Design of village e-budgeting information systems

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Abstract

Purpose: This study aims to design the flow of the e-budgeting system to develop the village financial system, as well as to increase transparency and accountability of the web-based budget system and minimize the occurrence of corruption loopholes in the village.

Method: The design system uses the waterfall method to analyze a model systematically. The model development step starts with the design of the system, database, menu structure, and interface. The design of the e-budget information system is built using PHP and MySQL programming in the form of web-based applications.

Results: This study developed a web-based e-budgeting application using the waterfall method to manage village finances. The online system increases flexibility, allowing access from any device. It runs smoothly on computers, with all menus functioning as designed, and is expected to simplify village financial management.

Limitations: The researchers' capability in designing the system is not optimal, as the researchers do not have the basis of informatics engineering, so the results obtained and delivered are not too detailed.

Contributions: This system is expected to be useful to facilitate the process of financial management at the village government level.

Novelty: The novelty of this study lies in the design of a village e-budgeting system with features like automatic Standard Unit Price calculation, automated tax management, and tracking of village income (PADes) for transparency. This application aims to enhance financial management, ensuring transparency and accountability in the village.

Keywords: *e-budgeting design, waterfall method, public access, unit price standardization, web-based*

How to Cite: Indratno, I., Fardani, I., & Kuntoro, S. H. (2024). Design of village e-budgeting information systems. *Journal of Governance and Accountability Studies,* 4(2), 71-93.

1. Introduction

Village Financial Management is all activities that include planning, implementation, administration, reporting, and financial accountability for the village (KEMENDAGRI, 2018). Law No. 6/2014 mandates the government to allocate village funds. The village fund is budgeted annually in the APBN, which is given to each village as a source of village income (Kemenkeu, 2019). In addition, villages are also required to support village digitalization programs, including the village financial management process that needs innovation to be developed. As one of the smallest levels of government in Indonesia, villages become spearheads in the implementation of the digitalization program being promoted by the Indonesian government (Rochman, Akliyah, & Burhanuddin, 2022). In the field of practice, there are still many mistakes in village financial management, either in the planning, implementation, administration, reporting, and accountability stages (Mondale, Aliamin, & Fahlevi, 2017). One of the current issues in village fund allocations by the village government is the lack of accountability for the use of the village funds (Sulumin, 2015). Also, the village is not ready to be transparent about village funds, so the community has no clue about the amount of village income and expenditure that comes from taxes and transfer funds (Wahyuni, 2019). Another problem is the lack of community participation in the management of village fund allocations, which has a major effect on village development (Suarnata, Atmadja, & Sulindawati, 2017) since the implementation of village fund allocation

management for village officials tends to have a more dominant role and, thus, is less effective (Suryono, 2001). Park (2019) said that in the local budgeting process, community participation is very important in terms of planning and evaluation. "According to the meta-analysis on performance budgeting theory and practice, the relationship between citizens' roles and performance-based budgeting is important. It is intended to understand the role of citizens in using performance budgeting, particularly for strategic planning and performance evaluation."

The village financial management system has actually been issued by the Ministry of Home Affairs, namely Siskeudes. The Village Financial System is one part of the steps taken by BPKP to play a role in the framework of Village Financial Escort (Basori, Megantoro, & Lasantu, 2016). According to research by Sulina, Wahyuni, Kurniawan, & ST (2017), the village financial system (siskeudes) is difficult to understand because it is still new, so the village officials have a hard time applying it. Also, research from Permaqi (2018) shows that this system has weaknesses, namely that the budget management process is not as good as the e-budgeting system that has been implemented in various regions in matters of transparency and accountability of village fund management. E-budgeting is one way to deal with internal problems in government organizations in preparing budgets (Rahman, 2018). The e-budgeting system plays an important role in budgeting, and the system can shorten the time needed in the budgeting process since it is done online and can be accessed anywhere (Basir & Alwi, 2018). Previous research shows that e-budgeting as an innovation in government (village) financial governance can be said to have been successful in terms of the system operation carried out well and in control by the apparatus (Ramadhanny & Yuwono, 2018). Other studies suggest that the implementation of e-budgeting can be successfully conducted through a coaching process that includes two stages, namely planning and implementing the management of village funds (Kaefataru, 2017). Besides, the e-budgeting implemented in Banyuwangi Regency can minimize the occurrence of budget irregularities and order administration in the budgeting process (Pratiwi, 2016).

Although there is already a study on implementing the Health Education System and creating an e-budgeting system and its application, it is also necessary to research the design of an e-budgeting system at the village scale. The current village financial system is still used offline or in the form of desktop applications (Mardianis, 2019). Therefore, we need an e-budgeting system that can be operated online and on a web-based basis. Besides, the e-budgeting system aims to minimize the occurrence of markups (Gunawan, 2016); hence, a standard price unit must be made so that prices can be standardized. Another thing that is important to implement is the process of transparency and community participation. Lorsuwannarat (2017) says "government must follow a participative approach that can support the people's participation in policy formulation, public services, political decisions, state power checks, the strengthening of civil society, and people network organizations." Therefore, the process of transparency and community participation is highlighted by providing open access for the public.

2. Literature review
Table 1. State of the Art

Author	Title	Results
Ji Hyung Park, James Madison University, 2018 (Park, 2018).	Does Citizen Participation Matter to Performance-Based Budgeting?	The research states that according to the meta-analysis on performance budgeting theory and practice, the relationship between citizens' roles and performance-based budgeting is important. It is intended to understand the role of citizens in using performance budgeting, particularly for strategic planning and performance evaluation.
Cal Clark, Charles E. Menifield, & LaShonda M. Stewart, University of Missouri, Columbia, Truman	Policy Diffusion and Performance-Based Budgeting	The case studies indicated that performance-based budgeting was generally part of a broader program of governmental reform, that executive agencies were more important than parliaments in managing it, that it became quite substantial in budget- and policy-making, and that

