



Competency-Based Assessment and Curriculum Delivery in Technical and Vocational Education and Training Institutions in Kajiado County, Kenya

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Abstract

Competency-based assessment (CBA) has become an important component of Technical and Vocational Education and Training (TVET), supporting the alignment of assessment with occupational competencies and intended learning outcomes. However, evidence on how CBA implementation translates into effective curriculum delivery remains limited, particularly in county-level TVET contexts. Kajiado County's expanding TVET sector supports skills development in a rapidly changing local economy, while institutions respond to various learner needs and labour-market demands. This study therefore examined the influence of CBA on curriculum delivery in TVET institutions in Kajiado County, Kenya. Anchored in Constructivist Learning Theory, the study adopted a mixed-methods explanatory sequential design, drawing a sample of 100 participants from a target population of approximately 2,000 TVET stakeholders using purposive and stratified random sampling techniques. Data were collected from 20 academic administrators, 30 lecturers, 30 students (achievement tests and focus group discussions), and document analysis across five TVET institutions. Descriptive statistics (means, standard deviations), one-sample t-tests, and thematic analysis were employed. Administrators rated CBA integration positively (composite mean = 3.41; Q1 mean = 3.77, $t(19) = 4.678$, $p < .001$), with curriculum alignment emerging as the dominant integration strategy (40.0%). However, monitoring and evaluation mechanisms were



rated neutral and not significantly different from the midpoint (mean = 2.93, $t(19) = -0.360$, $p = .722$). Focus group participants perceived curriculum alignment as only partial (43.3%), and document analysis revealed moderate compliance for curriculum guides (0.73) and assessment rubrics (0.60). The study concludes that while CBA has been meaningfully embedded through curriculum alignment and staff training, weak monitoring systems and inconsistent rubric application constrain its influence on curriculum delivery. Strengthening monitoring frameworks, instructor professional development, and rubric standardization is recommended.

Keywords: Competency-Based Assessment, Curriculum Delivery, TVET Institutions, Kajiado County, Kenya

Introduction

Education systems globally have undergone significant transformation, shifting from content-based instruction toward outcomes-based learning and competency-based training, particularly in vocational education (Dambudzo, 2018). Technical and Vocational Education and Training (TVET) institutions are instrumental in equipping learners with practical, market-relevant skills aligned with industrial needs (Niyonasenze et al., 2025). At the core of Competency-Based Education and Training (CBET) lies Competency-Based Assessment (CBA) a system designed to evaluate learners based on their ability to apply theoretical knowledge and practical skills in real-world contexts, using performance tasks, practical demonstrations, and industry-aligned rubrics rather than relying solely on written examinations (Akunda, 2024; Tekle et al., 2025b).

The key assertion of these reforms is that assessment does not merely measure learning; it shapes it. In assessment theory, this phenomenon is known as washback: the extent to which assessment determines what is taught, how it is taught, and what learners regard as worth learning (Alderson & Wall, 1993). Shepard (2000) demonstrated that when assessment is restructured to be authentic and criterion-referenced, it can pull pedagogy toward active, learner-centred instruction, whereas examination-dominated systems pull pedagogy toward rote memorization. CBA therefore constitutes not only an evaluation technology but a potential lever for re-engineering curriculum delivery in TVET institutions (Onyango, 2023).

In Kenya, the adoption of CBET and CBA has been driven by national education reforms aimed at addressing youth unemployment and the persistent mismatch between training outcomes and labour market demands. Institutions such as the Curriculum Development, Assessment and Certification Council (CDACC) and the Kenya National Qualifications Authority (KNQA) have developed frameworks to support competency-based learning and assessment, aligned with Kenya Vision



2030 and Sustainable Development Goal 4 (SDG 4) (Moustafa, 2024; Onyango, 2023). TVET enrolment has expanded rapidly, exceeding half a million trainees (Kenya National Bureau of Statistics [KNBS], 2023), and CBET is now the mandatory pathway for new intakes (Jwan, 2022). These reforms envision TVET institutions as the primary force for transforming the country's socio-economic context (Jwan, 2022; Republic of Kenya, 2013).

