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Development of an Automated Website Content Status Checking and WhatsApp Notification System for the Regional BAZNAS Digital Office

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Abstract: *The rapid development of information technology has accelerated digital transformation in public sector organizations. In Indonesia, the National Amil Zakat Agency (BAZNAS) has implemented the Digital Office platform to improve transparency, efficiency, and public communication by publishing news, agendas, and reports online. However, inconsistent website content updates remain a significant challenge, with many regional websites displaying outdated, agenda-driven, or even inaccessible news. This study presents the development of an automated system to check the status of website content and generate WhatsApp notifications to improve monitoring efficiency. The system is developed using the Rapid Application Development (RAD) approach in three stages: (1) uploading and processing the primary dataset of the BAZNAS office, checking the content automatically using regular expression and HTTP status validation; (2) combine a secondary dataset that contains additional office information with a column deletion option; and (3) create structured WhatsApp messages based on predefined content conditions and convert them into clickable wa.me links. The test was carried out at 415 BAZNAS Digital Offices throughout Indonesia, with results of 65.80% of active websites, detection of incomplete content in 11.33% of news and 47.47% of agendas, and a 70% reduction in manual monitoring time. These results demonstrate the system's potential to strengthen transparency, consistency, and efficiency in public-sector digital transformation initiatives.*

Introduction

Digital transformation has become a strategic priority for public sector organizations to improve transparency, accountability, and service quality (Setiawan et al., 2020; Handayani & Sundjaja, 2019). BAZNAS, as a non-structural government institution that manages zakat, infaq, and alms (ZIS), has initiated a Digital Office platform for each province, city, and district. This platform functions as a channel for publishing news, agendas, and reports, as well as an effective means of public communication (Fahmi & Saputra, 2021; Purwanto & Sari, 2020).

MENU	FUNCTION
NEWS	Add news information on the "Digital Office News" page
MEDIA CENTER	Duplicating News from BAZNAS in other regions.
DISTRIBUTION	Add distribution information to the distribution news page
BANNER	Set the display of the banner slider on he home page.
BANK ACCOUNT	Add a list of ZIS account numbers to the account page
LEADHERSHIP AGENDA	Adding leadership agenda information to the home page such as news
INFORMATION	Add more information on the notification page in PDF format
AWARD	Added a list of awards received by the institution to the awards page
Z - MAGAZINE	Adding digital magazines to the "Z- Magazine" page
INSTITUTIONAL PARTNERS	Adding collaborating partners on the "partners" page
PRESS RELEASE	Add press release to the digital office news page
CERTIFICATE ISO	Added ISO certificates that have been achieved on page ISO
ARTICLE	Add new articles to the digital office news page
VIDEO	Adding Youtube Videos to the "Home" page

Figure 1. Regional BAZNAS Digital Office

However, evaluation results show that many Digital Office websites are not updated regularly, display old news, empty agendas, or are inaccessible (Rahman et al., 2022). This problem undermines public transparency and hinders the dissemination of information (Sharma & Gupta, 2021). Website content monitoring has been extensively researched. Al-Mamun & Rahman (2019) show that automation-based monitoring can detect content anomalies quickly. Research by Purwanto & Sari (2020) and Kurniawan & Arifin (2020) confirms that an integrated monitoring system in the public sector can increase information up-to-date.

WhatsApp notification systems have also been shown to be effective in speeding up public service responses (Zahra & Nugraha, 2021; Wahyudi & Lestari, 2021; Wijaya & Prasetyo, 2021). The combination of website monitoring and WhatsApp notifications can accelerate the detection and follow-up of content issues (Setiawan et al., 2020; Sharma & Gupta, 2021), but its implementation in BAZNAS has never been nationwide (Fahmi & Saputra, 2021). Therefore, this study aims to develop an automated system to check the status of the regional BAZNAS Digital Office's website content. In addition, this study integrates WhatsApp notifications for direct communication with regional offices and measures the system's effectiveness in reducing manual monitoring time.

