

Design and Development of the Educational Version of the Electronic Withholding Tax Certificate Application (E-BUPOT) on a Website-Based Platform

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Abstract. Taxes are mandatory contributions that must be paid to the government to improve the welfare of the people. The Directorate General of Taxes has developed the Unified e-bupot Application that allows taxpayers to create tax deduction certificates and submit tax returns online. However, there is a lack of educational applications that facilitate learning. Therefore, this research aims to develop the "E-Bupot Bantu Pajak Edukasi Version" application as an educational tool for students and taxpayers. The development of the system utilizes PHP, JavaScript, HTML, CSS as programming languages with the Laravel Framework, and MySQL as the database storage. This application is expected to reduce errors in creating Annual Corporate Income Tax deduction certificates. The research will discuss the design, development, and implementation of a system flow similar to the DJP application into the E-Bupot Bantu Pajak application. The website serves as a learning platform for students and as a guide for reporting Annual Corporate Income Tax Returns. The development methodology employed is the waterfall method.

Keywords: tax; E-Bupot; SPT; Educationa.

1 Introduction

Tax is the largest source of income for the country. In other words, taxes are mandatory contributions that individuals and entities must pay to the state. This contribution is compulsory and aims to meet the needs of the state to enhance the welfare of the people [1]. The Directorate General of Taxes (DJP), as the institution responsible for tax management in Indonesia, continues to make various innovations aimed at providing ease for taxpayers in fulfilling their tax obligations through the implementation of the Unified Income Tax Return (SPT) [2]. One of the most anticipated innovations by taxpayers is the Unified e-bupot Application.

The e-bupot application is a software available on the Directorate General of Taxes platform, which allows users to create tax deduction evidence and submit SPT reports. By using e-bupot,

taxpayers can create tax deduction evidence and file SPT reports online, anytime and anywhere. The e-bupot application can only be accessed by taxpayers to create tax deduction evidence and report income tax directly, ensuring data security and providing legal certainty regarding the reliability of the deduction evidence [3]. However, it does not currently facilitate educational purposes. The Tax Center oversees a community of tax volunteers who play a crucial role in raising awareness and understanding among the public about their tax rights and obligations. Currently, Tax Center Polibatam needs an information system that can facilitate tax education for the public.

Education in taxation is highly necessary due to the lack of public understanding regarding taxation itself. Several previous studies related to tax applications have aimed at designing and constructing applications to facilitate the transition from manual to automated systems. In general, this is done to simplify the processing, recording, and transmission of data, which are typically challenging in manual systems. For instance, the Local Revenue Office (Badan Pendapatan Daerah or BPD) developed a tax application that had previously relied on Microsoft Office for data processing. Subsequently, an application was created to address data loss issues and facilitate automation[4]. Similarly, at PT. Galva, a recapitulation application was developed to replace the manual process that had previously relied on Ms. Excel. This transition to automation was intended to simplify data transmission, processing, and recording[5]. In contrast, the research titled "Design and Development of an Electronic Tax Assistance (E-Bupot) Application for Education-Based Taxation via a Website" serves as an educational tool for students at the State Polytechnic of Batam and the general public. This application assists in generating withholding tax certificates and reporting annual income tax returns for corporate entities without requiring the original Taxpayer Identification Number (NPWP) of the user. The hope is that this application can serve as an initial step before using the official tax application, reducing errors in the process of generating annual income tax return withholding certificates through the educational version of E-Bupot Tax Assistance that will be developed. Unlike the aforementioned studies, this application will focus on the platform used and various features and functions of the application to be constructed. This system will encompass features for digital signature recording, withholding certificate creation, and tax calculation for Article 4 paragraph 2, 15, 22, 23, and 26 or non-resident taxpayers, as well as reporting corporate annual income tax returns. Furthermore, to make this application accessible for learning purposes, the system will allow remote access through the internet and can be run using various web browsers without the need to download specific applications.

