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# Assessing Socio-Economic Barriers to the Long-Term Success of Community-Led Total Sanitation in Magarini, Kilifi County Kenya

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**Abstract: Fecal-oral infections in Magarini Sub County remain a critical public health challenge, largely due to the insufficient execution of the Community Led Total Sanitation (CLTS) approach initiated by the Ministry of Health. Around 5.6 million Kenyans still engage in open defecation, underscoring the urgent need for improved sanitation measures. This research examined the socio-economic determinants affecting the sustained adoption of CLTS-induced sanitation enhancements in the area. A convergent research methodology was used, gathering quantitative data via structured questionnaires from 388 household heads, chosen through stratified and proportionate random sampling. Data analysis was conducted using SPSS version 25, generating descriptive and inferential statistics to assess variable relationships.**

**The results revealed a notable link between location and religion in Magarini Sub-County, with a chi-square value ($\chi^2$) of 34.558, 20 degrees of freedom, and a p-value of 0.027. This suggests that geographic factors moderately influence religious affiliation, as indicated by a Cramer's V coefficient of 0.162. However, no significant correlation was found between education levels and population distribution. These outcomes emphasize the importance of culturally and socially tailored policies that account for regional and religious variations.**

**The study also identified personal savings and agricultural assets as key drivers in maintaining sanitation efforts. Sustainable financing approaches, community involvement, employment earnings, and government backing were deemed essential for long-term CLTS success. Dependence on these economic resources highlights the need for strategies that strengthen financial security and promote sanitation advancements. Policymakers and education leaders can leverage these findings to refine educational strategies and address sanitation disparities among different community segments.**

**Further research was recommended to explore household income and education as determinants of infrastructure requirements for lasting sanitation improvements in Magarini Sub County. Tackling these socio-economic barriers and cultivating an enabling environment could enhance sanitation and hygiene, thereby lowering the prevalence of fecal-oral infections in the region.**

***Keywords:*** *Socio-Economic Factors, Sanitation Interventions, Sanitation Practices, Improved Sanitation.*

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## I. INTRODUCTION

Community-Led Total Sanitation (CLTS) represents a radical alternative to conventional top-down approaches to sanitation and offers hope of achieving the Millennium Development Goals (Kar & Chambers 2008). It is a relatively novel approach, pioneered by Kamal Kar in Bangladesh in 1999, and has since spread to other countries in Asia and Africa (Kar and Bongartz 2006; Kar and Pasteur 2005). In contrast to state-led initiatives to improve sanitation that tend to focus on hardware and subsidies, CLTS emphasizes community action and behavior change as the most important elements to achieving better sanitation. CLTS focuses on enabling the local community to analyze the problems of fecal-oral routes of disease spread and find locally appropriate solutions rather than outsiders offering prescribed solutions. The aim is the total elimination of open defecation because it is assumed that if only a few individuals continue to defecate in the open, it represents a risk to the whole community (Bongartz & Movik, 2009; Geist 2008; Kar & Chambers, 2008; Kar & Bongartz 2006; Kar & Pasteur, 2005). Through exercises such as transect walks, mapping of defecation, and the various routes of disease spread (e.g., through flies and animals), as well as calculation exercises aimed at drawing villagers' attention to the amount of feces they are ingesting and by using local terms for 'shit,' powerful emotions such as shame and disgust are generated. Such powerful emotions fuel a desire to actively do something to improve the current situation, and a process is ignited where residents draw on local resources and knowledge to construct sanitary facilities that fit their particular needs and desires, within the constraints of household priorities and resources (Kar & Pasteur 2005). The focus is on process, on empowering the community to act themselves, to construct their own toilets from locally available material. What distinguishes Community-Led Total Sanitation from earlier community-based approaches, therefore, is the way that it emphasizes facilitation rather than education or training. Instead of telling villagers what is best for them and lecturing on what hygienic practices to adopt, the CLTS approach relies on creating a strong sense of self-awareness that in turn serves to trigger action. Where this process of 'triggering' is successful, action can often be immediate (see e.g., Geist 2008). The potential of CLTS is strongest in rural areas, because, as Black and Fawcett note, 'when sewage is not the means of excreta removal, sanitation is not possible by executive high command' (2008: 76). This is why it is easier to 'create' demand for something like CLTS in rural areas and, barring a few examples such as Kalyani in West Bengal, CLTS is largely a rural phenomenon. In urban areas, there are additional complications due to the lack of space and tenure insecurity.

