## CHAPTER 5

### DISCUSSION

#### **5.1 Introduction**

Chapter 5 discusses the findings of the study and it proposes a set of design recommendations. These design recommendations are meant to meet the needs and expectations of tourist family needs in the Saudi Arabian desert. These recommendations intend to point out the areas that can be feasibly improved to develop the ecotourism sector in Saudi Arabia. The content of this chapter is structured to answer the study objectives. The findings will provide some light over the elements and criteria to consider in developing sustainable ecotourism sites and the design considerations for planning and developing desert eco-tourism facilities.

#### **5.2 General discussion**

The first objective of this study is to examine the preferences regarding the environmental setting of tourist families to enable them enjoy ecotourism activities in the Saudi Arabian desert. The method used was an online survey handout distributed among a sample of tourists to measure population family-preferred. (1) How do we improve sustainable site ecotourism in Saudi Arabia deserts, the results indicate that most participants rated Saudi Arabian deserts as an ecotourism trip destination positively. However, Ayachi and Jaouadi (2017) advanced that ecotourism is a new concept, the participants reveal considerable awareness of the concept with 88% considering it relevant to Saudi Arabian deserts. Nine out of ten (92% )of the study participants were not on their first trip reveals the extent to which the concept is attracting a limited number of new visitors. The main challenge facing ecotourism lies in gaining more adopters amidst the negative association that most tourists have with the practice.



In general, the findings suggest that the government has done little to improve the Saudi Arabian desert as a family's tourist destination specially for camping, activities, services, and that ecotourism is highly unexploited in Saudi Arabia. In addition, only 3.6% and 1.4% of participants stated that they learned about the desert trip from signboards and ministry websites respectively. Furthermore, the results suggest that information regarding Saudi Arabia as a destination is very limited, considering that the vast majority, 92% of the participants, were returning visitors to Saudi Arabian desert. Thus, it is important to Improve ecotourism by making information available in multiple platforms such as fliers, ecotourism office, websites, etc. Also, make clear signage that blends with the environment and natural materials at the site to help tourist discover desert areas. Making improvements to facilities and passageways roads within the desert destination site for accessibility purposes. Moreover, it is important for ecotourism to improve designing appropriate infrastructure and materials that are environmental-friendly. The study finds most families prefer the following destinations: Al- Thumama, Al-Azariah, and Al Nairyah. These maybe because these destinations are considered as "Oasis in desert" and they are less than 100 km from major large cities. Thus, it is possible to identify the areas that tourist families prefer to visit, either because of its proximity to the city or because of its amenities and promote ecotourism

To answer the second question of (2) What are families' preferences for environmental settings while participating in ecotourism activities in the Saudi Arabia desert, the findings reveal the elements that affect tourist activities in the Saudi Arabian desert. The environmental settings for families' activities and preferred spaces identified by several participants include restrooms, roads, parking lots, lighting at night, and public transportation. Also, participants mentioned of the desire to improve facilities that would

improve their experience such as restaurants and local handicrafts stores. Participants also mentioned frequently the need to improve wayfinding, paying especial attention to signs, trails and disabilities access. Participants expressed they want more of these features in the future because they make them feel more comfortable and safer.

Overall, tourists tend to be cautioned when interacting with natives (Bedouins) and that can be solved with assuring mutual respect and better communications. Most tourists consider keeping their personal lifestyle while experiencing eco tourism which pose some challenges and some economic opportunities. In general, they seek basic services such as electricity, clean water and septic systems. The season of travel plays a central role in determining when tourists plan vacations, finding that most of the respondents prefer to travel during winter or spring. The unfavorable temperatures of the desert regions during fall or summer discourage traveling. These findings are in agreement with the literature which suggests that tourists prefer to have infrastructure near their camping sites such as places for campground, The programming of these facilities include sitting areas, shade, place to sleep, fireplaces, kids recreational facilities, screens for privacy, bathrooms ,small kitchen , waste management infrastructure, emergency services, and lighting at night .In addition design of the infrastructure should promote ecological resources, traditions and socio cultural values and natural habitat .