School of Public Affairs, Columbia, USA, 2017 (Clark, Menifield, & Stewart, 2018).		implementing it faced a significant number of challenges.
Muhammad Rifqi Ma'arif, STMIK Jenderal Achmad Yani Yogyakarta, 2016 (Rifqi et al., 2012).	Development of E-government Application Interoperability Models for Planning, Budgeting, Monitoring, and Evaluation of Regional Development in Indonesia	This study explains that the weaknesses of each system from planning, budgeting, monitoring, and evaluation in the development program data entry process cause confusion and inefficiency; thus, a new design is made using EAI, and the results are that the system is well synchronized, so program data input at planning does not need to be done again during the e-budgeting process.
Supanji Setiawan, Nuwun Priyono, and Chaidir Iswanaji, Faculty of Economics, Tidar University, Indonesia, 2016 (Setyawan, Priyono, & Iswanaji, 2017).	Development Model of E-budgeting and E-Reporting System on the Management of Village Fund Finance	Research shows that the preparation of e-budgeting in the budget activities of the Magelang Regency Government has helped in the efficiency of village fund realization, namely by setting the process of budget activities, starting from planning, budgeting, to budget control that can be done faster and can reduce costs incurred by the Balesari Village Government in achieving budget realization.
Zarnelly, Faculty of Science and Technology, UIN SUSKA Riau, 2017.	E-budgeting Information System Using Object-Oriented Approach (Case Study: UIN SUSKA Riau)	This research shows that budget management problems at UIN SUSKA Riau can be overcome with the e-budgeting information system in budget management during official trips.
Ratih Kurnia Ramadhanny, Faculty of Social and Political Sciences, Diponegoro University, Semarang, 2015 (Ramadhanny, 2015).	Village Government Financial Governance Innovation: Electronic Village Budgeting (E-Village Budgeting) to Create Good Governance in Banyuwangi Regency	This research shows that the E-VB application system conforms to the theory and concept of innovation. This system is an innovation designed to facilitate village government financial governance by utilizing the internet network in each village. The implementation of the E-VB system has been successful with fewer obstacles.
Rully Khoirul Anwar, Tri Listyorini. Faculty of Engineering Informatics, Engineering Study Program, Muria Kudus University, 2018 (Anwar & Listyorini, 2018).	Design an E-Budgeting Application to Control the Budget of Muria Kudus University Based on the Web (Case Study of Faculty of Engineering, Muria Kudus University)	Making an e-budgeting application design and building the web-based application to control budget of Muria Kudus University (case study of the faculty of engineering, Muria Kudus University).
Meytasari, Faculty of Da'wah and Communication Information Systems Study	E-Budgeting Information System for Official Travel at Raden Fatah State Islamic University Palembang	The system is made web-based using PHP programming language and MySQL database. It can calculate the appropriate costs from the official travel budget for estimates at the beginning of departure and real costs when the

Program (Untuk et al., 2016).	trip is finished. The system can also provide information on the realization of activities in a graphic and visual manner.

Source: Results of the Study (2022)

Various studies on the e-budgeting system have been carried out by previous researchers using qualitative and quantitative methods, Enterprise Application Integration (EAI), object-oriented approach methods in making e-budgeting systems for official trips, the Government Resource Management System concept method, and the Electronic Village Budgeting innovation concept created by Banyuwangi Regency (Sidik, Heru, & Mauluddin, 2021). The researchers propose a different method for designing the e-budgeting system, which is the waterfall method. This is because the waterfall method approaches systematically and sequentially in building a system (Franiv, Vasylyuk, & Franiv, 2023). The waterfall method process, which is the work of a system, is carried out sequentially. The resulting system will be of good quality because the implementation is gradual, so it is not focused on certain stages. In addition, the researchers will adopt the concept of the existing village financial management flow, namely the Electronic Village Budgeting innovation concept owned by Banyuwangi Regency, to also be applied in other villages (Muhtar, Hermana, Gartika, & Muharam, 2019). There is also research that creates an interactive web-based e-budgeting system to control the income and expenditure budget of Muria Kudus University using the method Software Development Life Cycle (SDLC) (Anwar & Listyorini, 2018). The reason the researchers adopt the concept of innovation is that the researchers feel that the concept is appropriate to achieve transparency and effectiveness in village financial management. Another difference is that other villages have not used the e-budgeting system, so research needs to be done on the design of the system. The difference in the design of the village e-budgeting system also lies in the features that will later be applied in the application, namely the Standard Unit Price feature that is designed automatically, the automation feature of goods and services tax management, and original income from the village for the process of transparency and optimization of PADes. The design of this application is expected to help create transparency and accountability in the village's financial management. Apart from that, the transparency process is crucial, especially for the community to oversee village finances, especially in performance-based budgeting for strategic planning and evaluation (Park, 2019). Performance-based budgeting is also part of a broader government reform program and plays a very important role in the budget and policy-making process (Clark et al., 2018). Another crucial thing with e-budgeting is that it helps realize efficient village funds, namely by speeding up the activity budget process from planning, budgeting, to budget control, and can reduce costs (Setyawan et al., 2017).
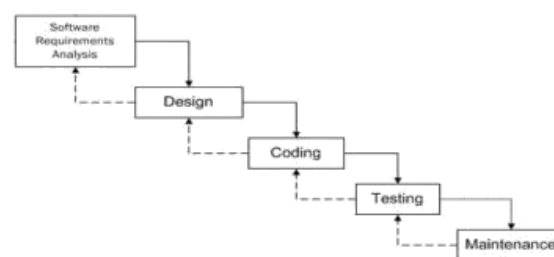
3. Research Method

Figure 1. The Waterfall Method

The method used in the development of this e-budgeting system is the waterfall method (see Figure 1). The reason for using this method is that the waterfall method takes a systematic and sequential approach to building a system (Pressman, 2002). The waterfall method process, namely the work of a system, is

carried out sequentially. The resulting system will be of good quality due to its gradual implementation so that it is not focused on certain stages.

3.1 Analysis Methods

Activities carried out in the analysis method are as follows:

1. Needs Analysis

   The needs analysis stage analyzes user requirements, software, and hardware needed in system development, as well as other needs in making databases. Data can be collected at this stage by conducting a study, interview, or literature study. A system analyst will dig up as much information as possible from the user so he can create a computer system that can perform the tasks according to the user's wants. This stage will produce a user requirements document, which can be said to be data related to the user's wishes in making the system.

