

Quest for Research Excellence On Computing, Mathematics and Statistics

Editors

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Quest for Research Excellence on Computing, Mathematics and Statistics

Chapters in Book

The 2nd International Conference on Computing, Mathematics
and Statistics (iCMS2015)

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**Technology Assistance for Kids with Learning Disabilities:
Challenges and Opportunities**

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Ahmad*

CHAPTER 6

Developing Waqf Land Computing: A Preliminary Study On The Used Of Web-based Applications And Spatial Database

Siti Nurbaya Ismail, Zanariah Idrus, Nor Hafizah Abdul Razak

Abstract: Around the world, the most commonly properties that being waqf, is land as its' use can be extend of, and making the benefit of waqf grows bigger to its beneficiary. However to what extent does the efficiency of waqf land data management currently being practice? This paper will discuss on the preliminary study done to identify the problems occur in managing waqf land data, thus, inspiring the development of waqf land computing by proposing web-based GIS model. The first objective of this research is, to investigate current practice of waqf land data management. Second objective is to investigate the used of web-based applications and spatial database in waqf land data management. Based on the findings, the third objective is to develop a web-based GIS model. Comparative study is done by investigating the current practice of Malaysia's waqf land data management. Study towards web-based applications and spatial database also had been conduct. Web-based applications had been used over the manual system for it most significant reason which is; its capability to store data on the servers that reflects the management of record keeping process. Where by spatial databases is one of the core foundations of any GIS program, the storage systems containing all of the data that is necessary for a finalized and fully functional GIS map to display all of the data layers that were included in its design. The preliminary result of the study shows that the integration between web-based applications and spatial database in waqf land data management brings tremendous new opportunity, making record keeping process more systematic, effective and efficient.

Keywords: waqf land data management, web-based application, spatial database, GIS

1 Introduction

Waqf whereby in plural is Awqaf is an Arabic term. Waqf can closely define as hold, confinement or prohibition. In Islam religious, waqf has its own designation. Kahf described waqf as “is used in Islam with the meaning of holding certain property and preserving it for the confined benefit of certain philanthropy and prohibiting any use or disposition of it outside that specific objective” [1]. To make it clear, waqf can be classified as a form of endowment that is donated for continuous good charitable purposes. The endowment invested to make a profit for the cause to which it is donated and cannot be sold, considering it as belonging to Allah [2].

Referring to Islam religious, there are several properties or belongings that can be waqf. According to Hassan “Awqaf applies not only to non-perishable properties like: fixed property, land or buildings, it is also can be applied to removable properties such as cash money, books, shares, stocks, and other assets” [3]. Around the world, the most commonly properties that being waqf, is land. This is because, land is properties that can be extend the use of it, and making the benefit of waqf grows bigger to its beneficiary. There are various model of investments of waqf land could be adopted by the waqf authority either they are depending on funding from the federal or state government or statutory bodies or financial institutions [4].

The main concern within this study is, to what extent does the efficiency of waqf land data management currently being practice in Malaysia. Almost all record keeping practice of the waqf land data is done manually. This means all the data are being record in papers, put it in files and later on the files will be pile up in cabinet. As mention before, waqf land cannot be sold. It will be remaining as endowment. Thereafter there is a strong need to keep track on the record. Using the manual practice, it will be challenging to deal with geographical and historical data. Furthermore, if the manual records being destroy due to natural hazard such as flood, fire or missing, the data will be lost forever and nothing can be done to obtain it. In the other hand, the waqf authority also needs a systematic, effective and efficient mechanism to manage the waqf land data. It is because every waqf land income must be managed carefully in order to be benefited by their beneficiaries.

To overcome the problems occur within managing the waqf land data manually; there is a need for a high end technology to overcome this situation. As stated in [4], the researchers had proved that in this era, “the implementation of ICT in waqf administration provides an effective management and planning”. ICT can be used as a systematic, effective and efficient mechanism to manage the waqf land data. Indisputably that ICT have the capability to store, retrieve, analyze and distribute waqf land data to its beneficiaries. Due to these circumstances, several states in Malaysia had been employed ICT in order to manage their waqf administration. This is including

Penang, Selangor and Federal Territories. For example, according to [4], waqf land of the Majlis Agama Islam Negeri Pulau Pinang (MAINPP) consists of four main applications namely waqf information management system, comprehensive building information system, information system based on Geographic Information System (GIS) and Pulau Pinang Geographic Information System. Based on this finding, implementation of ICT within waqf land data management had a huge prospect to look in.

Although there are some implementation of ICT in waqf land data management, there are still room for improvement. Previous study done by [5], claimed that currently in Malaysia, most of waqf properties and their institutions are unmanageable. The current applications are using different method and different techniques. Hence the purpose of this study is to look at the prospect of making the waqf land data management more systematic, effective and efficient. This study will introduce the used of web-based applications with the integration of spatial database to develop waqf land computing for data management system. The study will also proposed a web-based GIS model with the used of high end technologies, appropriate techniques and method. This model is hoped to be used as a standard that will help all the waqf beneficiaries manage the waqf land data more systematically, effectively and efficiently.

