IJISCS (International Journal of Information System and Computer Science)

Full Paper
eISSN 2598-246X
pISSN 2598-0793

IMPLEMENTATION OF PUSH NOTIFICATION TECHNOLOGY DURING THE GENERAL ELECTION PERIOD (PEMILU) TO SUPPORT E-GOVERNMENT

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Article history:
Received November 28, 2021
Revised December 12, 2021
Accepted December 14, 2021

Abstract

Since 2019, simultaneous regional head elections in Indonesia. Elections elect governors and deputy governors, regents and deputy regents, mayors and deputy mayors, members of provincial councils, and members from regency/municipal councils simultaneously. With the increase in the number of pairs of candidates selected, the information about the profiles of spouses, and the schedule of activities of the employee implementation team increases. So far, schedules obtained from banners, posters, television, radio, and others. With the development of technology, people are increasingly familiar with using the web, and gadgets information is received more quickly through social media. The purpose of this study is to apply push notification technology as a schedule reminder system for the team and the community during the election period, whether the incoming messages are read. The development method used is the waterfall: 1) analysis; 2) design; and 3) Implementation; and 4) Maintenance. The web-based notification system supports government services to employees (G2E) and government to the public (G2C) to make it easier to remember campaign schedules and other election activities, accurately and up-to-date so that they can get to know more about the profiles of candidate pairs.

Keywords:
Push Notification;
Election;
E-Government;
Waterfall

1.0 INTRODUCTION

Changes in human behavior in using technology such as the use of the internet and internet-based services to communicate, interact and carry out work responsibilities from home [1] changing habits are also a challenge for the government in implementing e-government [2]. The problem that often arises in elections is public participation. there are still people who do not participate in the election [3] [4] [5]. One of the factors that led to the low direct public participation and the simultaneous local elections, the lottery of the results of the Indonesian Survey Institute, was the change in campaign mode, which was largely regulated by general elections through the media, such as banners, posters, etc. [6].

The 2019 general elections were held simultaneously, namely the simultaneous presidential and vice-presidential elections as well as the elections for members of the legislature and members of regional people's representatives which took place on the same day. Likewise at the provincial and district/city levels. This is a milestone in the history of the Republic of

Indonesia. The public chooses to use five ballots, related to the election of the governor and deputy, mayor and deputy, provincial council members, and district/city council members [7]. Impact on: 1) Election commission employees, increased workload; 2) For the community, the level of voter participation is fluctuating and tends to decline. The existence of human resource management for the success of an organization is very decisive [8].

In addition, it cannot be denied that a lot of human power has been replaced by sophisticated equipment such as computers, and others that move effectively and efficiently [9] . In the general election held in Palembang, Indonesia, there were 23 stages of activities until voting. The increasing workload of the commission is a special concern for the government to be able to continue to carry out services for the implementation of elections. **The purpose of the research** is to implement push notification technology as a schedule reminder system for the team and the communit [10] [11] [12] [13] [14] during the election period. This technology is a reminder that can be sent via the desktop web and mobile web. For app developers, notifications are an effective way to interact with the users in different ways depending on the nature of your notification [15].

2.0 THEORETICAL

2.1. General Election

Based on the Law on Regional Head Elections (Pilkada) No. 1 of 2016 concerning the second amendment to Law No. 1 of 2015 concerning the stipulation of government regulations instead Law No. 1 of 2014 concerning the election of governors, regents, and mayors into law about simultaneous elections [16]. Then based on the results of the journal analysis stated that since 2019 there have been simultaneous regional elections [17]

2.2. E-Government

E-government can be categorized into 8 types: (1) Government-to-Citizen (G2C), (2) Citizen-to-Government (C2G), (3) Government-to-Business (G2B), (4) Business-to-Government (B2G), (5) Government-to-Employee (G2E), (6) Government-to-Government (G2G), (7) Government-to-Non-profit (G2N), (8) Nonprofit-to-Government (N2G). [18]. In the research conducted, the categories included in the service are G2E and G2C.

2.3. Web Push Notification

For app developers, notifications are an effective way to interact with users in different ways, depending on the nature of your notifications [15]. The following is Figure 1. Web Notification Admin, which is used from the admin side.

