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Original article

Budgetary control and solid waste management service delivery in Makindye-Ssabagabo Municipality, Wakiso District, Uganda. A cross-sectional study.

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Abstract

Background: In rapidly urbanizing municipalities around Kampala, solid waste management (SWM) depends on funds that are released on time, spent as approved and used to pay contractors promptly. This study examines the relationship between budgetary control and SWM service delivery in Makindye-Ssabagabo Municipality, Wakiso District.

Methods: A cross-sectional correlational survey combining quantitative and qualitative approaches was conducted from 19 to 25 October 2026. Data came from questionnaires completed by 84 municipal officials and councillors (census), a household survey of 384 residents (multi-stage sampling across 12 cells), 22 key informant interviews, review of municipal records for FY 2021/22 to FY 2024/25, and observation of nine service sites. Data were analysed using means, Pearson correlation, simple linear regression and thematic analysis.

Results: All instruments achieved a 100% response rate. Budgetary control was moderate (mean=2.87, SD=0.62), while SWM service delivery was rated low by officials (dimension means 2.35 to 2.55) and by households (mean = 2.60); only 17.0% of households were satisfied overall. Between 74% and 81% of the approved waste budget was released each year, waste-fee collection fell from 65.0% to 58.0% of target, and contractors waited a median of 48 to 56 days for payment. Only 46.1% of households received organised collection, and municipal records showed that 38% of waste generated was collected in FY 2024/25. Budgetary control had a very strong, positive and significant relationship with SWM service delivery ($r = 0.835$, $p < .001$; $R^2 = 0.697$).

Conclusion: Better budgetary control is significantly associated with better SWM service delivery. Predictable releases, a distinct and costed waste budget, verified and timely contractor payments.

Recommendation: The municipal council should show waste management as a distinct, costed line in the approved budget and work plan, prepared with input from residents through the budget conference.

Keywords: *Budgetary control, Solid waste management, Service delivery, Local government, Makindye-Ssabagabo*
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1. Background

Solid waste management is one of the most visible and most expensive services that local governments provide, and one of the most dependent on reliable funding. Kaza et al. (2018) estimated that the world generated about 2.01 billion tonnes of municipal solid waste in 2016, rising to a projected 3.40 billion tonnes by 2050, with the fastest growth in low-income countries. They also reported that waste management typically consumes a large share of municipal budgets in low-income countries. Even so, collection coverage remains low because funds are inadequate, released late or diverted to other uses. Reliable collection is also a global development concern, since Sustainable Development Goal 11.6 aims to reduce the adverse environmental impact of cities, including through municipal waste management.

Budgetary control is the process by which a local government prepares budgets, releases funds as planned, spends them as approved, monitors deviations and pays its obligations on time, so that money reaches the services for which it was approved. Where it is weak, planned services are not delivered. The PEFA (2024) assessment of Uganda found poor budget credibility, with significant deviations between approved and actual expenditure, and unpredictable releases to service delivery units that impeded planning and reduced the efficiency of public spending. Abdul et al. (2023) found that budgetary compliance had a statistically significant positive effect on the performance of Indonesian regional governments, narrowing the gap between planned and actual outputs.

In the waste sector, inadequate and unpredictable funding is one of the most frequently reported causes of poor service. Guerrero et al. (2013), reviewing waste management in cities of developing countries, found that insufficient financial resources and poor financial management by local authorities were among the main factors limiting collection and safe disposal. The same pattern appears in African cities. In the Greater Accra Metropolitan Area, Oteng-Ababio (2010) found that assemblies' delays in paying private waste contractors interrupted collection and let garbage accumulate. In Kinshasa, Kubanza and Simatele (2016) found that inadequate budget allocations and weak management of resources left poor neighbourhoods without collection services.

Uganda shows a similar picture. Eton et al. (2023) found that budget adherence in Kiruhura and Mbarara districts significantly influenced the completion of planned projects, and that districts whose expenditure deviated from approved budgets had more incomplete projects and understaffed facilities. Atukunda et al. (2024) found that budgetary control and managerial competencies jointly explained 55.9% of the variation in the performance of higher local

governments in eastern Uganda. Tukwatsibwe et al. (2024) found that budget forecasting and periodic reviews had a significant positive effect on public health service delivery in Bushenyi-Ishaka Municipality. Okot-Okumu and Nyenje (2011) found that Ugandan urban councils received inadequate funds for waste management after decentralisation, so collection was limited and open dumping widespread.

The problem is acute in the Greater Kampala Metropolitan Area (GKMA), where municipalities around Kampala have grown rapidly. Makindye-Ssabagabo Municipality in Wakiso District lies immediately south of Kampala's Makindye Division. The 2024 census enumerated its population at 439,605. Its growth has been fuelled by the influx of people from Kampala and by unplanned, informal development in its peri-urban areas. The Municipal Health Officer has noted that the average homestead in Ssabagabo has six people, so the volume of solid waste generated is a major challenge. Reports on the municipality describe widespread open dumping because collection and disposal facilities are absent, and a district-level report cited in the press warned that Wakiso District has no landfill and that the problem is most serious in Makindye-Ssabagabo, Kira and Nansana municipalities.

These weaknesses became visible in 2026. When garbage went uncollected for more than a week across parts of Wakiso District, the Makindye-Ssabagabo mayor said the municipality hired private trucks and, with Entebbe Municipality's permission, disposed of waste at the Entebbe dumpsite. Such emergency, ad hoc spending shows how closely service continuity depends on whether funds are available, released on time and used as approved. It also shows that the municipality relies on external disposal arrangements.

