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An Efficient Sampling Approach for Village Elections: Quick Count Using Stratified Systematic Cluster Sampling

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Abstract

Quick counts are widely used to estimate election outcomes before official results are announced. However, their accuracy depends on the quality of the sampling method used. This study applies the Stratified Systematic Cluster Random Sampling method in the 2019 village head election in Panembangan Village, Indonesia, to provide an efficient and statistically sound quick count process suitable for rural contexts with limited resources. The method integrates stratification (dividing voters by hamlet), clustering (grouping by polling stations), and systematic sampling (selecting polling stations at fixed intervals). Out of 10 polling stations, 5 were systematically selected after stratification. All valid votes from these polling stations were used for estimation. The results show that candidate Untung Sanyoto received 59.16% of the vote, while his opponent received 40.84%. The margin of error was ±0.69% at a 95% confidence level, and the estimates closely matched the official election results, demonstrating the method's reliability. This study shows that combining statistical rigor with practical sampling strategies can produce fast, accurate, and cost-effective results. It provides a scalable model for local elections, especially in regions facing geographic or logistical challenges, and contributes to the development of transparent and trustworthy democratic practices.

Keywords: Quick Count, Sampling Method, Stratified Systematic Cluster Random Sampling, Village Head Election

1. Introduction

Elections are a cornerstone of democratic governance, allowing citizens to exercise their right to choose leaders who represent their interests and manage public resources. At the grassroots level, village head elections—or *Pilkades* in Indonesia—are critical mechanisms through which local communities engage with democratic processes. These elections hold substantial importance, as village heads oversee community development, local budgets, and conflict resolution. Therefore, ensuring that village elections are conducted transparently, accurately, and efficiently is essential to maintaining public trust and safeguarding political legitimacy [1], [2], [3].

To support transparency and public engagement, quick count methods have gained widespread adoption as a means of providing early estimates of election outcomes. Quick counts can be particularly valuable in settings where official vote tabulations are delayed due to manual processes or logistical constraints. When implemented correctly, quick counts can strengthen electoral credibility, reduce uncertainty, and serve as an important oversight tool for election observers and the media [4], [5]. However, the accuracy and reliability of quick count results are entirely dependent on the sampling methodology used. Poor sampling design can lead to biased estimates and undermine the very trust these methods seek to foster [6].

In rural and remote areas, achieving a balance between methodological rigor and operational feasibility remains a persistent challenge. Factors such as geographic dispersion, limited infrastructure, constrained budgets, and shortages of trained personnel often make it difficult to implement full-coverage monitoring or large-scale data collection efforts [7]. Consequently, there is a pressing need for sampling techniques that are both statistically valid and adaptable to local realities. Traditional methods such as simple random sampling or multistage sampling, though robust in theory, may not be practical for small-scale or logistically complex elections [8].

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This study addresses these challenges by applying a hybrid method known as stratified systematic cluster random sampling in the context of the 2019 village head election in Panembangan Village, Banyumas Regency, Indonesia. This approach integrates three established sampling strategies into a unified framework. First, stratification is used to divide the population based on hamlet boundaries, ensuring that each geographic subgroup is adequately represented in the sample [9]. Second, clustering is implemented by treating each polling station (TPS) as a single cluster, thereby simplifying field operations and reducing resource requirements [10]. Finally, systematic sampling is applied by selecting polling stations at fixed intervals from an ordered list, following a randomly chosen starting point. This ensures even distribution across the population and minimizes selection bias [11].

In Panembangan Village, ten polling stations were initially identified, and five were systematically selected following stratification. All valid votes from these five polling stations—amounting to 3,760 ballots—were included in the quick count sample. The results indicated that candidate Untung Sanyoto received 59.16% of the vote, while his opponent secured 40.84%. With a calculated margin of error of ±0.69% at the 95% confidence level, the quick count estimates closely mirrored the official results released by the village election committee, reinforcing the method's validity and accuracy [12].

