# Mobile Application for Tourism: The Case of Egypt

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### ABSTRACT

The current study developed a proposed mobile app for tourism companies in Egypt and tested its usability. A survey from a group of 53 respondents was conducted based on the mobile app features which were developed by tourists. The proposed mobile app was then tested by using usability measurement framework which was used to test the usability of the app interface and to ensure that this app meets user requirements. Three main usability metrics were employed in this study: effectiveness, efficiency, and satisfaction. This study contributes to the current mobile tourism and mobile apps literature and offers useful information for ministry of tourism, software companies, mobile application developers, and, of course, mobile device users in addition to entrepreneurs, policy makers, practitioners, researchers, and educators through providing a clearer view and deep understanding for the issues related to the adoption of a tourism-related new mobile phone application in Egypt.

### **KEYWORDS**

E-Tourism, Egypt, Mobile Apps, Mobile Tourism, Tourism, Usability Testing

### **1. INTRODUCTION**

Tourism sector is among the first adopters of all novelties developed by ICT and mobile technology industry, thus customers' needs were always the main determinant to updating touristic service offers. Tourism sector moved from the traditional offline environment to the digital environment in terms of e-tourism and subsequently in mobile-tourism, according to history of tourism industry delineates the gradual progress made by touristic entities.

The field of tourism has been greatly influenced by the internet, which has led to the emergence of new trends in the pursuit for e-tourism (Neidhardt, Rümmele, & Werthner, 2017). Tourism industry has continuously experienced fast and huge transformations due to the emergence of mobile technologies and ICT industry. This transformation has changed tourists' consumption behavior in relation to their access and usage of information specific to this sector. The reconfiguration distribution service and product of tourism, in terms of their transformation to the mobile environment was imposed by the increased mobility of tourists who used technology and mobile devices.

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Tourism has a significant impact on the Egyptian economy, where it represents 13 percent of GDP. There is a strong linkage between tourism and other local economic business opportunities for people especially in cities that are close to tourist sites, which will ultimately have a positive influence on tourism activities. In addition, the local economy could develop more opportunities for local tourism companies and benefit from the tourist's demand for goods and services, to help provide the best tourism facilities.

However, after the 2011 revolution, the statistics showed that the number of tourists decreased significantly by 37 percent to reach "9 million" tourist, compared to the number of tourists in 2010 which was 14 million tourist (Hanaa A. Fayed, 2013). The political and economic disturbance that followed the revolution had a negative impact on all fields of Egyptian economy, especially tourism and related fields such as local travel and flight transportation (Hanaa A. Fayed, 2013).

Information and Communication Technologies (ICT) has now converted tourism to another level of global domain, as ICT has a great impact on changing not only business practices, but also the structure of the tourism industry (Porter, 2001). There has been a noticeable change where the ICT field has placed particular emphasis on the creation and expansion of services and tools which facilitates interaction between market participants at a global standard. Not only the number of tourists who use technology to plan and document their own trips via the internet all over the world has increased but also influenced by the search engine enhancements, the transportation amplitudes and the rapidity of the networks (Condratov, 2013).

While most common and influential type of tourism in Egypt is cultural (Mokhlis, 2009), different needs of tourists needs to be fulfilled in their travel such as booking flights, arranging journeys, hotels, restaurants, transportation...etc.;, therefore, an emerging e-commerce type of tourism which is called e-tourism could be of a big help.

Every year the number of hours spent on the internet continues to increase according to the 2019 Mary Meeker report, however the difference between desktop and mobile is becoming more perspicuous. In 2018, studies proved that the Americans spent 3.6 hours per day on mobile with an increase by 12 times more than a decade prior and spent 2 hours per day on a desktop or laptop. In 2020, E-marketer predicted increasing in hours of using mobile internet to reach about 4 hours per day and increasing by 88% in the time spent in mobile apps, rather than a browser. This reflects the importance of not only optimizing the companies' mobile websites but creating custom responsive apps as well.

The development of mobile applications has been growing for more than half a decade, ever since the first appearance of the very first app store in July 2008. It broadens the meaning of tourism business, where consumers have now the opportunity to share their experiences in real-time with family, friends and colleagues. This can create an environment where application users can get new ideas from other users as there is shared experience.

Mobile apps should be easy to use by target users, therefore, software usability testing is a key methodology tool to ensure that the application is meeting user requirements and easy. Usability testing is one of the important factors for companies as testing the developments of the product are often essential to the success of that product. However, as companies are improving multi cross-platform web and mobile apps, the usability testing of the traditional single-platform lacks guaranteeing a regular user experience. Nevertheless, usability testing in this research is conducted by selecting a group of individuals using the mobile application according to specific criteria and comparing the results with the basic objectives of the application taking into account user feedback during the test (Black, Spring 2015).

Therefore, the objective of the current study is to propose a mobile phone application with variant functions and then test it in terms of usability factors in order to enhance the role of e-tourism and help local and foreign tourists and travel agencies in Egypt.

#### 2. LITERATURE REVIEW

The present study is focusing on Egypt as it has always been tourists' attraction destination for at least more than one decade as River Nile, the pyramids, the culture and monuments were key

factors in attracting tourists from all over the world (Daher, 2007). The potential tourism in Egypt is prominent (Gray, 2000) due to the fact that it contains one third of the world monuments and also the pyramids of Giza as well as the countless sites of ancient Egypt along the Nile River, the deserts and the Sinai Peninsula (Gray, 2000). Not only does Egypt have amazing shores but also moderate climate throughout the year. Red Sea is one of the greatest scuba-diving sites in the world. When all those features combine together with a skilled, inexpensive labor force so it is not astonishing that the Egyptian government perceives tourism as an area of almost unlimited potential (Ibrahim, 2009). Therefore, the literature review section will discuss tourism in Egypt, types of tourism in Egypt, the role of ICT in tourism, tourism & mobile apps and mobile apps usability.

## 2.1 Tourism in Egypt

Tourism greatly contributes to Egyptian economy as it introduces a variety of new job opportunities, and generates foreign exchange income. Tourism can be a portal through which people around the world can share concepts and information while understanding each other. That's why tourism is not only important for individuals but also for the country itself. Therefore, it provides an opportunity to understand different communities, cultures, traditions, foods and lifestyles in different countries all over the world. Tourism not only helps in generating the income but also helps to preserve the economic stabilization in any country. Tourism assists in providing people with new careers whether directly or indirectly. An example for direct beneficiary are people who work in the tourism industry while indirect beneficiaries are people who work in other fields such as agriculture, airlines, hospitals and hotels...etc. (Rýznarová, 2016). Tourism is an intermediary of helping to generate a reciprocal relationship between cities and helps bring people from different countries close to each other and interact in close proximity. Tourism also helps to establish market demand that allows local products to earn market access and increase publicity (Archer, 1995; Laws, 1995).

One of the main targets of the Egyptian government is to support the tourism sector in order to increase domestic growth rates. This could be accomplished by taking the following procedures into consideration: reinforcing the local companies to preserve Egypt's share of the main markets, supporting low cost airlines, and helping raising awareness of recent tourist discoveries in countries with high population growth rate as China in the coming years.

Moreover, the government should strive to organize with the Central Bank of Egypt to supply credit to finance small and medium sized projects and to allow various funding resources to banks (Essays, 2013).

## 2.2 Types of Tourism in Egypt

Egypt has a lot of various fields of tourism attraction, one of the oldest types of tourism in Egypt are cultural or archeological tourism. The proposed Mobile app in the present study covered all types of tourism in Egypt and this section will briefly illustrate the different types of tourism as follows:

 Religious Tourism: Although religious tourism is growing worldwide, our understanding of the motives, interests and needs of tourists is limited (Hughes et al, 2013). At the same time, religious tourism is still an under-studied area in tourism research (Kartalet al,2015) and scholarly research has barely touched the relationship between religion and tourism (Collins-Kreiner & Wall, 2015). Due to the high sensitivity of the subject, religious tourism has not been fully exploited which resulted in the lack of scientific data and its overwhelming domestic nature in most countries (Religious tourism in Asia and the Pacific, 2011).

However, the link between religion and tourists' behavior has been recognized theoretically. Few studies showed the impact of religion on behavior and purchasing decisions (Battour et al,2017). Moreover, a range of researchers have investigated religion's impact on habits, attitudes, people's values, and behavior. Since religious tourism have an effect on tourist behavior so, religion may have

an influence on the choice of destination, tourists' favorite products and the selection of religious events (Weidenfeld & Ron, 2008).