Although the literature links budget performance to public service outcomes, few studies have measured how specific aspects of budgetary control relate to SWM service delivery in a rapidly urbanising Ugandan municipality. These aspects are the release of funds, budget adherence, budget transparency and participation, procurement integrity and timely payment of contractors. This study addressed that gap in Makindye-Ssabagabo Municipality.

2. Methodology

2.1 Research design

The study adopted a cross-sectional correlational survey design using both quantitative and qualitative approaches. Data were collected from the different categories of respondents once, over a short period, which made it possible to gather data from many respondents quickly and at low cost (Creswell & Creswell, 2018).

2.2 Study population

The study population comprised two groups. The first was 147 people involved in the management, financing, oversight and delivery of SWM services: key municipal officials (the Town Clerk, Chief Finance Officer, Senior Internal Auditor, Principal Procurement Officer, Municipal Health Officer, Environment Officer, Municipal Engineer and Municipal Planner); finance, planning and revenue staff; internal audit staff; environment, public health and sanitation staff; municipal and division councillors; LC I chairpersons of the 55 cells; and licensed private waste collection operators (MSMC Human Resource and Council records, 2026). The second group was the households of the municipality, the users of waste services, estimated at about 450,000 people in 2024 (MSMC, 2025a). Household heads or other adults aged 18 years or older who had lived in the municipality for at least one year were eligible. Including service users gave the users' view of service delivery and reduced the common-method bias that would have arisen from relying on officials alone (Podsakoff et al., 2003).

2.3 Sample size and selection

Officials, councillors and key informants. The 84 technical staff and councillors who answered the questionnaire were all included through a census, which removed sampling error for this group (Amin, 2005). This exceeded the minimum of 50 + 8m = 74 cases required for multiple regression with three predictors (Tabachnick & Fidell, 2019). Key informants were selected purposively: the 8 key municipal officials, 2 council committee chairpersons (finance, and works or health), 4 LC I chairpersons (one from a cell with scheduled collection and one from a cell without, in each division) and 8 licensed private waste collection operators, giving 22 interviews.

Households. The household sample was determined using Cochran's (1977) formula for large populations, $n = Z^2p(1 - p) / e^2$, where $Z = 1.96$ at the 95% confidence level, $p = 0.5$ (which gives the largest sample) and $e = 0.05$. Thus $n = (1.96^2 \times 0.5 \times 0.5) / 0.05^2 = 384.16$, approximately 384 households. This is consistent with the table of Krejcie and Morgan (1970) for populations above 100,000.

Table 1

Population, Sample Size, Sampling Technique and Instrument

Category	Population (N)	Sample (n)	Sampling technique	Instrument
Key municipal officials	8	8	Census; purposive for interviews	Questionnaire; interview guide
Finance, planning and revenue staff	18	18	Census	Questionnaire
Internal audit staff	4	4	Census	Questionnaire
Environment, public health and sanitation staff	14	14	Census	Questionnaire

Category	Population (N)	Sample (n)	Sampling technique	Instrument
Municipal and division councillors	40	40	Census; 2 committee chairpersons purposively interviewed	Questionnaire; interview guide
LC I chairpersons	55	4	Purposive	Interview guide
Licensed private waste collection operators	8	8	Purposive	Interview guide
Subtotal: officials, leaders and operators	147	96		
Households (service users)	About 450,000 people	384	Multi-stage: stratified, simple random, systematic	Household questionnaire
Total		480		

Source: MSMC staff and council records (2026); household sample computed using Cochran (1977). The 96 people in the first group provided 84 questionnaires and 22 interviews; the 10 key officials and committee chairpersons gave both.

2.4 Sampling techniques

A census was used for officials, technical staff and councillors because these categories were small and each member held information on how waste funds are managed or overseen (Amin, 2005). Purposive sampling was used for key informants because they held specialised knowledge of waste budgets, contracts and operations that could not be captured through random selection (Sekaran & Bougie, 2016).

Multi-stage sampling was used for households. In the first stage, the 55 cells were stratified by division and by whether or not they received scheduled weekly collection (11 of the 55 did; MSMC, 2025b). In the second stage, three cells were selected from each stratum in each division by simple random sampling, giving 12 cells. In the third stage, 32 households were selected in each cell by systematic random sampling: starting from a randomly selected household near the centre of the cell, every fifth household was approached along a randomly chosen direction until 32 households had been interviewed, giving 384 households (192 per division). In each household, the household head or another adult aged 18 years or older who had lived in the municipality for at least one year was interviewed. Stratifying by collection status ensured that both served and unserved areas were represented.

2.5 Data sources and collection methods

The study triangulated five sources of data. First, a self-administered questionnaire was completed by the 84 officials and councillors, enabling standardised data collection from many respondents in confidence (Amin, 2005). Second, a household questionnaire was administered face to face by trained research assistants, in English or Luganda as preferred, because some residents had difficulty reading. Third, semi-structured interviews were held with the 22 key informants to probe how waste budgets are prepared, how funds are released and spent, how contractors are monitored and paid, and how these practices relate to collection and disposal. Fourth, documents were reviewed for FY 2021/22 to FY 2024/25: approved budgets and budget performance reports, financial statements, revenue records, procurement plans and contract registers, payment vouchers, waste collection and operations logs, the fleet register, the complaints register, the Municipal Development Plan IV (MSMC, 2025a) and relevant laws and regulations. Fourteen types of records were reviewed for each financial year. Fifth, direct observation was made at nine sites: the main market in each division (2), one scheduled-collection cell and two unserved cells in each division (6), and the municipal disposal site.