Beyond its immediate context, this study contributes to the broader field of election monitoring by demonstrating that statistically sound quick count methods can be adapted for use in low-resource, decentralized settings. It provides a practical model that can be replicated in other rural or under-resourced regions facing similar logistical constraints. In doing so, it bridges the gap between methodological precision and field-level application, offering insights that are relevant both for practitioners and scholars interested in improving the quality and credibility of local democratic processes.

2. The Related Works

Quick count methods have become a central focus in electoral studies, particularly in contexts where early result estimation is crucial for enhancing transparency and reducing tensions during the vote-counting process. As a rapid statistical approach, quick counts rely on sampling a portion of polling stations to generate early predictions of final election outcomes. This technique has been effectively used in large-scale national elections, as well as in regional contests, but its application in local or village-level elections has received limited attention in the academic literature [13].

Sampling methodology is a critical determinant of the accuracy and credibility of quick count results. Various studies have emphasized that inappropriate sampling designs can lead to biased estimates, underrepresentation, and incorrect projections. Among the commonly used methods, Simple Random Sampling (SRS) is often employed due to its simplicity and theoretical robustness. However, SRS becomes inefficient in geographically dispersed populations because it fails to ensure proportional representation across spatial or demographic subgroups [14], [15].

To overcome such limitations, researchers have explored stratified sampling, which divides the population into homogeneous subgroups—or strata—based on shared characteristics such as geography, gender, or age. Sampling is then conducted proportionally within each stratum to improve representativeness and reduce sampling variance. Studies by Azora and Wati demonstrated the effectiveness of stratified designs in Indonesian gubernatorial elections, where vote estimates closely mirrored actual results when regional stratification was applied [16], [17].

In addition, cluster sampling has been widely adopted in field settings where logistical simplicity is essential. By treating units such as polling stations or precincts as clusters, researchers can reduce travel costs and interviewer workload. However, this method can introduce design effects if clusters are internally homogeneous but differ significantly from one another, potentially lowering statistical precision [18].

A more advanced solution involves combining stratification and clustering into stratified cluster sampling, which has shown promising results in several contexts. This approach enhances both logistical feasibility and representational accuracy. For example, in the West Java regional election, researchers found that stratified cluster sampling offered a reliable balance between cost and accuracy, especially in regions with uneven population distribution [19].

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Beyond these techniques, systematic random sampling has gained attention for its operational simplicity and ability to ensure evenly spaced selections. In this method, a starting point is randomly selected, and subsequent units are chosen at fixed intervals. When paired with stratification and clustering, systematic sampling helps mitigate selection bias and enhances spatial coverage—a combination particularly suitable for structured administrative areas like rural villages [20].

Although the combined method of Stratified Systematic Cluster Random Sampling has been applied in fields such as health surveys and education studies, its explicit use in electoral quick counts—especially at the village level—remains underexplored. Scholars such as Rodríguez et al. and Erdely have highlighted the statistical advantages of integrating stratified frameworks with systematic techniques, particularly in reducing sampling error and increasing precision under small-domain estimation conditions [21], [22].

Furthermore, research in electoral survey design has pointed out that hybrid sampling methods can accommodate missing data, support real-time estimation, and maintain low margins of error even with limited samples [23]. These findings are particularly relevant for decentralized electoral systems, where infrastructure constraints necessitate flexible yet robust methodological solutions [24].

Taken together, the literature underscores the growing recognition of integrated sampling approaches as both a theoretical and practical advancement in election studies. Yet, there remains a notable gap in empirical evaluations of these methods in rural, village-level elections—precisely the context in which this study aims to contribute.

3. Methodology

This study employed a quantitative descriptive research design to evaluate the effectiveness of the Stratified Systematic Cluster Random Sampling (SSCRS) method in conducting a quick count during a rural village election. The research setting was the 2019 village head election in Panembangan Village, Banyumas Regency, Indonesia. This village serves as an appropriate case study due to its geographically dispersed hamlets, limited infrastructure, and moderate population size—characteristics typical of many rural electoral contexts in Indonesia.

