DESIGN AND IMPLEMENTATION OF AN ANDROID BASED TOURIST GUIDE

Peter O. Sadiku, Roseline Oluwaseun Ogundokun, Emmanuel Abidemi Adeniyi Habib and Adedamola Akande

Design and Implementation of an Android Based Tourist Guide

[1*]Peter O. Sadiku

[1]Department of Computer Science, University of Ilorin, Ilorin, Kwara State

[*]Corresponding author Email**:** ogundokun.roseline@lmu.edu.ng

[2]Roseline Oluwaseun Ogundokun

Department of Computer Science, Landmark University Omu Aran, Kwara State

[3]Emmanuel Abidemi Adeniyi Habib

Department of Computer Science, Landmark University Omu Aran, Kwara State

[4]Adedamola Akande

Department of Computer Science, University of Ilorin, Ilorin, Kwara State

Abstract

Purpose: With the wide range of services provided by a guide, clearly meeting the needs tourist in all aspects is a challenge. Hence, this paper presents a mobile guide for tourists which was majorly designed to provide adequate information for prospective tourist either Nigeria or Foreigners within Nigeria.

Methodology: This mobile guide has information on the tourism Agency in Nigeria, location of hotels, airlines, tourist centers of the 36 states of Nigeria. It also assists tourists in locating tourist centers of choice with the embedded Google Map. The application is to include all airlines plying the domestic ways of Nigeria, few luxury hotels and tourist attractions in the country. The android framework would be implemented and a mobile client application that runs on the Android OS later than 3.2 (Honeycomb).

Results: Information is a paramount aspect of any society. To access adequate, complete and current information is the concern of everyone. The need for unadulterated information is a key factor that every society desire. Tourist guide which is an android application developed to address the challenges of where and how to get information. It addresses the issue of the cost of getting information, the authenticity of information and lots more by the Nigerian tourist. Tourists who have this application would familiarize themselves with information about tourist attractions.

Unique contribution to theory, practice and policy:

This Mobile tourist guide system is needed in this era where Nigeria is most versatile and has a high index in terms of growth in telecommunication's usage and mobile phones users. Nigerians are heavy users of mobile devices. It is, therefore, important to create awareness for the mobile application when fully updated. Electronic payment systems need to be incorporated. Regular update of information on items needs to be incorporated and a feedback mechanism is usually recommended so as to get diverse options from the users about the application

Keywords: *Tourism, Android, Google Map, Tourist Guide, Hotels, Mobile*

1.0 INTRODUCTION

Tourism can be defined as the act of traveling for sightseeing, leisure, religious, family or business reasons usually for a limited time particularly away from one's home. Tourism as a word came from two Latin words: which are 'tornae' and 'ism'. 'Tornae' means a lathe or circle and 'ism' means an action or process. The suffix 'ist' means who performed an action (WTTC, 2002). According to the world tourism organization (WTO), tourist is people who travel to other places for at most a year for reasons including business, leisure, and other purposes. 'A tourist is a person who travels for fun rather than for reasons related to business or an individual who travels to a place or attends a social event out of curiosity (Oxford dictionary).

A tourist can be a sick person who is after special medical needs which is unavailable at home, a businessman who travels with family for business is also known as business tourist, educationist travel to another town, city or country to further their educational career, adventurists who look for some unusual or bizarre experience fun seeker or leisure tourists who want to be refreshed with comfort while enjoying a break from normal routine of life and etc. (Esuola, 2009). A typical human tourist guide is an individual that assist and provide information on the culture, history, and heritage to people who are on an organized tour. A human guide also provides assistance and information to individual clients in historical sites, educational establishments and venues of relevant interest.

A tourist guide is an information system used widely to manage activities of a tourist and make his/her trip comfortable and convenient. Sequel to the understanding of the tourist management concept, several features are considered much important. The researcher would lay more emphasis on services and activities to be enjoyed by the tourist for easy navigation, access, and Comfort in Nigeria. No solution can certainly solve all the problems hence, the scope of the study has to be defined. Tourist guide (Information System for Tourists) is a mobile client application that runs on the Android OS later than 3.2 (Honeycomb). The application is intended to serve as a compass for the Tourists in Nigeria. It contains some overview of Nigerian tourism agency as a body and as well as information relating to hotels, airlines, history, languages and tourist centers of each of the thirty-six states in Nigeria. The Google map API is embedded in it. This enables the user to navigate easily to and around his/her place of choice.

