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Payment Concentration in Parent-Funded Class Finances: Evidence from a Spreadsheet Dashboard in an Indonesian Public Senior High School

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A R T I C L E I N F O

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A B S T R A C T

Parent-funded class finances are poorly documented, and shortfalls are usually reported only as totals. In Class X-8 of an Indonesian public senior high school, only 35.3% of the scheduled Rp180 million had been collected across three schemes (school committee contributions, savings, and class cash), and students who had paid in full supplied 73% to 87% of the installments received. A descriptive quantitative analysis of dashboard data for 36 students, using progress ratios, shortfalls, and installment concentration, shows that shortfalls sit with a subset of students rather than being spread evenly. Targeted reminders, flexible schedules, and aggregate reporting follow.

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INTRODUCTION

Class-level financial administration in Indonesian public senior high schools involves pooling money from parents for several purposes: contributions to the school committee, savings linked to school programmes, and a class cash fund for shared expenses. National regulation on education funding assigns shared responsibility to government, schools, and the community, including parents (Pemerintah Republik Indonesia, 2008). Relative to school budgets the class-level amounts are small, yet they are handled by volunteers, typically a parent coordinator and a treasurer, who often work without formal accounting support. Their administration therefore rests on simple tools such as spreadsheets and on the trust that parents place in the class management.

Research on school finance in Indonesia has concentrated on school-level budgets and on the accountability and transparency with which they are managed (Dahlan et al., 2024; Nurdiani & Nugraha, 2018), including the participation of school committees (Christian, 2023; Pradhan et al., 2014). The wider context is one of decentralised education governance (Bjork, 2003; Kristiansen & Pratikno, 2006), limited parental voice in school management (Chen, 2011), and concern that corruption weakens the effect of public education spending (Suryadarma, 2012). Much less attention has been given to the lowest level at which parental money is administered, the individual class. At that level the basic administrative questions are empirical and immediate: how much of what was agreed has actually been collected, and who has paid it?

This article addresses that gap through a case study of Class X-8 at SMA Negeri 2 Surabaya in the 2026/2027 academic year, where three payment schemes are administered through a spreadsheet workbook with an automated dashboard. Two questions guide the analysis: (1) What is the collection performance of each scheme relative to its scheduled total? (2) How concentrated is payment among students who have already paid in full? The contribution is a small, transparent set of indicators, including a lower-bound inequality measure that can be computed from group totals alone, that other class administrators can reproduce from dashboard data they already hold.

LITERATURE REVIEW

Accountability and Transparency

Bovens (2007) describes accountability as a relationship in which an actor feels obliged to explain and justify conduct to a forum, which may pose questions, pass judgement, and impose consequences. Romzek and Dubnick (1987) show that organisations answer to several kinds of accountability relationship at once, and Schillemans (2011) examines horizontal forms of accountability to peers and stakeholders. Applied to a class fund, the treasurer is the actor and the parents are the forum, and the provision of information is the first condition for the relationship to work.

Disclosure alone is not enough, however. Fox (2007) distinguishes answerability from the capacity to impose sanctions and argues that transparency does not automatically produce accountability. Hood (2010) questions whether the two always fit together, Meijer (2013) stresses the complex dynamics of transparency, and Bauhr and Grimes (2014) show that disclosure

can lead to resignation rather than action in some settings. Grimmelikhuijsen and Meijer (2014) examine how transparency affects perceived trustworthiness, and Bertot et al. (2012) discuss how information and communication technologies can support transparency. In Indonesian schools, studies treat accountability and transparency as the main lenses on fund management: Nurdiani and Nugraha (2018) reported an accountable category at 85.04% in a vocational school, Christian (2023) found that accountability, transparency, and efficiency of school budget management jointly had a positive and significant effect on school committee participation, and Dahlan et al. (2024) concluded that financial audits support compliance, transparency, and fraud prevention.

Small Voluntary Arrangements

A class fund resembles the small voluntary organisations studied in the nonprofit literature. Ebrahim (2003) catalogues the mechanisms through which NGOs account for their actions, Gray et al. (2006) discuss to whom such bodies are accountable, Benjamin (2008) shows how accountability requirements shape practice, and Cordery and Baskerville (2011) show that transgressions damage trust. These studies suggest that visible and regular reporting matters even where the amounts are modest.

