Knowledge Management System for Zakat

Aulia Rahman N*[1], Irman Hermadi[2], Wisnu Ananta K[3], Irfan Syauqi B[4]
[1,2,3]Departement of Computer Science, Faculty of Mathematics and Natural Science
[4]Departement of Islamic Economics, Faculty of Economics, Bogor Agricultural University,
Bogor 16680, Indonesia, Kampus IPB Dermaga, Jl. Meranti, Wing 20 Level 5-6, Bogor 16680
Telp./Fax.: +62-251-8625584
*Corresponding author, e-mail: aulia.rahman.nasution12p@apps.ipb.ac.id[1],
irmanhermadi@apps.ipb.ac.id[2], w.ananta.kusuma@gmail.com[3], irfan_beik@ipb.ac.id[4]

Abstract
Zakat is one of the Islamic pillars that has strategic contribution to the society. Zakat is one of the Muslim obligation.It is also a form of social solidarity. The collaborativeresearch conducted by Badan Amil Zakat Nasional (BAZNas) and Institut Pertanian Bogor (IPB) estimated the potential of zakat collection in Indonesia could reach about Rp 217 trillion every year that has not been achieved yet. Researchers and practitioners have advised to implement a Knowledge Management System (KMS) to optimize the collection and BAZNas's objectives. The objective of this research is to develop web-based Zakat Knowledge Management System (ZKMS). The KMS development methodology is done with using Knowledge Management System Life Cycle (KMSLC). Knowledge has been captured from experts consisting of practitioners and scientists from BAZNas of Bogor City, muzakki, documents, books and journals. ZKMS was developed using ASP.NET framework, C# programming language and MySQL database management system. The system has menu that are user, zakat knowledge, questions and answers with experts, interaction between members, about us, profiles and knowledge sources. This system is designed be user friendly to get, know, make, share, store and disseminate actual and contemporary of zakat knowledge.

Keywords: badan amil zakat nasional (BAZNas), knowledge management system life cycle (KMSLC), zakat knowledge management system (ZKMS)

1. Introduction

One of Islamic pillars that has strategic contribution to society is the zakat. It is part of implementation of the Muslim obligation and also a form of social solidarity. Social solidarity in socio-economic realities of society is the problem of poverty that needs attention and solution [1]. According to Badan Pusat Statistik (BPS) [2] and World Bank (World Bank 2012), Indonesia is one of five poorest countries in the Muslim world. BPS stated in 2012, number of poor people in Indonesia reached 29.88 millions however World Bank stated much higher number that reached 102.45 millions.Concept of people economic empowerment through of implementing zakat in Islam is one alternative to overcome poverty problem. One of people economic empowerment institutions has been mandated by the Law of Indonesian Republic No. 23 of 2011 for national zakat management is Badan Amil Zakat Nasional (BAZNas). BAZNas (2011) has published zakat data, donation, and alms that collected from all zakat organizations only reached by Rp 1.73 trillion. Collaborative research conducted by BAZNasand Institut Pertanian Bogor (IPB) estimated potential of zakat collection in Indonesia could reach about Rp 217 trillion every year. This potential needs to be extracted optimally in people life enhancement [3]. Many research suggested that not achieved zakat potential caused by low public awareness of zakat problems especially actual and contemporary [4]. In the end, the emphasis is awareness of people to give zakat, donation and alms that it must be cultivated and instilled in every Muslim [5].Knowledge Management System is a form of information combination, interpretation, reflection and experience of a person or an expert that could documented or knowledge that is still in minds of experts called implicit/tacit knowledge. It could be distributed in a container and could be accessed by all people.

Researchers and practitioners have advised to implement a Knowledge Management System (KMS) to optimize performance and objectives of an organization [6]. The objective of

KMS is to support the creation, transfer and application of knowledge within organization effectively and requires a lot of literature [7]. According to activity theory, KMS paradigm is to create, share, store and disseminate knowledge and collaborate with each other [8]. The expected result is to be a good learning system. In general, information is defined from terminology of data, knowledge is defined from terminology of information and cultural (wisdom) is defined from terminology of knowledge [9].Knowledge could lead gradually users to get the ultimate solution [10].Expression and representation model of knowledge is the most important stage to influence reasoning efficiency, enriching knowledge and affect the intelligence level of the entire knowledge [11].