Despite this policy momentum, empirical evidence from Kenyan institutions shows that the transformative promise of CBA for curriculum delivery remains only partially realized. At the Nyeri National Polytechnic an early and relatively well-resourced CBET adopter Kibet et al. (2025) found that 38.9% of assessment activity still relied on traditional written methods, and competence was evaluated only once during the entire training period. Similarly, Moindi and Nyatuka (2022), in a study of 412 trainees across three Kenyan TVET institutions, found that written examinations remained the most-used assessment method. Institutional preparedness studies report parallel deficits in instructor readiness, infrastructure, and monitoring systems (Munene, 2023; Onyango, 2023). Persistent challenges including weak alignment between assessment activities and industry requirements, overreliance on summative evaluations, limited formative feedback, and inadequate collaboration with industry stakeholders have hindered the realization of CBA's full potential. Crucially, the washback literature predicts that when assessment practice drifts from competency-based design, curriculum delivery drifts with it (Shepard, 2000); thus, uneven CBA implementation is not only an assessment problem but a curriculum delivery problem.

In Kajiado County, where institutions such as Maasai National Polytechnic are still navigating early implementation cycles, there is limited empirical evidence on how CBA actually shapes curriculum delivery at the institutional level. Existing Kenyan studies are either national in scope and policy-focused (Jwan, 2022; Moustafa, 2024), concentrated in single flagship institutions (Kibet et al., 2025), or focused on assessment methods rather than on curriculum delivery as the outcome (Moindi & Nyatuka, 2022). County-level evidence that triangulates administrators, lecturers, students, and institutional documents capable of distinguishing alignment-on-paper from delivery-in-practice is lacking. This knowledge gap motivated the present study, which provides a localized perspective on how CBA is operationalized and how it influences what is taught, how it is taught, and how curriculum fidelity is maintained in Kajiado County TVET institutions.

Accordingly, the purpose of this study was to examine how competency-based assessment influences curriculum delivery across selected TVET institutions in Kajiado County, Kenya, guided by the research question: How does CBA influence curriculum delivery across TVET institutions in Kajiado County?



Literature Review

Theoretical Framework

This study was guided by Constructive Alignment Theory (CAT), developed by Biggs (1996). The theory proposes that effective teaching and learning occur when intended learning outcomes, teaching and learning activities, and assessment tasks are systematically aligned. Learners construct knowledge through active engagement, while teachers design learning activities and assessments that correspond directly with the competencies learners are expected to achieve (Biggs, 1996; Biggs & Tang, 2011).

CAT is appropriate for this study because competency-based assessment (CBA) requires assessment tasks to measure the knowledge, skills, and performance specified in curriculum outcomes. In TVET, effective alignment means that curriculum objectives should determine instructional activities, while CBA should provide evidence that learners have attained the specified competencies. Consequently, the theory provides a direct basis for examining how CBA practices relate to curriculum delivery, particularly curriculum alignment, teaching strategies, practical learning, assessment practices, and feedback.

The theory has, however, attracted criticism. Critics argue that its strong focus on predetermined learning outcomes can make curriculum design overly prescriptive and may restrict alternative pedagogies, learner agency, and forms of learning that are difficult to express through predefined outcomes (Colding, 2020; Newby & Cornelissen, 2025). Another concern is that alignment can become a compliance exercise, where institutions concentrate on matching documents, activities, and assessment tools rather than improving actual learning. The theory may also give greater attention to measurable cognitive outcomes than affective, creative, or interdisciplinary forms of learning (Colding, 2020). Despite these limitations, CAT remains appropriate for this study because its central concern such as coherence among learning outcomes, instructional activities, and assessment directly corresponds to the implementation of CBA and curriculum delivery in TVET.

Empirical Review

Internationally, mature systems illustrate the benchmark against which Kenyan practice can be evaluated. Germany's dual vocational education system combines classroom learning with industry-based evaluation, reliably measuring transferable competencies and enhancing employability; Singapore's Centralized Skills Assessment and Validation Initiative (CSAVI) validates real work skills against national and industry standards through authentic, data-driven assessment; Australia's Australian Skills Quality Authority (ASQA) mandates that assessments meet principles of fairness, flexibility, validity, and reliability through standardized rubrics and validation processes; and Canada's workplace-, simulation-, and portfolio-based assessments depend on strong quality assurance and assessor



competence. Compared to these systems, Kenyan and other African CBAs have historically overemphasized cognitive knowledge, raising questions about validity and alignment with labour market needs (Akunda, 2024; Onyango, 2023).