2.0 LITERATURE REVIEW

The World Tourism Organization is the agency in charge of developing a standard for tourism definition. (WTO, 2002) defines tourism by the set of activities of an individual traveling to a location outside of his or her usual environment for at least a night, but not up to a year. Such an individual's purpose in traveling should not be the exercise of an activity that is not provided in the place visited. "Usual environment" in the above definition does not include trips within an individual's residential community and regular commuting trips. The phrase "Exercise of an activity not provided in the place visited" as used above does not include migration for temporary work with payment from an economic agent who is resident in the place visited. However, business-related travel such as sales calls, equipment installation, or conventions where the traveler's employer resides at another place but the place visited do not apply to this phrase.

2.1 The Tourism Industry

Ardahaey (2011), examined tourist destinations from five sectors and they are attractions, accommodation, infrastructure, supporting facilities, and transport. According to him, tourists are encouraged to visit a place because of attraction, they get to this place through the transportation services, the well-being of the tourist during their stay is catered for by the accommodating and support facilities and the functioning of the above is supported by the infrastructure Ardahaey, 2011).

A recent trend that is common in the tourism industry is what is referred to as "ecotourism". This is travels that include both preserving the natural world and sustaining the wellness of the human cultures that live in it. (Mowforth & Munt, 2015) differentiate from ecotourism and traditional tourism in two ways. The first is that ecotourism promotes environmentally-friendly travel and makes sure that visitors do not disturb the natural environment, and do not leave hazardous materials and dirt (which can affect the delicate ecosystem). Secondly, ecotourism seeks to promote "sustainable" tourism (Mowforth and Munt, 2015. Tourism that affects the natural environment negatively or leads to loss of local human cultures and values are not accommodated in ecotourism. An ecotourism example is tourism that occurred in Kenya in the 70s, where the Kenyan government collected fees for tourists to support conservation and maintain the park in the wildlife reserves.

2.2 Tourism and the Government

Governments have realized that long-term potential tourism can not only generate revenue but also promote peace and goodwill internationally (Upadhayaya, Müller-Böker, and Sharma, 2011). Countries are now taking merits of the advantage that they have in tourism. This advantage can earn foreign exchange for their nations with less hassle as compared to other products. Worthy of note is the fact that developing countries gain more from international tourism than industrialized countries. This account for around a third of their trade services.

In the bid to develop and promote tourism as an economically viable industry, the Federal Government of Nigeria in 1991 introduced a tourism policy. The main aim of this policy is to bring Nigeria to the front in Africa in terms of tourism destination, foreign exchange generation, even development encouragement, promotion of tourism-based rural enterprises, employment generation, rural-urban integration acceleration amongst others. Active private sector participation in tourism development is also one of the aims of the tourism policy.

2.3 Tourism Development in Coastal Region

Eco-tourism has been an area of emphasis over the years. As a result, researches that document tropical forest expansion has received more attention. Irrespective of the location (Esuola, 2009; Grau and Aide, 2008; Grau et al., 2008; Lugo (2002). Foster and Rosenzweig, 2004), tropical forest transition has been the center of recent researches. The theoretical model of the metamorphosis of the forest rooting from the effect of economic modernization on the forest cover is Forest Transition (Mather and Needle, 2008; Rudel et al., 2007). The forest transition model shows regions in Less Developed Countries, in their initial development stage, experiencing an increase in rural population that caused the clearing of forest to expand agriculture and provide timber for construction and fuel generation. Farmlands are abandoned for urban job opportunities.