To answer the last question of (3) What ecotourism activities and tourist services do families engage in while in the Saudi Arabia desert environment and (4) What kind of spaces do families prefer in the Saudi Arabia desert environments, the findings also show that special considerations should take into account the distribution of the tourists' ages, genders and other aspects that influence the willingness to participate in active outdoor travel activities. This is aligned with Naar and Schneider's (2016) findings. In this study,

gender has played a major role. Most of the respondents (113 out of 139) were females. Women's needs for privacy should also be addressed. A surprising result is that a significant portion of women's responses in the study are more likely to engage in ecotourism activities if there are facilities that can fulfill their needs with their kids. This contradicts the argument made by Ayachi and Jaouadi (2017) that women are unlikely to engage in ecotourism because of the traditional women's role. Moreover, the results reveal a widespread view Over 75% from participants preferred that facilities and activities should be separated based on gender. Most of the participants prefer that the group activities also be separated. These activities often include sand boarding, land touring, sunbath, camel/horses driving, sand skiing, camps, tours, seating areas, trips and public services. Privacy considerations within these activities can result in economic burden, especially for local tourists since it requires more requirements and causes some deficiencies in the mobility of the group.

The study findings are consistent with existing literature on the unique planning and design considerations to consider promoting desert ecotourism in Saudi Arabia. As Mehta (2005) revealed, the findings indicate that climatic conditions are bound to shape ecotourism and its associated activities significantly. Al-Sulbi (2010) show, it is essential for designers to factor the climatic changes. The ability of tourists to obtain pleasant experience in the desert depends on their capacity to overcome the severity of the weather in winter as well as in summer. However, it seems from participants' response that they tolerate winter in the desert probably because heating and insulation (clothing) can be achieved without access to electricity nor sophisticated equipment while cooling is a thermodynamic challenge even for people living in cities.

The responses indicate that there are multiple activities that ecotourists can choose from while in the desert. These activities are not necessarily available near all campgrounds; however, it is recommended to provide tourists several choices from an acceptable range of options. This is important for tourists to have a satisfactory ecotourism experience. The findings also support Ayachi and Jaouadi's (2017) study, identifying walking in the desert as the most popular activity.

The participants' responses to what they would like added in Saudi Arabia desert sites reveal the pressing need for infrastructural improvements. Ayachi and Jaouadi (2017) noted this concern by highlighting that the sector remains underdeveloped. The results suggest that increasing infrastructural facilities will be vital for ecotourism to thrive. In addition, it is important to exhibit the existing economic activities such as handicrafts and arts.

On another note, the purported ecotourism activities mainly fail to meet the ideals of ecotourism. The finding shows that ecotourists had relatively limited interaction with residents. This goes against Coria and Calfucura's (2012) conclusions regarding the inclusion of the local community as vital to the success of ecotourism. Meanwhile, the lack of communication and coordination with natives, who are usually excluded from the economic benefit while experiencing some disturbance, are some of the challenges that need to be addressed to ensure the sustainability and the safety of the ecotourism industry.

### **5.3 Design Implications**

The discussion of research questions reveals mostly positive attitudes towards ecotourism. The findings indicate the need to develop better facilities and infrastructure to attract eco-tourists. From a design perspective, several implications can be derived

from the research outcomes. The first implication relates to responding to tourists' preferences. While tourists appreciate their concept of ecotourism in the Saudi Arabian desert, their main concern regards the availability of accommodation facilities and infrastructure to ease movement.

The design of the facilities should factor in that most vacations are held during the winter and spring. Such would influence the material and architectural features such as air circulation, entries and side openings while maintaining local traditions for natural ventilation and controlling weather conditions including temperature wind and rainfall.

For sustainability purposes, emphasis on design should include innovative technologies that can help improve the efficiency of those infrastructure for example: use rainwater collection system for irrigation, use renewable energy sources like solar and wind power and use materials from sustainable sources or production methods.

A proper environmental impact assessment is necessary for:

- Designing appropriate infrastructure and materials that are environmental-friendly.
- Ensuring minimum disturbance by the construction facilities on the environment.
- Proper waste management to minimize negative environmental impacts.
- Minimum disturbance to wildlife
- Maintaining fresh air during construction
- Availing clean restrooms.

Future studies should investigate what biological deserts inhabitants use to overcome such a harsh environment. Moreover, the construction method and material selection are vital considerations and should form the basis of the form that ecolodges assume. It is believed that the desert has less soil microbial activity due to the lack of

humidity and nutrients which means that the material selected for construction could have more potential not to be environmentally degraded. Therefore, the design and construction of ecolodges should be chosen based on their potential impacts on destination sites. Limiting the impact of construction is necessary, especially for the highly fragile areas of deserts. Environmentally-damaging structures such as petrochemical based materials should cover as limited an area as possible. Careful planning and fencing for safety, separation and privacy are essential to minimize disturbance.