Contribution Behaviour

Voluntary contributions toward a shared good raise the classic collective-action problem (Olson, 1965; Ostrom, 1990, 2010). Experimental evidence shows that many people contribute conditionally on what others contribute (Fischbacher et al., 2001) and that cooperation depends on how free riding is handled (Fehr & Gächter, 2000). If such conditional behaviour operates in a class, payments would be expected to cluster among those who contribute fully, with the rest contributing little. This is the pattern examined here through concentration indicators.

Parent Engagement, Communication, and Reminders

Hoover-Dempsey and Sandler (1997) argue that parents' involvement depends on how they see their role, their sense of efficacy, and the invitations and demands they perceive. Low-cost communication can change behaviour: Kraft and Rogers (2015) report a field experiment on teacher-to-parent communication, Karlan et al. (2016) show that reminders increase saving, and Damgaard and Nielsen (2018) review nudging in education. These findings motivate follow-up that targets the students furthest behind rather than the whole class.

Spreadsheets and Dashboards

Spreadsheets are the default tool of volunteer treasurers but are error-prone, as the review by Powell et al. (2008) documents, while dashboards summarise performance for decision makers (Yigitbasioglu & Velcu, 2012). Both points call for transparency about how dashboard figures are derived, which is why this study recomputes the dashboard percentages from first principles.

Analytical Expectations and Research Gap

Table 1 links each construct to the indicator used in this study. Three descriptive expectations follow: (E1) collection progress is below the scheduled total; (E2) installments paid are concentrated among students who have paid in full; and (E3) the scheme with the largest installment shows the lowest progress. The studies above examine school-level management or committee participation. They say little about how collection performance should be measured within a single class, or about whether shortfalls are spread evenly across families or concentrated in a few. To the authors' knowledge, no earlier study reports class-level collection performance or the concentration of payments among students. [Verify this claim with a Scopus / Web of Science search before submission.]

Table 1. Conceptual alignment between the literature and the indicators

Construct	Key sources	Operationalised in this study
Information and answerability	Bovens (2007); Romzek & Dubnick (1987); Fox (2007); Meijer (2013)	Dashboard totals, progress ratio, and counts of students who have and have not paid
Limits of disclosure	Hood (2010); Bauhr & Grimes (2014); Grimmelikhuijsen & Meijer (2014)	Reading progress alongside a forum and follow-up, not as disclosure alone
Accountability in small voluntary bodies	Ebrahim (2003); Gray et al. (2006); Benjamin (2008); Cordery & Baskerville (2011)	Class fund treated as a small voluntary arrangement with a treasurer and parent forum
Contribution behaviour	Olson (1965); Ostrom (1990, 2010); Fehr & Gächter (2000); Fischbacher et al. (2001)	Concentration share and Gini lower bound of installments paid
Parent engagement and reminders	Hoover-Dempsey & Sandler (1997); Kraft & Rogers (2015); Karlan et al. (2016); Damgaard & Nielsen (2018)	Recommendation of targeted, low-cost follow-up for students furthest behind
Spreadsheet and dashboard reliability	Powell et al. (2008); Yigitbasioglu & Velcu (2012)	Recomputation of dashboard percentages from first principles

Note. Sources are listed in the References section.

METHODOLOGY

The study uses a descriptive quantitative case study design (Creswell & Creswell, 2018), summarised in Figure 1. The case is Class X-8 of SMA Negeri 2 Surabaya in the 2026/2027 academic year, with 36 active students. Three payment schemes are administered. School committee contributions are scheduled as 10 installments of Rp270,000 per student. The ODL savings scheme [author: spell out "ODL"] is scheduled as 10 installments of Rp130,000 per

student. The class cash fund is Rp100,000 per student per month for 10 months, from August 2026 to May 2027.