- 2. **Medical Tourism:** The Egyptian Ministry of Tourism recorded a lot of visits from some countries in the African continent such as Libya, Sudan and Yemen. Egypt was also a target destination of the Gulf market and the Arab World for health tourism during 50"s till 80"s, this is due to the presence of highly skilled doctors and practitioners in addition to springs and hot springs with mineral and sulfur water, which vary in depth, capacity and temperature. The spring water contains several mineral salts and some therapeutic minerals such as sodium carbonate, magnesium and iron. While the dry climate and moderation of temperature and humidity, sand and mud, which are suitable for healing from diseases such as rheumatic diseases, skin diseases, bone diseases, gastrointestinal tract, respiratory system are major medical attractions. This therapeutic tourism could be found in different locations such as are Helwan, Ain Sira, Ain Sokhna, Hurghada, Fayoum, Oases of the Western Desert, Wadi Natroun, Aswan, Safaga and Sinai (Service, 2009c).
- 3. **Recreational Tourism:** Recreational Tourism is the oldest type of tourism which provides the tourists with comfort and relaxation. Recreational tourism is defined as the pursuit of leisure activities during one's spare time such as golfing, sport fishing and rock climbing. Therefore, it has a major share of the international tourism market. Marketing tourism through recreation provides a rich resource of tourism industry for countries having the main constituents of this type of tourism which results in more revenues for such countries (Hala Al-Saby, 2011). Recreational tourism attracts a large number of tourists from all over the world, given Egypt's unique coastline of more than 3,000 km, which tourists spend their vacation in what is known as beach tourism. Sharm El-Sheikh, Dahab, Nuweibaa, Taba, South Sinai, Hurghada, Safaga, Marsa Alam, Red Sea and Ein Sukhna are known for their clean water, colorful coral reefs, rare fish, and the practice of diving and snorkeling. The city of El Alamein, in the northern coastal area overlooking the Mediterranean Sea, also stands out as a promising tourist destination for its numerous tourist villages along the sea coast. Nile cruises and evening cruises also attract a significant number of tourists. In addition to several Nile ships and floating hotels across the Nile River from Cairo to Luxor and Aswan, and vice versa, through all Upper Egypt cities overlooking the river.(Authority, 2016; Service, 2016).
- 4. Adventure Tourism: Can be defined as the movement of the people from one to another place outside their comfort zone for exploration or travel to remote areas. In Egypt, South Sinai has a variety of desert lands, which are full of magnificent mountain ranges of different colors and shapes. There are also many magnificent oases that spread throughout the mountains like the Firan and Malah Oasis. They also have rare medicinal plants such as herbs, some wild animals and areas for racing cars and bicycles. Adventure activities may include camping in the White Desert and diving at the coasts to discover underwater treasures. Tourists can go to German submarine and Napoleonic era warship wreck dives, coral reef diving in the Red Sea or explore underwater ruins in the Mediterranean sea.
- 5. Cultural/Archeological Tourism: Cultural tourism in Egypt is one of the most important types of tourism because of the existence of Egyptian, Pharaonic, Greek and Roman monuments. This helped different counties all over the world to open museums that contributed to the emergence of Egyptian museums of international standing, and enticed archaeological and nomadic missions to come to Egypt without interruption, international authors were fascinated by Egypt which inspired them to write about cultural monuments in hundreds of books by different languages (Service, 2009a).
- 6. **Eco-Tourism:** Environmental tourism is a promising emerging market as a global specialized industry whose revenues are estimated at billions of dollars as direct expenditure, unlike other indirect benefits and jobs offered by that huge market. Eco-Tourism is catering for tourists wishing to experience the natural environment without damaging it or disturbing its habitats

which includes responsible travel to natural areas. This type of tourism is unique because of its positive results of sustainable development to protect the environment and natural resources and the economic and social benefits they provide to the local population. A number of local Egyptian NGOs have contributed to raising the awareness of environmental issues and training tourism workers in ways they can preserve the natural capital on which their jobs depend (Ministry of State for Environmental Affairs, 2005).

7. **Heritage Tourism:** Heritage tourism or diaspora tourism or cultural heritage tourism consider a branch of tourism oriented towards the cultural heritage of the location where tourism is occurring. Heritage tourism is traveling to experience the places, artifacts and activities that authentically represent the stories and people of the past definition by the National Trust for Historic Preservation in the United States. Also, heritage tourism includes cultural, historic and natural resources (Preservation, 2017).

Recently, the trend towards this tourism has begun and one of the most prominent projects is Hilali Network, which aimed at documenting heritage. The Hilali Network merged current reform in Egyptian higher education as a vehicle for local community-led digital preservation and protection of Intangible Cultural Heritage (ICH). The Al-Sirah Al-Hilaliya (the 'Hilali') is an example of a major living oral epic, protected in Egypt as part of its adoption of the Convention of the Safeguarding of The Intangible Cultural Heritage (UNESCO) (Hilali Network, 2017).

- 8. **Culinary Tourism:** It is defined as dedicated food tours and experiences which is popular among chefs and food enthusiasts. Egypt has different types of food. The Egyptian cuisine is mixed with the charm of Middle Eastern and North African cuisine, as well as the quotations from different civilizations, for example Greece and France, which reflected their impact on Egyptian cuisine. Also due to the different nature of the environment in the cities of Egypt the diversity of cuisine there are coastal cities characterized by seafood and desert cities and Nubian cities such as Aswan (Service, 2009d).
- 9. **Sports Tourism:** Sports tourism is an important type of tourism in Egypt where there are a strong infrastructure in many sports such as football, handball, volleyball, squash, equestrian, golf, marine sports, fishing and bowling. Egypt had hosted several sports events such as the African Cup of Nations in 1959, 1974, 1986 and 2006, and also hosted the African Handball Championship for men five times. Egypt won the World Handball Championship for men in 2021 and organized the African Nations Volleyball Championship in 2015 and was named the organizer of the FIFA Women's Under-23 World Volleyball Championships in 2017. Egypt has been organizing the Egypt Marathon and the Pharaohs Rally Race, the International Al-Ahram Squash Championship and the World Squash Championship for the first time in December 2015 (Service, 2009d).
- 10. **Festivals Tourism:** Egypt organized a number of festivals which attracted local and international tourists. Those festivals contributed to tourism promotion, diversification of tourist attractions, promotion of shopping activities and sponsorship of artistic events. There are several festivals including Tourism and Shopping Festival, World Tourism Day Festival, Sun perpendicular festival at Abu Simbel Temple, the annual celebration of the tomb of Tutankhamun in Luxor, Cairo International Festival of Folklore, Cairo International Film Festival, Alexandria International Film Festival, International Festival of Documentary Films, Ismailia Festival of Folk Art, Cairo Festival International Experimental Theater, Cairo Arab Media Festival, the Festival and the fulfillment of the Nile, the International Festival of fishing in Port Said, the International Equestrian Festival (Service, 2009b).
- 11. **Conference Tourism:** Conferences and exhibitions tourism represented an important catogory of tourist in Egypt. Egypt has a unique geographic location and political status, which enabled it in the political, economic, cultural, medical and professional fields to host several international

conferences annually. The Egyptian General Organization for Exhibitions and Conferences is the formal organizer of conferences and exhibitions in Egypt Most of the conferences were held in Cairo, Alexandria, Sharm El-Sheikh, Hurghada and Ismailia. Those cities have international conference centers with technological capabilities and modern equipment's of audio and interpretation equipment's in various languages, making them a desirable destination by the organizers of international conferences. Egypt has succeeded in organizing several successful international conferences such as the Conference on Supporting and Developing the Egyptian Economy, the Cairo International Book Fair and the hosting of several international conferences, including the first international tourism bourse on behalf of the Mediterranean Stock Exchange, the First International Conference of Business Women (Service, 2015).

### 2.3 The Role of ICT in Tourism (E-Tourism)

Tourism development becomes crucial through an efficient and high-speed ICT infrastructure and software applications in the tourism and hospitality industry. ICTs allow supply chain management and customer management relations to be combined into a single source that facilitates a variety of operations - product selection, fulfillment, ordering, payment, tracking and reporting to be performed with one easy-to use tool(Alireza Farkhondehzadeh, 2013). Finally, ICTs cut costs by enabling the provider to be in direct contact with the consumer and also impact employment through the need for required maintenance of ICT equipment.

Management within tourism companies uses ICTs to undertake a range of tasks that enhance the efficiency of employees in the workplace, especially online reservations. ICT development has also led to changes in demand and supply. With increased ICT use demand becomes higher for flexible, individualized options and the quality of information has personalized leisure and tourism behavior. Through new technology and social and economic assessments (e.g., social media platforms like Facebook, Twitter, and blogs) customers have the ability to share information and research assessments on destination, quality of service in hotels and restaurants and environmental and social conditions (Bethapudi, 2013).

