Residents’ perceptions of geotourism in Qeshm Island UNESCO Global Geopark, Iran

Shahrzad Khodayar

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RESIDENTS’ PERCEPTIONS OF GEOTOURISM
IN QESHM ISLAND UNESCO GLOBAL GEOPARK, IRAN

This thesis is presented in partial fulfilment of the degree
of Master of Business by Research

Shahrzad Khodayar

Edith Cowan University
School of Business and Law
2018
USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.
Abstract

While much scholarly attention has explored the impacts of tourism behaviour on a destination, little is known about the effects of geotourism activities on host communities. Geotourism is a type of tourism based on geological features. It has been variously defined as a tourism with a ‘geological’ or ‘geographical’ orientation. This study addresses this gap in the literature by exploring residents’ perceptions of the impacts of geotourism development in the Qeshm UNESCO Global Geopark in the Persian Gulf in Iran. Qeshm Geopark has a sensitive environment as well as a strict traditional culture and it receives about 3 million visitors annually.

The objectives of this study are threefold. Firstly, to enrich the geotourism literature with an analysis of residents’ attitudes. Secondly, to determine the extent of the relationship between geotourism development in Qeshm Geopark and the impacts on local residents. Thirdly, to consider whether locals’ attitudes towards geotourism development in Qeshm Island change over time.

A quantitative method is used to achieve this goal with a sample of 266 residents of Qeshm Island. The data is analysed using a Confirmatory Factor Analysis and Structural Equation Modelling techniques. This study identified four geotourism impact domains and examined the effect of each domains on overall residents’ attitudes toward geotourism development in Qeshm Island. Results indicated that the overall residents’ attitudes are closely associated with their perceptions of positive cultural impacts in Qeshm Island. There is also a positive significant relationship between adverse urban issues and the overall residents’ attitudes in Qeshm Island. However, the residents’ positive perceptions and attitudes are much greater than the negative ones.

The results of this study will enhance the knowledge of residents’ attitudes towards future geotourism development in Qeshm Island. This will help to identify the current problems in planning and management and identify possible solutions for future geotourism development. It should also assist planners in the establishment of tourism development policies and strategies which are informed by residents’ concerns and issues. In addition, it should help them minimise any adverse impacts whilst enhancing the overall benefits.

iii
associated with geotourism development. This study also hopes to build on scholarly knowledge about geotourism, an important and emerging field.
Declaration

I certify that this thesis does not, to the best of my knowledge and belief:

1. Incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of high education.
2. Contain any material previously published or written by another person except where due reference is made in the text of this thesis.
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Acknowledgments

I remember what Alfred D Souza said, that “For a long time it seemed to me that life was about to begin – real life. But there was always some obstacle in the way, something to be gotten through first, some unfinished business, time still to be served, a debt to be paid. At last, it dawned on me that these obstacles were my life.”

I would like to acknowledge and thank my supervisors Professor Ross Dowling and Dr Greg Willson for all their encouragement, great support and the patient guidance provided throughout my Master’s Research studies. I have been extremely lucky, and it was an honour for me to share their exceptional scientific knowledge. Their positive outlook and confidence in my research inspired me and gave me confidence.

I appreciate Josephine Smith – WordSmith WA provided copyediting services in accordance with the Guidelines for editing research theses produced by the Institute of Professional Editors Ltd. The editorial intervention has been restricted to copyediting and proofreading, as covered in Standards D and E of the Australian standards for editing practice. Thanks also go to the staff of the School of Business and Law and the Graduate Research School at Edith Cowan University for their support during my study. I am also grateful to all my colleagues and friends at Edith Cowan University, who expressed an interest in the project and provided informal (and sometimes formal) feedback on my study.

Appreciation is also extended to Hamidreza Mohsenpour and all the staff in Qeshm Geopark office for their continued support and help during data collection at Qeshm Island. Additionally, I would like to thank Alireza Amrikazemi, director of Qeshm Island UNESCO Global Geopark, for his encouragement, advice and understanding during various stages of this project. Moreover, I wish to thank the local community of Qeshm Island for their kindness and hospitality while collecting data in Iran.

Thank you to my colleagues at Perth Airport, for all the moments of leisure shared together to overcome some more difficult times. Particularly, Kathryn Weeks for allowing time towards my study, confidence and prompt help, whenever I needed. Also, to my closer friends, Mojgan Maryam, Sharareh and Marjan. I express my gratitude for your unconditional friendship, support and patience throughout these years.
Last and foremost, I would like to convey my greatest thanks and deepest gratitude to my family. I owe special thanks to my parents, Soheila and Aliasghar, for their dedication and the many years of unconditional support during my graduate studies. I would not have come this far without your love, faith and sacrifice. And finally, to my sister, Sharareh, who have spent countless hours alone during these years, but always supported and gave me the strength to keep on going.
# Table of contents

Use of thesis ........................................................................................................................................ ii
Abstract ................................................................................................................................................ iii
Declaration ......................................................................................................................................... v
Acknowledgments .............................................................................................................................. vi
List of figures ....................................................................................................................................... xi
List of tables .......................................................................................................................................... xii

CHAPTER 1 INTRODUCTION .............................................................................................................. 1
  1.1 Introduction ................................................................................................................................... 1
  1.2 Background .................................................................................................................................. 3
  1.3 Research problem statement ....................................................................................................... 7
  1.4 Significance of the study ............................................................................................................ 7
  1.5 Purpose of the study .................................................................................................................... 8
  1.6 Research questions ..................................................................................................................... 8
  1.7 Research hypotheses .................................................................................................................. 8
  1.8 Definition of key terms .............................................................................................................. 9
    1.8.1 Sustainable tourism ............................................................................................................ 9
    1.8.2 Geotourism ........................................................................................................................ 9
    1.8.3 Geoparks ............................................................................................................................ 9
    1.8.4 Tourism impacts ................................................................................................................. 10

CHAPTER 2 LITERATURE REVIEW ................................................................................................. 11
  2.1 Overview of tourism ..................................................................................................................... 11
    2.1.1 From mass tourism to sustainable tourism ....................................................................... 14
  2.2 Overview of geotourism and geoparks ....................................................................................... 17
    2.2.1 Definition of geotourism .................................................................................................... 17
    2.2.2 Geotourism: A review of the literature ............................................................................ 20
    2.2.3 Geoparks and UNESCO Global Geoparks ...................................................................... 22
  2.3 Tourism and geotourism in Iran ................................................................................................. 25
    2.3.1 Review of geotourism and geopark literature in Iran ....................................................... 27
    2.3.2 Geotourism research in Qeshm Island UNESCO Global Geopark .................................. 28
  2.4 Tourism impacts on host communities ...................................................................................... 30
    2.4.1 Economic impacts .............................................................................................................. 30
    2.4.2 Socio-cultural impacts ...................................................................................................... 31
    2.4.3 Environmental impacts .................................................................................................... 32
  2.5 Perceptions of tourism impacts ................................................................................................. 34
  2.6 Factors influencing the perception of tourism .......................................................................... 39
    2.6.1 Distance from tourist sites ............................................................................................... 39
    2.6.2 Length of residency ............................................................................................................ 40
    2.6.3 Involvement in tourism ..................................................................................................... 40
    2.6.4 Residents’ economic dependence on tourism ................................................................... 40
    2.6.5 Seasonality pattern of development ............................................................................... 41
    2.6.6 Cultural differences between tourists and residents of a host community .................... 41
  2.7 Conceptual framework .............................................................................................................. 41
    2.7.1 Conceptual definition and research hypotheses ............................................................... 42
CHAPTER 3 METHODOLOGY ................................................................................................................. 45
3.1 Study site ........................................................................................................................................ 45
3.2 Research design ............................................................................................................................... 48
3.3 Variables .......................................................................................................................................... 49
  3.3.1 Independent variables ................................................................................................................ 49
  3.3.2 Dependent variables .................................................................................................................. 50
  3.3.3 Other tested data ....................................................................................................................... 50
3.4 Pilot study and pre-test .................................................................................................................... 51
3.5 The survey instrument .................................................................................................................... 52
3.6 Sample population .......................................................................................................................... 54
3.7 Data collection .................................................................................................................................. 55
3.8 Validity and reliability ..................................................................................................................... 56
3.9 Data analysis .................................................................................................................................... 57
  3.9.1 Structural Equation Modelling ................................................................................................. 58
3.10 Ethical considerations .................................................................................................................... 59
3.11 Chapter summary ........................................................................................................................... 59
CHAPTER 4 RESULTS .............................................................................................................................. 61
4.1 Introduction ....................................................................................................................................... 61
4.2 Descriptive results of the sample .................................................................................................... 61
  4.2.1 Descriptive analysis of demographic and social characteristics of respondents ............... 61
  4.2.2 Residents perceptions of geotourism impacts ....................................................................... 63
4.3 Exploratory Factor Analysis for residents’ perceptions of geotourism in Qeshm Island ........... 65
4.4 Confirmatory Factor Analysis and Structural Equation Modelling ............................................... 67
  4.4.1 Stage 1: Model fit 1 – CFA between geotourism impacts indicators ....................................... 68
  4.4.2 Stage 1: Model fit 2 – CFA between geotourism impacts indicators ....................................... 71
  4.4.3 Stage 1: Model fit 3 – CFA between geotourism impacts indicators ....................................... 74
  4.4.4 Stage 1: Model fit 4 – CFA between geotourism impacts indicators ....................................... 77
  4.4.5 Stage 2: CFA of the residents’ attitudes to geotourism impacts ............................................. 81
  4.4.6 Stage 3: CFA for geotourism impacts and the residents’ attitudes to geotourism in Qeshm Island ................................................................. 82
4.5 Residents’ attitudes towards geotourism in Qeshm Island ......................................................... 87
  4.5.1 Analysis of the open-ended residents’ responses to geotourism in Qeshm Island ............... 88
4.6 Summary ........................................................................................................................................... 89
CHAPTER 5 DISCUSSION ............................................................................................................................ 90
5.1 Introduction ....................................................................................................................................... 90
5.2 Residents’ perception of geotourism impacts ............................................................................... 90
  5.2.1 Research question RQ1 ....................................................................................................... 90
5.3 The residents’ attitudes towards geotourism impacts in Qeshm Island ....................................... 97
  5.3.1 Research question RQ2 ....................................................................................................... 97
5.4 The relationship between residents’ perception of geotourism impacts and residents’ attitudes towards geotourism impacts in Qeshm Island .................................................. 100
  5.4.1 Research question RQ3 ....................................................................................................... 100
5.5 Policy implications for Qeshm Global Geopark ......................................................................... 101
5.6 Summary of the discussion ........................................................................................................... 102
CHAPTER 6 CONCLUSION ........................................................................................................................ 105
6.1 Limitations ....................................................................................................................................... 107
6.2 Recommendations for further research ....................................................................................... 108
References ........................................................................................................................................... 109
List of figures

Figure 1-1  Qeshm Island (NASA, 2007) ........................................................................................................ 3
Figure 1-2  Qeshm Geopark map (QeshmGeopark, 2016) ........................................................................ 6
Figure 2-1  The tourism stakeholder system (Weaver & Lawton, 2014) ....................................................... 12
Figure 2-2  International tourist arrivals in 2017 (UNWTO, 2018)................................................................. 13
Figure 2-3  UNWTO Tourism Towards 2030: Actual trend and forecast 1950–2030 (UNWTO, 2016). 14
Figure 2-4  Overview of tourism Adopted from Newsome et al. (2012) ...................................................... 15
Figure 2-5  Distribution of Global Geoparks Network members .............................................................. 24
Figure 2-6  Topographical map of Iran .................................................................................................. 26
Figure 2-7  The scope of the concepts of the environment (Swarbrooke, 1998) ......................................... 33
Figure 2-8  Hypothetical evolution of a tourist area (Butler, 1980).............................................................. 36
Figure 2-9  A proposed conceptual model for this study............................................................................. 44
Figure 3-1  Qeshm Geopark map .............................................................................................................. 46
Figure 3-2  Culture diversity in Qeshm Island ............................................................................................. 47
Figure 4-1  Model fit 1 – CFA of geotourism impacts ................................................................................. 69
Figure 4-2  Model fit 2 – CFA of geotourism impacts ................................................................................. 72
Figure 4-3  Model fit 3 – CFA of geotourism impacts ................................................................................. 75
Figure 4-4  Model fit 4 – CFA of geotourism impacts ................................................................................. 78
Figure 4-5  CFA of the residents’ attitudes to geotourism ................................................................. 81
Figure 4-6  Overall model fit of residents’ perceptions towards geotourism in Qeshm Island .......... 83
Figure 4-7  SEM of the residents’ perceptions towards geotourism in Qeshm Island ......................... 85
Figure 4-8  Residents’ responses to geotourism in Qeshm Island ........................................................... 89
List of tables

Table 3-1  Economic impacts indicators of geotourism in Qeshm Island ............................................. 52
Table 3-2  Socio-cultural impact indicators of geotourism in Qeshm Island ........................................... 53
Table 3-3  Environmental impact indicators of geotourism in Qeshm Island ......................................... 53
Table 3-4  Host life cycle indicators towards geotourism ....................................................................... 54
Table 4-1  The Demographics of the Respondents in Qeshm Island .................................................... 62
Table 4-2  Respondents’ Perceptions of Geotourism in Qeshm Island ................................................... 64
Table 4-3  KMO and Bartlett’s Test ......................................................................................................... 65
Table 4-4  The results of the factor analysis for geotourism impacts in Qeshm Island ............................ 66
Table 4-5  Model fit 1 – CFA of geotourism impacts, standardised regression weight between geotourism impacts domain ................................................................................................................. 70
Table 4-6  Model fit 1 – CFA of geotourism impacts, validity and reliability test .................................... 71
Table 4-7  Model fit 2 – Coefficient correlation between the constructs of geotourism impacts in Qeshm Island ........................................................................................................................................ 73
Table 4-8  Model fit 2 – CFA of geotourism impacts, standardised regression weight between geotourism impacts domain ................................................................................................................. 73
Table 4-9  Model fit 2 – CFA of geotourism impacts, validity and reliability test .................................... 74
Table 4-10 Model fit 3 – Coefficient correlation between the constructs of geotourism impacts in Qeshm Island ........................................................................................................................................ 75
Table 4-11 Model fit 3 – CFA of geotourism impacts, standardised regression weight between geotourism impacts domain ................................................................................................................. 76
Table 4-12 Model fit 3 – CFA of geotourism impacts, validity and reliability test .................................... 77
Table 4-13 Model fit 4 – Coefficient correlation between the constructs of geotourism impacts in Qeshm Island ........................................................................................................................................ 78
Table 4-14 Model fit 3 – CFA of geotourism impacts, standardised regression weight between geotourism impacts domain ................................................................................................................. 79
Table 4-15 Model fit 4 – CFA of geotourism impacts, validity and reliability test .................................... 80
Table 4-16 Summary of fit indices for CFA of geotourism impacts in Qeshm Island .............................. 81
Table 4-17 CFA of the residents’ attitudes, standardised regression weight ............................................. 82
Table 4-18 Regression weights between the conclusive variables ......................................................... 84
Table 4-19 SEM and CFA of the conclusive model, validity and reliability test ..................................... 86
Table 4-20 Descriptive results of residents’ responses to geotourism in Qeshm Island .......................... 87
Table 5-1  Summary of findings .......................................................................................................... 103
Table 5-2  Summary of hypotheses .................................................................................................... 104
CHAPTER 1 INTRODUCTION

1.1 Introduction

Tourism has become one of the world’s largest industries and makes a major contribution to many national economies (UNWTO, 2016). During the last few decades, tourism has experienced rapid growth worldwide (UNWTO, 2016). Tourism development contributes to various economic, socio-cultural and environmental changes in the lives of the host communities (Lee, 2013). Once a community becomes a destination, tourism development will result in an increasing number of visitors, which may lead to numerous impacts on the local community. If the tourism activities result in a lesser quality of life, locals may be unwilling to further support tourism (Kim & Brown, 2012).

Tourism can bring many benefits to a society, particularly in rural areas and developing countries, through increasing job opportunities and investments (Diedrich & García-Buades, 2009); enhancing the contribution of locals in decision making, engendering a sense of community pride (Huh & Vogt, 2008); and increasing environmental awareness and natural protection (Honey, 2008). However, tourism can also cause adverse impacts on the host community. For instance, it may increase the price of goods and services (Fevzi Okumus, Ozturk, Ozer, & Çaliskan, 2015); induce prostitution and crime (Park & Stokowski, 2009), and increase traffic and pollution (Nunkoo & Ramkissoon, 2012).

Therefore, the support of residents of a tourism community is essential for planning, development, and a successful and sustainable tourism operation. In addition, officials, planners and community developers need to consider the residents’ standpoint in developing and marketing tourism and assisting the host community to gain higher level needs (Maslow, Frager, Fadiman, McReynolds, & Cox, 1970), such as social esteem, cognition, knowledge, actualisation and aesthetics.

This research examines the impacts of geotourism on host communities. ‘Geotourism is a form of natural area tourism that specifically focuses on geodiversity and landscape’ (Newsome & Dowling, 2010, p. 232). Dowling and Newsome (2006) defined geotourism as sustainable tourism with an initial focus on experiencing the geological features of the earth to promote environmental and cultural conservation and understanding, and also benefit to
the locals. This study is conducted in Qeshm Island, Iran using geotourism development to describe not only the physical aspects of development in this area but also the resulting impacts of increased visitation by tourists on the residents.

Geotourism is a type of tourism based on geological features, which has been variously defined as a tourism with ‘geological’ or ‘geographical’ orientation (Dowling & Newsome, 2018). The former view of geotourism was viewed as a ‘type’ of tourism in a similar vein to ecotourism, while the latter definition was wider and was seen as ‘a new approach’ to tourism (Dowling & Newsome, 2018).

For interpreting geotourism it is essential to describe the geological (Abiotic) element of the region to inform the area’s plants and animals (Biotic) elements, and then take these two elements together to describe how people have lived there (Cultural elements) both in the past as well as in the present (Dowling, 2013). Inherent in this interpretation is that the geology will be clearly and easily be explained according to its Form (landforms and landscape), Process (the origin of landforms) and Time (duration of forming landscapes) (Dowling & Newsome, 2018).

Dowling and Newsome (2018) suggested this definition, which included this spectrum of possibilities:

*Geotourism is the tourism of geology and landscape usually undertaken at geosites. It fosters conservation of geological attributes (geoconservation) as well as understanding geoheritage and geodiversity (through appropriate interpretation). At a higher level, the geological knowledge imparted at a geosite may be used to inform its biotic and cultural features so that a more holistic view of the environment can be gained. This should then lead to a more enhanced understanding and appreciation of the world built from its geological foundation.* (Dowling & Newsome, 2018, p. 5)
1.2 Background

This study will be conducted in Qeshm Geopark in The Islamic Republic of Iran (Iran). The country has a rich cultural heritage and also unique natural resources. Qeshm (pronounced Kesh’m) is the largest island in the Persian Gulf, and it is located in the south of Iran. The island is 120 kilometres long with an average width of 20 kilometres (Amrikazemi & Mehrpooya, 2006). Qeshm Geopark is located on the western side of the island, with an area of 32,000 hectares. The population of the Qeshm Island is 148,993, most of whom live in 59 villages (StatisticalCenter, 2016). There is a wide variety of geological phenomena and an abundance of nature in Qeshm Island.

![Figure 1-1 Qeshm Island (NASA, 2007)](image)

A great deal of planning and development led to the creation of the geopark in Qeshm Island. Qeshm Geopark was registered with the Global Geopark Network in 2006. However, as the geopark did not follow the United Nations Educational, Scientific and Cultural Organization (UNESCO) geopark regulations, the Qeshm Geopark was removed from the Global Geoparks Network (GGN) in 2012 (MehrNews, 2016). However, as Turner (2016) stated, since 2006 the infrastructure and local education had been significantly improved but due to the presence
of a large gas field in the heart of the island, the boundary of the geopark area was severely altered. Furthermore, different approaches and systems of management were the main reasons for this failure. As Amrikazemi, the head of Geotourism department in Geological Survey of Iran reported in November 2015, after reconsidering the environmental regulations and improving the geosite infrastructures, the local officials resubmitted the geopark dossier to UNESCO and it was finally approved in February 2016. The UNESCO evaluators travelled to Iran in August 2016 to assess the progress of development of this geopark before re-entry to the GGN (MehrNews, 2016). Finally, at the 21st session of UNESCO Executive Board on 5 May 2017, the Qeshm Island geopark was assigned as a UNESCO Global Geoparks for four years until 4 May 2021. The first revalidation exercise will take place in 2020 (UNESCO, 2017a).

Qeshm Geopark has a complex of twenty-five valuable geosites (Figure 1-2). Qeshm Island UNESCO Global Geopark is part of the huge mountain range of Zagros, which has been formed and folded during a huge buckling and the earth’s crust as the result of the last phase of the Alpine orogeny in the Plio-Pleistocene. The geological structures and formations of this mountain belong to the Late Precambrian to Cambrian (more than 480 million years ago). Qeshm Geopark has also the world longest salt cave, 6600 m in length which is filled with many fragile salt captures and salt rivers (UNESCO, 2017b).

Besides the geological phenomena there is much ecological, archaeological and cultural heritage in Qeshm Geopark. The island has a variety of wildlife, including birds, reptiles, dolphins and sea turtles. There is also a wonderful diversity in fauna and flora in this island as a result of collision between zoogeographical areas of Palearctic and Oriental, and phytogeographical areas of Afro-tropical, Oriental and Eurasian (UNESCO, 2017b).

The Qeshmi’s culture is inspired by their unique nature and geological heritage. The first human settlement in the Qeshm Island UNESCO Global Geopark dates back to 40,000 years ago. According to archaeological analysis, the island inhabitants were famous traders in ancient Persia, especially during the Sassanid era, from Far East to the east coast of Africa. Additionally, based on anthropological observations, some cultural heritage, clothing or music in Qeshm have their roots in African and Indian cultures. Qeshm is also described as a location of the Garden of Eden as stated in Cassell’s Bible (UNESCO, 2017b).
Qeshm is also a free trade zone. The natural gas that is coming from the island provides all the gas usage of the area. Qeshm is also one of the most important centres for the economic network between Iran and neighbouring countries such as United Arab Emirates (UAE), China and India. While the majority of Iranians are practicing Shia Islam, the religion of Qeshm residents is Muslim, Sunni and they are classified as a minority religion in Iran (Torabi Farsani, Coelho, & Costa, 2012).
Figure 1-2 Qeshm Geopark map (QeshmGeopark, 2016)
1.3 Research problem statement

Qeshm has a population of approximately 149,000 people and it is estimated that the Island receives about 3 million visitors annually (StatisticalCenter, 2016). It is a destination for visitors for its significant geological sites. Previous studies conducted in Qeshm Geopark show that geotourism growth in Qeshm Island has generated both positive and negative impacts on the locals, the patterns of the locals behaviour and their lifestyle (Shahhoseini, Modabberi, & Shahabi, 2016; Torabi Farsani et al., 2012). This Island has a sensitive environment and a very strict traditional culture. If geotourism continues to grow in Qeshm Island and is not planned and managed well, it will cause tension in the community and possibly increase the displeasure of locals against tourists.

This study will examine how the host community residents of Qeshm Island percieve the geotourism impacts and how those residents perceive geotourism development. In other words, the research problem focuses on the impacts of geotourism on Qeshm Island’s residents. The findings of this study will contribute to an understanding of residents’ concerns and issues as well as to knowledge of their attitudes towards future development of geotourism. This will assist tourism developers to set out the policies and strategies.

1.4 Significance of the study

In this context, it is critically important to study geotourism impacts in Qeshm Island to analyse whether geotourism development contributes positively overall in this region or is harmful to it. This will help to identify the current problems in planning and management and identify possible solutions for future geotourism development. This will make a significant and rational contribution to the geotourism literature as there are limited studies of residents’ attitudes and locals’ perceptions of impacts in a geotourism context.

The findings of this study contribute to the knowledge of residents’ attitudes towards the future development of geotourism to assist tourism developers to set out the policies and strategies along with residents’ concerns and issues.
1.5 Purpose of the study

The primary purpose of this study is to measure residents’ perceptions and behaviours towards geotourism planning and development in Qeshm Geopark. This is especially important because unlike many other industries, tourism destinations are where people also normally live, and also impacts on the local residents. So, inappropriate management and the inability to understand the locals’ needs have the potential to generate conflict between residents and visitors.

This study also applies a stage-based and life cycle model as a theoretical framework to guide the study and describe destination development and local residents’ changing reaction to geotourism activities in Qeshm Geopark. This is important since the main issue faced by local areas and regions is how to plan for optimal tourism development whilst at the same time minimising its impact on the local community.