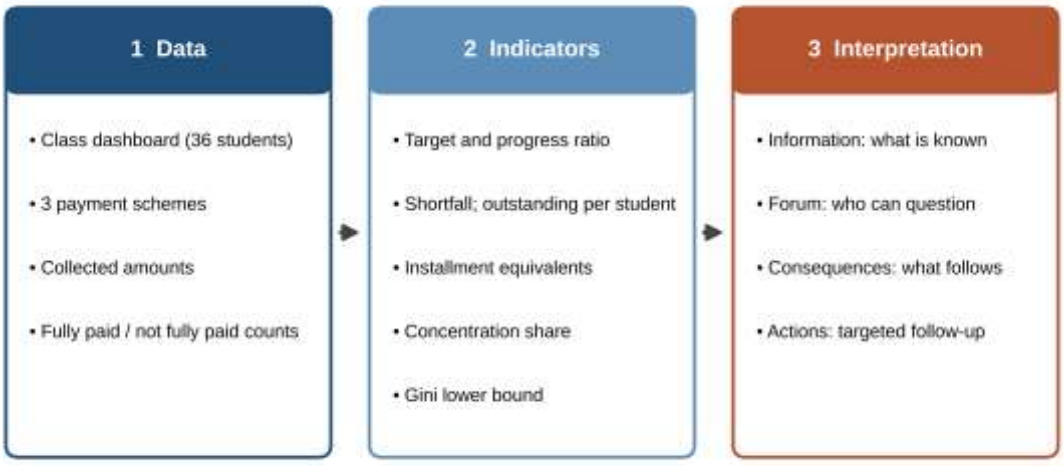


Figure 1. Analytical framework: from dashboard data to indicators and interpretation.

Data were taken from the dashboard sheet of the workbook "Administrasi Keuangan X-8", which the class treasurer maintains. Payments are entered manually in designated cells and all other cells, including the dashboard, are filled by formulas. The dashboard was accessed on 18 October 2026. Only aggregate figures were used (amount collected, number of fully paid students, number of students not fully paid, and the reported progress percentage); no individual records or names were used.

Seven indicators were computed (Table 2). Targets were derived from the schedule, and the progress percentages reproduced by this calculation match those reported by the dashboard (31.9%, 40.0%, and 38.1%), which serves as a consistency check on the workbook's formulas. The calculations assume that "fully paid" means all 10 installments have been settled. The Gini lower bound uses a two-segment Lorenz curve: students are ordered from least to most paid, the not-fully-paid students are treated as one group paying their mean, and fully paid students as another. Because within-group variation among the not-fully-paid students can only increase inequality, the resulting value is a minimum.

Table 2. Indicators, formulas, and interpretation

Indicator	Formula	Reading
Target	Students × installments × amount	Scheduled total for the academic year
Progress ratio	Collected ÷ target × 100%	Share of the schedule collected
Shortfall	Target − collected	Amount still to be collected

Indicator	Formula	Reading
Installments paid (equivalent)	Collected ÷ installment amount	Collected amount expressed in installments
Concentration share	(10 × fully paid students) ÷ installments paid (equivalent)	Share of installments supplied by fully paid students
Outstanding per not-fully-paid student	Shortfall ÷ students not fully paid	Average amount still owed per student who has not completed the schedule
Gini lower bound	1 − 2 × area under two-segment Lorenz curve	Minimum inequality of installments paid, given only group totals

Note. All indicators are computed from aggregate dashboard figures.

Because the data are class-level aggregates about minors' families, the manuscript reports no information that identifies individual students or parents. Permission from the school and the class parent community should be obtained before publication.

RESEARCH RESULT

Table 3 summarises collection performance. Across the three schemes, Rp63,470,000 had been collected against a scheduled Rp180,000,000, an overall progress of 35.3% and a shortfall of Rp116,530,000. Progress was highest for the ODL savings scheme (40.0%), followed by class cash (38.1%) and school committee contributions (31.9%), in line with expectations E1 and E3. The number of students who had paid in full was 10, 11, and 10 of 36 for the three schemes respectively. Figure 2 shows the same pattern graphically.

