

-RESEARCH ARTICLE-

e-WISATA ANDROID APP DESIGNED FOR TOURISM, REGIONAL GDP, AND TAX OF REGIONAL GOVERNMENT BUDGET IN INDONESIA: THE CONTEXT OF INDUSTRIAL REVOLUTION 4.0

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—Abstract—

This paper describes the conception, development and launch of the eWISATA, a mobile application (app) that the users can use to get facilitation regarding tourist information, budgeting, and location services. eWISATA is an android-based e-tourism application that does not require high mobile device specifications and run on all types or types of Androids OS. Users can directly install the same as Android applications in general. In general, the application consists of four main menus: the airport menu, seaport, tourism, and the info menu. Each menu will, of course, display different information according to the available data and information. The application is designed in the responsive mode to make it easier for users to access various mobile devices or computers that use different screen sizes. The information column contained in the table consists of area, airport, port, and distance from the airport to the port. The menu of tax revenue-sharing/non-tax revenue-sharing, the Regional Government Budget Revenues and Expenditures (APBD) displays information from the data retrieved from various sources. In eWISATA, the tourism menu is divided into two sub-menus, namely the tourism menu and the airport menu. The tourism menu will also be presented in digital maps, making it easier for users to access or search for tourist distances to airports and ports. This e-WISATA application, also equipped with a geographic information system, uses a digital map service licensed by Google Maps.

Keyword: e-Tourism, android-based, tax, regional government budget revenues and expenditures

1. INTRODUCTION

The use of mobile devices is changing the way businesses provide services to their customers (Ma et al., 2019). The use of mobile technology allows organizations to give real-time information to departments and real-time services to customers, hence increasing the speed with which information is transmitted to and from the customers (Chen et al., 2016). This is one facet of industrial revolution. The main feature of this industrial revolution is the incorporation of information and communication technology in the industry. The emergence of the Industrial Revolution 4.0 caused changes in various sectors (Suryanata et al., 2018). If it initially required a lot of workers, it can now be replaced with specialized machines. The Industrial Revolution 4.0 sounds promising because various conveniences can be obtained. Now we are in the era of the industrial revolution 4.0, marked by extraordinary developments in internet technology (Osin et al., 2019).

In this era of the industrial revolution 4.0, the challenges of preparing human resources (HR) to compete worldwide are getting more extensive and more competitive. Some of the impacts of the Industrial Revolution 4.0 are as follows: (1) Ease of accessing information is becoming easier to access via smartphones or other technologies. In

addition, the community is also easier to establish communication; (2) Effectiveness in the field of human power production can be replaced by machine technology. It will reduce production costs (payment of human labor) and increase production output; (3) The Industrial Revolution 4.0 can increase national income because it can produce something quickly with good quality; (4) Even though they use specialized machines, increasing job opportunities for experts still requires human experts in several fields that machines cannot replace (Chen et al., 2016; Suryanata et al., 2018).

Rapid progress in Information Technology (IT) seems to be unstoppable, where the impact can be felt in various fields, especially tourism. As reported from pemasaranpariwisata.com, Tourism 4.0 or Tourism 4.0 is still a conversation in the world of tourism for the past two to three years (Yangjanita, 2019). At the world level, Spain is one of the countries that have adopted this concept very well. It can be seen from its performance at the end of 2019. Spain is ranked first in the world in the international tourism competitiveness ranking issued by the World Economic Forum (WEF) in its report called The Travel & Tourism Competitiveness Report 2019 (Korže, 2019). At the national level, the Indonesian government has planned to enter the Tourism Industry 4.0 in early 2019, but the question is, are we ready to welcome this opportunity? To discuss this readiness, I will first explain tourism 4.0 and its examples and applications in the real world, and then we will see how it is applied in Indonesia. The term tourism 4.0 (tourism 4.0) started from the adaptation of the tourism industry, which followed the eruption of industrial developments in general, which has now reached the fourth revolution, namely industry 4.0. Therefore, talking about tourism 4.0, we will not be able to escape from industry 4.0 itself. Industry 4.0 is used as a new industrial paradigm that includes a series of industrial developments in the future using the latest technological elements that allow the industrial environment to be more intelligent. The term tourism 4.0 (tourism 4.0) emerged and developed from government circles, professionals, and practitioners in contrast to Smart Tourism and Smart Destination, which have developed among academics through more research than tourism 4.0. In Indonesia itself, Tourism 4.0 is Millennial Tourism born along with big data technology, travelers' behavior collected via apps & sensors, processed to create a seamless & personalized traveling experience (I. Nyoman Sudapet et al., 2020; I Nyoman Sudapet et al., 2021; I. N. Sudapet, Nasihien, R. D., Ibrahim, M. H. B. W., Sukoco, A., & Setiawan, M. I, 2020; I Nyoman Sudapet, Sukoco, bin Wan Ibrahim, et al., 2019; I Nyoman Sudapet, Sukoco, Ibrahim, et al., 2019; N. Sudapet et al., 2018). Therefore, the aim of this paper is to present the conceptualization and development process of eWISATA android application to facilitate tourists in Indonesia.