Additionally, since this is an educational application, the user interface design will be evaluated by students majoring in accounting at the State Polytechnic of Batam to assess its usability. Consequently, it is expected that this application can be used as intended upon completion of the implementation.

2 Analysis and Design

2.1 Application Development Models

The method used in this final project is based on systematic steps that form the workflow. The application design method is used as a guide in the implementation of this final project to ensure that the results achieved align with the predetermined objectives. The problem-solving method employed is the waterfall method. The application design method can be seen in Figure 1.

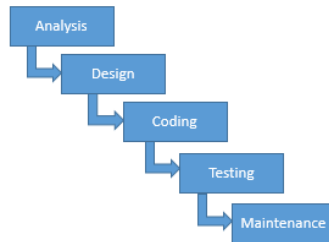


Fig 1. Waterfall Model

1. Analysis

In this stage, gather the requirements and information needed for the software to be developed [7]. This information is obtained through interviews and discussions with the Tax Center Polibatam team. This stage also includes creating use case diagrams based on the provided information.

2. Design

This stage is carried out before coding and aims to provide an overview of what should be done and how it should look [7]. The design chosen is web-based to ensure that the system can be accessed from anywhere by the public.

3. Coding

The coding stage involves transforming the previously created design into a set of code or instructions that the computer will execute [7]. In the system development, the tools used include PHP, JavaScript, HTML, CSS as programming languages, with the Laravel framework, and MySQL as the database. The software used includes Visual Studio Code, XAMPP, Thunder Client, and Google Chrome.

4. Testing

In this stage, the system is tested to present all the specifications, designs, and coding that were previously planned to ensure that the system works well according to the design [7]. Testing is conducted with the Tax Center Polibatam team using black-box testing.

5. Maintenance

In this stage, system maintenance is performed to identify errors and weaknesses that were not detected during testing and to improve the system's performance [7]. In this phase, one application error was found that was not detected during testing, related to the SPT (Income Tax Return) menu, where the number of transactions in the same tax period did not appear after clicking "add." After identifying this error, the immediate step taken was to fix the existing error.

2.2 System Overview

In the "Design and Development of the Electronic Tax Assistance (E-Bupot) Application for Education-based Tax Help" project, there are six general stages that will be carried out in the process of creating tax deduction evidence, namely Login, Signature Rules, Tax Deduction Creation, Posting, Tax Return Preparation, and Tax Return Submission. Additionally, there are four main menus consisting of Dashboard, Income Tax, Periodic Tax Returns (SPT Masa), and Settings. The initial step involves users visiting the <https://taxcenter-polibatam.id/id> page and registering through the tax assistance service menu. Afterward, users can log in through the Business Entity Reporting menu and select the E-Bupot menu. The system will then navigate to the settings menu.

For users who will be creating PPh (Income Tax) deduction evidence, they can register the authorized parties to sign tax deduction/withholding certificates and tax returns. In the signature recording menu, users input acting as, NIK/NPWP, and name data. After successful recording, it will appear in the list of signature certificates. In this table, there are actions to enable/disable the identity of the signatories.

After the signing process is completed, users can select "Income Tax" to record tax deductions. This menu has several submenus that can be selected, such as Self-declared PPh (List and Record), Article 4 paragraph 2, 15, 22, and 23 PPh (List and Record), Non-Resident PPh (List and Record), and the "Posting" submenu. After recording tax deductions in the selected submenu, users can view, edit, or delete the withholding tax certificates that have been created. Each time a PPh withholding certificate is successfully created, users can initiate the posting process by selecting the tax year and tax period and clicking the "check" button. If the posting process is successful, a notification will appear to proceed with posting. The successfully posted withholding certificates will appear in the "Periodic Tax Returns" menu.