What distinguishes Community- Led Total Sanitation from earlier community-based approaches, therefore, is the way that it emphasizes facilitation rather than education or training. Instead of telling villagers what is best for them, and lecturing on what hygienic practices to adopt, the CLTS approach instead relies on creating a strong sense of self-awareness that in turn serves to trigger action. Where this process of 'triggering' is successful, action can often be immediate (Geist, 2018). The potential of CLTS is strongest in rural areas, because, as Black and Fawcett note, (2008: 76) 'when sewage is not the means of excreta removal, sanitation is not possible by executive high command'. This is why it is easier to 'create' demand for something like CLTS in rural areas and, barring a few examples such as Kalyani in West Bengal, CLTS is largely a rural phenomenon. In urban areas, there are additional complications due to the lack of space and tenure insecurity.

- *Purpose*

The objective of this study is to determine the influence of socio-economic factors contributing to long term adoption of improved sanitation through community led total sanitation in Magarini Sub County, Kilifi County, Kenya.

## II. METHODOLOGY

- *Study Design*

This involved cross-sectional study. Quantitative data were collected using questionnaires and mainly targeted households' heads. The major economic activities in the area are salt mining and palm wine tapping. Agriculture is also practiced but the rains are unreliable.

- *Target Population*

Magarini Sub-County has a population of 191,610, with 12,795 households, according to the 2022 Kenya Demographic and Health Survey (KDHS). The study focused on household heads aged 18 years and above within the sub-county. Household heads were selected as respondents because they possess in-depth knowledge of their households and could provide reliable information on sanitation practices. A total of 388 households across Magarini's administrative wards were included in the study.

- *Sample Size*

The study's sample size was determined using Yamane's (1967) formula, which suggests a 5% margin of error for sampling. From a target population of 12,795 households, a sample of 388 participants was selected.

- *Sampling Technique*

The proportional sampling technique was employed by selecting a fair number of households from each of the six administrative wards, considering their individual sizes. To accomplish this, the initial stage involved determining the proportion of households in each ward compared to the total households across all six wards. This calculation was performed by dividing the number of households in each ward by the total number of households in all six wards using the provided formula.

$$\frac{\text{No. of HH per ward}}{\text{Total No. of HH in Sub County.}} \times \text{Sample size}$$

When this is calculated for every ward, the sampled households should sum up to the sample size which is 388.

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| Table 1: Sample size | | | |
|---|---|---|---|
| **Ward** | **Population** | **Households** | **Sample Size** |
| Adu | 16,298 | 2,588 | 79 |
| Sabaki | 4,221 | 816 | 25 |
| Garashi | 6,749 | 1,202 | 36 |
| Gongoni | 32,797 | 4,136 | 124 |
| Magarini | 13,795 | 2,241 | 68 |
| Marafa | 12,097 | 1,812 | 55 |
| Total | 85,957 | 12,795 | 388 |

To obtain a representative sample of households, 388 households were selected from household registers available for these villages using a simple random sampling method which ensured that each household in the population had an equal chance of being included in the sample, which helped reduce bias and increase the generalizability of the findings. The sampling process involved sequential sampling, selecting 388 households from the registers as the target population for the study. At the village level, the researcher used simple random sampling using a table of random numbers by assigning a unique number to each household. With the table, he started at a random point, preferably at the center, and systematically picked numbers, matching them to households on a list. Each number corresponded to a unique household, avoiding bias. This method allowed unbiased selection, where every household had an equal chance of being chosen, crucial for fair representation. This continued to generate random numbers until the desired number of households was obtained, ensuring a comprehensive and representative sample was attained. Within each sampled household, an interview was conducted with the head of the household, whether male or female. In the case of polygamous households, the husband was interviewed in the first household, then in the second and third households, the 2nd and 3rd wives were interviewed.

- *Data Collection and Analysis*

The study utilized simple random sampling to gather household-level data. Quantitative methods were employed for data collection, enabling the researcher to leverage the advantages of this approach and achieve a comprehensive analysis of the research topic. After selecting the random samples, the team reached out to the chosen households, outlined the study's purpose, and sought their consent to participate. Informed consent was obtained from all participants before proceeding with data gathering.

For quantitative analysis, the Statistical Package for the Social Sciences (SPSS) v25 was used to compute descriptive and inferential statistics, highlighting key variable relationships. Qualitative data was thematically categorized based on research objectives and presented narratively.