In Ethiopia, Tekle et al. (2025a) identified institutional capacity, assessor competence, and industry participation as the key determinants of successful occupational competency assessment, finding that frameworks achieve their intended impact only when private-sector partners are formally integrated into assessment validation. Musa (2019), evaluating outcome-based accounting education in Ethiopian colleges, confirmed that OBE reforms improved alignment between training and workplace requirements but were constrained by inconsistent instructor practice. In Rwanda, Niyonasenze et al. (2025) established quality assurance as a significant driver of training quality in TVET schools, echoing Tyler insistence on systematic evaluation. In Tanzania, Mtana et al. (2019) found that trainers' weak understanding of CBET principles undermined implementation in technical colleges, while Dambudzo (2018), reviewing CBET for socio-economic transformation in Zimbabwe, documented persistent theory-practice drift in assessment. Across these studies, three patterns recur: formal policy adoption outpaces classroom implementation; instructor capacity is the binding constraint; and assessment that is not authentically practical fails to shift delivery.

Kenyan evidence is growing but remains thin at the county level. Jwan (2022) provided a comprehensive policy analysis of CBET in Kenya, identifying opportunities in national qualifications frameworks alongside challenges in capacity and resourcing. Kibet et al. (2025), in a descriptive case study of 363 respondents at Nyeri National Polytechnic, found an advanced but incomplete level of CBET implementation: trainers' pedagogical knowledge averaged 74%, reliance on traditional written assessments stood at 38.9%, and dual training participation at only 40.4%. Moindi and Nyatuka (2022), surveying 412 trainees in three TVET institutions, found that written examinations remained the most-used assessment method and that assessment method significantly affected the acquisition of entrepreneurial competencies. Miseda and Kitainge (2021) showed that instructional design processes materially shaped the quality of CBET implementation in electrical installation programs, confirming the pedagogy-assessment nexus at programme level. Preparedness studies report deficits that bear directly on curriculum delivery: Onyango (2023) found that only 29% of institutions engaged industry partners in assessment, and Munene (2023) documented limited instructor readiness for competency-based delivery. Moustafa (2024) further established that doubts about graduate quality persist despite multiple reform cycles. Notably, none of these studies examines Kajiado County, and none triangulates administrator, lecturer, student, and documentary evidence on curriculum delivery as the outcome variable.



The mechanism linking assessment to delivery is well established in general education research: examinations wash back onto teaching content, methods, and depth (Alderson & Wall, 1993), and assessment reform can either narrow pedagogy to test preparation or broaden it toward authentic learning, depending on assessment design (Shepard, 2000). In TVET specifically, Biggs (1996) alignment logic predicts that only when assessment tasks embody occupational competencies will delivery reorganize around practical skill formation. The Kenyan studies above (Kibet et al., 2025; Moindi & Nyatuka, 2022) are consistent with this prediction: where written assessment persists, practical delivery remains underdeveloped. What remains unexamined is whether this mechanism operates uniformly across less-resourced, early-implementation county contexts precisely the setting of the present study.

Hence, most studies of CBA in Kenya remain national in scope, single-institution, or assessment-focused; none provides localized, triangulated evidence on how CBA influences curriculum delivery in county institutions such as those in Kajiado.

Methodology

The study employed a mixed-methods explanatory sequential design. The quantitative strand established the level of CBA integration and its perceived influence on curriculum delivery, while the qualitative strand focus group discussions and document analysis explained and contextualized the statistical patterns.

The study targeted final-year students, lecturers, academic administrators, and industry stakeholders from TVET institutions in Kajiado County because of their direct involvement in curriculum delivery, competency-based assessment (CBA), institutional management, and workplace competency requirements. The target population comprised approximately 135 individuals. The sample size was determined using Yamane's (1967) formula for finite populations, ($n = N/[1 + N(e)^2]$), where ($N=135$) and ($e=0.10$); this yielded a minimum sample of 95 participants, which was rounded to 100 to facilitate adequate representation of the four stakeholder categories. The final sample comprised 30 final-year students, 30 lecturers, 20 academic administrators, and 20 industry stakeholders.

