

Predicting Behavioural Intention of International Tourists Towards Geotours

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Abstract Geotourism could be one of the powerful tools for protecting the environment. It provides a long-term competitive edge through geomangement. As a niche area of the global tourism industry, geotourism is growing rapidly due to the high appreciation of landscape and geological phenomena. Fostering the nature and cultural sustainability, geotourists seek geological wonders framed in a natural and cultural authenticity. Responding to the call of the Egyptian Tourism Ministry to study non-traditional patterns of tourism, this study aims to investigate the factors predicting the behavioural intention to take geotours among international tourists. The study incorporated new constructs in the theory of reasoned action to achieve its aim. Employing structural equation modelling, findings revealed that behavioural intention of taking geotours is affected by geotourists' attributes, attitudes towards geotours, cultural heritage and subjective norms. The study introduces useful implications to policymakers and managers of tourism authorities in developing countries.

Keywords Geotourism · Geotourists · Geotours · Ecotourism · TRA · Egypt

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Introduction

Tourism is based on geographical places, which are socially constructed as travel destinations (Young 1999). The identities of these places are reinforced as travel destinations using unique images associated with the destination (Morgan, Pritchard and Pride 2004). In the 1990s, a niche tourism called geotourism has emerged whereby tourists are shying away from mass tourism to ecological-based travel. Geotourism is a tourism activity that relates to geological sites and features, including geomorphological sites and landscape (Joyce 2006). It is recognized as an exciting new direction for tourism surrounding geological and geomorphology attractions and destinations (Yalgouz-Agaj et al. 2010) and as a distinct area of special interest tourism (Dowling and Newsome 2008).

In general, geotourism deals with abiotic parts of the natural environment (abiotic nature or geodiversity: geological features, landforms and land processes) (Sadry 2009). According to Hose, Markovic, Komac and Zorn (2011) and Newsome et al. (2012), geotourism can be a powerful tool for sustainable development but, if not managed effectively, can constitute a direct threat to geoheritage resources. Geotourism has also some overlap with other tourism segments such as ecotourism, sustainable tourism and alternative tourism and potentially much overlap with educational travel and environmental, nature-based and heritage tourism. Many countries, such as USA, England, Australia and South Africa, have increased their focus on geotourism, particularly relying on their geoattractions (Hose 2011; Newsome and Dowling 2010a).

Due to its vast and unique natural environment, typical geographical location, diverse climate and various habitats, Egypt, the setting of this study, has become one of the best tourist destinations of the world. Immense historic potentiality and geological phenomena present in this country have turned it into one of the attractive geotourism regions of the world.

This study aims at examining the factors affecting tourist behavioural intention and behaviour to go on geotour holidays.

The rationale behind this study is the limited literature on geotourism studies as a new phenomenon (Allan 2012) particularly in the developing countries. In addition, many issues in geotourism need to be covered by different types of studies to learn about its different dimensions. Furthermore, the generalizability of published research on geotourism is problematic because most of these studies have been carried out in a small number of areas. The pertinent literature that relates to geotourism in Middle Eastern countries, including Egypt, is still minimal (Allan, Dowling and Sanders 2011). Add to this, the emerging tourism niche of geotourism is still at an early stage of commercial development in most countries (Farsani, Coelho and Costa 2011), and the wide recognition of geotourism is new (Hose 2008a). This study is useful for tourism policymakers and tourism enterprises' managers in Egypt who call for encouraging new trends of tourism in the Egyptian destination. Tour operators, travel agents and marketers may use the findings of this study to understand the behaviours of geotourists and set up packages that fit their profile.

Literature Review

Geotourism Concept

Although its antecedents dated back to the seventeenth century in Europe (Hose 2008b), geotourism passed into general usage in the early 1990s by Hose in 1995, who based his definition on geology and geomorphology (Hose 2005). The term was the focus of university research at the beginning (Hose 1994, Hose, 2003, unpublished PhD thesis) and promoted afterwards in the United Kingdom as a new form of niche tourism (Hose 1996, 2005) before its recognition and promotion in Europe (Hose 1997, 2000). After that, the term was used by Jonathan Tourtellot, the senior editor of National Geographic Traveller (NGT) and head of the Tourism Institute at the National Geographic Society (NGS) in 1997.

It is claimed that geotourism has many definitions (Allan 2012). According to Yalgouz-Agaj et al. (2010), the theoretical framework for the study of geotourism has varied according to different definitions. The two main backgrounds for defining the concept of geotourism lie in the fields of geology and geography (Allan 2012).

Pralong (2006) argued that, despite the significance of this definition in tourism literature, it does not involve the economic development created by geotourism. Including the natural dimension in geotourism, Dowling and Newsome (2006, p. 3) defined geotourism as '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 because it has linked geotourism to tourism of the natural area. Consequently, this definition has introduced geotourism as a stand-alone extension or a branch of the tourism industry. Most importantly, it pins down geotourism as a specific and concise concept. Dowling and Newsome (2006, p. 4) stressed that geotourism is a distinct subsector of natural area tourism.