2.6 Data collection instruments

The questionnaire for officials and councillors measured budgetary control through two dimensions with five items each, budget transparency and participation (FA1.1 to FA1.5) and procurement integrity (FA4.1 to FA4.5), and SWM service delivery through 21 items on access and coverage (4 items), reliability and timeliness (4), disposal and environmental safety (5), cleanliness of the environment (4) and capacity of the service (4) (SW1.1 to SW5.4). The third dimension of budgetary control, revenue and fund management, was measured from documents. The household questionnaire covered household information, access to service (5 items) and service quality and satisfaction (9 Likert items, HS1 to HS9). The key informant guide contained open questions with probes on budget preparation, the flow of funds, procurement and contract monitoring, the effect of budget management on services, other factors affecting services and recommendations; operators were also asked about contracting, payment and verification. The document review checklist recorded whether each document was found (fully, partially or not at all) and the data obtained. The observation checklist scored the cleanliness of streets and drains, illegal dumps, bins and skips, vehicles, protective gear and the condition of the disposal site on a scale of 0 (absent or poor), 1 (partly present or fair) and 2 (fully present or good). All perceptual items used the five-point Likert scale (5 = strongly agree to 1 = strongly disagree), and mean scores were interpreted as 4.21–5.00 very high, 3.41–4.20 high, 2.61–3.40 moderate, 1.81–2.60 low and 1.00–1.80 very low.

2.7 Measurement of variables

Budgetary control (independent variable) was measured through (i) budget transparency and participation (budget conference held, stakeholders consulted on waste priorities, budget and work plan made public, waste visible in the

budget); (ii) procurement integrity (waste items in the procurement plan, competitive award, contract monitoring before payment, PPDA compliance); and (iii) revenue and fund management (documentary). SWM service delivery (dependent variable) was measured through access and coverage, reliability and timeliness, disposal and environmental safety, cleanliness of the environment, capacity of the service, and household responsiveness and satisfaction.

Table 2

Documentary indicators

Indicator	Formula	Interpretation
Budget release performance	Funds released for waste / approved waste budget × 100	Higher means funds reached the activity
Budget absorption	Waste expenditure / funds released × 100	Low absorption signals weak execution
Waste fee collection rate	Fees collected / fees targeted × 100	Higher means stronger revenue management
Median invoice-to-payment interval	Days from contractor invoice to payment	Shorter means more timely payment
Collection coverage	Households served / total households × 100	Higher is better
Collection efficiency	Tonnes collected / tonnes generated (estimated) × 100	Higher is better
Schedule adherence	Collections done on schedule / collections planned × 100	Higher is better
Complaint resolution rate	Complaints resolved within set time / complaints received × 100	Higher is better
Cost per tonne collected	Waste expenditure / tonnes collected	Lower is better, read with quality

Source: Researcher (2026).

2.8 Data quality control

Validity. Content validity was established by giving the instruments to three experts (one each in public financial management, public health or environmental management, and research methods) and the supervisor, who rated each item from 1 (not relevant) to 4 (highly relevant). The item-level index (I-CVI) was the proportion of experts rating an item 3 or 4, and the scale-level index (S-CVI/Ave) was the average of the I-CVIs. Items with an I-CVI of 0.78 or higher were retained and a scale-level index of 0.80 or higher was considered acceptable (Lynn, 1986; Polit & Beck, 2006). The overall S-CVI/Ave was 0.84, so the instruments were judged valid; items below the threshold were reworded before pilot testing. For the SWM service delivery items, the Kaiser-Meyer-Olkin measure was 0.781 and Bartlett's test was significant ($\chi^2 = 577.16$, df = 210, $p < .001$), above the minimum KMO of 0.60 (Kaiser, 1974; Hair et al., 2019). Because the officials' sample (84) was small relative to the number of items, this result was interpreted cautiously.

Reliability. The instruments were pilot tested on 10 respondents in Namugongo, Kira Municipality, a neighbouring municipality with similar administrative structures and waste management challenges that was outside the study sample. A coefficient of 0.70 or higher was accepted (Nunnally, 1978). The pilot gave an overall Cronbach's alpha of 0.87, and unclear items were revised. Alpha was then recomputed on the main data. The budgetary control scale ($\alpha = 0.793$), the SWM service delivery scale ($\alpha = 0.885$) and the household service quality and satisfaction scale ($\alpha = 0.773$) met the threshold. The individual dimensions had lower alphas (0.563 to 0.696), which is common for scales of four to five items, so the dimensions were used for description and the combined scales for hypothesis testing.

Table 3

Reliability Results (Cronbach's Alpha)

Scale	Items	Alpha (α)	Decision
Budgetary control (overall)	10	0.793	Acceptable
Budget transparency and participation	5	0.617	Below threshold
Procurement integrity	5	0.696	Below threshold
SWM service delivery (overall)	21	0.885	Acceptable
Access and coverage	4	0.563	Below threshold
Reliability and timeliness	4	0.610	Below threshold
Disposal and environmental safety	5	0.636	Below threshold
Cleanliness of the environment	4	0.654	Below threshold

Scale	Items	Alpha (α)	Decision
Capacity of the service	4	0.605	Below threshold
Household service quality and satisfaction	9	0.773	Acceptable

Note: n = 84 for officials' scales; n = 384 for the household scale. Source: Primary data (2026).