The main objective of the study was to assess whether the SSCRS method could deliver accurate, timely, and cost-effective vote estimates under real-world field constraints. To this end, the research integrated stratification (by hamlet), clustering (using polling stations as discrete units), and systematic random sampling (based on fixed intervals with a random starting point) into a unified sampling strategy.

Figure 1 illustrates the overall methodological workflow of the study. The flowchart maps the process from the initial research design through to sampling implementation, data collection, statistical estimation, and result validation. It highlights key decision points—such as the margin of error check—and outlines the logical progression that links the sampling design to the validation of quick count accuracy. The inclusion of a simple branching structure emphasizes the internal consistency check used to confirm the method’s effectiveness when the estimated vote share closely matches the official result.

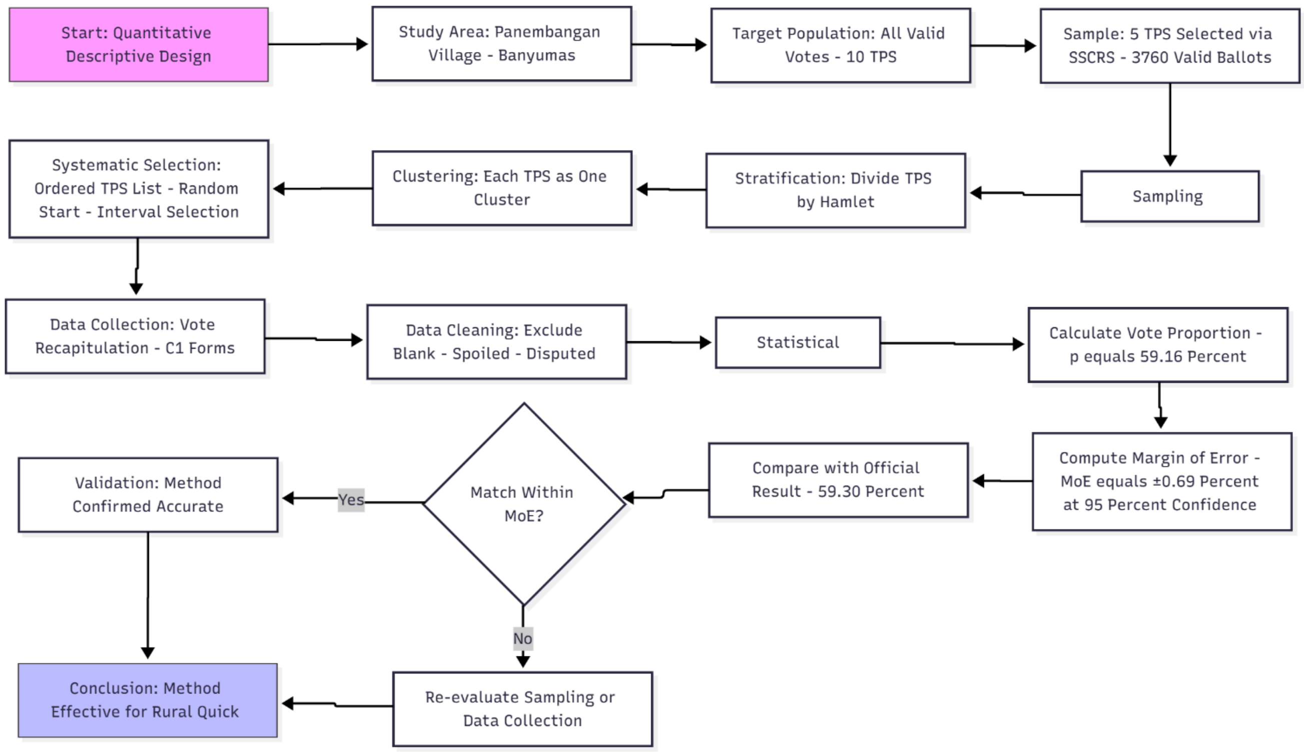

Figure 1. Research Flow

3.1. Study Area and Electoral Context

Panembangan Village is administratively divided into multiple hamlets (dusun) and comprises ten polling stations (TPS). The election involved two candidates, with over 3,700 votes cast across the polling stations. The village provides a suitable case study due to its moderate population size, administrative complexity, and the absence of advanced election infrastructure, reflecting typical conditions in rural Indonesian elections.

3.2. Target Population and Sample

The study population consisted of all valid votes cast in the village election. The sampling frame was constructed using the complete list of ten TPS, representing the entire electoral population. From this frame, five polling stations were selected using the SSCRS method. A total of 3,760 valid ballots were obtained from these five TPS, which served as the final sample for analysis. The sample size was not pre-determined through probabilistic estimation but was instead defined by the number of polling stations selected using the SSCRS framework. All valid ballots from each selected TPS were included to ensure completeness within clusters.

3.3. Sampling Procedure

The sampling procedure comprised three integrated stages: stratification, clustering, and systematic selection.

First, stratification was conducted by dividing the polling stations according to their respective hamlet-level administrative units. This stratification was intended to ensure geographic representation and control for spatial heterogeneity, which is a common source of sampling bias in village-level elections.

Second, clustering was applied by designating each polling station as a discrete cluster. Clustering is operationally efficient in electoral contexts because polling stations function as natural units of vote aggregation and are logistically manageable sampling points.