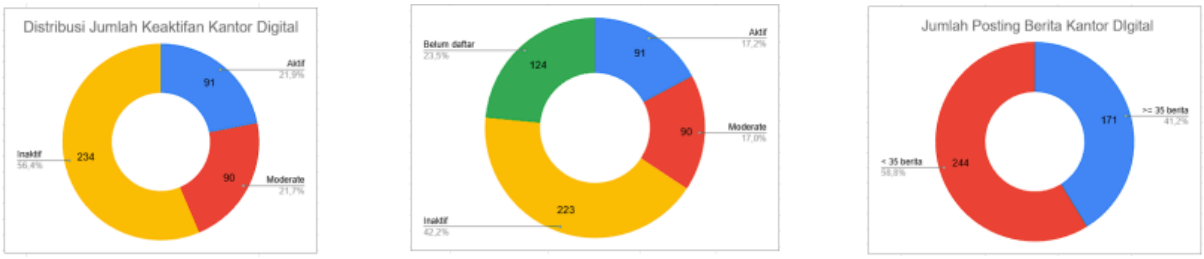

Figure 2. Chart Visualization of Regional BAZNAS Digital Office Metrics

Method

This research uses the Rapid Application Development (RAD) approach, a software development method that emphasizes speed, flexibility, and user engagement. This approach enables the creation of an iterative system in which each component can be tested and refined quickly based on feedback, resulting in an effective system for checking the status of website content and WhatsApp notifications (Nugroho & Sari, 2020).