1.6 Research questions

This study addresses the following three research questions:

RQ1: How do local residents perceive the impacts of geotourism in the Qeshm Island community?

RQ2: What is the general attitude of the Qeshm Island residents towards geotourism?

RQ3: What is the relationship between residents’ perception of geotourism impacts and residents’ attitude towards geotourism in Qeshm Island?

1.7 Research hypotheses

Based on developing the research questions, and reviewing previous literature, the following hypotheses are presented in the theoretical model, each of them flowing out of one of the three research questions. The research hypotheses are:

H1-a: Residents perceive that geotourism has positive economic impacts for them personally.
H1-b: Residents perceive that geotourism has negative sociocultural impacts for them personally.

H1-c: Residents perceive that geotourism has negative environmental impacts for them personally.

H2: Residents’ attitudes toward geotourism impacts are positive.

H3-a: There is a positive direct relationship between social cultural impacts of geotourism and residents’ attitude.

H3-b: There is a positive direct relationship between urban issues impact of geotourism and residents’ attitude.

1.8 Definition of key terms

1.8.1 Sustainable tourism

As Kitnuntaviwat and Tang (2008) stated, sustainable tourism is an industry that establishes a suitable balance between the environmental, economic and socio-cultural aspects of tourism development. It is economically viable, environmentally sensitive and socio-culturally appropriate.

1.8.2 Geotourism

Newsome and Dowling (2010, p. 3) define geotourism as “a form of natural area tourism that specifically focuses on landscape and geology. It promotes tourism to geosites and the conservation of geodiversity and understanding of Earth sciences through appreciation and learning. This is achieved through independent visits to geological features, use of geo-trails and viewpoints, guided tours, geo-activities and patronage of geosite visitor centres.”

1.8.3 Geoparks

Dowling and Newsome (2010, p. 9) define geoparks as “a nationally protected area containing a number of geological heritage sites of particular importance, rarity, or aesthetic appeal.”
These Earth heritage sites are part of an integrated concept of protection, education and sustainable development.”

1.8.4 Tourism impacts

As Mason (2015a) stated, impacts are the key factors in any discussion of the planning and management of tourism. Jafari and Brent Ritchie (1981, p. 3) define tourism impacts as “Tourism is a study of man away from his usual habitat, of the industry which responds to his needs and the impacts that both, he and the industry have for the host socio-cultural, economic and physical environments.”
“The tourist may have his [or her] vacation spoiled or enhanced by the resident. The resident may have his [or her] daily life enriched or degraded by the unending flow of tourists” (Knox & Rajotte, 1982, p. 77).

The purpose of this chapter is to review the important scholarly literature concerning residents’ attitudes towards geotourism in tourist destinations. This chapter presents and considers previous research findings regarding residents’ perceptions of tourism impacts and the influence of this perception on their quality of life.

2.1 Overview of tourism

The term ‘tourism’ – which describes travelling for leisure purposes – was first used in the English language in the nineteenth century (Honey, 1999). Due to the many angles of analysis and also the different backgrounds and cultures of the researchers, there is no settled definition of tourism, and this is criticism in most tourism literature. As Franklin and Crang (2001, p. 7) stated, “Tourism studies have had a problematic relationship with the process of defining and regulating tourism”. Fennell, Abeyesinghe, and Choy (2014) argued that the difficulty of defining tourism is due to its dependency on primary, secondary and tertiary levels of services and resources and the fact that it is so intricately contributed into the all domains of life, economically, socio-culturally and environmentally.

One of the most important definitions of tourism has been published by the World Tourism Organization (UNWTO, 1995, p. 1): “The activities of persons travelling to and staying in a place outside their usual environment for not more than one consecutive year for leisure, business, and other purposes.” Sharpley (2018) explained tourism as all things to all people, which means tourism may be defined differently from different view points. These could be from the view of a holiday-maker (representing tourism as a temporary period of escape from everyday life); a tourism business owner (simply a source of employment and income); the government (considering tourism as an important part of social and economic development policy); or from the residents (tourism as something to be coped with or resisting towards it).
However, as there is a lack of a commonly accepted definition for tourism, the definition stated by Weaver and Lawton (2014) has been chosen for this study, which places tourism in a broad stakeholder context (Figure 2-1). This definition built on Goeldner’s (2012) version to include transportation and the management of tourists within the broad tourism process:

_Tourism may be defined as the sum of the processes, activities, and outcomes arising from the relationships and the interactions among tourists, tourism suppliers, host governments, host communities, and surrounding environments that are involved in the attracting, transporting, hosting and management of tourists and other visitors._ (Weaver & Lawton, 2014, p. 3)

Figure 2-1 The tourism stakeholder system (Weaver & Lawton, 2014)

Despite numerous definitions and different academic approaches to tourism, the economic aspect of tourism cannot, or should not, be ignored. Indeed, the tourism industry is frequently described as one of the major global industries in the world and it is playing a very significant role in international commerce (Sharpley, 2018). According to the preliminary full-year results reported by the World Tourism Organization (UNWTO, 2018), the total number of
international tourist arrivals has increased by 7% and reaching 1,322 million worldwide, which is the highest rate in seven years (Figure 2-2).

This strong momentum is expected to grow at a rate of 4%-5% in 2018, which is above the 3.8% average increase projected for the period 2010-2020 by UNWTO in its Tourism Towards 2030 long-term forecast (UNWTO, 2018) (Figure 2-3). Furthermore, based on 2017 results by UNWTO region, the number of international tourist arrivals in the Middle East has increased by 5%, receiving 58 million tourists in 2017 (UNWTO, 2018).

Figure 2-2  International tourist arrivals in 2017 (UNWTO, 2018)
2.1.1 From mass tourism to sustainable tourism

Given these high rates of growth, tourism can have significant impacts on host communities according to environmental, economic and socio-cultural measures. While it is true that tourism’s contribution to the local economy may be valuable, there are many hidden costs as well. Some of these costs may include an increase in the price of goods, services and inflation level (Fevzi Okumus et al., 2015; Frauman & Banks, 2011); economic leakage and dependency on tourism (Dash, 2011; Garrigós-Simón, Galdón-Salvador, & Gil-Pechuán, 2015); seasonal income fluctuations; and the increased need to import goods (Wall & Mathieson, 2006).

Newsome, Moore, and Dowling (2012) stated that tourism is a twofold concept: mainstream (mass) or alternative (Figure 2-4). The great dissatisfaction of mass tourism, as well as concerns over the negative impacts of tourism, have led to an increased demand for socially and ecologically benign alternatives since the 1980s. Newsome et al. (2012) identified mass tourism as a destination with a large scale of hotels and resorts run by non-locals with millions of tourists due to its ease of access, global marketing and the popularity of the attraction area.
On the other hand, alternative tourism includes a softer, small-scale approach where natural, cultural and community resources are the most important part of tourism planning and development (Fennell et al., 2014). Alternative tourism aims at establishing a positive relationship between tourists and the locals through promoting social, natural and community values (Weaver & Lawton, 2014). Further, alternative tourism increases the participation of the residents in the ‘decision-making process’ and involving them in tourism development (Newsome et al., 2012). Geotourism is considered as a niche form of tourism, overlapped with other tourism sectors such as ecotourism, sustainable tourism and alternative tourism, and potential overlap with educational travel, environmental, nature-based and heritage tourism (Hose, Markovic, Komac, & Zorn, 2011).

There are a growing number of critics who have proposed that tourism development could lead to positive changes in communities through the concept of sustainable tourism (Bramwell & Lane, 2012). Sustainable tourism has been a major focus of research over the last few decades. There are more than 150,000 publications on tourism, of which 5,000 of them relate to sustainability (CIRET, 2013).
Discussion on the implementation of sustainable tourism began in the early 1990s (Bramwell, Higham, Lane, & Miller, 2017). Increasing threats from over-development, environmental degradation and travel to culturally sensitive areas have led to suggestions for a change in development and promotion of tourism (Honey, 2008). The most frequently quoted definition of sustainability is from the Brundtland Commission, formally known as the World Commission on Environment and Development (WCED), released in the *Our Common Future* report, also known as the ‘Brundtland Report’, in 1987 (Ritchie, 2003; Weaver & Lawton, 2014). Consequently, the concept of sustainability became an aspect of the tourism industry; Weaver and Lawton (2014) suggest that “sustainable tourism meets the needs of present generations without compromising the ability of future generations to meet their own needs” (Weaver & Lawton, 2014, p. 322).

In addition, Leung, Spenceley, Hvenegaard, and Buckley (2018) in the book of *Tourism and Visitor Management in Protected Areas: Guidelines for Sustainability* still support the definition provided by UNWTO (2005, p. 11): “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.” To reach long-term sustainability, tourism should be managed in such a way that ‘It does not exceed the environmental, socio-cultural or economic carrying capacity of a given destination’ and “related environmental, socio-cultural and economic costs are minimised while related environmental, socio-cultural and economic benefits are maximised” (Weaver & Lawton, 2014, p. 322). This means there should be a balance between the environmental, socio-cultural and economic aspects of tourism development. According to UNWTO and the United Nations Environment Programme (UNEP), this is provided through the following measures:

- Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to intercultural understanding and tolerance.
- Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-
earning opportunities and social services to host communities, and contributing to poverty alleviation. (UNWTO (2005, p. 11)

This research focused on all the abovementioned in the context of geotourism when referring to sustainability.

2.2 Overview of geotourism and geoparks

Visiting natural attractions that have important geological or geomorphological features has been practiced for a long time (Dowling, 2013; Migon, 2009). Today, geosites and geomorphosites attract many tourists interested in a deeper experience of the area, one which is not only about the Earth sciences but also about the heritage, culture, aesthetics and environmental character of the place. Visitors also expect to have access to support and information services, and to have the opportunity to purchase the local products, which can enhance the economic development of a rural area (Pásková, 2012).

Geotourism is a new global phenomenon. It has emerged into the tourism literature over the past two decades (Dowling & Newsome, 2018). While the term geotourism has existed in tourism studies for nearly twenty years, it has many definitions, as Dowling and Newsome (2006, p. 3) stated: “Geotourism sits within a spectrum of definitions”. Therefore, there are many definitions for the term of ‘geotourism’, ’ resulting from various theoretical frameworks in tourism study. Dowling and Newsome (2018) described geotourism through its geological and geographical approaches and presented solely a ‘type’ of tourism over time. The latter view was broadened by adding the element of the geographical spectrum and by describing it as a new ‘approach’ to tourism (Dowling & Newsome, 2018).

2.2.1 Definition of geotourism

Geotourism was first introduced by Hose in the 1990s; his definition was on geology-based tourism (Novelli & Elsevier, 2005). Hose (1995, p. 16) defined geotourism as: “The provision of interpretative facilities and services to enable tourists to acquire knowledge and understanding of the geology and geomorphology of a site beyond the level of mere aesthetic
appreciation”. Since 1995, further refinements were made by Hose (2000; 2008) on his first definition.

Dowling and Newsome (2006) constructed another definition of geotourism, which is also based mainly on geology and geomorphology, ‘The ‘geo’ part pertains to geology and geomorphology and the natural resources of landscape, landforms, fossil beds, rocks and minerals, with an emphasis on appreciating the processes that are creating and created such features’. This definition is significant as geotourism is identified as a specific concept and categorised as a form of natural area tourism. However, geotourism is only limited to the visiting of geological features and landscapes.

In 2010, another definition of geotourism presented by Newsome and Dowling (2010) recognised the broad range of geotourism’s stakeholders and infrastructure:

> Geotourism is a form of natural area tourism that specifically focuses on geology and landscape. It promotes tourism to geosites and the conservation of geo-diversity and an understanding of earth sciences through appreciation and learning. This is achieved through independent visits to geological features, use of geo-trails and viewpoints, guided tours, geo-activities and patronage of geosite visitor centres. (Newsome & Dowling, 2010, p. 232)

In this definition geotourism is still recognised as a form of tourism. However, unlike ecotourism, which by definition is only limited to natural area, geotourism can take place in either the natural or human-modified environment (Dowling & Newsome, 2018).

Previously, Hose (2012) addressed the historical and theoretical underpinnings of geotourism and the approaches to its sustainable management. He underpinned the modern geotourism by three key interrelated aspects (the ‘3G’s’): geoconservation, geohistory and geo-interpretation. Based on the 3G approach by Hose (2012), geotourism is redefined as: “The provision of interpretative and service facilities for the geosites and geomorphosites and their encompassing topography, together with their associated in situ and ex situ artefacts, to constituency-build for their conservation by generating appreciation, learning and research by and for current and future generations” (Hose, 2012, pp. 38-39).
The geographical approach to defining geotourism was first presented by the National Geographic Geotourism Charter. It explained that ‘geotourism is defined as tourism that sustains or enhances the geographical character of a place – its environment, culture, aesthetics, heritage, and the well-being of its residents’ (National Geographic, 2005). In this definition, the concept of sustainability is emphasised, such as conserving natural resources, destination planning and community wellbeing. Following this ‘geographic’ approach, Pralong (2006, p. 20) defined geotourism as “a multi-interest kind of tourism exploiting natural sites, and landscapes contain interesting earth-science features in a didactic and entertaining way”. He also presented geotourism as a component of regional economic development that could generate profits through the development of geoparks.

In terms of clarifying the geotourism definition, the International Congress of Geotourism in Arouca, Portugal in 2011, for the first time defined geotourism with a geographic approach that included the term geology as well (Dowling & Newsome, 2018). It stated that ‘geotourism should be defined as tourism which sustains and enhances the identity of territory, taking into consideration its geology, environment, culture, aesthetics, heritage and the well-being of its residents’ (Arouca Declaration, 2011). Dowling and Newsome (2018) argued that the shift from defining geotourism as a niche ‘type’ of tourism to an ‘approach’ to tourism presented a quantum shift for those focusing only on ‘geological tourism’.

It is now clear that geotourism has been defined as a type of tourism (geological tourism) or an approach to tourism, which constitutes a more geographic view. However, as Dowling and Newsome (2018) mentioned, the best way is to consider geotourism as both a form of tourism as well as an approach to it. However, it is one that firmly ties itself first to the geologic nature of an area’s ‘sense of place’. Such tourism development generates benefits for conservation (especially geoconservation), appreciation (through geoheritage interpretation), and the economy.

Therefore, one way of characterising geotourism is to present it as a spectrum of possibilities. At the geological end of the spectrum, the focus is on traditional geological tourism – tourism of geology and landscape (Newsome & Dowling, 2010), whereas the other end of spectrum includes a broader geographic approach, which still has the geological phenomenon, is utilised to inform a geosite’s biotic and cultural elements (Dowling & Newsome, 2018). Their latest definition includes this spectrum of possibilities:
Geotourism is the tourism of geology and landscape usually undertaken at geosites. It fosters conservation of geological attributes (geoconservation) as well as understanding geoheritage and geodiversity (through appropriate interpretation). At a higher level, the geological knowledge imparted at a geosite may be used to inform its biotic and cultural features so that a more holistic view of the environment can be gained. This should then lead to a more enhanced understanding and appreciation of the world built from its geological foundation. (Dowling & Newsome, 2018, p. 5)

2.2.2 Geotourism: A review of the literature

In recent years, geotourism has been researched in a range of topics, as reviewed by (Dowling & Newsome, 2018). Studies include promoting geotourism through geoconservation and geoheritage, examines the economic and social contribution of geotourism in communities, and assesses the regions for their potential for geotourism.

Promoting geotourism through conservation and geological resources is one of the principal characteristics of geotourism (Newsome & Dowling, 2018). Many studies have been conducted to illustrate how geotourism development resulted in fostering conservation, including Luochuan Loess National Park (Dong, Song, Chen, Zhao, & Yu, 2014), Hong Kong (Wang, Tian, & Wang, 2015), Loess regions, Poland (Solarska et al., 2013) and Arxan-Chaihe Volcano Area, Inner Mongolia, China (Németh, Wu, Sun, & Liu, 2017; Wang et al., 2014). Also, in some other areas geotourism is being used as a tool to promote geoheritage. For example, the Carnic Alps, Italy (Venturini & Pasquaré Mariotto, 2018); Covalagua and Las Tuerces, Palencia, Spain (Martâin-Duque, Caballero Garcâia, & Carcavilla Urquâi, 2012); Lake Van, Turkey (Üner, Alıriz, Özsayın, Selçuk, & Karabiyikoğlu, 2017); and the Geologic Park of Aliaga, Spain (Escorihuela & Dowling, 2015).

In many studies, geotourism is utilised as a vehicle to generate sustainable regional development: Qeshm Island Global Geopark (Torabi Farsani et al., 2012); Iceland (Ólafsdóttir & Dowling, 2014); Kutch Region, Gujarat, India (Swarna, Biswas, & Harinarayana, 2013); Mount Pinatubo, Philippines (Aquino, Schänzel, & Hyde, 2017); Ait Bou Oulli Valley in Central High Atlas, Morocco (Bouzekraoui et al., 2018); Taman Negara Kuala Koh National Park, Kelantan, Malaysia (Nazaruddin, 2016); Zonguldak, Turkey (Keskin Citiroğlu, Isik, & Pulat,
Also, many regions have been assessed for their potential for geotourism, such as: the Vizovice Highlands, Czech Republic (Kubalíková & Kirchner, 2016); Ait Bou Oulli Valley in Central High Atlas, Morocco (Bouzekraoui et al., 2018); Rottnest Island in the south-west region of Western Australia (Rutherford, Kobryn, & Newsome, 2015); and Fuentes Carrionas (Spain) and Serra do Cadeado (Paraná, Brazil) (Pellitero, Manosso, & Serrano, 2015).

Geotourism has been described as the driver of the geoparks and a reason to establish geoparks and geotrails (Dowling & Newsome, 2018). Through geotourism, geoparks became a vehicle to promote sustainable development in many regions around the world (Farsani, Coelho, & Costa, 2014). Some studies emphasised the links between geotourism and geoparks and their results on rural development (Ólafsdóttir & Dowling, 2014), sustainable geological heritage development (Badang, Ali, Komoo, & Leman, 2017), community entrepreneurship (Jaafar & Khoshkam, 2016) and poverty alleviation (Kiernan, 2013).

Dowling and Newsome (2018) explained geotourists are as central to geotourism. The context of geotourist has been viewed from different perspectives. Studies have illustrated the geotourists motivation in rural areas: a case study of Kandovan rocky village, Iran (Mamoon & Mercede, 2017); Hong Kong Global Geopark (Charmaine & Jim, 2015); characteristics and motivations of cave tourists in South Korea (Kim, Kim, Park, & Guo, 2008); and Crystal Cave, Australia (Allan, Dowling, & Sanders, 2015). Additionally, other studies examined the visitor experience in Mount Pinatubo, Philippines (Richard, Heike, & Kenneth, 2018); the Flinders Ranges, Australia (Kim & Brown, 2012); and the Hwansun Cave, South Korea (Kim et al., 2008). Also, the geotourists values have been evaluated in the study of Warowna et al. (2016) based on the selected natural environment and tourist infrastructure characteristics. However, a great number of contributions focused on geotourists and their behaviour; there has been very little on host communities and the impacts on residents as a result of geotourism (Shahhoseini et al., 2016; Torabi Farsani et al., 2012). This research moves towards addressing this gap in the literature.

As previously mentioned, geotourism is not only limited to natural areas. Geotourism can occur in any area with the possible development of its geological features as a tourist
attraction (Dowling & Newsome, 2018). Urban geotourism has been introduced in regions such as Sao Paulo City, Brazil (Del Lama, Bacci, Martins, Garcia, & Dehira, 2015); Belgrade, Serbia (Petrović Marko et al., 2017); and Turin, Italy (Borghi et al., 2014).

2.2.3 Geoparks and UNESCO Global Geoparks

The first attempt to introduce geoparks was made by the Digne Convention in 1991 in order to conserve and promote geological heritage and sustainable local development through a global network of territories containing outstanding geological features (Jones, 2008). In November 2000, members of four European territories met together in Greece to address and improve the regional socio-economic development through the protection of geological heritage and the promotion of geotourism. The result of this meeting was the creation of the European Geoparks Network (EGN) (McKeever, Zouros, & Patzak, 2010). Within six months, the EGN gained an official agreement of collaboration with the Division of Earth Sciences of UNESCO in April 2001 (McKeever et al., 2010). UNESCO used the European model as the one to follow and in 2004 the GGN was established (McKeever et al., 2010). Geoparks are defined as ‘a holistic and socially constructive concept which contributes to conservation, communities and the economy; geoparks personify sustainable development in action’ (Dowling, 2018). There are four levels of geopark:

1. A **Pre-Aspiring** Geopark occurs when a community expresses an interest to commence work towards establishing a geopark.
2. An **Aspiring** Geopark occurs when a formal organisation is established to create the park.
3. A **National Geopark** occurs when the geopark is established and joins the network of geoparks within its own country.
4. A **UNESCO Global Geopark** is the final level of designation. It occurs when a National Geopark applies to UNESCO to join the GGN. If successful then it becomes a member of the UNESCO Global Geoparks. When this occurs, the geopark can join a regional grouping such as the Asia Pacific Geoparks Network (APGN) or the European Geoparks Network (EGN). A UNESCO Global Geopark is given this designation for a period of four
years after which the functioning and quality of each geopark is re-examined during a revalidation process.

As of April 2018, there are 140 UNESCO Global Geoparks located in 38 countries (Figure 2-5), with 36 in China, 73 in Europe, five in North America, 19 in Asia, two in South America, two in Africa and one in the Middle East (GGN, 2018). Geoparks are not just about geology, all UNESCO Global Geoparks are associated with the innovation of local enterprise, creating job opportunities and providing a high quality of training courses; while the geological features of the area are protected. (Dowling, 2018; Ngwira, 2015). It also increases a sense of pride in locals through raising awareness of the importance of the area’s geological heritage and contributing to a better understanding of the intrinsic values of different cultures (Dowling, 2018).

There are four fundamental characteristics of a UNESCO Global Geopark that are an absolute prerequisite for an area to be considered as a UNESCO Global Geopark:

- Geological heritage of international value
- Active cooperation with other geoparks through the GGN
- Management by a body recognised under national legislation
- Visibility for visitors and locals in order to promote sustainable local economic development mainly through geotourism. (UNESCO, 2016)
Figure 2-5  Distribution of Global Geoparks Network members

(Retrieved from: http://www.globalgeopark.org/homepageaux/tupai/6513.htm)
2.3 Tourism and geotourism in Iran

The history of travel and tourism in Iran dates back to ancient times. However, the first official attempt to develop modern tourism in Iran was establishing the Jalbe-Sayahan Bureau in the Ministry of Interior in 1935 (Amiri Aghdaie & Momeni, 2011). The main aim of this organisation was to present Iranian historical and cultural treasures to the world and to attract tourists from all countries to benefit the economy of the nation. Protecting the environment is one of the government’s obligations under Principle 50 of the Constitution of Islamic Republic, and in recent years tourism has been identified as one of the most important non-oil sources of income in Iran.

Iran is located in the Middle West and South West of the Asian continent and covers a land area of 1,873,959 square kilometres. It shares borders with Pakistan and Afghanistan to the east, Turkey and Iraq to the west, and Azerbaijan, Armenia and Turkmenistan to the north. In the south, Iran reaches the Oman Sea and the Persian Gulf. About 55% of the country is mountainous and the remaining 45% is comprised of plateaus, plains, deserts, saline lands, ponds and lakes (Figure 2-6). Two striking mountain ranges characterise the country: Alborz to the north and Zeroes to the west. Most of the deserts in Iran are located in between those mountain ranges (Ghazi, Ólafsdóttir, Tongkul, & Ghazi, 2013).

Iran has a population of more than 75 million with a diverse range of climate zones from green plains in the northern regions to dry and hot weather in the central and eastern regions (Yalgouz-Agaj, Ardebil, & Karimdoust, 2010). From a geological perspective, Iran could be described as a country with a rich diversity. For example you could stand on the point of 27 metres below the sea level (Caspian Sea) or the highest peak of the western Eurasian region with an altitude of 5,670 metres above the sea (Mount Damavand). A land with 2000 mm annual precipitation (the region of Caspian Sea) or with an annual precipitation rate of 2 mm in the Lut desert, or experience temperature varying from -35°C to more than 45°C within one season at the same time (Yalgouz-Agaj et al., 2010). Today, besides Qeshm Island, which is a UNESCO Global Geopark, another 30 aspiring geoparks have been identified in Iran for their potential to become a national geopark, even to become a global designation level (Amrikazemi, Badri, & Jadidi, 2017) (Appendix B).
2.3.1 Review of geotourism and geopark literature in Iran

The term geotourism was first used in Iranian tourism literature by Nabavi (2000). It was later defined as “knowledge-based tourism, an interdisciplinary integration of the tourism industry with conservation and interpretation of abiotic nature attributes, besides considering related cultural issues, within the geosites for the general public” (Sadry, 2009, p. 17). It has now been redefined by Amrikazemi (2010, p. 442), who explains geotourism as “a conscientious and accountable touring in nature with the aim of visiting and recognising geological phenomena, their development and learning about their formation”. In both definitions geotourism is only confined to a natural area, however, as noted previously, geotourism can take place in any place with a possibility of geology being developed as a tourist attraction (Dowling & Newsome, 2018).