2. System Design

   The purpose of this stage is to provide an idea of what the system can do and how it will look. This stage fulfills all user requirements according to the analyzed results, such as the design of the e-budgeting system development view, and defines the overall system architecture. The documentation produced from this system design stage includes the design of Use Case Diagrams, Data Flow Diagrams (DFD), Entity Relationship Diagrams (ERD), and interface design.

3. Coding

   Writing program code is the stage of translating the system design that has been made into commands that the computer understands by using a programming language. This stage is a real stage in working on a system. In this system, the programming language used is PHP and MySQL database.

4. Testing

   Tests are carried out to ensure that the software created is by the design and all functions can be used properly without any errors.

5. Operation and Maintenance

   This is the last stage in the waterfall method where the system can be implemented. Maintenance includes correction to various errors that were not found in previous stages, repairing the implementation and development of the system unit, and program maintenance. System maintenance can be done by an administrator to improve the quality of the system to perform better.

3.2 Design Methods

According to Zarnelly (2017), the activities carried out in the design method are as follows:

1. Make a flowchart or a symbol of space building that has meaning and presents the process of the program. Besides, later in the flowchart, the meaning can be seen as an option or decision containing a yes or no value. The following is the flowchart plan for the e-budgeting system.

2. Create a system design. In this case, to facilitate system design, then model it using the Data Flow Diagram (DFD) model design, Entity Relationship Diagram (ERD), and interface design.

   a. Designing *a Data Flow Diagram* (DFD)

      The Data Flow Diagram (DFD) design represents a graphic of the e-budgeting system. DFD e-budgeting describes the components of the system, data streams, and storage of these data.

   b. Entity Relationship Diagram (ERD)

      Entity Relationship Diagram (ERD) design makes database design, which is grouping data related to e-budgeting information systems.

   c. Interface Design

      In this stage, the design of the program interface and the menus in the program are carried out.

4. Results and discussions

4.1 Analysis of the Current System

The system that is currently being run in village budget management is the system or application provided by the Ministry of Home Affairs, namely siskeudes (village financial system). This application has several facilities, as can be seen in Figure 2 below (Lista, 2021):
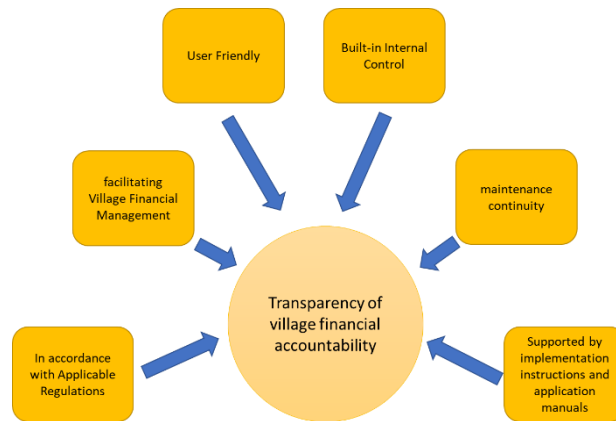
Figure 2. Advantages of the Village Financial System (Siskeudes)

4.2 Problem Analysis

The Village Financial System Application (Siskeudes) is an application developed by the Financial and Development Supervisory Agency (BPKP) to improve the quality of village financial governance so that it is accountable and transparent. By using the Siskeudes application, village officials can easily carry out the village financial management cycle in an accountable manner, from planning, implementation, administration, reporting, accountability, and supervision (Mega, Kalangi, & Kapojos, 2022). To analyze the implementation of the Siskeudes program, the researchers sought data and information through direct observation and observation in the field, as well as conducting initial interviews with parties concerned with the implementation of the Village Financial System (Siskeudes) program in Galanggang Village, Batujajar District, West Bandung Regency.

Researchers found several technical obstacles in the implementation of the Village Financial System (Siskeudes), as the Siskeudes is a new application and village officials who use the application should have accounting knowledge (Fauziah & Hermawan, 2022). There are also problems in the budget management process that often experience an imbalance between income and expenses when calculating funds. It happens because every year there is always a residual income from the process of disbursing village funds transferred in stages (Siregar, 2018). Another problem is that the pricing for activities or goods is still done manually because the standard unit price has not been included in the Siskeudes application. The ultimate problem is the lack of a transparent process for managing funds in the Siskeudes system so that the community cannot view the budgeting process for village activities (Murtiani, Handajani, & Waksito, 2023).

4.3 Analysis of the Proposed System

The process of the village e-budgeting system in managing the village budget is described as follows:
1. On the first page,
   The start page contains general information about the village and the purpose of realizing the transparency of the budgeting process of the village government to the community. On this page, the community can also download files of the entire budget management process in the village.
2. On the first menu,
   On the initial menu, there is a login to open e-budgeting, which contains the user ID and password. People who have user IDs and passwords to open e-budgeting are the village head, village secretary, village treasurer, admin, and BPDes. Each person has a different user ID and password and will be locked in time and activity when opening the e-budgeting system.
3. On the designing menu (secretary),
   This menu has planning sub-menus, namely the RAPBDES, the budget, the activities, and the APBDes.
4. On the standardized price menu (admin),

The standard unit price menu displays a list of prices for activities or goods based on standard price regulations issued by the Regent or Mayor in the current fiscal year. This standard unit price will automate the price according to the item or activity and display the total price.

5. On the administration menu,
   This menu contains sub-menus: a payment submission, a payment, check payments, and a payment report made by the village head to the treasurer who has the authority to disburse. The treasurer verifies that the amount submitted is adjusted to the balance of the receiving account. If it is not within the budget, then return to the activity input stage by changing activities or adding activities based on needs.

6. On the administration menu,
   This menu contains the recording of general cash books, village bank books, and tax-assisting cash books of the entire budgeting process that has been carried out.