Trustworthiness. Findings from officials, households, documents and observation were compared for each dimension, and differences are reported openly. For qualitative data, credibility was enhanced by recording interviews with consent, taking detailed notes and comparing interview responses with documentary and observational evidence.

2.9 Data collection procedure

After approval of the proposal, the researcher obtained an introductory letter from the School of Graduate Studies and Research of Team University and presented it to the Town Clerk of Makindye-Ssabagabo Municipal Council to seek permission. The instruments were validated by experts, pilot tested in Namugongo and refined. Four research assistants were trained on 17 October 2026 on the household questionnaire, sampling procedure, consent and confidentiality. The questionnaire for officials and councillors was delivered with a consent form and collected after five working days. The household survey took about two weeks of fieldwork within the collection period, interviews were scheduled at informants' convenience, records were reviewed and observation was done at the selected sites. Completed questionnaires were checked daily for completeness. Primary data were collected from 19 to 25 October 2026.

2.10 Data analysis

Questionnaire data were edited, coded and entered into SPSS. A mean index was computed for each dimension and for budgetary control and SWM service delivery overall, and means were interpreted using the scale in Section 2.6. Frequencies, percentages, means and standard deviations described respondents and the level of each variable. Normality was checked using skewness, kurtosis and the Shapiro-Wilk test; because the indices were approximately normally distributed, Pearson's correlation coefficient was used to determine the direction and strength of the relationship between budgetary control and SWM service delivery, with Spearman's rank correlation as a check. Strength was interpreted as weak (0.10–0.29), moderate (0.30–0.49), strong (0.50–0.69) or very strong (0.70 and above) (Cohen, 1988). Simple linear regression estimated the share of variation in SWM service delivery explained by budgetary control. Before regression, the assumptions of normality of residuals, linearity, homoscedasticity (Breusch-Pagan test) and independence of errors (Durbin-Watson statistic) were tested. The hypothesis was tested at the 0.05 level of significance.

Documentary indicators were computed for each financial year and presented as percentages, amounts or ratios. Because only four years of records were available, they were used to describe trends and to triangulate the survey findings, not to compute correlations. Household data described access, service quality and satisfaction, and cells with and without scheduled collection were compared using independent-samples t-tests and chi-square tests. Interview data were transcribed and analysed thematically (Braun & Clarke, 2006); informants are identified only by a code (KI01 to KI22) and role, and verbatim quotations are used to explain the quantitative findings.

2.11 Ethical considerations

The researcher obtained approval of the proposal and an introductory letter from Team University, and permission from the Town Clerk. A written informed consent form explained the purpose of the study to officials, councillors and key informants, and household respondents gave verbal consent recorded by the research assistant; only adults aged 18 years or older were interviewed. Participation was voluntary, with the right to withdraw at any time without penalty. Names were not recorded on questionnaires, responses were coded, and recordings and data files were stored in password-protected files accessible only to the researcher, so that respondents could speak freely about financial management without fear of victimisation. Permission to record interviews was sought, and no photographs showing identifiable people were taken during observation. The data were used only for academic purposes.

3. Results

3.1 Response rate

Table 4

Response rate

Instrument	Targeted	Achieved	Response rate (%)
Questionnaire: officials and councillors	84	84	100.0
Household questionnaire	384	384	100.0
Key informant interviews	22	22	100.0
Document review (14 record types × 4 years)	56	56 (47 full, 9 partial)	100.0
Observation sites	9	9	100.0

Source: Primary data (2026).

All instruments achieved a 100% response rate. All 14 types of records were located for each of the four financial years, although 9 of the 56 document-years were only partially available: the waste collection and operations logs (all four years),

the environmental and health inspection reports (all four years) and the complaints register for FY 2021/22. According to Mugenda and Mugenda (2003), a response rate of 70% or more is very good for analysis.

3.2 Background characteristics of respondents

Table 5

Background Characteristics of Officials and Councillors

Characteristic	Frequency	Percent (%)
Category of respondent		
Key municipal official	8	9.5
Finance, planning and revenue staff	18	21.4
Internal audit staff	4	4.8
Environment, public health and sanitation staff	14	16.7
Municipal/division councillor	40	47.6
Division		
Makindye-Ssabagabo East	39	46.4
Makindye-Ssabagabo West	45	53.6
Gender		
Male	41	48.8
Female	43	51.2
Highest education		
Certificate	20	23.8
Diploma	21	25.0
Degree	19	22.6
Postgraduate	24	28.6
Years of service		
Less than 2 years	16	19.0
2 to 5 years	23	27.4
6 to 10 years	27	32.1
Over 10 years	18	21.4

Source: Primary data (2026).

Councillors formed the largest group (40, 47.6%), followed by finance, planning and revenue staff (21.4%), environment, public health and sanitation staff (16.7%), key municipal officials (9.5%) and internal audit staff (4.8%). The respondents therefore included all the groups that plan, spend, audit and oversee waste funds. Technical staff (44) and councillors (40) were almost equally represented, which allowed the views of management and of the council's oversight arm to be compared. Respondents were spread across both divisions (46.4% East and 53.6% West) and were nearly balanced by gender (51.2% female). More than half held a degree or postgraduate qualification (51.2%), and 53.5% had served the municipality for six years or more, which means that most respondents had worked through the whole study period (FY 2021/22 to FY 2024/25) and were in a position to judge how waste funds were managed.