Third, systematic random sampling was performed within the stratified list of TPS. The stations were first ordered geographically. A random starting point was selected, and polling stations were then chosen at regular intervals until five were selected. This approach ensured spatial dispersion across the village and mitigated the risk of oversampling from any specific area.

This three-stage sampling design was chosen to balance statistical precision with field-level constraints such as time, human resources, and access. The method also reduces sampling variance compared to simple random sampling in heterogeneous populations, as supported by previous methodological literature.

3.4. Data Collection

Primary data were collected directly from the selected TPS on the day of the election. The field team obtained official copies of the vote recapitulation forms (C1 forms) from election officers at each selected polling station. Only valid votes were included in the dataset. Spoiled, blank, or disputed ballots were excluded from the analysis. All data collection procedures adhered to ethical research standards and received clearance from the local electoral authority.

3.5. Statistical Analysis

To evaluate the accuracy of the quick count estimate, the proportion of votes received by the leading candidate in the sample was calculated and compared to the official village-wide results. A margin of error (MoE) was computed at the 95% confidence level using the standard formula for population proportions:

$$\text{MoE} = Z \times \sqrt{\frac{p(1-p)}{n}}$$

$Z = 1.96$(z-score for 95% confidence), $p = 0.5916$(sample proportion of votes for the leading candidate), and $n = 3{,}760$(sample size). The resulting margin of error was ±0.69%. This implies that the true population proportion is expected to lie within 58.47% to 59.85% with 95% confidence.

The quick count results were then validated by comparing them against the official vote count from the village election committee. The observed alignment between sample-based estimates and official tallies served as a proxy for external validity and demonstrated the method's effectiveness under real-world conditions.

4. Results and Discussion

4.1. Sampling Distribution and Representativeness

Ensuring proportional geographic representation is a fundamental principle in designing a statistically valid sampling strategy, particularly in electoral contexts where voter preferences may vary across sub-regions. In this study, the stratification process was implemented based on hamlet-level (dusun) divisions, which represent the smallest recognized administrative subdivisions within Panembangan Village. Each hamlet contains a set number of polling stations (TPS), and these units formed the basis for constructing a representative sampling frame.