4.4 Designing the System

1. Context Diagram

A context diagram is a diagram that depicts the flow of data from each entity in the e-budgeting system, as shown in Figure 3 below.
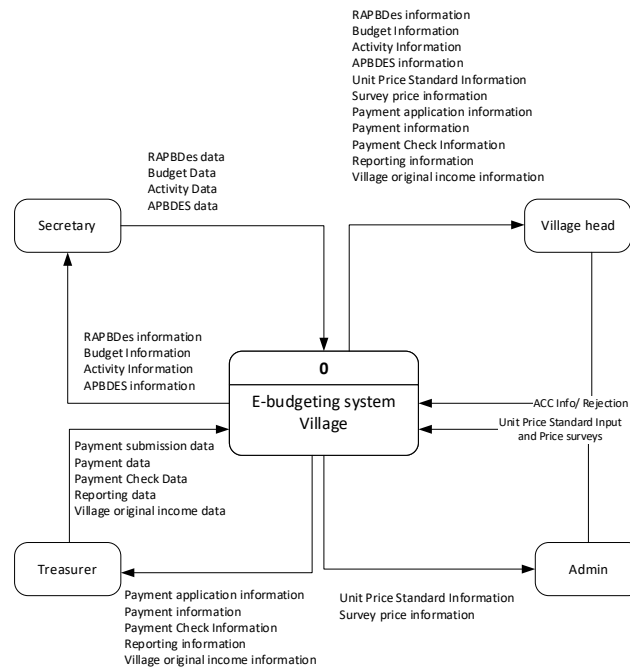
Figure 3. Context Diagram

2. Designing DFD (Data Flow Diagram)

Designing Data Flow Diagrams (DFD) represents the data flow of the system being built; any data that becomes an input will go through the system process and become output, which consists of process level diagrams, diagrams (level 0), detailed diagrams (level 1), and so on. Figure 4 below shows the level 0 diagram.
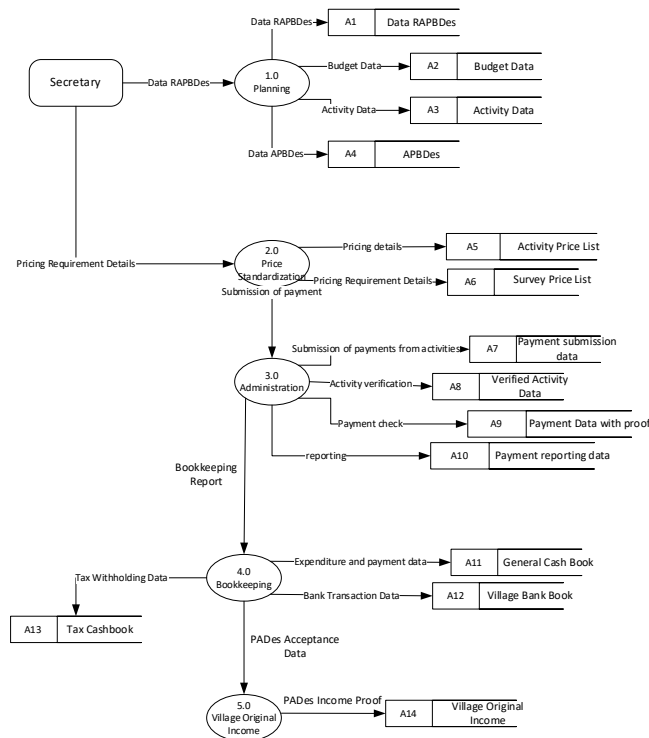
Figure 4. Level 0 Diagram of the E-budgeting Information System Process

3. Designing ERD ((Entity Relationship Diagram)
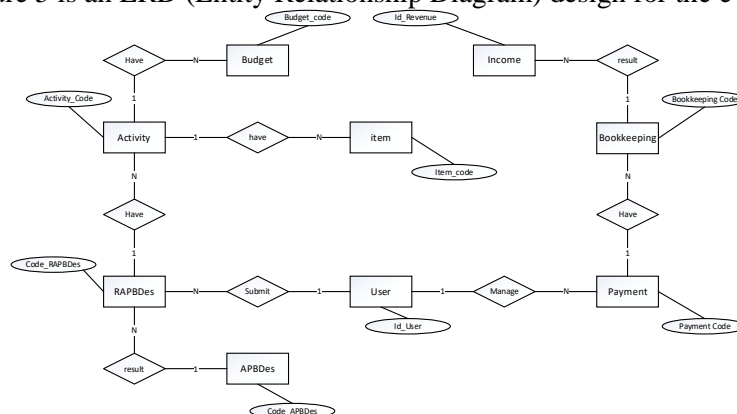The following Figure 5 is an ERD (Entity Relationship Diagram) design for the e-budgeting system:

Figure 5. Entity Relationship Diagram (ERD) Design

4. Designing Database
Here is one of the database table designs in the E-budgeting information system.
i   *User* Table
It is a table that functions as a means for users to enter the system. This system is given access rights to set the e-budgeting system of the user later, such as user_id, email, username, password, photo, status, name, level, description, and update_date. The following are the fields in the user table:
Name Table: user
Primary Key: id_user
Foreign Key: -

Table 2. *User* Table

Field	Type	Length	Description
id_user	Int	11	Primary Key (PK)
Nama (name)	Varchar	50	
Jabatan (position)	Varchar	50	
Level	Enum	(„Admin" (admin), "Kepala Desa" (village head), "Sekretaris Desa" (village secretary), „Bendahara Desa" (village treasurer))	
Email	Varchar	50	
Username	Varchar	50	
Password	Varchar	50	
Field	Type	Length	Description
Photo	Varchar	125	
Status	Enum	(„Aktif", „Tidak Aktif")	
tanggal_update (update date)	Datetime		

ii   RAPBDES Table
Fields contained in the RAPBDES table are RAPBDES code, activity code, activity year, activity, activity location, output, implementation, source of funds, and costs. Further details can be found below.
Name Table: RAPBDES
Primary Key: kode_RAPBDES
Foreign Key: kode_kegiatan
Table 3. RAPBDES Table

Field	Type	Length	Description
kode_RAPBDES (RAPBDES code)	Varchar	10	Primary Key (PK)
kode_kegiatan (activity code)	Varchar	10	Foreign Key (FK)
tahun_kegiatan (activity year)	Varchar	5	
Kegiatan (activity)	Varchar	225	
lokasi_kegiatan (activity location)	Varchar	225	
Keluaran (output)	Varchar	225	
Pelaksanaan (implementation)	Varchar	50	
sumber_dana (source of funds)	Varchar	50	
Biaya (costs)	Int	11	

iii   Activity Table
This table contains fields in the activity submenu, such as activity code, activity, activity details, activity location, budget, month of disbursement, and account. Further details can be seen below.
Name Table: kegiatan
Primary Key: kode_kegiatan