In 2010, Newsome and Dowling have introduced a wider definition of geotourism as a form of natural area tourism that specifically focuses on geology and landscape. It promotes tourism to geosites and the conservation of geodiversity. It is achieved through visiting geological features, use of geotrails and viewpoints, guided tours, geoactivities and patronage of geosite visitor centres (Newsome and Dowling 2010b).

Recently, geotourism is defined as a new movement helping travellers to increase their knowledge about natural resources, the cultural identity of hosts and ways of preserving them (Farsani et al. 2011). In other words, geotourism aims to sustain or enhance the geographical character of the place, its environment, heritage, culture and the well-being of its residents (Tourtellot 2003).

Furthermore, Hose has made many revisions to his definition since 1995 (Hose 2007). As a consequence, Hose (2008b) 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 (including its contribution to the development of the Earth Sciences) beyond the level of mere aesthetic appreciation. Geotourism was redefined comprehensively as 'the provision of interpretative and service facilities for 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, p.11; Hose and Vasiljević 2012, p. 38).

Geotourism and Sustainability

Geotourism adds to ecotourism's principal focus on plants (flora) and animals (fauna) by adding a third dimension of the abiotic environment. It fosters environmental and cultural understanding, appreciation and conservation and is beneficial to local community. Geotourism has links with ecotourism, cultural tourism and adventure tourism but is not synonymous with any of these forms (Dowling 2010; Stokes, Cook and Drew 2003). As a new tourism activity, it is an improvement over mass tourism that provides better sector linkages, reduces leakage of benefits from a country, creates local

employment and fosters sustainable development (Khan 1997). It has been promoted as a means of reconciling conservation of geologic and geomorphologic phenomena with economic development, particularly in developing countries (Campbell 2002; Hassan et al. 2012).

According to Robinson (2008), geotourism is ecologically sustainable tourism. Principles of geotourism serve as a foundation for sustaining the geographical sense of a place (Jonathan 2014). There are five key principles, which are fundamental to geotourism. They are that geotourism is geologically based (based on the geoheritage), sustainable (economically viable, community enhancing and fosters geoconservation), educative (achieved through geointerpretation), locally beneficial and generates tourist satisfaction. The first three characteristics are considered essential for a product to be included in geotourism, while the last two characteristics are viewed as being desirable for all forms of tourism (Dowling 2010, 2011).

Geotourism in Egypt

In some of Egypt’s remote areas, such as the high mountains of the Eastern Desert and the Uweinat Mountain area in the south-west, rocks possibly as old as 2,000 million years are exposed at the surface. By contrast, the honey-coloured limestones that were used to build the pyramids are relatively young, perhaps as little as 40 million years old. Over such huge timescales, both climate and the associated ecosystems have changed drastically (Colin 2011).

There are different geosites in Egypt (see Fig. 1 and for example Abdel-Maksoud and Hussein 2016). One of the most famous geosites is Fayoum. Fayoum has many areas with a variety of attractions including natural and geological assets. This includes rare fossils, archaeological and geological formations, springs, extensive mobile sand dunes, marine fossils and archaeological remains (Deabes 2002; EL Bayomi 2006; Nature Conservation Sector, Egyptian Environmental Affairs Agency and Ministry of State for Environmental Affairs

