CONSTRUCTION

Workforce Retention and Employee Attrition in Private Construction Firms in Delta State, Nigeria

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Published November 2026

Abstract

Workforce continuity is important to construction productivity, workmanship, occupational safety and project delivery, yet project-based employment can expose workers to unstable earnings and uncertain continuity. This study examined workforce retention and employee attrition in private construction firms in Delta State, Nigeria. A cross-sectional questionnaire survey was conducted in 93 firms. Of 930 questionnaires distributed, 889 were returned and retained (response rate 95.6%). In the respondent-record aggregates, voluntary-exit ratios were highest among unskilled/casual workers (16.54%), followed by skilled craftsmen (11.69%) and professional/management personnel (5.02%); attrition ratios were 17.04%, 12.27% and 5.11%, and retention ratios 77.37%, 85.47% and 94.28%. Perceived causes of attrition were not rated equally (Friedman $\chi^2(15) = 1{,}297.73$, $p < 0.001$). Low wages (mean = 3.86) and project-related job insecurity (3.79) formed a leading tier that did not differ significantly from each other, and both were rated above late or irregular wage payment (3.65), limited promotion (3.64) and better offers elsewhere (3.58). The 14 reported retention practices were moderately present (means 3.12–3.21) and could not be statistically distinguished from one another ($\chi^2(13) = 11.75$, $p = 0.548$). Retention-practice ratings did not differ by firm size or firm age (Kruskal-Wallis, all adjusted $p = 1.00$). Because respondents were nested within firms and the coded records contain no firm identifier, workforce ratios are respondent-record aggregates and test results are indicative; they must not be read as firm-level or state-wide estimates. The study provides descriptive and exploratory evidence on workforce management and identifies priorities for firm-linked longitudinal research.

Keywords: Workforce retention; employee attrition; construction firms; workforce stability; Delta State; Nigeria

1 Introduction

The construction industry contributes to economic development through housing, infrastructure, commercial buildings and industrial facilities. Its capacity to deliver projects depends not only on finance, materials and technology but also on a stable workforce of professionals, supervisors, skilled craftsmen and general workers. When experienced employees leave, firms may lose practical knowledge, incur recruitment and induction costs, weaken team coordination and experience delays or reduced quality. Workforce retention is therefore both an operational and a human-resource concern.

Construction employment is frequently organised around projects, contracts and changing site requirements. Workers may face uncertainty when projects are completed, delayed or suspended, particularly where firms cannot provide continuous employment or predictable payment between projects. Employees may consequently move to other contractors in search of higher wages, timely salaries, safer conditions, welfare benefits or career progression. The consequences may differ by

occupational group: professional and management roles may be required across several projects, whereas demand for skilled and casual labour fluctuates more directly with construction stages.

Recent construction research confirms that employee turnover is multidimensional. A systematic review of 77 studies grouped its drivers into personal, job-related, organizational and external influences, and classified consequences at individual, project and organizational levels (Abdolmaleki et al., 2024). More recent empirical studies have examined training, work-family conditions, organizational support and workforce sustainability. Yao et al. (2025) examined training and turnover intentions among frontline construction workers, while Kalhoro et al. (2025) reported associations between work-family conflict, perceived organizational support and turnover intention among construction professionals.

Nigerian studies have identified compensation, incentives and management practices as relevant to construction employee turnover (Moemena et al., 2020), reported moderate employee satisfaction among Niger Delta construction firms (Otali & Ekung, 2020), and documented skilled-craftsman shortages in small and medium firms (Bilau et al., 2015). However, these studies do not jointly describe actual workforce movement across occupational groups, workers' ranking of competing causes of leaving, and the extent of retention practices in the same sample of private contractors in Delta State, nor do they test whether the ranking of causes is statistically distinguishable.

The present study addresses that gap. It combines (i) reported workforce movement for professional/management, skilled and unskilled/casual workers, (ii) a profile of participating firms, (iii) respondents' ratings of sixteen possible causes of attrition, tested for rank differences and against the scale midpoint, and (iv) respondents' ratings of fourteen retention practices, compared across firm size and age. Respondent-record summaries show voluntary-exit ratios of 16.54% among unskilled/casual workers, 11.69% among skilled craftsmen and 5.02% among professional/management personnel. These ratios are pooled respondent-record aggregates because several respondents may have reported figures for the same firm, so they describe the submitted records and cannot be treated as unique employee totals or firm-average rates. The study does not claim causal effects from a cross-sectional survey.

1.1 Aim and objectives

The aim of the study is to examine workforce retention and employee attrition in private construction firms in Delta State, Nigeria. The specific objectives are to:

1. Describe reporteD workforce exits anD retention across professional/management, skilleD-craft anD unskilleD/casual occupational groups;
2. Profile ParticiPating firms by firm age and emPloyee-size category;
3. IdentIfy and rank the perceIved causes of workforce attrItIon and test whether the rankIng Is statIstIcally dIstInguIshable; and
4. Assess the retention prActices reported by respondents And whether they differ by firm size And firm Age.