ICT plays a significant role in the tourism industry that cannot be disregarded and it is a crucial driving force in the current information driven society. Business transactions in the industry by networking with trading partners, distribution of product services and providing information to consumers across the globe become more facilitated because of the spread of ICT tools (Elisabete Paulo Morais, 2013). On the other side, consumers are also using the internet to plan their trip and obtain information and travel. Information is the key element in the tourism industry (Aleksander Groth, 2015 November 27). Almost all aspects of tourism and industry are dominated by ICT. For example, we rely on it from scratch at the same time with identifying and developing tourism sites and destinations itself. Tourism industry has not been an exception in benefit by advantages of the use of Geospatial Information Technologies in recent years around the world for a variety of purposes is popularly known. It can be used by tourist professionals to determine the boundaries of the proposed tourist site as well as the surrounding areas and communities living in it. It can also obtain information on the methods linking the sites and the availability of other utilities such as water, power, market and so on (Elisabete Paulo Morais, 2013).

### 2.4 Tourism and Mobile Apps

ICT have been playing a major role within tourism (e-Tourism), both within the experience of travelers as well as within the tourism industry at large (Cantoni & Saldaña, 2016).

Researchers in field of the e-Tourism concentrate and recognize the significance of the technology of the mobile and fundamentally concentrate on four noticeable fields:

• Orientation of mobile technology (Kawase, Kurata, & Yabe, 2013)

- Orientation of system (Garcia, Torre, & Linaza, 2013)
- Orientation of business (Kasahara, Mori, Mukunoki, & Minoh, 2013)
- Orientation of user

Mobile tourism service appeared with the entry of the Internet in mobile (Schmidt-Belz, Nick, Poslad, & Zipf, 2003). Advanced mobiles provide higher bandwidth with 3G and 4G networks and precise positioning technology as GPS, Assisted GPS, and Triangulation. Some researchers use this application for tracking tourist locations and determine the most entertainment places (Anne Hardy, 2017), a good number of exciting users for this application such as Google Places. Malaysia, the most prominent country is concentrated in scientific research on Islamic tourism. Countries started work in advance to activate the idea of tourism through the programs of the mobile. Nowadays research focuses on e-tourism through Social Media by tracking tourist photo and position share and analysis text to gather data (Kapoor et al., 2018). Towards cross-domain data analytics in tourism using linked data based approach is the most important research because it is gathering between open data concept and tourism domain (Sabou, Onder, Brasoveanu, & Scharl, 2016).

The mobile phones are considered as an effective and easy tool to search for information as reserving transportation, accommodation, dining, transactions that you need during trips and travel plans (Aleksander Groth, 2015 November 27). Research in the tourism field for the use of smartphone has generally revolved around (1) Specific applications for mobile phones have been developed (Rasinger, Fuchs, Beer, & Höpken, 2009) (2) Smartphones have been accepted and adopted as an information communication tool (Eriksson & Strandvik, 2009) (3) The impact of smartphone usage in tourists travel experience in different aspects (Kramer, Modsching, ten Hagen, & Gretzel, 2007) In addition to that the interaction between the user and both the hypothetical and materialistic world is enabled by the tourist's smartphone regardless to any consideration for existing location of use (Kramer et al, 2007). That includes the literature of human–computer interaction and tourism information systems and services so the concentration has been laid on (1) recommendation mobile app system (Ricci, 2011), (2) navigation systems (Haid, Kiechle, Göll, & Soutschek, 2008), (3) location-based systems and naturally (Kaasinen, 2005), (4) diversification of the layout of portions and its effects within mobile tour guides.

Smartphones have a significance role for tourists during the whole touristic experience not only during the trip itself, therefore, smartphones works on changing the tourist's travel activities based on three stages of a trip: before traveling plan, midway activities, and after-traveling activities(Dan, Xiang, & Fesenmaier, 2014), The ease of use was improved by respondents when practicing their smartphone for planning activities, as well as the most appropriate solution when searching for tourism information at the destination, which leads to increase flexibility during the actual trip. When asked to justify using their smartphones, the observed response and ease of use were the highest response.

When using the smartphone three behavioral patterns are characterized: (1) Seeking for information as finding facts, collecting and searching for information, (2) supporting action as in-themoment or during planning the trip, (3) exchanging information as trip transactions and communication ways (Melanie Kellar, 2007). These common behavioral ethics match the tourism context through (1) searching for information such as restaurants, hotels, transactions (2) simplification such as navigation during trip, checking for the weather (3) Communicate (phone calls, Search in websites, sign into Facebook). Moreover, entertainment context for example taking and sharing photos with the community, playing games, listening to music is added, even though this context may be only referred less towards mobile tourism information search, but referred more towards a search for amusement or killing time (Dan et al., 2014).

### 2.5 Mobile Apps Usability

Usability testing focused on how well users can learn and use a product to be satisfied. Usability was defined as a qualitative attribute in order to assess the ease of use of system interfaces (Nielsen, 2012).

Usability was also referred to as methods for enhancing ease-of-use during the design process phase. Furthermore, 'Usability' could be defined through five components strongly contributing to overall product quality: learnability, efficiency, memorability, errors, satisfaction, and utility(Aleksander Groth, 2015 November 27).

Usability could be defined by the following 6 quality components:

- Learnability: User easily to learn applications and navigate through features.
- Effectiveness: The application covers all user needs.
- **Memorability:** Users can easily remember an application after a period and not learn it from scratch.
- Satisfaction: Users feel comfortable and positive towards using the application.
- Errors: The application should contain low numbers of errors and users can skip errors easily through tests.
- Utility: Refers to a design's functionality and investigates whether the system actually is fulfilling a user's needs.

After reviewing the previous literature about the usability model, several studies addressed the usability attributes such as Nielsen who stated five attributes of usability: Efficiency, Satisfaction, Learnability, Memorability and Errors. While International Organization of Standardization (ISO 98) stated only three attributes Effectiveness, Efficiency and Satisfaction. Harrison (2013) presented the recent model PACMAD which had the capability of testing mobile applications in which he combined the attributes from Nielsen's point of view and ISO (Mathur, Feb, 2019).

A Usability test could be looked at through two prospective; the first is the way that allows users to evaluate products or systems. The second is by conducting tests through gathering samples from different users and observing their performance, how the design is easy for use and how the tasks were complete, these tests were conducted from the first version of mobile app development until the final release of the app (Henstam, March 6, 2018).

Nielsen, Lewis and Virzi proved that 80% of usability problems were discovered by a sample of five users. This result was concluded after conducting several usability tests for different samples of different numbers of users (Alroobaea & Mayhew, 2014).

A study by Henstam,2018 concluded that the number of participants needed to find 85% of the usability test problems were between 8-10 participants.

### 3. CURRENT TOURISM MOBILE APPLICATIONS IN EGYPT

The E-Tourism concept was applied in some countries and has been of great success especially in the online travel reservations and there are some research discussions about e-tourism in countries such as Malaysia (Ibrahim Mohamed, 2011), Korea (Kim, 2004), Austria and Japan (Tanaka, 2011). Through searching, didn't notice any application for tourism on mobile phones talking about tourism types in Egypt, or contains historical data of sites but what has been found are some applications talking about photo of Ancient ruins (for example: Egypt Guide, Egypt tourist map, ...etc.) and some web sites (for example: Wikipedia, Ask Aladdin, ...etc.) have information about tourist places but no source gathered all data about types of tourism in Egypt.

At the beginning of 2019 some websites developed to support in Egypt on top of these websites "Ask Aladdin". This website adds some features like attractive pictures and videos about sites, best trips in Egypt and provides a guide service allowing tourists to ask about anything and the website will reply in chat or messages.

Nowadays, the most important feature in any mobile application is ease of use. After reviewing users' comments on current tourism applications, it has been found that most of them lack ease of

use. On the other hand, any of the current tourism applications did not contain tourism in Egypt as general due to multiple, breadth and depth of historical information. For example, "Egypt Guide" application contains pictures for some tourist sites. "Egypt tourist map" application contains maps for tourist sites in Egypt. "Visit Egypt" this application takes into consideration planning trips but missing categories tourist sites and suggest places to visit not based on users' favorites. The best application between current tourism applications is "Egypt Travel Guide" this application categorizes tourist sites based on Egypt cities and contains information about directions and weather but the application storage space is too large and has been found in users' reviews that maps are not correct and this application needs to be more flexible.

