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Implementation of the Profile Matching Method in Developing a Decision Support System for Direct Cash Assistance (BLT) in Pangestu Village

Made Putra Astama[1*]

Abstract

Pangestu Village is located in a tidal swamp area approximately 0.5 meters above sea level, with a population of around 2,000 residents. The village is bordered by Delta Upang Village to the north, Tirta Kencana and Pendowoharjo to the north, Purwosari (formerly SP3) and Muara Baru to the south, Tanjung Baru Village (Banyuasin II District) to the west, and Upang Makmur (Sahang River) to the east, adjacent to Air Salek District. Due to the high number of underprivileged households, Pangestu Village qualifies for Direct Cash Assistance (BLT), a government program designed to support low-income citizens. However, the village currently lacks an integrated information system to manage BLT data efficiently and securely. This study develops a mobile web-based Decision Support System (DSS) using the Profile Matching method to assist local authorities in identifying eligible recipients based on predefined criteria. The system allows administrators to store, process, and evaluate data securely while enabling residents to verify recipient lists transparently. The criteria used include age, number of dependents, occupation, income level, employment status, and housing condition. The application was built using PHP and MySQL technologies and successfully implemented to improve the efficiency and accuracy of the BLT recipient selection process.

Keywords

Profile Matching, Decision Support System, Pangestu Village, Direct Cash Assistance (BLT)

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[1*] Universitas Bina Darma, Indonesia, Corresponding email: 171420041@student.binadarma.ac.id

Introduction

The Direct Cash Assistance (Bantuan Langsung Tunai, BLT) program represents one of the Indonesian government's flagship initiatives designed to strengthen social welfare by providing financial aid or essential goods directly to low-income households. The primary goal of BLT is to sustain the economic well-being of underprivileged communities, especially those most affected by economic shocks or natural crises. As noted by Silitonga and Simangunsong (2020), such assistance programs embody a concrete manifestation of the state's responsibility to ensure equitable access to basic necessities and social protection. By targeting vulnerable populations, BLT seeks to alleviate poverty, stimulate local economic activity, and prevent the widening of social inequality.

The relevance of BLT became especially evident during the COVID-19 pandemic, when Indonesia, like many other nations, faced significant economic disruptions. The government expanded BLT as a rapid-response measure to mitigate the financial strain on households, particularly those in rural areas. However, despite its noble intent, many communities encountered implementation challenges stemming from administrative inefficiencies, data duplication, and inconsistencies in beneficiary identification. In Pangestu Village, located in Makarti Jaya District, Banyuasin Regency, the process of data collection and aid distribution was conducted manually, often resulting in errors, repeated entries, and disputes over eligibility. These limitations not only delayed fund distribution but also created perceptions of unfairness and reduced public trust in local governance.

The root of these issues lies in the absence of an integrated data management and decision-making system. Manual verification of applicant data makes it difficult for local officials to objectively assess eligibility, particularly when multiple socio-economic variables must be considered simultaneously. This situation underscores the need for a structured and transparent decision-making mechanism capable of processing complex information efficiently. In this context, the implementation of a Decision Support System (DSS) offers a promising solution. A DSS is a computer-based application designed to assist decision-makers in evaluating alternatives by analyzing relevant data according to defined criteria. Its integration into public administration enhances accuracy, reduces bias, and supports evidence-based policymaking at the village level.

In this study, the Profile Matching method was selected as the computational foundation for the DSS. The Profile Matching approach evaluates and ranks alternatives (in this case, potential BLT recipients) based on their proximity to an ideal profile or target criteria. It calculates a weighted score derived from normalized values across several key indicators such as income level, employment status, housing condition, number of dependents, and ownership of basic utilities. By quantifying these parameters, the Profile Matching method allows for objective, transparent, and reproducible decision-making. This is particularly beneficial in social assistance contexts, where subjective judgments can lead to unequal treatment or favoritism.

The implementation of this model in Pangestu Village aims to support local authorities in identifying eligible BLT recipients more effectively and equitably. Applicants are required to submit supporting documentation, including income statements, family cards (Kartu Keluarga), identity cards (KTP), and other verifiable socio-economic data. The DSS processes these inputs to produce a ranked list of candidates that reflects their eligibility scores relative to the defined ideal profile. As a result, decision-makers can allocate funds more accurately

while minimizing disputes and administrative errors. The use of such technology not only enhances transparency and accountability but also strengthens community confidence in the fairness of government assistance programs.