2. LITERATURE REVIEW

2.1 Industrial Revolution 4.0

Industrial era 4.0 makes the tourism sector increasingly dependent on the need for Information Technology (IT), where every process involved is always based on Information Technology (IT). Based on information sources from [pemasaranpariwisata.com](#), Tourism 4.0 is essentially tourism that utilizes technological developments in industry 4.0 ([Osini et al., 2019](#)). From various references and my observations in the field, several 4.0 technologies are often used in tourism 4.0 ([Suryanata et al., 2018](#)). Meanwhile, [Chen et al. \(2016\)](#) revealed some essential technologies in the tourism 4.0 technology ecosystem. It ranges from Peceny, Urška Starc et al. These technologies are IoT (Internet of Things), Big Data, Augmented Reality (AR), Virtual Reality (VR), Technology-based Business Models, Mobile Technology, Artificial Intelligent (AI), and Robots. We added another critical element regarding AR and VR technology, namely Mixed Reality (MR) technology. In terms of tourism service providers, Internet of Things (IoT) technology can reduce business expenses because, with the internet, tourism service providers can save time and costs from geographical barriers ([Popkova et al., 2019](#)). For example, tourism service providers can quickly enter foreign markets and reach more customers, and vice versa, customers can quickly contact these tourism service providers. Then with Big Data, data can be obtained from digital traces of tourists obtained from various sources, such as social media, tourist portals, business applications, chatbots, and others. This data can be obtained directly (real-time), so it is beneficial for decision-making speed. With this big data, actors in the tourism industry such as tourism service providers or destination managers can quickly obtain data on tourist behavior such as their movements, preferences, purchasing decisions, activities carried out, and others ([Kamilaris et al., 2017](#)).

2.2 Tourism in the Industrial Revolution 4.0 Era

In tourism 4.0, Augmented Reality technology can allow tourists to carry out activities such as booking hotels, accessing information while at the destination, navigating to and around destinations, translating writing or signs and conversations, finding alternative dining and entertainment options, only through the application on a mobile device or smartphone ([Hermawan et al., 2019](#)). Virtual Reality (VR) is a technology that allows users or users to interact with the environment in a virtual world that is simulated by a computer. Users feel that they are in an environment in tourism 4.0; virtual reality has a huge role. The visible trend is that tourists are starting to show great interest in this technology, along with tourist attractions that use this technology as an artificial tourist attraction instead of an attraction in actual reality ([Schutte et al., 2017](#)). There has been a virtual reality theme park in Indonesia at Neo Soho Mall, Jakarta, under Kovee Jaya

VR Theme Park. This amusement park is claimed to be the first virtual reality theme park in Indonesia.

The hotel and tourist business were one of the first industries to embrace the technical advancements connected with the previous industrial revolutions, and it continues to do so today. The Watt steam engine, which was the most significant scientific innovation of the first industrial revolution, had a significant impact on the travel and hospitality industries, as the advent of steam coaches made travel more convenient and speedier for travelers (Suryanata et al., 2018). Electricity was the next major influence on the hospitality and tourism industries, as it was the spark that ignited the second industrial revolution. The introduction of electricity and electrically powered machines in hotels and tourist attractions made travel and lodging safer and more convenient for travelers (Osei et al., 2020). A considerable influence on the hospitality and tourism industries was exerted in the early 1990s due to the widespread use and adoption of computers, information technology, and the Internet, all of which were major breakthrough technologies of the Third Industrial Revolution. As with other industries, the technology components of the Fourth Industrial Revolution have a substantial impact on the hospitality and tourism industries as well. Some researchers in the hospitality literature have recognised essential technological components of this revolution for the business, which they have identified in the literature (Anbia et al., 2018).