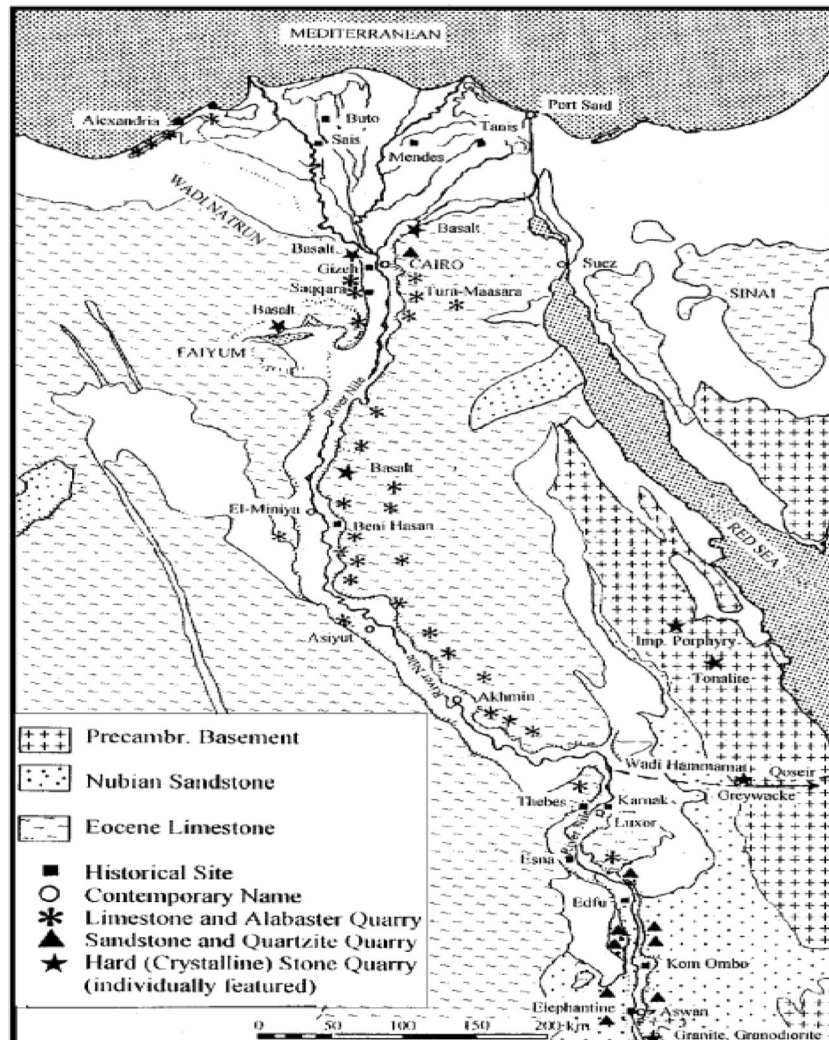


Fig. 1 A base map of Egypt’s geology Source: Klemm and Klemm (2001)

2006). In addition, invaluable fossil remains of the earliest and now extinct suborder of whales are existing in the Valley of Whales. It is one of the most important sites in the world that demonstrates one of the iconic changes that make up the record of life on earth (Hassan and Soliman 2014). This unique valley is also characterized by its varied species of desert plants, numerous types of reptiles, migrant birds and wild mammals (Soliman 2014).

A quite beautiful geosite is also found in Farafra Oasis. The main geographic attraction of Farafra is its White Desert. The White Desert is justifiably the most well-known desert destination in Egypt. The White Desert protected area is located in one of the most attractive and astonishing landscapes of Egypt. Limestone erosional features create a spectacular landscape that has made the region world famous. Relict oasis habitats represent some of the largest extents of remaining natural vegetation in the Western Desert. The region includes assemblages of fauna and flora characteristic of the Saharan biome, including several rare and highly endangered biological components. Its cultural heritage sites date from prehistoric times to the recent past (Nature Conservation Sector, Egyptian Environmental Affairs Agency and Ministry of State for Environmental Affairs 2006). The White Desert is a national park of Egypt. The desert centrepiece is its rock coloured from snow-white to cream colour. It has massive chalk rock formations that are textbook examples (Botros 2004; Elarabawy and Tosswell 1998; Stern 1981).

Other geosites include Sannur Valley Cave protected area, Eastern Desert of Egypt. There are several quarries in the area; some of them were anciently discovered and utilized at the time of pharaohs, and others are modern and currently exploited (Amin and Eissa 2008; Halliday 2003). Due to the ongoing alabaster drilling operations, 54 big cavities have been revealed, which lead downwards to a deeper cave. This cave extends to an area of 700 m, with a width of 15 m and a depth of 15 m. The most important feature of the cave is the quality of its natural formations that are the rarest in the world. They also represent an importance to researchers for conducting detailed comparative studies with regard to variations of ancient environmental conditions. The cave is located at 10 km from the city of Beni Suef which is situated at a 2-h driving distance from Cairo (Amin et al. 2008; Hassan and Soliman 2014).

Research Framework and Hypotheses Development

To understand the factors affecting tourists to take geotours, this study has adapted the theory of reasoned action (TRA) developed by Ajzen and Fishbein (1980), in which attitudes and subjective norms are antecedents of behavioural intention that explains the actual behaviour. However, concerning specific features of geotourism, further three dimensions were

incorporated in order to best predict the behaviour of geotourists. These constructs are characteristics of geotourists, motivation to take geotours and being interested in cultural/heritage components. The following sections explain the six antecedents of behavioural intention to take geotours.

Characteristics of Geotourists

Geotourism depends on scientific value, educational and historical values, international significance, cultural and social structures, biodiversity and appearance. Thus, the types of tourist who are visiting these places are also different (Yalgouz-Agaj et al. 2010). Based on nature and scope of geotourism, geotourists can be categorized as special interest tourists (Hose 1995). Hose (2008b) argued there are two main categories of geotourists: first, the educational group consisting of students of all educational stages who take over geological studies or other related studies, and second, the recreational group that includes different types of recreational people from the beginner to the expert.

What really distinguishes geotourists is their above-average interest in environmentally oriented travel. In addition, they are extremely careful in their tourist realm so as not to damage the environment. They believe that it is important to learn about other cultures, leading them to be more likely to enjoy primitive travel to wilderness areas and to enjoy adventurous outdoor travel with challenging risks and elements of excitement or to travel to remote locales (Stueve et al. 2002). They are focusing on cultural and social aspects of tourism (Benfield 2004; Robinson 2008; Stokes et al. 2003). According to Allan et al. (2011), geotourists are young, middle-aged and well educated. They are motivated by a high level of intrinsic motivation. They want to learn about geosites and be given sound information about the attractions they are visiting (Robinson 2008). Based on this argument, the first hypothesis of the study was developed as follows:

H1 : *Tourists who have geotourist characteristics are more likely to intend to take geotours.*

Attitudes Towards Geotours

Generally, travel has become a natural right of all people (Dura 2015) and it promotes world peace and understanding (Pan 2015). Travellers believe in the importance to experience or to learn about cultures other than theirs. Mature travellers think that the travel experience is better when they can learn as much as possible about the destination's customs, geography and culture. In addition, a large number of tourists seek holidays in rural and natural landscape. Geological sites have also aesthetic value to attract domestic and international tourists.