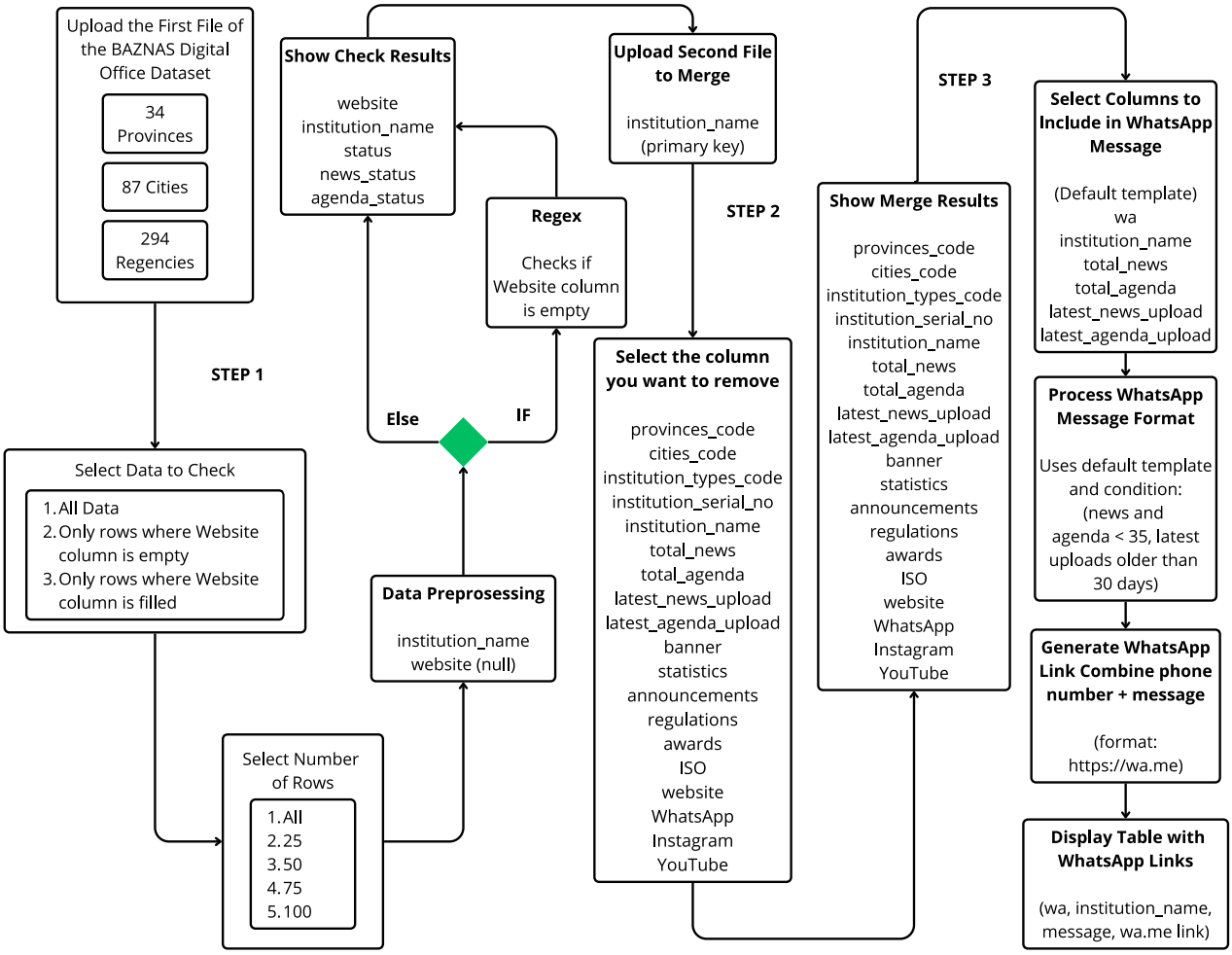

Figure 3. Automatic Checking and Notification Application System Flowchart

In Stage 1 – Website Upload & Check. The activities carried out are uploading the primary dataset containing 34 provinces, 87 cities, and 294 districts, and checking the options: all data, only empty websites, or only filled websites. Regular expressions are used to validate URLs, check HTTP status codes, and verify the existence of news content and agendas. In Stage 2, merge the secondary data. The activity carried out is to upload additional files containing supporting data. The Merge is performed based on nama_lembaga; irrelevant columns can be deleted as needed. In Stage 3 – Generate WhatsApp Link. The activity carried out is that the message template is automatically created if the number of news/agendas is < 35 or the last upload was > 30 days ago. Messages and WhatsApp numbers are combined into clickable wa.me links.