Foreign Key: -
Table 4. Activity Table

Field	Type	Length	Description
kode_kegiatan (activity code)	Varchar	10	Primary Key (PK)
Kegiatan (activity)	Varchar	225	
rincian_kegiatan (activity details)	Varchar	225	
lokasi_kegiatan (activity location)	Varchar	225	
Anggaran (budget)	Int	11	
bulan_pencairan (month of disbursement)	Varchar	15	
Rekening (account)	Varchar	20	

iv   Budget Table

This table contains fields in the budget submenu, such as budget code, date, account, budget, and disbursement month. Further details can be seen in Table 5.
Name Table: anggaran
Primary Key: kode_anggaran
Foreign Key: -
Table 5. Budget Table

Field	Type	Length	Description
kode_anggaran (budget code)	Varchar	10	Primary Key (PK)
Tanggal (date)	Date		
Rekening (account)	Varchar	50	
Anggaran (budget)	Int	11	
bulan_pencairan (disbursement month)	Varchar	50	

v   Goods Table

This table contains fields in the item table, such as item code, item name, unit, and price. Further details can be found in Table 6 below.
Goods Table: barang
Primary Key: kode_barang
Foreign Key: -
Table 6. Goods Table

Field	Type	Length	Description
kode_barang (item code)	Varchar	10	Primary Key (PK)
nama_barang (item name)	Varchar	50	
Satuan (unit)	Varchar	20	
Harga (price)	Int	11	

vi   Detail Table

This table contains fields in the detailed activity table, including activity code, item code, item name, unit, quantity, price, and subtotal. Further details are shown in Table 7 below.
Name Table: kegiatan_detail
Primary Key: kode_kegiatan
Foreign Key: kode_barang

Table 7. Detail Table

Field	Type	Length	Description
kode_kegiatan (activity code)	Varchar	30	Foreign Key (FK)
kode_barang (item code)	Varchar	10	Foreign Key (FK)
nama_barang (item name)	Varchar	50	
Field	Type	Length	Information
Satuan (unit)	Varchar	20	
Jumlah (quantity)	Int	5	
Harga (price)	Int	11	
sub_total	Int	11	

vii   APBDes Table

This table contains fields in the APBDes table, such as the APBDes code, year, regulation number, regulation date, the village name, the village head's name, and the village secretary's name. Details are shown in Table 8 below.
Name Table: apbdes
Primary Key: kode_apbdes
Foreign Key: -
Table 8. APBDes Table

Field	Type	Length	Description
kode_apbdes (APBDes code)	Varchar	10	Primary Key (PK)
Tahun (year)	Int	5	
no_peraturan (regulation number)	Varchar	50	
tanggal_peraturan (regulation date)	Date		
nama_desa (village name)	Varchar	50	
nama_kepala_desa (village head's name)	Varchar	50	
nama_sekretaris (village secretary's name)	Varchar	50	

viii *Login Log Table*

This table contains fields in the login log, such as id_log, id_user, name, level, and data_log. Details can be seen in Table 9 below.
Nama Table: log_login
Primary Key: id_log
Foreign Key: -
Table 9. *Login Log* Table

Field	Type	Length	Description
id_log	Int	5	Primary Key (PK)
id_user	Int	11	
Username	Varchar	25	
Name	Varchar	50	
Level	Varchar	25	
date_log	Date		

ix   Payment Submission Table

This table displays fields used in the administration menu, including submission_id, date, activity_description, status, and amount. Details are shown in Table 10 below.

Name Table: pengajuan_pembayaran

Primary Key: id_pengajuan

Foreign Key: -

Table 10. Payment Submission Table

Field	Type	Length	Description
id_pengajuan (submission ID)	Int	5	Primary Key (PK)
Tanggal (date)	Date		
uraian_kegiatan (activity description)	Varchar	50	
Status	Varchar	20	
Besaran (amount)	Int	11	

x   Payment Table

The payment table displays fields containing payment_id, proof_no, payment_date, activity_description, payment, amount, proof_date, and payment_proof. Further details can be seen in Table 11 below.

Table 11. Payment Table

Field	Type	Length	Description
id_pembayaran (payment ID)	Int	11	Primary Key (PK)
no_bukti (proof number)	Varchar	30	
tanggal_bayar (payment date)	Date		
uraian_kegiatan (activity description)	Varchar	50	
pembayaran (payment)	Enum („Tunai",„Bank")		
besaran (amount)	Int	11	
tanggal_bukti (proof date)	Date		
bukti_pembayaran (payment proof)	Varchar	255	

xi   General Cash Table

This general cash table displays fields in general cash of the e-budgeting system: general cash_id, account_code, account_name, debit balance, and credit balance. Details are shown in Table 12 below.

Name Table: kas_umum

Primary Key: id_kas_umum

Foreign Key: -

Table 12. General Cash Table

Field	Type	Length	Description
id_kas_umum (general cash ID)	Int	11	Primary Key (PK)
kode_rekening (account code)	Int	30	
nama_rekening (account name)	Varchar	225	
saldo debet (debit balance)	Int	11	

saldo kredit (credit balance)	Int	11	

xii   Village Bank Table
The village bank table displays fields such as village_bank_id, proof_number, bank, bank details, description, and transaction type. Details are shown in Table 13 below.
Name Table: bank_desa
Primary Key: id_bank_desa
Foreign Key: -
Table 13. Village Bank Table

Field	Type	Length	Description
id_bank_desa (village bank ID)	Int	11	Primary Key (PK)
nomor_bukti (proof number)	Int	30	
bank	Varchar	50	
rincian bank (bank details)	Varchar	225	
keterangan (description)	Varchar	225	
jenis_transaksi (transaction type)	Enum („Pengambilan Uang", „ Penyetoran Uang")		

xiii Cash Tax Table
This table displays fields from the cash tax book, such as cash tax_id, proof_number, proof_date, activity_description, amount, and description. Details can be seen in Table 14 below.
Name Table: kas_pajak
Primary Key: id_kas_pajak
Foreign Key: -
Table 14. Cash Tax Table