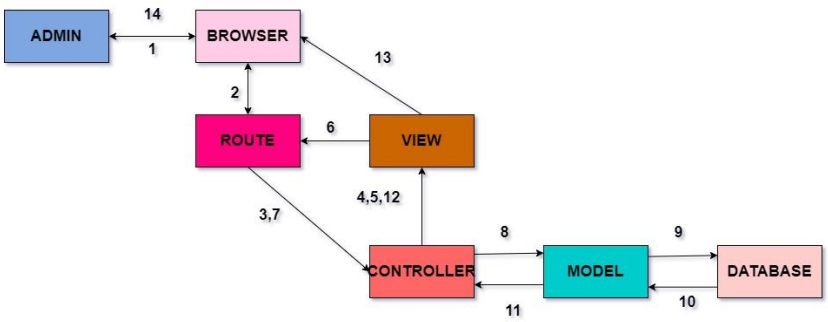


Figure 1. web notification Admin

In the picture, the flow is explained using numbering, namely admin requests http/s via browser (1), The request will be forwarded to the route (2), the route will call the defined controller (3), The controller returns the view according to the request (4), admin takes action by pressing the add, edit, or delete button (5), Check the route according to the request form in the view (6), the route will call the controller that has been defined (7), controller wraps data and sends commands to model (8), The model acts according to the controller's command by passing it to the database server (9), The database will process the data it receives and return its information to the model (10), The model passes the information it gets from the database to the controller (11), The controller adjusts the view display according to the information received by the model (12), the view renders web pages so that they can appear in the browser (13), the admin receives a response from the browser (14). In Figure 2. Web Notification User, which is used from the user side.

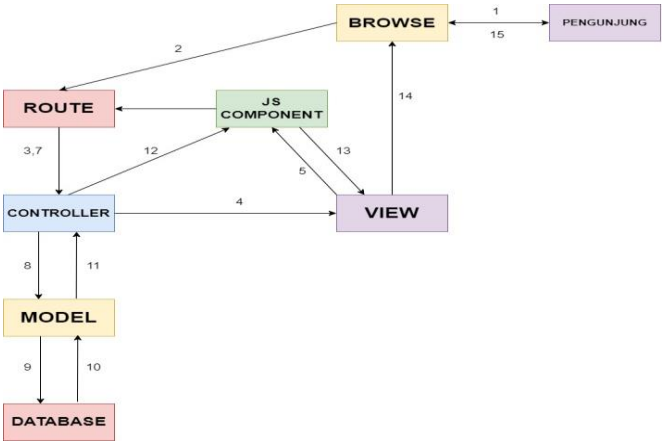


Figure 2. Web Notification User

In the picture, the flow is explained using numbering, namely, visitors make htp/s requests via browser (1), The request will be forwarded to the route (2), the route will call the controller that has been defined (3), The controller returns the view according to the request (4), view load js component (5), js component sends ajax request/xhr to route (6), route calls the defined controller (7), controller wraps data and sends commands to model (8), The model acts according to the controller's command by passing it to the database server (9), The database will process the data it receives and return information to the model (10), The model passes the information it gets from the database to the controller (11), controller reverses information via JSON (12), js will parse the received information and render it to the view (13), The view will display notification alerts in the browser (14), visitors receive a response from the browser (15).

2.4. Rasch Model

The analysis of this test instrument using the Rasch model is included in the item response measurement theory. This measurement could explain the interaction between the subjects and the test items. This will make the measurement have more precise and objective results. [19]. The Rasch model uses one parameter in analyzing user capabilities, with the application used is Winstep Software Small steps Software. Analysis with Rasch model reasonably easy done and produce proper analysis. The use of the Rasch model is quite easy to do with accurate analysis results. [20]

3.0 METHODOLOGY

3.1. System Development Method

The system development method used is the waterfall-like in Figure 3. Waterfall Model. According to D. Naga Malleswari [21], system development is divided into 6 stages, such as :