It was discovered by Luo et al. (2016) that there are three types of Internet of Things (IoT) technologies that are essential for the establishment of Smart Tourism Destinations. These are cloud computing, IoT, and end-user Internet service systems. Robert (2017) also identified four types of information and communications technology (ICT) that are essential for establishing smart systems in the hotel and tourism industries. Cloud computing, the Internet of Things, mobile communication, and artificial intelligence (AI) technology are examples of such technologies. According to Radulov (2019), 3D printing, self-driving cars, service automation, artificial intelligence, and robotic technologies are the primary technology components of the Fourth Industrial Revolution that are now having an impact on business and the economy. The study therefore recommends six (6) essential technologies from the Industrial Revolution 4.0 (IR 4.0) technologies for the hospitality and tourism industries, which are based on the existing implementation of sophisticated technology in industry. CPS, IOT, Cloud Computing, Big Data, Artificial Intelligence, and Advanced Robotics are examples of such technologies. The fact that these six broad technologies serve as the generic technological components of IR 4.0, with other technologies incorporated in them, should be noted. They are critical components of information systems that promise to provide hospitality and tourism organisations and consumers with more relevant information, greater mobility, better decision assistance, and more delightful experiences as a result of the Fourth Industrial Revolution (Osin et al., 2019).

2.3 Mobile Applications

On a first glance, mobile applications appear to be the most straightforward method of connecting with our early cell phones, alarm clocks, currency calculators, and so on. At the time, users only utilized mobile applications for rudimentary tasks such as receiving phone calls, sending text messages, and performing simple calculations (Wang et al., 2018). However, mobile application developers remained focused on the question "Why Simple?" at all times. But they were well aware that, in the future, the mobile application's extensive feature set will be explored, and that everyone would make use of it. In the year 2000, mobile application developers started discussing the development of internet-based mobile applications (Bry et al., 2018). People can use those mobile applications to connect to the internet for purposes that are important to them on a regular basis. There are some places of the world, such as the European Union, where the mobile sector has lagged behind. The mobile network in that part of the world was not as advanced as it is today. As a result, having high expectations for a mobile application from that section is a weird thing. However, if we consider Europe, where the world's largest mobile companies such as Nokia, Ericsson, and others have established their headquarters, it is from this region that mobile innovation has emerged (Rusyn et al., 2020). However, the fundamental issue is that those companies were not only producing cell phones for the mobile operator, but they were also producing mobile applications. However, it is possible that they will slow things down. Those contributed to a disconnect between the developer and the customer. It resulted in aggravation for the developer, regardless of what they made or when it was to be released or never released (Wang et al., 2018).

Every mobile phone manufacturer has been producing smartphones and feature phones for the past few years. Furthermore, improving the computing capacity of those mobile phones will result in a quick expansion in the number of smart mobile applications (Rusyn et al., 2020). The majority of individuals in industrialized countries, such as the United States and Europe, can't imagine leaving their homes without their cell phones. This is true not only for rich countries, but also for developing ones, where mobile applications are increasingly popular. The mobile application is being used in a variety of settings (Bry et al., 2018). We'll go through some of the most often used areas. Consider the various forms of communication such as internet browsing, voice chat, Facebook, Twitter, and so on. Nowadays, every ordinary mobile phone is equipped with the Facebook programme. Users can share their experiences with their friends and family from any location, including the vehicle or the train. People can communicate with one another through the usage of messenger. With the help of a VoIP programme and the internet, we may make low-cost calls to any part of the world. After that, we can talk about the Global Positioning System (GPS). Current position identifying on a map, road navigation, vehicle tracking, and other applications that make use of GPS systems are the most popular (Jaya et al., 2021). The Google Maps application assists us in locating any location. We can view products, select products, and place orders for products using

mobile commerce. In some restaurants and markets, smartphone applications such as Mobile Wallet are used to complete payment transactions. People can conduct business transactions through the use of a mobile application. Another feature of the mobile application is the ability to do mobile banking and e-ticketing. It is possible to control a home equipment from a remote location using a mobile application that is supported by an internet connection on occasion. Businesspeople are doing their operations outside of the office. People can watch videos and movies from YouTube directly on their mobile devices by utilising the YouTube mobile application. They have the ability to play video and audio. Children can engage in game play on their mobile devices, which is also a type of mobile application (Bry et al., 2018).