Table 3. Collection performance by payment scheme, Class X-8, 2026/2027

Scheme	Amount (Rp)	Target (Rp)	Collected (Rp)	Shortfall (Rp)	Progress	Fully paid	Not fully paid
School committee contributions	270,000	97,200,000	31,050,000	66,150,000	31.9%	10	26
ODL savings	130,000	46,800,000	18,720,000	28,080,000	40.0%	11	25
Class cash	100,000	36,000,000	13,700,000	22,300,000	38.1%	10	26
All schemes	**–**	**180,000,000**	**63,470,000**	**116,530,000**	**35.3%**	**–**	**–**

Note. Targets are derived as 36 students × 10 installments × installment amount. Collected amounts, fully paid counts, and progress percentages are from the class dashboard.

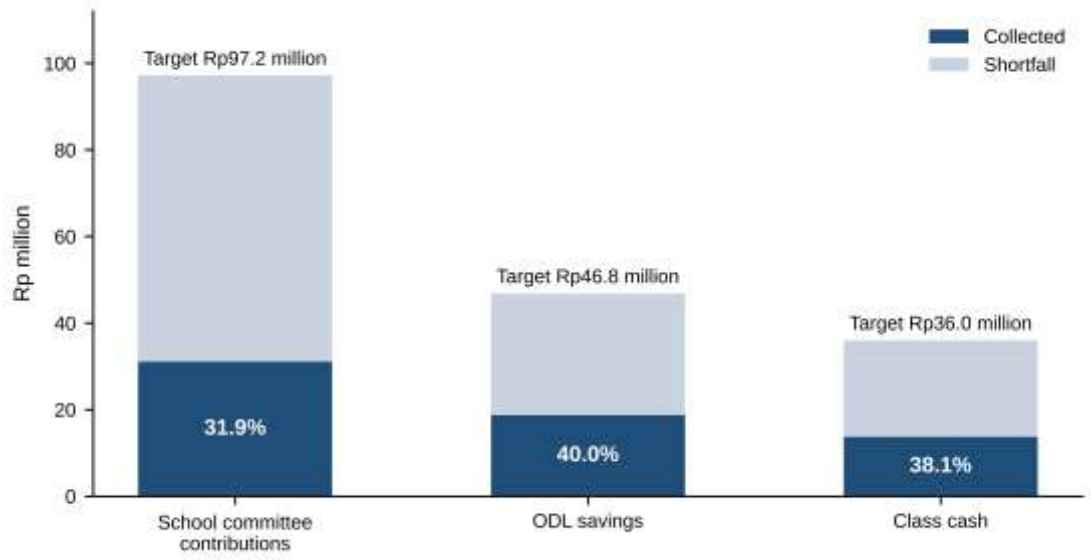


Figure 2. Collected amount and shortfall against target, by payment scheme (Rp million).

Table 4 converts the collected amounts into installment equivalents. On average a student had paid 3.19 of 10 school committee installments, 4.00 of 10 ODL installments, and 3.81 of 10 class cash installments. If fully paid students settled all 10 installments, they account for 100 of the 115 committee installments (87.0%), 110 of the 144 ODL installments (76.4%), and 100 of the 137 class cash installments (73.0%). The remaining students, 25 or 26 per scheme, therefore paid on average 0.58, 1.36, and 1.42 installments respectively (Figure 3), which supports E2.

Table 4. Installment equivalents and concentration of payments

Scheme	Installments paid (equivalent)	Mean per student (of 10)	From fully paid students	Share from fully paid students	Mean per other student
School committee contributions	115	3.19	100	87.0%	0.58
ODL savings	144	4.00	110	76.4%	1.36
Class cash	137	3.81	100	73.0%	1.42

Note. Installments paid (equivalent) = collected ÷ installment amount. Calculations assume that fully paid students have settled all 10 installments.