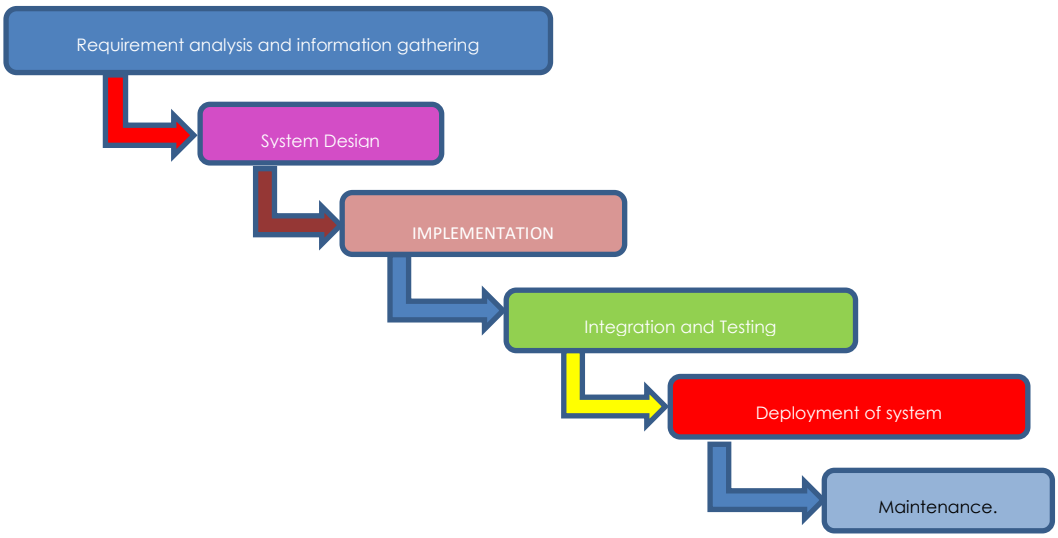


Figure 3. Waterfall Model

1. Requirement analysis and information gathering
   from start to finish every one of the necessities of the framework to be created is caught in this part and recorded in an essential determination report. Data collection is carried out using a questionnaire, done online with a list of questions and results as shown in table 1. The results of filling out the questionnaire.

2. System Design
   Framework Design helps in indicating equipment and gives a virtual diagram of the framework/programming to be planned. At the design stage, it can be seen in Figure 4. Data Flow Diagrams and Figure 5. Entity Relationship Diagrams

3. Implementation
   With inputs from the above phase, the system is first moduled in small programs called units, which are integrated into the coming step. Each program is tested on a particular scale to which is referred to as Unit Testing. Can be seen in Figure 6. Allow Notification and Figure 7. News notification

4. Integration and Testing
   Every one of the units created in the usage stage is incorporated into a framework after a review of every unit. Post joining the whole framework is tried for any issues and breakdowns. At this stage, a program trial has been carried out and has been hosted under the name https://pilkada.endanglestariruskan.com/. The research is only limited to stage 4.

5. Deployment of system
   The little units are converted into one useful unit and are tried. Once the testing is done, the item is set up in the client's condition or discharged into the market.

6. Maintenance
   There are a few concerns that come up in the customer environment. To repair those issues patches are discharged. Likewise to improve the ancient rarity some better forms are discharged. Support is done to acquire these progressions in the client's condition.