In using this study, it is crucial to acknowledge its limitations. The study is a preliminary exploration of ecotourism adoption in the Saudi Arabian desert. Therefore, the analysis should not be generalized to other contexts. The reliance on online surveys evokes reliability concerns. Even if there is a clear description of what “ecotourism” entails before filling the survey, understanding the term is likely to differ among participants. It may potentially impact the answers to some questions concerning ecotourism.

#### **5.4 Recommendations**

Since ecotourism is in relatively early stages in Saudi Arabia, the main recommendation is for designers to assume a long-term view of economic development and a holistic vision that integrates planning and design to achieve sustainable ecotourism.

- For sustainability purposes, the infrastructure should not only target improving the ecotourism offers and tourist attractions. Emphasis should also be on empowering the local communities to encourage them to adopt sustainable activities in their daily lives. Such would require the

government to adopt capacity building initiatives. Including education and training of local communities in ecolodge management.

- Understanding the prevailing culture, which can assist in maintaining the environmental sustainability during the construction process.
- There should be appropriate measures to reduce harms to the tourists when visiting sensitive areas of the ecosystem.
- Demonstrate respect for a sensitivity of local cultures in both its development and operation phases.
- The tourists should be educated on the existing animals and plants as well as cultures of the community to avoid possible conflicts
- The number of visitors at a particular time should depend on the maximum carrying capacity of the site
- The local community should draw direct economic benefits from the tourist activities in the area
- There should be minimal or no adverse impacts on the social, economic, and environmental facilities in the area

In this paper, some guidelines Recommendation were interpreted based on the data analysis and the families tourists prefer of ecotourism and sustainability design to enhance tourist's satisfaction with their needs including in desert destinations.

### **5.5 Design Guidelines Recommendation**

The first guideline is to provide roads to the destination and passageways within the destination site for accessibility purposes. The design team should determine the facilities' size, where the visitors will go, and the activities they will undertake. Since the

majority of the participants prefer short trips when they plan to go to the desert, it is crucial to consider that family holidays are usually outside working hours, and their activities should incorporate various motives involving some family members (Jaafar & Maideen, 2012). For the site to accommodate families, it is recommendable for it to be split into different sections for men and women in services. Surrounding the campsite with a fence and setting up security checkpoints are among the immediate measures for security, privacy, and safety. Sanitation and hygiene should be thoroughly assured by providing the necessary facilities. For example, pre-made multi-phase septic tanks can be used to ensure that waste water do not pose health risk for tenants. Also, environmental risk assessment can be done from the governments level is important for the sector to develop safety and health guidelines for these isolated areas.

### **5.5. General Conclusion**

Ecotourism emerges as an avenue that Saudi Arabia can exploit to diversify the economy. However, the findings reveal that Saudi Arabia is yet to give the necessary investment needed to exploit its privileged position as a country that welcomes millions of visitors annually. It would be counterproductive if Saudi Arabia committed to popularizing the ecotourism destinations without necessary configurations to ensure facilities meet tourists' needs and expectations. Thus, the next step is to develop ecotourist facilities in the country, considering economic opportunities for local community members.

### **5.7 Consideration for future studies**

Design functions assume a central role in realizing the benefits of ecotourism in the Saudi Arabian desert. However, the government has a role to play because of the need for infrastructure to facilitate the functioning of the physical settings of destinations.



Ecotourism is still a developing practice courtesy of the increasing attention on environmental conservation. With the Saudi government keen to diversify the economy, infrastructural improvements are expected. Despite the comprehensive insights by this study, the researcher could not apply all the findings because the emphasis was on the design approach. Thus, future research can examine the subject from the local community, tourist, or government perspectives. Sustainable ecotourism needs to be considered from various perspectives because of the equally vital roles that different stakeholders assume. Future studies should focus on establishing guidelines for the ecotourism sector to design environmentally friendly facilities that can maintain the safety of tourists in a sustainable environment. Also, future studies for more details about the guidelines in this paper to enhance tourist education and training of local communities about ecotourism. More research to find how well tourist connect and benefit from desert nature.

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APPENDIX A  
SHORT CONSENT

STUDY TITLE: Promoting Sustainable Desert Ecotourism Development in Saudi Arabia: Design Guidelines for Families in Desert Environment

This questionnaire is part of the survey conducted by the College of Design at Arizona State University. I am a graduate student under the direction of Professor Milagros Zingoni. I am conducting a research study to identify the preferences in environmental settings, activities and services of tourist families in Saudi Arabian deserts. In addition, the result of this study will provide important information to help improve ecotourism desert environments.