In the Periodic Tax Returns menu, users can view the amount billed per tax period or complete incomplete input data in the income tax menu. The Periodic Tax Returns menu consists of two submenus, namely "Recording Proof of Deposit" and "Tax Return Preparation." In the "Recording Proof of Deposit" submenu, users can view the amount billed per tax period and check for any discrepancies in the withholding amounts. To check this, users can add data by clicking the "add" option, fill in the required information, and then click the "save" button. After saving, the amount billed per tax period and any discrepancies will be displayed in their respective tables. Users can also click the envelope icon to obtain a billing ID. Users can download the billing ID letter by clicking the print icon in the action options.

After recording proof of deposit, users can switch to the "Tax Return Preparation" menu to view a summary of payments. The "Tax Return Preparation" submenu consists of two options, namely "Draft" and "Submit." The "Draft" menu is used to complete sections of the tax return that cannot be automatically generated when inputting tax deduction evidence. Users can record DOSS and Dopp attachments, view the list of deposits, and select the signatory's identity. In this section, users are not required to fill in all fields. Additionally, there is a "Submit" menu used to preview the data entered in the previous draft menu. In the "Submit" menu, users cannot make any further edits. After previewing and completing this process, users can submit the tax return to receive an Electronic Withholding Certificate (BPE) and a Periodic Notification Letter.

Finally, users can switch to the dashboard menu to view and download all withholding certificates. An overview of the system can be seen in Figure 2.

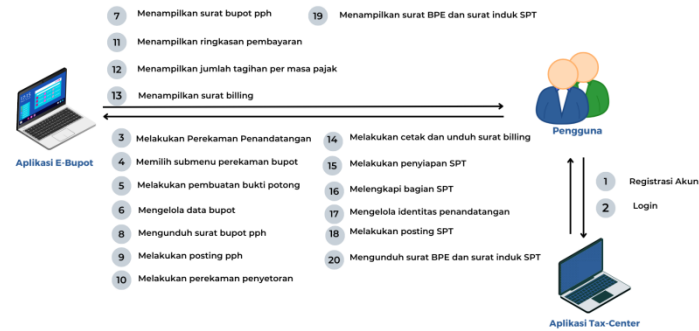


Fig 2. System Overview

2.3 Functionality needs

The functional requirements for the E-Bupot Tax Assistance Application can be seen in the following table (Table 1).

Table 1. Functionality needs.

Code	Functionality Needs
F001	Users can register.
F002	Users can log in.
F003	Users can set signatures.
F004	Users can toggle identities.
F005	Users can choose the tax deduction (bupot) recording submenu.
F006	Users can create tax deduction certificates (bupot).
F007	Users can manage tax deduction (bupot) data.
F008	Users can download tax deduction certificates (bupot).
F009	Users can post Income Tax (PPH).
F010	Users can record deposits.
F011	Users can print and download billing letters.
F012	Users can prepare tax returns.
F013	Users select the tax return preparation submenu.
F014	Users can complete tax return sections.
F015	Users can manage signatory identities.
F016	Users can post tax returns.
F017	Users can download Electronic Withholding Certificates (BPE).
F018	Users can download parent tax return letters.

2.4 Non Functionality Needs

The non functional requirements for the E-Bupot Tax Assistance Application can be seen in the following table (Table 2).

Table 2. non Fungsionaliti needs

Code	Non fungsionaliti needs
NF001	The system can be easily accessed.
NF002	The system can be used with all types of browsers.
NF003	The application is designed with an attractive interface.

2.5 Usecase diagram

A Use Case Diagram describes an interaction between one or more actors and the system to be developed. Use cases are used to determine what functions exist within a system [8]. Below is the design of a use case diagram for the E-Bupot Tax Assistance website. The use cases can be seen in Figure 3 below.