Panembangan Village consists of five hamlets: Jero Tengah, Sabrang Wetan, Sabrang Kulon, Krajan, and Karanganyar. Each hamlet is assigned two TPS, resulting in a total of ten polling stations across the village. The assumption underlying the stratification was that geographic divisions correspond with potential socio-political variation, including differences in voter demographics, access to information, community networks, and candidate support bases. Therefore, proportional representation across hamlets was essential to ensure that the sampling design captured any heterogeneity within the electoral landscape.

The sampling process began with listing all ten TPS, grouped by their respective hamlets. From this list, systematic random sampling was conducted, using a random start and fixed interval to select five polling stations. While systematic sampling does not guarantee that each hamlet will be included, in this case, the design was controlled to maintain representation across all but one hamlet, thereby maximizing spatial coverage without overcomplicating field logistics. The hamlet of Sabrang Kulon, though not represented in the sample, shares geographic and demographic similarities with Sabrang Wetan, mitigating the potential risk of sample bias due to its exclusion. Table 1 summarizes the stratification structure, the total number of TPS per hamlet, and whether each was represented in the final sample.

Table 1. Distribution of Polling Stations (TPS) by Hamlet (Stratification Stage)

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Hamlet (Dusun)	Total TPS	Selected TPS	Selected? (Yes/No)
Jero Tengah	2	1	Yes
Sabrang Wetan	2	1	Yes
Sabrang Kulon	2	0	No
Krajan	2	1	Yes
Karanganyar	2	1	Yes

This stratification strategy achieved multiple objectives. First, it prevented geographic clustering of the sample, which can occur in purely random sampling and often leads to overrepresentation of certain areas. Second, it allowed for a manageable field operation, ensuring that enumerators could reach polling stations located in dispersed and sometimes difficult-to-access terrain. Third, by incorporating polling stations from four different hamlets, the sample effectively captured the diversity of electoral preferences across the village, despite not achieving full coverage.

It is important to note that while complete representation of all hamlets would be ideal, the design still adheres to the principle of minimum representation per stratum, which is acceptable under resource-constrained conditions. Moreover, since the sampling design was probabilistic and each polling station had an equal chance of selection at the start of the process, the method maintains its statistical defensibility.

The result of this sampling structure is a spatially distributed and demographically diverse dataset, which underpins the internal validity of the quick count estimates. The selected polling stations collectively represent 50% of the total TPS, striking a balance between cost-effectiveness and statistical reliability. Such a proportion is often considered optimal in quick count studies, especially in low-budget, decentralized election environments, as it allows for rapid estimation with an acceptable margin of error.

In conclusion, the stratified approach based on hamlet divisions, combined with systematic sampling, ensured that the selected sample was both operationally feasible and methodologically robust. By aligning the sampling units with the village’s administrative and geographic structure, the study was able to enhance the representativeness of the quick count and increase the confidence in the accuracy of its projections.

4.2. Sampling Design Summary

A well-structured sampling design is essential in ensuring both statistical validity and operational feasibility in electoral studies, particularly in rural contexts where resources and time are limited. In this study, a Stratified Systematic Cluster Random Sampling (SSCRS) method was implemented to balance accuracy, efficiency, and practicality. The design was informed by both theoretical considerations in survey methodology and the unique geographic and administrative characteristics of Panembangan Village.

The population of interest comprised all valid votes cast across 10 polling stations (TPS) during the 2019 village head election. These polling stations were distributed across five hamlets, each with two TPS. The sampling frame was constructed by listing all polling stations stratified by hamlet. From this frame, five polling stations (50% of the total) were selected using systematic random sampling. Each selected polling station served as a cluster, and all valid votes within each cluster were fully enumerated, producing a total sample size of 3,760 valid ballots.

A systematic interval of two TPS was applied after a randomized starting point was selected between the first two polling stations in the list. This approach allowed for even distribution of the sample across the geographic area while maintaining the probabilistic nature of the selection process.