Of the 84 officials and councillors, 40 (47.6%) were councillors, 18 (21.4%) finance, planning and revenue staff, 14 (16.7%) environment, public health and sanitation staff, 8 (9.5%) key municipal officials and 4 (4.8%) internal audit staff. Respondents were spread across the East (46.4%) and West (53.6%) Divisions and nearly balanced by gender (51.2% female). More than half held a degree or postgraduate qualification (51.2%), and 53.5% had served the municipality for six years or more, so most had worked through the whole study period (FY 2021/22 to FY 2024/25) and were in a position to judge how waste funds were managed.

By design, the 384 households were split equally between the two divisions and between cells with and without scheduled collection (192 each). Male (51.3%) and female (48.7%) respondents were almost equally represented and all adult age groups were covered. Households lived in unplanned or informal settlements (29.4%), planned estates (27.6%), market or commercial premises (23.2%) and rental apartments (19.8%). The average household had 4.5 members (SD = 1.61; range 1 to 8), and 71.6% of respondents had lived in their area for two years or more.

The 22 key informants were the 8 key municipal officials (KI01 to KI08), the two committee chairpersons (KI09 and KI10), four LC I chairpersons (KI11 to KI14) and eight private waste operators (KI15 to KI22).

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3.3 Budgetary control

Table 6

Budget Transparency and Participation

Code	Statement	SA %	A %	NS %	D %	SD %	Mean	SD
FA1.1	A budget conference is held before the annual budget is approved.	8.3	17.9	38.1	27.4	8.3	2.90	1.06
FA1.2	Residents and stakeholders are consulted when waste priorities are set.	3.6	22.6	35.7	26.2	11.9	2.80	1.04
FA1.3	The approved budget and work plan are made available to the public.	4.8	27.4	35.7	23.8	8.3	2.96	1.02
FA1.4	Waste activities are clearly shown in the approved budget.	4.8	22.6	29.8	36.9	6.0	2.83	1.00
FA1.5	Budget allocations to waste reflect actual needs.	3.6	25.0	38.1	25.0	8.3	2.90	0.99
	Average						2.88	

Note: n = 84. SA = strongly agree, A = agree, NS = not sure, D = disagree, SD = strongly disagree. Source: Primary data (2026).

Budget transparency and participation was moderate (mean = 2.88). Only 26.2% of respondents agreed that a budget conference is held before the budget is approved and 26.2% that residents and stakeholders are consulted on waste priorities (38.1% disagreed with the latter). The item with the most disagreement was whether waste activities are clearly shown in the approved budget: 42.9% disagreed and only 27.4% agreed. This suggests that waste is planned within broader departmental votes rather than as a clearly costed and visible line.

Table 7

Procurement integrity

Code	Statement	SA %	A %	NS %	D %	SD %	Mean	SD
FA4.1	Waste procurements are included in the annual procurement plan.	7.1	25.0	34.5	22.6	10.7	2.95	1.10
FA4.2	Waste contracts are awarded through competitive processes.	4.8	26.2	27.4	31.0	10.7	2.83	1.08
FA4.3	Contractors are monitored to confirm delivery before payment.	9.5	9.5	41.7	33.3	6.0	2.83	1.02
FA4.4	Procurement of vehicles, bins and skips follows PPDA rules.	4.8	11.9	40.5	31.0	11.9	2.67	1.00
FA4.5	Cases of irregular procurement in waste are rare.	10.7	17.9	40.5	22.6	8.3	3.00	1.09
	Average						2.86	

Note: n = 84. Source: Primary data (2026).

Procurement integrity was also moderate (mean = 2.86). The weakest items concerned control of contracts: only 19.0% agreed that contractors are monitored to confirm delivery before payment (39.3% disagreed), only 16.7% agreed that procurement of vehicles, bins and skips follows PPDA rules (42.9% disagreed), and 41.7% disagreed that waste contracts are awarded competitively. Inclusion of waste items in the procurement plan (mean = 2.95) was rated somewhat better, so procurement is planned but the award and verification of contracts are weaker.

Table 8

Documentary Indicators of Budgetary Control, FY 2021/22 to FY 2024/25

Indicator	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Approved waste budget (UGX million)	520	590	650	720
Funds released (UGX million)	405.6	477.9	481.0	547.2
Budget release performance (%)	78	81	74	76
Actual expenditure (UGX million)	356.9	434.9	413.7	487.0
Absorption: expenditure as % of releases	88	91	86	89
Expenditure as % of approved budget	68.6	73.7	63.6	67.6
Waste fee target (UGX million)	120	145	170	200
Waste fees collected (UGX million)	78	91	102	116
Waste fee collection rate (%)	65.0	62.8	60.0	58.0
Contracts completed on time (%)	68	71	62	66
Median invoice-to-payment interval (days)	48	50	56	48

Source: Approved budgets, budget performance reports, revenue records, contract register and payment vouchers, FY 2021/22 to FY 2024/25.