In recent years some studies have been focused on geotourism in Iran on a different range of topics. These include examining geotourism potentials in various ranges of geosites, geosites assessments, identifying the impacts of geotourism and explaining the new concepts of ‘geo-activities’.

Many regions have been evaluated for their potential for geotourism in a different range of geosites such as hot springs, caves, volcanoes and deserts. The case study of Kerman hot springs (Khabazi, Fahimi far, Eshtehardian, Nohesara, & Rohanifard, 2016) is an example of geo-medicine, where geotourism linked to the health benefits of the natural area. In recent contributions in the area of volcanoes, Amrikazemi (2014) introduced some potential areas in Iran for volcano tourism. Also, in another study by Ghazi et al. (2013) the authors described the diverse geological features of the Mount Sahand region as a potential geopark in East Azarbaijan including, Sahand Volcano, the Urmia Lake, salt deposits, springs, limestone caves and Cenozoic vertebrate fossils. In additional studies the Mount Zagros in the western side of Iran which has a high geological heritage value of Paleogene rocks has been assessed for its potential to become a geopark (Beigi, 2017; Habibi, Golubova, & Ruban, 2017; Habibi & Ruban, 2017, 2018).

Deserts cover more than one-fifth of Iran’s land (about 300,000 square metres). Their geomorphologic characteristics have been identified for sustainable development in Iran (Farsani, Taheri, Tazeh, & Malekzadeh, 2014; Seyedi & Dalfardi, 2015; Yalgouz-Agaj et al.,
Eshraghi, Ahmad, and Toriman (2012) determined the advantage of geotourism in desert areas in creating job opportunities, poverty alleviation, involving locals and keeping the cultures alive. The different geosites of the Lut desert have also been assessed for their suitability for geotourism development (Maghsoudi, Moradi, Moradipour, & Nezammahalleh, 2018).

Other studies encompass the new concept of geo-activities such as geo-tours, geo-guides, geo-education, geo-products and geo-branding (Farsani, Mortazavi, Bahrami, Kalantary, & Bizhaem, 2017; Farsani, Coelho, Costa, & Amrikazemi, 2014; Shafiei, Farsani, & Abdollahpour, 2017). The initial aim of geo-activities is to promote initiatives in order to foster geo-knowledge (an understanding of Earth sciences) and geo-education, through the placement of interpretative panels; the establishment of geo-tours; training geo-tour guides; conducting workshops and outdoor activities for children and students; and designing geo-products (Farsani et al., 2017).

2.3.2 Geotourism research in Qeshm Island UNESCO Global Geopark

In 2004 Alireza Amrikazemi, the head of Geotourism department in Geological Survey of Iran, published a book titled *Atlas of the Qeshm Geotourism*, which examined the geological features of Qeshm Island (Amrikazemi, 2004). The initial proposal for the Qeshm Island UNESCO Global Geopark was based on this book (Shahhoseini et al., 2016). Assessments conducted in order to select an optimal geosite in the Qeshm Island Geopark identified the mangrove forests as the highest rank geosite, whereas the Kharbas Cave achieved the lowest rank due to its remoteness, poor waste management, etc. (Zarei, Fatemi Mohamad, Mortazavi Mohammad, Pourebrahim, & Ghoddousi, 2016). In other research, an assessment applied to evaluate the tourist attractiveness mentioned the Qeshm Island Geopark as not a fully developed area (Pourahmad, Hosseini, Pourahmad, Zoghi, & Sadat, 2017). Their low assessment was due to the difficulty of access to the geosites, location far away from the Qeshm City and residents’ attitude towards tourism.

This literature review identified only a few studies that reported the impacts associated with geotourism in communities and residents’ attitudes (Shahhoseini et al., 2016; Torabi Farsani et al., 2012). This is therefore lacking in the geotourism literature. Both of these studies were
conducted on Qeshm Island. Torabi Farsani et al. (2012) explored the impacts of geotourism in the Qeshm Island community and assessed the geopark’s socio-cultural sustainability in this region. About (55%) of the responses indicated negative impacts from developing geotourism on local communities in Qeshm Island, such as loss of local language and culture (for example the local clothes). However, the locals pointed to some positive socio-economic impacts of geotourism, such as improving local festivals, additional income and cultural exchange.

In another study by Shahhoseini et al. (2016), both quantitative and quantitative methods were used to evaluate the attitudes of the local population towards geotourism in Qeshm Island based on Social Exchange Theory (SET). SET was presented as a theoretical framework in residents’ perception domain by Ap (1992) which could explain the underlying rationale of residents’ responses to tourism development. This theory explained that residents evaluate an exchange based on the assessment of costs and benefits resulting from tourism, and their behavioural responses are based on their overall evaluation of the exchange.

The study of Shahhoseini et al. (2016) revealed that the majority of the Island residents had a positive attitude towards geotourism due to an increase in job opportunities. In addition, based on the Doxey Irridex Model (Doxey, 1975), the Qeshm region was viewed as being in the first stage of destination development, known as ‘Euphoria’. At this stage, tourism provided new job opportunities and increased the locals’ income, and only a minority of the residents were irritated by the adverse impacts of tourism development.

Through a review of these two studies it was revealed that the perception of the residents from geotourism impacts in their community has changed over the time. However, in neither of the studies was the relationship between the geotourism impacts and residents’ attitudes examined. Considering that one of the main concepts of geotourism and geoparks is to empower locals and generate financial benefits for regional communities (Dowling, 2018), understanding the residents’ attitudes towards geotourism is an important element of communities’ commitment in supporting geotourism.
2.4 Tourism impacts on host communities

According to Zhang, Inbakaran, and Jackson (2006) the sustainable development of tourism is dependent on harmonious relationships between tourists and visitors, the community and residents, and the organisations or business working in the tourism industry. Many scholars have broadly studied residents’ perceptions and attitudes towards tourism as well as the factors that influence residents’ perceptions. Many of the works have found positive and negative perspectives (Blesic, Pivac, Besermenji, Ivkov-Dzigurski, & Kosic, 2014; Chen & Chen, 2010; Chuang, 2013; Gabriel, Osti, & Faccioli, 2011; Hall, Page, & Ebook, 2014; Haobin, Qiu, Huawen, & Goh, 2014; Jackson, 2008; Kumar, Sakthivel, & Ramanathan, 2013; Látková & Vogt, 2012). Although, according to Carbone (2005, p. 562), “Tourism is not inherently positive or negative ... but everything depends on how it is planned and managed.”

Many of the studies have dealt with the impacts of tourism in three categories- economic, socio-cultural and environmental. For example, tourism could positively affect locals by creating jobs and new business opportunities, new infrastructure, protection of cultural heritage and natural areas, and greater opportunities for cultural exchange. (Almeida-Garciaa, Pelaez-Fernandezb, Balbuena-Vazquez, & Cortes-Maciasa, 2016; Blesic et al., 2014; Chuang, 2013; Gabriel et al., 2011; Miyakuni, 2012; Nawijn & Mitas, 2012; Yu, 2011).

The negative impacts include increasing prices, higher taxes, increased crime, drug use, prostitution, crowding, traffic, cultural change, dislocation from traditional land and failure to present indigenous culture, air and water pollution, damage to the ecosystem, litter, molestation of wildlife and deforestation. (Biagi, Brandano, & Detotto, 2012; Kwon & Vogt, 2010; Vargas-Sánchez, Porras-Bueno, & de los Ángeles Plaza-Mejia, 2014).

2.4.1 Economic impacts

Many previous researchers have found the economic impacts of tourism to be significantly positive (Draper, Woosnam, & Norman, 2009; Huh & Vogt, 2008; Jeonglyeol Lee, Li, & Kim, 2007; Kuvan & Akan, 2005). Important economic impacts are increased job opportunities and more investment (Diedrich & García-Buades, 2009; Dyer, Gursoy, Sharma, & Carter, 2007; Jeonglyeol Lee et al., 2007; Nunkoo & Ramkissoon, 2011); and increased tax revenues (Fevzi Okumus et al., 2015; Simpson, 2008). On the other hand, some researchers have found
negative economic impacts. For instance, the increased prices of goods, services and inflation level (Fevzi Okumus et al., 2015; Frauman & Banks, 2011; Jackson, 2008); economic leakage and dependency on the tourism sector (Dash, 2011; Garrigós-Simón et al., 2015; Kaltenborn, Andersen, Nellemann, Bjerke, & Thrane, 2008).

The economic success of tourism development relies on maximising the economic benefits and minimising the costs in the community. It also depends on several issues (Dwyer, Forsyth, & Dwyer, 2011):

- retaining the number of tourists spending within the local community
- minimising tourism leakage by supporting locals’ products
- the quality of the workforce
- the equality of opportunities for investors
- the equality of benefit distribution.

All of these can enhance the prospects of community development and the quality of life of the residents.

2.4.2 Socio-cultural impacts

In any given community, some residents perceive the negative effects of tourism and some who are more positively affected. Tourism can cause some negative socio-cultural impacts in the host community such as loss of community character and the contribution (Alobiedat, 2016; Huh & Vogt, 2008; Puhakka, Sarkki, Cottrell, & Siikamäki, 2009); loss of authenticity and culture (Alobiedat, 2016; Fevzi Okumus et al., 2015; Park & Stokowski, 2010; Soontayatron, 2014); an increase in prostitution and crime (Diedrich & Garcia-Buades, 2009; Goeldner & Ritchie, 2007; Huybers, 2007; Jackson, 2008; Park & Stokowski, 2009; Sharma, Dyer, Carter, & Gursoy, 2008); and also substance abuse among workers in tourism industry and declining hospitality (Belhassen & Shani, 2013).

A vast array of positive socio-cultural impacts of tourism such as improved quality of life and community service and facilities (Andereck, Valentine, Knopf, & Vogt, 2005; Diedrich & García-Buades, 2009; Fevzi Okumus et al., 2015; Jackson, 2008; Kuvan & Akan, 2012); promotion of cultural exchange and increased understanding of different culture; and an increase in participation in decision making and a sense of community pride (Diedrich &
García-Buades, 2009; Huh & Vogt, 2008; Hwang, Stewart, & Ko, 2012; Wang & Bramwell, 2012) have been examined extensively.

The ultimate socio-cultural benefit of tourism is that every traveller is potentially ‘an ambassador for peace’, which is broadly promoted by the International Institute for Peace through Tourism (IIPT) (Wintersteiner & Wohlmuther, 2014). The main concept is that through the direct contact between people of different cultures, a greater international understanding and cooperation is fostered, which ultimately leads to a more peaceful, sustainable world (Kelly, 2006). When hosts and guests respect the socio-cultural differences between each other and value the heritage diversity and different ways of life, tourism will improve their respective quality of life.

2.4.3 Environmental impacts

The environment has been recognised as a major resource for tourism. This could be because the environment could be an attraction by itself or this is where tourism activity takes place (Mason & Kuo, 2008). In recent years, researchers have been conducted many impacts assessments studies as there has been an increased awareness of the potential negative impacts of tourism on host communities (Hwan-Suk & Sirakaya, 2005). Also, ‘alternative’ forms of tourism (e.g. ecotourism, green tourism, geotourism) have emerged to make tourism more consistent with the concept of sustainable development (Yu, 2011).
According to Swarbrooke (1998), there are five different aspects of the environment. As Figure 2-7 indicates these include the natural environment, the farmed environment, wildlife, natural resources and the built environment. It should be noted that these five aspects are linked to each other and working as a system. Therefore, the effects of any action or decision in one part of the system could influence all other parts (Mason, 2015a).

Further, Mason (2015a) stated that there are some factors that influence tourism impacts. These factors include:

- The ‘where’ factor, as some environments are more susceptible to tourism impacts than others
- The type of tourism activity
- The nature of any tourist infrastructure, and
- ‘When’ tourism activity occurs as some seasonal activities and destinations would impact so heavily on the environment that there is little chance of recovery during the rest of the year.

As Archer, Cooper, and Ruhanen (2005) explained, the extent of environmental damage by tourists is related to the magnitude of the development and the number of visitors, the
concentration of usage both spatially and temporally, the nature of environment in question, and the nature of the planning and management practices adopted before and after development takes place.

However, on an environmental level, if management is implemented effectively, tourism can contribute to improving environmental resources. For example, it may enhance natural protection and increase environmental awareness (Diedrich & García-Buades, 2009; Higham, 2007; Honey, 2008; Satyendra, R., & Irina, 2016; Stronza & Durham, 2008; Vargas-Sánchez, de los Ángeles Plaza-Mejía, & Porras-Bueno, 2009). However, tourism can also have significant negative environmental impacts related to an increase in traffic, vandalism and pollution (Diedrich & García-Buades, 2009; Jackson, 2008; Jeonglyeol Lee et al., 2007; Kaltenborn et al., 2008; Klein, 2011; Látková & Vogt, 2012; Marsh, 2012; Nunkoo & Ramkissoon, 2012; Williams & Ponsford, 2009).

2.5 Perceptions of tourism impacts

Attitudes have been defined as “an enduring predisposition towards a particular aspect of one’s environment” (McDoughall & Munro, 1987, p. 87). Residents attitudes towards tourism have been structured into three dimensions: (1) cognitive (knowledge, beliefs, and perceptions); (2) affective (like and dislikes); and (3) behavioural (actions or intentions) (Carmichael, 2006). Tourism development in rural areas is increasing the number of tourists, leading to both negative and positive impacts on local communities. The perceived negative effects of mass tourism on communities culture, economy and environment have raised concerns for the future of tourism destination (Honey, 2008). Many researchers have explored the different ways that local communities can be influenced by tourism development. The main theories explaining residents’ reaction to tourism are the Doxey Irridex Model and the Tourism Area Life Cycle (TALC) model by Butler (1980). They suggest residents’ attitudes towards tourism activities might be directly related to the stage of tourism development of a host community.

The Doxey Irridex Model (1975) was one of the first models developed to measure the effect of tourism development on local communities. Doxey (1975) proposed a four-stage model for
explaining how host communities react to tourism activities. According to Doxey, residents’ attitudes will change over time with the relationship of the local community with visitors becoming increasingly negative as tourism development grows. The model ranges from *euphoria*, which is the first level of tourism development in a destination. In this stage, there is no tourism marketing yet, and tourists and investors are welcome. The next stage is *apathy*, when there is planning and advertising for targeted destinations and the relationship between visitors and locals become more formal and based on commercial purposes. When the volume of visitors and tourism development has reached the carrying capacity point for the region, any over-development annoys the locals, and they begin to frustrated about tourism activities in their place; this is the *annoyance* stage of the Doxey Irridex Model (1975). Finally, the area enters the stage of *antagonism*, where tourism development in the destination is now only producing negative impacts, and residents express their irritation against tourists for all the negative impacts tourism has brought into their community. However, Sharpley (2014) found little factual evidence of antagonistic behaviour by the host community to substantiate this theory.

Many researchers have applied the Doxey Irridex Model in their studies (Fevzi Okumus et al., 2015; Huimin & Ryan, 2012; Kwon & Vogt, 2010; Litvin, 2010; Ribeiro, Valle, & Silva, 2013; Zhang, Wong, & Lai, 2018). For instance, Ribeiro et al. (2013) examined the perception of residents towards tourism in Cape Verde. The result of this study revealed that the destination was in the initial stage of tourism development and residents tended to show a positive attitude towards visitors, and they were within the *euphoria* stage of tourism development. The concept of ‘sustainable tourism’ has over the last 30 years become the main focus of tourism destination management (McGehee et al., 2013). The central idea of ‘sustainable tourism’ is to develop and manage tourism that leads to maximising benefits for the triple bottom line (economic, environmental and socio-cultural sustainability) while conserving the resources on which it depends (Dwyer, 2005).

To understand the changes in communities due to visitation over time, Butler (1980) illustrated the evolution of a TALC (Figure 2-8). The concept of the model was based on product life cycle, by which the process of a product to sell is slow at first, then it experiences a more rapid growth rate, stabilises, and finally declines. Butler (1980) described how a tourist area passes through several stages: First is the *exploration* stage, where the initial discovery
of the destination is done by a small number of adventurous tourists who are looking for or attracted by a unique culture or the natural beauty of the area and who have lots of contacts with the local citizens. At this stage, residents will not be involved in tourism activities yet, and tourism has a very little impact on the community or the economy of the destination. By providing tourism facilities and raising local awareness, the authority attracts more visitors and leads to the next stage, involvement, in which the local community starts developing tourism infrastructure, resulting in more tourists arriving. At this stage, residents become involved in tourism and a tourist season develops. Locals have a great deal of contact with tourists, and the area becomes popular very fast. The next stage, development, provides a well-defined tourist market within the region and local control of tourism declines as the levels of carrying capacity are reached. These may include environmental factors (e.g. air pollution and land scarcity) or tourism facilities (e.g. transportation and accommodation) or social factors (e.g. crowding or resentment among residents). Due to the negative impacts of visitors and local overuse, eventually the total number of visitors may also decline.

Figure 2-8 Hypothetical evolution of a tourist area (Butler, 1980)

In a literature review, Doğan (1989) formulated a comprehensive adjustment model and strategy for residents to cope with changes in their community. The first adjustment is
resistance, where residents begrudge tourists and show a feeling of resentment towards foreigners. The next reaction is retreatism, in which locals try to avoid visitors and close off into themselves. This is where the economic benefit of tourism is too important to push away, so the residents withdraw from the community and take refuge in their culture. Another strategy is known as boundary, when the economic benefit of tourism is so great, and the host community chooses to nullify the negative impacts of tourism on their society. Boundary maintenance involves a balance between the interests of locals and visitors, and it enables a destination to benefit from tourism activities without hurting the local cultures. Revitalisation is a unique adjustment strategy where culture is the focus of tourism and so protects the community’s local culture and heritage by promoting its benefit and their existence. Revitalisation could also increase residents pride and appreciation of their heritage. The final stage of residents’ adjustment to tourism is adoption, where some residents especially the young age group perceive tourism as a vehicle for changing the structure of the destination society to assimilate the western culture. It is rare to see the entire models happening within a community as residents normally take a hybrid attitude with a combination aspect of different strategies. Also, any resident’s reaction might be changed over the time of tourism development, and the most different impacts of tourism will be seen either positively or negatively.

The later developed four-stage continuum identifies residents’ reactions as first, embracement, the welcoming and acceptance level of tourists and tourism; then tolerance, where residents cope with both positive and negative impacts of tourism in their community; the third stage is adjustment, when the residents reschedule their activities to escape crowds; and finally, the most extreme negative reaction expressed by residents is withdrawal, which means the locals temporary remove themselves from the community to escape from tourism and visitors (Doğan, 1989).

Although several models of tourism destination development have been presented, Butler’s (1980) paradigm has been identified as one of the main models used to assess the processes of tourism destination development over the time (Karplus & Krakover, 2005). A great number of studies have applied Butler’s (1980) framework to analyse the development process of destinations such as island or country (Diedrich & Garcia-Buades, 2009; Irwana Omar, Ghapar Othman, & Mohamed, 2014; McElroy, 2006; McElroy & Parry, 2010; Rodríguez,
Parra-López, & Yanes-Estévez, 2008; Vong, 2009). An important model has been proposed by (McElroy & Hamma, 2010) for a sample of 39 small islands in the Caribbean versus Pacific and Indian Ocean islands, used an alternative model based on the Tourism Penetration Index and identified the most successful small tourism island along Butler’s (2006) life cycle. The results suggest the factors such as geographic proximity to the primary metropolitan origin markets, political dependency status, and uncrowded island ambiance were statistically significant influences on the uneven spread of these islands tourism across the world.

The TALC framework has also been applied to some specific natural environment destinations including natural parks, resorts and countries (Garcia-Ayllon, 2016; Lee & Weaver, 2014; Lumbanraja, 2012; Zhong, Deng, & Xiang, 2008). In these studies, the life cycle model has been identified as a great tool to determine the limit of usage of natural areas as an element of tourism and recreational activities in order to maintain the desired quality of an area’s social and biophysical characteristics.

As Romão, Guerreiro, and Rodrigues (2013) stated, it is also remarkable to notice that the general process of tourism evolution is not equally observed in all destinations. In other words, the duration of each stage can vary in different destinations, and other factors such as competition with similar places and products, or the evolution of supply and demand markets in destinations are also associated with the evolution of tourism destinations. In addition, the TALC model does not have a universal framework for all destinations. For instance, the process of development can be very different in ‘instant resorts’ or ‘ready-made’ destinations (such as Cancun in Mexico), which can enter directly into the development stage with minor exploration and involvement phases, due to the large investment and planning, massive promotion and arrangement of the tourist area at the international level (Butler, 2006). Eventually, due to the lack of statistical information on destinations, recognition and accessibility of the TALC framework stages is not always clear or even possible. Sometimes the features of different stages coexist in the same moment (Lagiewski, 2006).

The vast majority of the papers on residents’ perceptions and attitudes adopted quantitative methods (Almeida-Garciaa et al., 2016; Blesic et al., 2014; Boateng, Okoe, & Hinson, 2018; Del Chiappa & Abbate, 2016; Draper et al., 2009; Joo et al., 2018; Lawton & Weaver, 2015; Li, Liu, Wang, & Zhu, 2014; Prayag, Hosany, Nunkoo, & Alders, 2013; Ribeiro et al., 2013; Sharma & Dyer, 2009b; Song, Pratt, & Wang, 2017; Vargas-Sánchez, Oom Do Valle, Da Costa Mendes,
& Silva, 2015; Wang & Luo, 2017; Woosnam, Draper, Jiang, Aleshinloye, & Erul, 2018). Indeed, only a few papers were found using qualitative analysis (Haobin et al., 2014; Hunt & Stronza, 2014; Lepp, 2007). Sharphey (2014) stated that the use of quantitative methods is understandable as the main aim of most studies was to examine the relationship between variables influencing residents’ perceptions of tourism.

In addition, only a few case studies had a longitudinal approach and considered the possibility of attitude change over time (Bishnu & Pam, 2012; Lee, Lee, Kang, Lee, & Jeon, 2013; Sharma & Gursoy, 2015); whereas, the majority of research data have been collected at a single time (Ana Isabel, Júlio Da Costa, & Patrícia Oom Do, 2014; Gabriel et al., 2011; Głąbiński & Duda, 2017; Kafashpor, Ghasempour Ganji, Sadeghian, & Johnson, 2018; Long & Kayat, 2011; McCaughey, Mao, & Dowling, 2018; McDowall & Choi, 2010; Ngowi & Jani, 2018; Rasoolimanesh & Jaafar, 2016; Roozbeh Babolian, 2016; Wang, 2016). To overcome this issue, the results of this study are compared to the similar previous research in Qeshm Island (see Section 2.3.2). Additionally, due to the conservative nature of this traditional community, it is believed that residents would be more comfortable completing a questionnaire than participating in an interview. Therefore, this study applied quantitative methods with four open-ended questions, which not only explain what residents perceive, but also describe why and where this perception and attitude come from.

2.6 Factors influencing the perception of tourism

It is concluded that some factors influence residents’ perception of tourism impacts and residents’ attitudes towards tourism activity in a community (Sharma & Dyer, 2009b). The factors that affect the perception of locals towards tourism development and its impacts can be classified under the following headlines.

2.6.1 Distance from tourist sites

It has been claimed that when the distance to a tourism centre zone increased, positive impacts are perceived less favourably (Deery, Jago, & Fredline, 2012; Huh & Vogt, 2008; Sharma & Dyer, 2009a). However, Sharphey (2014) stated that this relationship has not been
consistently found in studies and in another statement, Deery et al. (2012) noted that there are mixed results about this aspect as some of the locals prefer the dynamism while others are inconvenienced by tourism activities.

2.6.2 Length of residency

As Sharpley (2014) stated, the factor of length of residency has been found to have an ambiguous and sometimes contradictory result on the perceptions of the residents. Therefore, the findings of studies could not be generalised to other communities (Cordero, 2008; Woosnam, 2012; Woosnam, Norman, & Ying, 2009).

2.6.3 Involvement in tourism

Many studies have found a positive relationship between participation in tourism and the favourable relationship with it (Besculides et al., 2012; Fredline & Faulkner, 2010). As supported by Gursoy et al. (2010), community involvement is a factor that is expected to influence the sustainability of any tourism development considerably.