2 Comparison Analysis of Malaysia's Waqf Land Data Management

In Pulau Pinang, Majlis Agama Islam Negeri Pulau Pinang (MAINPP) is the trustee and administrator of the waqf properties including, land. As stated in [4], MAINPP has several information system to help them managing their data such as information system based on Geographic Information System (GIS) and Pulau Pinang Geographic Information System. The only drawback of the implemented system is, it can only be access by the MAINPP staff but not to the entire user. There for the distributing of information to all it beneficiary do not being archive yet. And also, we do not know to what extend does GIS being implemented to manage waqf land data.

In Kedah, Majlis Agama Islam Kedah (MAIK) is in charge to manage waqf properties as well as waqf land. MAIK had implemented e-Waqf, a stand alone database system to manage their land data. This system although had ability to update and provide efficient and systematic data management process [6], but it still lack of capability in order to generate geographical report and also information distributions.

As for Perlis, Majlis Agama Islam & Adat Istiadat Melayu Perlis (MAIPS); and Perak, Majlis Agama Islam & Adat Melayu Perak (MAIPk) is responsible to manage waqf properties. But, since the state is in a small area,

they do not have a great issue in managing their data. However, the current practice is not systematic, and there for, they need to improve their information system in order to give their user efficient, accurate and real time data

Table 1: Waqf Data Management

	Kedah	Perlis	Penang	Perak
Trustee / Administrator	Majlis Agama Islam Kedah (MAIK)	Majlis Agama Islam & Adat Istiadat Melayu Perlis (MAIPS)	Majlis Agama Islam Negeri Pulau Pinang (MAINPP)	Majlis Agama Islam & Adat Melayu Perak (MAIPk)
URL	http://www.maik.gov.my/	http://www.maips.gov.my/	http://www.mainpp.gov.my/	http://www.aiamp.gov.my/
Method used to manage waqf land data	Computerized system	Manual	Geographic Information System	Manual
System Name	e-Waqf	-	Pulau Pinang Geographic Information System	-
Computerized System	Stand alone database system	Unsystematic	Web-based and GIS	Unsystematic

3 Web-based Applications, Spatial Database and GIS

3.1 Web-based Applications

Web can be best describe as a widely used service on the Internet, consists of a worldwide collection of electronic documents [7]. Web based application is an online system that can bee seen as global library of information available to anyone connected to the internet. The web is an outstanding mechanism for interactive applications with excellent ability to deliver and distribute data. The web ubiquity provides global application availability to both users and organization [8]. Based on these remarkable enormous positive advantages, web had been used widely all over the world now days to support almost every possible work.

Web-based applications had been used over the manual system for numerous reasons. The first, and possibly most significant, is the capability of web-based application to store data on the servers. This situation reflects the management of record keeping process. In an average manual process, record keeping is conduct with pen and paper. However, with the used of web-based applications, all the problems within the manual process can be overcome easily. Effective accessibility is the second advantage in web-based applications. It promotes accessibility to an application, of anytime, anywhere around the globe. Based on the second advantage, raised the third advantage, which is, data within web-based applications can be manage easily, whenever necessary.

3.2 Spatial Database

The conventional database can only support conventional data type such as number and text. Where by spatial database is a database management system that provides an environment for spatial data types in its implementations [9]. Spatial data types are data regarding to spaces. Briefly, within this study, spatial database can be claimed as geographical database that supports geographical data. Waqf land data contains geographical data. There for, spatial database is the best to be implemented in managing waqf land data.

3.3 Geographical Information System (GIS)

The evolved of Geographic Information System (GIS) in almost every industry, make all the researchers agree that GIS benefits organizations in many different areas. All sectors that deal with land analysis and management, apply GIS application for integrating and analysing data from different formats, scale and coordinate systems, according to specific cognitive objectives. For each of these features, everything based on land survey and its precise and accurate graphic and cartographic representation, where the main technical figure, make GIS as a useful tool in waqf administration. For example, the implementation of GIS application in Waqf land data management provides various benefits in term of data, record, figures and enables efficient waqf property's management and administration [10].

As stated in [11], the implementation of GIS known as "Sistem GIS Wakaf" developed by Universiti Putra Malaysia (UPM) has shown an excellent achievement in solving land mapping problem under management of Majlis Agama Islam Selangor (MAIS). This accomplishment becoming a stepping stone to further investigate and explore the benefit of GIS application in land management sector in Malaysia.

4 Proposed Model for Waqf Land Data Management

In this day of ICT age, integration between web-based applications and database can brings tremendous new opportunity, making record keeping process more systematic, effective and efficient. A study had explain that the merging of web and database technologies happen due to the increasing demands of data-intensive web sites [12]. Studies also show that integration between web-based applications and database is predicted to become the next generation of database technology. As web database connectivity opens the door to new innovative services [13].