The approved waste budget rose every year, from UGX 520 million to UGX 720 million (an increase of 38.5%). However, only 74% to 81% of the approved budget was released in any year (an average of 77.3%), and of the funds released, 86% to 91% were spent, so actual expenditure was only 63.6% to 73.7% of the approved budget. The lowest

release rate (74%) occurred in FY 2023/24. Waste-fee collection also weakened: although the target rose from UGX 120 million to UGX 200 million, the share collected fell every year, from 65.0% to 58.0%. On procurement, only 62% to 71% of waste-related contracts were completed on time, and the median interval between a contractor's invoice and payment was 48 to 56 days, longest in FY 2023/24. The payment vouchers showed that "some files lack a full signed verification trail", and the contract register noted that output verification was not always linked to payment files. Households were also doubtful about use of fees: only 17.4% agreed that the municipality uses waste fees responsibly, while 43.7% disagreed.

The interviews pointed to two themes. The first was that budgets are prepared within a fixed resource envelope, with limited community input and waste-specific costing:

"Departmental estimates are consolidated against the available resource envelope. Budget conferences and committee discussions occur, but community input and waste-specific costing vary." (KI08, Municipal Planner)

The second, raised by officials and operators alike, was that funds are released late or unpredictably and that this disrupts operations:

"Funds follow approved budgets and release procedures. Cash-flow constraints, competing obligations and processing delays can affect the timing of activities." (KI02, Chief Finance Officer)

"Municipal cash management affects waste-service continuity because approved funds may not be accessible at the point when expenses fall due." (KI22, Licensed private waste operator)

On contract monitoring, informants agreed on what should happen but implied that it does not always happen: "Route logs, supervisor checks, complaints and signed verification forms should support approval of invoices and payment" (KI04, Principal Procurement Officer). In the open responses of officials, irregular releases and competing priorities (19 respondents), budget allocations that do not match growing demand (16) and contractor payment delays affecting fuel and route schedules (15) were among the main financial challenges named.

Overall, budgetary control was moderate (mean = 2.87, SD = 0.62). The waste budget grew, but roughly a quarter of it was not released each year, waste-fee collection declined relative to target, and contractors waited about seven weeks for payment, often without a complete verification trail.

3.4 Level of solid waste management service delivery

3.4.1 Officials' and councillors' views

Table 9

Officials' and Councillors' Ratings of SWM Service Delivery Dimensions

Dimension	Items	Mean	Interpretation	Items with most disagreement
Access and coverage	4	2.50	Low	Markets and commercial areas adequately served (56.0% disagreed)
Reliability and timeliness	4	2.37	Low	Skips emptied before overflowing (60.7% disagreed)
Disposal and environmental safety	5	2.53	Low	Disposal site managed to reduce smell, smoke, leachate (59.6% disagreed)
Cleanliness of the environment	4	2.55	Low	Enough bins in public places (only 8.3% agreed)
Capacity of the service	4	2.35	Low	Workers receive protective gear and are paid on time (63.1% disagreed)

Note: n = 84. Source: Primary data (2026).

All five dimensions were rated low, with means between 2.35 and 2.55. More than half disagreed that most households receive collection (52.4%) and that coverage had improved in the last three years (51.2%). Only 10.7% agreed that waste is collected according to the published schedule, and 59.5% disagreed that complaints are handled promptly. Nearly half disagreed that collected waste is taken to an approved site (47.6%) or that open burning is controlled (47.7%). Capacity of the service was the lowest-rated dimension: 59.5% disagreed that the municipality has enough functional vehicles and equipment, and 60.7% disagreed that private contractors perform to agreed standards.

3.4.2 Households' access, service quality and satisfaction

Table 10

Household Access to Waste Collection by Collection Stratum

Item	Scheduled cells, n (%)	Unserved cells, n (%)	Total, n (%)
Receives organised collection	141 (73.4)	36 (18.8)	177 (46.1)
Collection daily	32 (16.7)	4 (2.1)	36 (9.4)
Collection weekly	50 (26.0)	8 (4.2)	58 (15.1)
Collection irregular	66 (34.4)	87 (45.3)	153 (39.8)
Never collected	21 (10.9)	78 (40.6)	99 (25.8)
Dump in drainage or open land	7 (3.6)	40 (20.8)	47 (12.2)
Pays for collection	98 (51.0)	27 (14.1)	125 (32.6)

Note: 192 households in each stratum. Source: Primary data (2026).

Fewer than half of all households (46.1%) received organised collection. Access depended heavily on where a household lived: 73.4% in cells with scheduled collection, compared with 18.8% in cells without it ($\chi^2 = 113.36$, df = 1, $p < .001$). Even in scheduled cells, 26.6% received no organised service. Collection was irregular for many: only 9.4% of households received daily and 15.1% weekly collection, while 39.8% were served irregularly and 25.8% never. In total, 217 households (56.5%) reported burning, burying or dumping their waste in drains or open land, and dumping was far more common in unserved cells (40 households) than in scheduled cells (7). Only 32.6% of households paid for collection (51.0% in scheduled and 14.1% in unserved cells; $\chi^2 = 58.12$, df = 1, $p < .001$), paying UGX 10,000 to UGX 40,000 per month (mean UGX 22,760).

Households rated service quality and satisfaction as low (mean = 2.60, SD = 0.63). Only 17.0% were satisfied overall, while 47.9% were not (mean = 2.54). Only 20.8% agreed that waste is collected on the days promised, 18.7% that their neighbourhood is clean and 22.4% that complaints are handled quickly.