2.4 Tourism and Mobile Application: Indonesian Context

Regional tourism in Indonesia is also known by its residents and by foreign tourists. Unfortunately, the tourism promotion strategy in this country is still not optimal. It is evident from the number of new tours in areas that have not been fully exposed. Tourists feel that they only know the same tourist attractions (Briciu et al., 2020). Therefore, we need a platform that can help popularize alternative tourist attractions: a Mobile Phone-based application. Given the current high number of smartphone users, which reach 60% of the total population of Indonesia, this effort can be an effective strategy for promoting regional tourism (Safitri et al., 2017). Regarding mobile applications, platforms like this are tools to simplify and speed up various digital jobs. Since computers and the internet began to develop, developers are increasingly competing to launch multiple applications to meet market needs (Fedelis Brian Putra Prakasa et al., 2020). Almost certainly, all smartphone users install applications on their cellphones. It can be game applications, shopping applications, or travel applications. The travel guide platform is no exception. Many smartphone users prefer to find information about tourist attractions to be visited via the internet and social media. The information obtained is also more detailed and complete, including recommended alternative tours. If you only rely on promotion with print media or television, the promotion will be less effective. People don't watch television every time, but we can be sure that most smartphone users will take their cell phones anywhere. From there, mobile applications should be developed as the most effective tourism promotion strategy (F. B. P. Prakasa et al., 2021).

Some of the benefits of using mobile applications for tourism promotion include: (1) Saving budget costs, compared to print media, no need for printing costs or printing costs, application development can reduce costs up to 70% more affordable; (2) Data and information that is constantly updated, mobile-based travel applications will continually be updated in terms of information and data related to tourism displayed; (3) Effective and efficient to reach more comprehensive users, the mobile application is the most effective and efficient promotion platform. Applications like this can get a broader target user. They consider that smartphone users in Indonesia continue to increase yearly, so this application will not expire; (4) Access anytime and anywhere, coexist

with digital media, travel applications make it easy for users to access information anytime and anywhere. The nearest lodging to travel tickets can be easily accessed through a mobile application-based traveling platform starting from information on tourist attractions; (5) The most accurate branding strategy, apart from being a tourism promotion strategy, traveling applications can also be the most proper branding strategy. Each city can have its travel application that has a different interface with travel applications in other cities. Such as the City of Solo, which has used an application called "Solo Destination," the City of Magelang with the application "Come to Magelang," and other cities that have used a mobile application as a tourism branding strategy in their town (Ballina, 2020; Bhaduri et al., 2020; Carlisle et al., 2021; Ketter, 2021; Skinner et al., 2018). Therefore, in order to extend the facilitation canvas in Indonesian tourism industry the new tourism android application is developed with the name of eWISATA. Following sections will explain the methodology adopted to develop the application and its interface.

3. METHODOLOGY

The process of development of eWISATA android application was divided into several steps. First, the conceptualization of the tourism mobile application was done based on the gaps presented in prior literature and brief consumer market survey. It has been concluded that mobile applications to tourism promotion strategies can be a breakthrough to help increase regional tourism potential. Each city can build and develop its travel application to help boost tourist visits, both local and foreign tourists. As dozens of cities have utilized this great opportunity in mobile technology to increase the promotion of tourist destinations to provide more accessible, more accurate, and reliable delivery of tourist information and access to public services in the smartphone application. Jogja, Kendal, Solo, Magelang, Denpasar, Sragen, Rembang, Demak, Purworejo, Bantul, Sabang, Sleman, and Batu have been recorded using mobile applications as tourist guide portals and city libraries.

Next, the design and development of mobile application. Android applications can be written using Kotlin, Java, and C++ languages. The Android SDK tools compile your code and your data and resource files into an APK, an Android package, an archive file ending in .apk. One APK file contains all the contents of an Android application and is the Android file device used to install applications. Each Android app resides in its security sandbox, which is protected with the following Android security features: (1) The Android operating system is a multi-user Linux system in which each application is a different user; (2) By default, the system assigns a unique Linux user ID to each application (this ID is only used by the system and is unknown). The system gives permissions to all files in the application so that only authorized user IDs can access them; (3) Each process has its virtual machine (VM), so application code runs in isolation from other applications; (4) By default, each application runs in its own Linux process. The Android system starts when an app component needs to run, then kills the

process when it's no longer required or when the system needs to recover memory for other apps to use. The Android system implements the principle of minimal privilege. It means that by default, the application only has access to the components it needs to do its job and nothing more. It results in a highly secure environment where applications cannot access parts of the system without permission. However, there are several ways for apps to share data with other apps and for apps to access system services: (1) Two applications can be set to use the same Linux user ID, in which case they can access each other's files. Applications with the same user ID can also run in the same Linux process and use the same VM to save system resources. The application must also be signed with the same certificate; (2) Apps can request device data such as user contacts, SMS messages, removable storage (SD card), camera, and Bluetooth. The user must explicitly grant this permission.