- *Ethical Consideration*

Ethical clearance for the study was obtained from the Department of Graduate Studies, with NACOSTI approval (Ref No: 713888). Authorization was also secured from the County Health Research Coordinator, as well as from each participant. An introductory letter was provided by the postgraduate studies department. Respondents were guaranteed confidentiality, with no personal identifiers recorded in the research. Written informed consent was acquired from all participants, and pseudonyms replaced actual names to ensure anonymity. Involvement in the study was entirely voluntary. Both research assistants and investigators upheld strict confidentiality regarding all questionnaire responses provided by participants.

## III. RESULTS AND DISCUSSIONS

- *Relationship Between Educational Attainment and Population Distribution in Magarini*

The Magarini study revealed no statistically meaningful connection between educational attainment and population distribution, with a p-value of 0.19 exceeding the standard 0.05 significance level. The respondent distribution across education levels was varied: 11.7% (9 respondents) lacked formal education, 28.6% (22 respondents) had primary education, another 28.6% (22 respondents) attained secondary education, 18.2% (14 respondents) reached tertiary education, and 13.0% (10 respondents) held university degrees. This distribution implies that differences in education levels among participants may stem from random variation rather than a structured trend.

However, contrasting research indicates a strong relationship between education and community-led total sanitation (CLTS) success. For instance, Kar and Chambers (2018) observed that communities with higher education levels showed better CLTS results, including greater latrine adoption, as educated individuals more readily embraced health-conscious practices. Likewise, Biran et al. (2019) established that education improved understanding of sanitation benefits, leading to more effective CLTS participation.

Contrariwise, the Magarini results support studies like Cavill, Chambers, and Vernon (2018), which found no significant education-CLTS link, proposing that community unity, leadership, and cultural norms may outweigh education in CLTS effectiveness. These conflicting perspectives illustrate the intricate factors shaping CLTS outcomes, where education's role remains debated. While some studies stress education's influence, others suggest it is not the dominant factor. Magarini's findings contribute to this debate, reinforcing the idea that CLTS success depends on a combination of social, cultural, and educational factors.

In the long run, Magarini's lack of a significant education-population link does not diminish the value of assessing educational backgrounds. Rather, it emphasizes the need for integrated strategies that combine education with other key drivers to optimize CLTS outcomes in the Sub County. Acknowledging these complexities allows policymakers and educators to design more targeted interventions that align with specific community needs.

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➢ *Cross-Exploring Relationships between Location and Religion*

The chi-square test results ($\chi^2$ = 34.558, df = 20, p = 0.027) from a cross-tabulation analysis in Magarini Sub-County demonstrate a statistically significant link between respondents' residential areas and their religious affiliations, ruling out random chance. Cramer's V coefficient (0.162) further indicates a moderate correlation between these variables. Such findings align with existing research on how geography influences religious diversity. For example, Stark and Finke (2021) highlighted that regional differences in religious composition often stem from historical and cultural factors. Likewise, Pew Research Center (2017) observed that migration trends and historical settlement patterns significantly shape global religious demographics.

Within Magarini Sub-County, religious distribution varies: Protestant and Pentecostal groups dominate in Adu and Marafa, whereas Catholics are more concentrated in Sabaki. Muslim communities are prominent in Marafa and Magarini, while traditional religions remain marginal. This pattern mirrors observations in Sub-Saharan Africa, where colonial legacies and missionary efforts have influenced religious demographics (Johnson & Grim, 2018).

The moderate Cramer's V value (0.162) implies that location, while influential, is not the only factor affecting religious affiliation. Other elements such as socio-economic status, education, and migration also contribute, as noted by Norris and Inglehart (2011) in their analysis of religion in contemporary societies.

Magarini Sub-County findings reinforce broader studies on the intricate connection between geography and religious identity. The prevalence of certain faiths in specific areas reflects localized historical, cultural, and socio-economic dynamics, consistent with global trends. Collectively, these studies emphasize that while geographic location significantly impacts religious diversity, it operates alongside other determinants in shaping affiliations.