Table 11

Household Service Ratings by Access to Collection

Comparison	Group 1: mean (SD)	Group 2: mean (SD)	t	Sig.
Scheduled (1) vs unserved cells (2)	2.98 (0.61)	2.23 (0.37)	14.63	< .001
Receives collection (1) vs does not (2)	3.18 (0.39)	2.11 (0.30)	29.80	< .001
East (1) vs West Division (2)	2.61 (0.66)	2.60 (0.61)	0.04	.964

Note: Welch independent-samples t-test; dependent measure is the household service quality and satisfaction index (HS1 to HS9). Source: Primary data (2026).

Households in scheduled cells rated services significantly higher than those in unserved cells, and households that received organised collection rated them much higher (mean = 3.18) than those that did not (mean = 2.11). There was no difference between the East and West Divisions. Even households with organised collection rated services only as moderate.

3.4.3 Documentary indicators of service delivery

Table 12

Documentary Indicators of SWM Service Delivery, FY 2021/22 to FY 2024/25

Indicator	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Waste generated (tonnes per day)	190	200	215	225
Waste collected (tonnes per day)	60.8	68.0	77.4	85.5
Collection efficiency (%)	32	34	36	38
Cells with scheduled weekly collection (of 55)	8	9	10	11
Household collection coverage (%)	30	32	35	38
Schedule adherence (%)	72	74	67	69
Complaints recorded	420	510	690	820
Complaint resolution rate (%)	62	64	58	61
Functional municipal collection vehicles	6	6	5	5
Cost per tonne collected (UGX)	16,082	17,522	14,644	15,605

Source: Waste collection and operations logs, complaints register, fleet register and budget performance reports; cost per tonne computed by the researcher.

The records show some improvement but a large and persistent gap. The share of waste collected rose from 32% to 38% and household coverage from 30% to 38% as scheduled weekly collection was extended from 8 to 11 of the 55 cells. Tonnage collected rose by 40.6% (from 60.8 to 85.5 tonnes per day), yet about 140 tonnes a day were still not collected in FY 2024/25, and collection efficiency remained less than half of the MDP IV target of over 80%. Reliability did not improve: schedule adherence stayed between 67% and 74%, complaints nearly doubled (420 to 820), only 58% to 64% were resolved, and functional municipal vehicles fell from six to five. FY 2023/24 was the weakest year for reliability, with the lowest schedule adherence (67%) and complaint resolution (58%).

3.4.4 Observation of service sites

Observation of the nine sites showed mostly fair or poor visible conditions. Only the East Division main market was rated relatively good. The West scheduled-collection cell and one West unserved cell were rated poor, and the West scheduled cell scored lower than both unserved cells in the East, so being on the collection schedule does not guarantee a clean environment. The lowest-scoring items were streets and drains free of accumulated waste and availability of bins or skips (both 0.67 out of 2), followed by skips not overflowing and functional collection vehicles in use (both 0.78). At the disposal site, waste was not covered or compacted, open burning was observed and there was no evidence of sorting or recycling, although hazardous waste was kept separate. These observations agree with officials' low ratings of capacity and cleanliness and with households' low ratings of service quality.

3.5 Budgetary control and SWM service delivery

Table 13

Correlation and Simple Regression of SWM Service Delivery on Budgetary Control

Statistic	Value
Pearson correlation (r)	0.835
Sig. (2-tailed)	< .001
R^2	0.697
Adjusted R^2	0.693
F (df)	188.72 (1, 82)
Unstandardised coefficient (B)	0.781
N	84

Source: Primary data (2026).

Budgetary control had a very strong, positive and significant relationship with SWM service delivery ($r = 0.835$, $p < .001$) and explained 69.7% of its variation on its own. Since $p < .05$, the null hypothesis was rejected, and it was concluded that there is a significant positive relationship between budgetary control and SWM service delivery in Makindye-Ssabagabo Municipality. Both dimensions of budgetary control were strongly related to service delivery: budget transparency and participation ($r = 0.763$) and procurement integrity ($r = 0.755$).

The documentary evidence pointed in the same direction. Over the four years, the years with higher release rates were also the years with higher schedule adherence, more complaints resolved and more contracts completed on time. FY 2022/23, with the highest release rate (81%), recorded the highest schedule adherence (74%), complaint resolution (64%) and on-time contract completion (71%), while FY 2023/24, with the lowest release rate (74%) and the longest payment delay (56 days), recorded the lowest values on all three. Because only four years of data were available, this co-movement was not tested statistically, but it is consistent with the survey result.

Interviews described the mechanism. Operators explained that late releases and payments interrupt collection directly: "Implementation may fall behind schedule when funds are not released promptly or payment paperwork takes longer than anticipated." (KI20, Licensed private waste operator)

"Even after an allocation is approved, waste-service teams can face delays while payments are processed or other urgent expenses are prioritised." (KI17, Licensed private waste operator)

4. Discussion

4.1 Budgetary control and SWM service delivery

Budgetary control had a very strong, positive and significant relationship with SWM service delivery ($r = 0.835$, $p < .001$), and the null hypothesis was rejected. Years in which a higher share of the budget was released and contractors were paid sooner were also years of better schedule adherence and complaint resolution, and informants described how late releases and payments interrupt collection.