As a result of the need for forest products by urban markets and the political need for the conservation of forest, forest regeneration and plantation was given birth to. Two main paths

to forest transition identified by Rudel et al. (2005) were: Development economically that leads to decline in farming and forest scarcity stemming from consumption, which leads to a rise in the planting of trees. The study into tropical forest transition has been encouraged. Studies on tourism as it relates to ecologies, politics, and economies of different regions has also been advocated for (Rudel, 2005). However, arguments have a stem that the aim of tourism development should be its sustainability (Bentinck, 2002). UNCSD NGO Steering Committee, 1999) also stated that the involvement of the public sector in tourism should be reduced to its minimal, while the private sector should be the main driving force.

2.4 Overview of Existing System

Since the beginning of time, man has offered to guide services for visitors to an area. The guide of the escort was there to ensure the safety of the travelers, to provide navigation and to lead them to specific places. To this day, the essence of guiding has not changed – it has just evolved. More and more travelers descend upon various countries around the world and wish to learn more about its attractions and cultures. This is where tour guides are needed. Exclusivity is an important factor when it comes to tour guides, and many visitors will pay top dollar to employ a private tour guide who can offer them the most intricate and comprehensive tour possible.

Travelers are excited to go home and retell tales of ancient tribes and endangered rainforests. This is where tour guiding has led over the last few hundred years. People want to leave a foreign country with more knowledge than when they first arrived, and not just with information that they could find at a bookstore or on the internet. Tour guides are storytellers and lead groups of travelers to interesting places that are sometimes unknown to the outsider or untrained eye. Tourism accounts for about 25 % of any country's economy, therefore land tours are a segment of the economy that must be nourished, and this means offering guided tours to complete the visitor experience.

2.5 Disadvantage of the Existing System

The existing system makes use of a human guide, which is not very efficient as the mobile guide because the existing system doesn't work 24hrs a day. The existing system is specific to a particular location or place. The existing system is not flexible.

3.0 METHODOLOGY

The android framework was adopted in this study. The application runs on any mobile phone on which android OS 3.2 (honeycomb) was installed. This framework was chosen because it's one of the most widely used in the world. Android is an operating system based on the Linux kernel and designed primarily for touch screens mobile devices such as smartphones and tablet computers. It was initially developed by Android Inc., which Google backed financially and later bought in 2005, Android was unveiled in 2007 along with the founding of the Open Handset Alliance - a consortium of hardware, software, and telecommunication companies devoted to advancing open standards for mobile devices.

The user interface of Android is based on direct manipulation, using touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching and reverse pinching to manipulate on-screen objects. Internal hardware such as accelerometer, gyroscope, and proximity sensors is used by some applications to respond to the additional user action, for example, adjusting the screen from portrait to landscape depending on how the device is

oriented. Android allows users to customize their home screens with shortcuts to applications and widgets which allow users to display live contents, such as emails and weather information, directly on the home screen. Applications can further send notifications to the user to inform them of relevant information, such as new emails and text messages.

The application provides interface/activity to help where information can be found about the application. This help activity gives detailed information about the application for the users to be able to navigate through the application and also gives guidelines on how to make use of the application. The first publicly available smartphone running Android, the HTC Dream, was released on October 22, 2008. It is obvious that many Nigerians today do not have enough money to purchase laptops to browse or surf the internet, they rather go for android mobile phones which are relatively cheaper and more portable. This, in turn, has led to the proliferation of android phones in Nigeria, the researcher has ceased this advantage to get tourists members that use android too as much as possible get and make use of this app.

The developed system possesses benefits such as:

Convenience: Tourists are usually available 24 hours a day, depending on what time they want to seek fun, in as much as the tourists have Internet access on their phone. They do not need to visit a mobile or queue up waiting for human guide's directive.

Locator: Tourist guide would display the location of the tourist at any particular time provided the GPS is switched

Flexible: The software is flexible as it can perform simultaneous activities at a particular time