Many systems have been built to support awareness of zakat that it aimed of getting information zakat related easily. One system has been built is a Web-Based Zakat Information System by Francisca Meisye Huseina (2006). The advantages of a system could display zakat information and could calculate zakat. The weakness of a system is only display information but not be a knowledge, only one-way interaction and not involve experts thoroughly.Zakat services and socialization activities are conducted using old patterns. It is necessary innovated by using the knowledge management system and utilize the current technology, so that any data, information and knowledge could be processed accurately and quickly accessible by public especially muzakki. The formulation of problem in this research is lack of awareness, satisfaction and muzakki trust. It is caused the lack of knowledge about zakat. Therefore, we have taken a concept of KMS that it would be cultivated and be instilled knowledge, paradigms and awareness in every a Muslim. The objective of this research is to develop web-based Zakat Knowledge Management System (ZKMS).

2. Research Method

Development of ZKMS has used Knowledge Management System Life Cycle [12] that could be seen in Figure 1. The phases are: evaluate existing infrastructure, form the KM team, knowledge capture, design KMS blueprint, verify and validate the KM system, implement KM system and testing KM system.
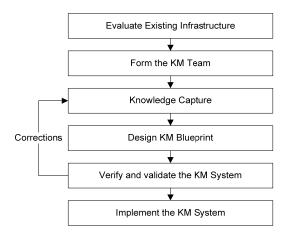

Figure 1. KMSLC Development Phase

Existing infrastructure has been evaluated with considering project finance, human resources and operational constraints. Then we have created a project strategy that consisted of a vision, resources and culture, in order to complete the project as quickly as possible with maximum profits and to use technology that supports requirements of KMS. KM team has been formed with identifying stakeholders for optimizing the formation of teams that would work together to build KMS from blueprint to implementation. The team's success has depended on ability of team members, team size, project complexity, team leadership and motivation as well as not exceed time than realization of promise delivered.Knowledge has been captured from knowledge resources, knowledge sharing culture, identification of explicit knowledge in a

repository of various media with study of literature, capturing of the tacit knowledge from experts with interview and knowledge representation. The research material has used the expert knowledge base that consists of practitioners and scientists from BAZNas of Bogor City, muzakki, documents, books, journals of zakat. Knowledge has been captured from experts in order to build a knowledge base. KMS blueprint has been designed using Unified Modeling Language (UML), Object Relational Mapping (ORM) and Entity Relationship Diagram (ERD).Experts has verified and validated knowledge with a blueprint design that has been made. KM System has been implemented with creating a database, writing program code, interface-pages in system and converts knowledge into explicit forms, including of errors reasoning, ambiguity, incompleteness and error representation and user training. KMS has been tested using black box where system is run on Google Chrome or Mozilla Firefox, MySQL local web server and Microsoft Visual Studio 2010.

Knowledge Capture has done with:

a) The study of literature

Explicit knowledge has been captured from books, documents, papers, proceedings and journals scientific research zakat related. Explicit knowledge has been extracted in form of files that has been stored in the database. The books and journals have been captured knowledge that are:

1. Al-qur'an Dan Hadist.
2. Fiqih 4 Mazhab - Syaikh Al-Allamah Muhammad Bin Abdulrrahmantahun 2013
3. 20 Fatwa Pilihan Seputar Zakat - Al-Imam 'Abdul 'Aziz bin 'Abdillah bin Baz tahun2007.
4. Fiqih Zakat- Al-Qurdowi tahun 1997
5. Buku Panduan Zakat Dompet Dhuafa - Ahmad Hadi Yasin tahun2011
6. Buku Tunaikan zakat - Achmad Muzammil tahun2003.
7. Kitab Zakat - Syaikh Abdul Aziz bin Baz tahun2009
8. *Factors Affecting Zakat Payment Through Institution Of Amil: Muzaki's Perspectives Analysis* (Case Study Of Badan Amil Zakat Nasional [BAZNas])ect.