Further, the involvement of the residents in tourism planning and management will ensure that impacts of tourism will be perceived more as being acceptable and appropriate (Gursoy et al., 2010).

2.6.4 Residents’ economic dependence on tourism

The results of many studies indicate that there is a positive relationship between economic dependence and residents’ acceptance of tourism in destinations (Huh & Vogt, 2008; Kwon & Vogt, 2010; Wang & Pfister, 2008). However, Sharpley (2014) has stated that a variety of variables such as the level of wages in tourism could also temper these attitudes.

Further, it is argued that residents working within the tourism industry have a more positive attitude towards it (Deery et al., 2012; Draper, Woosnam, & Norman, 2011). This is because they perceive more benefits than costs. On the other hand, residents who have no interests are more inclined to hold negative perceptions, as the costs are greater with no significant
direct benefits (Lee & Back, 2006). This aspect also supports the ‘social exchange theory’ (Lee & Back, 2006).

2.6.5 Seasonality pattern of development

This is attributed to the fact that some destinations are visited more or less at a different time of the year. This is due to seasons, public holidays and school holidays, etc. As Sharpley (2014) stated, residents’ perception of tourism is found to vary according to seasonality; however, the high and low season may balance the local’s attitude. This will influence the way in which residents perceive tourism in their community as seasonality patterns differ from community to community (Wall & Mathieson, 2006).

2.6.6 Cultural differences between tourists and residents of a host community

Developing a positive tourist cross-cultural interaction would not be possible without understanding the importance of cultural differences between the host community and the tourists and the way this influences perceived socio-cultural impacts (Ng, Lee, & Soutar, 2007). Cultural differences could be determined in cultural values, attitudes, perceptions, social behaviour, needs, expectations, experiences, beliefs, norms, motivations, and verbal and non-verbal behaviours (Reisinger & Turner, 2002).

Based on the differences in cultural background, there are three types of social contact between tourists and local communities: where the cultural background is (1) the same; (2) different, but not significant; and (3) different, and the differences are large (Sutton, 1967). The greater the differences in cultural background, the greater residents and tourists misunderstand each other; leading to friction and irritation, which will cause residents to perceive tourism as negative in the host community (Sutton, 1967).

2.7 Conceptual framework

As stated in Chapter One, there are three questions addressed by this research. The first question (RQ1) is: How do local residents perceive the impacts of geotourism in the Qeshm
Island community? Based on the literature, tourism impacts are found in three dimensions: economic, socio-cultural and environmental. There might be some political impacts contributed to geotourism activities in Qeshm Island. However, the proposed model does not cover political impacts to respect respondents’ rights and the researcher’s security as Iran is a politically closed country.

The second research question (RQ2) is: What is the general attitude of the Qeshm Island residents towards geotourism? The next section presents residents’ attitudes towards geotourism activities and the prevailing mood of the host community, which is based on the Doxey Irridex Model. This model argued that based on residents’ perception of tourism impacts in their area, their attitude would regress through the four stages of euphoria, apathy, irritation and antagonism. The dependent variables are residents’ attitudes, and the independent variables are geotourism impacts on Qeshm Island such as economic impacts, socio-cultural impacts and environmental impacts.

The final question (RQ3) is: What is the relationship between residents’ perception of geotourism impacts and residents’ attitude towards geotourism in Qeshm Island?

2.7.1 Conceptual definition and research hypotheses

Thus far, several dimensions in the study of residents’ perception towards tourism and geotourism development are reviewed that provide conclusions about the relationship among these dimensions. The conceptual framework that will guide this study is illustrated in Figure 2-9. This model presents the principle relationship between inputs and expected results and also indicates how the outcomes could be restricted by potential barriers. At the extreme side of the diagram is the residents and how some intrinsic variables such as residential proximity, period of residency, their geotourism activities and tourists–residents ratio influence their perception of geotourism impacts and their attitude.

Natural resources perform an important function in the lives of residents of Qeshm Island and in turn, tourists and residents also have an influence on the resources through their economic, social and cultural activities. Consequently, when areas are designed or used as a geotourism
attraction site, the carrying capacity of the resources and residents characteristics need to be considered for geotourism development in Qeshm Island.

The following six hypotheses are presented, each of them flowing out of one of the three research questions. This study hypothesised:

H1-a: Residents perceive that geotourism has positive economic impacts for them personally.

H1-b: Residents perceive that geotourism has negative socio-cultural impacts for them personally.

H1-c: Residents perceive that geotourism has negative environmental impacts for them personally.

H2: Residents’ attitudes toward geotourism impacts are positive.

H3-a: There is a positive direct relationship between socio-cultural impacts of geotourism and residents’ attitude.

H3-b: There is a positive direct relationship between urban issues impact of geotourism and residents’ attitude.
Conceptual Framework

Extrinsic and Intrinsic Dimensions
Residential Proximity
Period of Residency
Demographics
Tourists-Residents Ratio

Residents’ Perceptions of Geotourism impacts

Socio-cultural impacts  Economic impacts  Environmental impacts

Residents’ Attitude towards Geotourism

Feedback (Strategies, Policies, Guidelines)

Figure 2-9  A proposed conceptual model for this study
CHAPTER 3 METHODOLOGY

This chapter describes the methods used in understanding residents’ perceptions towards geotourism in Qeshm Island. Specifically, this chapter explains the description of the study site, Qeshm Island UNESCO Global Geopark, the pilot study and the pre-test research design, the procedure of participant collection, the manner of the data analysis and finally a discussion on ethical consideration.

3.1 Study site

Qeshm Island is the largest island in the Persian Gulf and is part of Hormozgan Province of the Islamic Republic of Iran. The island has an area of 1,565 square kilometres and comprises 59 towns and villages. According to the Iran Bureau of Census, the island has a population of 148,993 residents consisting of 40,506 households (StatisticalCenter, 2016). Qeshm Geopark is a UNESCO Global Geopark and consists of twenty-five geosites. The boundary of the Qeshm Geopark consists of Qeshm Island, Deirestan Bay and some parts of the mangrove forests and 800 metres in the sea from the low tide line (Figure 3-1).
Figure 3-1 Qeshm Geopark map

Adopted from: http://www.tourism.qeshm.ir/en/qeshm-map
Qeshm Island is located at 26° 32’ 27’’ 00 N and 55° 15’ 56’’ 160 E, has about 292 kilometres of coastline, which is limited to Bandar Abbas from the north and to Hengam Island from the south (Zarei et al., 2016). Based on archaeological evidence, a large population inhabited Qeshm Island during the Maads Empire around 1000 BC (Negahban & Jamadi, 2011) cited in (Esfehani & Albrecht, 2018). The ancient history of the Qeshm Island has resulted in the creation of a variety of geoheritage and landscapes as well as the rich cultural background. Qeshmi culture has been influenced by Iranian, African and Arabic cultures (Figure 3-2). This is due to the long history of wars, sailing and trade in this area. The Qeshmi people speak Farsi with Bandari dialect, mixed with many English, Arabic, Hindi and Portuguese words. Also, their musical instruments and foods are inspired by a mix of Indian, African, Arabic and Iranian background (Torabi Farsani et al., 2012).

Figure 3-2 Culture diversity in Qeshm Island
(Traditional clothing in Qeshm Island (upper-left), Qeshmi women’s art (upper-right), The art of building traditional wooden ships (lower) Photographer: S.Khodayar)
Many studies have been conducted on Qeshm Island which presents a great case study opportunity for research into geotourism. Also, my Persian cultural background, Persian language skills, my prior work experience as well as the personal emotional connection to my homeland, influenced my decision to undertake the fieldwork in Iran.

### 3.2 Research design

Reviewing the previous studies (see Section 2.4) has shown that measuring the environmental and socio-cultural impacts of tourism is less complicated in comparison with economic impacts as some features of economic impacts such as costs, benefits and leakage are challenging to observe and measure quantitatively. As Nunkoo, Smith, and Ramkissoon (2013) and Sharpley (2014) stated, quantitative methods are well suited for measuring attitudes in a large sample. These scholars also identified that the vast majority of the research related to the area of host attitude employs quantitative methods and focuses on the specific impacts of tourism or using a particular method such as Structural Equation Modelling (SEM) (Amuquandoh, 2010; Andereck & Nyaupane, 2011; Draper et al., 2011; Nepal, 2008; Sharma & Dyer, 2009a; Vargas-Sánchez, Porras-Bueno, & de los Ángeles Plaza-Mejía, 2011; Woosnam, 2012).

Qualitative (Dyer, Aberdeen, & Schuler, 2003; Lepp, 2007, 2008) and mixed-methods (Andereck et al., 2005; Chhabra, 2010; Diedrich & García-Buades, 2009) approaches have also been adopted in this area of residents’ attitudes, but not to the extent of quantitative methods (Andereck et al., 2005; Chhabra, 2010). Also, due to their traditional culture and a closed community, it is believed that residents would be more comfortable completing a survey rather than attending an interview. Therefore, this research employs quantitative approaches of data collection and analysis as it is believed the methods used are the most appropriate for answering the research questions.

A questionnaire is designed as a survey instrument that consists of all the constructs of the proposed model to investigate the hypothesis of interest. The survey instrument within this study was designed based on the relevant literature and previous methods used by Meyer (2011) and Miyakuni (2012) considering statements that adequately explain the survey
framework. Further, the study followed a descriptive and inferential research design to provide summaries of sample and measures from a significant amount of data (Trochim & Donnelly, 2008). This is in order to reach conclusions that extend further than the immediate data and inference from the data to general conditions (Trochim & Donnelly, 2008).

3.3 Variables

A variable is a quantity which is changing in an experiment or calculation. An experiment usually consisting of two kinds of variables: independent and dependent.

A ‘dependent’ variable is the one that is changed in the experiment and what is affected during the experiment. The dependent variable responds to the independent variable. It is called dependent because it ‘depends’ on the independent variable. In a scientific experiment, a dependent variable is always with an independent variable. An ‘independent’ variable is defined as the variable that is changed or controlled in a scientific experiment. It represents the cause or reason for an outcome (Unger & Denmark, 1975).

3.3.1 Independent variables

Demographic

Residents’ perceptions towards the geotourism impacts in Qeshm Island are influenced by demographic variables such as gender, age, income and employment statement and level of education. Here, the relation of residents’ employment status and whether residents are financially dependent or not dependent on tourism with the impacts of geotourism, were tested (Miyakuni, 2012).
3.3.2 Dependent variables

Residents’ attitudes

The variables used in this study to measure residents’ attitudes were the positive and negative economic impacts, positive and negative socio-cultural impacts and the positive and negative environmental impacts. The five items used to measure the economic impacts were adapted from Claudia, Muzaffer, and Daniel (1997) and Miyakuni (2012) as their results have shown high reliability in those statements (a Cronbach’s alpha of 0.73 for positive statements and 0.75 for negative statements).

Cronbach’s alpha (or coefficient alpha) is a measure of internal consistency and considered to be a measure of scale reliability. It examines how closely related a set of data are as a group. It is desired to have a Cronbach’s alpha over 0.70; however, 0.60 is also acceptable for exploratory research (Hair, 1998).

The socio-cultural impacts variables included eight items comprising four positive statements and four negative statements. These items were adapted from Gursoy and Rutherford (2004) with internal consistency reliability, Cronbach’s alphas of 0.76 for positive statements and 0.75 for negative statements. The environmental impact items were adapted from the study of Vargas-Sánchez et al. (2009) with five items. Two items considered a positive impact and the other three statements considered as negative impacts. The internal consistency reliability test in this study confirmed a Cronbach’s alpha of 0.85.

3.3.3 Other tested data

Doxey Irridex Model

In this study the Doxey Irridex Model was used to examine the locals’ reaction to the impacts of tourism from euphoria (happy for tourism), to apathetic (indifferent to tourism), or irritated or annoyance by tourism, or finally, antagonised (in opposition to tourism) stage. Doxey (1975) claimed that an increase in the number of tourists in a host community results in residents’ reaction with hostility towards tourists, and the local community passes through stages from euphoria to antagonism. Qeshm Island receives 3 million visitors annually.
(StatisticalCenter, 2016). The Doxey Irridex Model analysed the current attitudes of a selected participant in Qeshm Island community about their exposure to tourism in the destination. Also, a linear regression analysis was applied in order to predict the relationship between perceived geotourism impacts domains, the residential demographic characters and the overall residents’ response to geotourism in Qeshm Island. Regression analysis is a good statistical technique for investigating the relationship between sets of data and identifying if there is a cause and effect relationship among variables. In linear regression, the values of the dependent variable change by a fixed amount for a unit increase or decrease in the value of the independent variable. The regression analysis in a business management setting is more likely used to make predictions as an input to a decision-making procedure (Brandimarte, 2011).

3.4 Pilot study and pre-test

In order to enhance the reliability of the scales in the questionnaire a pilot study was conducted. A pilot study involves conducting a small-scale research project with a small group of respondents similar to those that will be used in the full study (William, Barry, Jon, & Carr, 2012). The pilot study sought to determine:

1. if participants understand the instructions,
2. if the risk of demand characteristics and experimenter effects has been reduced, and
3. whether the method of data collection works (Weathington, Cunningham, & Pittenger, 2012).

To pilot the research instrument the questionnaire was first distributed to 30 undergraduate and postgraduate students of Edith Cowan University. Revisions were made to the wording of the scales based on their feedback. Furthermore, a pre-test was conducted to test the analysis techniques and estimate the potential response rate. For this pre-test the questionnaire was distributed online through some of the researcher’s contacts and their suggestions on Qeshm Island. The analysis was conducted with 40 completed questionnaires, and the results showed that all scales had high reliability with Cronbach’s alpha scores over 7.3.
3.5 The survey instrument

A questionnaire was developed based on previous literature which consists of three parts. Each part includes a series of statements to gather information about all aspects of the study. The first section is involved gathering respondent’s demographic characteristics such as gender, age, education level, income, the number of years they have lived in the area, and their living distance from attraction sites. Based on the literature, demographic variables and the degree of involvement in the tourism sector have been explored in many studies regarding their influence on residents’ perceptions and attitudes towards tourism (Liang & Hui, 2016; Ribeiro et al., 2013; Stylidis, Biran, Sit, & Szivas, 2014).

The second part of the questionnaire includes residents’ perceptions of various geotourism impacts in Qeshm Island including measuring variables influencing residents’ attitude such as economic benefit and cost of geotourism, the socio-cultural benefits and costs of geotourism, and environmental benefit and cost of geotourism in Qeshm Island (see Tables 3–1 to 3–3). Residents’ perception were measured on a five-point Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. A five-point Likert type scale was selected based on its superior validity and recommended for tourism impact research (Maddox, 1985).

Also, there might be some political impacts contributed to geotourism activities in Qeshm Island and its planning policies. However, as Iran is a politically closed country people may not comfortable to comment on political issues and government structures. Therefore, questions that are related to the government were not included in the survey to respect everyone’s right and the researcher’s security.

Table 3-1  Economic impacts indicators of geotourism in Qeshm Island

<table>
<thead>
<tr>
<th>Economic Impact Indicators of Geotourism</th>
<th>Positive statements</th>
<th>Negative statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased employment and investment opportunities</td>
<td>More businesses for local people</td>
<td>Increased prices in Qeshm Island Benefits only a small number of residents in Qeshm Island</td>
</tr>
<tr>
<td>More profits for companies outside of the community</td>
<td>More profits for companies outside of the community</td>
<td></td>
</tr>
</tbody>
</table>
Table 3-2 Socio-cultural impact indicators of geotourism in Qeshm Island

<table>
<thead>
<tr>
<th>Socio-Cultural Impact Indicators of Geotourism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive statements</td>
</tr>
<tr>
<td>Incentives to locals to preserve the local culture</td>
</tr>
<tr>
<td>Improvement of the quality of roads and recreational areas</td>
</tr>
<tr>
<td>Positive impacts on the cultural identity of local residents</td>
</tr>
<tr>
<td>Enhances cultural exchanges between tourists and residents</td>
</tr>
</tbody>
</table>

Table 3-3 Environmental impact indicators of geotourism in Qeshm Island

<table>
<thead>
<tr>
<th>Environmental Impact Indicators of Geotourism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive statements</td>
</tr>
<tr>
<td>Improves the physical appearance of the Island</td>
</tr>
<tr>
<td>An incentive for local people to conserve natural resources</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

The third part of the questionnaire addresses the host residents’ attitudes towards geotourism activities and the prevailing mood of the host environment in Qeshm Island with four questions concerning the Doxey Iridex Model (Table 3-4). This model claims that based on residents’ perceptions of tourism impacts in their area, their attitude will regress through four stages of euphoria, apathy, irritation and antagonism.
Table 3-4  Host life cycle indicators towards geotourism

<table>
<thead>
<tr>
<th>Number</th>
<th>Host Life Cycle Indicators Towards Geotourism</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Euphoria – Feeling happiness by the impacts of geotourism</td>
</tr>
<tr>
<td>2</td>
<td>Apathy – Feeling indifferent to the impacts of tourism</td>
</tr>
<tr>
<td>3</td>
<td>Irritation – Feeling irritated by the impacts of tourism</td>
</tr>
<tr>
<td>4</td>
<td>Antagonism – Feeling antagonised by the impacts of tourism</td>
</tr>
</tbody>
</table>

3.6 Sample population

According to Babin and Zikmund (2015, p. 312), a population is “any complete group of entities that share some common set of characteristic.” The purpose of this research is to explore the perceived impacts of geotourism on Qeshm Island residents. Therefore, the target population of this study was individuals 18 years old or older who reside in the city of Qeshm, Iran and the study used the convenience sampling method to select the study sample from the target population.

Convenience sampling is a non-probability sampling technique where subjects are chosen based on the convenient accessibility and proximity to the researcher. In convenience sampling, the researcher does not consider selecting a sample that is representative of the entire population. Selecting is based on obtaining participants that are conveniently available. This method is convenient, fast and economical, as a large number of questionnaires can be completed (Easterby-Smith, Jackson, & Thorpe, 2013).

Qeshm Island has a total population of 148,993, with 66,801 living in the municipal area and 82,160 in towns (StatisticalCenter, 2016). Based on the sample size guidelines provided by Krejcie and Morgan (1970), a sample size of 384 is adequate for the total population of Qeshm Island. There were 384 questionnaires distributed amongst the residents of fifteen tourism dependent and non-dependent towns, including Ba’saiedu, Dulab, Guri, Chahou Sharghi, Chahou Gharbi, Salkh, Guran, Tabl, Haft Rangoo, Soheili, Deyrestan, Hengam, Shib Deraz, Zeinabi and Borkeh Khalaf (Figure 3-1). The residents of Qeshm and Dargahan were not
selected due to the residence of many non-locals and the presence of visitors with different trip purposes (such as businesses in Qeshm trade zone). Therefore the total sample population of 384 respondents was considered representative.

A convenience sample of the residents of Qeshm Geopark who are 18 years old and above was selected to conduct the research. The research took place from 7 to 25 April 2017 which was a peak season in Qeshm Island due to the Persian New Year holiday. As this study was conducted in the busiest time of the year, some negative impacts of geotourism might have found more intensively than at the normal time. The questionnaires were distributed in public areas such as geosites, local businesses and households in the community. Data collection occurred both on weekdays and weekends, between the hours of 9:00 am to 6:30 pm.

Once a respondent agreed to participate they were asked whether or not they were residents of Qeshm Island and are over 18 years old, as the local residents of Qeshm Island were incorporated for this study. If they responded positively to these questions the researcher briefed the participant on the purpose of the study and then asked if they were willing to complete the survey instrument.

Once respondents indicated their availability to complete the questionnaire, the researcher remained present in order to assist if the participant had any questions regarding the survey or questionnaire. Participants were assured that all responses were completely anonymous and confidential. When participants completed the questionnaire the researcher thanked them for their participation and wrote the place that the survey has been completed to make sure that the questionnaires were evenly spread across the selected towns.

3.7 Data collection

A prepared open-ended questionnaire was used to gain different perceptions from the respondents. The researcher personally administered the prepared open-ended survey. After preparing the English version of the questionnaire the finalised English version was translated into Farsi. The Farsi questionnaire was reviewed by two Farsi/English experts with a tourism background to obtain feedback on the equivalency of the English/Farsi translation and the clarity of the Farsi version of the questionnaire.
A total of 31 questions were administered, four being open-ended with the rest closed-ended. The duration for completing the questionnaire varied ranging from 6 to 15 minutes. The average length of a questionnaire was around 10 minutes. Data collection ended when the sampling size was reached, as well as the gender and age category strata. A total of 266 completed questionnaires were obtained from the 384 distributed surveys, corresponding to 69.2% of the initially defined sample. The high response rate recorded in this study could be the result of the researcher’s effort in visiting all busy areas and following it up with respondents.

3.8 Validity and reliability

The reliability and validity of variables affect the research findings (Creswell (2014). Therefore, once the questionnaire was constructed, the validity and reliability of the survey were assessed. Reliability is the consistency of the similar measurements which produce the similar results (Babbie, 2015). Reliability has two dimensions: repeatability and internal consistency (Zikmund, 2013). The internal consistency is concerned with the correlation between the scale items of a sample which are measuring the same construct.

The reliability of the survey was measured by Cronbach’s alpha score. It is desired to have a Cronbach’s alpha over 0.70; however, 0.60 is also acceptable for exploratory research (Hair, 1998). In this study, first the internal consistency reliability was assessed based on the previous literature and then evaluated based on the responses provided in this study (c.f 4.3).

Validity is the extent to which an empirical measure well corresponds to the concept of the research study (Babbie, 2015). Different types of validity include 1) translation validity, which includes face/content validity referring to the degree that a research survey measures a specified content area and all the factors of variables being measured are reflected within the content; 2) criterion-related validity, which reflects how well one measure could predict an outcome for another measure, usually measured by their correlation; and 3) construct validity, which is the ability that a test could measure to confirm the hypothesis generated from a theory that the survey instrument constructed (Zikmund, 2013).
Content validity of the survey instrument was assessed in the pilot study through two research scholars and reviewers to examine and provide feedback for revision. Next, the survey comprised of thirty undergraduate and postgraduate students in the area of business and tourism management to check for readability of the questions and also estimating the time for completing the survey. Furthermore, a pre-test was conducted on the similar target population.

Convergent validity was assessed by removal of the indicators from the survey instrument with a low outer loading, which located the underlying construct factor and checks whether a chi-square difference test is significant (Anderson & Gerbing, 1988). Discriminant validity was tested by conducting a chi-square difference test on every possible pair of constructs. Also, the estimated correlation parameter between a pair of constructs was constrained to 1.0, and the statistical differences between the constrained and unconstrained model were examined.

3.9 Data analysis

Data analysis was a multi-stage process. Firstly, all returned questionnaires were encrypted, and all data entered into the statistical package SPSS 25 (Statistical Package for the Social Sciences) for statistical data processing (Allen, Bennett, & Heritage, 2014). SPSS was chosen because of its popularity in academic fields as it provides many techniques of analysis, data transformation and forms of output. Also, SPSS is capable and enables researchers to obtain statistics ranging from simple descriptive numbers to complex analysis of multivariate matrices (Arkkelin, 2014).

In the first phase of data analysis, the descriptive statistics and distribution including frequency distribution, mean, median and standard deviation were assessed. Descriptive statistics are used to draw the basic and main conclusion features of the data in a study. They provide simple summaries about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data (Goos & Meintrup, 2015).
Next, the underlying constructs of the Qeshm Island residents’ perceptions of the impacts of geotourism were measured using an Exploratory Factor Analysis (EFA). SEM was conducted using Analysis of Moment Structures (AMOS) 25 to test the proposed model using Confirmatory Factor Analysis (CFA). Multiple measures were used to assess the fit between the model and the data, including normed chi-square (chi-square/df), Comparative Fit Index (CFI) and Root Mean Square Error Approximation (RMSEA), all of which were suggested in the literature for single group analysis (Hair, Black, Babin, Anderson, & Tatham, 2006).

3.9.1 Structural Equation Modelling

SEM is a multivariable statistical analysis technique for theory development and construct validation in social sciences and psychology (Anderson & Gerbing, 1988). The correlation between two variables is not a sufficient condition for causation; causation manifests itself in correlation (Hair, Black, Babin, & Anderson, 2014). SEM reveals a series of hypotheses about the relationship between variables by using the Regression Coefficient Variance and Covariance Analysis. Maximum likelihood (ML) estimation has been the predominant approach in SEM, which indicates if the measured variables are continuous and follow a multivariate normal distribution (Anderson & Gerbing, 1988).