2 Literature review

2.1 Conceptual review

Employee retention refers to organizational efforts and employment conditions that encourage employees to remain with an employer. It includes fair compensation, reliable payment, supportive supervision, safe working conditions, welfare provisions, training and opportunities for career progression. Kossivi et al. (2016) identify employee-retention determinants across organizational and individual domains. In construction, retention must also be considered in relation to project cycles, temporary work arrangements, changing site locations and fluctuating labour demand.

Employee attrition describes the reduction in an organization's workforce over a specified period through employee exits. For analytical clarity, voluntary resignation should be distinguished from other exits such as retirement, death or long-term illness, and from employer-initiated dismissals or layoffs. The present study follows this distinction: its attrition ratio comprises voluntary exits plus other exits, while dismissals/layoffs are presented separately.

Turnover intention is not identical to actual turnover. It captures an employee's stated inclination to leave, whereas an exit ratio is calculated from recorded departures relative to a specified workforce denominator. This study reports workforce movement ratios from respondent-record data and perceived causes from questionnaire ratings; it does not track individual intentions longitudinally.

2.2 Empirical review

Nigerian evidence provides a relevant foundation. Moemena et al. (2020) examined employee turnover in quoted construction companies in South-West Nigeria and identified management practices, incentives and employee treatment as relevant. Otali and Ekung (2020), studying construction firms in the Niger Delta, reported moderate employee satisfaction. Bilau et al. (2015) documented the skilled-craftsman shortage affecting Nigerian small and medium construction firms and linked it to productivity, work quality, project duration and firm performance. These studies show why workforce stability is a practical concern for Nigerian contractors, although their settings and outcome measures differ from the present survey.

International synthesis has broadened the understanding of construction turnover. Ayodele et al. (2020) reviewed 53 studies and grouped turnover influences into job-related, external-industry, company-related and individual factors. Abdolmaleki et al. (2024) reviewed 77 papers, identified 51 drivers and noted that consequences occur at individual, project and organizational levels. This body of work supports a multidimensional approach rather than treating pay as the only determinant. A limitation of much of this literature is that drivers are often listed or grouped without testing whether some are rated reliably higher than others; the present study addresses this by ranking and testing perceived causes.

Recent empirical research highlights training and support. Yao et al. (2025) studied frontline construction workers and examined whether training can reduce turnover intentions, while reminding researchers that intentions are not verified exits. Kalhoro et al. (2025), using data from construction professionals in China, found that work-family conflict was positively associated with turnover intention, while perceived organizational support and work-family enrichment were negatively associated with it. Gbiengua et al. (2026) examined sustainability attributes among construction fieldworkers and reported that nurturing, diversity, equity, health and well-being, and connectivity were associated with lower attrition intentions. A Nigerian study by Majekodunmi et al. (2026), con-

ducted in one engineering company, considered change management and retention and emphasized training, allowances and workplace safety; its single-organization design limits generalisation.

The reviewed evidence points to a gap: the need to examine workforce movement across occupational groups alongside the ranked perceived causes of attrition and the retention practices reported in private construction firms in Delta State. The study does not claim to be representative of every contractor in the state, because workforce records are pooled across respondents and firm identifiers were not retained.

2.3 Theoretical framework: Social Exchange Theory

Social Exchange Theory, associated with Blau (1964), proposes that social and employment relationships are sustained through reciprocal exchanges. Employees are more likely to remain when they perceive fair treatment, organizational support and a reasonable return for their contribution. Competitive remuneration, timely payment, safe working conditions, welfare provisions and development opportunities can signal that an organization values its workforce; irregular wages, insecure employment and limited progression may weaken perceived reciprocity and encourage employees to seek alternatives.

The theory is relevant to construction because the exchange is shaped by project cycles, contract duration, site location and labour-market conditions as well as by organizational treatment. A firm may value its employees yet face cash-flow constraints between projects. The theory also yields a testable expectation for this study: if reciprocity concerns drive exits, then the pay and continuity items should be rated higher than welfare or working-condition items. Section 4.3 tests that expectation. Figure 1 presents the conceptual framework; it guides descriptive interpretation and does not imply causal effects.

The conceptual framework guiding the study is shown in Figure 1.

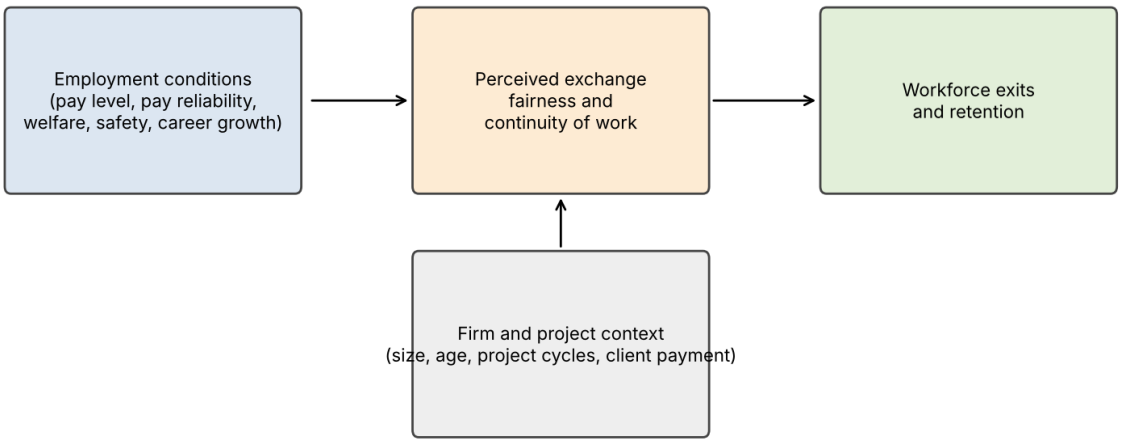


Figure 1. Conceptual framework guiding the study (authors' synthesis, informed by Social Exchange Theory).