Based on the above mentioned about current tourism applications, it has been talking about some features into this applications, so research will be started with tourism types in Egypt and categorizes places based on this types for example Egypt has Religious Tourism divided into three types of tourism: Islamic tourism, Christian tourism and Jewish tourism each one of them contains tourist sites and a rich history. It should also put these sites locations by using maps, weather in these sites, available transportation, restaurants and allow users to make review and rate sites based on suggested sites on planning a trip. As much as possible this application will be made to support multi languages.

### 4. METHODOLOGY AND RESULTS

The first step in the proposed application was the data collection phase. The current study is based on the mixed methodology which means the combination of quantitative (e.g., experiments, surveys) and qualitative (e.g., focus groups, interviews) methods. The mixed methodology provides the justified correlations between variables and deep comprehension of the research phenomenon. Primary data which is necessary for the investigation was collected through the survey and interviews.

Inductive approach was used in this study to ensure that the frequent, dominant, or significant themes inherent in raw data arise the result in research without methodologies restrictions (Thomas, 2006). Data collection in the inductive approach was used to explore a phenomenon, identify themes and patterns and create a conceptual framework but if the present study had been aimed at testing ground hypothesis, research could have employed a deductive approach. However, the results of the interviews and the survey were used for providing better understanding of the phenomenon of tourist apps in the modern tourist industry.

In accordance with the classification designed by Saunders, Lewis, and Thornhill (2012), this study could be identified as an exploratory research. In other words, the study focused on several research problems in order to understand and explain the phenomenon of tourist apps in the tourist industry: the usage of apps in modern tourism, the spheres of tourist experience in which tourist apps are sought-after, and the significance of upgrading tourist experience by using tourist apps.

The survey questions were designed in order to achieve the following research objectives:

- To determine the features in which tourists would prefer in the mobile app.
- To observe how effective the mobile app in Egypt.
- To analyze profound aspects of tourists' attitude toward mobile app.

Overall, this survey is built with closed-ended questions because it includes a digital list of questions that a tourist can answer individually. The survey was built up with a total of twelve questions. The main questions were centered on subjects of what features the tourists would prefer to be included in the mobile app to facilitate their tour in Egypt, which language the tourist prefers the app with. The sample of survey is composed of 53 respondents that target not only Egyptian but also foreigners due to the differences in their cultures, technology and the way of thinking all of these factors have a great effect on the results of the survey. For example, there are some samples that prefer tours individually rather than tour guides. Also we took in consideration age categories

#### Table 1. Survey questions

1. Your age is: 2. Are you male or female?
3. Nationality?
4. Where do you currently live (city, country)?
5. What are your main interests in selecting a destination?
6. What are the most challenging problems that you face when choosing a destination?
7. Do you prefer to use tourist guide services or tour independently?
8. Which of the following devices do you own?
9. How likely would this app be for you if it was available on your device?
10. What kind of information would you need to facilitate your visit to any tourist destination?
11. Which language do you prefer for apps?
12. In your opinion, what are the services that should be available in the mobile application?

(ages less than 24 to over 55 years old) and the interest of each person that differed from the other in his tourist destination (e.g., Culture, Nature, Adventure, Religion...etc.). The last question was built as an open-ended question to gather any additional suggestions would the tourists prefer in the app.

### 4.1 Survey Results

Figure 1 shows the groups of respondents according to their age. Out of 53 respondents, the largest category is in the age group of less than 24 years old with 90%, the reason for this large percent is the effect of social media and technology on youth that's why targeted this category. The second largest group with 22.5% was the age group that ranges between 24 and 39 years old. The third group was between 40 and 55 years old accounts for 7.5% of the participants followed by the last group of participants over 55 years old at 12.5%.

Table 2, 3 and 4 illustrates the gender of the tourists. The sample included 42 female respondent representing 79% and 11 male respondent represent 21% from 10 different nationalities. Table 2 shows that 27 respondent were from Egypt with 51%, 10 respondents with 19% of the tourists were from Denmark. Tourists from China who live in Alexandria were 4 respondents with 7%, followed by tourists from England and Germany (3 respondents, 6%) and finally one tourist from the USA, France, Switzerland, Czech REP, and New Zealand were included as well. The total percentage of all foreigners represent 49%.



#### Figure 1. What is tour age?

#### Table 2. Are you male or female?

Gender		
Male	21%	
Female	79%	

#### Table 3. Nationality

Nationality		
Egyptian	51%	
Foreign	49%	

#### Table 4. The statistics of foreigners' participants

Nationality	Number of survey	Percentage	City, Country
German	3	6%	Stuttgart Germany
French	1	1%	Paris, France
American	2	2%	Atlanta, USA
Chinese	4	7%	Alexandria, Egypt
British	3	6%	London, England
Swiss	1	1%	Switzerland
Czech	1	1%	Czech REP. /Brno
New Zealand	1	1%	wellington, new Zealand
Danish	10	19%	Copenhagen, Denmark
Egyptian	27	51%	Alexandria, Egypt

Figure 2 illustrates the destination that tourists were interested in. The survey results showed that all types of tourism were relatively close, which could indicate that all types of tourism were of interest for the tourists, therefore those should be taken into consideration when developing the app. The survey indicated 10 types of tourism in Egypt namely; Culture 21%, Nature 17%, Adventure 15%, Food and drink 13%, Heritage life 8%, Rest 7%, Festivals and conferences have the same percent as Sport and Religion 5% and Health 4%.

#### Figure 2. What is your favorite type of tourism when selecting a tourist destination?



Figure 3 illustrates some of the most common challenges which faced the tourists. Most of the problems were in tourist destinations high prices 85%, which is considered the main problem that faced not only the foreigner tourists but also the Egyptian tourists. Other problems varied between foreigners and Egyptian tourist in terms of the quality of the service, reliability and language difficulties.

Figure 4 shows how the tourist would like to do his tour with a tour guide or tour individually. The majority of Egyptian and foreign respondents were relatively similar in their preferences, as most of the respondents chose to tour individually 85% while On the other hand, approximately 15% of respondents preferred to tour with a tour guide. Therefore, the proposed mobile app will take these results into consideration when developing the app which could help tourists to plan their own trips by themselves and/ or facilitate the way for them to communicate with a private tour guide.

Figure 5 shows different types of hand-held devices that tourists may use in order to further explore the type of software and/or operating system that could be utilized in the proposed mobile app. Most of the respondents were restricted to three systems which were Android Phone 43%, iPhone 39% and iPad 10%. The percentage of the remaining different devices was very small or almost nonexistent such as iPod touch 5%, Windows phone 3% and Symbian phone 0%. Those results will be used as a guide in developing a cross-platform feature – for the proposed mobile app- for the first three main devices namely; Android, iPad and iPhone.

Figure 6 shows the extent to which the respondents are interested in the application. Overall, the statistics shows that over 85% of participants found the idea of the mobile app appealing to them. On the other hand, 1% of the respondents did not find the app appealing at all. Out of the 85% which found the app very appealing, 2% of respondents indicated that a similar app already available in their devices, where only 3% of respondents found the app slightly appealing to them.

Figure 7 shows some of the main types of information and functions the tourists might look for during their trips/ tour. The survey included almost all possible type of information such as; History of tourist sites, Weather, Transportations, Restaurants and shops, Photos of the site and how to plan the trip. The results shows some similarities between Egyptians and foreigners in terms of some



Figure 3. What are the most challenging problems that you face when choosing a destination?

Figure 4. Do you prefer to use tourist guide services or tour independently?





#### Figure 5. Which of the following devices do you own?

Figure 6. To what extent do you think this mobile app would be appealing to you if it was available on your device?



Figure 7. What kind of information/ functions would you possibly need in the app to facilitate your visit/tour to any tourist destination?



functions such as transportations and planning the trip, however, there were some differences in other types of needed information between foreigners and Egyptians such as History of tourist sites, Weather, Restaurants, shops and photos of the site.

Figure 8 illustrates the language of the proposed mobile app which is preferred by the participants. The majority of the respondents 85% chose to have the app in English language even though most of them were non-native English speakers. Approximately 15% of the respondents preferred to have the app in their native languages. Therefore, the proposed mobile app will develop the option of multi-languages to be included in the app.

The last question in the survey was in your opinion, what are the functions which you prefer in any tourist mobile app? This open-ended question was developed to gather any additional information and suggestions the tourists may prefer in the app. However, the answer to this question was left blank in all the questionnaires.

### 5. SYSTEM PROTOTYPE DESIGN AND DEVELOPMENT

The present study aimed at designing and developing a mobile application for tourism in Egypt, and then conducting a usability test to identify the main usability problems and how they vary among adopters and non-adopter's groups.