Table 2 Relationship between Religion and Location

| | **Atheists** | | **Protestant** | | **Catholic** | | **Pentecostal** | | **Muslim** | | **Traditional** | | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | f | % | f | % | f | % | f | % | f | % | f | % | f |
| 1. Adu | 15 | 18.8% | 28 | 35.0% | 14 | 17.5% | 11 | 13.8% | 10 | 12.5% | 2 | 2.5% | 80 |
| 2. Marafa | 17 | 15.3% | 19 | 17.1% | 17 | 15.3% | 35 | 31.5% | 20 | 18.0% | 3 | 2.7% | 111 |
| 3. Magarini | 9 | 11.7% | 12 | 15.6% | 17 | 22.1% | 20 | 26.0% | 16 | 20.8% | 3 | 3.9% | 77 |
| 4. Sabaki | 3 | 10.0% | 6 | 20.0% | 11 | 36.7% | 5 | 16.7% | 5 | 16.7% | 0 | 0.0% | 30 |
| 5. Kibaoni | 3 | 9.1% | 13 | 39.4% | 9 | 27.3% | 5 | 15.2% | 3 | 9.1% | 0 | 0.0% | 33 |
| Total | 47 | | 78 | | 68 | | 76 | | 54 | | 8 | | 331 |

*$\chi^2$=34.558 · df=20 · Cramer's V=0.162 · Fisher's p=0.027*

➢ *Frequency Distribution of Socio-Economic Resources Available for Implementing CLTS Practices*

Table 3 presents the cross-tabulation of FRAI.CLTS and NII.CLTS, showing the count and percentage of respondents in each category. The test of independence suggests no statistically significant relationship between FRAI.CLTS and NII.CLTS ($\chi$2 = 16.977, df = 16, p = 0.288).

Table 3. Relationship between FRAI.CLTS and NII.CLTS

| | **SSC** | | **ACWS** | | **PWMS** | | **ANT** | | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| **FRAI.CLTS** | f | % | f | % | f | % | f | % | f |
| 1. PS | 61 | 55.5% | 24 | 21.8% | 5 | 4.5% | 20 | 18.2% | 110 |
| 2. LAP | 44 | 66.7% | 8 | 12.1% | 4 | 6.1% | 10 | 15.2% | 66 |
| 3. IFE | 51 | 51.5% | 20 | 20.2% | 12 | 12.1% | 16 | 16.2% | 99 |
| 4. RFM | 15 | 40.5% | 9 | 24.3% | 6 | 16.2% | 7 | 18.9% | 37 |
| 5. Government | 9 | 52.9% | 6 | 35.3% | 1 | 5.9% | 1 | 5.9% | 17 |
| Total | 180 | | 67 | | 28 | | 54 | | 329 |

$\chi^2$=16.977 · df=16 · Cramer's V=0.113 · Fisher's p=0.288

Cross-tabulation of FRAI.CLTS and NII.CLTS reveals no statistically significant relationship between these two variables ($\chi$2 = 16.977, df = 16, p = 0.288). This suggests that the distribution of socio-economic resources for Community-Led Total Sanitation (CLTS) practices does not significantly differ across the categories analyzed. Personal savings emerge as the predominant resource, accounting for 33.5% of the total. This reliance on individual financial reserves underscores a strong personal commitment to sanitation improvements but raises concerns about long-term sustainability, particularly for lower-income individuals who may quickly exhaust their savings. Comparatively, research

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by Harter *et al*. (2018) also highlights the substantial role of personal savings in rural sanitation projects, indicating a common trend where individuals prioritize immediate health benefits over potential financial strain.

Livestock and agricultural products contribute 19.9%, reflecting the rural and agrarian nature of many CLTS-implementing communities. This finding aligns with studies by Chambers and Myers (2020), which underscore the critical role of agricultural income in funding community initiatives. However, dependence on agricultural resources makes CLTS funding vulnerable to external factors like weather and market fluctuations, as noted by Rogers and Lydon (2017), who emphasize the instability of agricultural incomes in rural sanitation projects.

Income from employment constitutes 29.9% of resources, suggesting that a considerable portion of the population has stable employment, providing a reliable source of funding for sanitation improvements. This stability is less susceptible to seasonal variations compared to agricultural income. Research by Kar and Chambers (2020) supports this, showing that regular employment can significantly bolster community-led initiatives due to consistent financial contributions. Remittances, contributing 11.2%, highlight the importance of external financial support from family members working in urban areas or abroad. This aligns with findings by Satterthwaite *et al*. (2015), who note the critical role of remittances in supporting rural development projects, including sanitation. This external support can be pivotal for communities with limited local economic opportunities, providing a necessary influx of funds for CLTS activities. Government salaries make up the smallest share at 5.4%. This may include both direct government support and salaries of community members employed by the government. The relatively low percentage suggests limited government involvement or funding, consistent with findings by Chambers (2019), who observed that government contributions to rural sanitation projects are often minimal, necessitating greater reliance on community resources and external support.