Information and reviews: Availability of huge amount of information at a go

4.0 FINDINGS AND DISCUSSIONS

The android interface is used by touching the screen, this involves actions such as swiping, tapping, pinching and so on. Sensors such as accelerometer, gyroscope, and proximity sensors are used to respond to user's action by some application. Home screen customization with widgets and application shortcuts are some of the features of Android devices. Notification is also sent by android applications to inform users of events, information, unchecked messages amongst others.
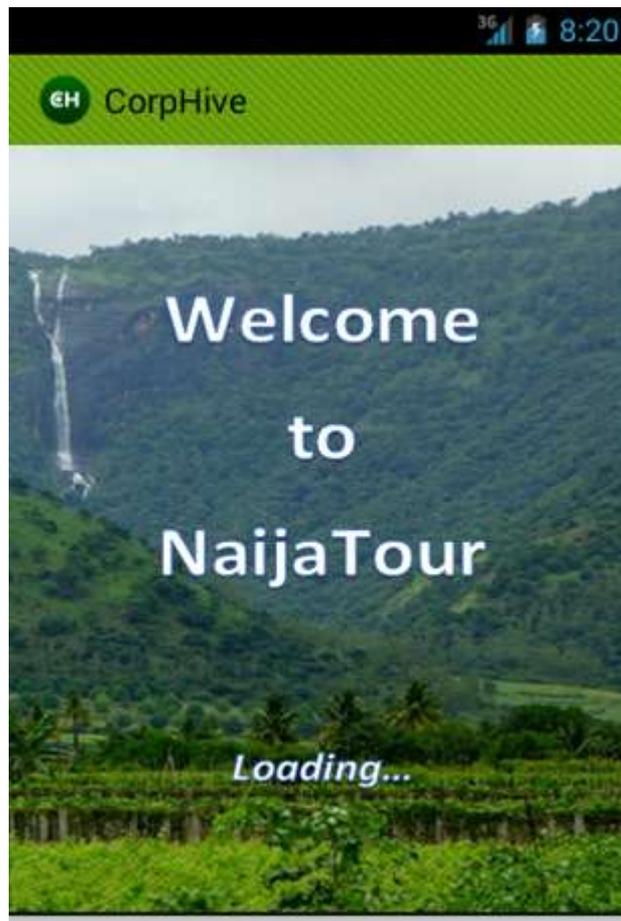
Figure 1: Home Page of the Application

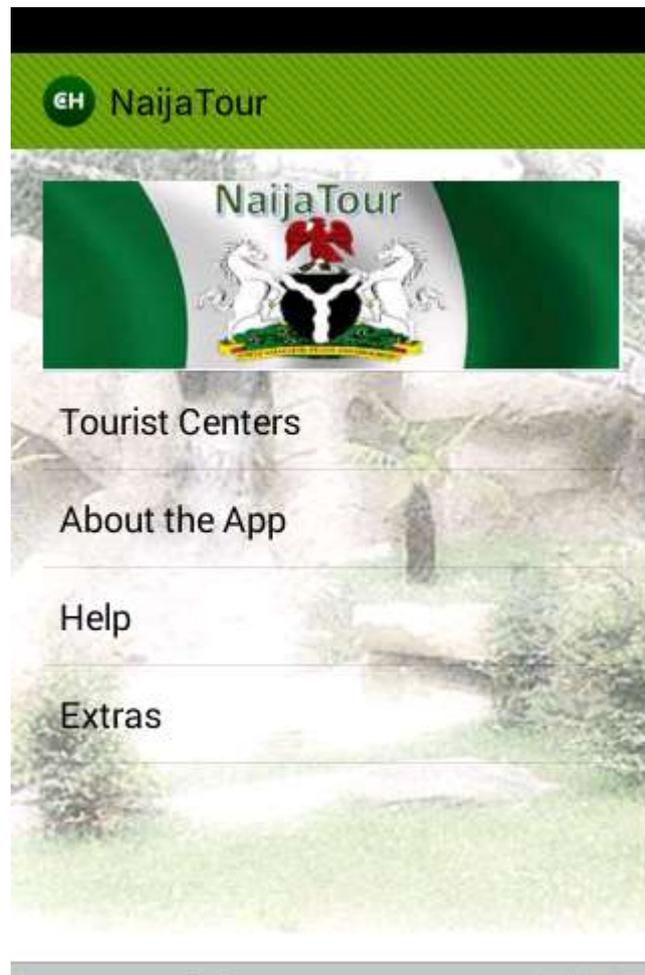Figure 1 above shows the opening(splash activity) of NAIJA TOUR(mobile tourist guide)