In order to generate a system prototype, firstly a framework which supported cross platform to be able to develop a suitable user interface was identified. The present study used web app framework which includes the following functions: Angular and Ionic as a development language, Html5, CSS, and JS as a client-side language for user interface and run the code by using Apache Cordova. The web app also executes and support the following platforms IOS, Android, and Windows application.

The following were the proposed mobile app features:

- 1. The app supported cross platform.
- 2. The app supported multiple languages.
- 3. The app allowed users search in terms of type of tourism, Egyptian cites and finding tourism places.
- 4. Users can plane their own trip or choose trip from travel agencies then contact with this agency and rate it.
- 5. The app allowed users to contact with registered Egyptian tour guides for planning trips, those registered guides can have their personal information, languages, skills like diving, price etc. on the app.
- 6. The app allowed users to search and have access to places like ATMs, Gas stations, Gyms, Restaurants, Hospitals and so on...
- 7. The app provided users with information about different events taking place in Egypt like festivals, conferences and so on.
- 8. The app also allows users to give their feedback and reviews about any aspect of their trips.



#### Figure 8. Which language do you prefer for mobile app?

Figure 9a to Figure 9d show some selected panel pages of the proposed mobile app.

### 6. USABILITY TESTING

After developing the mobile app, a pilot test was conducted as a mean of testing the proposed app. The aim of this test was to examine the app in a real environment, the main objectives of pilot testing was to:

Test the app readiness to use.

#### Figure 9a. Home Page in Cross platform, menu page, tourism cities



Home Page in Cross platform

Menu page

**Tourism Cities** 

### Figure 9b. Tourism Type, a brief description under each type, tourism type sites, tourism cities sites



Tourism Type



under each type

**Tourism Type Sites** 



**Tourism Cities Sites** 

Figure 9c. Overview Image, site menu option, description about site history, gallery



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Figure 9d. Nearby Option, notifications option contact tour guide, choose tourism company



- Find out how users react to the app.
- Give the app users the opportunity to actually use the app with all its features and provide their feedback and suggestions for more advanced enhancement in the future.

### 6.1 Usability Test Steps

Step 1: Create Usability Test Scenario.

Step 2: Participants fill usability pre-test questionnaire.

Step 3: Prepare for the test and record all participants' actions and navigations on the app.

Step 4: Participant fill usability post-test questionnaire.

The usability test experiment was carried out on a random group of 8 participants, taking into consideration the diversification in the selected sample, whether in the age group or in the educational background, and also the technological background.

Table 5 represents the analysis of the usability pre-test questionnaire which participants filled. The table showed differences between participants in terms of background and technological experience with the use of mobile phones where there were 6 experts in using mobile apps, 1 medium and 1 low.

Questions	Low	Medium	Expert
How often do you use mobile phones to search for information about tourism sites?	1	1	6
How often do you access tourism websites by using a mobile phone?	1	1	6
How often do you access applications such as Facebook using a mobile phone?	0	1	7
How often do you use mobile phones to search for restaurants/ shops near tourism site?	1	1	6
How often do you make hotel reservations by accessing mobile applications?	2	2	4
How often do you search for tourism agencies using a mobile phone?	1	1	6
How often do you plan your own trip by using a mobile phone?	2	1	5
Do you intend to adopt/ download the proposed tourism app on you mobile phone? Y/N	1	2	3

#### Table 5. Users expertise questionnaire

Table 6 shows some demographic analysis for the usability test sample in terms of gender, age and education.

### 6.2. Conducting Usability Test

In this step, the researcher observed and video recorded the participants' actions and navigation of the proposed mobile app in a suitable place for every participant to feel comfortable. Usability test was conducted by using the researcher's mobile phone so as to prevent interruptions made by calls, messages, and notification. The present study adopted the International Organization of Standardization (ISO 98) usability measurement framework model as foundation for usability dimensions, the results of the usability pre-test questionnaire will be analyzed in terms of three usability metrics; effectiveness, efficiency and satisfaction as follows:

### 1. Effectiveness

Task completion rate is a measure of effectiveness. Therefore, the number of successful completed tasks error free represents the degree of effectiveness. However, the task is considered usable and successful if users can find correct function button from the second trial (Krug, 2005). Table 7 shows the results of effectiveness tasks based on the most common 14 tasks in the proposed mobile app. Both Mann-Whitney U test and Kruskal-Wallis test found insignificant difference between low, medium and expert users in terms of all tasks of effectiveness.

Most participants successfully completed 13 out of 14 tasks. The minimum number of successful tasks done by only two low experienced participants was 12 out of 14 tasks. On the other hand, 6 participants successfully completed all tasks scenario from which 2 were medium and 4 were expert (Table 8).

### 2. Efficiency

Task completion time and number of clicks (menu and keystrokes) to execute the task are the metrics for efficiency measurement, so results show that low experienced participants needed time

Characteristics		Expert	Medium	Low	Total
	Female	4	0	1	5
Gender	Male	2	1	0	3
	Total	6	1	1	8
	Less than 24	2	0	0	2
	Between 24 and 39	3	0	0	3
Age	Between 40 and 55	1	0	1	2
	Over 55	0	1	0	1
	Total	6	1	1	8
	No qualification	0	0	0	0
	Undergraduate	2	0	0	2
Education	Graduate	0	0	1	1
	Post graduate	4	1	0	5
	Total	6	1	1	8

#### Table 6. Participants' demographics

#### Table 7. Task completion rate

Task	Solved from 1 <sup>st</sup> trial	Solved from 2 <sup>nd</sup> trial	Solved after more than 2 trial	Didn't complete	Wrong Completion
1. Login to the system	8	0	0	0	0
2. Check your profile data	8	0	0	0	0
3. Add new trip	0	4	1	2	1
4. Get all tourism sites destinations which are related to favorite tourism type	4	2	2	0	0
5. Select site and get information and gallery about this site	8	0	0	0	0
6. Add this site to your trip and to your favorites	6	2	0	0	0
7. Rate this site and give us your comments	6	2	0	0	0
8. Choose tour guide for your trip and contact with them if they are available	4	2	2	0	0
9. if you did not find any available tour guide, so check travel agency offers	8	0	0	0	0
10. if you like Egyptian cities, get all types of tourism sites in any city	6	2	0	0	0
11. Search for the closest hotels and restaurant	8	0	0	0	0
12. Change your application language to Arabic or any other language	5	3	0	0	0
13. Send your feedback	8	0	0	0	0
14. Exit the application	5	0	0	0	3

#### Table 8. Task completion rate among participants

	Number of succe	Tatal	
	13/14	14/14	10tai
Low	2	0	2
Medium	0	2	2
Expert	0	4	4
Total	2	6	8

to complete the tasks more than medium and experts' participants. Table 9 represents the maximum and minimum time (by minutes) for each task.

Results showed that there was a significant difference in task completion time between low experienced participants and the remaining two groups; where low group needed more time to complete tasks. However, there was no significant difference between medium experienced group and expert participants in the tasks completion time, except in tasks 7, 8, and 11 where the medium group executed these tasks in less time than the expert group.

	Minimum time (Mins)	Maximum time (Mins)
Task 1	00:30	00:50
Task 2	00:10	00:30
Task 3	00:40	01:10
Task 4	00:20	00:50
Task 5	00:30	01:00
Task 6	00:30	01:10
Task 7	00:20	00:55
Task 8	00:35	02:00
Task 9	00:12	00:40
Task 10	00:25	00:45
Task 11	00:15	00:40
Task 12	00:30	01:05
Task 13	00:02	00:20
Task 14	00:05	01:00
Total time	03:21	07:25

#### Table 9. Task completion time

### 3. Satisfaction

The results showed that there was no significant difference between the three groups of users and user satisfaction with the app as the 8 participants were satisfied with the app interface. However, there was a difference between participants in terms of their intention to adopt the proposed mobile app before and after using the app as showed in table 10.

### 7. CONCLUSION

Tourism is an important sector of Egypt's economy which contributes significantly in the level of employment and national GDP. Most of tourism organizations in Egypt have yet to establish and develop their online presence. Many of the companies that already have online presence had no applications or services in place to support online transactions. Unfortunately, the E-tourism is still immature and requires major strategic management decisions and procedures from both public and private sectors.