3 Methodology

3.1 Research design and study area

A quantitative, cross-sectional questionnaire survey collected information on firm characteristics, workforce movement, perceived causes of attrition and reported retention practices. The study covered private construction firms operating in Delta State, Nigeria, including firms undertaking building and related construction activities. A cross-sectional design is appropriate for describing workforce conditions reported during the survey period; it does not establish temporal order or causal effects.

3.2 Population, sample and response accounting

The study initially selected 100 private construction firms, of which 93 were reached and participated. Ten questionnaires were distributed in each participating firm, giving 930 questionnaires; 889 were returned and retained and 41 were not returned, a response rate of 95.6% (889/930). Participating firms remained anonymous.

The sample accounting is summarised in Table 1.

Table 1. Sample accounting.

Sample accounting item	Number
Private construction firms selected	100
Firms successfully reached	93
Questionnaires distributed (93 × 10)	930
Questionnaires returned and retained	889
Questionnaires not returned	41
Questionnaire response rate	95.6%

The unit of response was the individual respondent, and firms were the organisational settings in which respondents were recruited. Because up to ten questionnaires were distributed within each firm, the 889 records are nested within 93 firms rather than representing 889 independent firms. The coded records contain unique questionnaire IDs but no firm identifier; firm-level variables (age, size, zone, work type, clients, registrations) produce 646 distinct combinations and IDs are not assigned in firm blocks, so firms cannot be reconstructed. Respondent-level ratings are therefore analysed as questionnaire responses, while pooled workforce totals are respondent-record aggregates.

3.3 Instrument and data collection

The structured questionnaire comprised sections on firm profile (A), workforce movement (B), respondent characteristics (C), perceived causes of attrition (D, 16 items), retention practices (E, 14 items), perceived effects of workforce instability and productivity (F, 10 items) and open-ended comments (G). The workforce section requested opening headcount, staff joining, voluntary exits, other exits (retirement, death or long-term illness), dismissals/layoffs and closing headcount for each of three staff groups over a 12-month reference period, and whether figures came from records or estimates. Perceived causes were rated on a five-point agreement scale (1 = strongly disagree to 5 =

strongly agree) and retention practices on a five-point extent scale (1 = not at all to 5 = very large extent).

3.4 Measurement and data analysis

Workforce movement was summarized separately for each staff group. Ratios were calculated as: voluntary-exit ratio = (voluntary exits ÷ opening headcount) × 100; attrition ratio = [(voluntary exits + other exits) ÷ opening headcount] × 100 (dismissals/layoffs excluded and reported separately); retention ratio = [(opening headcount − voluntary exits − other exits − dismissals/layoffs) ÷ opening headcount] × 100; dismissal/layoff ratio = (dismissals/layoffs ÷ opening headcount) × 100. Ratios were computed from pooled totals across returned records, so they weight records by reported headcount and may double-count employees where several respondents reported the same firm.

Likert-items were summarized by mean, standard deviation, median, percentage agreeing (rating 4 or 5) and bootstrap 95% confidence intervals (5,000 resamples). Because Likert ratings are ordinal, non-parametric tests were used. Differences in the rating of the 16 causes and of the 14 practices were tested with Friedman tests (effect size: Kendall's W), with Wilcoxon signed-rank post-hoc comparisons among the leading causes. Each item was compared with the scale midpoint (3.0) using one-sample Wilcoxon signed-rank tests (effect size: matched-pairs rank-biserial r). Ratings of the retention-practice composite (mean of 14 items) and of selected wage items were compared across firm-size and firm-age bands with Kruskal-Wallis tests (effect size: epsilon-squared). Associations between the retention-practice composite and stability perceptions were examined with Spearman correlations. Holm adjustment was applied within each family of tests. Because respondents are nested in firms and no firm identifier exists, p-values treat responses as independent and are indicative only. As a sensitivity check, a design effect of $1 + (m - 1)\rho$ with an average of 9.6 respondents per firm was considered: even at the extreme $\rho = 1$ (design effect 9.55), the retention-practice composite remains significantly above the midpoint ($z = 9.5$ unadjusted and 3.1 after inflating the variance by 9.55), and the same holds for the leading perceived causes.

3.5 Reliability and ethical considerations

Cronbach's alpha was 0.827 for the 14-item retention-practice block, 0.601 for the 16 perceived-cause items and 0.764 for the 10-item stability and productivity block. The retention-practice block showed good internal consistency. The perceived-cause coefficient is modest, so causes are reported item by item and not as a single scale.

