



Work–Life Balance and Academic Staff Performance in North-East and North-West Nigerian Universities: A Zone-Specific, Disaggregated, Longitudinal Mixed-Methods Design with Institutional Policy Evaluation

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ABSTRACT

A companion narrative review (Gelwasa & Dorh, 2026) found that evidence linking work–life balance (WLB) to academic staff performance in Nigeria is consistently positive, but is concentrated in the North-Central and southern zones, is almost entirely cross-sectional, is rarely disaggregated, and says little about whether institutional WLB policies work. This paper turns the four research directions proposed in that review into one pre-specified study design. The study combines a three-wave panel survey of academic staff in 12 universities in the North-East and North-West (target baseline N = 1,656; expected analyzable N = 1,160 at wave 3), a two-point institutional policy audit, 36 staff interviews and 12 key-informant interviews, integrated through an explanatory sequential design. WLB is modelled as five dimensions measured with adapted and back-translated instruments, and performance is captured through self-report and records-based indicators. Eight hypotheses address zone differences, moderation by gender, rank and discipline, reciprocal WLB–performance paths in random-intercept cross-lagged panel models, and the association of a 0–20 Policy Implementation Index with staff outcomes. Power analysis shows power of at least 0.92 to detect a small interaction effect ($f^2 = 0.02$) within a single zone. No primary data have yet been collected. The paper therefore reports the design, instruments, sample-size justification and decision rules, so that results can later be judged against a fixed plan. The study is expected to provide the first zone-specific longitudinal evidence on WLB in Northern Nigerian universities and a defensible basis for institutional policy.

Keywords: work–life balance; academic staff performance; North-East Nigeria; North-West Nigeria; mixed methods; longitudinal design; institutional policy

1. INTRODUCTION

1.1 Background and rationale

Universities are judged on teaching, research and community service, and the academic staff who deliver this mandate work under conditions that blur the boundary between job and home. In Nigeria, large classes, thin staffing, funding shortfalls and recurrent industrial action add to that load; the eight-month strike by the Academic Staff Union of Universities (ASUU), which ended in October 2022, is the most recent reminder (Africanews, 2022). In the North-East, the insurgency adds a further burden. Attacks on tertiary institutions, destruction of facilities and staff attrition have been documented in Adamawa State (Momodu & Tukur, 2021), and the ASUU chairman at the University of Maiduguri reported in 2017 that at least 70 lecturers had resigned since 2009 because of the insurgency (“70 Lecturers to Quit UNIMAID,” 2017). Such conditions plausibly



change both how far work spills into personal life and what institutions can offer in return. Evidence from elsewhere in Nigeria points consistently in one direction. Work–life balance dimensions jointly explained 25.5% of the variance in lecturers’ psychological well-being at the University of Benin, with work/personal-life enhancement the strongest predictor (Ogordi, 2024), and WLB had a considerable influence on lecturers’ job performance in the same city (Kadiri & Isokpan, 2023). Excessive workload and an unfavorable work environment depressed lecturer performance in Kwara State (Olagunju et al., 2024), and a conceptual review recommends stronger WLB policy and counselling support in federal universities (Effiong et al., 2026). International evidence agrees: WLB is associated with job satisfaction, life satisfaction, and mental health across seven cultures (Haar et al., 2014), and studies of UK academics link heavy job demands and poor work–life balance to poorer well-being (Kinman & Jones, 2008).

1.2 Evidence gaps addressed

The companion review (Gelwasa & Dorh, 2026) screened ten sources published between 2018 and 2026 and located none set in the North-East or North-West. That is not proof that nothing exists, since unpublished theses on individual northern institutions are likely held in university repositories. What is missing is a comparable, published, multi-institution evidence base. The review proposed four research directions, and each is converted here into a design commitment:

1. Zone-specific primary studies. Universities in the North-East and North-West are sampled directly, six per zone, with staff-level measurement of insecurity exposure.
2. Disaggregation by gender, rank and discipline. Sampling quotas guarantee enough women, senior staff, and each discipline group to estimate subgroup differences, and measurement invariance is tested before any group is compared.
3. Longitudinal and mixed-methods designs. Three survey waves over 12 months separate stable differences between people from change within people, and interviews after wave 2 explain what the survey shows.
4. Institutional policy evaluation. A Policy Implementation Index scores what each university provides on paper and in practice, and is related to staff awareness, WLB, and performance.