Based on that, the current study tried to fill this gap by introducing a general overview of E-tourism in Egypt, types of tourism in Egypt, the role of ICT in Tourism and tourism mobile apps. Then the

	Low	Medium	Expert	Total
Intention of adoption before trying the app	1 of 2 (50%)	2 of 2 (100%)	3 of 4 (75%)	6 of 8 (75%)
Intention of adoption after trying the app	1 of 2 (50%)	0 of 2 (0%)	1 of 4 (25%)	2 of 8 (25%)

Table 10. Participants 'intention of adoption of tourism mobile app

study developed a proposed mobile phone application for tourism and tested the usability of this app in Egypt. A survey from a group of 53 respondents was conducted based on the mobile app features which were developed by tourists.

The proposed app was then tested by using usability measurement framework which was used to test the usability of the app interface and to ensure that this app meets user requirements. Its goal was to detect any usability problems the app interface, to ensure that all services needed by users are included and finally to ensure that most users are satisfied with the app.

Three main usability metrics were employed in this study; effectiveness, efficiency and satisfaction. Effectiveness; the results showed that most participants successfully completed most of tasks so there was no significant difference between different participants in terms of level of technological background. Efficiency; the efficiency of the system was measured by time of task completion and number of clicks (menu and keystrokes). The study found that all participants completed al tasks on time and there was no significant difference between medium experienced group and expert participants in the tasks completion time, except in tasks 7, 8, and 11 where the medium group executed these tasks in less time than the expert group. However, there was a difference between experienced, medium and low participants which was shown clearly in tasks (1, 3 and 14). Task 1 needed longer time for execution because it needed writing on a mobile keyboard. Task 3 was a bit problematic to users as they kept asking how to execute it and even some participants skipped this task. Task 14 which was about going back to home screen and logout the system, created a problem for some users as well. Satisfaction; the study found no significant difference in level of satisfaction and intension of adoption between the three levels of participants.

### 8. IMPLICATIONS, LIMITATIONS AND FUTURE STUDIES

The study has several useful implications for researchers, mobile apps developers, travel-related organizations and even government departments when rendering mobile apps services and disseminating information to their potential consumers. Form the theoretical perspective, the study added to the accumulative literature of both tourism and information systems fields through studying and applying the important functions which would be considered in the mobile app in Egypt. From the practical perspective, the present study provided a clearer view and deep understanding for the issues related to the usage and adoption of a new mobile phone application in Egypt.

Although thorough considerations have been taken, there are several limitations that may warrant future research. The study surveyed the geographic area of Alexandria, Egypt during the production and testing phases of the application, cautions therefore should be exercised when generalizing the results, and future scholars are strongly encouraged to compare the studies using different national subcultures and to improve the app functions to aim better tourists' services.

Future scholars are also encouraged to include additional metrics in mobile app usability testing such as the battery life, the network connectivity, the application speed, data storage and application navigation.

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## APPENDIX

### Mobile App Questionnaire for Tourism

1. Your age is

		Less than 24 Between 40 and 55	Between 24 and 39 Over 55
2.	Are	e you?	
		Male	Female

3. Nationality

4. Where do you currently live (city, country)?

#### 5. What are your main interests in selecting a destination?

	Adventure	Heritage life
	Culture	Health
	Nature	Religion
	Rest	Sport
	Food and drink	Festivals and Conferences
Other		

#### 6. What are the most challenging problems that you face when choosing a destination?

	Quality of services	Reliability
	Language difficulties	Price
0.1		

### Other

Do you prefer to use tourist guide services or tour independently? 7.

Tourist guide services Tour independently 

#### 8. Which of the following devices do you own?

	Blackberry		Allary.	
	iPad		W III Sec	
	iPod touch		Syme.	
	iPhone		Ганн .	
Other (please specify)				

#### 9. How likely would this app be for you if it was available on your device?

	It already is available on my	Extremely likely
device		
	Very likely	Moderately likely
	Slightly likely	Not at all likely

#### 10. What kind of information would you need to facilitate your visit to any tourist destination?

	History of site	Weather
	Transportations	Restaurant and shops
	Photo of site	Plan your trip
Other		

#### 11. Which language do you prefer for app?

English Your country language Other

#### 12. In your opinion, what are the services that should be available in the mobile application?

### **Usability Test Scenario**

Thank you for taking part in our usability study. During the session, you will be asked to use the mobile application and do a list of tasks. This does not mean that you are being tested; but it is rather the mobile application is being examined. The session will be recorded, and is expected to take about 20 minutes. Please feel free to ask any questions before we begin.

- 1. Login using username account "test@test.com" and password "123".
- 2. Check your profile data.
- 3. Add new trip and determine number of days.
- 4. Get all tourism sites related to favorite tourism type.
- 5. Select site and read information and gallery about this site.
- 6. Add this site to your trip and to your favorites.
- 7. Rate this site and give us your comments.
- 8. Chose tour guide for your trip and contact with him if available in this days.
- 9. You did not found any available tour guide so check company offers.
- 10. You like Egypt cities get all tourism site by city categorise.
- 11. Search for a close hotel and restaurant near you.
- 12. Change your application language to Arabic.
- 13. Send us your feedback.
- 14. Back to home and logout to exit the system.

Start time:	End time:	Notes
Task	Observations	
Login	No problem Wrong turns () Completed without assistance	
0.1.0.1.	Didn't complete	
Check your profile data	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
Add new trip	No problem Wrong turns ( ) Completed without assistance Need Help Didn't complete	
Get all tourism sites related to favorite tourism type	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
Select site and read information and gallery about this site	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
Add this site to your trip and to your favorites	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
Rate this site and give us your comments	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
Chose tour guide for your trip and contact with him if available in this days	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
You did not found any available tour guide so check company offers	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
You like Egypt cities get all tourism site on it	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
Change your application language to Arabic	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
Search for a close hotel and restaurant near you	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
Send us your feedback	No problem Wrong turns () Completed without assistance Need Help Didn't complete	
Exit the system	No problem Wrong turns () Completed without assistance Need Help Didn't complete	

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Participant #:		Date:	
Start time:	End time:	Notes	
O/P = Problems/ obstacles associated with	each task		
S = Suggestions for improvement			
R = Rating  or ranking of the product			
Task	Participant Comme	nts & Notes	
1. Login			
2. Check your profile data			
3. Add new trip			
4. Get all tourism sites related to favorite			
tourism type			
<ol><li>Select site and read information and</li></ol>			
gallery about this site			
6. Add this site to your trip and to your			
favorites			
7. Rate this site and give us your			
Comments 8. Chase tour quide for your trip and			
contact with him if available in this days			
9 You like Egypt cities get all tourism			
site on it			
10. You did not found any available tour			
guide so check company offers			
11. Change your application language to			
Arabic			
12. Search for a close hotel and			
restaurant near you			

### **Usability Pre-Test Questionnaire**

#### Please rate your expertise on each of the following activities

А.	Using mobile for search about tourism sites information Never done Expert						
	0	1	2	3		4	5
В.	Accessing to Never done	ourism websites u	ising a mobile	e phone E	e Expert		
	0	1	2	3		4	5
C.	Accessing ap Never done	oplications such a	as Facebook u	ising a E	mobile phone Expert		
	0	1	2	3		4	5
D.	Using mobile Never done	e for search abou	it restaurant n	ear you E	ı in tourism site xpert	e	
	0	1	2	3		4	5
E.	Reserve hote Never done	el by accessing w	ebsite or mob	oile app E	olication Expert		
	0	1	2	3		4	5
F.	Search for to Never done	ourism company t	trip offers	Е	xpert		
	0	1	2	3		4	5
G.	3. Plan your own trip Never done Expert						
	0	1	2	3		4	5
Plea	se check only on	e box in each of	the following	guest	<u>ions</u>		
1.	Your age is						
	Less th	nan 24			Between 24	and 39	
	□ Betwee	en 40 and 55			Over 55		
2.	Are you?						
_,	□ Male				Female		
3.	Education						

Undergraduate

Post graduate

3.