The recommended method was to follow a two-step SEM modelling by Anderson and Gerbing (1988), which first involves assessing the fit of the latent constructs using CFA, then evaluating the hypothesised relationship between the constructs. To test the structure of factor model in EFA, the goodness of fit chi-square ($\chi^2$) is examined. However, the goodness of fit chi-square tends to be large in large samples. For testing the hypotheses with chi-square, only the central chi-square distribution is used, which results in a discrepancy of the sample covariance matrix and the implied covariance matrix equal to zero. Even with a small discrepancy between the estimated model and data, when the sample size is large enough, any model would be rejected due to the discrepancy which is not statistically equal to zero (Hoyle, 1995). Moreover, the ($\chi^2$) chi-square test only offers “a dichotomous decision strategy implied by a statistical decision rule and cannot be used to quantify the degree of fit along a continuum with some prespecified boundary” (Hoyle, 1995, p. 81).

According to the problems associated with chi-square, another four indices, CFI, RMSEA, PCLOSE, and Standardised Root Mean Square Residual (SRMR), were evaluated for assessing
the fit of the tested scale. The Comparative Fit Index (CFI) (Bentler, 1990) values above 0.9 determines a good fit, and RMSEA (Michael & Robert, 1992) with a cut-off value of 0.05 or lower is recommended as a good model fit. Also, the RMSEA associated p-value (PCLOSE) (Hair et al., 2014) greater than 0.05 indicated a close fit and SRMR (Hair et al., 2014) with a value lower than 0.09, is considered a fit model. In this study, a series of SEMs were used to examine the EFA, fit the proposed measurement model and test the hypotheses about the relationships between geotourism impacts and residents’ attitudes towards geotourism development on Qeshm Island.

3.10 Ethical considerations

The obligation to moral responsibility and to respect research ethics is a part of all social science researchers. Social science researchers must be responsible for preventing the research subject from being harmed, distressed or treated insensitively, both physically or psychologically (Bernard, 2013). The ethical aspects of this study are considered as very important and the research is conducted by giving attention to privacy and personal needs of all respondents and participants in this research projects. For the policies of Edith Cowan University followed in this study, and the ethical clearance granted by the Ethics Committee before collecting data, see http://intranet.ecu.edu.au/research/research-ethics/ethics-committees/human-research-ethics-committee.

3.11 Chapter summary

This chapter outlined the research design for the study. The study is conducted in Qeshm Island UNESCO Global Geopark in Iran. Quantitative methods were selected for analysis purposes because the majority of the studies related to the residents’ perceptions and attitudes; quantitative methods are well suited for measuring attitudes in a large sample; and finally, the nature of Qeshm community means residents seem to be more comfortable with answering the questions rather than attending interviews.
The instrument developed based on relevant literature and previous methods used by Meyer (2011), Miyakuni (2012) and Doxey (1975) includes demographic characteristic, geotourism impacts and residents’ attitudes towards impacts associated with geotourism activities in Qeshm Island. A total of 31 questions were administered, four being open-ended. The study was targeted sample size of 384 participants from the residents of Qeshm Island with a different range of age, gender, tourism dependent or non-dependent individuals who were willing to participate. A pilot study and the pre-test is conducted before collecting the data. The data collection was conducted during April 2017. A total of 266 (69.2%) complete questionnaires were obtained.

Firstly, descriptive statistics and distribution include their frequency distribution, mean, median and standard deviation is assessed. Next, the underlying constructs of the Qeshm Island residents’ perceptions of the impacts of geotourism were measured using EFA. SEM was conducted using AMOS 25 to test the proposed model using CFA. The results of the data gathering and its analysis are presented in the next section.
CHAPTER 4 RESULTS

4.1 Introduction

The main aim of this study is to understand residents’ perceptions towards geotourism in Qeshm Island UNESCO Global Geopark. A self-administered questionnaire with a sample size of 384 participants is adequate for use in fifteen tourism dependent and non-dependent towns. A total of 266 complete questionnaires were collected, corresponding to 69.2% of the initially defined sample.

Data were entered into the software package SPSS 25 for analysis. This chapter outlines the main results of this study. Data analysis is a multistage process. Firstly, the descriptive results regarding demographic and social characteristics of the respondents will be presented. Then, the perceptions of geotourism impacts in Qeshm Island will be assessed.

4.2 Descriptive results of the sample

First, the results of descriptive statistics report the sample profile and demographic characteristics of the participants (Table 4-1). Next, the descriptive statistics of perceived geotourism impacts in Qeshm Island are illustrated (Table 4-2). Overall, locals held positive perceptions of geotourism impacts in their community; more detailed descriptions of each dimension are described below.

4.2.1 Descriptive analysis of demographic and social characteristics of respondents

Demographic data collected for each respondent consisted of gender, age, education, income, length of residency, tourists–residents ratio and whether or not an individual financially benefited from tourism. From Table 4-1, it can be seen that the proportion of male respondents (59%) was higher than the proportion of female participants (41%). Most of the respondents (36.7%) were between the ages of 25 and 34 years. Nearly one-third of the respondents to the survey have less than a high school diploma (32.7%) and nearly one-third have a high school diploma (32.3%) as their highest level of education. Furthermore, it can be seen that most of the respondents (52.3%) have financially benefited from geotourism in
Qeshm Island, with an average income of less than 250 AUD (1,000,000 Toman) monthly (67.3%). Data regarding distance residents live from geosites and their interaction with tourists collected using open-ended questions and prior to data analysis were separated into five major categories. Also, the largest proportion (42.7%) of the respondents live very close (between 1 and 4 kilometres) to the geosites.

Table 4-1 The Demographics of the Respondents in Qeshm Island

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td>Female</td>
<td>109</td>
<td>41.0%</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>157</td>
<td>59.0%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>18-24</td>
<td>94</td>
<td>35.6%</td>
</tr>
<tr>
<td></td>
<td>25-34</td>
<td>97</td>
<td>36.7%</td>
</tr>
<tr>
<td></td>
<td>35-44</td>
<td>52</td>
<td>19.7%</td>
</tr>
<tr>
<td></td>
<td>45-54</td>
<td>13</td>
<td>4.9%</td>
</tr>
<tr>
<td></td>
<td>55-64</td>
<td>4</td>
<td>1.5%</td>
</tr>
<tr>
<td></td>
<td>65-74</td>
<td>2</td>
<td>0.8%</td>
</tr>
<tr>
<td></td>
<td>+75</td>
<td>2</td>
<td>0.8%</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>Illiterate</td>
<td>32</td>
<td>12.0%</td>
</tr>
<tr>
<td></td>
<td>High School</td>
<td>87</td>
<td>32.7%</td>
</tr>
<tr>
<td></td>
<td>Diploma</td>
<td>86</td>
<td>32.3%</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s Degree</td>
<td>50</td>
<td>18.8%</td>
</tr>
<tr>
<td></td>
<td>Post Graduate</td>
<td>11</td>
<td>4.2%</td>
</tr>
<tr>
<td><strong>Income (Monthly)</strong></td>
<td>Less than 250 AUD</td>
<td>179</td>
<td>67.3%</td>
</tr>
<tr>
<td></td>
<td>$250 - $500</td>
<td>52</td>
<td>19.5%</td>
</tr>
<tr>
<td></td>
<td>$500 - $750</td>
<td>18</td>
<td>6.8%</td>
</tr>
<tr>
<td></td>
<td>More than $750</td>
<td>17</td>
<td>6.4%</td>
</tr>
<tr>
<td><strong>Geotourism income</strong></td>
<td>Yes</td>
<td>139</td>
<td>52.3%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>127</td>
<td>47.7%</td>
</tr>
<tr>
<td><strong>Tourists interact (Weekly)</strong></td>
<td>Never</td>
<td>71</td>
<td>26.7%</td>
</tr>
<tr>
<td></td>
<td>Rarely</td>
<td>92</td>
<td>34.6%</td>
</tr>
<tr>
<td></td>
<td>Frequently</td>
<td>103</td>
<td>38.7%</td>
</tr>
<tr>
<td><strong>Residential proximity to tourism attractions area (km)</strong></td>
<td>1-4</td>
<td>112</td>
<td>42.7%</td>
</tr>
<tr>
<td></td>
<td>5-9</td>
<td>54</td>
<td>20.6%</td>
</tr>
<tr>
<td></td>
<td>10-14</td>
<td>24</td>
<td>9.3%</td>
</tr>
<tr>
<td></td>
<td>15-20</td>
<td>20</td>
<td>7.6%</td>
</tr>
<tr>
<td></td>
<td>More than 20km</td>
<td>52</td>
<td>19.8%</td>
</tr>
</tbody>
</table>
4.2.2 Residents perceptions of geotourism impacts

The results (Table 4-2) report residents’ awareness of the positive economic benefits of geotourism in their community. The majority (72.2%) of the respondents (the sum of strongly agree and agree) agreed that geotourism increases employment and investment opportunities. Only 13.1% (the sum of strongly disagree and disagree) disagreed that geotourism has not been an effective job creator in Qeshm Island. It was followed by an agreement with the statement ‘geotourism generates more business for locals’ (73.7%). In addition, 63.2% of the participants agreed that geotourism causes increases in house and product prices. However, 18.8% of them claimed that geotourism does not cause an increase in prices in Qeshm Island. Also, the majority of the respondents agreed with the statements of ‘geotourism benefits only a small number of residents’ (64.3%), and ‘all the profits generated by geotourism end up with nonlocals and companies outside of Qeshm Island’ (45.1%). However, 18% and 29% disagreed (the sum of strongly disagree and disagree) with this matter respectively.

A vast majority of the respondents (77.1%) agreed (the sum of strongly agree and agree) that geotourism development has improved the physical appearance of Qeshm Island. Also, there was a high level of agreement that geotourism provides incentives for locals to protect their natural resources (78.5%), the sum of strongly agree and agree. Respondents disagreed on increasing environmental contamination (42.1%), and natural damages caused by geotourism activities (56.4%), as well as any noise increased in peak season by tourists (60.2%) in Qeshm Island.

Respondents generally held a fairly positive view with respect to the socio-cultural impacts of geotourism in their community except for the item of ‘traffic congestions and accidents’ as a result of geotourism development (56.4%). This is supported by 42.8% of the respondents that geotourism increases overcrowding in public areas while 39.8% of them disagreed. However, the majority of the respondents (76.4%) had a positive view regarding increasing incentives to locals to preserve Qeshm’s local culture, positive impacts on the cultural identity of the residents (73.7%), providing cultural exchange between tourists and residents in Qeshm Island (69.5%), and an improvement on quality of the public amenities in Qeshm Island (68.0%). Notably the majority of the respondents were disagreed that geotourism activities
has caused negative effects on Qeshmi’s culture in general (51.5%) and increasing crime rates in their local community (54.9%).

Table 4-2 Respondents’ Perceptions of Geotourism in Qeshm Island

<table>
<thead>
<tr>
<th>Geotourism impacts</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td><strong>Economic impacts</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism increases employment and investment opportunities</td>
<td>2.6%</td>
</tr>
<tr>
<td>Geotourism causes increases in house and products prices</td>
<td>4.9%</td>
</tr>
<tr>
<td>Geotourism provides more business for local people</td>
<td>2.3%</td>
</tr>
<tr>
<td>Geotourism benefits only a small number of residents</td>
<td>5.6%</td>
</tr>
<tr>
<td>Profits generated by Geotourism activities end up with companies and persons from outside</td>
<td>9.8%</td>
</tr>
<tr>
<td><strong>Environmental impacts</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism development improves the Island’s physical appearance</td>
<td>4.5%</td>
</tr>
<tr>
<td>Geotourism causes damage to the natural surroundings and to countryside</td>
<td>17.7%</td>
</tr>
<tr>
<td>Geotourism provides incentives for local people to protect and conserve natural resources</td>
<td>4.9%</td>
</tr>
<tr>
<td>Geotourism increases environmental contamination (rubbish, wastewater)</td>
<td>10.5%</td>
</tr>
<tr>
<td>Geotourism increases noise</td>
<td>18.8%</td>
</tr>
<tr>
<td><strong>Socio-cultural impacts</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism provides incentives to locals to preserve Qeshm’s local culture</td>
<td>5.6%</td>
</tr>
<tr>
<td>Geotourism increases traffic congestion and accidents</td>
<td>5.6%</td>
</tr>
<tr>
<td>Geotourism encourages improvement in the quality of roads, parks, and other recreational areas</td>
<td>2.6%</td>
</tr>
<tr>
<td>Geotourism increases the crime rate</td>
<td>21.1%</td>
</tr>
<tr>
<td>Geotourism has positive impacts on the cultural identity of the residents</td>
<td>7.5%</td>
</tr>
<tr>
<td>Geotourism causes unpleasant overcrowding of public and leisure spaces</td>
<td>13.9%</td>
</tr>
<tr>
<td>Geotourism enhances cultural exchange between tourists and residents</td>
<td>4.9%</td>
</tr>
<tr>
<td>Geotourism negatively affects Qeshm Island’s culture</td>
<td>17.7%</td>
</tr>
</tbody>
</table>
4.3 Exploratory Factor Analysis for residents’ perceptions of geotourism in Qeshm Island

To identify the underlying geotourism impact domains in Qeshm Island, Exploratory Factor Analysis (EFA) was conducted using Principal Component Analysis (PCA) and promax rotation. However, prior to conducting EFA, the suitability of the data was assessed (Table 4-3). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was calculated to confirm the appropriateness of conducting factor analysis with an acceptance level of 0.7 (Hair et al., 2014). Additionally, Bartlett’s test of sphericity was used with a rejection criterion of 0.05 (Hair et al., 2014). The KMO for the items was 0.75, which was considered appropriate and concerning the Bartlett’s test, it was found to be statistically significant (p < 0.000). Therefore, the data was considered suitable for factor analysis.

In order to identify each factor with only one dimension and prevent cross loading, all the items with a factor loading greater than 0.30 were considered a contributing factor. According to Table 4-4, EFA discovered a four-factor solution from the 18 impact scale items using a minimum Eigen-value of 1. The four factors explained 64.98% of the total variance. Cronbach’s alpha examined a sufficient level of reliability for factor 1, Urban Issues = 0.84; factor 2, Social Cultural = 0.88; factor 3, Community Facilities = 0.88; and factor 4, Community Costs = 0.77, all above the 0.7 cut-off suggested by Hair et al. (2014). The results of the factor analysis are presented in Table 4-4.

Table 4-3 KMO and Bartlett’s Test

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</th>
<th>0.753</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartlett’s Test of Sphericity</td>
<td></td>
</tr>
<tr>
<td>Approx. Chi-Square</td>
<td>2422.734</td>
</tr>
<tr>
<td>df</td>
<td>153</td>
</tr>
<tr>
<td>Sig.</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Table 4-4 The results of the factor analysis for geotourism impacts in Qeshm Island

<table>
<thead>
<tr>
<th>Items</th>
<th>Factors Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban Issues</td>
</tr>
<tr>
<td>Geotourism increases environmental contamination (rubbish, wastewater)</td>
<td>0.871</td>
</tr>
<tr>
<td>Geotourism negatively affects Qeshm Island’s culture</td>
<td>0.789</td>
</tr>
<tr>
<td>Geotourism causes unpleasant overcrowding of public and leisure spaces</td>
<td>0.734</td>
</tr>
<tr>
<td>Geotourism causes damage to the natural surroundings and to countryside</td>
<td>0.706</td>
</tr>
<tr>
<td>Geotourism increases noise</td>
<td>0.677</td>
</tr>
<tr>
<td>Geotourism increases traffic congestion and accidents</td>
<td>0.638</td>
</tr>
<tr>
<td>Geotourism increases the crime rate</td>
<td>0.583</td>
</tr>
<tr>
<td>Geotourism provides incentives for local people to protect and conserve natural resources</td>
<td>0.885</td>
</tr>
<tr>
<td>Geotourism has positive impacts on the cultural identity of Qeshm Island residents</td>
<td>0.858</td>
</tr>
<tr>
<td>Geotourism provides incentives to locals to preserve Qeshm’s local culture</td>
<td>0.854</td>
</tr>
<tr>
<td>Geotourism enhances cultural exchange between tourists and residents</td>
<td>0.831</td>
</tr>
<tr>
<td>Geotourism development improves the Island’s physical appearance</td>
<td>0.834</td>
</tr>
<tr>
<td>Geotourism generates more business for local people</td>
<td>0.822</td>
</tr>
<tr>
<td>Geotourism increases employment and investment opportunities</td>
<td>0.813</td>
</tr>
<tr>
<td>Geotourism encourages improvement in the quality of roads, parks and other recreational areas</td>
<td>0.778</td>
</tr>
<tr>
<td>Geotourism benefits only a small number of residents</td>
<td>0.942</td>
</tr>
<tr>
<td>Geotourism causes increases in house and products prices</td>
<td>0.935</td>
</tr>
<tr>
<td>Profits generated by Geotourism activities end up with companies and persons from outside of Qeshm Island</td>
<td>0.634</td>
</tr>
<tr>
<td><strong>Cronbach’s Alpha Coefficient</strong></td>
<td>0.843</td>
</tr>
<tr>
<td><strong>Initial Eigenvalue</strong></td>
<td>3.79</td>
</tr>
<tr>
<td><strong>% of variance</strong></td>
<td>21.09</td>
</tr>
<tr>
<td><strong>Cumulative %</strong></td>
<td>21.09</td>
</tr>
</tbody>
</table>
The seven items loaded into Factor 1 include increase in environmental contamination, negative culture impact, overcrowding in public, damage to the environment, increase in noise, increase in traffic and accidents, and increase in crime rate. These were labelled ‘Urban Issues’ as it included all socio-cultural and environmental problems. In addition, the four items were loaded into Factor 2 include incentive to locals to protect natural resources, positive cultural identity, incentive to locals to preserve Qeshmi’s culture, enhance cultural exchange. These were labelled ‘Social Cultural’ as it includes the positive socio-cultural and environmental advantage of geotourism impacts. The four items loaded into Factor 3 including urban appearance improved, more business for locals, increase in investment and employment, quality of the urban areas improved were labelled ‘Community Facilities’ as it draws the urban economic improvement within the community. Also, the three items loaded into Factor 4 include geotourism only benefit small number of residents, prices increased, profits ended up with non-local companies or persons. These were labelled ‘Community Costs’ as it shows the costs of geotourism economic impacts within the community.

The categories derived in this study were found to be very similar to those in previous tourism literature (Dyer et al., 2007; Fevzi Okumus et al., 2015; Jackson, 2008; Liang & Hui, 2016; Mason, 2015a, 2015b; Nunkoo et al., 2013; Yu, 2011). For instance, in the context of tourism Liang and Hui (2016) determined six distinct factors as a result of tourism impacts in Shenzhen, China. These factors include: Urban issues (represents the improvement in natural resources and traffic congestion); Community economic strength (such as economic development in the region); Family and personal well-being (refers to the quality of family life and personal health); Community well-being (reflects items such as public safety, preserving local culture and history and cultural exchange); Way of life (include items related to community attachment), Community awareness and facilities (representing items such as community image and heritage awareness).

4.4 Confirmatory Factor Analysis and Structural Equation Modelling

The underlying constructs measuring the residents’ perceptions of geotourism impacts in Qeshm Island was found and verified using EFA. In order to confirm the uni-dimensionality and validity of the all impact constructs in the proposed model, the CFA and SEM were tested.
The data was analysed using AMOS 25, conducting ML tests to present CFA and SEM. CFA is the first stage of SEM, which examines the relationship between observed variables and their underlying latent constructs, while SEM indicates structural path between the latent variables.

CFA and SEM were conducted by following the steps below:

1. First, the standardised regression weights of each factors’ variable were checked.
2. Second, the correlation coefficients of the factors derived were assessed and reported.
3. Third, to confirm the model fit is in the acceptable range, the standard fit indices were met which are including chi-square statistic derived by the degree of freedom value \(\chi^2/df\), Comparative Fit Index (CFI), Tucker Lewis Index (TLI), RMSEA and SRMR.

A similar procedure has been applied to conduct CFA and SEM in previous literature (Chen & Chen, 2010; López, Virto, Manzano, & Miranda, 2018; Rasoolimanesh, Ringle, Jaafar, & Ramayah, 2017; Stylidis et al., 2014).

If model fit indices discover a poor fitting SEM, according to indices fit range or the model did not support the underlying theory, model modification was performed to improve the model fit. Therefore, more than one model fit may be required in order to produce a good model fit from the dataset.

CFA was conducted on each construct of the theoretical model separately in order to achieve an individual acceptable fit model according to the fit indices guideline. As Hooper, Coughlan, and Mullen (2008) stated it is a good practice to examine the fit of each construct and its items individually to find whether there are any items that have a weak correlation within their constructs. Next, the overall model fit was measured and the SEM was presented to obtain the goal of this study.

4.4.1 Stage 1: Model fit 1 – CFA between geotourism impacts indicators

CFA was conducted on geotourism impact factors derived from EFA to examine the correlation coefficient of latent factors, standardised regression weights of each factors’
variable and also to check the model fit indices are met. Three model fits are made, as the model fit indices were not found acceptable based on fit indices guideline.

Figure 4-1 shows that there are significant relationships between all geotourism factors that include Social Cultural, Urban Issues, Community Facilities and Community Costs. According to the correlation coefficient, there is a small positive relationship between Social Cultural and Community Facilities \( (r = 0.28) \) and Social Cultural and Community Costs \( (r = 0.12) \). Also, there is a very small positive relationship between Community Facilities and Community Costs \( (r = 0.03) \) and Social Cultural and Urban Issues \( (r = 0.07) \). However, the correlation coefficient shows a small negative relationship between the latent variables of Urban Issues and Community Facilities \( (r = -0.17) \) and a very small negative relationship between Urban Issues and Community Costs \( (r = -0.01) \).
Additionally, the standardised regression weight ($\beta - value$) revealed a significant contribution of all impact variables to the prediction of geotourism impacts, specifically through Social Cultural and Community Facilities impact domains (Table 4-5).

Table 4-5  Model fit 1 – CFA of geotourism impacts, standardised regression weight between geotourism impacts domain

<table>
<thead>
<tr>
<th>Geotourism Impacts Domain</th>
<th>Standardised Regression Weight ($\beta – value$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Cultural</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism provides incentives for local people to protect and conserve natural resources</td>
<td>0.90</td>
</tr>
<tr>
<td>Geotourism provides incentives to locals to preserve Qeshm’s local culture</td>
<td>0.80</td>
</tr>
<tr>
<td>Geotourism has positive impacts on the cultural identity of Qeshm Island residents</td>
<td>0.79</td>
</tr>
<tr>
<td>Geotourism enhances cultural exchange between tourists and residents</td>
<td>0.74</td>
</tr>
<tr>
<td><strong>Urban Issues</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism increases environmental contamination (rubbish, wastewater)</td>
<td>0.89</td>
</tr>
<tr>
<td>Geotourism negatively affects Qeshm Island’s culture</td>
<td>0.75</td>
</tr>
<tr>
<td>Geotourism causes unpleasant overcrowding of public and leisure spaces</td>
<td>0.69</td>
</tr>
<tr>
<td>Geotourism causes damage to the natural surroundings and to countryside</td>
<td>0.61</td>
</tr>
<tr>
<td>Geotourism increases noise</td>
<td>0.56</td>
</tr>
<tr>
<td>Geotourism increases traffic congestion and accidents</td>
<td>0.54</td>
</tr>
<tr>
<td>Geotourism increases the crime rate</td>
<td>0.58</td>
</tr>
<tr>
<td><strong>Community Facilities</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism development improves the Island’s physical appearance</td>
<td>0.73</td>
</tr>
<tr>
<td>Geotourism generates more business for local people</td>
<td>0.79</td>
</tr>
<tr>
<td>Geotourism increases employment and investment opportunities</td>
<td>0.79</td>
</tr>
<tr>
<td>Geotourism encourages improvement in the quality of roads, parks and other recreational areas</td>
<td>0.68</td>
</tr>
<tr>
<td><strong>Community Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism benefits only a small number of residents</td>
<td>0.98</td>
</tr>
<tr>
<td>Geotourism causes increases in house and products prices</td>
<td>0.41</td>
</tr>
<tr>
<td>Profits generated by geotourism activities end up with companies and persons from outside</td>
<td>0.93</td>
</tr>
</tbody>
</table>

Respecting the model fit statistics of geotourism impacts, chi-square divided by the degrees of freedom resulted in a value of $(\chi^2)/df = 2.53$, which indicates a good fit. The CFI value of 0.91 is considered a good fit as it complies with the interpretation guidelines ($\geq .9$). However, the TLI value of 0.89 is produced, which is not a good fit as values greater than 0.90 are
considered a good fit. Also, the model computed the RMSEA and SRMR values of 0.07 and 0.06 respectively, which are considered a good fit as their values are less than 0.08.