Figure 2: Above shows the homepage of the application

Figure 2 display the homepage of the Tourist guide system where the Tourist is able to know about the functionality of the application, find help if there are difficulties and can also find extra functions. Homepage of the application being showed above possess features such as the

Tourist Centers in the country cutting across the six geopolitical zones, Information about NAIJA TOUR and Extras such as available hotels and available airlines in Nigeria.
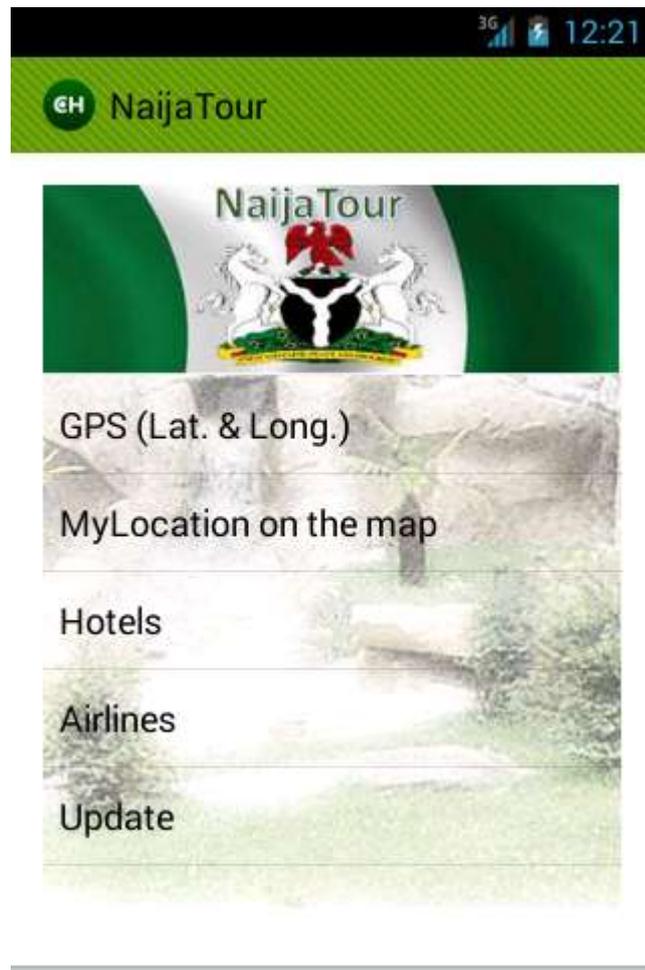
www.iprjb.org

Figure 3: Extra button page

Figure 3 shows the options contained in the extra button of the application. This page contains other features of the application such as; GPS, location, Hotels; Top hotels to visit in Nigeria and their respective addresses, Airlines; All known operating airlines in Nigeria and their respective addresses and Update; The required or available updates for the application on PLAY STORE.
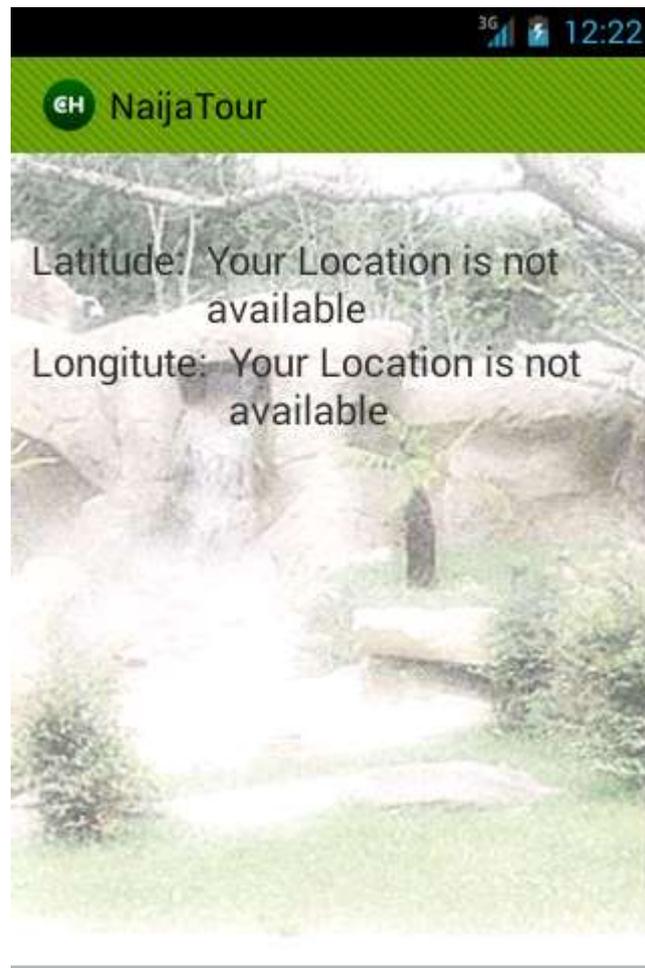
Figure 4: Showing the latitude and longitude of the tourist