1.3 Theoretical grounding

Four perspectives guide the design. Role strain and work–family conflict theory holds that time and energy demands in one domain reduce the capacity to meet demands in another (Greenhaus & Beutell, 1985). The Job Demands–Resources (JD-R) model separates demands such as workload and role conflict from resources such as autonomy, flexibility and support, and links the two to strain and engagement (Demerouti et al., 2001; Bakker & Demerouti, 2007). Conservation of resources theory predicts that people protect scarce resources and enter loss spirals when resources are threatened (Hobfoll, 1989), which is especially relevant where physical insecurity is a daily concern. Border theory stresses that flexibility and boundary permeability shape how people move between work and home (Clark, 2000). Because balance is bidirectional and can be positive as well as negative, WLB is measured as interference and enhancement in both directions (Fisher et al., 2009). For gender, meta-analytic evidence suggests that differences in work–family conflict are small and depend on context (Shockley et al., 2017), while qualitative work shows women academics negotiating work and care within gendered expectations (Toffoletti & Starr, 2016). Gender is therefore examined jointly with academic rank, in line with the intersectional argument that overlapping positions can produce experiences not visible when each is studied alone (Crenshaw, 1989). On policy, reviews of organisational research link WLB practices to organisational outcomes, though the link depends on implementation (Beauregard & Henry, 2009).

1.4 Objectives and hypotheses

The study has four objectives: (i) to estimate the WLB–performance relationship among academic staff in the North-East and North-West; (ii) to test whether it differs by gender, rank and discipline; (iii) to establish its



direction and stability over 12 months and explain it qualitatively; and (iv) to evaluate the association between institutional WLB policy implementation and staff outcomes. The pre-specified hypotheses are:

- H1** Work-side WLB dimensions (workload and time demands, stress and role conflict) are negatively, and flexibility and institutional support positively, associated with performance and well-being; the personal-life dimension has a weaker association, as in the reviewed studies.
- H2** The WLB–performance association differs between the North-East and North-West, and is more negative among staff reporting higher insecurity exposure.
- H3** Gender moderates the association: work interference with personal life is more strongly related to lower performance among women than men.
- H4** Rank moderates the association, with stronger effects among junior staff (Graduate Assistant to Lecturer I) than among senior staff (Senior Lecturer to Professor).
- H5** Discipline moderates the association (non-directional): STEM and health sciences, social and management sciences, and arts, humanities and education differ in slopes.
- H6** Within persons, change in WLB predicts later change in performance, and performance predicts later WLB (reciprocal paths).
- H7** A higher Policy Implementation Index is associated with better staff WLB, and institutions that adopt new provisions during the study improve more than comparable institutions that do not.
- H8** Staff awareness of policy mediates the association between the Policy Implementation Index and WLB.

2. MATERIALS AND METHODS

2.1 Research design

The study is an embedded explanatory sequential mixed-methods design (Creswell & Plano Clark, 2018). The quantitative strand is a three-wave panel survey. The qualitative strand starts after wave 2, so that interviews can probe patterns already visible in the data, such as unexpected zone, gender or rank differences. A policy strand audits institutional provisions at baseline and at follow-up. The strands are integrated at the design, method and interpretation levels (Fetters et al., 2013), with joint displays used at the interpretation stage (Guetterman et al., 2015). Table 1 maps each recommended research direction to its design response, analytic technique and hypotheses, Figure 1 shows the analytic model, and Figure 3 shows the schedule.

Table 1. How the four recommended research directions are built into the study design

Research direction (Gelwasa & Dorh, 2026)	Design response	Analytic technique	Hypotheses
1. Zone-specific primary studies	12 universities, six each in the North-East and North-West; staff-level insecurity exposure measured	Multi-group SEM by zone; zone × WLB and insecurity × WLB interactions	H1, H2
2. Disaggregation by gender, rank and discipline	Quota floors for women, three rank bands and three discipline clusters; invariance tested before comparison	Moderated models with simple slopes; gender × rank intersectional cells	H3–H5
3. Longitudinal and mixed-methods designs	Three waves over 12 months; interviews after wave 2; joint displays	Latent growth models; RI- CLPM; reflexive thematic analysis; integration	H6