The next section of this document introduces the following concepts: (1) The core framework components that define the application; (2) The manifest file where you declare the components and features that the device requires for the application; (3) Resources separate from application code and allow applications to optimize their behavior for various device configurations. Application components are the essential building blocks of Android applications, where each component is an entry point where the system or user can enter your application. Some components depend on other components. Android-based e-tourism applications do not require high mobile device specifications and run on all types or types of Androids OS (Operating System). Users who are still using the Android OS type version 4 (four) up to the latest version at this time, version 10 (ten). Likewise, when installing or installing the system on each user's device. By searching with the keyword 'e-wisata' on the google play store, it will automatically find the 'e-wisata' application. Users can directly install the same as Android applications in general. The application consists of four main menus: the airport menu, seaport, tourism, and the info menu. Each menu will, of course, display different information according to the available data and information ([Setiawan et al., 2018](#))

4. RESULT AND DISCUSSION

The application is designed in the responsive mode to make it easier for users to access various mobile devices or computers that use different screen sizes. The following [Figure 1](#) presents the main display or home screen of the application.

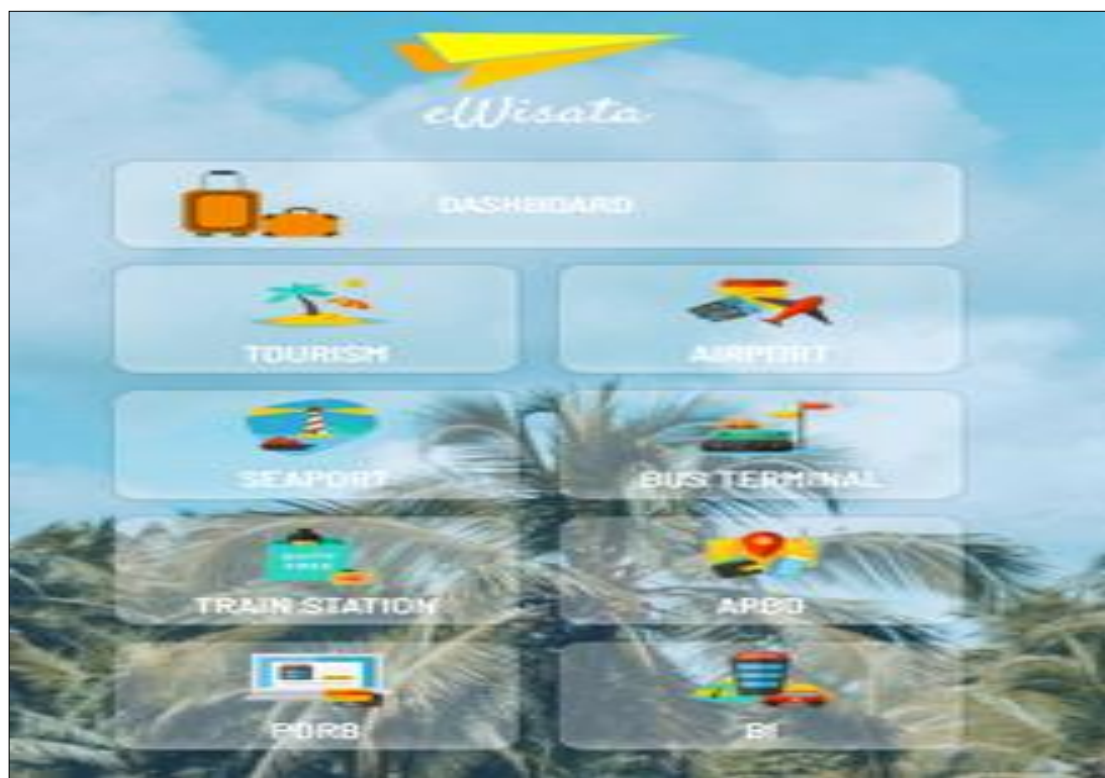


Figure 1. eWISATA Home Screen (<https://ewisata.worldsdg.info/>)