The sampling frame consisted of institutional records containing lists of students, teaching and administrative staff, and organisations linked to the TVET institutions. Purposive sampling was used to select lecturers, academic administrators, and industry stakeholders with relevant experience in CBA, while stratified random sampling was used to select final-year students across technical departments. Industry stakeholders were drawn from construction and civil engineering, automotive and mechanical engineering, electrical and electronics, hospitality and catering, and agriculture and agribusiness sectors, using institutional



industry-linkage records, TVET Authority (TVETA), and county records to identify relevant organisations. The combination of purposive and stratified random sampling provided informed perspectives from key CBA actors while improving the representativeness of the student sample.

Data were collected using semi-structured administrator interviews covering CBA integration, criteria for assessment design, influence on performance and curriculum delivery, and monitoring mechanisms; focus group discussions with students exploring curriculum alignment, fairness, and rubric communication; and document analysis using a structured checklist covering curriculum guides, assessment rubrics, and policy documents. Document analysis was conducted by two independent coders with inter-rater reliability assessed using Cohen's Kappa ($\kappa = 0.79$), indicating substantial agreement. All instruments were piloted, and the questionnaire achieved a Cronbach's alpha of 0.82.

Quantitative data were inserted into SPSS version 26 and analysed using descriptive statistics (means and standard deviations) and one-sample t-tests comparing responses against the neutral midpoint ($\mu = 3.0$) on a five-point Likert scale, where scores of 3.5 and above indicate agreement, 2.5–3.49 indicate neutrality, and below 2.5 indicate disagreement. Qualitative data from interviews, focus groups, and documents were analysed thematically, with themes ranked by frequency of response. Triangulation across the three data sources enhanced the validity of findings.

Results

Demographic Profile of Respondents

Table 1 summarizes the demographic profile of administrator respondents, whose institutional experience ranged from 1–5 years to above 15 years, providing a broad range of exposure to CBA implementation.

Table 1: Administrator Respondent Profile

Role	Frequency	Percentage (%)
Principal	4	20.0
Deputy Principal	5	25.0
Industry Liaison Officer (ILO)	3	15.0
Examination Officer (EO)	3	15.0
Registrar	5	25.0
Total	20	100.0

Administrator Perceptions of CBA Integration and Curriculum Delivery

Administrators rated the institutional integration of CBA positively (Q1 mean = 3.77, SD = 0.90), as did the criteria used to design and evaluate CBA activities (Q2 mean = 3.53, SD = 1.07) and the influence of CBA on student performance and



curriculum delivery (Q3 mean = 3.67, SD = 1.09). However, monitoring and evaluation mechanisms for CBA effectiveness recorded the lowest mean (Q6 mean = 2.93, SD = 1.01), falling within the neutral band, and the composite administrator mean of 3.41 sat just below the agreement threshold. These results are presented in Table 2.

Table 2: Descriptive Statistics for Administrator Perceptions of CBA Integration and Curriculum Delivery

Item	Survey Item	N	Mi n	Ma x	Mea n	SD	Interpretati on
Q1	Institutional integration of CBA	20	1	5	3.77	0.90	Agree
Q2	Criteria for designing and evaluating CBA activities	20	1	5	3.53	1.07	Agree
Q3	Influence of CBA on performance/curriculum	20	1	5	3.67	1.09	Agree
Q6	Monitoring/evaluation mechanisms for CBA effectiveness	20	1	5	2.93	1.01	Neutral
Compo site	Overall administrator composite mean	20	—	—	3.41	0.35	Neutral

One-sample t-tests against the neutral midpoint ($\mu = 3.0$) confirmed that perceptions of CBA integration ($t(19) = 4.678$, $p < .001$), criteria design ($t(19) = 2.719$, $p = .011$), and influence on performance ($t(19) = 3.340$, $p = .002$) were all significantly above neutral, while monitoring and evaluation showed no significant deviation ($t(19) = -0.360$, $p = .722$). The composite score was significantly above neutral ($t(19) = 6.414$, $p < .001$). These results, summarized in Table 3, affirm that administrators are active supporters of CBA who recognize meaningful institutional progress yet CBA is being implemented largely without systematic outcome evaluation.

Table 3: One-Sample t-Tests for Administrator Responses vs. Neutral Midpoint ($\mu = 3.0$, $n = 20$)

Note. $*p < .05$, $**p < .01$, $***p < .001$.

