

Archaeological Resources & Sustainability: A case study of Tourism in the ancient ruins of Thebes

By Kiara N. Cobb and Cynthia S. Deale

Introduction

According to the World Travel and Tourism Council (WTTC) (2016), tourism is an expanding, profitable global industry that contributes approximately 7.2 trillion American dollars (USD) to the global economy annually and employs more than 200 million people worldwide, resulting in 1 in 11 jobs around the world. One of the benefits of tourism is that travelers can experience culture and history by visiting cultural and historical areas at tourist destinations. This type of tourism is known as cultural or heritage tourism and according to McKercher and Du Cros (2002), multiple definitions for heritage tourism exist. These definitions are based upon motivational, experiential or aspirational, and operational definitions. For the purposes of this case study, heritage tourism is defined as “travel that provides an authentic experience and communicates the lives, events, or accomplishments of past peoples (Pinter, 2005).

Thus, heritage tourism can include touring archaeological sites such as pyramids, temples, villages, buildings, activity areas, and other structures around the world. The Pyramids of Giza in Egypt, Pompeii in Italy, Teotihuacan in Mexico, Hieraplis in Turkey, Machu Picchu in Peru, and Mesa Verde National Park in the United States (U.S.) are all archaeological sites frequented by tourists on a year-round basis. Visiting these archaeological sites can provide tourists with cultural knowledge and understanding, in addition to allowing them to personally view genuine cultural evidence.

As mentioned, tourists visit archaeological sites around the world and thus, intersections between tourists and rare or one-of-a-kind archeological resources occur. Therefore, efforts have been made to conserve and protect archaeological resources because archaeological sites are non-renewable resources that cannot be replaced if they are damaged or diminished. Organizations such as the International Council on Monuments and Sites (ICOMOS) (2015) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) (2017) were established to promote world heritage and conserve its resources and therefore, conserve and protect archaeological resources. These organizations provide for the global recognition of cultural sites, and funding and networking opportunities to help protect these

sites. They also support the creation of sustainable tourism practices to assist in the conservation and preservation of archaeological sites, such as those located in Thebes, Egypt, the focus of this case study.

Background

Egypt and Tourism

The ancient ruins of Thebes are in Egypt, a country that is steeped in history beginning 3200 years “Before the Common Era” (B.C.E) (Wachal, 1999) to the present-day. Tourism in Egypt contributed 12.8% to the national income in 2014 and the WTTC (2014) expected that to rise 5.4% in 2015. Historical and cultural attractions are significant contributors to the tourism sector, specifically the seven UNESCO World Heritage Sites within the country. Tourism is well-established in Egypt due to its popularity as a tourist destination, specifically for holiday packages in European markets (BMI Research, 2016). However, tourism in Egypt has stagnated and declined due to travel warnings issued after terrorist attacks and political unrest, violence, and instability (Tomazos, 2017), although it is expected to rebound by 2020 (BMI Research, 2016). Table 1 shows recent tourism figures for Egypt and although a decline in visitors after the major violent events in 2011 can be seen (Lesch, 2017), tourism in the country is expected to rebound by 2020 (BMI Research, 2016). The Temple of Karnak, Abu Simbel Temple Complex, Luxor Temple, and Saqqara Pyramids are popular cultural attractions that tourists visit each year. The Temple of Karnak and Luxor Temple are both located in ancient Thebes, the focus of this case study.

Heritage Tourism, Archaeology, and Sustainability

Attention to heritage tourism has increased over the last couple of decades and it has become the focus of a significant amount of research (e.g. Du Cros, 2001; Chhabra, 2009; Garrod & Fyall, 2000; Nuryanti, 1996; Poria, Butler, & Airey, 2003). Cultural heritage tourism such as that involved with visitation to the ruins of Thebes and other archeological sites in Egypt can perhaps best be viewed through the lens of sustainable tourism, for it has been suggested that tourism to archeological sites needs to carefully address social, environment, and economic factors (e.g. Du Cros, 2001; Meskell, 2000), which comprise the triple bottom line of sustainable tourism. According to the UNWTO (2017) sustainable tourism can be defined as “Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environ-

Kiara N. Cobb and Cynthia S. Deale are both affiliated with East Carolina University.