The figure 4 above displays the latitude and longitude of the tourist, by using this feature the application requires the use of a GPS embedded in the gadget, the display above illustrates a device that doesn't have a GPS feature which further buttresses the fact that NAIJA TOUR would not be able to fully utilize the features unless a GPS device is used.
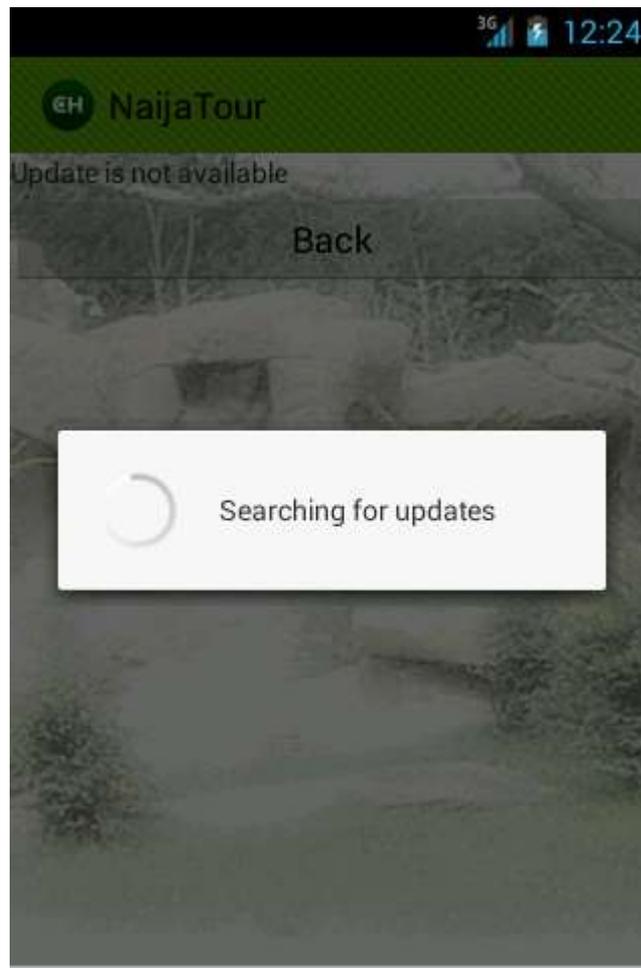
Figure 5: Searching for any available update on the application by the developer.