- *Frequency Distribution of Existing Sanitation Infrastructure (ESI) in Your Community for the Successful Implementation of CLTS.*

Perceptions of Existing Sanitation Infrastructure (ESI) in Magarini Sub-County reveal diverse community attitudes crucial for the effectiveness of Community-Led Total Sanitation (CLTS). Survey results indicate that 13.6% strongly agreed, 9.5% agreed, 10.3% somewhat agreed, 11.2% remained neutral, 9.1% somewhat disagreed, 34.1% disagreed, 10.6% strongly disagreed, and 1.5% were unaware of available sanitation infrastructure. These insights underscore the necessity for improved outreach and education to enhance community understanding of existing facilities and their advantages.

Research highlights the role of awareness and participatory approaches in sanitation initiatives. Mosler (2019) stressed that behavioral change depends not only on infrastructure but also on education and community participation. Similarly, Cameron et al. (2020) demonstrated that community-driven efforts yield better results when residents are well-informed about sanitation benefits.

The 1.5% unaware of ESI signals a key information gap, necessitating targeted awareness programs. For neutral (11.2%) and somewhat agreeable (10.3%) respondents, tailored messaging addressing concerns and clarifying benefits could encourage greater acceptance a strategy supported by Sijbesma et al. (2010). Meanwhile, the 34.1% who disagreed and 10.6% who strongly disagreed likely question infrastructure adequacy. Engaging them in discussions to identify and address their concerns, as Whaley and Webster (2019) suggest, can build trust and cooperation.

For those somewhat disagreeing (9.1%) or somewhat agreeing (10.3%), showcasing gradual improvements can boost confidence in sanitation efforts, aligning with Jenkins and Curtis (2018). The 13.6% strongly agreeing and 9.5% agreeing can serve as advocates, using their positive experiences to influence peers through community dialogues, as Kar and Chambers (2021) recommend.

Given these varied perspectives, a multifaceted strategy combining awareness campaigns, community engagement, and visible infrastructure enhancements is vital for CLTS success. This approach aligns with broader studies emphasizing adaptive communication and participatory methods in sanitation programs (Mosler, 2021; Cameron et al., 2019; Sijbesma et al., 2020).

- *Exploring Relationships Between Location and Existing Sanitation Infrastructure (ESI)*

The chi-square test results ($\chi^2 = 66.636$, df = 28, p = 0.000) confirm a significant association between location and perceptions of existing sanitation infrastructure (ESI) in Magarini Sub County. This suggests that attitudes toward sanitation facilities differ notably by geographical area. A Cramer's V value of 0.224 further indicates a moderate correlation, reinforcing the role of location in shaping these perceptions. The data reveal clear disparities in dissatisfaction levels across the sub-county.

In Adu, the largest proportion of respondents (28.7%) expressed dissatisfaction with ESI, though neutral and positive views were also present, reflecting mixed but leaning negative sentiment. Marafa, with the highest respondent count (111), displayed greater dissatisfaction—29.7% disagreed, and 20.7% strongly disagreed—while agreement levels were lower than in Adu. Magarini exhibited even stronger discontent, with 36.4% disagreeing and only 10.4% agreeing. Sabaki, despite a smaller sample (30 respondents), saw 30% disagreement, alongside a relatively even split between neutral and positive responses. Gongoni emerged as the most dissatisfied location, with 60.6% disagreeing and no respondents agreeing.

These findings corroborate prior studies (Tumwine et al., 2020; Kativhu et al., 2018) linking location to sanitation access and perceptions, particularly in rural and peri-urban settings where infrastructure gaps persist. The strong

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location-ESI relationship in Magarini Sub County implies that localized factors such as resource distribution and maintenance efficacy shape residents' views. The heightened dissatisfaction in Gongoni and Magarini signals an urgent need for area-specific interventions.

To address these disparities, policymakers should prioritize tailored strategies over uniform solutions. Potential measures include boosting sanitation investments, improving maintenance systems, and involving communities in project design to ensure relevance. The study underscores the necessity of geographically targeted efforts to enhance sanitation infrastructure, aligning with broader research on the influence of location in sanitation satisfaction.