Table 1**Tourism in Egypt**

| Year | 2010 | 2011 | 2012 | 2013 | 2014 |
|-----------------------------------|---------|--------|--------|--------|------|
| Domestic tourism | | | | | |
| Total trips | 18 190* | 16 481 | 16 725 | 19 549 | n/a |
| Overnight visitors(tourists) | 8100 | 7340 | 7456 | 8713 | n/a |
| Day visitors (excursionists) | 10090 | 9141 | 9269 | 10836 | n/a |
| Inbound tourism | | | | | |
| Total international arrivals | 14700 | 9800 | 1150 | 9500 | 9900 |
| Overnight visitors (tourists) | 14021 | 9452 | 11164 | 9209 | 9650 |
| Same-day visitors (excursionists) | 680 | 348 | 336 | 291 | 250 |

*All numbers are in thousands

Source: Organisation for Economic Co-operation and Development (OCED) (2016). Egypt. OECD TOURISM TRENDS AND POLICIES 2016. Paris, France: OECD Publishing. DOI: <http://dx.doi.org/10.1787/tour-2016-47-en>

ment and host communities." In a country such as Egypt, with its fantastic remnants of the past, the interplay between the environmental, socio-cultural, and economic aspects of tourism include threats of damage to historical artifacts and ruins, the growing pressures of increases in tourism infrastructure and operations, and changes to the local community that are not necessarily welcomed by local residents (Meskell, 2000). The juxtaposition between the ancient and the living can be particularly poignant in a country such as Egypt (Abu-Lukhod, 1998) and it may be inauthentic, with tourism at times showing only luxurious resort accommodations and inauthentic villages to visitors (Meskell, 2000). In addition, in terms of tourism, culture can sometimes be seen as a form of merchandizing (Heau, 2015) or as a commodity and again, that is not very authentic (Medina, 2003). Therefore, as Meskell (2000, p. 161) notes, "Archaeologists, like anthropologists, must accept that they work within living communities, even if they study their long dead ancestors." (Meskell, 2000, p. 161). Tourists also visit living communities when they travel to the sites of ruins in Egypt, including the ruins at Thebes.

Along with the focus on sustainability, the stakeholder approach and theory may be helpful for understanding the complexity involved in the development and management of heritage tourism. While the stakeholder approach and theory were first applied in the business realm (e.g. Freeman, 1984), it makes sense to attend to the varying needs and desires of the interested parties involved at a heritage tourism site, including those of the current visitors, future visitors, current host community, and future host community (Byrd, 2007), with the archaeological component recognized as an additional stakeholder.

To effectively develop, manage, and sustain responsible tourism at heritage tourism sites, the needs of all of the stakeholders need to be considered (Lawrence, Wickins, & Phillips, 1997).

Luxor, the Ancient Ruins of Thebes, and Tourism

The ancient ruins of Thebes are currently located in the modern city known as Luxor, with a population of 422,402, located about 600 miles south of Cairo, the capital city of Egypt (World Population Review, 2017). Visitors can reach Luxor via road, railroad, and an international airport. Luxor provides tourists with opportunities to see major archaeological sites, including the Temple of Karnak, Luxor Temple, Valley of the Kings, Temple of Medina Habu, Temple of Hatshepsut at Dier el Bahari, Valley of Artisans at Deir el-Medina, and Avenue of Sphinxes; all part of the ancient ruins of Thebes (TripAdvisor, 2017). The designation of Thebes as a UNESCO World Heritage site has led to an increase in tourism (Shackley, 1998). An estimated ten million visitors travel to Thebes each year, and a third of those travelers visit Thebes for a least a day (Schuster, 2008).

TripAdvisor (2016a) has noted that Luxor is home to many hospitality operations, including approximately 58 hotels, 28 bed and breakfast establishments and inns, 38 specialty lodging properties, 65 vacation rental properties and 99 AirBnB properties. Occupancy of Luxor hotels has been estimated to be 64%, with 20.08% of those rooms occupied by non-Egyptians (Al-Youm, 2016). Thebes also offers cruise line tourism where guests can stay, dine, and shop on the Nile River (Egypt Tourism, 2017). The numerous accommodation options provide employment for inhabitants of Luxor and the surrounding area, and as tourism increases in Luxor, the demand for and supply of

accommodations should increase as well. TripAdvisor also (2016b) lists over 154 restaurants, offering varied cuisines and dishes, and ranging from full-service restaurants to coffee and tea shops. These restaurants provide dining options for residents and tourists alike and provide employment for local residents.