This figure shows that the application is searching for an available update on the system developed and this is an option is used by the administrator of the application.
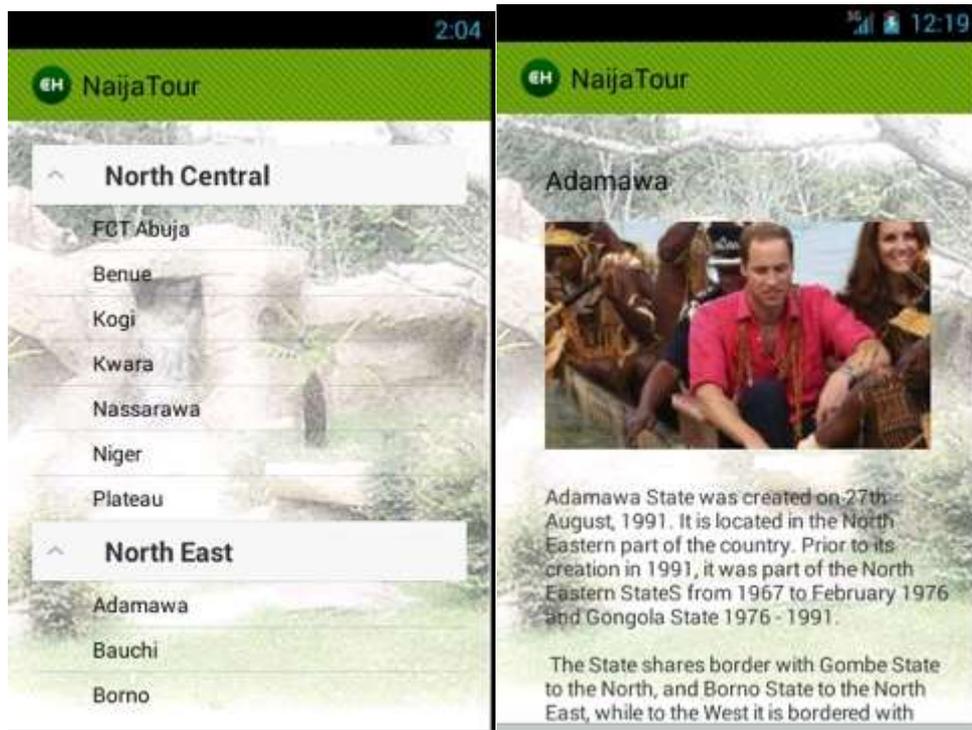
Figure 6: Display of some states searched out by the application

In the figure above, North-central and North-east geopolitical zones were being displayed and a short history of Adamawa state was displayed after searching and clicking on Adamawa being under the North East Geo-Political Zone in Nigeria.
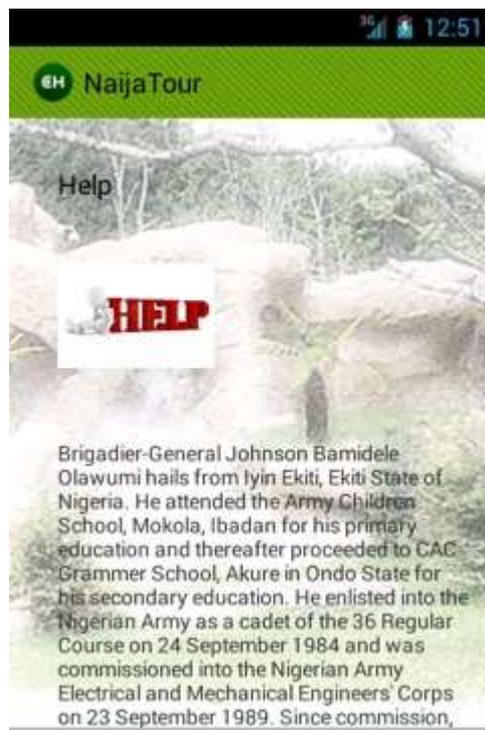
Figure 7 Help interface page

This figure 7 above shows some information about a particular state being searched on the application developer.

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Information is a paramount aspect of any society. To access adequate, complete and current information is the concern of everyone. The need for unadulterated information is a key factor that every society desire. Tourist guide which is an android application developed to address the challenges of where and how to get information.

It addresses the issue of the cost of getting information, the authenticity of information and lots more by the Nigerian tourist. Tourists who have this application would familiarize themselves with information about tourist attractions. They will be acquainted with some of the culture and norms of the people, the language spoken and of course, the natural resources available in the land. They will also be able to find their way to their respective places of the lodge and different hotels that are available with the ability of the application embedded Google map API which shows full navigations.

If information is outdated, it will be of no use to the person in need of it. This is why the tourist guide enables the update to keep its information current. This study is a result of efforts to fully take the information system to mobile users. As users are moving towards mobile technology, everything is done at the fingertips at any moment anytime and anywhere.