Field	Type	Length	Description
id_kas_pajak (cash tax ID)	Int	11	Primary Key (PK)
nomor_bukti (proof number)	Int	30	
tanggal_bukti (proof date)	Date		
uraian_kegiatan (activity description)	Varchar	225	
besaran (amount)	Int	11	
keterangan (description)	Varchar	225	

xiv Original Income Table
This table displays fields from the original income menu of the e-budgeting system that include income_code, DNA_source, account name, amount, and description. Details can be seen in Table 15 below.
Name Table: pendapatan_asli
Primary Key: kode_pendapatan

Foreign Key: -

5. Designing Interface

Interface design is a system interface design that will be carried out by the admin, village head, village secretary, village treasurer, and BPD. Here is one of the login interface designs in the e-budgeting information system.
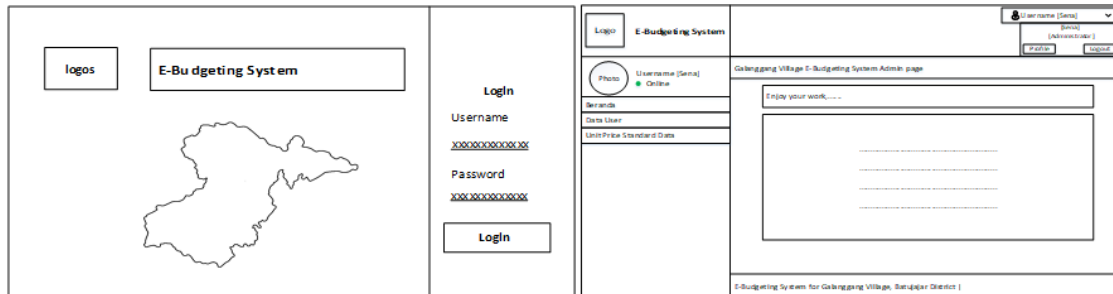
Figure 6. Page Interface Design

6. E-budgeting System Implementation

E-budgeting system implementation displays the results of the design process in the form of a web page. The following is an example of the result of a homepage display.

i. Home Page

The home page is the initial display when the user successfully logs in to the e-budgeting system. The following is an example of what the admin access rights home page looks like.
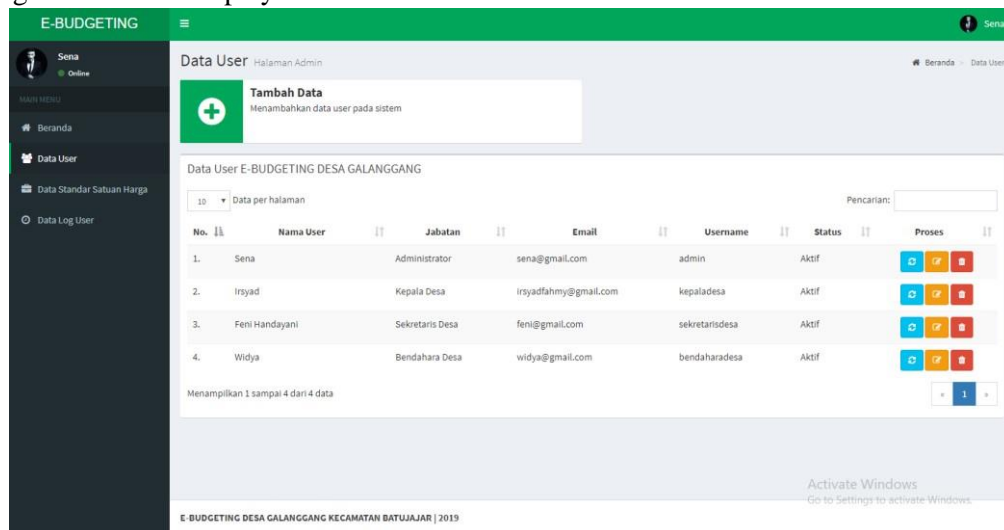
Figure 7. Home Page View

The image above is the home page displaying fields of user data, standard unit price data, and user log data.

ii. User Data Page

The user data page displays a list of e-budgeting system users. The following are the results of the e-budgeting user data list display.
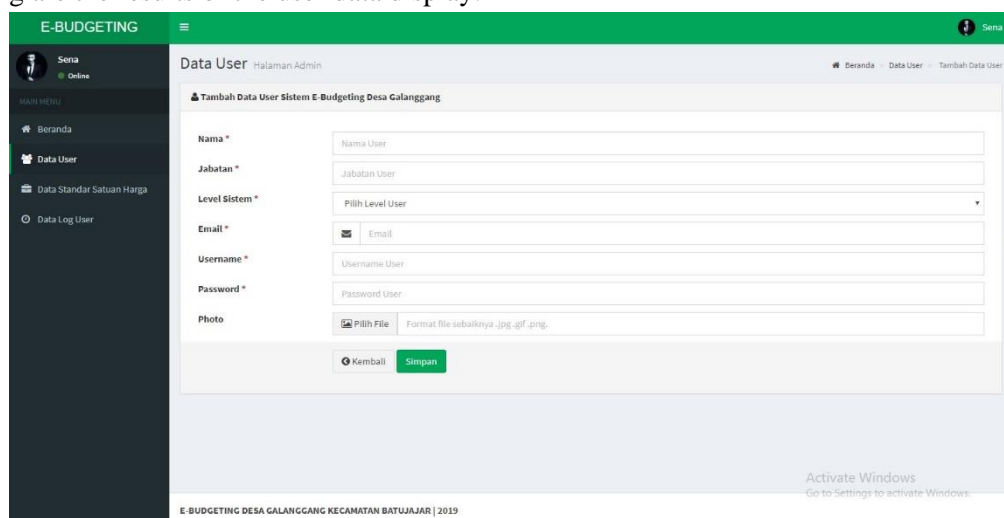
Figure 8. User Data Page Display

iii. Add User Data Page

The add user data page is a display of the fields for adding user data in the e-budgeting system. The following are the results of the user data display.