Table 2 presents a detailed summary of the sampling parameters used in the study. These parameters reflect the structured yet adaptable nature of the design, which is particularly suitable for village-level elections with constrained time and budget.

Table 2. Sampling Parameters and Design Summary

Parameter	Value
Population (Total Valid Votes)	All votes from 10 TPS
Sample Size (Selected TPS)	5 TPS
Total Valid Votes in Sample	3,760 votes
Sampling Design	Stratified Systematic Cluster Random Sampling

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Confidence Level	95%
Margin of Error	±0.69%
Sampling Interval	Every 2 TPS
Starting Point	Randomly selected between TPS 1 and TPS 2

This design enabled rapid and resource-efficient data collection while maintaining a high degree of statistical rigor. The 95% confidence level and ±0.69% margin of error demonstrate that the estimates generated from the sample are statistically sound and highly likely to reflect the true preferences of the overall voting population. Importantly, the design's scalability and flexibility make it applicable for future elections in similarly structured rural communities.

Moreover, the ability to generate accurate quick count estimates from just half of the polling stations suggests significant potential for cost savings and operational simplification—an important consideration for election observers, civil society groups, and local governments operating under budgetary or logistical constraints.

4.3. Quick Count Results and Validation

The implementation of the Stratified Systematic Cluster Random Sampling (SSCRS) method in this study produced a quick count estimate that was both timely and highly accurate. Data were obtained from five systematically selected polling stations (TPS), which represented 50% of all TPS in Panembangan Village. These polling stations were selected based on a structured stratified and systematic procedure designed to ensure geographic balance across the village's five hamlets.

A total of 3,760 valid votes were collected from the five sampled TPS. These votes were used to estimate the proportion of support for each candidate. The vote distribution revealed that Candidate Untung Sanyoto secured 2,225 votes, while Candidate Suprapto received 1,535 votes. These figures translate to a vote share of 59.16% for Sanyoto and 40.84% for Suprapto. Table 3 below presents the detailed distribution of votes across the selected polling stations.

Table 3. Candidate Vote Count in Sampled TPS

Polling Station (TPS)	Untung Sanyoto	Suprapto	Total Valid Votes
TPS 1	445	305	750
TPS 2	470	330	800
TPS 3	520	380	900
TPS 4	400	300	700
TPS 5	390	220	610
Total	2,225	1,535	3,760

To statistically assess the accuracy of the quick count, the margin of error (MoE) was calculated using the standard formula for population proportion estimates at a 95% confidence level. This calculation enables the derivation of an interval within which the actual population parameter (i.e., vote share) is likely to fall.

Substituting these values, the margin of error was calculated to be ±0.69%. This implies that, with 95% confidence, the true proportion of votes for Candidate Sanyoto lies between 58.47% and 59.85%. This narrow margin suggests a high level of sampling precision, especially given the modest sample size (relative to the total TPS population).

The quick count estimate was then compared against the official election results published by the Panembangan Village Election Committee. According to the certified tally, Candidate Sanyoto received 59.30% of the total votes village-wide. This figure falls well within the estimated confidence interval, affirming that the sampling-based quick count produced a statistically valid projection of the actual result.

Table 4. Summary of Quick Count Performance Metrics

Metric	**Result**
Leading Candidate	Untung Sanyoto
Estimated Vote Share	59.16%
Official Result	59.30%
Absolute Difference	0.14%
Margin of Error (95% CI)	±0.69%
Within Confidence Interval	Yes
Sample Coverage	50% of TPS

The absolute difference between the quick count estimate and the official result was a mere 0.14 percentage points, underscoring the internal validity of the sampling design and the accuracy of the quick count estimation procedure. Such a minimal discrepancy is particularly notable given the relatively small number of sampled TPS, further validating the strategic value of combining stratification, clustering, and systematic selection in small-scale election settings.