5.2 Conclusion

The authors concluded that tourist guide which is an android application gives room for accesses to genuine information about tourism and this eases the stress of Nigerian tourists traveling around who are bothered about their destinations. The app also addresses some of the questions that might be resident in the minds of the people. The developed tourist guide is very easy to navigate through and can be assessed by just anyone no matter their level of knowledge on technology. The tourist guide is an answer to the question in the minds of many prospective Nigerian Tourists. Tourist guide (Information System for Tourists) is a mobile client application that runs on the Android OS later than 3.2 (Honeycomb). The application also served as a compass for the Tourists in Nigeria. The app contains some overview of Nigerian tourism agency as a body and as well as information relating to hotels, airlines, history, languages and tourist centers of each of the thirty-six states in Nigeria. The Google map API is embedded in it. This enables the user to navigate easily to and around his/her place of choice.

5.3 Recommendations

This Mobile tourist guide system is needed in this era where Nigeria is most versatile and has a high index in terms of growth in telecommunication's usage and mobile phones users. Nigerians are heavy users of mobile devices. It is, therefore, a goldmine to have an application that can deliver exactly or more of the functions the tourists will get from a conventional tour guide. Therefore, the importance of the mobile tour guide cannot be overemphasized. Below are some recommendations:

  i.   Creation of awareness for the mobile application when fully updated

ii.   Electronic payment systems are incorporated

iii.   Regular update of information on items

iv.   A feedback mechanism is usually recommended so as to get diverse options from the users about the application

v.   Incorporated with the conventional tour guide for quick and rapid response, as they will serve as complements.

REFERENCES

Ardahaey, F. T. (2011). Economic impacts of tourism industry. *International Journal of Business and Management*, *6*(8), 206-215.

Esuola, A. (2009) Tourism and Hidden Treasures of Nigeria: Investment Opportunities in the Nigeria Tourism Industry. Bloomington, Indiana. Xlibris Corporation

Esuola, A. (2009). *Tourism and hidden treasures of Nigeria: investment opportunities in the Nigeria tourism industry*. Xlibris.

Foster, A. D., & Rosenzweig, M. R. (2004). Agricultural productivity growth, rural economic diversity, and economic reforms: India, 1970–2000. *Economic Development and Cultural Change*, *52*(3), 509-542.

IEA. (2010). What is ergonomics? Available at: http://www.iea.cc/01_what/What%20is%20Ergonomics.html [March 30, 2011].

Kiper Tugba, (2012). Role of Ecotourism in Sustainable Development. Retrieve from https://www.intechopen.com/books/advances-in-landscape-architecture/role-of-ecotourism-in-sustainable-development

Lugo, A. E. (2002). Can we manage tropical landscapes?–an answer from the Caribbean perspective. *Landscape Ecology*, *17*(7), 601-615.

Mowforth, M & Munt, I. (2015). Tourism and sustainability: Development, globalisation and new tourism in the Third World: Fourth edition. 10.4324/9781315795348

National Academy of Sciences. (2010). Health Care Comes Home: The Human Factors. The National Academic Press. 500 fifth Street, N. W. Washington, DC 20001. https://www.nap.edu/catalog/13149/health-care-comes-home-the-human-factors

Satake, A., & Rudel, T. K. (2007). Modeling the forest transition: forest scarcity and ecosystem service hypotheses. *Ecological Applications*, *17*(7), 2024-2036.

UNCSD NGO. (1999). Sustainable Tourism: A Non-Governmental Organization Perspective prepared. Retrieved from https://sustainabledevelopment.un.org/content/documents/401ngo4.pdf

Upadhayaya, P. K., Müller-Böker, U., & Sharma, S. R. (2011). Tourism amidst armed conflict: Consequences, copings, and creativity for peace-building through tourism in Nepal. *The Journal of Tourism and Peace Research*, *1*(2), 22-40.

WTO. (2002). UNWTO Tourism Highlights, 2002 Edition. Retrieved from https://www.e-unwto.org/doi/pdf/10.18111/9789284406876

WTO. (2013). UNWTO Annual Report 2013. RETRIEVED From: https://www2.unwto.org/publication/unwto-annual-report-2013