4 Results

4.1 Workforce movement across occupational groups

Table 2 presents pooled respondent-record aggregates. Unskilled/casual workers had the highest voluntary-exit ratio (16.54%) and attrition ratio (17.04%) and the lowest retention ratio (77.37%). Skilled craftsmen recorded an attrition ratio of 12.27% and retention ratio of 85.47%. Professional/management personnel recorded the lowest attrition ratio (5.11%) and the highest retention ratio (94.28%). Dismissal/layoff ratios were 5.59%, 2.25% and 0.61% respectively.

Table 2. Pooled workforce movement by occupational group.

Occupational category	Opening headcount*	Voluntary exits*	Other exits*	Dismissed*	Voluntary (%)	Attrition (%)	Retention (%)	Dismissal (%)
Professional/ management	8,166	410	7	50	5.02	5.11	94.28	0.61
Skilled craftsmen	32,086	3,752	186	723	11.69	12.27	85.47	2.25
Unskilled/casual	30,517	5,047	153	1,707	16.54	17.04	77.37	5.59

Figure 2 compares the reported workforce movement ratios across the three occupational groups.

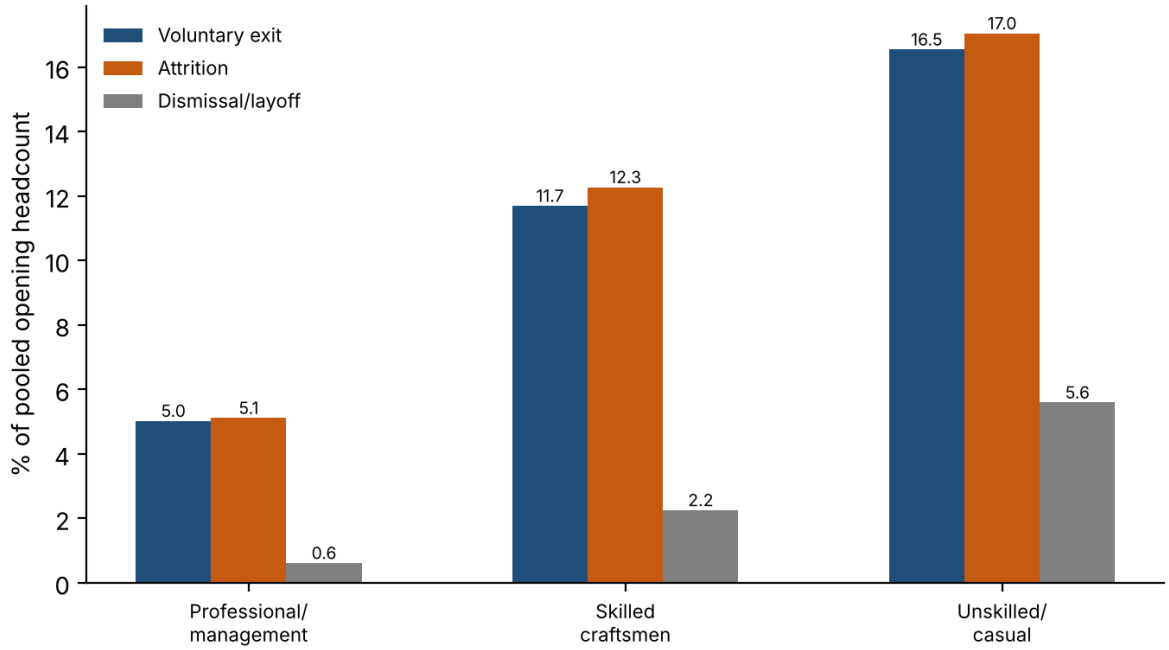


Figure 2. Reported workforce movement ratios by occupational group (respondent-record aggregates, not firm-level rates).

The pattern indicates greater reported movement among unskilled/casual workers and skilled craftsmen than among professional/management personnel, consistent with the greater exposure of site-based and temporary roles to project completion and fluctuations in labour demand. The pooled-record design does not permit firm-level or causal interpretation.

4.2 Profile of participating firms

Table 3 presents the firm profile of returned questionnaires.

Table 3. Firm profile of returned questionnaires.

Characteristic	Category	Questionnaires (n)	% of 889
Firm age	Below 5 years	144	16.2
Firm age	5–10 years	227	25.5

Characteristic	Category	Questionnaires (n)	% of 889
Firm age	11–15 years	171	19.2
Firm age	16–20 years	138	15.5
Firm age	21–25 years	77	8.7
Firm age	26–30 years	64	7.2
Firm age	31 years and above	68	7.6
Employee-size band	1–9	161	18.1
Employee-size band	10–49	338	38.0
Employee-size band	50–99	201	22.6
Employee-size band	100–249	104	11.7
Employee-size band	250 or more	85	9.6

The largest share of questionnaires came from firms 5–10 years old (n = 227; 25.5%) and from the 10–49 employee band (n = 338; 38.0%). About 78.7% came from firms with fewer than 100 employees. These distributions describe firms represented in the returned questionnaires and are not a census profile of private construction firms in Delta State.

