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THE APPLICATION OF WATERFALL MODEL IN THE DESIGN OF ZAKAT MANAGEMENT INFORMATION SYSTEM AT DKM BAITURRAHMAN

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Abstract

The process of receiving zakat is very sensitive because zakat receipts are included in the category of financial management that needs to be accounted for in reporting. DKM Baiturrahman Mosque is one of the institutions that carry out the process of receiving zakat, where the process of receiving zakat is carried out and managed using a manual or conventional system, reporting recapitulation still uses the manual method so that data recording still has several weaknesses such as vulnerability to data loss, data search that takes time quite a long time and poor data accuracy. Therefore, it is necessary to build an information system for zakat management by using a good information technology. This application is called SIPEZAK (Sistem Informasi Pengelolaan Zakat). The development of this website-based zakat management application is built using the waterfall model approach. With this information system, it is hoped that it will help the process of receiving zakat, distributing and reporting zakat funds to be more effective and efficient.

Keywords: zakat; information system; website; waterfall

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Introduction

Zakat comes from the form of the word "zakat" which means holy, good, blessing, growing, and developing. It is called zakat, because it contains the hope of obtaining blessings, cleansing the soul and cultivating it with various virtues. The meaning of growing in the sense of zakat shows that issuing zakat is the cause of the growth and development of assets, the implementation of zakat results in many rewards. While the sacred meaning shows that zakat is to purify the soul from ugliness, falsehood and purification from sins. Zakat is a certain part of the property that must be issued by every Muslim when it has reached the specified conditions. As one of the pillars of Islam, Zakat is paid to be given to those who are entitled to receive it (asnaf). Zakat is also a social and humanitarian charity

activity that can be developed in accordance with the development of mankind.

Although it has many institutions of zakat management but not suitable with the system that applied in each institutions. zakat management system in Mostly, institutions are still applying the manual system or not computerized that make it less effective to conduct the operasional of zakat management. (Indrivani & Wahyu, 2018) One of them is the DKM Baiturrahman Karawang. This institution, still using conventional or manually, that write data of zakat to the register book and recorded after it was transferred into the computer but still using Microsoft Excel. Then the making of the report is less efficient for much data, and hard to make that report. With this system, many problems are often encountered, such

as sheets or archive data is vulnerable missing, precision is less accurate, the process is longer, and others.

Therefore, the role of technology is needed in improving the zakat management system in order to reduce the weaknesses faced during the conventional process. In the research by Indrivani, states that by creating a zakat payment information system online can save time and not interfere with work activities because payment can be done anywhere. that the use of technology will help the zakat management process, zakat fund reporting will be more effective and efficient. The people Based on this, DKM Baiturrahman Karawang need solusion to solve that problem with designing of Zakat information system zakat based on website to managed Zakat management more effective and efficient and called SIPEZAK (Sistem Informasi Pengelolaan Zakat) (Supriadi & Fitriani, 2018) (Supriadi & Fitriani, 2018). With a web-based information system, people involved in zakat management can manage and monitor the use of zakat funds anytime and anywhere.

Related Study

(Supriadi & Fitriani, 2018), in their research said that the amount of zakat data that must be recorded starting from the registration, receipt and distribution of zakat gives rise to various problems, such data loss, so designing a web-based zakat management information system is one way to overcome the problems and weaknesses of the zakat management process.

in their research was conducted on the basis of the need for a data management system for recipients of zakat, infaq and shodaqoh that can be used to manage data on the utilization section (PDG) at the Indonesian Zakat Initiative (IZI) Lampung. The application of this system provides convenience during the process of managing data input for recipients of zakat, infaq and shodaqoh in search of data and making report (Najmudin, Syihabudin, Fatoni, & Sujai, 2022).

Method

This research uses a waterfall model approach. According to (Rosa, 2016) stated that the waterfall model is a linear sequential or classical life cycle, The waterfall model provides a sequential software life flow approach starting from analysis, design, coding, testing and support stages (Roger & Bruce, 2015). (Wantoro, 2019) Refers to Pressman in linear sequential, development software is done systematically and sequential starting from the analysis phase, implementation, testing design, and maintenance. (Wantoro, 2019) The researcher used four stage are as follow:

a. Requirement Analysis

In this process, the researcher analyses the requirement of data, application and observes the zakat management process carried out by the zakat management committee and so on.

b. Design

At the software design stage the researcher uses Entity Relationship Diagram (ERD) to design the database design and its components such as entities, attributes and relationships. To design the program model, the author uses diagrams in the Unified Modelling Language (UML). Unfied Modelina Language (UML) according to is a family of graphical notations supported by a single meta-model, which helps the description and design of software systems, especially systems built using object-oriented programming (OO).

c. Coding

He coding used in the design of this system follows the coding system in the php programming. The result of this stage is a computer program in accordance with the design that has been made at the design stage.

d. Unit Testing

he researcher conducted testing of the system and program units. Then unit testing involves verifying that each program unit meets its specifications.