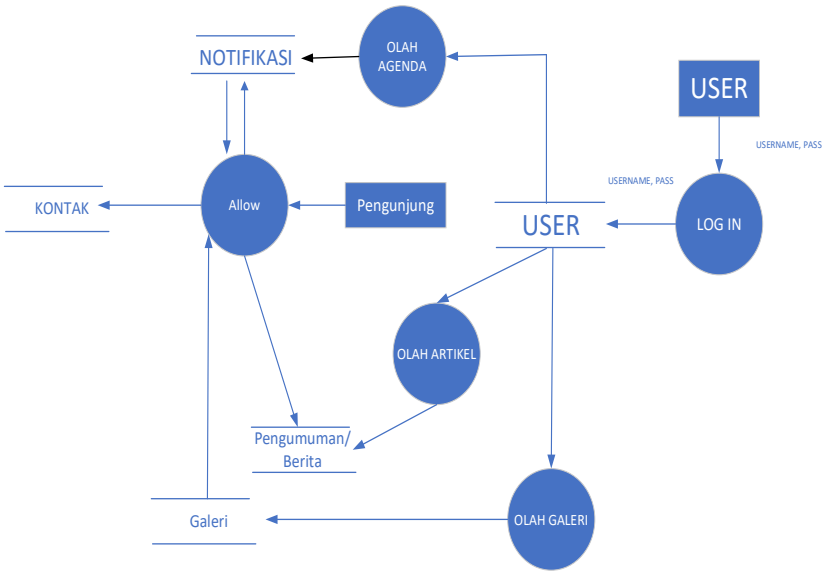


Figure 4. Data Flow Diagrams

ERD is used for database design as shown in Figure 2. Entity Relationship Diagram. Users log in as web notification management, connect with agenda processing as notification schedule entries, connect with articles for news and announcement management, and galleries to display photos or videos of activities. Meanwhile, contacts are visitors who follow web notifications, can view news/announcements and galleries

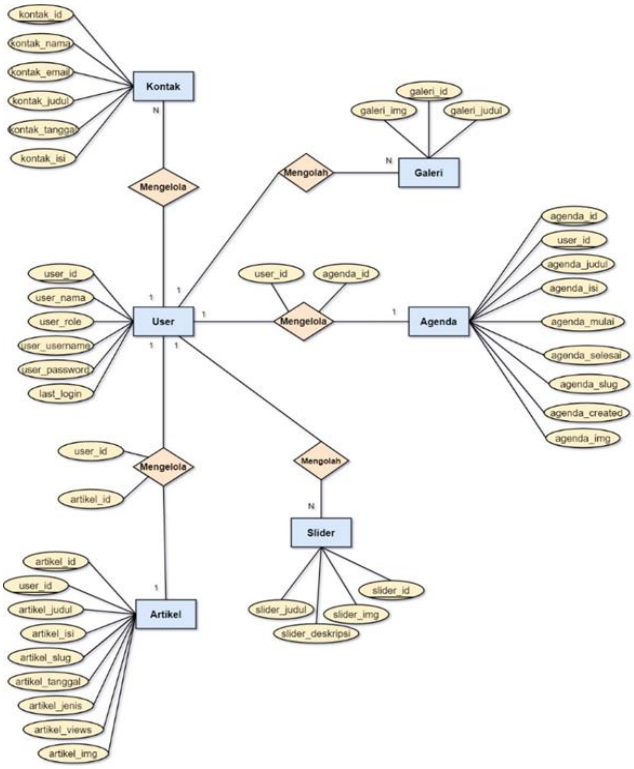


Figure 5. Entity Relationship Diagrams

4.0 RESULANTS AND DISCUSSION

Table 1. Questionnaire Results

No	Question	Percentage of answers				
		VA	A	N	D	VD
1	Respondent's knowledge of simultaneous elections/elections	46,3	46,3	6,2	1,3	0
2	Awareness of choosing a Candidate Pair	63,7	31	4	1,3	0
3	Known selected profile	32,2	31,3	30	4,8	1,8
4	Get to know the profile of one of them through the Campaign	39,6	46,3	13,2	0,5	0,4
5	remembering the campaign schedule through billboards, banners, tv, radio is less effective	22,5	43,2	22	10,6	1,8
6	Causes of residents not participating: busy working/farming/schooling/other work	25,1	36,6	22,5	13,7	2,2
7	not participating and or subjective because they do not know the candidate profile	35,8	49,1	12,8	2,2	0
8	during the election, a lot of hoax information spread	38,4	38,4	13,2	4,4	5,7
9	Required application/system or official link to remind important schedules during elections/elections	58,6	35,7	4,8	0,9	0
10	A Reminder system of important election schedules can provide early awareness in voting rights (participation)	38,3	48,9	11	1,8	0

With description, Very Agree (VA), Agree (A), Neutral (N), Very Disagree (VD).

Based on the results of the questionnaire analysis, it was found that 52 percent of male respondents and 48 percent of female respondents answered, with 52 percent of respondents being between 17 and 25 years old at most. As shown in table 1. Questionnaire Results. The number of respondents was 200, which then obtained the result that each question item has a special quality, namely 0.97. The tendency of respondents to answer agrees to the question. The consistency of the answers is sufficient.

Then the results of the questionnaire were processed using the Rasch model with the Winstep application. The results of the analysis using the Rasch model show that the

respondents who answered agreed with the questions more, this can be seen in Table 1. Person Reliability, with a person measure of + 1.53, the average logit value is above 0.0.