No qualification

Graduate

## Usability Questionnaire

Please make your choice by circling the square brackets that best represent your opinions.       [1]     [2]     [3]     [4]     [5]						
Str	ongly disagree	slightly disagree	Neutral	Slightly Agree	Strongly Agree	
1.	I think tourism r [1]	nobile application [2]	is easy to use [3]	[4]	[5]	
How	vever, figuring out ho	w to		was difficul	t	
2.	The system was [1]	well designed [2]	[3]	[4]	[5]	
3.	It was organized [1]	l the way I preferre [2]	d [3]	[4]	[5]	
4.	It was user frien [1]	dly [2]	[3]	[4]	[5]	
5.	I don't need to a [1]	sk questions to kno [2]	ow how to use appli [3]	cation [4]	[5]	
6.	It requires few s [1]	teps to accomplish [2]	what I want to do v [3]	vith application [4]	[5]	
7.	I can recover fro [1]	om mistakes quickl	y and easily [3]	[4]	[5]	
Exce	ept					
8.	I can use it succ [1]	essfully every time [2]	[3]	[4]	[5]	
9.	I learned to use [1]	it quickly [2]	[3]	[4]	[5]	
10.	I easily rememb [1]	er how to use it [2]	[3]	[4]	[5]	
11.	I feel comfortab [1]	le using this applic [2]	ation [3]	[4]	[5]	
12.	The amount of i [1]	nformation is adeq [2]	uate [3]	[4]	[5]	
13.	The system's in [1]	formation provided [2]	l is easy to read and [3]	understand [4]	[5]	
14.	The system's in [1]	terface is pleasant [2]	[3]	[4]	[5]	
15.	The system's in [1]	terface has adequat [2]	e use of graphics [3]	[4]	[5]	
16.	The system's in [1]	terface has appropr [2]	iate use of colors [3]	[4]	[5]	
17.	The navigation [1]	buttons are well pla [2]	aced and labeled [3]	[4]	[5]	
18.	The pages headi [1]	ngs are self-explan [2]	atory [3]	[4]	[5]	
19.	Display message [1]	es are easy to see a [2]	nd understand [3]	[4]	[5]	
20.	This system has [1]	all the functions an [2]	nd capabilities I exp [3]	ect to find [4]	[5]	
21.	This system nee [1]	ds additional featur [2]	res to be added. [3]	[4]	[5]	
Such	1 as					
22.	This system is u [1]	seful and meets my [2]	needs. [3]	[4]	[5]	
23.	I would recomm [1]	end it to a friend. [2]	[3]	[4]	[5]	
24.	Overall, I am sa [1]	tisfied with this sys [2]	stem. [3]	[4]	[5]	
Con	iments					

#### إستخلص الرسالة باللغة العريبة

أثبتت صناعة السياحة في مصر، أنها واحدة من الصناعات الرئيسية والقطاعات سريعة النمو، في الاقتصاد ، تمثل مصر، المرتبة الأرلى من حيث الوجهة السياحية في تمال إفريقيا وتحلل. المرتبة 23 من بين أفضل 50، سياحيًّا علميًّا، تعتير، مصر، من أهم أهداف البلدان الثالية للسياحة، بريطانية - إيطالية - ألمانية - وزنسة - بولندة - روسية - أوكرانية - الولايات المتحدة والمملكة العربية السعودية.

و. في المنوات الأغيرة ، زاد تكتير. التبكة العالمية على جميع مجالات المجتمع الحديث تقريبًا. تكرت السياحة بتكل كبير أيضنًا بالتبكة ممه أدى إلى ظهور. انجاهات جنيدة للبحث في السياحة الإلكترونية. كمه يستندم المستهلكون الإنترنت للحصول على المطومات والتحظيط لرحلته وسفرهم. ذلك اصبحت المطومات هي الخصن الرئيسي في صناعة السياحة وتوافرها. على التبكة.

مشكلة البحث.

انغضت مدلات السيامة بعد تورة 25 يناير. 2011 ومنذ ذلك الحين كان هناك جهد كبير. لاستعادتها بطرق، متلقة بما في ذلك إدعال النظم التكولوجية الحديثة مثل السيامة. الإلكترونية.

نَّمَ تَطبيق مفهوم السلِمة الإلكترونية في الحدِّد من البلدان وحقق نجلعًا كبيرًا. كمثل على حجن السفن عبر الإنترنت وحجن الفادق، وحجوزات الطيران. بالإضافة إلى ذلك ، هلك الحدِّد من أبحك السلِمة الإلكترونية التي أجريت في الحديث مثل ملزيا، وكوريا والنمسا والبابان. على الرغم من إجراء بعض الأبحاث حول السِنمة الإلكترونية في مصر، وإلا أن تطبيق السياحة الإلكترونية باستخدام تطبيق الهائف المحمول لم يتم التحقيق فيه في مصر.

> بالإضافة إلى ذلك ، لم يولى البحث العلمي الاهتمام اللازم لاستخدام تطبيق الهاتف المحمول كأداة لدعم السياحة. وبالتلمي ، وجب مد هذه الفجوة البحقية. أهداف المحت.

الهنف من، هذه الأطروحة هو اقتراح تطبيق للهاقف المعمول مع وظافف متنوعة تم اختباره من حيث عوامل كبلية الاستخدام يكرين دور. السياحة الإلكترونية في مصر، ومساعدة السياح المطبين والأجانب ووكالات السفر، في مصر، سيكون هذه التطبيق المقترح واحتًا، من أوائل تطبيقات الهوائف المعمولة الرائد في محبل السياحة في مصر، والتي تُخذت في الاعتبار، العزاب المخالفة للتعنيلات السبح المعليين الأجانب وستكون مصدرًا، إلكترونيًّة كبيرًا، المعرفة حول فات السياحة الم بالإصفاقة إلى الفتائف والمعاجم والمتأجر.... إلغ. أهمة المست.

هذا البحث ينطوي. على أثار. أكاديمية وعملية.

1.1 الأهمية النظرية:

سوف يضيف البحث إلى الأسيات التراكمية لكل من مجالات السياحة وأنظمة المعلومات من خلال دراسة وتطبيق الوظائف المهمة التي سيّم استخدامها في التطبيق الذي سيدعم في: تهاية المطلف الانتعاق السياحي في مصر.

2.1 أهمية عملية:

يمكن تلغيص الأهمية الملية لهذاء البحث في دعم السياح ووكالات السفر. من خلال السياحة الإلكترونية باستخدام تطبيقات الهاتف المحمول والتي سنسهم في زيادة معدلات السياحة في. مصر. ككل.

منهجية البحث

التطبيقات المالية

ئم تشبيق مقهوم السيامة الإلكترونية في بعض الدول وكان له نجاح كبير. طى سبيل المثل حجوزات السقر، عين الإنترنت ، وهذك بعض الأيمات تناقش السيامة الإلكترونية في دول مثل ماليزية وكررية والنسة والبابن، من خلال البحث ، لم يلاحظ أي تطبيق السيامة على الهواقف المحمولة يتحدث عن أنواع السيامة في مصر، أن يحتوي على بيقات كتريفية عن المواقع السيامية ولكن مة وجد هر بعض التطبيقات التي تتحدث عن صورة الأكان القنيمة (على سيل المثل، دليل مصر، مصر، الالمولية في بعض الاوقع على عبقات كتريفية عن الإنترنت (على سيل المثل، ويكيبينية ، اسأن علام الدين ، ... إلغ،) تحتوي على معلومات حول الأمكن السياحية ولكن لا مصر.

في أيامنة هذه ، فإن أهم ميزة في أي تطبيق للهائف المصول هي سهولة الاستخدام. بعد مراجعة تطبقت الستخدمين طى التطبيقات السراحية الحالية ، وجد أن معظمهم يفتر. إلى هذه الميزة، من ناحية أخرى ، فإن أي من التطبيقات السراحية الحالية لا تحتري طى السراحية يحتري طى جبب تحد المطومات الثار يخبة واتساعية و صقية، طى سبيل المثل ، يحتري تطبيق "تليل مصر" طى صور لبعض المواقع السراحية، تطبيق "خريطة مصن السراحية" يحتري طى خريطة المواقع السياحية المواقع المواقع السراحية المائل ، الاعتبان رحلة التعطيط ولكن في عداد المقتردين قلت المواقع السراحية، تطبيق "خريطة مصن السراحية يحتري طى خريطة الم السفر، الممائل على عداد المقتردين قلت المواقع السراحية واقتراح أملكن الزيارة لا تعتب طى المقصلة للمستخدمين. أقصل تطبيق بين التطبيق بأعذ في السفر، الممائل على عداد المقتردين قلت المواقع السراحية واقتراح أملكن الزيارة لا تعتب طى المقصلة للمستخدمين. أقصل تطبيق بين التطبيقات السراحية المواقع السراحية المعام السفر، الممائل ولكن في عداد المقتردين قلت المواقع السراحية واقتراح أملكن الزيارة لا، تعتب طى المقصلة للمستخدمين. السفر، المائل ولين في عداد المقتردين قلت المواقع السراحية مائل والاح أملكن الزيارة لا، تعتب على المعتبة المستخدمين. أقصل تطبيق بين المائية وقد تط السفر، المواقع المواقع السراحية على أساس مدن مصر، ويعتري على مطومات حول الاتجامات والطقس ولكن مسلمة تطبيقات الم المقر، طبية في مراجعات المستخدمين التي تعين الغرائط غير، مسرحية والتراح أملكن يحامة إلى أن تكون تكون مروية، ول

في هذا القسم بدّم تقديم مراجعة الأدبيات ذات الصلة. ينقسم القسم إلى تلائلة أقسام رئيسية على النحو. الذلي: السياحة في مصر، و ينوع السياحة في مصر، و تطبيقات السياحة الإلكترونية. والهوائف المحمولة.