Tourists can visit the ancient ruins at Thebes various times throughout the day. For example, the Luxor Temple is open daily from 6am-10pm during the summer and 6am-9pm during the winter, the Karnak Temple Complex is open daily from 6am-5:30pm (Supreme Council of Antiquities, n.d.). Based on the daily operations of the sites, the area is accessible to visitors 12 to 15 hours a day, contributing to frequent visitation throughout the day. Visitors can access the ruins locally through various forms of transportation including taxi, bus, or ferry (Supreme Council of Antiquities, n.d.).

Tourists can purchase admittance tickets or packages from different tour businesses. Tickets or packages range in price from \$25 to \$400 USD. The tours offer different options including general admission, private tours, full and half day tours, and some private shows such as the Karnak Sound and Light Show (Trip Advisor, 2016). Nile cruise trips also include tickets to tour the ruins of Thebes (Trip Advisor, 2016). Some of the tours offer transportation to and from the site as a part of the tour. The sites also contain gift shops, rest rooms, and other visitor facilities. According to one noted scholar, on an annual basis, "Thebes, specifically the Karnak Temple and the Valley of Kings, contributed 89 million dollars to the tourism sector through ticket sales and concessions" (Schuster, 2008, p. 63).

The Dilemma: The effect of tourism on the ancient ruins of Thebes

Archaeological sites and materials are all vulnerable to damage and deterioration and the impacts of tourism can contribute to their decline. The decay and destruction of materials can be caused by chemical (such as exposure to water, oxygen, temperature), biological (such as macro/micro-organisms), or physical (such as abrasion and/or erosion, direct pressure, expansion cycle, etc.) catalysts (California Department of Parks and Recreation, 2017). Some of the damage to and deterioration of the ancient ruins of Thebes is caused by several of the previously mentioned factors, including exposure to wind-blown sands that can cause physical abrasion to the ruins, slowly eroding the physical structure. Exposure to climatic and natural environments cannot be completely controlled.

In Luxor, and especially in the ruins in the ancient city of Thebes, the increase in visitors has led to conservation issues. For example, visitors at the tomb of Nefertari in the Valley of the Queens cause "increased levels of humidity and vibration" that have resulted in the authorities restricting entry so as "to preserve the decorated inscriptions and limit the damage to the tomb" (Shackley, 1998, p. 242). An

estimated 8,000 tourists visit the valley each day, and the combination of peak visitation each day generates sweat and body heat that cause humidity and high temperature in the tombs, resulting in damage to wall paintings; people also lean against painted pillars to gain balance, contributing to tomb damage (Schuster, 2008, p. 64). In addition, guided tourist groups frequently lead to congestion issues and the use of large motor vehicles and the docking of cruise ships can hurt the environment by increasing "levels of air pollution from diesel fumes and river pollution from oil and refuse, which may have the effect of impairing the quality of the tourist experience" (Shackley, 1998, p. 242). Due to "time constraints posted by airplanes and boat schedules, as well as a lengthy drive for day-trippers," large groups of visitors often descend on the area, resulting in high concentrations of visitors at some parts of the sites, before lunch at the Valley of the Kings and after lunch at the temple of Karnak (Schuster, 2008, p. 63). Out of 63 tombs, only 18 are open for public visitation because of their fragile condition and need for stabilization (Schuster, 2008). With continued heavy visitation, open tombs face increasing damage and destabilization. Regarding the site in general, the ancient ruins of Thebes has been described as "one of the world's greatest conservation challenges" and "public works projects, unmanaged tourism, and destructive agricultural policies threaten to destroy an extraordinary cultural landscape" (Schuster, 2008, p. 62). Furthermore, the effects of tourist visitation on the ancient tombs in Thebes can be applied to tombs located in the Valley of the Kings, Valley of the Queens, and other tombs located within the ancient ruins of Thebes.