4.3 Perceived causes of attrition

Table 4 reports all 16 perceived causes ranked by mean. A Friedman test showed that causes were not rated equally, $\chi^2(15) = 1{,}297.73$, $p < 0.001$, Kendall's W = 0.10 (a small-to-moderate degree of agreement in ranking). Low wages compared with other firms (M = 3.863) and project-related job insecurity (M = 3.794) formed a leading tier. Their difference was not significant (Holm-adjusted p = 0.51), but each was rated higher than late or irregular wage payment, limited promotion, better offers elsewhere and delayed client payments (adjusted $p \leq 0.003$). Late payment (3.649), limited promotion (3.637) and better offers (3.582) were statistically tied with one another (adjusted $p \geq 0.69$). Delayed client payments (3.483), long working hours (3.435), lack of recognition (3.432), poor supervision (3.399) and lack of training (3.397) formed a middle group in which neighbouring items were not distinguishable.

Table 4. Perceived causes of attrition (n = 889; 1–5 scale).

Rank	Perceived cause	Mean	SD	95% CI	% agree (4–5)	p vs 3.0†
1	Low wages compared with other firms	3.863	0.863	3.81–3.92	66.0	<0.001
2	Job insecurity, because work ends when a project ends	3.794	0.846	3.74–3.85	64.8	<0.001
3	Late payment of wages or salaries	3.649	0.884	3.59–3.71	56.6	<0.001
4	Few chances for promotion or career growth	3.637	0.889	3.58–3.70	57.3	<0.001
5	Better offers from other firms or other states	3.582	0.865	3.53–3.64	54.0	<0.001

Rank	Perceived cause	Mean	SD	95% CI	% agree (4–5)	p vs 3.0†
6	Delayed payment from clients that limits what the firm can pay	3.483	0.875	3.42–3.54	50.8	<0.001
7	Long working hours and heavy workload	3.435	0.869	3.38–3.49	47.7	<0.001
8	Lack of recognition for good work	3.432	0.869	3.37–3.49	47.2	<0.001
9	Poor supervision or leadership on site	3.399	0.877	3.34–3.46	45.9	<0.001
10	Lack of training and skill development	3.397	0.868	3.34–3.45	44.2	<0.001
11	Poor welfare provision (health care, accommodation, transport, allowances)	3.339	0.869	3.28–3.39	43.6	<0.001
12	Stress and poor work-life balance	3.305	0.844	3.25–3.36	40.6	<0.001
13	Unsafe site conditions and accident risk	3.217	0.859	3.16–3.27	37.2	<0.001
14	Wanting to start their own business	3.163	0.881	3.11–3.22	34.4	<0.001
15	Remote or distant project sites	2.967	0.854	2.91–3.02	25.5	0.249
16	Moving abroad for work	2.799	0.900	2.74–2.86	21.4	<0.001

†One-sample Wilcoxon test against the midpoint of 3.0, Holm-adjusted across 16 items; indicative because of clustering. Bootstrap CIs, 5,000 resamples.

Figure 3 shows the mean ratings of the perceived causes with their bootstrap confidence intervals.