Geological activities include geological trails, fossil hunting, museums and visitor centres (Allan 2012).

The quality of the natural environment plays a key role in attracting international visitors to destinations. How visitors to geosites think about nature in general could influence their perception of specific places and their more or less idealized concept of attractive environments and ultimately their attitudes towards conservation. Geotourists are those types of tourists who possess an environmental ethic, support the environmental conservation and strive for first-hand experience with the environment (Bjørn et al. 2011).

An attitude towards the environment is a measure of how people would like to experience the landscape according to their personal preferences for environmental, social and cultural aspects. These preferences reflect more basic values or environmental value orientations (Homer and Kahle 1988). The majority of travellers show some concern for and sensitivity about the environment in general. They believe that people must live in harmony with nature in order to survive. These attitudes are at least partially reflected in their at-home behaviours. They could buy environmentally safe household products even if they cost more. Furthermore, they donate to environmental organisations (Stokes et al. 2003). Based on this discussion, the second hypothesis of the study is formulated as follows:

H2 : *Attitudes of tourists towards travel and environment are positively affecting their intention to take geotours.*

Cultural/Heritage Dimension and Activities of Travellers

Tourism increases and promotes cultural exchange between tourists and residents. Tourism can also be a force to preserve and revitalize the cultural identity and traditional practices of host communities and acts as a source of income to protect heritage sites (Akkawi 2010; Easterling 2005). Significantly, large numbers of travellers are interested in history and culture, as reflected in their beliefs and local area activities (MacCannell 1976; Ooi 2002; Timothy and Nyaupane 2009; Smith 2009; Csapó 2012).

Many travellers support the preservation of historic sites and monuments and the cultural/visual performing arts and support controlling access to historic sites. Furthermore, travellers eat in ethnic/specialty restaurants in their local area and nearly as many attend community festivals and ethnic celebrations. They like to read books/magazines or watch movies/videos about history and culture. They visit historic sites and museums in their local areas. Many travellers attend performing art events and/or visit art museums/galleries in their local areas. Travellers' positive attitudes about culture and history, as well as their attraction to such activities at

home, almost certainly extend to the activities they choose to do while travelling (Stokes et al. 2003). This leads to develop the third hypothesis of the study:

H3 : *Tourists interested in cultural/heritage activities are more likely to intend to go on geotour holidays.*

Motivations to Take Geotours

Travel motivations can be considered as one of the most important psychological influences of tourist behaviour (Van Vuuren and Slabbert 2012); therefore, they refer to reasons of why tourists select and travel to a specific destination (Page and Connell 2006). According to the push-pull theory, motivation represents the factors that pull tourists to visit a certain place (Mohammad and Som 2010; Allan 2011). Yoon and Uysal (2005) have divided motivations to push and pull ones. Relaxation, knowledge and education, exciting and active physical state, and escaping from daily-life routine are examples of push motivations. On the other hand, pull motivations include visiting historical places at destinations, experiencing different cultures, weather, safety and high-quality facilities and services.

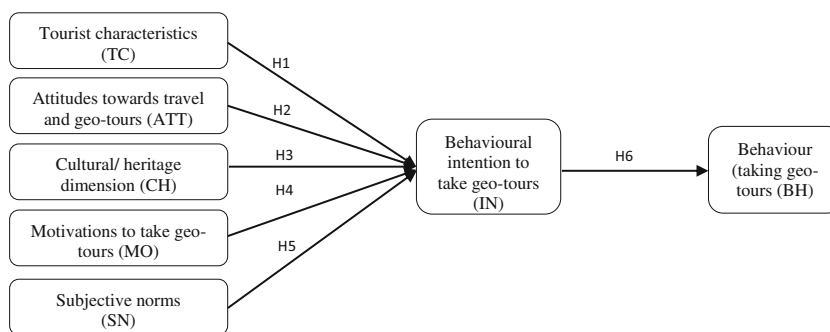
Lee and Tideswell (2005) found that tourists are motivated to travel to experience natural attractions, to visit new places and to occupy free times. Allan (2012) has empirically tested the effect of these motivations on geotourist satisfaction. Empirical results revealed that knowledge, relaxation, escape, enjoyment, friendship and sense of wonder are among the main motivations for tourists to go on geotours. Build upon these findings, the fourth hypothesis of the study was developed as follows:

H4 : *Motivations have a positive effect on tourist intention to take geotours.*

Subjective Norms

Subjective norms refer to perceived pressures on a person to perform a given behaviour and the person's motivation to comply with those pressures (Fishbein and Ajzen 1975). According to Fishbein and Ajzen (1975) and Vallerand, Deshaies, Cuerrier, Pelletier and Mongeau (1992), subjective norms are determinants of behavioural intention. Subjective norms could affect the tourists to travel to a certain place or destination or even a specific tour (i.e. geotours), where friends, people and tourists travel with and others may approve the selection of geotours. Based on this causal relationship built in the theory of reasoned action, the fifth research hypothesis was developed as follows:

Fig. 2 The hypothesized model of the study



H5 : *Subjective norms are positively affecting tourist intention to go on geotours.*

Behavioural Intention and Actual Behaviour

Behavioural intention is defined as the degree to which a person is prompt to accomplish certain behaviour (Ajzen and Fishbein 1980; Davis 1989). Based on the work of Ajzen and Fishbein (1975) and the confirmatory analysis of Vallerand et al. (1992), behavioural intention is a determinant of the behaviour. Adapting this causal relationship between behavioural intention and behaviour to taking geotours, behavioural intention implies the traveller's intention to take geotours or considering it their first choice in destination selection process for their next holiday plans. The behaviour could take numerous forms; it could be travelling on geotours, revisiting the same or similar destinations because of the destination attractiveness (Quintal and Polczynski 2010) and/or willingness to recommend geotours to others (Alegre and Cladera 2009; Valle et al. 2006). Based on this discussion, the sixth and seventh hypotheses were formulated as follows:

H6 : *Behavioural intention is positively affecting tourist behaviour.*

H7 : *Behavioural intention is mediating the causal relationship between intention determinants and behaviour.*

Figure 2 shows the hypothesized model of the study and the seven developed hypotheses of the study.

Research Methods

Measurement Scale and Data Collection

The proposed research model includes seven latent variables with multiple indicators measured on a five-point Likert scale (Fig. 2). The theory of reasoned action (TRA) was adapted to help interpret the tourist intention and behaviour of going on

geotour holidays. TRA basically has four constructs (attitudes, subjective norms, intention and behaviour). Reviewing the literature studies on geotours (i.e. Allan 2012; Allan et al. 2011; Hose 2008b; Robinson 2008; Stokes et al. 2003) has revealed further three constructs to consider, namely geotourist characteristics, cultural/heritage dimension and motivations to take geotours. To measure the proposed model constructs, a list of items was initially generated then refined to retain the relevant items for this study. Using corrected item-total correlations, 41 validated indicators were used to measure seven constructs (ten indicators to measure geotourist characteristics, ten indicators for attitudes, five for motivation, six for cultural/heritage dimension, three for subjective norms, three for intention and four for behaviour (Table 1)). A panel of academics in Egypt and the UK (including two professors from UK universities specialising in business and management and two professors from Egypt specialising in tourism and hospitality) has checked face validity and construct validity of the questionnaire. The panel validated the questionnaire against the aim, objectives and hypotheses of the study and has ensured that it fulfils such aims (i.e. content validity). The other task of the panel was to check the layout of the questionnaire including the order of questions, wording, font size, etc. (i.e. face validity).

Later, the questionnaire was piloted on 20 respondents to check its construct validity using corrected item-total correlation statistics to assure valid indicators. The final questionnaire form was completed by international tourists who visited Fayoum, Hurghada, Sharm El-sheikh and Farafra Oasis in Egypt. Two hundred forms were randomly collected during the period of November 2014 to February 2015. The random sample technique was used to select respondents. Simple random sample is a probability sample that is always preferable in research as it decreases bias and maximizes the external validity (Vogt 2007). Furthermore, in the questionnaire, a question about the geotourists' characteristics was included to explore the nature of the tourists filling in the questionnaire and support their validity for the study. In addition, the four selected places, as a geographical frame for the study, have various geological sites and features visited by tourists.

Analysis Technique

As a quantitative-based study and to test the hypotheses of the proposed model, structural equation modelling (SEM), the advanced multivariate technique, was used for analysis purposes. With its ability to measure complicated causal relationships among constructs, SEM is the highly appropriate analytical approach for this type of research (Olsson et al. 2000). WarpPLS Software version (5) was used to conduct the structural equation modelling analysis. Measurement and structural models revealed from SEM are assessed based on the fit indices cited by Kock (2012). Indices include average path coefficient (APC), average *R*-squared (ARS), average adjusted *R*-squared (AARS), average block variance inflation factor (AVIF) and average full collinearity VIF (AFVIF). APC, ARS and AARS should have *P* values equal to or lower than 0.05, while AVIF and AFVIF values should be equal to or lower than 3.3. Composite reliability statistics and Cronbach’s alpha should be 0.7 or above to verify the reliability of the measurement model (Hair et al. 1998). Average variance

extracted (AVE) should be equal to or higher than 0.50 to verify the convergent validity (Fornell and Larcker 1981); meanwhile, square root of average variance extracted (SQRT AVEs) should be greater than correlations among constructs to assure the existence of discriminant validity of the model (Kock 2012).

Research Findings

Descriptive Statistics

Looking at Table 1, it is found that 61% of respondents are males, 35.1% of them are aged between 20 and 30 years and 48.6% are university undergraduates. Respondents’ nationalities include Russian, German, English, Armenian, Egyptian and some other nationalities (Table 1).