Furthermore, the convergent validity, discriminant validity and the reliability of the model fit were examined using Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and Average Shared Variance (ASV). The acceptable range for CR is considered greater than 0.7 and AVE value greater than 0.5. Also, the value of MSV should less than AVE (MSV < AVE) and the ASV value less than AVE (ASV < AVE). From Table 4-6, it is seen that the AVE value of Urban Issues is less than 0.50 (AVE = 0.44), which indicates that the variables are not correlated well with each other within their factor latent.

This model was consequently not accepted as the model fit guidelines were not met. Therefore, it is essential to conduct model modification to get a good model fit statistics for further SEM analysis.

### Table 4-6 Model fit 1 – CFA of geotourism impacts, validity and reliability test

<table>
<thead>
<tr>
<th>Initial Model Fit</th>
<th>CR</th>
<th>AVE</th>
<th>MSV</th>
<th>MaxR(H)</th>
<th>Community Facilities</th>
<th>Urban Issues</th>
<th>Social and Cultural</th>
<th>Community Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Facilities</td>
<td>0.834</td>
<td>0.558</td>
<td>0.080</td>
<td>0.840</td>
<td></td>
<td></td>
<td></td>
<td>0.747</td>
</tr>
<tr>
<td>Urban Issues</td>
<td>0.846</td>
<td>0.448</td>
<td>0.030</td>
<td>0.888</td>
<td>-0.172</td>
<td>0.670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social and Cultural</td>
<td>0.884</td>
<td>0.658</td>
<td>0.080</td>
<td>0.901</td>
<td>0.282</td>
<td>0.067</td>
<td></td>
<td>0.811</td>
</tr>
<tr>
<td>Community Costs</td>
<td>0.843</td>
<td>0.665</td>
<td>0.013</td>
<td>0.969</td>
<td>0.031</td>
<td>-0.005</td>
<td>0.115</td>
<td>0.816</td>
</tr>
</tbody>
</table>

Note: VALIDITY CONCERNS
Convergent Validity: the AVE for Urban Issues is less than 0.50.

### 4.4.2 Stage 1: Model fit 2 – CFA between geotourism impacts indicators

Model fit 1, concerning geotourism impacts indicators did not meet the acceptable range fit statistics. Also, the AVE result of the factor Urban Issues was less than 0.5, not indicating a good convergent validity. As a result, the modification is conducted to improve these statistics to obtain a good model fit.

As explained, it is not uncommon to find that the fit of a proposed model is poor. However, after assessing the fit modification indices, there are a few things can be made which might
lead to improving the results as long as make theoretical sense. The indices suggest adding either a covariance between two errors under the same constructor remove any items with a poor factor loading within a construct (Albright & Park, 2009). First, a covariance was added between E15 and E12, which were under the same construct, and the modification indices found a high correlation between these two errors. Then, a second model fit is conducted in order to check whether the model fit is improved and support the fundamental theory (Figure 4-2).

The correlation coefficients are slightly changed but there is still a significant relationship between the all constructs derived from geotourism impacts (Figure 4-2). The correlation coefficients between the factors of Community Facilities and Community Costs, and Social Cultural and Urban Issues slightly increased by $r = 0.04$ and $r = 0.08$ respectively. However, the correlation between all other factors are slightly dropped (Table 4-7).
Table 4-7 Model fit 2 – Coefficient correlation between the constructs of geotourism impacts in Qeshm Island

<table>
<thead>
<tr>
<th>Factors</th>
<th>Social Cultural</th>
<th>Urban Issues</th>
<th>Community Facilities</th>
<th>Community Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Constructs’ relationship</td>
<td>r value</td>
<td>Constructs’ relationship</td>
<td>r value</td>
</tr>
<tr>
<td>Social Cultural</td>
<td>0.08 small positive</td>
<td>0.20 small positive</td>
<td>0.13 small positive</td>
<td>-0.01 very small negative</td>
</tr>
<tr>
<td>Urban Issues</td>
<td>-0.18 very small negative</td>
<td>0.04 small positive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: r = correlation coefficient value

Also, the standardised regression weight ($\beta - value$) is changed and increased in some constructs specially through the Community Facilities impacts factor (Table 4-8).

Table 4-8 Model fit 2 – CFA of geotourism impacts, standardised regression weight between geotourism impacts domain

<table>
<thead>
<tr>
<th>Geotourism Impacts Domain</th>
<th>Standardised Regression Weight ($\beta - value$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Cultural</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism provides incentives for local people to protect and conserve natural resources</td>
<td>0.90</td>
</tr>
<tr>
<td>Geotourism provides incentives to locals to preserve Qeshm’s local culture</td>
<td>0.80</td>
</tr>
<tr>
<td>Geotourism has positive impacts on the cultural identity</td>
<td>0.79</td>
</tr>
<tr>
<td>Geotourism enhances cultural exchange between tourists and residents</td>
<td>0.74</td>
</tr>
<tr>
<td><strong>Urban Issues</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism increases environmental contamination (rubbish, wastewater)</td>
<td>0.89</td>
</tr>
<tr>
<td>Geotourism negatively affects Qeshm Island’s culture</td>
<td>0.75</td>
</tr>
<tr>
<td>Geotourism causes unpleasant overcrowding of public and leisure spaces</td>
<td>0.69</td>
</tr>
<tr>
<td>Geotourism causes damage to the natural environment</td>
<td>0.61</td>
</tr>
<tr>
<td>Geotourism increases noise</td>
<td>0.56</td>
</tr>
<tr>
<td>Geotourism increases traffic congestion and accidents</td>
<td>0.54</td>
</tr>
<tr>
<td>Geotourism increases the crime rate</td>
<td>0.58</td>
</tr>
<tr>
<td><strong>Community Facilities</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism development improves the Island’s physical appearance</td>
<td>0.68</td>
</tr>
<tr>
<td>Geotourism generates more business for local people</td>
<td>0.80</td>
</tr>
<tr>
<td>Geotourism increases employment and investment opportunities</td>
<td>0.82</td>
</tr>
<tr>
<td>Geotourism encourages improvement in the quality of roads, parks and other recreational areas</td>
<td>0.62</td>
</tr>
<tr>
<td><strong>Community Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism benefits only a small number of residents</td>
<td>0.98</td>
</tr>
<tr>
<td>Geotourism causes increases in house and products prices</td>
<td>0.41</td>
</tr>
<tr>
<td>Profits generated by Geotourism activities end up with companies and persons from outside</td>
<td>0.93</td>
</tr>
</tbody>
</table>
The second model fit revealed a chi-square divided by the degrees of freedom value of \( \frac{x^2}{df} = 2.45 \) that is acceptable according to statistical interpretation guidelines (Hooper et al., 2008). The CFI value of 0.92 presented a good fit as well as it met the acceptable range \( \geq 0.9 \). TLI value of 0.90 is indicated a good fit as values greater than 0.90 are considered a good fit. Also, the RMSEA and SRMR values of 0.07 and 0.06 were considered a good fit as their values are less than 0.08 (Table 4-9).

Finally, the convergent validity, discriminant validity and the reliability of the model fit were calculated. While the reliability value and discriminant validity were confirmed as being ideal, the AVE value of Urban Issues is still less than 0.50 (AVE = 0.44). Therefore, this model is rejected as the model fit guidelines were not met. As a result, the model fit 3 was conducted by removing the item of ‘noise increased’, which had a poor factor loading with its construct, Urban Issues.

<table>
<thead>
<tr>
<th>Model Fit 2</th>
<th>CR</th>
<th>AVE</th>
<th>MSV</th>
<th>MaxR(H)</th>
<th>Community Facilities</th>
<th>Urban Issues</th>
<th>Social and Cultural</th>
<th>Community Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Facilities</td>
<td>0.821</td>
<td>0.538</td>
<td>0.075</td>
<td>0.841</td>
<td>0.733</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Issues</td>
<td>0.846</td>
<td>0.448</td>
<td>0.043</td>
<td>0.889</td>
<td>-0.207</td>
<td>0.670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social and Cultural</td>
<td>0.884</td>
<td>0.657</td>
<td>0.075</td>
<td>0.900</td>
<td>0.274</td>
<td>0.066</td>
<td>0.811</td>
<td></td>
</tr>
<tr>
<td>Community Costs</td>
<td>0.843</td>
<td>0.665</td>
<td>0.013</td>
<td>0.970</td>
<td>0.045</td>
<td>0.005</td>
<td>0.116</td>
<td>0.815</td>
</tr>
</tbody>
</table>

**VALIDITY CONCERNS**
Convergent Validity: the AVE for Urban Issues is less than 0.50.

**4.4.3 Stage 1: Model fit 3 – CFA between geotourism impacts indicators**

From Figure 4-3, it can be seen that the correlation coefficient between the geotourism impact constructs still describe a significant relationship as the r value is still between -1 and 1 (Cohen, 1988), excluding factors Urban Issues and Community Costs as it is showing no association between them \( r = 0.00 \) (Table 4-10).
The standardised regression weight ($\beta - value$) is also improved within all constructs variables, showing a significant contribution to their factor domains (Table 4-11). Also, regarding the model fit statistics of geotourism impacts, chi-square divided by the degrees of
freedom value of \( (x^2)/df = 2.58 \), which is improved in this model and accepted according to statistical interpretation guidelines (Hooper et al., 2008). The CFI value of 0.92 produced a good fit similar to previous model fit and it met the acceptable range (\( \geq 0.9 \)). The TLI value of 0.90 is also considered a good fit as it complies with the interpretation guideline (\( \geq 0.9 \)). Also, the RMSEA and SRMR values of 0.07 and 0.06 were considered a good fit similar to the previous model fit as their values are less than 0.08.

Table 4-11 Model fit 3 – CFA of geotourism impacts, standardised regression weight between geotourism impacts domain

<table>
<thead>
<tr>
<th>Geotourism Impacts Domain</th>
<th>Standardised Regression Weight (( \beta - value ))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Cultural</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism provides incentives for local people to protect and conserve natural resources</td>
<td>0.90</td>
</tr>
<tr>
<td>Geotourism provides incentives to locals to preserve Qeshm’s local culture</td>
<td>0.88</td>
</tr>
<tr>
<td>Geotourism has positive impacts on the cultural identity</td>
<td>0.79</td>
</tr>
<tr>
<td>Geotourism enhances cultural exchange between tourists and residents</td>
<td>0.74</td>
</tr>
<tr>
<td><strong>Urban Issues</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism increases environmental contamination (rubbish, wastewater)</td>
<td>0.90</td>
</tr>
<tr>
<td>Geotourism negatively affects Qeshm Island’s culture</td>
<td>0.74</td>
</tr>
<tr>
<td>Geotourism causes unpleasant overcrowding of public and leisure spaces</td>
<td>0.69</td>
</tr>
<tr>
<td>Geotourism causes damage to the natural environment</td>
<td>0.61</td>
</tr>
<tr>
<td>Geotourism increases traffic congestion and accidents</td>
<td>0.57</td>
</tr>
<tr>
<td>Geotourism increases the crime rate</td>
<td>0.53</td>
</tr>
<tr>
<td><strong>Community Facilities</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism development improves the Island’s physical appearance</td>
<td>0.68</td>
</tr>
<tr>
<td>Geotourism generates more business for local people</td>
<td>0.80</td>
</tr>
<tr>
<td>Geotourism increases employment and investment opportunities</td>
<td>0.82</td>
</tr>
<tr>
<td>Geotourism encourages improvement in the quality of roads, parks and other recreational areas</td>
<td>0.62</td>
</tr>
<tr>
<td><strong>Community Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism benefits only a small number of residents</td>
<td>0.98</td>
</tr>
<tr>
<td>Geotourism causes increases in house and products prices</td>
<td>0.93</td>
</tr>
<tr>
<td>Profits generated by geotourism activities end up with companies and persons from outside</td>
<td>0.41</td>
</tr>
</tbody>
</table>
Further, the convergent validity, discriminant validity and the reliability of the model fit were indicated (Table 4-12). However, there are acceptable levels of reliability value and discriminant validity, the AVE value of Urban Issues is improved but still less than 0.50 (AVE = 0.47).

Therefore, this model was consequently not accepted as the convergent validity confirms not good model fit statistics. As a result, it is essential to conduct another model modification in order by removing the item of ‘crime rate increased’, which had a poor factor loading with its construct Urban Issues ($\beta - value$) = 0.53.

Table 4-12 Model fit 3 – CFA of geotourism impacts, validity and reliability test

<table>
<thead>
<tr>
<th>Model Fit 3</th>
<th>CR</th>
<th>AVE</th>
<th>MSV</th>
<th>MaxR(H)</th>
<th>Community Facilities</th>
<th>Urban Issues</th>
<th>Social and Cultural</th>
<th>Community Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Facilities</td>
<td>0.821</td>
<td>0.537</td>
<td>0.075</td>
<td>0.841</td>
<td><strong>0.733</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Issues</td>
<td>0.837</td>
<td>0.470</td>
<td>0.049</td>
<td>0.888</td>
<td>-0.222</td>
<td><strong>0.685</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social and Cultural</td>
<td>0.884</td>
<td>0.658</td>
<td>0.075</td>
<td>0.901</td>
<td>0.273</td>
<td>0.062</td>
<td><strong>0.811</strong></td>
<td></td>
</tr>
<tr>
<td>Community Costs</td>
<td>0.843</td>
<td>0.665</td>
<td>0.013</td>
<td>0.970</td>
<td>0.045</td>
<td>0.000</td>
<td>0.116</td>
<td><strong>0.815</strong></td>
</tr>
</tbody>
</table>

Validity concerns
Convergent Validity: the AVE for Urban Issues is less than 0.50.

4.4.4 Stage 1: Model fit 4 – CFA between geotourism impacts indicators

From Figure 4-4 it can be observed the correlation coefficients are slightly improved between all constructs derived from geotourism impacts (Table 4-13) excluding the factor Social Cultural and Community Facilities as there is a zero association between these two impact domains ($r = 0.00$). Also, the standardised regression weight ($\beta - value$) is increased between all constructs items showing a significant contribution with the impact factors (Table 4-14).
### Table 4-13 Model fit 4 – Coefficient correlation between the constructs of geotourism impacts in Qeshm Island

<table>
<thead>
<tr>
<th>Factors</th>
<th>Social Cultural</th>
<th>Urban Issues</th>
<th>Community Facilities</th>
<th>Community Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r value</td>
<td>Constructs’</td>
<td>Constructs’</td>
<td>Constructs’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>relationship</td>
<td>relationship</td>
<td>relationship</td>
</tr>
<tr>
<td>Social Cultural</td>
<td>0.04</td>
<td>very small</td>
<td>0.27</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>positive</td>
<td>small positive</td>
<td>small positive</td>
</tr>
<tr>
<td>Urban Issues</td>
<td>-0.23</td>
<td>small</td>
<td>0.00</td>
<td>no correlation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Facilities</td>
<td>0.05</td>
<td>very small</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Costs</td>
<td></td>
<td>positive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Figure 4-4 Model fit 4 – CFA of geotourism impacts](image-url)
<table>
<thead>
<tr>
<th>Geotourism Impacts Domain</th>
<th>Standardised Regression Weight (β – value)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Cultural</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism provides incentives for local people to protect and conserve natural resources</td>
<td>0.90</td>
</tr>
<tr>
<td>Geotourism provides incentives to locals to preserve Qeshm’s local culture</td>
<td>0.80</td>
</tr>
<tr>
<td>Geotourism has positive impacts on the cultural identity</td>
<td>0.79</td>
</tr>
<tr>
<td>Geotourism enhances cultural exchange between tourists and residents</td>
<td>0.74</td>
</tr>
<tr>
<td><strong>Urban Issues</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism increases environmental contamination (rubbish, wastewater)</td>
<td>0.88</td>
</tr>
<tr>
<td>Geotourism negatively affects Qeshm Island’s culture</td>
<td>0.75</td>
</tr>
<tr>
<td>Geotourism causes unpleasant overcrowding of public and leisure spaces</td>
<td>0.70</td>
</tr>
<tr>
<td>Geotourism causes damage to the natural environment</td>
<td>0.61</td>
</tr>
<tr>
<td>Geotourism increases traffic congestion and accidents</td>
<td>0.58</td>
</tr>
<tr>
<td><strong>Community Facilities</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism development improves the Island’s physical appearance</td>
<td>0.68</td>
</tr>
<tr>
<td>Geotourism generates more business for local people</td>
<td>0.80</td>
</tr>
<tr>
<td>Geotourism increases employment and investment opportunities</td>
<td>0.82</td>
</tr>
<tr>
<td>Geotourism encourages improvement in the quality of roads, parks and other recreational areas</td>
<td>0.62</td>
</tr>
<tr>
<td><strong>Community Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Geotourism benefits only a small number of residents</td>
<td>0.98</td>
</tr>
<tr>
<td>Geotourism causes increases in house and products prices</td>
<td>0.93</td>
</tr>
<tr>
<td>Profits generated by geotourism activities end up with companies and persons from outside</td>
<td>0.41</td>
</tr>
</tbody>
</table>
Further, regarding model fit indices, chi-square divided by the degrees of freedom is produced a value of \( \frac{\chi^2}{df} = 2.53 \), which is an acceptable range according to statistical interpretation guidelines (Hooper et al., 2008). The CFI value of 0.93 presented a good fit as well as it met the acceptable range (\( \geq 0.9 \)). TLI value of 0.91 is an improvement and indicated a good fit as values greater than 0.90 are considered a good fit. Also, the RMSEA and SRMR values of 0.07 and 0.05 were considered a good fit as their values are less than 0.08 (Table 4-15).

Table 4-15 Model fit 4 – CFA of geotourism impacts, validity and reliability test

<table>
<thead>
<tr>
<th>Model Fit 4</th>
<th>CR</th>
<th>AVE</th>
<th>MSV</th>
<th>MaxR(H)</th>
<th>Community Facilities</th>
<th>Urban Issues</th>
<th>Social and Cultural</th>
<th>Community Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Facilities</td>
<td>0.821</td>
<td>0.538</td>
<td>0.075</td>
<td>0.841</td>
<td><strong>0.733</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Issues</td>
<td>0.835</td>
<td>0.509</td>
<td>0.055</td>
<td>0.874</td>
<td>-0.234</td>
<td><strong>0.713</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Cultural</td>
<td>0.884</td>
<td>0.658</td>
<td>0.075</td>
<td>0.901</td>
<td>0.273</td>
<td>0.043</td>
<td><strong>0.811</strong></td>
<td></td>
</tr>
<tr>
<td>Community Costs</td>
<td>0.843</td>
<td>0.664</td>
<td>0.013</td>
<td>0.970</td>
<td>0.045</td>
<td>0.001</td>
<td>0.116</td>
<td><strong>0.815</strong></td>
</tr>
</tbody>
</table>

**No validity concerns**

In order to obtain a good model fit, the convergent validity, discriminant validity and the reliability of the model fit were examined. The results confirm that there were acceptable levels of internal consistency and all the variable factors are perfectly correlated, and discriminant validity is achieved (Table 4-16). From the above structural equation analyses, the model fit statistics are found for geotourism impacts in Qeshm Island. In addition to model fit statistics, the approved model is also supported by literature (Archer et al., 2005; Diedrich, 2009; Fevzi Okumus et al., 2015; Nunkoo & Ramkissoon, 2011, 2012; Simpson, 2008).
Table 4-16 Summary of fit indices for CFA of geotourism impacts in Qeshm Island

<table>
<thead>
<tr>
<th>Model</th>
<th>CMIN</th>
<th>CMIN/df</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Fit 1</td>
<td>327.390</td>
<td>2.538</td>
<td>0.915</td>
<td>0.899</td>
<td>0.076</td>
<td>0.0655</td>
</tr>
<tr>
<td>Model Fit 2</td>
<td>313.950</td>
<td>2.453</td>
<td>0.920</td>
<td>0.905</td>
<td>0.074</td>
<td>0.0655</td>
</tr>
<tr>
<td>Model Fit 3</td>
<td>288.977</td>
<td>2.580</td>
<td>0.921</td>
<td>0.904</td>
<td>0.077</td>
<td>0.0653</td>
</tr>
<tr>
<td>Model Fit 4 (final)</td>
<td>245.991</td>
<td>2.536</td>
<td>0.930</td>
<td>0.914</td>
<td>0.076</td>
<td>0.0599</td>
</tr>
<tr>
<td>Target Value</td>
<td>Good n &gt; 200</td>
<td>2–3</td>
<td>&gt; 0.9</td>
<td>&gt; 0.9</td>
<td>&lt; 0.08</td>
<td>&lt; 0.08</td>
</tr>
</tbody>
</table>

4.4.5 Stage 2: CFA of the residents’ attitudes to geotourism impacts

Figure 4-5 is shown a significant contribution ($\beta$ – value) of all the attitudes items to the prediction of overall attitudes. Table 4-17 shows the standardised regression weight between all the residents’ attitudes variables.

![Diagram of CFA of the residents’ attitudes to geotourism]
Table 4-17  CFA of the residents’ attitudes, standardised regression weight

<table>
<thead>
<tr>
<th>Residents’ Attitudes Towards Geotourism</th>
<th>Standardised Regression Weight ($\beta$ – value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General happiness about geotourism impacts in Qeshm</td>
<td>0.43</td>
</tr>
<tr>
<td>Feeling indifferent about geotourism impacts in Qeshm</td>
<td>0.81</td>
</tr>
<tr>
<td>Negative feelings about geotourism impacts in Qeshm</td>
<td>0.58</td>
</tr>
<tr>
<td>Feeling annoyed about geotourism impacts in Qeshm</td>
<td>0.68</td>
</tr>
</tbody>
</table>

Regarding the model fit statistics of the residents’ attitudes, chi-square divided by the degrees of freedom is produced a value of ($x^2$)/$df$ = 0.50, which indicates a good fit. The CFI value of 0.96 is assessed a good fit as well, as it met the interpretation guidelines ($\geq 0.9$). Also, the TLI value of 0.91 is indicated a good fit as values greater than 0.90 are considered a good fit. Additionally, the model computed the RMSEA and SRMR values of 0.07 and 0.04 respectively, which are considered a good fit as their values are less than 0.08.

4.4.6 Stage 3: CFA for geotourism impacts and the residents’ attitudes to geotourism in Qeshm Island

CFA was conducted individually on geotourism impacts and residents’ attitudes, followed by model fit indices were examined and the model modification was applied where required in order to demonstrate the structural equation analysis for this study. Moreover, the approved models are also confirmed within previous tourism impacts literature (Almeida-Garciaa et al., 2016; Doxey, 1975; Gabriel et al., 2011; Jackson, 2008; Kuvan & Akan, 2012; Mason, 2015a; Park & Stokowski, 2010; Ribeiro et al., 2013; Sharma et al., 2008; Vargas-Sánchez et al., 2011). Therefore, the purpose of this stage is to conduct SEM on geotourism impacts and residents’ attitudes, by combining both the accepted model (Figure 4-6).

The overall constructs model presented a chi-square divided by degree of freedom value of ($x^2$)/$df$ = 2.40, which indicates a good fit as the acceptable values are between 2 and 3. The CFI value of 0.92 is found to be relatively acceptable as a good fit based on the interpretation guidelines ($\geq 0.9$). Also, the model computed the RMSEA 0.07, which is a good fit as its value is less than 0.08.
Figure 4-6 Overall model fit of residents’ perceptions towards geotourism in Qeshm Island
Regarding the standardised regression weights \( (\beta - value) \), the following positive statistical significant relationships were found (Figure 4-7):

- Urban Issues and Geotourism Involvement \((\text{CR} = 2.92, p \leq 0.00)\)
- Social Cultural and Period of Residency \((\text{CR} = 1.95, p \leq 0.05)\)
- Community Facilities and Tourists–Residents Ratio \((\text{CR} = 2.42, p \leq 0.01)\)
- Residents’ Attitudes and Social Cultural \((\text{CR} = 3.33, p \leq 0.00)\)
- Residents’ Attitudes and Urban Issues \((\text{CR} = 2.64, p \leq 0.00)\).

Conversely, significant negative correlations were illustrated by:

- Social Cultural and Geotourism Involvement \((\text{CR} = -3.55, p \leq 0.00)\)
- Community Facilities and Geotourism Involvement \((\text{CR} = -2.95, p \leq 0.00)\)
- Community Costs and Geotourism involvement \((\text{CR} = -4.72, p \leq 0.00)\)
- Community Costs and Period of residency \((\text{CR} = -2.42, p \leq 0.02)\)
- Residents’ Attitudes and Geotourism Involvement \((\text{CR} = -2.79, p \leq 0.00)\) (see Table 4-18).