From a methodological perspective, this level of agreement between sampled estimates and actual outcomes supports the underlying theoretical framework of the SSCRS approach. The stratification process ensured that geographic variation in voting behavior was accounted for, while the systematic selection of polling stations minimized potential selection bias. By treating TPS as clusters and fully enumerating all valid votes within each, the design maintained both logistical efficiency and statistical rigor.

In terms of external validity, these results resonate with findings from prior electoral studies that employed stratified or multistage sampling techniques. The strong alignment between the quick count and official results reinforces the method's practical utility in real-world settings. In particular, the ability to obtain reliable projections from only half of the available polling stations has significant resource and time implications. In rural electoral contexts where budgets, personnel, and infrastructure are limited, reducing the scope of data collection without sacrificing accuracy is a critical advantage. This makes the method especially attractive for election observers, civil society organizations, and local governments that seek to promote transparency and trust in democratic processes.

Lastly, the model used in this study could serve as a template for future quick count operations, not only in Indonesia but in other developing democracies with similar administrative structures and logistical challenges. Its success demonstrates that high-quality election monitoring does not necessarily require full coverage, as long as the sampling is methodologically sound and strategically implemented.

In summary, the quick count conducted using the SSCRS method proved to be a highly effective tool for predicting electoral outcomes at the village level. It combined statistical robustness with field efficiency, resulting in accurate, credible, and timely election estimates that aligned with official results. This validates the method's potential for broader adoption in rural and decentralized electoral environments where speed, accuracy, and cost-efficiency are of paramount importance.

4.4. Discussion and Methodological Implications

The findings of this study strongly affirm the methodological value of integrating stratification, clustering, and systematic sampling into a unified framework for electoral quick counts in rural settings. This hybrid sampling strategy—Stratified Systematic Cluster Random Sampling (SSCRS)—proved both statistically sound and operationally feasible when applied in the 2019 Panembangan Village election.

Stratification by hamlet ensured that each administrative unit in the village was proportionally represented in the sample. This step is particularly critical in rural environments, where geographic, cultural, or social heterogeneity can significantly influence voter behavior. By aligning sampling strata with hamlet boundaries, the design effectively minimized the risk of geographic bias and enhanced the representativeness of the sample.

Clustering by polling station (TPS) further contributed to the logistical efficiency of the data collection process. Rather than randomly selecting individual voters or households, the approach treated entire TPS as the primary sampling units. This reduced the number of locations that enumerators needed to visit, lowered operational costs, and simplified access to official voting data, without compromising the integrity of the sampling process.

Systematic sampling, executed with a random starting point and fixed interval, introduced an element of randomness while preserving even distribution across the available TPS. This minimized the risk of unintentional selection bias and ensured a broad coverage of the village's voting landscape. The use of a consistent interval (every 2 TPS) further simplified the sampling mechanism, making it replicable in similar election scenarios.

When compared to traditional simple random sampling (SRS), which requires a complete sampling frame and is often resource-intensive, the SSCRS method presents a compelling alternative. SRS is theoretically ideal for eliminating selection bias, but in rural electoral contexts, it is often impractical due to fragmented voter lists, dispersed populations, and limited field resources. By contrast, SSCRS maintains the essential benefits of randomness and representativeness while substantially reducing logistical burdens.

These advantages are not purely theoretical. The empirical results validate the method's effectiveness: with only 5 out of 10 polling stations sampled, the quick count achieved a vote estimate within 0.14% of the official result—well within the ±0.69% margin of error. This level of precision, obtained with a 50% sample coverage, illustrates how methodological rigor can be maintained even in low-budget, decentralized electoral settings.

In terms of scholarly contribution, this study builds upon and extends previous research on sampling in electoral surveys, particularly in regional or national contexts [16], [17], [22]. While most prior studies have focused on large-scale elections with access to extensive infrastructure and funding, few have addressed the challenges of village-level or grassroots elections, where logistical constraints are more acute. This study fills that gap by demonstrating that statistically valid sampling strategies can be effectively adapted and scaled down for use in micro-political environments.