Ecotourism is the traveling of people in natural areas with an aim of conserving and improving the living standards of the people living around (Cheia, 2013). Ecotourism can also be defined as the travel to areas that are protected, fragile and small scale. The aim of ecotourism is to benefit the local community by having their culture understood and respected while at the same time providing awareness, funds and empowerment for conservation (Coria & Calfucura, 2012).

I am inviting your participation, which will involve answering some questions about the Saudi Arabian deserts you are visiting. You have the right not to answer any question, and to stop participation at any time. There are no foreseeable risks or discomforts to. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty, to be eligible for the study, you must be 18 or older. Return of this questionnaire will be considered your consent to participate. You are assured of complete anonymity and confidentiality. The results of this study may be used in reports, presentations, publications but your name will not be used. The survey will take no more than five minutes to answer.

If you have any questions concerning the research study, please contact the research team at:

- 1- Milagros Zingoni at [mzingoni@asu.edu](mailto:mzingoni@asu.edu)
- 2- Amirah Alfadhli at [aaalfad2@asu.edu](mailto:aaalfad2@asu.edu)

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788. Please let me know if you wish to be part of the study.

APPENDIX B  
SURVEY QUESTIONS

## Survey Questionnaire

Please only fill this in if you consider yourself to be an ECO-TOURIST! This survey is considered to find out the preferences of eco-tourists when choosing an ecotourism desert site in Saudi Arabia. If you agree to participate in this study, turn in the survey.

### Appendix B: Short Consent

#### Part I: Tourist socio-demographics

1. What is your gender? *(Please ✓ one)*
  - Male.
  - Female.
  
2. What is your age? *(Please ✓ one)*  
.....
  
3. Where are you from? *(Please ✓ one)*
  - Saudi Arabia.
  - Somewhere else, please specify: .....
  
4. What is the level of your education?
  - .....
  
5. What is your level of education? *(Please ✓ one)*
  - Primary or below
  - High school or pre-university
  - College/University
  - Postgraduate or above
  - Others, please specify .....

#### Part II: Trip characteristics

6. How are your vacation organized? *(Please ✓ one)*
  - Independently
  - Independently with organized tours
  - Non-profit group organized tours
  - Tour Operator/Travel agent
  
7. How long do you go on your vacation in Saudi Arabia desert for? *(Please ✓ one)*
  - 1 to 2 days
  - 2 to 3 days
  - 3 to 4 days



- 4 +

8. Which season do you prefer to spend your vacation in Saudi Arabia desert? (  
*Please ✓ one*)

- Summer
- Full
- Winter
- Spring

9. Which desert destination do you go in Saudi Arabia?

- ANSWER:.....  
.....

10. Is there any other destination you would like to add in future?

- ANSWER:.....  
...

11. Who is traveling with you on this trip? (*Please ✓ one*)

- Family only
- Family and Friends
- Business associates
- Organized group tour
- Traveling alone
- Friends only

12. Including yourself, how many people are in your trip? (Please fill in a number for each)

\_\_\_\_\_ # of Women    \_\_\_\_\_ # of Men    \_\_\_\_\_ # of Children

13. How did you know about the Saudi Arabia desert? (*Please ✓ one*)

- Ministry website
- social media
- friends & relatives
- Sign boards
- web maps
- others, please specify .....

14. Have you ever visited Saudi Arabia desert before today? (*Please ✓ one*)

- No
- Yes

↓ (*please fill in a number*)

- a) Number of visits: \_\_\_\_\_ visits, including this trip
- b) during you most recent visit, what activities did you participants in with your family? (check from the list)

- Sunbath
  - Sand therapy
  - Bicycle deriving at desert
  - Driving over dunes
  - Skiing on sand hills
  - Camel or horses driving
  - Flight with gliders and paragliders
  - Visiting desert perspectives
  - Visiting water reservoirs
  - Visiting desert fauna at night
  - Walking at desert woodlands
  - Using local restaurants
  - Shopping from local small bazaars
  - Visiting coexistence manifestations of human and nature
  - human and nature
  - Walking at desert and salt desert
  - Motorcycle driving
  - Desert rally
  - Wind boat driving at desert
  - Visiting camel breeding centers
  - Desert visiting by balloon
  - Observation of the stars
  - . Purchasing handicrafts
  - Visiting monuments and shrines
  - Hunting
  - Mountain climbing
  - Historical Monuments Photography
  - Walking at desert and salt desert
- 

### Part III: Opinions about ecotourism and sustainability

15. Overall, how would you rate Saudi Arabia deserts as a tripe destination? (*Please ✓one*)

- |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Poor                     | Below<br>average         | Average                  | Above<br>average         | Excellent                |

16. Please rate the Saudi Arabia desert activities below, in order of importance when choosing an eco-tourism vacation and let your family shear there thought with you.