Table 4-18 Regression weights between the conclusive variables

<table>
<thead>
<tr>
<th>Constructs Correlation</th>
<th>Estimate</th>
<th>SE</th>
<th>CR</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Cultural &lt;--- Geotourism Involvement</td>
<td>-0.433</td>
<td>0.122</td>
<td>-3.559</td>
<td>***</td>
</tr>
<tr>
<td>Urban Issues &lt;--- Geotourism Involvement</td>
<td>0.420</td>
<td>0.143</td>
<td>2.928</td>
<td>**</td>
</tr>
<tr>
<td>Community Facilities &lt;--- Geotourism Involvement</td>
<td>-0.280</td>
<td>0.095</td>
<td>-2.958</td>
<td>**</td>
</tr>
<tr>
<td>Community Costs &lt;--- Geotourism Involvement</td>
<td>-0.636</td>
<td>0.135</td>
<td>-4.720</td>
<td>***</td>
</tr>
<tr>
<td>Social Cultural &lt;--- Period of Residency</td>
<td>0.011</td>
<td>0.006</td>
<td>1.958</td>
<td>**</td>
</tr>
<tr>
<td>Community Costs &lt;--- Period of Residency</td>
<td>-0.014</td>
<td>0.006</td>
<td>-2.267</td>
<td>**</td>
</tr>
<tr>
<td>Community Facilities &lt;--- Tourists–Residents Ratio</td>
<td>0.142</td>
<td>0.059</td>
<td>2.421</td>
<td>**</td>
</tr>
<tr>
<td>Residents’ attitudes &lt;--- Geotourism Involvement</td>
<td>-0.163</td>
<td>0.058</td>
<td>-2.796</td>
<td>**</td>
</tr>
<tr>
<td>Residents’ attitudes &lt;--- Social Cultural</td>
<td>0.104</td>
<td>0.031</td>
<td>3.339</td>
<td>***</td>
</tr>
<tr>
<td>Residents’ attitudes &lt;--- Urban Issues</td>
<td>0.069</td>
<td>0.026</td>
<td>2.648</td>
<td>**</td>
</tr>
</tbody>
</table>

Note: *** = \( p \leq 0.001 \) and ** = \( p \leq 0.05 \)
Figure 4-7 SEM of the residents’ perceptions towards geotourism in Qeshm Island
Finally, the convergent validity, discriminant validity and the reliability of the model fit were assessed using CR, AVE, MSV and ASV. The results demonstrate that there were acceptable levels of internal consistency between the constructs and all the variable are perfectly correlated, and discriminant validity is achieved (Table 4-19). Therefore, the model as presented in Figure 4-7 is accepted as the conclusive model for residents’ perceptions of geotourism impacts in Qeshm Island. By means of this, the goal of the study is achieved.

Table 4-19 SEM and CFA of the conclusive model, validity and reliability test

<table>
<thead>
<tr>
<th>Conclusive Model</th>
<th>CR</th>
<th>AVE</th>
<th>MSV</th>
<th>MaxR(H)</th>
<th>Residents’ Attitudes</th>
<th>Urban Issues</th>
<th>Community Costs</th>
<th>Community Facilities</th>
<th>Social and Cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents’ Attitudes</td>
<td>0.724</td>
<td>0.505</td>
<td>0.121</td>
<td>0.764</td>
<td><strong>0.637</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Issues</td>
<td>0.835</td>
<td>0.509</td>
<td>0.056</td>
<td>0.872</td>
<td>0.152</td>
<td><strong>0.714</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Costs</td>
<td>0.843</td>
<td>0.665</td>
<td>0.020</td>
<td>0.981</td>
<td>0.142</td>
<td>0.001</td>
<td><strong>0.815</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Facilities</td>
<td>0.818</td>
<td>0.534</td>
<td>0.073</td>
<td>0.842</td>
<td>0.105</td>
<td>0.236</td>
<td>0.053</td>
<td><strong>0.730</strong></td>
<td></td>
</tr>
<tr>
<td>Social and Cultural</td>
<td>0.885</td>
<td>0.659</td>
<td>0.121</td>
<td>0.898</td>
<td>0.348</td>
<td>0.045</td>
<td>0.118</td>
<td>0.270</td>
<td><strong>0.812</strong></td>
</tr>
</tbody>
</table>
4.5 Residents’ attitudes towards geotourism in Qeshm Island

The descriptive statistics of the residents’ attitudes towards geotourism in Qeshm Island are summarised and presented in Table 4-20. The five-point Likert type scale is used for measuring the attitudes of local residents, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree.

The results indicated that the majority of the respondents (93.6%) agreed (the sum of agree and strongly agree) that they are presently happy with the impacts of geotourism in Qeshm Island. Therefore, based on Doxey Irridex Model their attitudes are at the euphoria stage. This model stated that locals’ perceptions vary from euphoria, a feeling of happiness or comfort, to apathy, when residents start being indifferent, and then annoyance, when the number of tourists and the unfavourable impacts have increased, and finally antagonism, which includes the covert and overt aggression to tourists (Doxey, 1975).

Table 4-20 Descriptive results of residents’ responses to geotourism in Qeshm Island

<table>
<thead>
<tr>
<th>Items of residents’ response</th>
<th>Frequencies (%)</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>General happiness about geotourism impacts</td>
<td>3.0</td>
<td>0.0</td>
<td>3.4</td>
<td>28.2</td>
<td>65.4</td>
</tr>
<tr>
<td>Feeling indifferent about geotourism impacts</td>
<td>68.4</td>
<td>15.4</td>
<td>11.7</td>
<td>1.9</td>
<td>2.6</td>
</tr>
<tr>
<td>Negative feelings about geotourism impacts</td>
<td>43.6</td>
<td>16.2</td>
<td>12.8</td>
<td>18.0</td>
<td>9.4</td>
</tr>
<tr>
<td>Feeling annoyed about geotourism impacts</td>
<td>59.4</td>
<td>17.3</td>
<td>12.0</td>
<td>6.8</td>
<td>4.5</td>
</tr>
</tbody>
</table>
4.5.1 Analysis of the open-ended residents’ responses to geotourism in Qeshm Island

Respondents were also asked to demonstrate, in one short paragraph reasons influencing their overall attitude towards geotourism. Open-ended responses to these four questions were categorised into different types of geotourism impacts based on their common theme found from responses and also the conceptual framework for geotourism impacts in this study.

The following eight categories emerged:

1. Positive economic impacts (mostly stated as creating job opportunity for locals)
2. Negative economic impacts (e.g. seasonality of geotourism, geotourism dependency for locals)
3. Positive environmental impacts (e.g. environmental preservation)
4. Environmental impacts (e.g. mostly pollution)
5. Positive socio-cultural impacts (e.g. making friends with tourists, learning from different cultures, meeting new people, responsibility increased towards protecting geopark for our future generations, increased community pride, locals are happier now, an increase in motivation, the empowered of women, an improvement in locals culture)
6. Negative socio-cultural impacts (e.g. less security for tourists and locals, local’s traditional customs lost among youth, the rudeness of tourists)
7. Positive local governmental impacts (e.g. Qeshm has become known globally, the region has been improved, an increase in officials’ attention, more connections with the capital and center of the province)
8. Negative local governmental impacts (e.g. still poor public facilities, no entrance fee for most of the geosites, officials do not support locals)

The residents’ responses towards geotourism are presented in Figure 4-8. It shows that the positive advantage of socio-cultural impacts is cited most frequently by respondents (32.0%). In addition, the positive economic impacts including job opportunities for locals is highly regarded (29.0%). Additionally, a total of 15.0% of the respondents stated a positive or negative impact associated with their local government.
4.6 Summary

This chapter has reported the analysis of the data collection. The results showed the majority of the respondents had a positive perception regarding geotourism impacts in Qeshm Island UNESCO Global Geopark. Also through EFA, the underlying geotourism impacts domain have been explored. These included Urban Issues, Social Cultural, Community Facilities and Community Costs.

CFA and SEM were applied to confirm the uni-dimensionality and validity of the all impacts in the proposed model. Also, through examining the relationship between geotourism impacts and the residents’ attitude, there was found a significant positive relationship between Urban Issues and Geotourism Involvement, Social Cultural and Period of Residency, Community Facilities and Tourists–Residents Ratio, Residents’ Attitudes and Social Cultural, and Residents’ Attitude and Urban Issues.
CHAPTER 5 DISCUSSION

5.1 Introduction

This chapter discusses how the key results arising from the analysis of the data in Chapter Four compares, contrasts and involves scholarly literature. This chapter then tests and answers the three main research questions of this study and their hypotheses. Finally, this chapter explores the practical implementation for geotourism planning and development strategies.

5.2 Residents’ perception of geotourism impacts

This section discusses the findings relating to geotourism impacts in the Qeshm Island UNESCO Global Geopark. Understanding the perceptions of geotourism will answer the first research question (RQ1) of this study, which was presented by the following three hypotheses:

H1-a: Residents perceive that geotourism has positive economic impacts for them personally.

H1-b: Residents perceive that geotourism has negative socio-cultural impacts for them personally.

H1-c: Residents perceive that geotourism has negative environmental impacts for them personally.

5.2.1 Research question RQ1

RQ1: How do local residents perceive the impacts of geotourism in the Qeshm community?

The findings of this study confirmed that the residents of Qeshm Island understood the geotourism impacts in their community. The results revealed that the impacts are perceived in a range of different perspectives including economic, social, cultural, political and environmental. While many studies have examined tourism impacts in communities (Ahmed, 2015; Almeida García, Balbuena Vázquez, & Cortés Macías, 2015; Bonimy, 2008; Jackson,
2008; Liang & Hui, 2016; Song et al., 2017), there has been little research in the context of geotourism impacts on communities (Shahhoseini et al., 2016; Torabi Farsani et al., 2012).

However, the findings of this study support previous literature that purports that tourism creates positive and negative impacts in the economic, social, cultural and environmental aspects of a community. For example tourism can result in job increases and investment in communities (Diedrich & García-Buades, 2009; Dyer, Gursoy, Sharma, & Carter, 2007; Jeonglyeol Lee et al., 2007; Nunkoo & Ramkissoon, 2011), increased prices (Fevzi Okumus et al., 2015; Frauman & Banks, 2011; Jackson, 2008); and economic leakage and dependency on the tourism sector (Dash, 2011; Garrigós-Simón et al., 2015; Kaltenborn et al., 2008).

It also brings an improvement in community services and public facilities (Andereck et al., 2005; Diedrich & García-Buades, 2009; Fevzi Okumus et al., 2015; Jackson, 2008; Kuvan & Akan, 2012), and increases a sense of community pride (Diedrich & García-Buades, 2009; Huh & Vogt, 2008; Hwang et al., 2012; Wang & Bramwell, 2012).

Enhancing natural protection and increasing environmental awareness within the community are also recognised in many studies (Diedrich & García-Buades, 2009; Higham, 2007; Honey, 2008; Satyendra et al., 2016; Stronza & Durham, 2008; Vargas-Sánchez et al., 2009). Conversely, studies found the negative environmental impacts of tourism in communities, such as an increase in traffic and pollution (Diedrich & García-Buades, 2009; Jackson, 2008; Jeonglyeol Lee et al., 2007; Kaltenborn et al., 2008; Klein, 2011; Látková & Vogt, 2012; Marsh, 2012; Nunkoo & Ramkissoon, 2012; Williams & Ponsford, 2009).

5.2.1.1 Hypothesis H1-a: Residents perceive that geotourism has positive economic impacts for them personally

Regarding the economic impacts, this research found a positive economic perception within the community (72.2% agreed that geotourism increases employment and investment). Also, the extracted factor of Community Facilities, which included two positive economic impact statements with a high correlation of 0.82 and 0.81 respectively, explained 12% of the total variance of geotourism impacts. Through the geotourism and geopark development in Qeshm Island, locals are significantly involved in geotourism planning, geo-marketing and the
development of geo-products such as geo-tours, geo-guides, running geo-guest houses as well as the geo-museum. In addition, the rate of illegal work such as goods and fuel smuggling has been reduced and replaced by geotourism activities (QeshmOfficials, 2018).

Thus geotourism is viewed as a powerful tool for improving the local economy in Qeshm Island. This is evident by the residents having positive perceptions regarding the economic impacts in their community and their belief that geotourism has increased employment and investment opportunities in Qeshm Island. Thus validates hypothesis H1-a: Residents perceive that geotourism has positive economic impacts for them personally.

Previous studies in Qeshm Island confirmed that residents perceived that geotourism had given rise to increasing job opportunities (81.0%) and an increase in economic growth (91.0%) (Shahhoseini et al., 2016). Also, Torabi Farsani et al. (2012) detailed the positive socio-economic impacts of tourism in Qeshm as result of geotourism activities, impacts such as local festivals, seasonal and part-time jobs, and the entrepreneurship for women. These positive economic impacts are further supported by a number other previous studies as outlined in Chapter 2 (Diedrich & García-Buades, 2009; Dyer et al., 2007; Jeonglyeol Lee et al., 2007; Nunkoo & Ramkissoon, 2011).

One critical finding of this study is that while the economic impact of geotourism is perceived as being more positive for the residents of Qeshm Island, 64.3% of the respondents reported that geotourism development only benefits a limited number of residents. Additionally, this research found that an extracted factor of Community Costs from the dataset confirmed the negative economic impacts of geotourism. This factor includes the items of ‘an increase of the prices’, ‘profits ended up to non-local companies or people’ and ‘profits are only limited to a small number of residents’, which explained 11% of the total variance of geotourism impacts.

Furthermore, the respondents who were not living close to geosites (living more than 10 kilometres away from geosites, 36.6%), not involved in geotourism (47.7%), and have limited contact with tourists (61.3%), tended to highlight the negative economic impacts. In another words, there is an uneven distribution of geotourism development in Qeshm Island which is a reflection of nature and the way those geosites are recognised and signposted. Consequently, towns located next to the geosites tend to receive more economic benefits.
than those which are further away from the main tourist attraction areas. Communities living near remote geosites have limited participation in geotourism activities, which negatively affects their perceptions of geotourism, further preventing them from becoming involved in opportunities for economic development.

The uneven distribution of tourism is further supported by Lee, Hampton, and Jeyacheya (2015), who revealed that even in those cases that aimed to make tourism development more sustainable and locally focused, there is a lack of distributional equalities in economic benefits between residents, local elites and foreign tourism business. The uneven distribution of tourism structures within communities not only benefits a limited number of individuals but also may lead to mass tourism with economic gains leaking out of the community (Jamal & Camargo, 2014).

5.2.1.2 Hypothesis H1-b: Residents perceive that geotourism has negative social cultural impacts for them personally

The perception of socio-cultural impacts is measured by four positive and four negative statements (Table 3-2, p.53). This study found that respondents expressed some negative socio-cultural impacts, for instance 56.4% of the respondents agreed that there was ‘an increase of traffic congestion and accidents’ as a result of geotourism development in their community and that it caused an ‘increase in overcrowding in public areas’ on Qeshm Island (42.8%).

However, the results indicated a generally positive perception regarding socio-cultural impacts of geotourism on Qeshm Island. A number of respondents said there were ‘increased incentives for locals in preserving the Qeshmi’s traditional culture’ (76.4%) and that there was an increased ‘cultural exchange provided between tourists and residents’ as a result of geotourism in Qeshm Island (69.5%). Interestingly, respondents denied geotourism activities contributed to any ‘negative effects on Qeshmi’ traditional culture’ (51.5%) or an ‘increase in crime rates’ (54.9%). Moreover, the positive and negative dimensions of socio-cultural impacts were identified and emerged as two factors. The extracted Factor 2, labelled Social Cultural and including the positive socio-cultural impacts of geotourism with high reliability ($\alpha = 0.88$), explained 36% of the variance of the total geotourism impacts. Thus, the results of
this study do not support Hypothesis H1-b: Residents perceive that geotourism has negative social cultural impacts for them personally.

The findings presented are consistent with a previous study in Qeshm Island by Shahhoseini et al. (2016), which stated that the positive social and cultural impacts were viewed as being more beneficial than the negative ones. In this study, a significant number of the respondents agreed that the culture and traditions of the Qeshm Island locals are respected by tourists (93.7%). However, in the study of Torabi Farsani et al. (2012), residents found and addressed many negative socio-cultural impacts contributed to geotourism in Qeshm Island. They indicated that negative impacts such as the attrition of their native language, the disappearance of some of the local customs, the imitation of the tourists’ styles, and an increase the inclination of urban lifestyles, were a result of geotourism development in Qeshm Island.

Comparing the results found in this study with those in the previous literature, it revealed another significant finding that the perceptions of socio-cultural impacts in Qeshm Island have changed over the time. This finding has confirmed the theory of forms of adjustment (Doğan, 1989). This model argued the perception of the socio-cultural changes in communities as a result of tourism will generally end up with some reactions by residents in their adjustment to the new situations. To the degree that tourism impacts are perceived as being positive, the residents’ reactions may take the form of acceptance of the changes within the community. On the other hand when residents perceive tourism negatively their reactions may become more resistant towards tourists and tourism (Doğan, 1989). The five types of the forms of adjustment in communities presented by Doğan (1989) are resistance, retreatism, boundary maintenance, revitalisation and adoption. These have previously been described in Chapter Two.

Based on Dogan’s (1989) model, the results reflect the fact that residents’ perceptions towards geotourism have changed from boundary maintenance to adoption. In the stage of boundary maintenance, which is a passive response, Qeshm residents appreciated geotourism and tourists but they maintain their distance from the tourists. Locals understood the economic benefits of geotourism and the negative socio-cultural impacts were effectively nullified. On the other hand, tourists usually failed to make a close relationship with the residents but they showed respect for the local life and their traditions.
The results show that the residents of Qeshm Island are in the ‘Adoption’ level of adjustment. They cope with socio-cultural impacts and recognise geotourism as a vehicle for changing their existing social structures. This finding is further supported by Shahhoseini et al. (2016) who stated as a result of cultural exchange, the social structure of some families who are in direct contact with tourists, has been changed, and they have access to a greater degree of freedom within this new concept. Additionally, 69.5% of the residents perceive cultural exchange as a definite contribution of geotourism in Qeshm Island. The present findings are also consistent with other studies in the context of tourism (e.g. Ahmed, 2015; Hunt & Stronza, 2014) who applied Dogan’s (1989) forms of adjustment framework to describe destination development and local residents’ changing reactions to tourism.

Many Qeshm Island women, some for the first time in their life, are now participating in their local economy and this is a significant achievement for the development of the geopark. Also, according to the results, 41% of the respondents were female, which confirms the significant roles of women in the Qeshm Island community. Although the literature regarding women entrepreneurship in tourism is extensive (Enea, 2017; Jaafar et al., 2015; Koutsou, Notta, Samathrakis, & Partalidou, 2009; Movono & Dahles, 2017; Muñoz-Fernández, Rodríguez-Gutiérrez, & Santos-Roldán, 2016; Qureshi & Ahmed, 2012; Roberts & Soederberg, 2012), surprisingly little has been carried out in the area of geotourism.

Research on female entrepreneurship in tourism is normally presented and categorised as the gendered impacts of tourism in host communities; that men and women are affected differently by tourism development (Muñoz-Bullón, 2009; Santero-Sanchez, Segovia-Pérez, Castro-Nuñez, Figueroa-Domecq, & Talón-Ballestero, 2015; Sharma & Gursoy, 2015). However, the area of female entrepreneurship in tourism presented as a way of social change, includes research on the potential that tourism holds for ‘women’s activism and leadership in the community and political life and for women’s entrepreneurship’. The findings regarding female entrepreneurship in Qeshm Island as a results of geotourism development is consistent with that of Fijian women who became successful business operators and influential drivers of socio-political change, affecting established gender relations within an indigenous Fijian setting (Movono & Dahles, 2017). This study also argued that through tourism-based entrepreneurship, local women have attained not only economic but also psychological, social and political empowerment.
5.2.1.3 Hypothesis H1-c: Residents perceive that geotourism has negative environmental impacts for them personally

The environment is the primary fundamental resource of Qeshm Island where geotourism activity occurs and where the Qeshm Island UNESCO Global Geopark is located. Damage or disturbance to this environment may result in a decrease in tourist numbers and the park could then lose its UNESCO designation. Therefore, by considering the environmental fragility of this geopark the importance of environmental planning and management is vital and a critical issue for the future wellbeing of the Island.

The results show that environmental impacts are perceived as being more positive than negative: 56.4% of the residents disagreed that any environmental damage has occurred with geotourism in the Island (Table 4-2, p.64). Geotourism brings excellent environmental awareness to the community to preserve their natural environment. This research found the locals motivation to protect natural resources is highly supported (78.5%). Also, the majority (77.1%) reported the physical appearance of the Qeshm Island has improved as result of geodevelopment. Thus, the results of this study do not support this assumption, thereby, hypothesis H1-c: Residents perceive that geotourism has negative environmental impacts for them personally is rejected.

Locals are also denied the negative environmental impacts: for instance 60.2% of the residents disagreed a noise increase during the peak season because of tourists. Additionally, the increase of environmental contamination is denied by 42.1% of the respondents. However, conducting training for locals in the Qeshm Island Geopark has led to a high awareness and appreciation for the need to protect the natural environment. The community-oriented non-governmental organisations (NGOs) and volunteers are significantly involved in conservation activities in Qeshm Island Geopark such as saving the Hawksbill sea turtles’ eggs program, which is one of the endangered species in the world, volunteering for trash collection and clean-up within the geosites (QeshmGeopark, 2018; Torabi Farsani et al., 2012).

The subject of environmental impacts resulting from geotourism has not been investigated in the previous studies of Qeshm Island Geopark. Environmental impacts are perceived negatively in many studies in the context of tourism (Klein, 2011; Látková & Vogt, 2012;
Marsh, 2012; Nunkoo & Ramkissoon, 2012; Williams & Ponsford, 2009). However, the results of this research support the findings of other studies such as those by (Diedrich & García-Buades, 2009; Satyendra et al., 2016; Vargas-Sánchez et al., 2009), who found tourism, if effectively managed, could be a positive contributor to environmental improvement. They also stated some similar positive environmental impacts include an increase of environmental awareness among locals and enhanced natural protection within communities.

5.3 The residents’ attitudes towards geotourism impacts in Qeshm Island

The descriptive statistics of the residents’ attitudes are summarised and presented in the previous chapter (Table 4-20, p.88). The residents’ attitudes towards geotourism were measured by four open-ended questions adopted from the Doxey Irridex Model. This model states that locals’ perceptions vary from euphoria, a feeling of happiness or comfort, to apathy, when residents start being indifference, annoyance, when the number of tourists and the unfavourable impacts have increased, and finally antagonism, which includes covert and overt aggression to tourists (Doxey, 1975).

Respondents were also asked to explain the reasons which contributed to their attitude in one short paragraph. Their responses towards geotourism are presented in Figure 4-8 (p.90). This figure shows that the positive advantage of socio-cultural impacts is cited most frequently by respondents (32.0%). In addition positive economic impacts included improved job opportunities for locals (29.0%). Additionally, a total of 15.0% of the respondents stated the positive and negative impacts of government as a result of geotourism development in Qeshm Island.

In the next section, Research Question 2 and its hypothesis will be answered and further discussed.

5.3.1 Research question RQ2

RQ2: What is the general attitude of the Qeshm Island residents towards geotourism?

Research question RQ2 is addressed by one hypothesis:

H2: Residents’ attitudes toward geotourism impacts are positive.
5.3.1.1 Hypothesis H2: Residents' attitudes toward geotourism impacts are positive.

Descriptive statistics (Table 4-20, p.88) indicate that the largest proportion of the respondents (93.6%) present an overall positive attitudes towards the impacts of geotourism. Therefore, hypothesis H2 is supported. Residents’ attitudes towards geotourism impacts are thus at the euphoria stage of the Doxey Irridex Model. This model suggests that the residents’ attitudes change and become more negative as a result of tourism development and increase in a number of tourists in a host community.

The overall positive residents’ attitudes (euphoria stage) may relate to the total positive (economic, socio-cultural and environmental) perceptions of geotourism and geopark found in this study, which were discussed in detail in previous section (5.2) where:

- Respondents confirmed that geotourism has contributed to increased job and investment opportunities for locals in Qeshm Island, especially the rural areas (72.2%).
- Residents admitted geotourism increased the incentives for locals to conserve the Qeshmi’s traditional culture (76.4%).
- Respondents also agreed that geotourism increased locals’ motivations to protect their natural resources (78.5%).

Also, based on open-ended responses from the survey, the overall positive attitudes (euphoria stage) is cited mostly because of the positive socio-cultural impacts and economic contribution of geotourism, especially for locals in rural areas (Figure 4-8, p.90). This finding was further supported by a previous study in Qeshm Island (Shahhoseini et al., 2016). The present findings seem to be consistent with (Eusébio, Vieira, & Lima, 2018; Hammad, Ahmad, & Papastathopoulos, 2017; Scholtz & Slabbert, 2018; Turan & Kozak, 2016; Zhang et al., 2018), who applied the Doxey Irridex Model to examine the tourism development process and evolution of tourist destinations.