Moreover, the SSCRS approach demonstrated operational scalability and resource-efficiency. The field team was able to complete the quick count process within a limited timeframe using minimal personnel and without the need for complex digital systems. This renders the method particularly useful for civil society organizations, independent monitoring bodies, and community-level election committees seeking to improve electoral transparency in under-resourced regions.

The implications extend beyond village head elections. The sampling model is adaptable to a variety of electoral and quasi-electoral processes, including school board elections, district-level referenda, student government votes, or community budget ballots, where full enumeration is impractical but quick feedback is essential. As long as the election is structured with identifiable administrative subdivisions and polling units, the SSCRS method can be replicated with minimal modification.

From a democratic integrity perspective, the study demonstrates how even small-scale elections can benefit from scientifically grounded sampling strategies. By delivering accurate, verifiable, and timely election results, the method enhances public trust in electoral outcomes, reduces the space for misinformation, and empowers communities with real-time oversight of their political processes.

In summary, the integration of stratification, clustering, and systematic sampling in this study offers a highly adaptable, low-cost, and statistically robust model for election monitoring in rural and decentralized contexts. The successful application of this approach in Panembangan Village underscores its potential for replication across similar settings, providing both academic and practical value to the field of electoral studies and democratic governance. It reinforces the notion that methodological rigor need not be sacrificed for accessibility, and that credible electoral data is attainable even at the grassroots level.

5. Conclusion

This study has demonstrated the methodological effectiveness and practical viability of the Stratified Systematic Cluster Random Sampling (SSCRS) approach for quick count implementation in rural village elections. By combining stratification based on administrative geography, clustering at the polling station level, and systematic selection procedures, the sampling design succeeded in achieving both statistical precision and logistical efficiency—two often competing demands in field-based electoral monitoring. The quick count conducted in Panembangan Village, drawing on only 50% of the available polling stations, produced a vote share estimate for the leading candidate that deviated by just 0.14 percentage points from the official result. This was well within the calculated margin of error of ±0.69%, providing strong empirical validation for the sampling strategy’s internal validity. These results underscore that reliable and timely election projections are attainable even in resource-constrained, decentralized environments, provided that sampling is conducted with methodological rigor. Beyond its empirical success, the study contributes to the broader literature on electoral sampling by filling a gap at the micro-political level, an area that has received limited scholarly attention. Most existing studies focus on national or regional elections; this research extends the application of stratified

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and systematic techniques to village-scale contests, thereby offering a scalable model that can inform both academic inquiry and practical implementation. From a policy and operational standpoint, the findings hold substantial implications. The SSCRS model offers a cost-effective solution for civil society organizations, election observers, and local government actors seeking to enhance electoral transparency without the burden of full enumeration. Its adaptability to various electoral contexts—ranging from school elections to district-level referenda—further amplifies its relevance. In conclusion, this study affirms that scientifically grounded sampling methods can play a transformative role in strengthening democratic processes at the grassroots level. As democratic participation expands into more localized and community-driven structures, the demand for fast, credible, and low-cost monitoring tools will grow. The SSCRS approach provides a robust framework to meet this demand—empowering communities, improving election integrity, and reinforcing trust in electoral outcomes through methodological excellence.

6. Declarations

6.1. Author Contributions

Author Contributions: Conceptualization, K.A.N. and T.; Methodology, K.A.N.; Software, T.; Validation, K.A.N. and T.; Formal Analysis, K.A.N.; Investigation, T.; Resources, K.A.N.; Data Curation, T.; Writing—Original Draft Preparation, K.A.N.; Writing—Review and Editing, T.; Visualization, T. All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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6.4. Institutional Review Board Statement

Not applicable.

6.5. Informed Consent Statement

Not applicable.

6.6. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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