Table 4. Relationship between location and ESI perceptions

| | 1. Agree | | 2. Disagree | | 3. Neutral | | 4. SA | | 5. SD | | 6. SHA | | 7. SHD | | 8. DKN | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | f | % | f | % | f | % | f | % | f | % | f | % | f | % | f | % | f |
| Adu | 6 | 7.5 | 23 | 28.8 | 13 | 16.3 | 5 | 6.3 | 16 | 20.0 | 8 | 10.0 | 9 | 11.3 | 0 | 0.0 | 80 |
| Marafa | 13 | 11.7 | 33 | 29.7 | 6 | 5.4 | 23 | 20.7 | 9 | 8.1 | 15 | 13.5 | 9 | 8.1 | 3 | 2.7 | 111 |
| Magarini | 8 | 10.4 | 28 | 36.4 | 12 | 15.6 | 16 | 20.8 | 6 | 7.8 | 4 | 5.2 | 2 | 2.6 | 1 | 1.3 | 77 |
| Sabaki | 5 | 16.7 | 9 | 30.0 | 5 | 16.7 | 0 | 0.0 | 0 | 0.0 | 4 | 13.3 | 6 | 20.0 | 1 | 3.3 | 30 |
| Gongoni | 0 | 0.0 | 20 | 60.6 | 1 | 3.0 | 1 | 3.0 | 4 | 12.1 | 3 | 9.1 | 4 | 12.1 | 0 | 0.0 | 33 |
| Total | 32 | | 113 | | 37 | | 45 | | 35 | | 34 | | 30 | | 5 | | 331 |

*$\chi^2$=66.636 · df=28 · Cramer's V=0.224 · Fisher's p=0.000*

N.B: **ESI KEY**
1=Agree
2=Disagree
3=Neutral
4= Strongly Agree
5=Strongly Disagree
6=Somehow Agree
7=Somehow Disagree
8= Don't Know

## IV. CONCLUSIONS

The study of educational attainment and population distribution in Magarini indicates no statistically meaningful link between the two, suggesting that differences in education levels could stem from random variation rather than identifiable trends. Nevertheless, the data reflects a range of educational achievements, underscoring both progress and areas requiring attention. Policymakers must account for these refinements to improve educational results effectively.

Religious diversity is heavily shaped by geography, with certain regions dominated by Protestants, Pentecostals, Catholics, or Muslims. These patterns likely arise from historical, cultural, and socio-economic influences, requiring policymakers to adopt localized approaches that meet community needs and foster interfaith cooperation.

Personal savings stand out as a vital resource, demonstrating strong community engagement despite long-term viability concerns. Agricultural output and employment earnings also contribute significantly, highlighting the need for stable economic conditions to support CLTS programs. To sustain sanitation practices, diversifying funding streams is essential.

Sanitation infrastructure is notably affected by urban-rural divides, socio-economic disparities, and policy measures. While standardized policies provide a foundation, adaptable strategies addressing diverse socio-economic contexts are crucial for success. Moderate dissatisfaction in Gongoni and Magarini underscores the need for location-specific sanitation solutions, ensuring interventions align with each area's unique needs and perceptions.

## RECOMMENDATIONS

The study of educational attainment and population distribution in Magarini indicates no statistically meaningful link between the two, suggesting that differences in education levels could stem from random variation rather than identifiable trends. Nevertheless, the data underscores the range of educational achievements, pointing to both progress and gaps requiring attention. Policymakers must account for these subtleties to improve educational results effectively.

Religious diversity is heavily shaped by geography, with Protestants, Pentecostals, Catholics, and Muslims concentrated in distinct regions. These patterns likely arise from historical, cultural, and socio-economic influences, underscoring the need for policymakers to tailor approaches to local contexts and foster interfaith cohesion.

Personal savings stand out as a vital resource, demonstrating community dedication despite sustainability challenges. Agricultural output and employment income also contribute significantly, highlighting the role of economic stability in the effectiveness of CLTS programs. To sustain sanitation practices, diversifying funding streams is critical for policymakers.

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Sanitation infrastructure is strongly affected by broader determinants such as urban-rural divides, socio-economic conditions, and policy measures. While standardized policies provide a foundation, adaptable strategies addressing diverse socio-economic realities are key to success. Notably, moderate dissatisfaction in Gongoni and Magarini wards calls for area-specific sanitation solutions, ensuring interventions align with local needs and perceptions.

➢ *Competing Interests*

The author declared that there was no any competing interest.

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