Changes in Thebes are presenting conservation challenges. The ancient ruins of Thebes used to have dry conditions and a small human population in the area, both of which helped to preserve the ruins. Currently, Egypt is experiencing a wetter climate, increasing population, and expanding agriculture, all of which adversely affect the stability of the ancient ruins (Boraik & Johnson, 2008). For example, the creation of the Aswan Dam increases controlled irrigation all-year, adding airborne moisture due to evaporation and condensation. The daily humidity activates salts in the groundwater that become trapped in the temple walls causing crystallization that subsequently shatters the stone in the ruins (Boraik & Johnson, 2008). In addition, runoff from "over-irrigated fields" leads to high ground water that contains salts that erode and destabilize foundations, and humidity and increased rainfall adversely affect mud brick palaces at the ancient ruins (Boraik & Johnson, 2008). UNESCO (2015) reported that the following were factors affecting Thebes in 2015: changes in traditional ways of life and the knowledge system; deliberate destruction of heritage; flooding; housing issues; land conversion; deficient management systems /management plans; and water issues (related to rain and the water table).

Additional conservation issues cited were the illegal construction of buildings in proximity to archaeological sites, the deterioration of the

floor outside of Karnak, harmful grass making the site unsafe, ground water at the Temple of Medamoud, garbage and neglected materials left behind in The Avenue of Sphinxes due to a project suspension based on funding and other issues, among other problems (UNESCO, 2015). Furthermore, issues of encroachment and construction around the area, deterioration caused by natural factors, and ground water issues, in addition to the lack of sanitation and lighting at the Medamoud Temple, were reported (UNESCO, 2015). While the sites are prone to damage due to human interaction with the ruins, there are also issues related to the archaeological excavations as well, particularly in The Avenue of the Sphinxes. As far back as 1999, a plan was created to renovate and recreate the Avenue of the Sphinxes that at the same time would necessitate leveling large areas of the city and therefore, displace residents and business operators (Abraham & Bakr, 1999). However, the plan was contentious due to the displacement of centuries of urban development and it is currently, for the most part, on hold (Golia, 2013).

As noted, plans for further excavations of the sphinxes are controversial, and current tourism at the ancient ruins of Thebes exacerbates the deterioration of the site. Increased tourism can lead to several issues related to the conservation of Thebes. As more tourists visit the ruins, they contribute to the local economy, leading to increased development in the city. Development directly impacts Thebes because increasing encroachment can lead to the destruction of the site. Transportation to Thebes in the form of taxis, buses, and boats leads to pollution affecting the air quality and water near the ruins. The constant traversing of tourists at the sites can cause physical damage through the direct physical pressures of walking on the ruins and possibly touching the ruins or archaeological materials. Abrasion can be caused by tourists tracking in sand with their feet and then rubbing against the floor of the ruins, or via stirring up sand with the motion of their bodies. Moreover, tourists may bring macro-organisms and micro-organisms with them to archaeological ruins that can cause undesirable biological growth. Other negative impacts include thievery and vandalism. Though ancient ruins in Egypt have experienced thievery and vandalism for centuries, tourists may also be responsible for intentionally or unintentionally removing archaeological material, marking the ruins with graffiti, or damaging the site in other ways.

Efforts to Manage and Implement Sustainable Tourism Practices

Some efforts to conserve the ancient ruins of Thebes through sustainable tourism practices have been implemented. These include collaborative programs such as that of the Getty Conservation Institute American Research Center in Egypt, at Medinet-Habu, that has sponsored training in site management and a dewatering program at Luxor and Karnak that lowers ground water and reforms agriculture (Boraik & Johnson, 2008).

One strategy that could be used for sustainable development at the ancient ruins of Thebes is the application of a comprehensive site management plan such as the one implemented at the Pyramids of Giza in 1988 (Hawass, 1998) or the one that was created specifically for Thebes by Kent Weeks, a noted archaeologist and professor emeritus at the American University of Cairo (Weeks, 2006). In the plan, Weeks (2006) suggests monitoring tombs, providing display panels to inform visitors of the carrying capacity, and applying crowd control tactics. Specific recommendations include the creation of walkways to prevent visitors from contact with murals, regulation of temperature and humidity, possible discounts for off-season tickets, possible virtual reality tourism for fragile parts of the site, and improved conservation training and site management (Schuster, 2008; Weeks, 2006).

Conclusion

Thebes is one example of the relationship between archaeology and tourism. Conservation issues such as those at Thebes can be found around the world, and the creation and implementation of sustainable initiatives could help protect archaeological sites for the future and consider the needs of all stakeholders, including local residents and tourists. Public touring of archaeological sites is important because it provides opportunities for the exchange of cultural knowledge and exploration about the field of archaeology, and increases knowledge of local, state, national, and international world history. However, if tourism continues to increase, the continued growth in public visits to archaeological sites could lead to the deterioration and jeopardy of archaeological sites worldwide. This case study offers evidence of the need for sustainable initiatives for one archaeological site, and hopefully it will start a discussion about sustainable initiatives for archaeological sites worldwide.