Accordingly, this research seeks to design and implement a web-based Decision Support System utilizing the Profile Matching method to automate the BLT selection process for Pangestu Village. The system aims to improve administrative efficiency, standardize data evaluation, and ensure that aid distribution is conducted objectively and responsibly. Beyond its immediate operational benefits, this initiative contributes to the broader agenda of digital governance and public service reform in Indonesia, demonstrating how information technology can be leveraged to enhance social welfare policy implementation at the grassroots level. Ultimately, the project aspires to serve as a scalable model for other rural communities facing similar challenges in managing and distributing social aid programs.

Methodology

Planning

Although Pangestu Village has an established BLT distribution procedure, the process remains manual. The study began by analyzing existing workflows and identifying the need for an automated system that enables faster and more accurate selection. The proposed DSS provides real-time access to BLT information and publishes verified recipient lists on a public web portal

Problem Identification

Field observations and interviews with village officials identified several key issues: The absence of a decision support system results in inefficiencies during data collection and verification. Manual data management often leads to duplication and errors in BLT distribution. Limited transparency prevents residents from monitoring recipient data effectively. Hence, a structured DSS was required to ensure fairness, accuracy, and traceability in the selection process.

System Analysis

The DSS was designed as a web-based application accessible to both administrators and residents. Users can input data directly, while administrators evaluate eligibility using the Profile Matching algorithm. The system generates an automated ranking of eligible candidates based on weighted criteria that reflect the government's BLT guidelines.

System Design

The design process included creating system models and diagrams to define user interactions and system functionality.

Use Case Diagram

The Use Case Diagram represents interactions between users and the system's core functions, including data entry, profile verification, and decision approval.

Activity Diagram

The Activity Diagram visualizes the step-by-step process of BLT data collection, verification, and system-based evaluation.

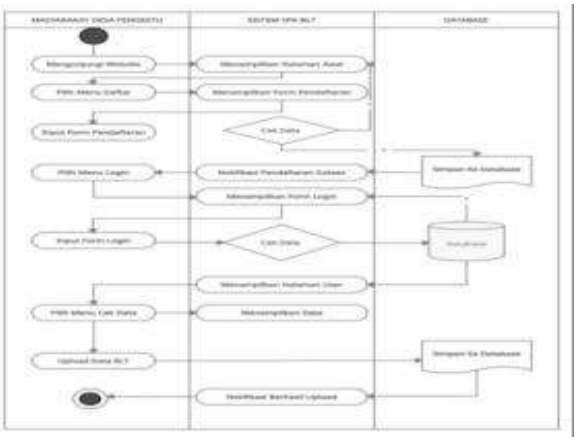

Figure 1. Activity Diagram

Class Diagram

The Class Diagram outlines the system's data structure and relationships between entities, including applicant data, evaluation criteria, and decision outputs.

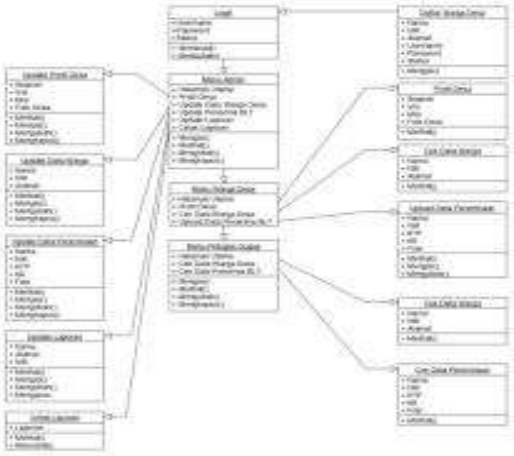

Figure 3. Class Diagram

Results

The developed DSS consists of two main user roles: Administrators and Residents (Applicants). Administrators handle data verification, recipient selection, and system management, while residents can register and check eligibility results online.The DSS was built using PHP as the main programming language and MySQL as the database system. The Profile Matching algorithm was implemented to calculate scores for each applicant based on deviations from ideal values. The smaller the deviation, the higher the candidate's suitability.

System Interface Overview

1. Homepage: Displays general information about Pangestu Village and BLT announcements.
2. Village Profile Page: Contains the village's geographical, demographic, and administrative data.
3. Recipient Data Page: Displays a list of verified BLT recipients for public transparency.
4. Photo Documentation Page: Presents visual records of BLT distribution events.
5. Login Page: Allows registered users to access the system using their National Identity Number (NIK) and password.
6. Applicant Verification Page: Enables administrators to validate and edit submitted data.
7. Profile Matching Calculation Page: Displays the results of the algorithmic ranking process based on criteria weights.
8. Criteria Management Page: Allows administrators to define and adjust assessment criteria.