Results and Discussion

A. User Requirements

In designing the Zakat Management Information system there are several users who have different information needs, such as the following:

1) Administration

Administration can be logged on the login form before access program, managing data of Muzaki, managing data of Zakat type, managing data of Mustahik, managing of Zakat transactions and confirmation, managing of Zakat Balance, **C.** managing of Zakat distribution and Managing of Zakat Report.

Muzaki

Muzaki can make registration, view and edit profile, making transactions and confirm zakat, View the zakat distribution report and view mustahik data

B. System Requirements

- Users (Admin/Managers) must first login to be able to access this application by entering their username and password.
- **2)** The user must log out after using the application.

- **3)** The system can process zakat management data and zakat data reports.
- **4)** The system provides transaction and confirmation of zakat payment
- **5)** Users can monitor the distribution and utilization of the zakat funds they provide

Software Design

1) Usecase Diagram

Usecase diagram is used to describe briefly who is using the system and what can be done. A Usecase represents how a system interacts with its environment by illustrating the activities that are performed by the users system and the system's responses (Fowler, 2004). Use Case Diagram that will be described only associated with major process of managing the Zakat information system can be seen at figure 1 bellow.



Figure 1 Usecase diagram of Zakat management Information System (SIPEZAK)

D. Database design

А database is collection а of interconnected data groups (archives) that are organized in such a way that they can be reused quickly and easily . (Fatansyah, 2018) Database design are describing the relationship between tables. The description database for Zakat Management of Information systems at the DKM Baiturrahman are using Entity Relationship

Diagram (ERD) to specification the table or file requirement for the application. Entity Relationship Diagram (ERD) or Entity Relationship Diagram is a diagram that describes entities and their data elements and their relationships (relationships) with other entities. (Dennis, Wixom, & Roth, 2012) The database design of Zakat information system can be seen at figure 2 as follows:





E. User Interface

User Interface is the way of program and user to communicate. The interface was designed with user friendly system and comfortable to use, straight to the program content of the basic functions of the program was created, and can meet the requirement of the system. The interfaces of Zakat management application at DKM Baiturrahman can be seen at figures below.

1) User Interface

Bado Masjid Baiturral	an /	AMil Z(m. Nuansa Tradisi Res	akat (BA ^{idence Karawang}	Z)	
BERANDA	SOP	LAYANAN	REKENING DONASI	KALKULATOR ZAKAT	
		LOGIN Username: Masu Password : Ma	MUZAKI Jikkan Username YYYY-MM-DD	Lin D D D	k Penting Tentang Kami Berita Zakat Registrasi Login

Figure 3 Login Interface for user

2) Muzaki's dashboard

BERANDA	SOP	LAYANAN	REKENING DONASI	KALKULATOR ZAKAT	
Selamat datang	di Website Ba	adan Amil Zakat		Lin	k Penting
				D	Tentang Kami
				D	Berita Zakat
				Ø	Registrasi
				D	Login

Figure 4 Muzaki's dashboard Interface

3) Muzaki Registration Interface

ERANDA	SOP LAYANAN REKENING	DONASI KALKULATOR ZAKAT
	REGISTRASI	Link Penting
	ID Muzaki : MZK000002	7 Tentang Kami
	No. KTP : Masukkan No. KTP	Registrasi
	Nama i Masukan Nama Lennkar	
	Jenis Kelamin : - Pilih	
	Alamat :	.a
	Tempat Lahir : Masukkan Tempat Lahir	
	Tanggal Lahir : YYYY-MM-DD	yyyy-mm-dd
	"Tanggal Lahir digunakan untuk password sa	at Login
	No HP : Masukan Nomor HP	
	Foto : Browse No file sel	ected.