Tabel 2. Person Reliability

03-247WS.txt - Notepad

File Edit Format View Help

TABLE 3.1 C:\Users\HP\Desktop\210802 untuk di pr ZOU247WS.TXT Aug 8 21:33 2021
INPUT: 200 Person 10 Item REPORTED: 200 Person 10 Item 5 CATS WINSTEPS 3.73

SUMMARY OF 193 MEASURED (NON-EXTREME) Person

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	41.1	10.0	1.53	.48	1.07	.0	1.04	.0
S.D.	4.2	.1	.95	.15	.72	1.3	.66	1.2
MAX.	49.0	10.0	4.24	1.05	4.86	4.2	4.13	3.7
MIN.	31.0	9.0	-.04	.33	.14	-3.0	.14	-2.9
REAL RMSE	.57	TRUE SD	.76	SEPARATION	1.32	Person RELIABILITY		.64
MODEL RMSE	.50	TRUE SD	.80	SEPARATION	1.60	Person RELIABILITY		.72
S.E. OF Person MEAN = .07								

MAXIMUM EXTREME SCORE: 7 Person

Then for the quality of the questions displaying "special" results, namely 0.97. it means the question is quite reliable.

Tabel 3. Item Reliability

CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .80

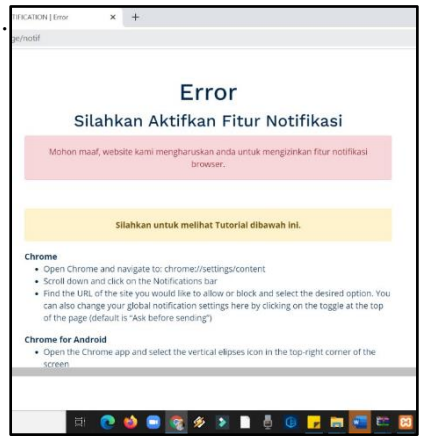
SUMMARY OF 10 MEASURED (NON-EXTREME) Item

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	824.4	198.9	.00	.10	.98	-.2	1.04	.3
S.D.	58.0	.5	.61	.02	.25	2.0	.23	1.8
MAX.	907.0	200.0	.86	.13	1.59	4.4	1.56	4.2
MIN.	731.0	198.0	-1.04	.08	.64	-3.3	.79	-1.9
REAL RMSE	.11	TRUE SD	.60	SEPARATION	5.53	Item RELIABILITY		.97
MODEL RMSE	.10	TRUE SD	.60	SEPARATION	5.71	Item RELIABILITY		.97
S.E. OF Item MEAN = .20								

UMEAN=.0000 USCALE=1.0000
Item RAW SCORE-TO-MEASURE CORRELATION = -.99
1928 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE: 3791.34 with 1723 d.f. p=.0000
Global Root-Mean-Square Residual (excluding extreme scores): .7253

Based on the results of the questionnaire and analysis of the Rasch model, a schedule notification system was made to remind news or announcements of all activities during the election period, both for employees and for the web-based community.

The system that enters the selection page will be directed to follow the notification web, with an initial error display if it does not follow or is allowed. As in Figure 6. Allow Notification. After visitors allow, notifications will enter the web according to the notification schedule for election activities. Figure 7. News notification, show notification which appears on the web.



Picture 6. Allow Notifications

Figure 7. News notification

5.0 CONCLUSION

Based on the results of the questionnaires that have been filled in, also based on the analysis of the results of the questionnaires that have been processed, it is concluded that all the questionnaire fillers who have sufficient age requirements in choosing are represented with an equal number of men and women, on average they answered agree to the statement on the questionnaire. , based on the processing of the Rasch model with the Winstep application with a reliability result of 0.97 which means that the quality of the questions is special, valid. where among several statements explains that one of the desires to vote is because they know the profiles of candidate pairs, with the simultaneous election of heads of state or regional heads and their staff, more profiles have to learn, one of the effective ways is through open campaigns for candidate pairs, but because they are used to using gadgets, other media as a transmitter of information less attention. So that with a reminder system with web-based notifications, message reminder information is more accurate and up-to-date without having to know the recipient. Further researches are needed to be developed based on android and election activities in one data, without having to open a web page.

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