b) Interview

The interview has been conducted to capture tacit knowledge that is in the experts minds. Experts are selected because they are intensively involved in research and they have an experience of the zakat service in Indonesia. Expert name is Ustadz Jejen Hermawan H, Spdl. Result of the interview that has been captured from their knowledge are the ones who could receive zakat is poor person's, the poor category have basic needs that must fulfilled every day or every month from Indonesian society is Rp. 900.000, - according to the number of eating 3 x Rp. 10.000, - x 30 days. Groups who could receive zakat are people who is owed, and ratio both the debt and income that makes them eligible to receive zakat is basic needs more than their daily income by Rp. 50.000, - and others that couldnot be contained in this presentation.

3. Results and Discussion

BAZNas has technology infrastructure that be adequate for system implementation. There has a network of computers and internet has integrated, a server unit online 24-hour that could be used to manage knowledge. Servers have used Intel Core i5, 3 GB memory, 500 GB Hard Disk. It also has MySQL and XAMPP. Microsoft Visual Studio 2010 and Navicat Premium are installed to develop ZKMS. Software from Microsoft that has been used not all licensed or still trial. Finance for this project has received an allocation of funds from the financial center BAZ itself every year. Human resources also have been accommodated with the information technology division. Administrator and expert has been trained to run the system. Then the project has created a strategy that consists of a vision that emphasizes the application of zakat knowledge management, knowledge sources has been taken from experts. Culture is instilled into every administrator, and specifically for experts to always create, share, enhance and maintain zakat knowledge. KM team has been formed with the stakeholder, experts, administrators and researcher and developer a ZKMS.

Technique to represent the knowledge base into a schema / diagram is one of its with using Knowledge Map [13] in order to get relationships / linkages between the data with other data. Knowledge has been taken from explicit knowledge sources consists of Qur'an, Hadits,

Shafi'i, Hanafi, Hambali, Maliki book's, documents and journals zakat related. The Implicit knowledge and the knowledge sharing culture are gotten from practitioners and scientists from BAZNas and muzakki. The formulation could be seen as in Figure 2. Knowledge Map of ZKMS has eight subdivisions. The first of these is the intentions on payments. The second of these is the terms of obligation where there are six of terms among others is islam, fully-owned (owned perfect), already reached one nishab and reached one year (Al-Hawl). The third of these is the right group accept where there are eight of group among others is fakir and miskin. The fourth is the distribution of zakat. The fifth is the haram group accept where there are four of group among others is kafir and atheis. The six is the promise of Allah for them that pay of zakat. The seven is the punishment of Allah for them that not pay of zakat. The last subdivision is the kinds of zakat that has two kinds are fitrah and maal. Fitrah has two subdivisions that are measure and time of payment. Maal has two subdivisions that are intention and kinds of maal. The kinds of maal zakat have seven subdivisions. The first is the animal husbandry that are camel, cow and buffalo / sheep. the next subdivision are mining and seafood, trade, gold, silver and saving, enterprise, income and the last subdivision is the agriculture that are rain water, irrigation and hybrid.
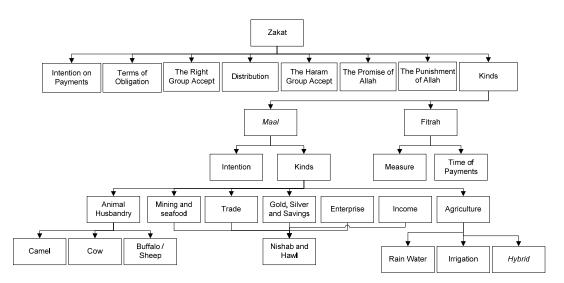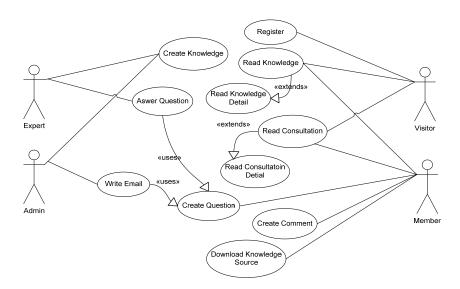