Discussion

The implementation of the Profile Matching method in the Decision Support System (DSS) for the selection of Bantuan Langsung Tunai (BLT) recipients in Pangestu Village has proven to be a practical and reliable approach in improving the accuracy and fairness of decision-making. The method effectively simplifies complex, multi-criteria evaluation processes by converting qualitative judgments—such as economic conditions, family dependency ratios, and housing quality—into quantitative scores that can be objectively compared. This conversion reduces subjectivity in human assessment and ensures that each decision is grounded in measurable data rather than personal bias or social influence. Such an approach is consistent with the ethical and procedural objectives of social welfare distribution outlined by Silitonga and Simangunsong (2020), which emphasize fairness, transparency, and accountability in government assistance programs.

Through the adoption of the web-based DSS, the system provides a centralized digital platform where all applicant data are securely stored, processed, and accessed. This structure allows village officials to manage beneficiary information efficiently while maintaining the integrity and confidentiality of sensitive personal data. The use of a centralized database also eliminates the redundancies and data duplication that were prevalent in the manual system, significantly accelerating the verification and selection process. Furthermore, the system's digital architecture enables the automatic generation of ranking reports, allowing decision-makers to review the most eligible candidates based on predefined criteria. This capability ensures that the allocation of BLT funds is consistent with established eligibility standards and reduces administrative workload.

A key strength of the developed DSS lies in its ability to enhance transparency and public trust. By enabling the publication of approved recipient lists online, the system provides an open verification mechanism for the community, minimizing the potential for misinformation or favoritism. This level of transparency helps mitigate social tensions and conflicts that often arise in welfare distribution, especially in small communities where perceptions of unfairness can lead to disputes. The public visibility of program results encourages community oversight

and fosters a sense of collective accountability—key factors in strengthening governance at the village level.

In addition to operational efficiency, the DSS represents a meaningful contribution to the digital transformation of local governance. The system's integration into Pangestu Village's administrative workflow aligns with Indonesia's broader national agenda for digital public service innovation, as outlined in the country's e-Government and Smart Village initiatives. By implementing a data-driven mechanism for social aid distribution, the village has taken a concrete step toward modernizing its governance practices. This demonstrates that even rural areas can leverage technological tools to improve service delivery, decision accuracy, and institutional credibility—goals that resonate with Silitonga and Simangunsong's (2020) call for leveraging technology in community empowerment and social welfare management.

The successful deployment of the DSS also provides a model for scalability. Other villages or local governments facing similar challenges in social aid distribution can replicate or adapt the Profile Matching approach with minimal cost and training. The method's flexibility allows for the adjustment of criteria weights according to local contexts—whether targeting poverty reduction, education support, or disaster relief. This adaptability ensures that the technology remains relevant across diverse welfare applications while maintaining its core principles of fairness and objectivity. Moreover, the integration of digital reporting tools can facilitate vertical coordination with district or provincial governments, improving oversight and policy evaluation.

In conclusion, the adoption of the Profile Matching-based DSS in Pangestu Village has delivered tangible improvements in the objectivity, efficiency, and transparency of BLT distribution. By transforming data into actionable insights, the system supports evidence-based decision-making and enhances accountability within local governance. It not only aligns with Indonesia's digital transformation goals but also reinforces the values of social justice and inclusivity in public administration. Moving forward, the continued enhancement of this system—such as by incorporating real-time monitoring, data analytics, and mobile access—will further strengthen the role of information technology as a cornerstone of effective and equitable community development.

Conclusion and Recommendations

Based on system design and implementation, several conclusions were drawn: The Decision Support System for BLT eligibility using the Profile Matching method successfully automates the selection process and minimizes human bias. The system, developed using PHP and MySQL, streamlines data management and improves decision-making efficiency. Transparency and fairness are achieved by allowing residents to access verified BLT recipient data online.

Disclosure Statement

The authors declare no potential conflicts of interest regarding this study. The research was conducted solely for academic purposes at Universitas Bina Darma.

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Biographical Notes

MADE PUTRA ASTAMA Undergraduate student, Department of Informatics Engineering, Universitas Bina Darma. His research interests focus on web-based systems, decision support models, and applied computing.