مصر، من أهم الدول السياحية حيث تشوي حلى تلك اثار، العالم و، معيزات بيليَّة ومناخبة جطتهه دوله سياحيه من الدرجه الاولى حيث تحتوي حلى الواح مختلفه و، متحده من السياحات، وقد تم تشاول الواح السياحة في مصر، والتحت عن كل فوع يصفة خاصة وقد تم حصر، هاه الانواح وتقسيمها الى ١١- نوع كما بلي:

السياحة الدينية، السياحة الطبية، السياحة الترفيهية، سياحة المغامرة، سياحة تقافية، السياحة البيلية، السياحة الصاحم والشراب السياحة، السياحة الرياضية، سياحة المهرجان، سياحة المؤكمرات.

كماً، ليضد ثابت تنوّل السياحة و. علاقتها بنكتولوجيا المطومات و، سبب ظهور، مقبوح السياحة الالكثر رنبة بعض التطور. الهائل في شبكات الانثرينت و. سهولة الحصول علي المعلومات التي تعتبر بديرها أمم مفتيح السياحة الالكثرونية لان سهولة الحصول علي المعلومة عن مكان معين بساعد على تشتيط السياحه في تلك المكان و. تنقل الغبرات و. المناظر، الخلاب عن طريق الصور، بين السياح، لذلك أصبحت السياحة الالكثرونية وعلاقتها بتكنولوجيا المعلومات من الموصو على الموامات التي

الدول بشكل علم. أما عن تطبيق الديلمة الألكثرونية سواء بعراقح الانثرنت ان الصور. التي يتم نشر ها على مواقع الأواصل الاجتماعي او. عن طريق تطبيقات الهائف المصول فقد تم عرض مه تم المصول عليه من الدراسات السابقة و. ثم اختبار، الهائف المصول يصفة خاصة الدراسة في هذا البحث.

تحديد البيانات والمصادر وطرق جمع البيانات;

الخطرة الأولى في اقتراحنا هي مرحلة جمع البيانك. يعمّد البحث الحلي على المنهجية المختلطة التي تعنى الجم بين الأسليب الكمية (مثل التجارب والمسوحات)، والطرق النوعية (مثل مجموعات التركيز، والمقابلات). يبدر أنه قرار، معقول لهذه الأطروحة لأنه يوفر، لنا في وقت واحد مع الارتباطات الميررة بين المنغيرات والفهم المميق لظاهرة البحث. سيّم جمع البيانك الأولية الضرورية للتعقيق من خلال المسح والمقابلات.

تصميم وتطوير النموذج الأولى للنظام

الهنف من هذا الجزء هن تصعيم وتطوير، تطبيق للهائف المحمول للسواحة في مصر، » وإجراء اختبار، قابلية الاستعدام التحديد متكلات قابلية الاستعدام الرؤسية وكيف تختلف بين. المجموعات المتبنية وغين المثبنين.

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يستعدم النظام أنكر. من اللغة - و. يصنف أملكن سياحية مصر، على أسلس نوع السياحة ومحافظات مصر، ونوع من المحلم، كما كم تضمين كاريخ هذه الأملكن والمطلبات لزيارتها. يقوم النظام بإعطان المستعدم عن طريق الطقس في الأملكن السياحية ويحتوي على نظام تحديد المواقع الوصول ويعض المعلومات حول المطاعم والمحلات التجارية ومه إلى نلك تحيط يهذه الأملكن.سيسمح النظام المستعدم بترتيب رحلته واقتراح الأملكن بناءً على محل المستخدمين، الأخرين لهذه الأملكن. التجريب والتقيم التنهجة.

ثم تقيم النهج المتثرح من حيث التطبيق في قطاح السياحة ومن خلال مقارنة نتائج النهج المتثرح مع نتائج من النهج في الواقع. ثم تقديم حرض وتصور، لتناثج المقارية المتثرحة من أجل تسبيل فهم السياح والناس والذي بعد مرحلة مهمة لإستخراج المعرفة المفيدة عن السياحة في مصر ، ثم اختبار، مجال السياحة حلى وجه التحديد لأهبيته في مصر، كما ذكر، في العادين السابقة.

تَمَكَّ المطوات الأولى في التنيذ في إجراء سج من مجموعة مكونة من 33 شخصنًا واستنت إلى الميزات التي بمكن تطويرها أن يحتاج السباح إلى معرقتها أنناء زيارتهم لمصن. عند تحديد هذه الميزات ، قررنة إنشاء تطبيق للهائف المحمول لأنه لغة العصن وفي متناول ايدي الجميح أيضنًا لجمل السباح أكثر، راحة في الطور، على جميع المطومات التي يحتاجونها. في مكان واحد.

تَح بدأته في تطييق النموذج الأولى للتطبيق من أجل اختبار، كفاءته في تحقيق الميزات التي تَم تحديدها مسبقًا.

أحد أهدافنا، هن جعل تطبيق الهاتف المحمول مصدرًا، للبيانات الإلكترونية، عبن الإنترنت يتضمن المواقع السياحية ، والتاريخ ، والطفس ، والأحداث العامة ، وطبيعة مواقعة في مصر. .... إلغ.

ي . كمه أغذ بإضافة المزيد من الميزات المثيرة للاهتمام السياح في استعدام التطبيق من خلال إنشاء ملف تحريف شخصي ، أن الاتصال بالدليل السيامي أن المجز، لدى شركة السيامة ، كمه أن الديه إمكانية التعطيفان حلته الخاصة بتحديد المكان، والوقت ومعرفة ما إذا كان هذا المكان مثلغا الزيارة في هذا الوقت أم لا. لقد تمنه بعمل صفحة بحث تساعد السياح على تحديد نوح السيامة وأبعثنا، دعمنة الطبيق عن طريق الغريطة لإظهار، جميع أقرب الأماكن السائح التي قالي قالدي والوقت ومعرفة ما إذا كان هذا المكان مثلغة الزيارة في هذا الوقت أم لا.

ه ها ها بهن صحه بطا ساند اسراع على لطرد فرح اسراحه و رضه دمه اسطيق من طريق الطريعة و مهان جمع افراب ار مان سانح التي طالسان العادق والمعاطم. والمتلجز .... إلخ.

نحن أبِضُنَه مهتمون بتسهيل الاستخدام » وتشمل لغات متعددة ودعم جميع المنصات المتقاطعة المنائحة مثل تطبيقات OS، و: Android، و: windows.

بحد ذلك بدأنا اعتبار. هذه التطبيق على بيئة حقيقية وإدارة المستغديين أصل مجمو عنة من المهام إذا كم تنفيذها بشكل صحيح من خلاله يثم تحديد الكفاءة والفدلية ومدى الرضاء عن السياح وقبل ذلك كم اختبار. المستخدمين لتحديد خلفيتهم التكفر لوجية إذا هم مبتدئ أن مقرسط أن خبراء وتقو عهم في الفئة المرية والخلفية التطيمية.

عندمه ينتهي السائح المهلم العملية التي تم ادرارتها من خلال مسح قصير المعرفة تطيقه ونيه استخدامها مرة أخرى أو. لا إذا كان التطييق موجودًا.

نتيجة للاستيبانات السابقة ، وجدنه تقاعلًا: رائمًا وردود فعل إيجابية من السياح وأيضمًا بعد الاختبارات العملية، تغيرت بعض الأراء تجاه التطييق بطريقة إيجابية.

Eman Ahmed graduated from faculty of commerce Alexandria university management information system department since 2011, and then applied to a 9-month scholarship program at the Information Technology Institute (ITI) of the Egyptian Ministry of Communication immediately after graduation to study development tools and languages. This program is very competitive and well known in Egypt. His passion for education motivated him to get a master degree in Management Information Systems in 2019. His master thesis was entitled "Investigation of The Use of Information Technology Applications in The Tourism Sector in Egypt". The objective of his thesis was to propose a mobile application with variant functions and then test it in terms of usability factors in order to enhance the role of e-tourism in Egypt and help local and foreign tourists and travel agencies in Egypt. He is working as team lead software developer, he worked in HR system with all parts (budget module, master file to save employees data, recruitment module and candidate portal) and in ports system (Port management system, Gate system, Charging and discharging system, Billing system, Storage and withdrawal system).