Fig 3. Usecase diagram

2.7 Usability Method

The analysis of the usability aspect's quality is evaluated using a questionnaire method. The questionnaire was administered to accounting students at the Batam State Polytechnic, who constitute the sample population for this study. The questionnaire used is based on the System Usability Scale (SUS) to assess the usability of the E-Bupot Tax Assistance application. Based on the distribution of respondents' gender in the questionnaire, there were 3 male respondents and 17 female respondents, out of a total of 20 respondents who participated [10]. The following Table 3 lists the SUS questions along with the Likert scale score results.

Table 3. List of SUS questions with Likert scale

No	Question	Likert Scale				
		1	2	3	4	5
1	I think I would like to use this system again.	0	0	1	10	9
2	I found this system to be complex.	0	0	1	9	9
3	I found this system easy to use.	0	0	1	8	9
4	I needed help from others or a technician to use this system.	0	0	1	7	9
5	I think the features of this system work as they should.	0	0	1	7	8
6	I feel there are many inconsistencies in this system.	0	0	1	7	7
7	I believe others would quickly understand how to use this system.	0	0	0	7	7
8	I find this system confusing.	0	0	0	7	6
9	I feel there are no obstacles in using this system.	0	0	0	6	6
10	I need to learn how to use this system first.	0	0	0	6	5

Table 3 shows the responses of 20 participants for each item in the System Usability Scale (SUS) ranging from 1 (strongly disagree) to 5 (strongly agree). Some items have positive values for odd-numbered questions and negative values for even-numbered questions, reducing respondent bias. The SUS score is calculated using the following formula:

$$\text{SUS Score} = ((Q1-1) + (Q3-1) + (Q5-1) + (Q7-1) + (Q9-1) + (5-Q2) + (5-Q4) + (5-Q6) + (5-Q8) + (5-Q10)) \times 2.5 \quad (1)$$

The results of the SUS score calculation are listed in the table, with a score of 71 on the red line, indicating that the application performs well in terms of functionality or usability, with a positive average score level [11].

Table 4. Result for SUS Question Formula

Responden	Ke-1	Ke-2	...	Ke-20	SUS Score
Q1	3	3	...	3	
Q2	3	3	...	3	
Q3	3	4	...	3	
Q4	2	1	...	1	
Q5	2	3	...	3	
Q6	3	3	...	3	
Q7	3	3	...	2	
Q8	4	4	...	3	
Q9	2	2	...	3	
Q10	2	2	...	4	
Total	27	27	...	28	
SUS Score	68	68	...	70	71

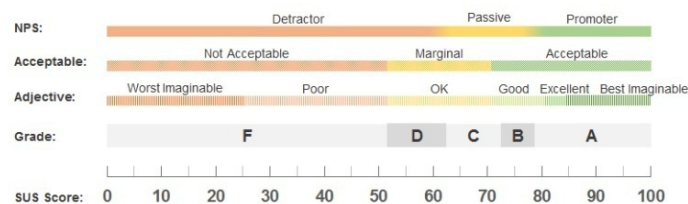


Fig 5. SUS Score

3 Result and Discussion

The results and discussions conducted have led to implementations as shown in the images below:

3.1 Interface Implementation

1. Signature Settings Page

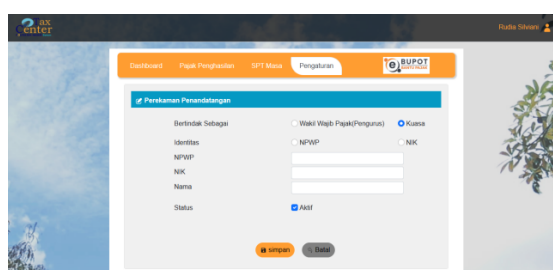


Fig 6. Signature page

Here is the settings page as shown in Figure 6. In this section, users can record signatures used to register the identity/parties authorized to sign withholding certificates.