Figure 9. Display of the Add User Data Page

The image above shows the user data page, which functions to regulate who will later become users of the e-budgeting system by setting names, passwords, etc.

iv. Edit User Data Page

The edit user data page is a display of the user data fields to manage users who will use the e-budgeting system. The following is a display of user data.
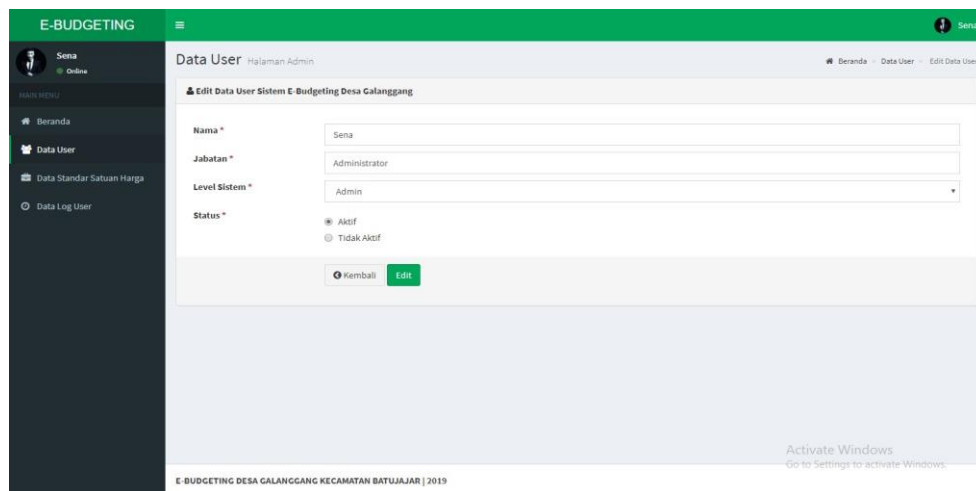
Figure 10. Display of the Edit User Data Page

The image above shows a form for filling in user data such as name, position, system level, and status. The rights to this field are owned by the admin.

v. Standard Unit Price Data Import Page Display

The standard unit price data page is a display of admin access rights to enter standard unit price data. The following is an image of the results of the standard unit price data display for the e-budgeting system.
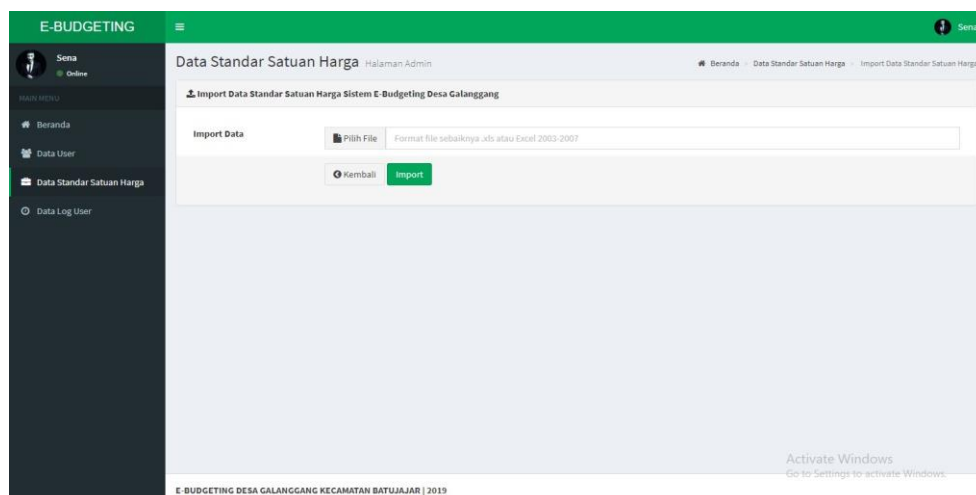
Figure 11. Import Page Display of Item Price Files

The image above shows the standard data import page for price units, whose function is to standardize the unit prices for goods to be spent by the village.

vi. Standard Unit Price Page Display

The standard unit price page is a display of the price list that has been standardized by the standard unit price system. The following page displays the standard unit prices.

Figure 12. Standard Unit Price Page Display

vii. RAPBDES Data Page Display

The RAPBDES data page is a display of the RAPBDES in the e-budgeting system to which the village secretary has access rights. The following is a display of the RAPBDES e-budgeting page.

Figure 13. RAPBDES Data Page Display

viii. Activity Data Page

The activity page is a display of the activity field, which displays activity data in e-budgeting. The following are the results of the activity data display in the e-budgeting system.
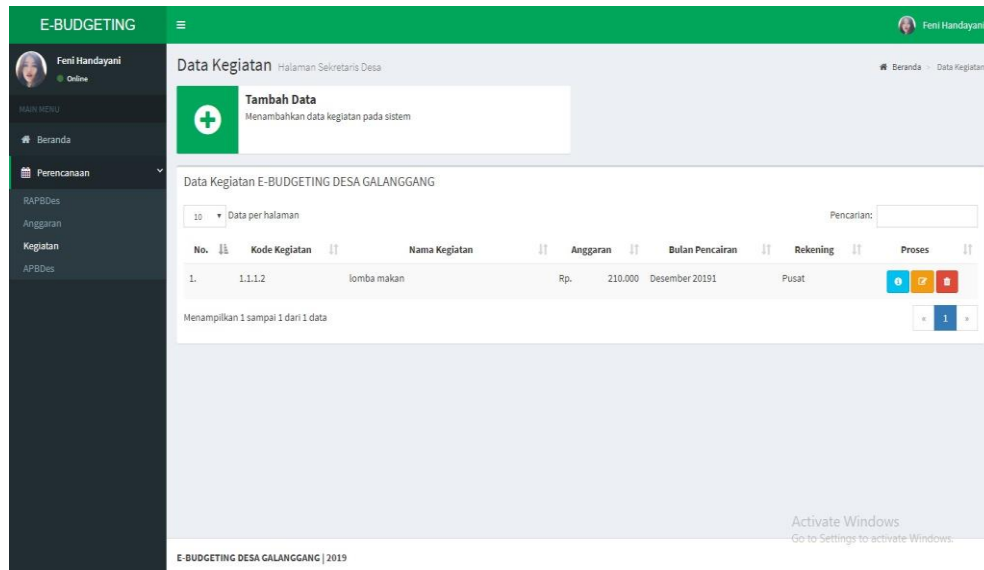
Figure 14. Activity Data Page Display

ix. Add Activity Data Page Display

The add activity data page display is a page for adding activity data carried out by the village secretary. The following is a display of the page for adding data on e-budgeting system activities.