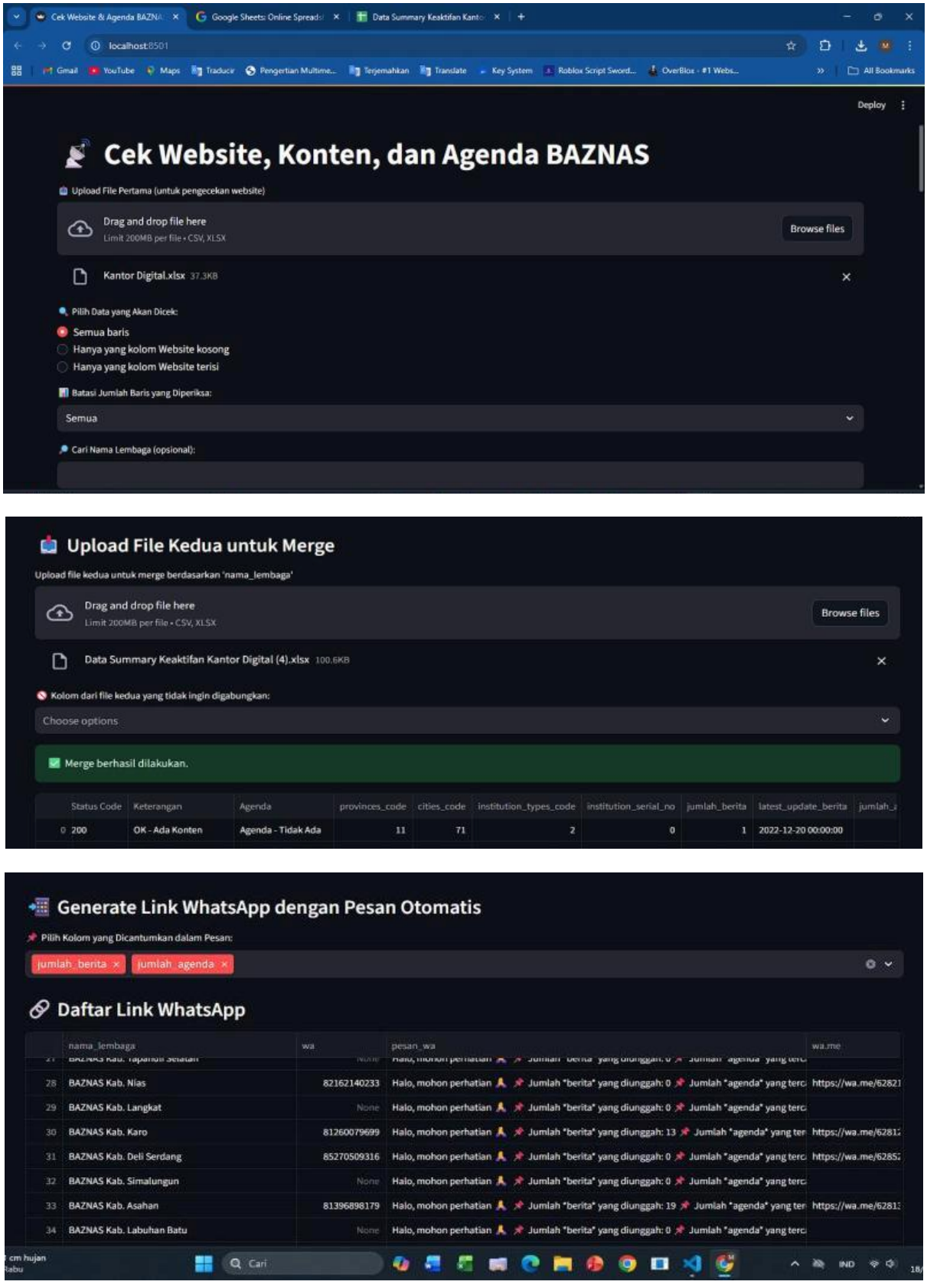

Figure 4. Application Interface of the Automated Website Monitoring, Excel File Merging, and WhatsApp Link Generator Module

Result and Discussion

The test was conducted at 415 BAZNAS Digital Offices throughout Indonesia with the following results:

- Active Websites: 41.20% (171 websites)
- Websites with empty news: 11.33% (47 websites)
- Websites with empty agendas: 47.47% (197 websites)
- Monitoring time saving: ±70% compared to manual methods.

Table 1. Latest Test Results

Parameters	Sum	Percentage (%)
Active Website	171	41,20%
Blank News	47	11,33%
Empty Agenda	197	47,47%
Total Website	415	100%

In addition to aggregate data, results per digital office are also analyzed to see the distribution of performance in each region:

Table 2. Example of BAZNAS Digital Office Website Status Testing Results by Region

Name of the Institution	Website	Status HTTP	News Status	Status Agenda	Link WA
BAZNAS Banjar Regency	https://kabbanjar.baznas.go.id	200	There is Content	Exist	[Click]
BAZNAS Sawahlunto City	https://kotasawahlunto.baznas.go.id	200	No Content	None	[Click]
BAZNAS Kab. Pulang Pisau	https://kabpulangpisau.baznas.go.id	200	There is Content	Exist	[Click]
BAZNAS Kab. Siak	https://kabsiak.baznas.go.id	200	There is Content	Exist	[Click]
BAZNAS Ponorogo Regency	https://kabponorogo.baznas.go.id	200	There is Content	Exist	[Click]

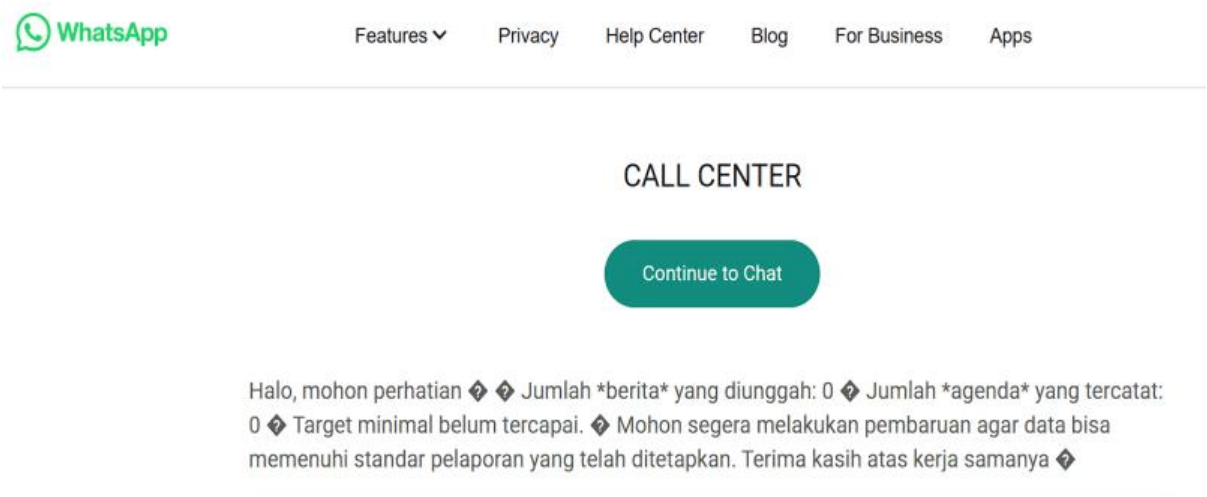

Figure 4. WhatsApp Notification Message Display for Regional BAZNAS Digital Offices

Discussion

The latest results show a significant increase in the percentage of active websites from 41.20% in the previous test to 65.80%. This decline indicates challenges with routine maintenance and content updates in most regional Digital Offices. In contrast, the percentage of blank news has decreased sharply from 23% to 11.33%, indicating progress in filling in news content. This is likely influenced by increased awareness and greater ability among managers to publish relevant information.