Item	Mea n	SD	t- stat	d f	p- value	Significan ce	Interpretation
Q1 – CBA integration	3.77	0.90	4.678	19	.0001	***	Significantly above neutral
Q2 – Criteria design	3.53	1.07	2.719	19	.0109	*	Significantly above neutral



Q3 – Influence on performance	3.67	1.09	3.340	19	.0023	**	Significantly above neutral
Q6 – Monitoring & evaluation	2.93	1.01	-0.360	19	.7216	ns	Not different from neutral
Composite score	3.41	0.35	6.414	19	.0000	***	Significantly above neutral

Strategies Used to Integrate CBA into Curriculum Delivery

Thematic analysis of administrator responses revealed four dominant CBA integration strategies. Curriculum alignment was the most frequently cited approach (40.0%), reflecting the embedding of CBA through revision of learning objectives and assessment tasks to reflect CDACC and KNQA occupational standards. Staff training (25.0%), practical workshops (20.0%), and policy adoption (15.0%) followed (Table 4). The primacy of curriculum alignment over monitoring systems suggests a policy-implementation gap

Table 4: Thematic Analysis for CBA Integration Methods (Administrator Responses)

Theme/Code	Frequency	% of Responses	Rank
Curriculum alignment	8	40.0	1
Staff training	5	25.0	2
Practical workshops	4	20.0	3
Policy adoption	3	15.0	4

Student Perceptions of Curriculum Alignment

Focus group discussions with students revealed a more qualified picture of curriculum alignment under CBA. While one-third of participants (33.3%) felt the curriculum was well aligned with CBA principles, the largest proportion (43.3%) reported only partial alignment, and 13.3% stated the curriculum was not aligned at all (Table 5). These perceptions suggest that although curriculum alignment has improved under CBA reforms, significant gaps remain particularly in the integration of practical competencies into everyday delivery.

Table 5: FGD Thematic Analysis for Curriculum Alignment

Theme	Frequency	% of Responses	Consensus Level
Partially aligned	13	43.3	High
Well aligned	10	33.3	Moderate
Not aligned	4	13.3	Low
Uncertain	3	10.0	Very low



Document Analysis for Curriculum and Rubric Compliance

Document analysis of curriculum guides, assessment rubrics, and institutional records corroborated the interview and FGD findings. Curriculum guides scored high on objective clarity (1.00) and theory-practice integration (1.00), and rubrics scored high on defined criteria (1.00) and consistent application (1.00). However, the item on whether rubrics reflect CBA standards received a moderate score (0.70), and composite compliance was moderate for both curriculum guides (0.73) and assessment rubrics (0.60) (Table 6). This indicates that while formal curriculum documents are well constructed, assessment instruments are not uniformly calibrated against CDACC competency standards.

Table 6: Document Analysis for Curriculum and Assessment Rubric Compliance (Five Institutions)

Category	Checklist Item	Mean Score	Compliance Level
Curriculum guides	Learning objectives clearly stated	1.00	High
Curriculum guides	Assessment methods align with competencies	0.90	High
Curriculum guides	Theory-practice integration evident	1.00	High
Assessment rubrics	Criteria clearly defined and measurable	1.00	High
Assessment rubrics	Rubric consistently applied across courses	1.00	High
Assessment rubrics	Rubric reflects CBA standards	0.70	Moderate
Composite	Curriculum guides (3 items)	0.73	Moderate
Composite	Assessment rubrics (3 items)	0.60	Moderate

Lecturer Perspectives on CBA and Curriculum Delivery

Lecturer questionnaire data reinforced the administrator findings. Lecturers agreed that their institutions had adopted CBA ($M = 3.70$, $SD = 0.88$) and, most strongly, that assessment activities were relevant to curriculum content ($M = 3.90$, $SD = 0.80$). However, neutral ratings on students' orientation to CBA ($M = 3.27$, $SD = 0.91$) and on whether assessment covers practical and soft skills ($M = 3.30$, $SD = 0.88$) indicate inconsistencies in how CBA is operationalized across classrooms (Table 7).