Discussion Questions

This case study focused on the adverse effects of tourism on the ancient ruins of Thebes. Discuss two factors affecting the sustainability of the ancient ruins of Thebes.

- Managers of archaeology projects at the ancient ruins of Thebes strive to implement sustainable tourism practices. Discuss potential sustainable practices that can be implemented at archaeological sites and other historical or environmentally sensitive tourism attractions before they are opened to the public?
- How can the management staff at Thebes engage tourists and the public in the promotion and practice of sustainable initiatives to preserve the ancient ruins of Thebes?
- What role does human population growth play in sustainability at the ancient ruins of Thebes and potentially at other similar types of attractions?
- Who should be responsible for creating sustainable tourism initiatives at the ancient ruins of Thebes and why?

- What additional sustainable initiatives could be implemented to protect the ancient ruins of Thebes?
- Discuss why partnerships between management at the ancient ruins of Thebes, the local community, and local and state government are important for the development of sustainable tourism practices at Thebes.
- Consider sustainable tourism initiatives being financed by a fee attached to the purchase of entry tickets to the Thebes. Would charging tourists an additional fee to protect the integrity of the Thebes be fair and ethical? Why or why not?
- Do you think touring the ancient ruins of Thebes should be limited in the future? Explain.
- There are many stakeholders in Thebes. What suggestions do you have for meeting the needs of all interested parties including visitors, the host community, and the archaeologists? Justify your recommendations.

Suggestions for Additional Learning Activities

- Research three different archaeological sites in different regions of the world and discuss sustainable tourism issues and initiatives at these archaeological sites.
- Think of a strategy to address one of the sustainability issues related to tourism that is discussed in the case study. Outline how the strategy works, policies or legislation needed to implement the strategy, and why the strategy is important to the sustainability of the archaeological site.
- Create marketing and educational tools that would assist sustainability efforts targeted at visitors to archaeological sites.