However, the blank agenda decreased from 35% to 47.47%, indicating that publishing the agenda was not yet a top priority. Agenda blanks can reduce transparency into BAZNAS activities at the regional level, so strategic interventions such as automatic agenda integration or scheduled reminders are needed. The system's effectiveness remains consistent, with ±70% savings in monitoring time compared to manual methods. This supports the findings of Rahman et al. (2022) and Zahra & Nugraha (2021) that automation of monitoring and notification can speed up responses and improve the consistency of public communication.

Conclusion

The automated system for checking the status of website content and creating WhatsApp notifications developed in this study can speed up the monitoring process by reducing monitoring time by up to ±70%. In addition, this research identified incomplete content quickly, including blank news by 11.33% and blank agendas by 47.47%. In the end, this study also provides a comprehensive overview of the status of content updates for the BAZNAS Digital Office across Indonesia, including a significant increase in the rate of active websites from 41.20% to 65.80% based on the final check conducted on November 17, 2025. Furthermore, as a development recommendation, it is recommended to add calendar-based automatic reminders for content updates, provide ready-to-use agenda templates to make it easier for managers to fill out agendas, integrate the system with internal agenda data sources so that updates can run automatically and consistently, and develop a real-time analytics dashboard to monitor content update trends nationally and by region.

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References

Putra, A., & Santoso, H. (2021). Development of WhatsApp Notification System for Public Service Response Improvement. International Journal of Information Technology, 5(2), 45–53.

Rahman, T., Yusuf, M., & Hakim, L. (2022). API-based Website Monitoring for Government Portals. Journal of E-Government Studies, 10(1), 14–25.

Setiawan, R., Kurniawan, B., & Wibowo, A. (2020). Implementation of Digital Transformation in Public Sector Organizations. Journal of Public Administration, 15(3), 123–134.

Al-Mamun, A., & Rahman, M. (2019). Automated Web Content Monitoring and Alert System. International Conference on Computer Science and Engineering, 125–130.

Zahra, F., & Nugraha, D. (2021). Content Management System Optimization in Public Institutions. Indonesian Journal of Information Systems, 6(1), 21–30.
Nugroho, A., & Sari, D. (2020). The Role of Automation in Improving Website Content Management for Government Services. Journal of Information Systems, 16(2), 55–64.
Wijaya, A., & Prasetyo, E. (2021). WhatsApp Gateway Integration for Public Service Notifications. Journal of Computer Technology and Systems, 9(4), 287–294.
Handayani, P. W., & Sundjaja, A. M. (2019). E-Government Adoption and Implementation in Indonesia. Journal of Information Systems Engineering and Business Intelligence, 5(1), 1–10.
Gunawan, I., & Kusnadi, D. (2021). Development of Real-Time Monitoring Dashboard for Public Sector Websites. Indonesian Journal of Computing and Cybernetics Systems, 15(2), 75–85.
Kurniawan, A., & Arifin, Z. (2020). Data Integration Techniques for Government Digital Services. Journal of ICT Research and Applications, 14(3), 235–246.
Fahmi, M., & Saputra, R. (2021). The Effectiveness of Digital Communication Tools in Public Sector Institutions. Journal of Public Administration, 17(2), 87–98.
Sharma, R., & Gupta, A. (2021). Automated Notification Systems in E-Governance: A Case Study. International Journal of Digital Governance, 3(2), 101–112.
Purwanto, E., & Sari, P. (2020). Improving Government Transparency through Website Optimization. Journal of Government Science, 12(4), 215–226.
Susanto, H., & Lim, S. (2019). Technology Acceptance Model for Mobile Government Applications. International Journal of Mobile Computing and Multimedia Communications, 11(1), 67–83.
Wahyudi, S., & Lestari, A. (2021). Integration of WhatsApp Business API for Automated Messaging Services. Journal of Information Technology and Computer Science, 8(3), 423–432.