The display above shows that the main page for the application's graphical user interface (GUI) is divided into several sections, including the header section and the content section. The header section contains the application logo, the content section includes several menus, and the menu section is divided into icons and labels. The tourism menu is divided into two sub-menus, namely the tourism menu and the airport menu. The tourism menu will also be presented in digital maps, making it easier for users to access or search for tourist distances to airports and ports. This e-tourism application, also equipped with a geographic information system, uses a digital map service licensed by Google Maps. The following [Figure 2](#) displays of the tourism menu which also has a Google Maps digital map feature



Figure 2. Tourism Menu Digital Map Feature (<https://ewisata.worldsdeg.info/>)

This tourism page displays information on tourist destinations in Indonesia by being presented in digital maps based on GPS and information on the distance between tourist destinations to the airport and the airport. For example, according to the picture above, for tourist destinations in the Southwest Aceh Regency area, there are 14 tours. For instance, for Suak beach tourism, the distance to Kuala Batu airport - Blang Pidie is 22.68 Km, and the distance to Susoh port is 20.06 Km. The info menu consists of three sub-menus, namely Regional Gross Domestic Product (Regional GDP), Non-Central Business District (CBD), Central Business District (CBD) Regional GDP, and Regional Government Budget Revenues and Expenditures (APBD). Of course, each menu will have a function with a different data presentation. Each of these menus will appear sub-menu again according to the menu group. The Non-CBD Regional GDP menu consists of several sub-menus. It includes government administration, defense and social security, manufacturing industry, health services and social activities, financial and insurance services, other services, educational services, services companies, water supply and waste management, provision of accommodation and food and drink, wholesale, retail trade and car repair, mining and quarrying, agriculture, forestry and fisheries, electricity and gas procurement, as well as Regional GDP. The menu for providing accommodation and eating and drinking helps display information from the data. Similar to the previous menu, the information column contained in the table consists of area, nominal (billion), airport, port, and distance from the airport to the port. For example, Semarang City data for accommodation and food and drink provider services is 126.20 (billion) with the name Achmad Yani Airport and the port name

Tanjung Emas, where the distance between the two is 6.13 Km. Another example is the city of Bandung with a nominal value of 448.01 (billion), the name of the Husein Sastranegara Airport, and the name of the port. The CBD Regional GDP menu consists of sub-menus including construction, transportation and warehousing, information and communication, and real estate. Transportation and warehousing menu to display information from the data. Similar to the previous menu, the information column contained in the table consists of area, nominal (billion), airport, port, and distance from the airport to the port. More details can be seen in the following Figure 3.