References

- Abraham, G., & Bakr, A. (1999). A comprehensive development plan for the city of Luxor, Egypt. Cambridge, MA: Abt Associates.
- Al-Youm, A. (2016). Luxor hotel occupancy rate stands at 64%: official statistics. Egypt Independent April 2. Retrieved from <http://www.egyptindependent.com/news/luxor-hotel-occupancy-rate-stands-64-official-statistics>
- Boraik, M., & Johnson, R. W. (2008). Western Thebes: History, change, and challenges, The Getty Conservation Institute Newsletter, 23(2). Retrieved from http://www.getty.edu/conservation/publications_resources/newsletters/23_2/feature2.html.
- Byrd, E. T. (2007). Stakeholders in sustainable tourism development and their roles: applying stakeholder theory to sustainable tourism development, *Tourism Review*, 62 (2) 6-13, doi: 10.1108/16605370780000309.
- BMI Research (2016). Egypt Tourism Report. New York, NY: BMI Research.
- California Department of Parks and Recreation (2017). Impacts to archaeological sites. Retrieved from https://www.parks.ca.gov/?page_id=24533
- Chhabra, D. (2009). Proposing a sustainable marketing framework for heritage tourism. *Journal of Sustainable Tourism*, 17(3), 303-320.
- Du Cros, H. (2001). A new model to assist in planning for sustainable cultural heritage tourism. *International Journal of Tourism Research*, 3(2), 165-170.
- Freeman, R. E. (1984). *Strategic management: The stakeholder approach*. Boston, MA; Pittman.
- Garrod, B., & Fyall, A. (2000). Managing heritage tourism. *Annals of Tourism Research*, 27(3), 682-708.
- Hawass, Z. (1998). Site management: The response to tourism. *Museum International*, 50(4), 31-37.
- Heau, L. (2015). When archeology rescues tourism: The case of Bocana del Rio Copalita, Huatulco, Oaxaca, México. *Pasos: Revista de Turismo y Patrimonio Cultural*. 13 (5), 1095-1111.
- International Council on Monuments and Sites (ICOMOS) (2015). Retrieved from <http://www.icomos.org/en/>.
- Lawrence, T. B., Wickins, D., & Phillips, N. (1997). Managing legitimacy in ecotourism. *Tourism Management*, 18(5), 307-316.
- Lesch, A. (2017). Egypt's spring: Causes of the revolution. Middle East Policy Council. Retrieved from <http://www.mepc.org/egypts-spring-causes-revolution>.
- McKercher, R. & Cros Du, H. (2002). *Cultural tourism: The partnership between tourism and cultural heritage*. New York, New York: The Haworth Press, Inc.
- Meskel, L. (2000). The practice and politics of archaeology in Egypt. *Annals of the New York Academy of Sciences*, 925(1), 146-169.
- Nuryanti, W. (1996). Heritage and postmodern tourism. *Annals of Tourism Research*, 23(2), 249-260.
- Organisation for Economic Co-operation and Development (OCED) (2016). *Egypt. OECD TOURISM TRENDS AND POLICIES 2016*. Paris, France: OECD Publishing. DOI: <http://dx.doi.org/10.1787/tour-2016-47-en>
- Pinter, T. (2005). Heritage tourism and archaeology: Critical issues. *The SAA Archaeological Record*, 5 (3), 9-11.
- Poria, Y., Butler, R., & Airey, D. (2003). The core of heritage tourism. *Annals of Tourism Research*, 30(1), 238-254.
- Schuster, A.M. H. (2008). The bell tolls for Thebes. *Archaeology*, 61 (5), 62-64.
- Shackley, M. (1998). Conclusions. In M. Shackley (Ed.). *Visitor Management* (pp. 194-242). Burlington, MA: Butterworth and Heinmann.
- Sturdwick, N., & Sturdwick, H. (1999). *Thebes in Egypt. A guide to the tombs and temples of ancient Luxor*. Ithaca, NY: Cornell University Press.
- Supreme Council of Antiquities. Sites. Luxor, Egypt (n.d.) Retrieved from http://www.sca-egypt.org/eng/SITE_Luxor.htm
- Tomazos, K. (2017). Egypt's tourism industry and the Arab Spring. In R. Butler, & W. Suntikul (Eds.), *Tourism and Political Change*. (2nd ed.). Wood Eaton, Oxford: Goodfellow. Retrieved from https://pure.strath.ac.uk/portal/files/62088084/Tomazos_TPC_2017_Egypt's_tourism_industry_and_the_arab_spring.pdf.
- TripAdvisor (2017). Luxor, Egypt. Retrieved from https://www.tripadvisor.com/Tourism-g294205-Luxor_Nile_River_Valley-Vacations.html.
- TripAdvisor (2016a). Luxor Hotels. Retrieved from https://www.tripadvisor.com/Hotels-g294205-Luxor_Nile_River_Valley-Hotels.html.
- TripAdvisor (2016b). Restaurants in Luxor. Retrieved from https://www.tripadvisor.com/Restaurants-g294205-Luxor_Nile_River_Valley.html.
- United Nations Educational, Scientific, and Cultural Organization (UNESCO) (2017). Retrieved from <http://en.unesco.org/>
- UNESCO (2016). The criteria for selection. Retrieved from <http://whc.unesco.org/en/criteria/>.
- UNESCO (2015). Ancient Thebes with its Necropolis. Retrieved from <http://whc.unesco.org/en/list/87>.
- United Nations World Tourism Organization (2017). Sustainable development of tourism: Definition. Retrieved from <http://sdt.unwto.org/content/about-us-5>.
- United Nations World Tourism Organization (UNWTO) (2014). Glossary of tourist terms. Retrieved from <http://cf.cdn.unwto.org/sites/all/files/Glossary-of-terms.pdf>.

Wachal, R.S. (1999). *Abbreviations dictionary: A practical compilation of today's acronyms and abbreviations*. New York, NY: Houghton Mifflin.

Weeks, K. (2006). Theban Mapping Project. Retrieved from <http://www.theban-mappingproject.com/about/masterplan.html>.

World Population Review (2017). Population of cities in (2017) (Egypt). Retrieved from <http://worldpopulationreview.com/countries/egypt-population/cities/>.

World Travel and Tourism Council (WTTC) (2016). Economic Impact Analysis. Retrieved from <http://www.wttc.org/research/economic-research/economic-impact-analysis/>.

World Travel & Tourism Council (2014). Travel & Tourism 2015 Economic Impact Egypt. Retrieved from <http://sp.wttc.org/-/media/files/reports/economic-impact-research/countries-2015/egypt2015.pdf>.