Table 2 shows the mean values of constructs and standard deviations. It is revealed that respondents have opinions very close to ‘agree’ option, which leads to their positive opinions and attitudes, intention and behaviour towards geotours.

Table 1 Descriptive statistics

Attribute		Frequency	Percent
Gender	Male	108	61.0
	Female	69	39.0
Age	Less than 20 years	18	10.2
	20–30 years	94	53.1
	31–40 years	42	23.7
	More than 40 years	23	13.0
Education level	Secondary/high school	35	19.8
Nationality	Undergraduate	86	48.6
	Postgraduate	56	31.6
	Russian	43	24.29
	English	15	8.47
	French	9	5.08
	German	21	11.86
	Egyptian	13	7.34
	Kazakhstani	6	3.39
	Armenian	15	8.47
	Norwegian	8	4.52
	Italian	6	3.39
	Turkish	4	2.26
	Belarusian	6	3.39
	Albanian	4	2.26
Brazilian	7	3.95	
Georgian	6	3.39	
Czech	5	2.82	
Ukrainian	5	2.82	
Argentinean	4	2.26	

Table 2 Means and standard deviations of the study's constructs

Construct	Mean	Std. deviation
Geotourist characteristics	3.89	0.964
Attitudes towards travel and environment	3.94	0.945
Cultural/heritage dimension	3.73	0.986
Motivation to take geotours	3.75	1.047
Subjective norms	3.77	0.997
Behavioural intention	3.85	0.976
Behaviour	3.87	0.932

Measurement, Structural Models and Hypotheses Testing

This section depicts the statistical analyses using structural equation modelling to validate the measurement model and to test the causal relationships (hypotheses) in the structural model.

The Measurement Model

According to Hox (2010), the measurement model measures the relationships between the indicators and their constructs. Table 1 includes 41 indicators measuring seven constructs. Statistics of Table 3 depict that Cronbach's alpha and composite reliability are greater than 0.7. AVEs are greater than 0.50, and SQRT AVEs are greater than correlations among constructs. These measures verify the validity and reliability of the measurement model.

The Structural Model

The structural model measures the causal relationships among constructs. Intention to take geotours is mediating the causal relationships between intention's antecedents and taking geotours (behaviour). Model fit and quality indices show a good model fit: $APC = 0.293$, $P < 0.001$, $ARS = 0.602$, $P < 0.001$, $AARS = 0.595$, $P < 0.001$, $AVIF = 1.833$, $AFVIF = 2.280$ and large Tenenhaus GoF = 0.665, which all falls within target values.

From Fig. 3, it is revealed that the intention of taking geotours is positively affected by five constructs. These five constructs are the following: tourist characteristics ($\beta_{TC \rightarrow IN} = 0.19$, $P < 0.01$) (H1), attitudes towards travel and taking geotours ($\beta_{ATT \rightarrow IN} = 0.13$, $P < 0.05$) (H2), cultural/heritage dimension ($\beta_{CH \rightarrow IN} = 0.18$, $P < 0.01$) (H3), motivation to take geotours ($\beta_{MO \rightarrow IN} = 0.22$, $P < 0.01$) (H4) and subjective norms ($\beta_{SN \rightarrow IN} = 0.24$, $P < .01$) (H5). These five dimensions explain 57% of the intention to take geotours ($R^2 = 0.57$). In addition, the intention of taking geotours is positively affecting the behaviour of taking geotours

($\beta_{SN \rightarrow IN} = 0.80$, $P < .01$) (H6). Sixty-four percent of variance in behaviour of taking geotours is explained by intention of going on geotour holidays ($R^2 = 0.64$).

To test the seventh hypothesis that intention is mediating the relationship between intention's antecedents and behaviour, five direct relationships between intention's antecedents and behaviour were measured. None out of the five relationships between intention's antecedents and behaviour of going on geotours were found significant leading to a conclusion of intention is fully mediating the relationships between behaviour of taking geotours and tourist characteristics, motivation, cultural/heritage dimension and subjective norms.

Conclusions

Discussion of Findings

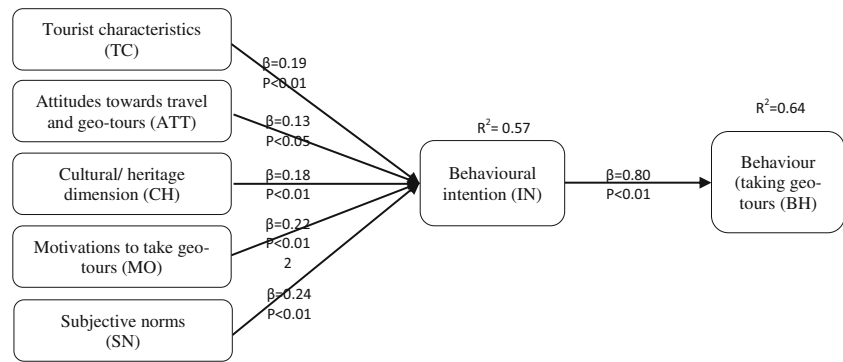
Due to the breakdown of international tourist arrivals after the revolution of January 2011, the Egyptian Ministry of Tourism has started to encourage non-traditional and new trends of tourism to replace the traditional leisure and cultural tourism breakdown. The historical and geological potential of Egypt has prepared it to be an attractive geotourism region, as observed by Abdel-Maksoud and Hussein (2016). Geotourism, as a new trend, attracts travellers with specific characteristics. These characteristics include their desire to learn about other cultures, enjoyment of adventurous outdoor travel with challenging risks and travelling to wilderness and remote areas. In addition, they are repeat visitors, young and middle age, mostly university students and others study geological studies. Therefore, this category of tourists should be motivated to visit Egypt. This study helps understanding the factors affecting tourists behavioural intention to take geotours. It adapts the theory of reasoned action and incorporating some new relevant constructs (i.e. geotourist characteristics, attitudes