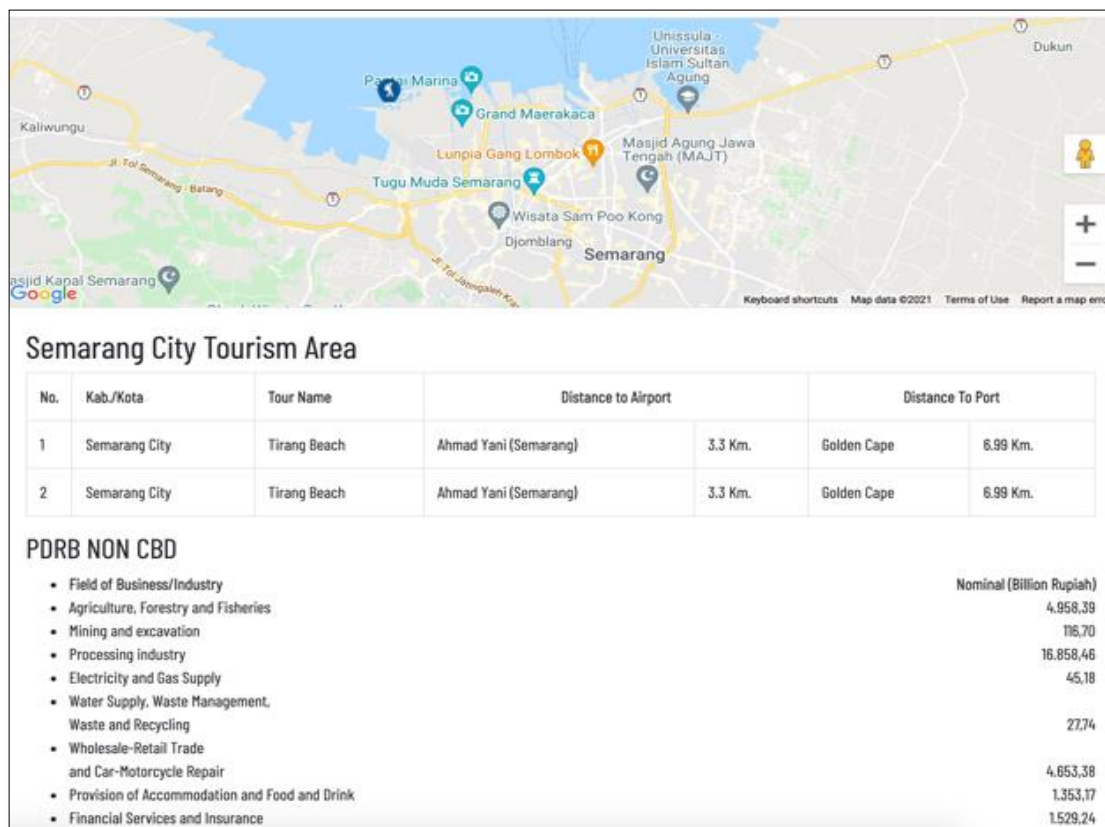
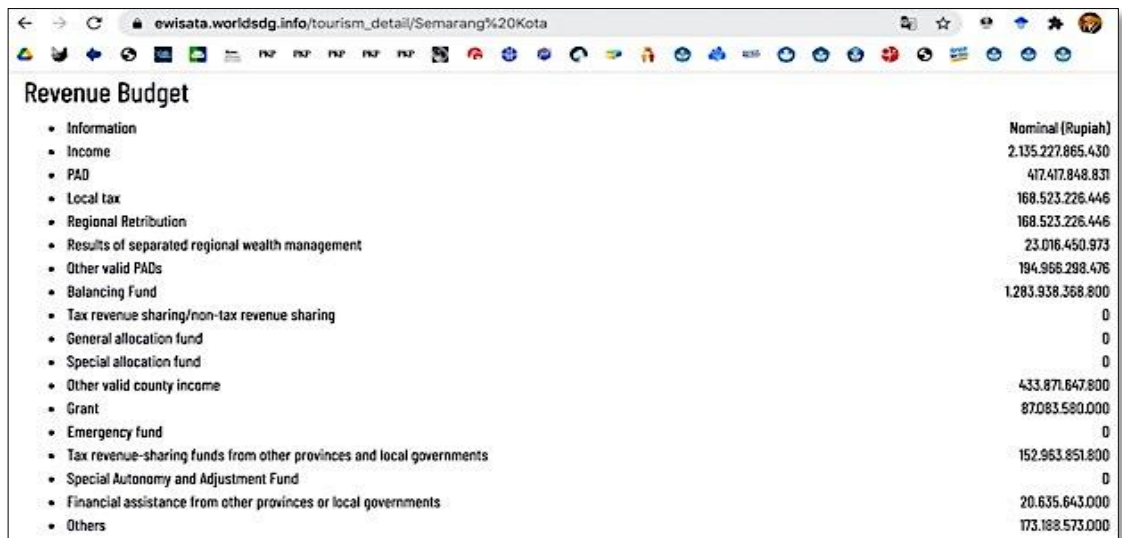


Figure 3. Beach Tourism, Airport, Port and Regional GDP in Semarang, Indonesia (<https://ewisata.worldsdg.info/>)

The menu of tax revenue-sharing/non-tax revenue-sharing, the APBD displays information from the data. Similar to the previous menu, the information column contained in the table consists of area, nominal (billion), airport, port, and distance from the airport to the port. For example, the data for Samarinda City is 849,880,000,000.00 (billion) with the name Temindung airport and the name of the Samarinda port, where the distance between the two is 2.6 km. Another example is the Jayapura City area with a nominally separated regional wealth management of 54,936,823,231.00 (billion) from Sentani airport and Jayapura port, where the distance between the two is 21.55 km.

Another example is Ternate, with a nominal value of 21,019,301,194.00, with the name Sultan Babullah airport (Ternate) and the port of Ternate with a distance of 4.69 km. By referring to income data, the highest value is from the Kutai Kartanegara Regency with a nominal value of 3,677,700,000,000.00, and the lowest in the Central Sumba Regency with a nominal value of 5,935,446,840.00 (billion). The menu of tax proceeds from the Province, APBD displays information from the data. Similar to the previous menu, the information column contained in the table consists of area, nominal (billion), airport, port, and distance from the airport to the port. For example, Makassar City data is 366,638,439,266.00 (billion) with the name Hasanuddin airport and the port name Makassar, where the distance is 2.6 km. Another example is Ternate, with a nominal value of 26,184,141,240.00 with the name Sultan Babullah airport (Ternate) and the name of the port of Ternate, with a distance of 4.69 km. The menu of tax proceeds, APBD from the Province displays information from the data. Similar to the previous menu, the information column contained in the table consists of area, nominal (billion), airport, port, and distance from the airport to the port. More details can be seen in the following Figure 4.