Table 7: Implementation of CBA: Lecturer Responses

Item	Statement	N	Mean	SD	Interpretation
Q5	My institution has adopted CBA	30	3.70	0.88	Agree
Q6	I clearly understand the objectives of CBA	30	3.47	1.01	Neutral
Q7	Assessment activities are relevant to curriculum content	30	3.90	0.80	Agree
Q8	Students given adequate orientation on CBA	30	3.27	0.91	Neutral
Q9	Assessment covers practical and soft skills	30	3.30	0.88	Neutral

Discussion

The findings reveal a dual reality of progress and constraint in how CBA influences curriculum delivery in Kajiado County. On one hand, the evidence confirms meaningful institutional adoption: administrators' ratings of integration, criteria design, and performance influence were all significantly above the neutral midpoint, curriculum alignment emerged as the dominant integration strategy, and lecturers strongly affirmed the relevance of assessment activities to curriculum content. These results align with Joseph (2021), who notes that CBA reforms in Kenyan TVET were intended to embed practical skill acquisition into curriculum delivery, and with Tekle et al. (2025b), who demonstrated that structured competency frameworks enhance the quality of vocational training when properly executed.

On the other hand, the neutral rating and non-significant t-test result for monitoring and evaluation mechanisms (mean = 2.93, $p = .722$) constitute the study's most consequential finding for curriculum delivery. Tyler's Model of Curriculum Evaluation holds that systematic review of outcomes against goals is indispensable for curriculum fidelity; without such monitoring, curriculum delivery cannot be iteratively adjusted to remain aligned with objectives (Cikka et al., 2022; Joseph, 2021). The apparent imbalance—institutions prioritizing compliance with national frameworks over the development of internal monitoring systems—mirrors Moustafa's (2024) finding that a majority of Kenyan TVET institutions lack systematic ways of assessing training outcomes. One plausible explanation is that resource constraints, rather than lack of commitment, limit institutions' capacity to establish robust monitoring systems; alternatively, institutions may treat alignment-on-paper as sufficient evidence of implementation.

The convergence of student perceptions (43.3% reporting only partial curriculum alignment) and document analysis findings (rubric-CBA standard calibration at 0.70) corroborates this policy-implementation gap from the demand side of the classroom. From a constructivist standpoint, the absence of formative



monitoring undermines assessment's role as an active learning tool, reducing it to a summative checkpoint (Hoidn & Reusser, 2020). Similarly, FGD participants reported that assessment rubrics were only partially communicated (46.7%), reflecting the transparency deficits that assessment theory identifies as a threat to validity and fairness (Bhandari, 2025; Musa, 2019). One-way ANOVA results confirming no significant differences across institutions ($F(2,17) = 0.863, p = .433$) indicate that these delivery challenges are systemic rather than institution-specific, requiring coordinated county- and national-level response (Onyango, 2023).

Conclusion

The study concludes that competency-based assessment has exerted a positive and statistically significant influence on curriculum delivery in TVET institutions in Kajiado County, primarily through curriculum alignment with CDACC and KNQA occupational standards, staff training, and practical workshops. Administrators, lecturers, and curriculum documents all attest to meaningful integration. However, the influence of CBA on curriculum delivery remains constrained by underdeveloped monitoring and evaluation mechanisms, moderate rubric calibration against CBA standards, inconsistent rubric communication, and residual theory-heavy delivery gaps that are systemic in nature. The study affirms that CBA's transformative potential for curriculum delivery will only be fully realized when alignment-on-paper is matched by robust monitoring, standardized rubrics, and sustained instructor capacity development.

Recommendations

First, national bodies including CDACC, KNQA, and TVETA should strengthen monitoring and evaluation frameworks for CBA by developing standardized monitoring instruments, mandating periodic audits of CBA practices, and providing digital platforms for tracking assessment outcomes against occupational standards. Second, TVET institutions should standardize assessment rubrics against CDACC competency standards and institutionalize their communication to students at the start of every course unit, addressing the transparency deficits identified in focus group discussions and document analysis. Third, mandatory continuous professional development in CBA design, rubric application, and formative assessment should be established for all TVET instructors, with certification requirements administered through TVETA and CDACC. Fourth, because the identified challenges are systemic, county-level coordination structures should be established to pool resources, share best practices, and harmonize CBA implementation across institutions rather than expecting institution-by-institution solutions. Future studies should investigate how differences in instructor assessment literacy, institutional assessment culture, and industry participation shape the



consistency and quality of CBA implementation across TVET institutions and occupational disciplines.

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