This finding is consistent with Atukunda et al. (2024), who found that budgetary control and managerial competencies explained 55.9% of the variation in the performance of higher local governments in eastern Uganda; with Eton et al. (2023), who found that budget adherence significantly influenced the completion of planned projects in Kiruhura and Mbarara districts; and with Tukwatsibwe et al. (2024), who found a significant positive effect of budget forecasting and periodic reviews on public health service delivery in Bushenyi-Ishaka Municipality. It also agrees with Abdul et al. (2023), who found that budgetary compliance narrowed

the gap between planned and actual outputs in Indonesian regional governments.

The specific mechanism found in Makindye-Ssabagabo, that late and partial releases and delayed payment of contractor's interrupt collection, mirrors the findings of Oteng-Ababio (2010) in the Greater Accra Metropolitan Area. It also echoes the PEFA (2024) assessment of Uganda, which found that unpredictable releases impede planning and reduce the efficiency of spending. The municipality's experience in FY 2023/24, when the lowest release rate and the longest payment delays coincided with the poorest schedule adherence and complaint resolution, is a local illustration. The finding that the waste budget grew by 38.5% while only about three-quarters of it was released each year, and that fee collection felt relative to target, supports the conclusion of Okot-Okumu and Nyenje (2011) and Guerrero et al. (2013) that inadequate and poorly managed funding limits waste collection in developing-country cities.

Both budget transparency and participation ($r = 0.763$) and procurement integrity ($r = 0.755$) were strongly related to service delivery. This suggests that how waste priorities are set and made visible in the budget matters as much as how contracts are managed. From a Stakeholder Theory perspective, budget conferences and consultation give residents a voice in setting priorities (Bryson, 2004); where waste is not visible as a line in the budget, stakeholders cannot track whether what was planned was delivered.

5. Conclusion

Budgetary control is significantly and positively related to SWM service delivery. The growth of the waste budget has not translated into proportionate improvements in service because a quarter of the budget is not released, funds arrive unpredictably, contractors are paid late and often without a full verification trail, and waste-fee collection is falling relative to target. Predictable releases and timely, verified payments are necessary for reliable collection.

6. Limitations

Some officials were reluctant to give information on financial weaknesses and contractor payments, and some may have given socially desirable answers; this was addressed by assuring confidentiality and anonymity and by triangulating officials' responses with household views, documents and observation. Several records, notably the waste collection and operations logs, the complaints register for FY 2021/22 and the environmental and health inspection reports, were only partially available; the researcher used the available records and noted for each document whether it was found. Households found it difficult to judge how funds are used, so household questions were limited to what residents could know. Observation captured conditions only on the days of the visits; this was reduced by observing several sites and comparing them with records. Because the study was cross-sectional, it cannot firmly establish cause and effect; this was mitigated by grounding the analysis in theory and qualitative explanations. Because the study was limited to one municipality, the findings may not be generalised to all local governments, although they may apply to other fast-growing municipalities in the GKMA.

7. Recommendations

The municipal council should show waste management as a distinct, costed line in the approved budget and work plan, prepared with input from residents through the budget conference and cell-level consultations, so that stakeholders can follow what was planned and delivered.

The Chief Finance Officer should agree a quarterly cash-flow plan for waste services that protects funds for fuel, contractor payments and essential operations from competing obligations, and should report the release rate against this plan to the finance committee each quarter.

The Principal Procurement Officer and Environment Officer should link every contractor payment to verified collection logs, signed supervisor confirmation and complaints records, and should set and monitor a maximum interval between a verified invoice and payment.

The revenue department should reconcile waste-fee collections monthly against targets and services provided, and should explain fee rates and their use to residents, in order to reverse the decline in the fee collection rate.

Future studies could compare several municipalities in the GKMA, use longer time series of release and payment data to test the link between release rates and service outcomes statistically, and examine other factors that affect waste services, such as disposal site availability and population growth.

List of abbreviations

α: Cronbach's alpha (reliability coefficient)
B: Unstandardised regression coefficient
CPA: Certified Public Accountant
df: Degrees of freedom
FA: Item code for budgetary control questions (FA1.1 to FA1.5, FA4.1 to FA4.5)
FY: Financial year (e.g. FY 2024/25)
GKMA: Greater Kampala Metropolitan Area
HS: Item code for household service quality and satisfaction questions (HS1 to HS9)
I-CVI: Item-level Content Validity Index
KI: Key informant (KI01 to KI22)
KMO: Kaiser-Meyer-Olkin measure of sampling adequacy
LC I: Local Council I
MDP IV: Municipal Development Plan IV
MSMC: Makindye-Ssabagabo Municipal Council
n / N: Sample size / population size
p: Probability (significance) value
PEFA: Public Expenditure and Financial Accountability
PPDA: Public Procurement and Disposal of Public Assets (Act/Authority)
r: Pearson correlation coefficient
R^2: Coefficient of determination
S-CVI/Ave: Scale-level Content Validity Index (average method)
SD: Standard deviation
SPSS: Statistical Package for the Social Sciences

SW: Item code for SWM service delivery questions (SW1.1 to SW5.4)
SWM: Solid waste management
t: t-test statistic
UGX: Uganda shillings

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Informed consent

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Author contributions

RM conceptualized the study, developed the methodology, carried out the investigation, wrote the original draft.
MM Supervision, validation, writing- review and editing
All authors approved the final version of the manuscript and agreed to be accountable for the work.

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Data availability statement

Data used in this study is available upon request from the corresponding author

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