3.2 Testing

The testing of this application was conducted using the black-box method. Black-box Testing is used to test the functionality of the developed program to see if it conforms to the established specifications. The main focus is on the end-user perspective of the application[12]. The Black-box testing was conducted in collaboration with Mr. Dedi Kurniawan, who is the client from Tax Center Polibatam. Furthermore, the tax calculations in this research were validated by the Accounting PBL Lecturers and Students. The testing was conducted on Monday, June 26, 2023. The results of this testing are shown in Table 5.

Table 5. Result of The Testing

No	Initial Condition	Initial Scenario	Final Condition	Tester 1
1	Signature Recorder	The input acts as, name, tax ID (NPWP), ID card number (NIK), and status.	Data is displayed in the list of signatories table.	Successful
2	Toggle Identity Change	Click on the icon in the action table.	Clicking the action successfully activates/deactivates the signatory's identity.	Successful
3	Income Tax	Click on the "Income Tax" submenu.	Successfully switched to the selected menu.	Successful
4	Record Proof of Deduction Article 4 paragraph (2),	Input data for recording proof of deduction: taxpayer identity, withheld income tax	1. The tax rate and the amount of withheld income tax are displayed.	Successful

	15, 22 23, and 26 or Non-Resident	(PPh), list of documents, and withholder's identity.	2. The input data is saved and displayed in the list of withholding documents for Article 4 paragraph 2, 15, 22, 23, and 26 non-residents.	
5	List of Deduction Proof Article 4 paragraph (2), 15 22, 23, and 26 or Non-Resident	1. Edit the record of Bupot Pasal by clicking on the edit icon in the actions. 2. Delete a record by clicking on the delete icon in the actions.	1. Changes in data are visible in the list of withholding documents. 2. The selected data has been successfully removed from the list of withholding documents.	Successful
6	Income Tax Deduction Letter	Click the envelope icon in the actions on the list of proofs.	Successful in displaying the letter and performing letter download.	Successful
7	Income Tax Posting	Select the year, tax period, and click the check button.	Data with the selected tax year and period will appear in the Tax Period menu.	Successful
8	Tax Period Return	Record proof of payment.	Successfully accumulated transactions with the same tax type and payment.	Successful
9	Billing Letter	Click the print icon on the table of the amount of tax per tax period.	Successfully displaying and downloading letters.	Successful
10	Tax Period Preparation	Choose one of the available sub-menus.	Successfully switched to the selected menu.	Successful
11	Draft	Complete the parts of the SPT that are not generated automatically, such as DOSS, DOPP, and select an identity.	Data has been successfully saved and appears in the "Send Tax Period" submenu.	Successful
12	Send	Preview and check the data.	The data sent is correct.	Successful
13	Posting Tax Period	Click the send button.	BPE and Parent letters have been successfully created and appear on the Dashboard menu.	Successful
14	Dashboard	1. View the BPE letter by clicking the folder icon in the actions. 2. View the master SPT letter by clicking the print icon in the actions.	1. Successfully viewed the BPE letter and downloaded it as a PDF or printed it. 2. Successfully viewed the Parent SPT letter and downloaded it as a PDF or printed it.	Successful

4 Conclusion

4.1. Conclusion

Based on the research problem and objectives, it can be concluded that an educational version of the E-Bupot Tax Assistance Application has been successfully developed as a web-based platform to assist taxpayers and students in understanding the process of creating tax deduction certificates and tax reporting. This is particularly beneficial for students at Politeknik Negeri Batam, especially those in the Accounting department. The developed application has been tested by the client and the accuracy of its tax calculations has been validated by Accounting PBL Lecturers and students. The usability evaluation using the SUS scale resulted in a score of 71.

4.2. Recommendations

The application is not yet perfect as there are still some complexities that may cause uncertainty among users. Therefore, user adaptability (learnability)[11] is required. Furthermore, further development is needed to enhance the application beyond its current state. Recommendations for future development include implementing a feature for recording tax deduction certificates using Excel data import, which would allow for the simultaneous recording of a large number of transactions and save time during the certificate recording process.

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