Figure 2. Knowledge Map of ZKMS

Figure 4 Use Case Diagram of ZKMS

ZKMS is designed with using UML [14]. Use case diagram could be seen as in Figure 4, which has four user that are admin, expert, member and visitor. Visitor could do registration, read knowledge extends to use case of read knowledge detail, read consultation extends to read consultation detail. Member read knowledge extends to use case of read knowledge detail, read consultation extends to read consultation detail, create a question that would be answered by an expert, create comment and download knowledge source. Expert could create knowledge, answer question uses the create question by member or create email by an admin. The admin could create knowledge, create an email uses the create question by member if question no yet answered by an expert.

Class Diagram of KMS illustrates the system structure that is defined in terms of classes that could be seen in Figure 5. Class Register has seven methods that are page_load, btnDaftar_click, validation, ASPxUploadContol1_FileUploadComplete1, saveFoto and btnSelesai_Click, Class Registerdirects to class Login which has three attribute that are idUser, username and password and which has three methods that are Page_Load, btnLogin_Click and btnRegister_Click. Class Login directs to class Master Page. Class Master Page directs to class Default. Class Default directs to class All Knowledge. Class All Knowledge is a generalization from class All Knowledge Detail, All Knowledge Add, All Knowledge Edit, All Knowledge Delete and other direction.
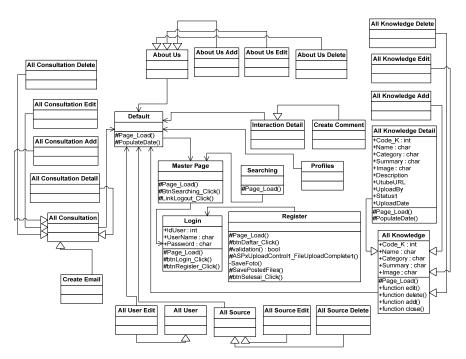

Figure 5. ClassDiagram of ZKMS

Object Relational Mapping (ORM) [15] is designed to represent the database relational of data storage with object form that could be seen as in Figure 6. Each user attributes upload one or more knowledge source attribute; each knowledge source attributes upload by one user attribute. Each user attributes have one or more interaction; each interaction attributes have one user. Each user attributes have one or more consultation; each consultation attributes have one user. Each user attributes create one or more zakat attribute; each zakat attributes have one user. Each zakat attributes has one maal and fitrah attribute. Fitrah attribute has two values that are measure and time of payment. Maal attribute has intention's value and has one animal husbandry, mining and seafood, trade, gold, silver and savings, enterprise, income and agriculture attribute.
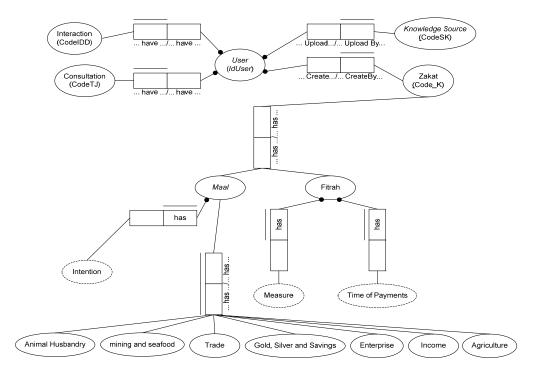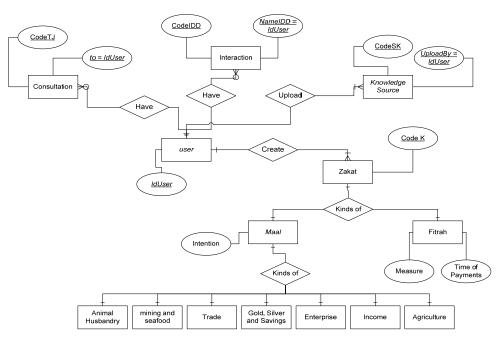
Figure 6. ORMof ZKMS