Figure 15. Add Activity Data Page Display

x. Budget Page View
The budget page display shows the village revenue budget to which the secretary has access rights.

Figure 16. Budget Page View

xi. APBDes Page View
The APBDes page is a page display for inputting or creating village regulations regarding the current year's budget. The following is a display of the APBDes page for the e-budgeting system.
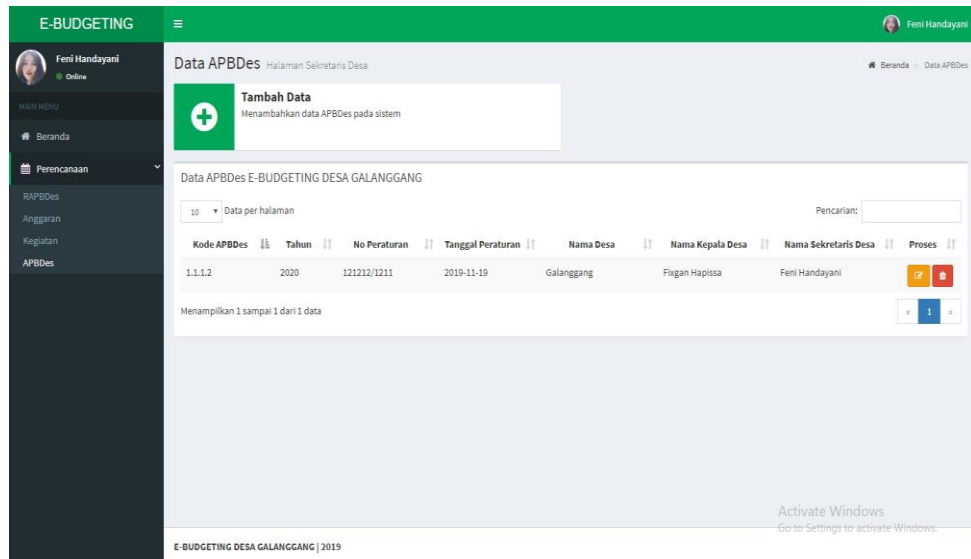
Figure 17. APBDes Data Page Display

xii. User Log Page Display

The user log page is a page that displays user activity in the e-budgeting system. The following is a display of the e-budgeting system user log page.

Figure 18. Log User View

7. Functional Testing Results

Testing is done to see the function of the system. After the functional testing process is carried out on each access right, it can be concluded that this system can display forms according to access rights from the start menu to submenus and fields in the system and work according to their function.
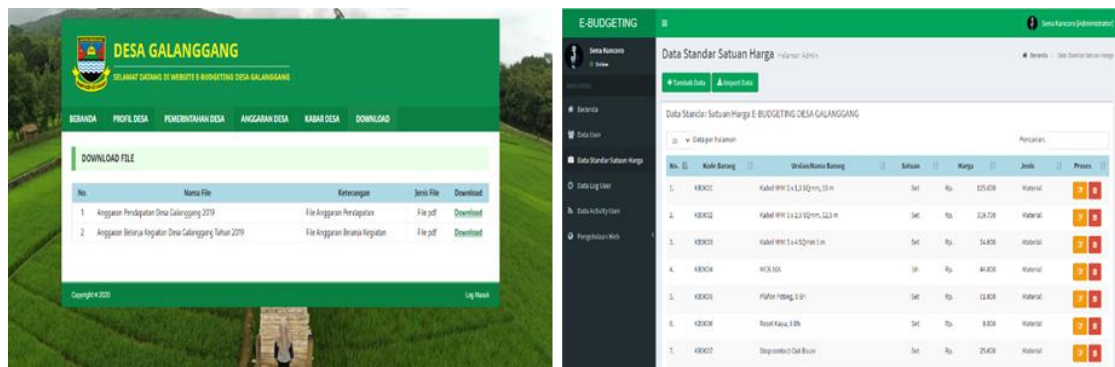

Figure 19. Results of the E-Budgeting System for Public Access Rights and Standard Features of Unit Prices

5. Conclusion

From the research results of Design of Village E-Budgeting Information Systems, the researchers can draw the following conclusions:

5.1. Conclusion

a. The results show this study has successfully built a web-based e-budgeting application to manage village finances using the waterfall method.

b. The e-budgeting information system is built using PHP and MySQL programming in the form of web-based applications. It can help the budgeting process become easier, as it is online, which makes this system more flexible and can be done anywhere without having to rely on one computer or laptop.

c. The e-budgeting system is designed to have features as follows: a planning menu containing submenus of RAPBDes, Budget, Activities, and APBDes; an admin menu containing user data, standard price units, user logs, activity logs, and web management; an administration menu containing submenus of submitting payments, payments, payment checks, and payment reports; a bookkeeping menu containing submenus for general cash books, village bank books, and village tax books, as well as original revenue menus.

d. This web-based e-budgeting application runs according to design; all menus function accordingly, and the application runs smoothly on a computer and is expected to be useful to facilitate the process of village financial management.

The terms "government" and "governance" are often considered to have the same meaning, namely, how to apply authority in an organization, institution, or country. Government is also the name given to the entity that exercises governmental power in a country. Governance is defined as mechanisms, practices, and procedures for government and citizens to manage resources and solve public problems. In the concept of governance, the government is only one of the actors and is not always the determining one.

E-government has principles, including process transparency. In this research, the e-budgeting system is created to realize transparency in financial management. This is in line with e-government theory, which has the concept or principle of transparency in all processes. Thus, it can be concluded that the design of an e-budgeting system is suitable for application in a regional e-government process to support the principle of transparency.

5.2. Limitation
1. The researchers' capability in designing the system is not maximized enough, as the researchers are not experts in the IT field, so it needs to be sharpened to get maximum results.
2. The researchers should admit that the analysis of the system design is not yet too sharp, so the results obtained and delivered are not too detailed.

5.3. Suggestion
1. The need for better system improvement that the researchers may not have thought of in building an e-budgeting system for this village.
2. Future spatial planning can use electronic systems to facilitate the planning process.
3. The need for development support from government agencies so that it can be implemented properly.
4. The village government can improve security both in terms of supervision of the e-budgeting system process by providing experts in the field of IT or network security if this system will later be used.

Acknowledgment

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