Table 3 The measurement model

Constructs (reflective)	Loading	AVE	SQRT AVE	CA	CR
Geotourist characteristics (TC)					
I am interested in environmentally oriented travel	0.856	0.685	0.828	0.949	0.956
I enjoy primitive travel to wilderness areas	0.849				
I enjoy outdoor recreation	0.806				
I read or watch shows about nature and the environment	0.849				
I like visiting local art galleries or museums	0.799				
I like to visit authentic historic and archaeological sites	0.834				
I travel to experience people, lifestyles and cultures	0.846				
I prefer small-scale accommodations run by local people	0.787				
I buy organic food products	0.840				
I donate money to nature/environmental organizations	0.809				
Attitudes towards travel and environment (ATT)					
Taking holidays is important to me	0.629	0.568	0.684	0.873	0.897
I prefer to spend money on travel rather than on materials and goods	0.636				
I would travel more if I had more money	0.608				
Travel enhances the overall quality of my life	0.659				
I care about the environment when I make choices for holiday	0.689				
I think about how I can reduce environmental damage when I go on holiday	0.753				
I am very concerned about environmental issues	0.723				
I make decisions on travel companies based on their environmental policies	0.750				
I believe in managing the number of visitors at historic sites and monuments	0.698				
People must live in harmony with nature to survive	0.677				
Cultural/heritage dimension (CH)					
I prefer to eat in local restaurants	0.877	0.755	0.869	0.935	0.949
I like to attend community festivals and local celebrations	0.875				
I like to read books/magazines or watch movies about history and culture	0.866				
I like to visit historic sites and museums	0.894				
I like to attend performing art events	0.859				
I like to visit art museums/galleries	0.842				
Motivation to take geotours (MO): taking geotours					
Help me to refresh my mental and physical state	0.843	0.776	0.881	0.927	0.945
Enable me to explore new places	0.886				
Allow me to escape from the daily life routine	0.906				
Increase my knowledge	0.864				
Provide me with many social, cultural and recreational advantages	0.903				
Subjective norms (SN)					
My family and friends tell me to take geotours	0.914	0.836	0.914	0.902	0.939
People I am travelling with recommended geotours to me	0.922				
Most people who are important to me approve of my selection of geotours	0.907				
Behavioural intention (IN)					
I intend to take geotours next holidays	0.879	0.826	0.909	0.894	0.934
Geotours will be my first choice for my next holiday	0.917				
I plan to visit geosites in my next holidays	0.929				
Behaviour (BH)					
I will continue to visit geosites if the price of their services increased somewhat	0.878	0.798	0.893	0.916	0.940
I will recommend geotours to someone else	0.902				
I will visit the same geosites again in the next few years	0.902				
I will visit another geosite that offers a different type of experience	0.891				

AVEs average variance extracted, SQRT AVEs square root of AVEs, CA Cronbach’s alpha, CR composite reliability

Fig. 3 The structural model of going on geo-tours



towards environment and cultural heritage and motivations of taking geotours).

Starting with the distinguishing characteristics of geotourists and based on the results of this study, it is revealed that geotourists are mostly less than 30 years and are mostly university undergraduates. They are environmentally oriented travellers, interested in nature and local cultures (people life styles, art galleries and museums) and prefer staying in a small-scale accommodation. These characteristics have made this category of travellers unique tourists carefully selecting their destinations to fulfil their desires and needs. Understanding these characteristics helps to predict the behavioural intention of those travellers and facilitates the task of marketers to attract them to a country like Egypt owing adequate potentialities for this new trend, geotourism. Investigating travellers who visited Egypt, through this study, and identifying their characteristics have confirmed the characteristics revealed by previous studies (i.e. Allan et al. 2011; Benfield 2004; Robinson 2008; Stokes et al. 2003).