Furthermore, the residents’ responses manifested through open-ended questions (section 4.5.1) represent a better understanding of the impacts and attitudes literature, rather than only classifying them as a positive, neutral or a negative impact. Examination of residents’ responses regarding geotourism was also another significant finding of this study which not
only corroborates the previous results, but also revealed another two possible impacts which
have not been suggested in previous literature in this field. The new impacts argued the
positive and negative political impacts associated with geotourism in Qeshm Island that
explained a total of 15% of the response rate.

The positive political impact is categorised based on responses such as Qeshm has become
globally known, the region has improved, there has been an increase in officials’ attention,
more connections with the capital, etc. While the negative political impact emerges from
statements such as ‘lack of public facilities such as toilets and parking area for many of the
geosites’, ‘no visiting fee on most of the geosites’, ‘officials do not support locals’ and ‘many
other potential geosites are not located and registered yet’.

Although a high number of the respondents were happy by the overall impacts of geotourism
in Qeshm, there are still about 27.4% of the residents who have a negative feeling about
geotourism development in Qeshm Island (Table 4-20, p.88). According to residents’
responses, this attitude is reflected from a poor geotourism strategy and lack of official
support in this area especially during the off-seasons. Residents also stated an inequality of
geosites benefit distribution within the island where the towns close to the city of Qeshm
received more socio-economic advantage due to the presence of tourists.

This finding is critically important as geotourism has become the main and the only source of
income for many families in Qeshm rural areas. Geotourism has contributed significantly to
poverty alleviation in this area by linking the local economy with geotourism’s net benefits.
Also, officials are required to take a view on market-based approaches, monitoring and
planning in this geotourism dependent community. Otherwise, a lack of such measures could
lead to an increase in the negative impacts and geotourism may eventually be destroyed. This
finding is supported by Kiernan (2013), who indicated that attempts to achieve a short-term
economic fix may cause a significant longer-term economic disadvantage if the geoheritage
resources are not preserved and managed safely.
5.4 The relationship between residents’ perception of geotourism impacts and residents’ attitudes towards geotourism impacts in Qeshm Island

This section discusses research question RQ3, which is addressed by two hypotheses, H3-a: There is a positive direct relationship between socio-cultural impacts of geotourism and residents’ attitudes, and H3-b: There is a positive direct relationship between urban issues impacts of geotourism and residents’ attitude. Overall, the factors describing geotourism impacts are supported in previous tourism literature (Diedrich & García-Buades, 2009; Dyer et al., 2007; Fevzi Okumus et al., 2015; Jackson, 2008; Mason, 2015a, 2015b; Nunkoo et al., 2013; Yu, 2011). In this section, research question RQ3 will be answered by testing hypotheses H3-a and H3-b.

5.4.1 Research question RQ3

RQ3: What is the relationship between residents’ perceptions of geotourism impacts and residents’ attitudes towards geotourism in Qeshm Island?

5.4.1.1 Hypothesis H3-a: There is a positive direct relationship between social cultural impacts of geotourism and residents’ attitude

The construct of social cultural impacts included items that measured positive socio-cultural impacts and positive environmental impacts. The regression test conducted to examine the relationship between social cultural impacts and residents’ attitudes used AMOS v25. Results revealed that there is a direct positive relationship between social cultural impacts and residents’ attitude (Estimate = 0.104, CR = 1.95, p ≤ 0.05). So, the social cultural impact is found as a predictor for the overall residents’ attitude towards geotourism in Qeshm Island (Table 4-18, p.85). Thereby, H3-a is valid.

This finding is further supported by residents’ responses through answering open-ended questions (see Section 4.5.1). Residents cited the positive advantages of socio-cultural impacts (e.g. learning from different cultures, increasing motivation, empowering women, improving locals culture, etc.) as the most favourable reason for their overall attitude towards geotourism. The frequency of positive socio-cultural impacts explained the value of 32% of
the eight total impacts found through residents’ responses (Figure 4-8, p.90). Also, the finding of this study is consistent with Fevzi Okumus et al. (2015) and Deery et al. (2012), who found overall happiness was significantly influenced by positive cultural and environmental impact factors.

5.4.1.2 Hypothesis H3-b: There is a positive direct relationship between urban issues impact of geotourism and residents’ attitude

The construct of urban issues impact that emerged from EFA included items measuring negative socio-cultural impacts and negative environmental impacts (Table 4-4, p.66). Results revealed that there is a direct positive relationship between urban issues impact of geotourism and residents’ attitude (Estimate = 0.69, CR = 2.64, p ≤ 0.00). The urban issues impact is found as a predictor of the overall residents’ attitude towards geotourism in Qeshm Island (Table 4-18, p.85). Therefore the hypthesis H3-b is valid. This finding is consistent with Fevzi Okumus et al. (2015), who found that negative cultural and environmental impact factors significantly influence overall happiness.

5.5 Policy implications for Qeshm Global Geopark

The findings of this study are intended to assist local governments, decision makers, officials and geopark managers in planning and implementing geotourism development strategies. This could be accomplished through a better understanding of geotourism impacts and locals’ attitudes towards community-based geotourism development. As the local community is one of the main elements of geotourism, the principles of geotourism policy in Qeshm Geopark should be in line with residents’ attitudes.

The fact that many respondents were to believed they did ‘not get supported enough by local government’ suggests that there may be a need for greater communication between the geopark office, government officials and residents. The local community may not be as aware of all the positive impacts geotourism has on the Qeshm Island community as are government officials, planners and decision makers. Communication with, and involvement of, all
communities could help perceptions, ideas, experiences, plans and realities to get exchanged and discussed. Through communication, education and participation in the geotourism planning process, the perceptions of the negative impacts of geotourism could be reduced, and the possibility of turning negative impacts into positive ones could also be realised.

5.6 Summary of the discussion

This chapter discussed the methodology and the findings of this study including residents’ perceptions of geotourism, residents’ attitudes towards geotourism and the relationship between geotourism impacts and residents’ attitudes. The three research questions of this study were answered and the hypotheses tested. Table 5-1 and Table 5-2 present a summary of the findings and hypotheses tested in this study.
Table 5-1 Summary of findings

<table>
<thead>
<tr>
<th>Category</th>
<th>My findings</th>
<th>Other studies in geotourism context</th>
<th>Other studies in tourism</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Consistent with</td>
<td>Not consistent with</td>
</tr>
<tr>
<td>Residents’ perceptions of geotourism impacts</td>
<td>Positive economic impact</td>
<td>Shahhoseini et al., 2016; Torabi Farsani et al., 2012</td>
<td>Diedrich &amp; García-Buades, 2009; Dyer et al., 2007; Jeonglyeol Lee et al., 2007; Nunkoo &amp; Ramkissoon, 2011</td>
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<td></td>
<td>Uneven distribution of geotourism benefits</td>
<td></td>
<td>Jamal &amp; Camargo, 2014; Lee et al., 2015</td>
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<td></td>
<td>Positive socio-cultural impact</td>
<td>Shahhoseini et al., 2016</td>
<td>Torabi Farsani et al., 2012</td>
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<td></td>
<td>Positive environmental impact</td>
<td></td>
<td>Diedrich &amp; García-Buades, 2009; Satyendra et al., 2016; Vargas-Sánchez et al., 2009</td>
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<tr>
<td>The residents’ attitudes towards geotourism impacts in Qeshm Island</td>
<td>Euphoria stage based on (Doxey, 1975)</td>
<td>Shahhoseini et al., 2016</td>
<td>Eusébio et al., 2018; Hammad et al., 2017; Scholtz &amp; Slabbert, 2018; Turan &amp; Kozak, 2016; Zhang et al., 2018</td>
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<td></td>
<td>Poverty reduction</td>
<td></td>
<td>Kiernan, 2013</td>
</tr>
<tr>
<td>The relationship between residents’ perceptions of geotourism impacts and residents’ attitudes towards geotourism impacts in Qeshm Island</td>
<td>Socio-cultural impact is found as a predictor for the overall residents’ attitude</td>
<td></td>
<td>Deery et al., 2012; Fevzi Okumus et al., 2015</td>
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<td></td>
<td>Urban issues impact is found as a predictor for the overall residents’ attitude</td>
<td></td>
<td>Fevzi Okumus et al., 2015</td>
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<tr>
<td>Hypothesis</td>
<td>Findings</td>
<td>Valid/Rejected</td>
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<tr>
<td>H1-a: Residents perceive that geotourism has positive economic impacts for them personally</td>
<td>Descriptive statistic found the positivity of economic impact, supported by the results of open-ended questions analysis and previous literature (cf. 5.2.1.1)</td>
<td>Valid</td>
<td></td>
</tr>
<tr>
<td>H1-b: Residents perceive that geotourism has negative social cultural impacts for them personally</td>
<td>Descriptive statistic found the negativity of socio-cultural impact, supported by the results of open-ended questions analysis and previous literature (cf. 5.2.1.2)</td>
<td>Rejected</td>
<td></td>
</tr>
<tr>
<td>H1-c: Residents perceive that geotourism has negative environmental impacts for them personally</td>
<td>Descriptive statistic found the positivity of environmental impact, supported by the results of open-ended questions analysis and previous literature (cf. 5.2.1.3)</td>
<td>Rejected</td>
<td></td>
</tr>
<tr>
<td>H2: Residents’ attitudes toward geotourism impacts are positive.</td>
<td>Descriptive statistic found the positivity of residents’ attitude, supported by the results of open-ended questions analysis and previous literature (cf. 5.2.2.1)</td>
<td>Valid</td>
<td></td>
</tr>
<tr>
<td>H3-a: There is a positive direct relationship between social cultural impacts of geotourism and residents’ attitude</td>
<td>SEM plus supported by previous literature (Estimate = 0.104, CR = 1.95, p ≤ 0.05) (cf. 5.2.3.1)</td>
<td>Valid</td>
<td></td>
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<tr>
<td>H3-b: There is a positive direct relationship between urban issues impact of geotourism and residents’ attitude</td>
<td>SEM plus supported by previous literature (Estimate = 0.69, CR = 2.64, p ≤ 0.00) (cf. 5.2.3.2)</td>
<td>Valid</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 6 CONCLUSION

The primary purpose of the study was to measure the residents’ perceptions and attitudes towards geotourism planning and development in Qeshm Island UNESCO Global Geopark in Iran. Three research questions addressed for this purpose were:

- RQ1: How do residents perceive the impacts of geotourism in the Qeshm community?
- RQ2: What is the general attitude of the Qeshm residents towards geotourism?
- RQ3: What is the relationship between residents’ perception of geotourism impacts and residents’ attitude towards geotourism in Qeshm Island?

Then, based on developing the research questions and previous literature, this study hypothesised:

- H1-a: Residents perceive that geotourism has positive economic impacts for them personally.
- H1-b: Residents perceive that geotourism has negative social cultural impacts for them personally.
- H1-c: Residents perceive that geotourism has negative environmental impacts for them personally.
- H2: Residents’ attitudes toward geotourism impacts are positive.
- H3-a: There is a positive direct relationship between social cultural impacts of geotourism and residents’ attitude.
- H3-b: There is a positive direct relationship between urban issues impact of geotourism and residents’ attitude.

The survey was designed based on models and scales in previous studies in the area of tourism impacts and residents’ attitude by Meyer (2011), Bonimy (2008), Miyakuni (2012). The literature was used in order to develop a significant questionnaire consisting of three parts. The first section was gathering the respondent’s demographic characteristics such as gender, age, education level, the degree of involvement in geotourism, etc. The second part includes residents’ perception of various geotourism impacts in Qeshm Island such as economic, social and cultural, environmental (both beneficial as well as adverse).
The third part addresses the residents’ attitudes towards geotourism activities and the prevailing mood of the host community in Qeshm Island with four questions concerning the Doxey Irridex Model. Four open-ended questions were used to gain different perceptions from the respondents. Respondents were asked to write a short paragraph explaining their reasons influencing their overall attitude towards geotourism. A total of 31 Questions were administered with four of them being open-ended and the rest closed-ended.

The study sought the views of the residents of Qeshm Island from a range of ages and gender as well as those who are tourism dependent or non-dependent individuals. Respondents who agreed to participate were then asked whether or not they were state residents over the age of 18 years. Three hundred and fifty questionnaires were distributed amongst the residents of fifteen tourism-depended and non-dependent towns.

Once the questionnaire was constructed the validity and reliability of the survey were assessed. Data analysis was a multi-stage process. For the quantitative analysis all returned questionnaires were encrypted and all data entered into statistical package SPSS 25 (Statistical Package for the Social Sciences).

In the first phase of data analysis, the descriptive statistics and distribution were assessed. Next, the underlying constructs measuring Qeshm Island residents’ perceptions of the impacts of geotourism using EFA. SEM was conducted using AMOS 25 (maximum likelihood method) to test the proposed model using CFA. Multiple measures were used to assess the fit between the model and the data, including normed chi-square (chi-square/df), CFI and RMSEA, all of which were suggested in the literature for single group analysis (Hair, Black, Babin, Anderson, & Tatham, 2006).

Responses from four open-ended questions were categorised into different types of geotourism impacts based on their common themes found as well as the conceptual framework for geotourism impacts in this study. The results of the descriptive analysis (Table 4-2) showed residents’ awareness of the positive and negative impacts of geotourism in Qeshm Island. The respondents generally held a reasonably positive view concerning the impacts of geotourism in their community. The results reflect the fact that the perception of residents towards geotourism has changed from boundary maintenance to adoption, based
on Doğan (1989). They cope with socio-cultural impacts and recognise geotourism as a vehicle for changing their existing social structures.

The results indicated that the majority of the respondents (93.6%) agree that they are happy with the development of geotourism on Qeshm Island (Table 4-20, p.88). This reflects the euphoria stage of the Doxey Irridex Model. Additionally, the results of the study found that the social and cultural impacts and the urban issues resulted from geotourism effected the overall residents’ respond towards geotourism. A summary of the discussion is provided in Table 5-1.

6.1 Limitations

Despite its contributions the study might be limited by the following factors:

- As geotourism is a new term conceptually, participants who are from the general population may not be knowledgeable about this new type of tourism.

- Due to the limited time of the Master’s thesis, this study focused only on Qeshm Island community and other communities might have different attitudes towards geotourism. To overcome this limitation, future studies should explore a wider spectrum of communities using a similar survey.

- There might be some political impacts on geotourism in Qeshm Island and its planning policies. Since Iran is a politically closed country people may choose not to comment on political issues and government policies. Therefore, questions that are related to politics have not been asked in the survey to respect people’s choice and the researcher’s security. However, some of the residents’ responses to open-ended questions reflect the positive and negative impacts of local government in their community and this impact was previously discussed in chapters four and five.
6.2 Recommendations for further research

It is recommended that further research be undertaken in the following areas:

1. This study was conducted in one country, considering a community of one global geopark during a specific time of the year. Future research could expand on the investigation of geotourism impacts in different countries, geosites, communities and times of the year in order to test and further generalise the findings.

2. This research revealed the effects of political impact on residents’ attitudes. Within the field of geotourism few studies have investigated the issue of political impacts on different geoparks and their communities. Therefore, more research could be undertaken to study the concept of politics in geotourism and geopark development in different communities.

3. Because of the lack of accurate longitudinal geotourism statistics at the county level (i.e., geotourism revenues, the rate of locals’ business and their involvement in geotourism, the rate of geotourists by sector and season), the study did not attempt to examine the level of tourism development. Future studies are required to ascertain residents’ involvement in geotourism and examine the economic impact of geotourism on Qeshm Island.

4. Finally, this research could also be expanded to determine the role of women in geotourism development. Future research will provide researchers and planners with the opportunity to learn more about how women could contribute to geotourism in a community.


Burlington, MA: Oxford


Hello and thank you for your time. My name is Shahrzad Khodayar and I am a Master’s student at Edith Cowan University, WA, Australia. For my dissertation, I am examining residents’ perceptions toward geotourism in your area.

The main purpose of this research is to determine the residents’ attitudes toward geotourism impacts in Qeshm geopark. The study is valuable to you, as a resident of Qeshm, as well as to the community of Qeshm Island because the result will help to improve understanding of tourism impacts in Qeshm Island.

Please take about 10 minutes to fill out the provided survey and return it once you finished. This study might include photography or video taken from your daily activities (this is optional if you agree to do so and your face would not be identifiable). Also, the questions on first part are designed to obtain some demographic information that is very important to this study.

This project has been approved by the Human Research Ethics Committee of Edith Cowan University. All your responses will remain completely confidential and you do not have to provide your name or address. A summary of results will be sent to Qeshm Geopark Organisation and Qeshm Tourism Department. Ultimately, this should lead to cooperative planning for future tourism development in Qeshm Island.

We appreciate your assistance. If you have any questions regarding this questionnaire and the study, please do not hesitate to contact us. If you have any concerns or complaints about the research project and wish to talk an independent person, you may contact:

Research Ethics Officer
Edith Cowan University
270 Joondalup Drive
JOONDALUP WA 6027
Phone: (+61 8) 6304 2170
Email: research.ethics@ecu.edu.au

Sincerely yours,

Shahrzad Khodayar (Masters by Research student)
Email: skhodaya@our.ecu.edu.au
Tel: [Redacted]
School of Business and Law, Edith Cowan University
270 Joondalup Drive, Joondalup WA 6027

Prof. Ross Dowling (Principal Supervisor)
Email: r.dowling@ecu.edu.au
Tel: +61 8 6304 5891
School of Business and Law, Edith Cowan University
270 Joondalup Drive, Joondalup WA 6027

☐ I agree to participate in this research.
PHOTO / RECORDINGS RELEASE FORM

PURPOSE

To describe the impacts of geotourism in Qeshm Island and residents daily life which is required in my thesis projects.

- Photography/Recording for research purposes - unidentifiable

1. The Participant Information letter stated that ‘photographs/video will be used for research purposes only.’
2. If photographs are to be taken, these need to be unidentifiable unless consent has been received from the participant approving the photographic/video release, per the below.

- Photography/Recording for research purposes - identifiable

1. Consent form title to read PHOTO / RECORDINGS RELEASE FORM
2. The following section to be included on the consent form.

I, the undersigned, voluntarily consent to the taking photos and/or recording video, publication, and use of my picture or video for the purpose of research associated with this study.
By signing this release, I do not forfeit any of my legal rights, at any time I may revoke this authorisation for future use.

SIGNATURE OF PARTICIPANT: _______________
DATE: ________
PRINTED NAME OF PARTICIPANT __________________________

THANK YOU FOR YOUR ASSISTANCE

Administrative use only

Photographer: ...............................................................................................................................................
Event / Project: ............................................................................................................................................
Photo file name / no: ...................................................................................................................................
Section One: Demographics

Q1) Are you:
1) Male
2) Female

Q2) What is your age bracket:
1) 18-24
2) 25-34
3) 35-44
4) 45-54
5) 55-64
6) 65-74
7) +75

Q3) Please indicate the highest level of education you have completed:

1) No schooling completed
2) Basic Secondary/ High School
3) Diploma
4) Tertiary education / Undergraduate degree
5) Post graduate degree
6) Other: .......

Q4) What is your total monthly income before taxes (in Toman)?
1) Under 1,000,000
2) 1,000,000-2,000,000
3) 2,000,000-3,000,000
4) 3,000,000-4,000,000
5) More than 4,000,000

Q5) Do you benefit financially from tourism in your community?
☐ Yes
☐ No

Q6) In an average week, how many times would you personally interact with tourists?
☐ Never
☐ Rarely
☐ Frequently

Q7) How close (in km) do you live to the main tourism area? ............ km.

Q8) How long have you lived here? ............ years
### Part 2-1: Your opinion about the potential Economic Impacts of Geotourism

The first set of questions asks your opinion regarding the impacts of geotourism in Qeshm Island including Economic, Environmental, Social and Cultural issues. Please indicate your level of agreement with each of the following statements. (Please circle one response for each statement).

<table>
<thead>
<tr>
<th>Part 2-1</th>
<th>Your beliefs about Potential Economic Impacts of Geotourism</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q10</td>
<td>Geotourism increases employment and investment opportunities in Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q11</td>
<td>Geotourism causes increases in house and products prices in Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q12</td>
<td>Geotourism generates more business for local people in Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q13</td>
<td>Geotourism benefits only a small number of residents in Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q14</td>
<td>Profits generated by Geotourism activities end up with companies and persons from outside of Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Part 2-2: Your opinion about the potential Environmental Impacts of Geotourism

The second set of questions asks your opinion regarding the impacts of geotourism in Qeshm Island including Economic, Environmental, Social and Cultural issues. Please indicate your level of agreement with each of the following statements. (Please circle one response for each statement).

<table>
<thead>
<tr>
<th>Part 2-2</th>
<th>Your beliefs about Environmental Impacts of Geotourism</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q15</td>
<td>Geotourism development improves the physical appearance of Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q16</td>
<td>Geotourism causes damage to the natural surroundings and to countryside on Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q17</td>
<td>Geotourism provides incentives for local people to protect and conserve natural resources on Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q18</td>
<td>Geotourism increases environmental contamination (rubbish, wastewater) on Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q19</td>
<td>Geotourism increases noise on Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
These set of questions asks your opinion regarding the potential social and cultural impacts of geotourism in Qeshm Island including Economic, Environmental, Social and Cultural issues. Please indicate your level of agreement with each of the following statements. (Please circle one response for each statement).

<table>
<thead>
<tr>
<th>Part 2-3</th>
<th>Your beliefs about Social and Cultural Impacts of Geotourism</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q20</td>
<td>Geotourism provides incentives to locals to preserve Qeshm’s local culture</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q21</td>
<td>Geotourism increased traffic congestion and accidents in Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q22</td>
<td>Geotourism encourages improvement in the quality of roads, parks and other recreational areas in Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q23</td>
<td>Geotourism increases the crime rate in Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q24</td>
<td>Geotourism has positive impacts on the cultural identity of Qeshm Island residents</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q25</td>
<td>Geotourism causes unpleasant overcrowding of public and leisure spaces in Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q26</td>
<td>Geotourism enhances cultural exchange between tourists and residents in Qeshm Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q27</td>
<td>Geotourism negatively affects Qeshm Island’s culture</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
### Part 3: Your feeling about the Impacts of Geotourism

The following questions ask about your feeling toward the impacts of geotourism in your community. There are four statements. Please choose one answer for each statement that closely express your feeling.

<table>
<thead>
<tr>
<th>Part 3</th>
<th>Your feeling about the Impacts of Geotourism</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q28</td>
<td>I have a feeling of general happiness about the impacts of geotourism in our community If yes, why and if not why not?.................................</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q29</td>
<td>I feel indifferent about the impacts of geotourism in our community If yes, why and if not why not? ..............................................</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q30</td>
<td>I have negative feelings about the impact of geotourism in our community If yes, why and if not why not?..............................................</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q31</td>
<td>I feel annoyed about the impact of geotourism in our community If yes, why and if not why not?..............................................</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B

List of Aspiring Geoparks in Iran

<table>
<thead>
<tr>
<th>1- Lout Geopark</th>
<th>2- Golestan Geopark</th>
</tr>
</thead>
<tbody>
<tr>
<td>3- Damavand Geopark</td>
<td>4- Ekbatan Geopark</td>
</tr>
<tr>
<td>5- Sabalan Geopark</td>
<td>6- Geno Geopark</td>
</tr>
<tr>
<td>7- Makran Geopark</td>
<td>8- Urmia Geopark</td>
</tr>
<tr>
<td>9- Dasht (Mand) Geopark</td>
<td>10- Fars (Kazeroon-Firooz Abad) Geopark</td>
</tr>
<tr>
<td>11- Sahand Geopark</td>
<td>12- Tabas Geopark</td>
</tr>
<tr>
<td>13- Kalat Geopark</td>
<td>14- Maah Neshan Geopark</td>
</tr>
<tr>
<td>15- Koohdasht (shiraz) Geopark</td>
<td>16- Mount Savad (Kiasar) Geopark</td>
</tr>
<tr>
<td>17- Zagros (Mount Oshtoran) Geopark</td>
<td>18- Naft Geopark</td>
</tr>
<tr>
<td>19- Maku Geopark</td>
<td>20- Alamout Geopark</td>
</tr>
<tr>
<td>21- Hormoz Geopark</td>
<td>22- Kashan Geopark</td>
</tr>
<tr>
<td>23- Aras Geopark</td>
<td>24- Yazd Geopark</td>
</tr>
<tr>
<td>25- Mount Kabir (Seymareh) Geopark</td>
<td>26- Kerman Geopark</td>
</tr>
<tr>
<td>27- Nakhlak (Anarak) Geopark</td>
<td>28- Kourd Geopark</td>
</tr>
<tr>
<td>29- Jandagh (Khour) Geopark</td>
<td>30- Gilan Geopark</td>
</tr>
</tbody>
</table>