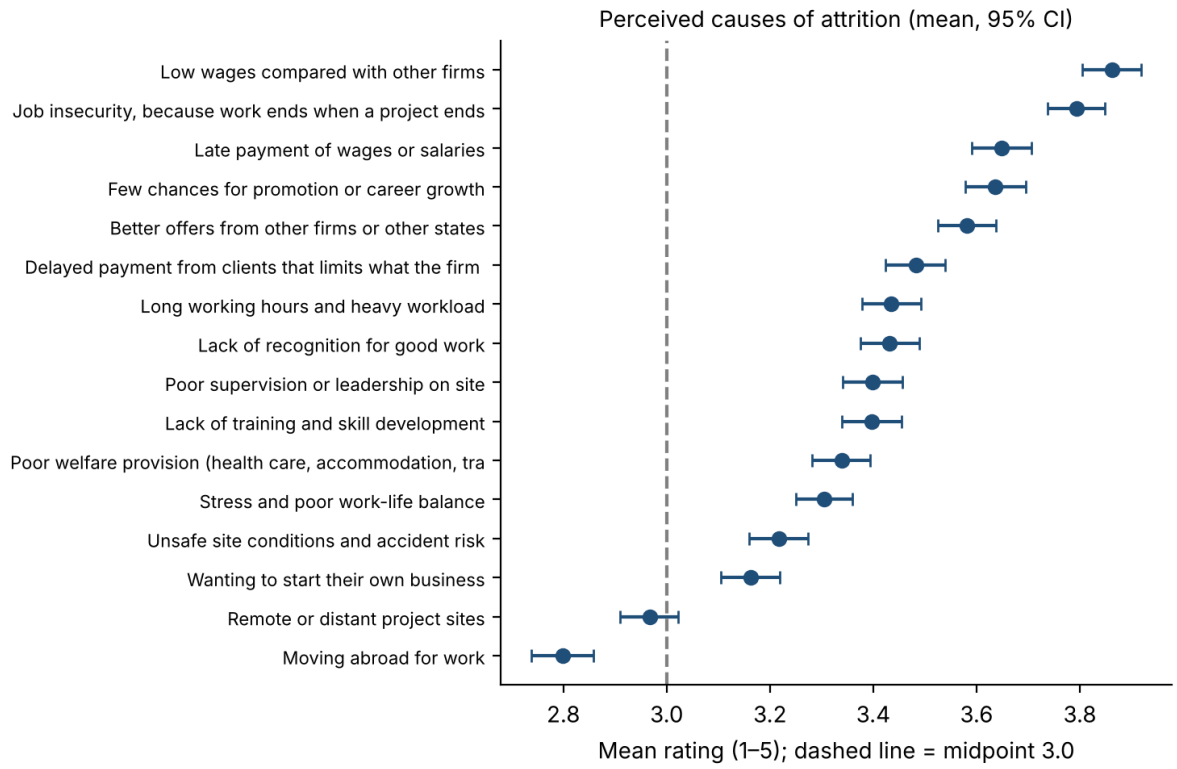


Figure 3. Mean ratings of perceived causes of attrition with 95% bootstrap confidence intervals. The dashed line marks the scale midpoint (3.0).

Fourteen of the 16 causes were rated significantly above the midpoint. Remote or distant project sites (2.967) did not differ from it (p = 0.25) and moving abroad for work (2.799) was rated below it. Unsafe site conditions (3.217) and poor welfare provision (3.339) were rated above the midpoint but well below the pay and continuity items. The leading perceived causes therefore relate to the amount and reliability of earnings and the continuity of work. These are respondent perceptions and should not be presented as established causes of individual resignations.

4.4 Reported retention practices

Table 5 reports all 14 retention practices. A Friedman test found no significant difference among them, $\chi^2(13) = 11.75$, p = 0.548, W = 0.001, so the apparent ranking is not reliable: healthcare/ medical support (3.215) and safety equipment and safe working (3.191) cannot be said to be rated above the others. All 14 practices were rated significantly but only slightly above the midpoint (means 3.119–3.215; Holm-adjusted p < 0.001; r = 0.17–0.31). The composite mean was 3.17 (SD = 0.53). Practices were therefore moderately present, not strongly established. The two lowest-rated practices were recognizing long service (3.119) and paying on time every time (3.137), and paying competitive wages (3.159) was also in the lower half, although these differences are small.

Table 5. Reported retention practices (n = 889; 1–5 scale).

Rank	Retention practice	Mean	SD	95% CI	% agree (4–5)	p vs 3.0†
1	Provides health care or medical support	3.215	0.942	3.15–3.28	38.0	<0.001

Rank	Retention practice	Mean	SD	95% CI	% agree (4–5)	p vs 3.0†
2	Provides safety equipment and enforces safe working	3.191	0.948	3.13–3.25	36.2	<0.001
3	Offers flexible hours, rest days or leave	3.189	0.967	3.12–3.25	37.5	<0.001
3	Holds open communication between management and workers	3.189	0.973	3.12–3.25	37.8	<0.001
5	Provides pension, insurance or end-of-service benefits	3.186	0.941	3.12–3.25	36.3	<0.001
6	Provides accommodation, transport or feeding allowances	3.180	0.970	3.12–3.24	35.0	<0.001
7	Gives bonuses or incentives for good performance	3.178	0.959	3.11–3.24	37.6	<0.001
8	Pays competitive wages and salaries	3.159	0.964	3.10–3.22	36.2	<0.001
8	Keeps key workers between projects	3.159	0.935	3.10–3.22	35.5	<0.001
10	Offers clear promotion and career paths	3.157	0.979	3.09–3.22	37.3	<0.001
11	Provides regular training and skill upgrading	3.154	0.967	3.09–3.22	37.3	<0.001
12	Gives workers a say in decisions that affect them	3.150	0.967	3.09–3.21	36.1	<0.001
13	Pays on time, every time	3.137	0.957	3.07–3.20	36.0	<0.001
14	Recognises and rewards long service	3.119	0.942	3.06–3.18	35.2	<0.001

†One-sample Wilcoxon test against the midpoint of 3.0, Holm-adjusted across 14 items. Tied means share a rank.

Figure 4 shows the mean ratings of the retention practices with their bootstrap confidence intervals.