Figure 5 Interface of muzaki's Registration

4) Muzaki's profile

BERANDA	PROFIL	SOP ZI	zwa	F KONFIRMASI	LOGOUT	
	PROFIL I	MUZAKI				Useful Links
	-	Username	-	MZK0000001		Kalkulator Zakat
		Nama Lengkap		user 1		Data Mustahik
		Tempat Lahir	-	karawang		Ø Komentar
		langgal Lahir		1985-07-02		
		Jenis Kelamin	4			
		Alamat	4	karawang		
		NO HE		000		
		Edit				
		BERANDA	TEN	ITANG KAMI LOGOUT (USER 1)	
				Figure C		

Figure 6 Interface of muzaki's profile

5) Zakat Processing

Badan Masjid Baiturrahman -	AMil Perum. Nuansa Trad	Zaka isi Residence Karav	(BAZ)			
BERANDA PR	OFIL SOP	ZIZWAF	KONFIRMASI	LOGOUT		
Jenis ZIZWAF					Use Ø	eful Links Laporan Zakat
Infaq dan Shadaq	joh Z	akat Maal	Zakat Fitrah		0 0 0	<u>Kalkulator Zakat</u> <u>Data Mustahik</u> Komentar
tabunginfaq		AS 18	ZAK T		U	Komencar
Lanjut Donasi	La	njut Donasi	Lanjut Donasi			

Figure 7 Interface of Zakat processing

6) Zakat Transaction

BE	ERANDA	PROFIL	SOP	ZIZWAF	KONFIRMASI	LOGOUT	
	No Transo	Tro aksi TR	ansaksi D 00000002	oonasi Or 2 Tan	nline ggal 2020-07	-03	Useful Links Caporan Zakat Kalkulator Zakat Data Mustahik Komentar
			tabu	ng infaq			
		Ir	nfaq dar	shadac	loh		
		sum sum	bangan sukare bangan sukarela	ela atau se atau seikhlasnya	ikhlasnya I		
			Si	mpan			

Figure 8 Interface of zakat transaction by muzaki

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7) Zakat Confirmation

BERANDA	PROFIL	SOP	ZIZWAF	KONFIRMASI	LOGOUT	
		MASUKAN	BERKAS TRANSFER	3		Useful Links
	No. Transaksi	TROO	000001			A Laporan Zakat
	Tanggal Transaksi	2020	-07-03			8 Kalkulator Zakat
	Tanggal Konfirmasi	2020	-07-03			 Data Mustahik Komentar
	Bukti Transfer	Bro	owse No file s	elected.		
		Sim	oan Kembali			

Figure 9 Interface of zakat confirmation

8) Invoice of zakat

BERA	NDA PR	OFIL SO	P ZIZWAF	KONFIRMASI	LOGOUT		
		DATA	TRANSAKSI BELUM PEMB	AYARAN		Use	ful Links
No	No Transaksi	Tanggal	Nominal	Status	Pilihan	0	Laporan Zakat
1	TR00000001	2020-07-03	100,000	Menunggu	<u>Konfirmasi</u> I <u>Cetak</u>	0	Data Mustahik
						0	Komentar

Figure 10 Interface of zakat invoice

9) Calculator of Zakat

BERANDA PROFIL SOP ZIZWAF	KONFIRMASI LOGOUT	
Kalkulator Zakat		Useful Links
Keterangan :		Laporan Zakat
 Masukkanlah Data (Nominal) Kedalam kotak yang tersed keterangan 	fia di samping kanan pada setiap	 Kalkulator Zakat Data Mustahik
 Untuk Mendapatkan Jumlah Zakat, anda harus Memasi Harga Emas Murni Saat ini per Gram dan Tekan Enter 	ukkan nominal pada baris z. r	8 Komentar
 Apabila Jumlah Zakat Yang Harus di Bayarkan Bernilai O, Membayar Zakat, 	Anda Tidak dikenakan	
PERHITUNGAN NISAB		
Harga Emas Murni Saat ini per Gram	Rp 490000	
Besarnya Nisab (Harga Emas x 85 gram)	Rp 8925000	
ZAKAT HARTA YANG TELAH TERSIMPAN	SATU TAHUN	
a. Uang Tunai, Tabungan, Deposito atau sejenisnya	Rp	
b. Saham atau surat-surat berharga lainnya	RD 0	

Interface of zakat calculator

10) Administrator dashboard

	Administrator-Badan Ami Masjid Baiturrahman - Perum. Nuansa Tradisi Residence Karawang	l Zakat
	MUSTAHIK MUZAKI JENIS ZAKAT DAFTAR TRANSAKSI	DATA KONFIRMASI
	DATA PENVALURAN	
	Selamat datang [administrator] di Halaman ADMIN - Website Badan Amil Zakat {BAZ}, Masjid Baiturrahman - Perum. Nuansa Tradisi Residence Karawang	Useful Links Image: Constraint of the second sec
nozilla.org/en-US/firefox/cent	ral/KOMENTAR LOGOUT (ADMINISTRATO	R)