As mention before, almost all record keeping practice of the waqf land data is done manually using papers. Although there are some GIS implement within this area, we do not know, to what extend does the capability of the system. A study argues that land record systems (paper based, computer assisted or fully computerised) must be flexible in order to respond meaningfully to what is required of the system as a situation changes [14]. The paper also has discussed 5 existing models in database structures namely, Land Administration Domain Model (LADM), Social Tenure Domain Model (STDm), Open Source Cadastre and Registry (OSCAR), Talking Titler Model and Comparison and Critique. Based on the existing problems and models, there is very great prospects to reconstruct the current practice of managing

waqf land data [14]. To this extent, this research is an opportunities to bring ICT in Islam especially in the scope of managing waqf land data integration between web-based applications and spatial database in waqf land data management

4.1 Proposed Web-based Geographical Information System Model

In order to overcome the problem in managing waqf land data, we had proposed a web based GIS model with the combination of spatial database. Figure 1 show the proposed model.

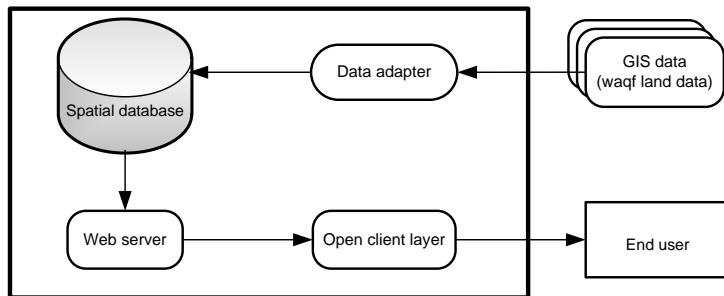


Figure 1: Proposed web based GIS model with the combination with spatial database

5 Conclusion

This study introduce the used of web-based applications with the integration of spatial database to develop waqf land computing for data management system. The study model will made used of high end technologies, appropriate techniques and method. The web based GIS model with integration of spatial database is hoped to be used as a standard that will help all the waqf trustee/administrator manage waqf land data more systematic, effective and efficient, that will promote to tremendous benefit to its beneficiary.

Reference

1. Kahf, M. (n.d). Waqf: A Quick Overview, Article x. Retrieved November 26, 2010, from <http://www.kantakji.com/fiqh/Files/Wakf/Z140.pdf>
2. Yaqub, W. (2006). Waqf Future Fund Working Towards A Better Future. Retrieved November 26 from http://www.islamic-relief.com/uk/pdf/WAQF_A4_Progress.pdf
3. Hassan, K.H. (2010). *An Integerated Poverty Alleviation Model Combining Zakat, Awqaf and Micr-finance*. Seventh Internation Conference – The Tawhidi Epistemology: Zakat and Waqf Economy, Bangi, 2010.
4. Hasan, Z. & Abdullah, M. J. (2008). The Investment of Waqf Land as an Instrument of the Muslims' Economic Development in Malaysia. *Dubai International Conference for Endowments Investments, the Dubai Awqaf and Minors Affairs Foundation*, 4-6th February 2008.
5. Hassan, A., Shahid, M.A., (2010). *Management and Development of the Awqaf Asset*. Seventh Internation Conference – The Tawhidi Epistemology: Zakat and Waqf Economy, Bangi, 2010.
6. Zuraidah Mohamed Isa, Norhidayah Ali, Rabitah Harun, “A Comparative Study of Waqf Management in Malaysia”, 2011 Internatioanl conference on Sociality and Economics Development, Singapore, 2011.
7. Shelly, G.B., and Vermaat, M.E. (2011). *Discovering Computers: Living in Digital World*, Thomson Course Technology, Boston, MA.
8. Connolly, T. & Begg, C. (2007). *Database Systems: A Practical Approach to Design, Implementation, and Management*, Fourth Edition. Addison Wesley.
9. Guting, R.H. (1994). An Introduction to Spatial Database Systems. *Special Issue on Spatial Database Systems of the VLDB Journal* (Vol. 3, No. 4, October 1994)
10. Zulkifli Hasan and Muhammad Najib Abdullah, “The Investment Of Waqf Land As An Instrument Of Muslims' Economic Development In Malaysia”, Dubai International Conference on Endowments' Investment, 2008.
11. Sistem GIS selesai isu tanah wakaf | N9 Kini - Portal Berita Negeri Sembilan, retrived from "<http://n9kini.com/?p=58993#respond>", Date 30 October 2011.
12. Morrison, M., Morrison, J., & Keys, A. (2002). Integrating Web Sites And Databases. *Communication of the ACM*. Vol 45 Issue 9

13. Rob, P. & Coronel, C. (2002). *Database Systems: Design, Implementation, and Management*, 6th Edition, Course Technology, Boston, MA
14. Molero, R., Barry, M., Hunter, A., Shunnar, T. (2010). *Flexible Database Structures for Land Records*. FIG Congress 2010, Facing the Challenges – Building the Capacity, Sydney, Australia, 11 – 16 April 2010.



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