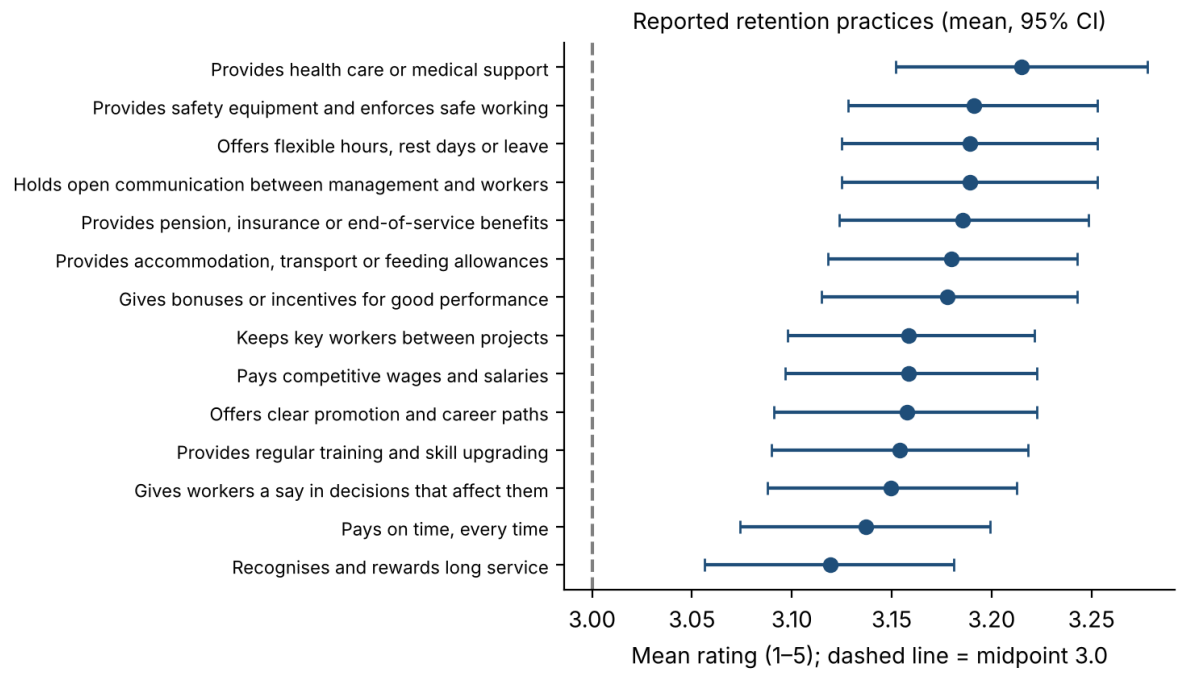


Figure 4. Mean ratings of reported retention practices with 95% bootstrap confidence intervals. The dashed line marks the scale midpoint (3.0).

Comparing Tables 4 and 5, the wage-related causes were the most strongly endorsed whereas the corresponding wage-related practices (competitive pay, timely pay) were among the weaker practices. This is consistent with a gap between what respondents associate with leaving and what firms are perceived to provide, but the survey does not establish that this gap explains actual exits.

4.5 Reliability analysis

Table 6 summarises Cronbach's alpha for the three questionnaire blocks.

Table 6. Cronbach's alpha by questionnaire block.

Questionnaire block	Items	Cronbach's alpha	Interpretation
Perceived causes of attrition	16	0.601	Modest; report items individually
Retention practices	14	0.827	Good internal consistency
Stability and productivity perceptions	10	0.764	Acceptable

The retention-practice alpha supports its use as a descriptive composite. The modest coefficient for perceived causes means the sixteen items are interpreted individually and not as one construct.

4.6 Inferential and exploratory analysis

Group comparisons used the retention-practice composite and the three leading wage-related causes. Kruskal-Wallis tests showed no significant differences by firm size or firm age (Table 7; all Holm-adjusted $p = 1.00$; epsilon-squared ≤ 0.006). Mean composite scores ranged from 3.13 to 3.20 across size bands (the 250+ band, $n = 85$, scoring 3.13) and from 3.08 to 3.25 across age bands. The data therefore give no support for a firm-size or firm-age gradient in these perceptions, although the analysis has limited power to detect small differences and cannot account for clustering.

Table 7. Kruskal-Wallis tests of ratings by firm size and firm age.

Grouping	Outcome	H	df	p (raw)	ε^2
Firm size	Retention-practice composite	2.45	4	0.654	0.003
Firm size	Low wages (cause)	4.03	4	0.402	0.005
Firm size	Job insecurity (cause)	1.30	4	0.862	0.002
Firm size	Late/irregular payment (cause)	0.54	4	0.969	0.001
Firm age	Retention-practice composite	4.48	6	0.612	0.005
Firm age	Low wages (cause)	4.45	6	0.616	0.005
Firm age	Job insecurity (cause)	4.86	6	0.562	0.006
Firm age	Late/irregular payment (cause)	2.51	6	0.867	0.003

All Holm-adjusted p-values (12 tests including two further wage-practice items in the supplementary file) = 1.00.

The retention-practice composite was strongly correlated with the 10-item stability and productivity block (Spearman $\rho = 0.79$, $p < 0.001$) and moderately with "most of our skilled workers stay with us from one project to the next" ($\rho = 0.43$) and "our workforce is more stable now than 3 years ago" ($\rho = 0.45$). The size of the first correlation may partly reflect shared response style because both blocks come from the same respondents at one time; the associations are exploratory and not causal. A multiple regression with HC3 standard errors ($R^2 = 0.405$) calculated earlier is not reported because it ignores within-firm dependence, which cannot be corrected without a firm identifier.

5 Discussion

Reported workforce movement showed an inverse descriptive pattern between attrition and retention across occupational groups. Unskilled/casual workers had the highest voluntary-exit (16.54%) and attrition (17.04%) ratios and the lowest retention (77.37%); skilled craftsmen followed (12.27% and 85.47%), and professional/management personnel had the lowest attrition (5.11%) and highest retention (94.28%). This gradient is consistent with the exposure of site-based and casual roles to project completion and fluctuations in labour demand. The substantial movement among skilled craftsmen is important because their knowledge contributes directly to workmanship, productivity and quality, and Bilau et al. (2015) similarly identified skilled-craftsman shortages as a challenge for Nigerian small and medium firms. The ratios are, however, pooled respondent-record measures and not population estimates.