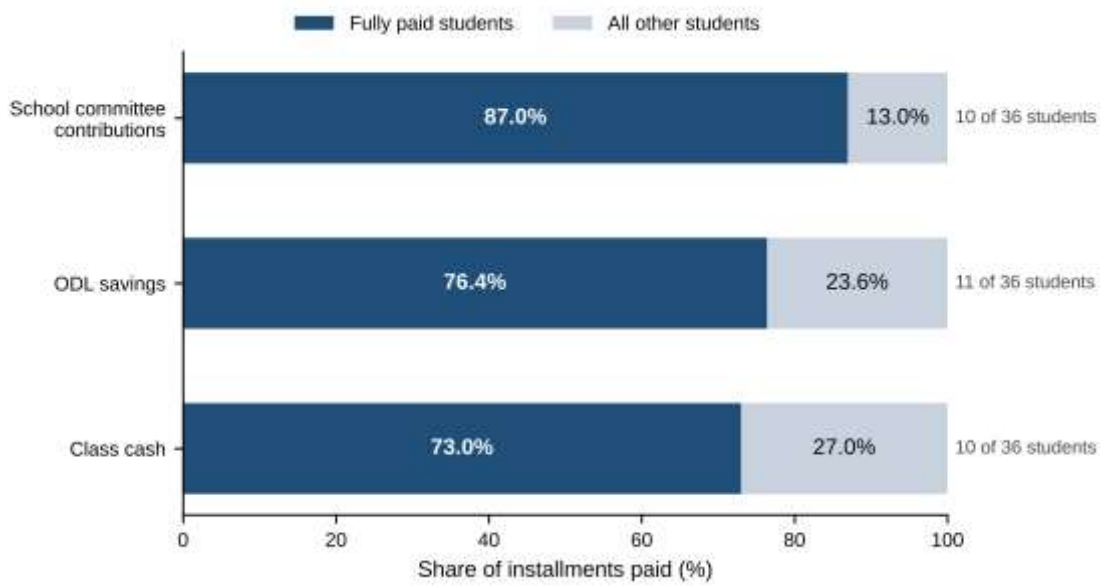


Figure 3. Share of installments paid by fully paid students and by all other students.

Table 5 shows what the concentration means for the students who have not completed a schedule. On average each such student still owed Rp2,544,231 in committee contributions (9.42 installments, 94.2% of the full-year obligation), Rp1,123,200 in ODL savings (86.4%), and Rp857,692 in class cash (85.8%). The Gini lower bounds were 0.59, 0.46, and 0.45, so inequality in installments paid was at least moderate in every scheme and highest for school committee contributions (Figure 4).

Table 5. Outstanding obligation and minimum inequality of installments paid

Scheme	Shortfall (Rp)	Outstanding per not-fully-paid student (Rp)	In installments	% of full-year obligation	Gini lower bound
School committee contributions	66,150,000	2,544,231	9.42	94.2%	0.59
ODL savings	28,080,000	1,123,200	8.64	86.4%	0.46
Class cash	22,300,000	857,692	8.58	85.8%	0.45

Note. Outstanding per not-fully-paid student = shortfall ÷ students not fully paid. Gini lower bound from a two-segment Lorenz curve.