Linking the characteristics of geotourists to their attitudes, geotourists are interested in natural environment preservation, local cultures and adventurous tours; therefore, it is expected that they have positive attitudes towards geotours. They think that these tours are useful and help them learn new things and gain new experiences. They are environmentally oriented, and they care about the environment in their choices for holidays. Visiting historical attractions, learning about new cultures and living in harmony with nature enhance travellers' quality of life. Travellers having these characteristics and attitudes are more likely to have behavioural intentions towards taking geotours. These results are in line with extant studies by Kaltenborn, Nyahongo and Kideghesho (2011) who claim that geotourist attitudes towards environment make them strive for getting experience with the environment. Furthermore, having the belief of learning about other's history and culture may explain the positive attitudes towards taking geotours. Geotourists are interested in remote areas,

local restaurants and foods, community festivals and art galleries, and this leads to search and select tours that include such activities. According to Stokes, Cook and Drew (2003), geotours include such a variety of activities and travellers looking for these activities are mostly geotourists.

In addition to geotourists' characteristics, positive attitudes towards geotours and their beliefs in cultural/heritage activities, tourist motivations to take geotours improve the prediction of tourist behavioural intention to go on geotours. Motivations that pulling geotourists to travel to geosites are related to their attitudes and beliefs. Travelling to gain new experiences as a characteristic of geotourists links to their motivation of travel to explore new places. Using the word 'new' in exploring 'new' places and gaining 'new' experiences explains the push motivation of geotourists to travel to geosites and justifies the escape from daily-life routine to refresh mental and physical states. These findings of the study are concurrent with Yoon and Uysal (2005) who found that tourists are motivated to travel to relax, escape from routine and refresh the physical state. For those categories of geotourists who are interested in visiting and studying geosites, geotours provide and increase their knowledge and provide them with social and cultural advantages. This result is in line with the empirical findings of Allan (2012).

Add to motivations to take geotours, the recommendations of relatives, friends and colleagues (subjective norms) could affect the behavioural intention of geotourists to go on geoholidays. Word of mouth of person's trusted friends and colleagues have a positive impact on his decision and selection of geotours and destinations. According to the findings of this study, subjective norms have the greatest effect on the behavioural intention of geotourists. This refers to the importance of others' recommendations on the decision of travelling to a certain destination or selecting specific tours. According to psychologists, behavioural intentions have a significant positive effect on one's decision which will be translated into a behaviour. Having an intention to go on geotours adequately explains the behaviour of taking geotours.

To sum up, tourists with geoattributes, motivated to explore new places and learn about new cultures, travel to gain knowledge, have positive attitudes towards natural landscape and environmentally oriented could have a significant behavioural intention to travel to geosites. This trend is an alternative form of tourism that could replace the traditional patterns of tourism activities and help countries, such as Egypt, to recall for tourists to visit its attractions and enjoy their geoplaces.

Implications

Responding to the claim that the generalizability of published research on geotourism is problematic where it is carried on a small number of areas and the literature that relates to geotourism in the Middle East countries is still minimal, this study partially fulfils these gaps and provides an empirical evidence to the extant studies. Theoretically, this study incorporates three new constructs into the theory of reasoned action to help predict the behavioural intention of taking geotours. Geotourist characteristics, attitudes towards environment and cultural heritage and motivation to go on geotours have added a significant effect on predicting the intention of taking geotours. Thus, this study has a significant theoretical contribution to the knowledge.

As for practice implications, this study has two-fold contributions, implications to officials and policymakers of tourism in addition to some managerial implications. As for policymakers, this study pays their attention to a new pattern of tourism activities that should be encouraged to replace the traditional patterns that are very sensitive to the political stability circumstances. The study is clearly explaining that there is a category of tourists interested in geotours. The Egyptian country has a wide variety of attractions that can support this type of activities. Responding to the call of the Egyptian Ministry of Tourism of the urgent need to develop new untraditional patterns of tourism, policymakers and officials could use the findings of this study. They would use the findings to draw up a strategy to develop this pattern of tourism, encourage tour operators and travel agents to design geotour packages and gradually involve 1 or 2 days of a geotour to existing traditional holiday packages. Another role of the policymakers in the ministry is to build a marketing strategy to market this pattern of tours and create a cluster of stakeholders to develop this pattern and study the tourists' needs in depth.

Moving to managerial implications, this refers to tour operator and travel agent managers. Those managers have a responsibility towards developing this pattern of tours, geotours. To encourage international arrivals, tour operators and travel agents have to introduce new holiday packages of geotours and market it in travel market, in addition to providing the appropriate infrastructure by the support of policymakers and official bodies responsible for tourism. They could benefit from

the characteristics of geotourists revealed in this study, reinforce their attitudes and activate their motivations in order to create a niche market for this pattern of tourism in a country that has many geopotentialities to build upon such holiday packages.

Limitation and Future Research

Like any other studies, this study has a number of limitations: the literature review relevant to geotourism is limited; statistics of geotours and tourists in Egypt are lacking; the methodological limitation of employing a quantitative method only to predict the behavioural intention of geotourists; and the claim that Egypt is potentially a major area for geotourism because of its various geological sites and features, despite Egypt not being branded as a geotourism destination due to lack of promotional efforts to disseminate the geological attractions of Egypt to international tourists. Future research venues, therefore, should include comparing Egypt with other Middle East countries and employing the qualitative approach to study the perceptions of geotours and the plans of policymakers to develop this pattern of tourism.

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