Use numbers from 1-5 (1-most important, 5-least important)

Desert Activities	most important			least important	
	1	2	3	4	5
<input type="checkbox"/> Wildlife Bird Watching					
<input type="checkbox"/> Landscape Hiking					
<input type="checkbox"/> Skiing on sand hills					
<input type="checkbox"/> Sand therapy					
<input type="checkbox"/> Historical Monuments Photography					
<input type="checkbox"/> Purchasing handicrafts from local small bazaars					
<input type="checkbox"/> Visiting camel breeding centers					
<input type="checkbox"/> Land touring (e.g. jeep, hummer, ATV, horseback)					
<input type="checkbox"/> Picnicking					
<input type="checkbox"/> Visiting monuments and shrines					
<input type="checkbox"/> Special event (e.g. festival, concert)					
<input type="checkbox"/> Sightseeing					

Other, please specify: \_\_\_\_\_

17. about the current situation in Saudi Arabia deserts site. Second, in the right column indicate how would you like each feature to change in the future. (Circle one number in each column)

How do you rate the current situation?					Features of Saudi Ariba desert	How would you like in the future?				
Too Little	2	About right	3	Too much		4	5	Want less	Keep as is	Want more
1	2	3	4	5	Public transportation	1	2	3	4	5
1	2	3	4	5	Parking lots	1	2	3	4	5
1	2	3	4	5	Roads	1	2	3	4	5
1	2	3	4	5	Built environment	1	2	3	4	5
1	2	3	4	5	Directional signs	1	2	3	4	5
1	2	3	4	5	Disabilities access	1	2	3	4	5
1	2	3	4	5	Variety of attractions	1	2	3	4	5
1	2	3	4	5	Trails	1	2	3	4	5

1 2 3 4 5	Purchasing local handicrafts	1 2 3 4 5
1 2 3 4 5	Hotels	1 2 3 4 5
1 2 3 4 5	Restaurants	1 2 3 4 5
1 2 3 4 5	Restrooms	1 2 3 4 5
1 2 3 4 5	Lighting at night	1 2 3 4 5
1 2 3 4 5	Interaction with residents	1 2 3 4 5
Poor                  Excellent	Features of Saudi Ariba desert	No Change                  Change for the better
1 2 3 4 5	Authentic culture	1 2 3 4 5
1 2 3 4 5	Safety	1 2 3 4 5
1 2 3 4 5	Air quality	1 2 3 4 5
1 2 3 4 5	Cleanliness	1 2 3 4 5
1 2 3 4 5	Natural environment	1 2 3 4 5
1 2 3 4 5	Sleeping	1 2 3 4 5
1 2 3 4 5	Bathing	1 2 3 4 5
1 2 3 4 5	Eating	1 2 3 4 5

18. Do you prefer to separate the desert activities and services of women and men?

(Please ✓ one)

- No
- Yes

↓ (please indicate what kind of activity or services)

.....

19. Which tourist service would you like to have in the Saudi Arabia desert site?

(Please ✓ one)

- overnight camp
- wildlife safari
- hiking & trekking
- visitor center
- Transportation to site
- Restaurants and cafes

others.....

20. Why do you choose the desert as a destination to spend your vacation?

• .....

21. Is the ecotourism important from your opinion? Please ✓ one)

- No
- Yes

↓ (*why*)

.....

**22.** Please give some suggestions for the Saudi Arabia desert ecotourism development.

- .....

Thank you for participating in our survey.

APPENDIX C  
IRB APPROVAL

EXEMPTION GRANTED

[Milagros Zingoni Phielipp](#)  
[HIDA: The Design School](#)  
 480/727-0267  
 MilagrosZingoni@asu.edu

Dear [Milagros Zingoni Phielipp](#):

On 1/31/2020 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Promoting Sustainable Desert Ecotourism Development in Saudi Arabia: Design Guidelines for Families in Desert Environment
Investigator:	<a href="#">Milagros Zingoni Phielipp</a>
IRB ID:	STUDY00011365
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none"> <li>• Amirah Alfadhli.pdf, Category: Recruitment Materials;</li> <li>• Amirah Alfadhli, Category: IRB Protocol;</li> <li>• Amirah Alfadhli, Category: Consent Form;</li> <li>• Translation certificate, Category: Translations;</li> <li>• translation survey, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> </ul>

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 on 1/31/2020.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Amirah Alfadhli  
 Amirah Alfadhli