Figure 12 Interface of Administrator dashboard

11) Input Data of Mustahik

MUSTAHIK	MUZAKI JENIS ZAKAT DAFT	TAR TRANSAKSI DAT	TA KONFIRMASI
	MASUKAN DATA MUSTAH	нк	Useful Links
Id Mustahik	M00001		Data Komentar
Nama			D LogOut
Aamat	B / U 444 臣言言目[Styles 汪汪[译禄 约 04]∞ 委 ψ 星 - 2 圖 x, x* Ω	• Paragraph •	
No. Telp	Path:p		

Figure 13 Interface of Mustahik list

12) List of Muzaki

MUS	танік	MUZAKI	JEN	IS ZAKAT	DAFTAR TRANSA	KSI	DATA K	ONF	IRMASI
DAT	A PENYALU	RAN							
			D	ATA MUZ	AKI			Use	eful Links
								0	Cek Saldo Zakat
No	ID Muzaki	Nama	Jenis Kelamin	Alamat	Tempat & Tanggal Lahir	No. Telp	Pilihan	0	Data Komentar
1	MZK0000001	user 1	Laki-laki	karawang	karawang, 1985-07-02	008	Hapus	0	LogOut
	inst L v Desuriou	us 1 Next > I	Lastas						

Figure 14 Interface of muzaki's list

13) List of Zakat type

мизтанік		MUZAKI JENIS ZAKAT		DAFTAR TRANSAKSI		DATA KONFIRMASI	
						Lie	efullinks
	DATA ZAKAT						Laporan Zakat
	Tambah Jenis Zakat /						<u>Cek Saldo Zakat</u> <u>Data Komentar</u>
No	Kode Zakat	Nama	Nominal	Keterangan	Gambar	Pilihan 🦉	LogOut
1	Z00001	Zakat Fitrah	0	Zakat fitrah	ZAKAT	Edit Hapus	
2	200002	Zakat Maal	0	Emas dan perak ada 	255	Edit I Hapus	
3	Z00003	Infaq dan Shadaqoh	0	sumbangan sukarela	utorstefas	Edit Hapus	
<< Fi	rst < Previous	1 Next > Last :	»>				

Figure 15 Interface of zakat type list

AC Masjid B	aiturrahman - Perum	trator– 1. Nuansa Tradisi Resid	Badan A lence Karawang	Amil Z	akat
MUSTA	HIK MUZAK	i jenis zak	AT DAFTAR TRAN	SAKSI DAT	A KONFIRMASI
DATA	INVALUTAN.				
					Useful Link
		DATA T	RANSAKSI		D Laporan Zak
No	No Transaksi	Tanggal	Nominal	Status	<u>Cek Saldo Za</u> Data Koment
1	TR0000001	2020-07-03	100000	Menunggu	D LogOut

15) Report of Zakat distribution

MUCTADDA	MUZAVI				DMACI
MUSTAHIK	MUZAKI	JENIS ZAKAT	DAFTAR TRANSAKSI	DATA KONFI	RMASI
				Use	eful Links
		DATA PENYA	LURAN	D	Laporan Zakat
				0	Cek Saldo Zakat
			Tambah Pe	nyaluran Zakat	Data Komentar
No No.	Penyaluran	Tanggal	ID Mustahik No	minal 🦉	LogOut
cc First L c Pres	ious Next > Las	it >>			

Figure 17 Interface of zakat distribution report

ance of Z	akat				
MUSTAHIK	MUZAKI	JENIS ZAKAT	DAFT	AR TRANSAKSI	DATA KONFIRMASI
		Saldo Zako	ıt		Useful Links
N	lo Jenis Zo	akat Salo	ob	Aksi	Data Komentar LogOut
	1 Infaq dan Shadaqo	h	RP. O	Salurkan Dana	
	2 Zakat Maal	R	P. 80.000	Salurkan Dana	
	3 Zakat Fitrah		RP. 0	Salurkan Dana	
		KOMENTAR	LOGOUT	(ADMINISTRATC	IR)
		Fi	aure	18	

Figure 18 Interface of zakat balance

Conclusion

From the results of research on the Zakat Management System (SIPEZAK) at the DKM Baiturrohman, it can be concluded that The existence of a computerized process provides a fundamental advantage for the company in the form of automation and improving the quality of information. Using the web-based application of the zakat management information system can increase the effectiveness and efficiency in the zakat management process. The information system is able to provide convenience for muzakki in carrying out the zakat process (Rais, 2009). Muzaki can monitor zakat funds managed by DKM and the DKM is helped by computerized data archiving which makes the data neater, safer and easier to manage for reports. The next development, SIPEZAK can be made even better by adding features and can also be made a mobile application so that it can be more easily used smartphones.

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