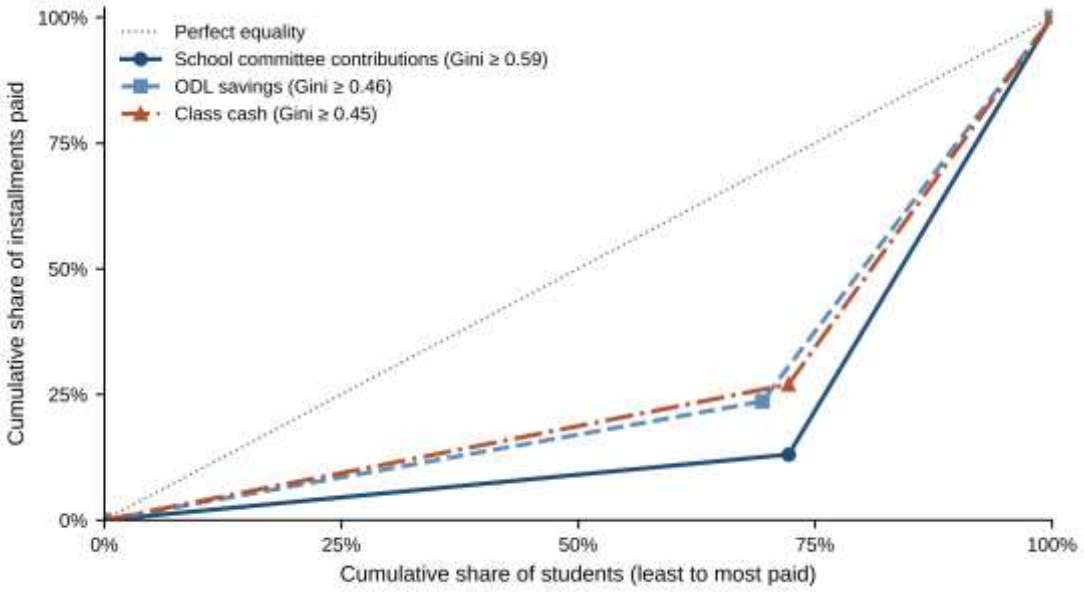


Figure 4. Minimum concentration of installments paid (two-segment Lorenz curves). True curves lie further from equality.

DISCUSSION

The first finding is that, at the time of the snapshot, the class had collected a little over one third of the amount scheduled for the year. School committee contributions had the lowest progress and also the largest installment, whereas the cheapest scheme, class cash, performed better. This is consistent with payment being sensitive to installment size, but the data cannot test that explanation and other factors, such as how each scheme was communicated, may contribute.

The second and more informative finding is concentration. Most installments received came from the roughly 28% to 31% of students who had already paid in full, while the other students had paid, on average, fewer than 1.5 installments. This is the pattern one would expect if contributions are conditional on what others do (Fischbacher et al., 2001) and if collective-action problems are not managed by shared rules (Olson, 1965; Ostrom, 2010). The shortfall is therefore not a mild, uniform lateness shared by every family; it sits with a subset of students. One caution applies: students counted as fully paid may be families who prepaid the whole schedule, so the pattern may reflect early lump-sum payment rather than steady compliance. Either way, the implication for administration is the same.

In terms of accountability, the dashboard already meets the information element described by Bovens (2007): totals, progress, and the numbers of students who have and have not paid are available in one place. The other two elements, a forum that can question the treasurer and consequences that follow, depend on how the figures are used. This echoes the argument that disclosure by itself does not produce accountability (Fox, 2007; Hood, 2010; Bauhr & Grimes, 2014) and the school-level evidence that accountability and transparency are linked to committee participation (Christian, 2023). Regular reporting to parents

also supports trust in small voluntary bodies (Cordery & Baskerville, 2011; Ebrahim, 2003).

For practice, the concentration result suggests directing effort at the students furthest behind. Evidence that reminders and parent communication change behaviour (Karlan et al., 2016; Kraft & Rogers, 2015; Damgaard & Nielsen, 2018) supports targeted, low-cost follow-up, and Hoover-Dempsey and Sandler (1997) suggest that invitations and clear expectations matter for parents' decisions. Because committee contributions are framed as voluntary assistance (Kementerian Pendidikan dan Kebudayaan Republik Indonesia, 2016), follow-up should be supportive and flexible, such as adjusting the installment schedule, rather than punitive.

CONCLUSIONS AND RECOMMENDATIONS

Class X-8 had collected 35.3% of the scheduled Rp180 million across three schemes, with progress ranging from 31.9% for school committee contributions to 40.0% for ODL savings. Between 73% and 87% of installments received came from students who had paid in full, and the Gini lower bounds (0.45 to 0.59) show that the shortfall is concentrated in a subset of students rather than spread evenly.

Four recommendations follow. First, direct reminders and personal follow-up at students who have paid few or no installments, instead of broadcasting to the whole class. Second, offer flexible installment schedules, especially for the largest scheme, consistent with its voluntary nature. Third, share aggregate progress with parents at regular intervals, without naming individuals. Fourth, complete the accountability loop by adding expenditure data from the cash book and budget plan to the same dashboard, so that parents can see both what has been collected and how it has been used.

ADVANCED RESEARCH

This study has several limitations. It covers one class and a single snapshot, and the dashboard does not state a cut-off date, so progress ratios should be read against the payment calendar. It uses aggregate dashboard figures only and does not analyse expenditure, so efficiency and the use of funds are not assessed. The treatment of "fully paid" as all 10 installments is an assumption, and the Gini values are lower bounds. Future research could follow several classes over the whole academic year, use student-level data under appropriate ethical safeguards, add interviews with parents on reasons for non-payment, test reminder interventions, and examine expenditure against the budget plan.

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