Figure 7. ERDof ZKMS

Database is designed with using the Entity Relationship Diagram (ERD) [16]. It has five entities that are: user, knowledge source, knowledge, discussion and interaction and dialogue that could be seen in Figure 7. Each user attributes that has idUser as primary key upload one or more knowledge source attributes that has codeSK as primary key and uploadBy = IdUser as foreign key; each knowledge source attributes upload by one and only one user attribute. Each user attributes have one or more interaction that has CodeIDD as primary key and uploadBy = IdUser as foreign key; each interaction attributes have by one and only one user attribute. Each

user attributes have one or more consultation that has CodeTJ as primary key and uploadBy = IdUser as foreign key; each consultation attributes have by one and only one user attribute. Each user attributes create one or more zakat attributes that have Code_K as primary key. Each zakat attributes has kinds of maal and fitrah attribute. Fitrah attribute has two values that are measure and time of payment. Maal attribute has intention value and has kinds of one animal husbandry, mining and seafood, trade, gold, silver and savings, enterprise, income and agriculture attribute.

Verification and validation of KMS have done with interviews and discussion on a design blueprint with experts from BAZNas. Overall design blue print is accordance with what is expected on stage of the knowledge capturing, then next stage is KMS implementation process with using ASP.NET (C#) to be converted into a web.

Implementation of KM System has the navigation functions contains all concepts blueprint that have been designed. Visitors could do registration in the registration navigation. Login navigation is permission process for members, experts and admin. Header navigation is used to search the knowledge if put in a word and would search for words listed on the system. Navigation menu consists of menu of knowledge zakat, consultation with experts, interaction and dialogue between members, knowledge source, profile, about us and user. Navigation of sub-menu consists of the animal husbandry, mining and seafood, trade, gold, silver and savings, enterprise, income, agriculture. Center navigation contains banner "welcome to ZKMS", introduce the KMS system and how manner to create an account, top topic with a question and answer with experts. Navigation of footer consists of the category zakat, tools and shortcut of the system.

KM System has been tested with black box [17] on each of functions that have been tested by the examiner whom be credible with running application system on Google Chrome or Mozilla Firefox, MySQL local web server and Microsoft Visual Studio 2010 which has already installed. Any function that is designed on the blueprint has been tested with black box. Procedures performed by testing functional requirements and non-functional requirements. Specification of testing is: status of one (1) for successful testing and status of zero (0) for testing that did not work. Ultimately testers have stated that each function has run successfully.

Current research is focusing on the development KMS for zakat in BAZNas and continuity of its practices. What was not being measured is, how significant processes are being practiced; how implement the concept of system manage change and rewards structure and how do to post-system evaluation. It is hoped that we could further relate the existence with significance of existence to better understand the culture of knowledge management processes at BAZNas.By doing so, we could further determine which process needs to be improved (if any) or process the administrator normally practice. The results of finding would be useful to cultivate the knowledge sharing for society among BAZNas.

4. Conclusion

The formulation of problem in this research is lack of awareness, satisfaction and muzakki trust. It is caused the lack of knowledge about zakat. Therefore, we have taken a concept of KMS that it would be cultivated and be instilled knowledge, paradigms and awareness in every a Muslim. The objective of this research is to develop web-based Zakat Knowledge Management System (ZKMS). The KMS development methodology is done with using Knowledge Management System Life Cycle (KMSLC).The ZKMS was developed using ASP.NET framework, C# programming language and MySQL database management system. The system has menu that are user, zakat knowledge, questions and answers with experts, interaction between members, about us, profiles and knowledge sources. This system is designed be user friendly to get, know, make, share, store and disseminate actual and contemporary of zakat knowledge.

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