	Nominal (Rupiah)
Information	2.135.227.865.430
Income	417.417.848.831
PAD	168.523.226.446
Local tax	168.523.226.446
Regional Retribution	23.016.450.973
Results of separated regional wealth management	194.966.298.476
Other valid PADs	1.283.938.368.800
Balancing Fund	0
Tax revenue sharing/non-tax revenue sharing	0
General allocation fund	0
Special allocation fund	0
Other valid county income	433.871.647.800
Grant	87.083.580.000
Emergency fund	0
Tax revenue-sharing funds from other provinces and local governments	152.963.851.800
Special Autonomy and Adjustment Fund	0
Financial assistance from other provinces or local governments	20.635.643.000
Others	173.188.573.000

Figure 4. Beach Tourism and Revenue of APBD in Semarang, Indonesia (<https://ewisata.worldsdg.info/>)

5. CONCLUSION

Android-based e-tourism applications do not require high mobile device specifications and run on all types or types of Androids OS. Users can directly install the same as Android applications in general. The tourism menu is divided into two sub-menus, namely the tourism menu and the airport menu. The tourism menu will also be presented in digital maps, making it easier for users to access or search for tourist distances to

airports and ports. This e-tourism application, also equipped with a geographic information system, uses a digital map service licensed by Google Maps. The following is a display of the tourism menu which also has a Google Maps digital map feature. The application consists of four main menus: the airport menu, seaport, tourism, and the info menu. Each menu will, of course, display different information according to the available data and information. The application is designed in the responsive mode to make it easier for users to access various mobile devices or computers that use different screen sizes. The menu of tax revenue-sharing/non-tax revenue-sharing, the Regional Government Budget Revenues and Expenditures (APBD) displays information from the data. The menu of tax proceeds from the Province, APBD displays information from the data. Similar to the previous menu, the information column contained in the table consists of area, nominal (billion), airport, port, and distance from the airport to the port. The menu of tax proceeds, APBD from the Province displays information from the data. Similar to the previous menu, the information column contained in the table consists of area, nominal (billion), airport, port, and distance from the airport.

6. RESEARCH IMPLICATIONS

An organization's capacity to reach its primary target market can be improved by developing a mobile application. This target market often consists of local and visiting outdoor lovers, as well as other concerned citizens looking for a straightforward way to report environmental issues to the appropriate authorities. In addition to the standard methods of communication such as telephone calls, emails, web pages, and public meetings, the past studies have provided an extra link between travellers and tourism agency staff. Because existing informative resources may not be mobile adapted, a reporting app will almost certainly necessitate a change in a tourism agency's interaction strategy. Aside from that, some tourism agency directors may be under the impression that adding a new pipeline to agency personnel will place an undue strain on resources committed to responding to the general public. Furthermore, a commitment from the tourism organisation to keep the app up to date is essential.

In the realm of mobile devices, there is a great deal of emphasis placed on enhancing the capabilities of applications. In addition to crowdsourcing and data integration and sharing, interapp services, data aggregators, security, and social networking are also discussed in the paper. What features should be included in a tourist application will be determined by the situation of the market and the objectives of the tourism organisations. The fundamental principles remain in place: rapid and frugal filtering, inductive reasoning, and user–agency engagement, among others. Improvements that make it easier to use the app and increase the number of images collected and sent are expected, as well as longer and larger video files that can be provided from the smartphone to the intended receiver, sound recording or transcriptions of voice recordings that optimise characterizations provided by the customer, and more auto population of data fields in the app.

Although the usage of mobile applications in organizations is growing at a rapid pace, the management of this technology is still in its early stages. For example, the realisation that a company might construct and maintain an excessive number of mobile applications is still making its way throughout federal agencies today. As a result of this knowledge, there has been an increase in convergence among agencies, divisions, organizations, and authorities for all those mobile applications that have a specific purpose, such as identifying a tourism attraction in a city, into a dedicated app. There have been certain decisions made about development considerations, such as keeping mobile apps easy and fast to use and having applications have increased reporting features such as GPS and image capturing.

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