The perceived causes were not interchangeable: low wages and project-related job insecurity formed a leading tier, with late payment, limited promotion and better offers elsewhere in a statistically tied second tier. That the top two did not differ from each other means the data cannot say whether pay level or work continuity matters more in respondents' minds; both should be treated as priorities. This is consistent with Nigerian research identifying incentives and management practices as turnover considerations (Moemena et al., 2020) and with Niger Delta evidence of moderate satisfaction (Otali & Ekung, 2020). It also fits the pattern in the international reviews that job-related and organizational factors, not only external labour-market pull, dominate construction turnover (Ayodele et al., 2020; Abdolmaleki et al., 2024). Better offers elsewhere ranked below the pay and security items, and moving abroad was rated below the midpoint, suggesting that respondents attribute

leaving more to conditions inside the firm than to external pull alone. From a Social Exchange Theory perspective, the ranking supports the interpretation that reliable pay and credible continuity are central to perceived reciprocity, whereas safety and welfare items, though above the midpoint, were less strongly endorsed as reasons for leaving.

Retention practices were moderately rated and statistically indistinguishable from each other. This means respondents did not perceive any practice as clearly better established than the others, and the ordering with healthcare and safety first should not be emphasized. Recent studies point to training, organizational support, health and well-being and workforce sustainability as relevant dimensions of retention (Yao et al., 2025; Kalhoro et al., 2025; Gbiengua et al., 2026). The contrast with the causes is notable: the factors most associated with leaving (pay level, pay reliability, continuity) correspond to practices that were not rated higher than average, and "pays on time" was among the lowest-rated practices. This may indicate that current practices do not fully address the conditions most associated with leaving, but the survey does not link an individual's exposure to a practice with that person's decision to stay or leave.

Ratings did not differ by firm size or age, so the data do not support the view that older or larger firms retain workers more successfully or that wage concerns are confined to small firms. Absence of significance should not be read as evidence of equivalence, given clustering and the small size of some bands. Overall, the evidence supports a practical retention agenda focused on competitive and timely remuneration, credible arrangements for continuity between projects, welfare and safety provision, and transparent development opportunities, to be tested in firm-linked longitudinal research before causal conclusions are drawn.

6 Conclusion and recommendations

6.1 Conclusion

This study examined workforce retention and employee attrition in private construction firms in Delta State using 889 questionnaires returned from 93 firms. Respondent-record aggregates showed the highest attrition among unskilled/casual workers (17.04%), followed by skilled craftsmen (12.27%) and professional/management personnel (5.11%), with retention following the reverse order (77.37%, 85.47%, 94.28%). Low wages and project-related job insecurity were the leading perceived reasons for leaving, followed by a tied group including late payment, limited promotion and better offers elsewhere, whereas the 14 retention practices were moderately and similarly present. Ratings did not differ by firm size or age. Because workforce figures were pooled without firm identifiers, ratios are descriptive respondent-record aggregates and the statistical tests are indicative only.

6.2 Recommendations

1. Private construction firms should review remuneration periodically so that wages reflect skills, responsibilities and prevailing labour-market conditions.
2. Firms should strengthen cash-flow forecasting and payment controls so that wages and agreed benefits are paid consistently, including during delayed client payments.
3. Contractors should identify core skilled craftsmen and professionals essential to project continuity and develop feasible arrangements to retain them between projects.

4. Firms should strengthen site welfare through healthcare access, protective equipment, safe working procedures, rest periods and clear communication channels.
5. Training, mentoring, certification support and transparent promotion pathways should be provided to improve development prospects and perceived organizational support.
6. Firms should maintain annual workforce records that distinguish voluntary resignation, retirement, death/long-term illness, dismissal and layoff, using consistent denominators.
7. Future surveys should assign each participating firm a confidential, non-identifying code so responses can be linked within firms and analysed with cluster-adjusted or multilevel methods.

7 Limitations and directions for further research

First, the cross-sectional design captures one period and cannot establish causality. Second, respondents are clustered within 93 firms with no firm identifier, so responses cannot be aggregated to firm level or analysed with cluster-adjusted standard errors, and p-values are indicative. Third, workforce figures may have been reported by several respondents from the same firm, so pooled headcounts and ratios may double-count employees, and pooled ratios weight larger reporting units more heavily. Fourth, ratings are perceptions reported by managerial respondents (all 889 records list the respondent's position as project manager, who may rate pay and retention practices differently from workers. Fifth, the perceived-cause scale shows modest internal consistency.

Future research should use anonymous firm codes, verify workforce figures against payroll or staff registers, and obtain one consolidated workforce-movement record per firm. A firm-linked dataset would support multilevel modelling, and longitudinal records would help establish whether changes in remuneration, welfare and project continuity precede changes in attrition. Mixed-method interviews could explain how project pipelines, cash flow and employment arrangements shape retention decisions across occupational groups.

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