4. Institutional policy evaluation	Policy audit at baseline and follow-up; Policy Implementation Index (0–20); staff awareness and use	Multilevel regression; mediation; staggered difference-in-differences (exploratory)	H7, H8
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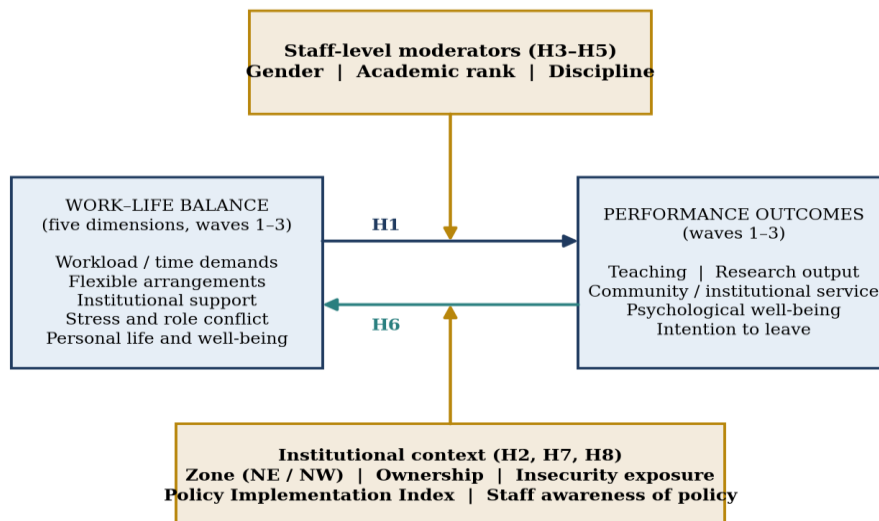


Figure 1. Analytic model. H1 is the WLB-to-outcome path, H6 the reciprocal path tested with cross-lagged models, H3–H5 the staff-level moderators, and H2, H7 and H8 the institutional context and policy paths.

2.2 Setting and population

The North-East comprises six states (Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe) and the North-West seven (Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara). Six universities per zone (12 in total) will be selected purposively from the National Universities Commission list to cover federal, state and, where operating and accessible, private ownership, and a range of insecurity exposure. The target mix per zone is three federal, two state and one private university, substituting the nearest ownership category where no private university is accessible. The population is full-time academic staff with at least 12 months of service, so that respondents can describe their work–life balance over a meaningful period. Staff on leave for more than six months at baseline are excluded. Where the authors’ own institution is sampled, data there are collected by independent research assistants.

2.3 Sampling and sample size

Sampling is multistage. Eight departments per university (96 in total) are selected to cover three discipline clusters, and staff are then drawn by stratified random sampling from departmental staff lists. Because women are expected to be a minority of the academic workforce, they are oversampled to at least 30% of each zone sample, and no rank band (junior, middle, senior) or discipline cluster may fall below 20%.

Sample size follows Cochran (1977). For a proportion of 0.5, 95% confidence, and a 5% margin of error, $n_0 = 1.96^2 \times 0.5 \times 0.5 / 0.05^2 = 384$. With a design effect of 1.5 for clustering, 577 analyzable respondents are needed per zone at wave 3. Assuming 85% retention to wave 2 and 70% to wave 3, the baseline target is 138 staff per university, or 828 per zone and 1,656 overall (Table 2). Power was computed from the noncentral F distribution for a single-degree-of-freedom increment, such as one interaction term, at $\alpha = .05$ (Cohen, 1988; Faul et al., 2009). At the expected wave-3 sample of 580 in one zone, power is 0.92 for $f^2 = 0.02$ (a small effect), 0.99 for $f^2 = 0.035$, and above 0.99 for $f^2 = 0.05$; pooled power at $n = 1,160$ exceeds 0.99 (Figure 2). Smaller cells, such as senior women in one discipline, will have lower power and are reported descriptively. Only 12 universities are sampled, which is too few for reliable estimation of between-university variance (Maas & Hox, 2005). University is therefore entered as a fixed effect, departments (96 clusters) as random

intercepts, and any inference at the university level, including the policy comparison, is labelled exploratory. For the qualitative strand, 36 staff (three per university, selected for maximum variation in gender, rank and discipline) and 12 key informants (one per university, such as a registrar, human-resources head or ASUU branch chair) will be interviewed. Guest et al. (2006) found that most themes emerged within the first 12 interviews of a fairly homogeneous sample; 18 per zone allows for the greater heterogeneity here.

Table 2. Study components and target sample by zone

Component	North-East	North-West	Total
Universities (target mix: 3 federal, 2 state, 1 private per zone)	6	6	12
Departments (8 per university)	48	48	96
Wave 1 baseline survey (138 per university)	828	828	1,656
Wave 2 expected (85% retained)	704	704	1,408
Wave 3 expected (70% retained)	580	580	1,160
Staff interviews (after wave 2)	18	18	36
Key-informant interviews	6	6	12
Policy audits (baseline and follow-up)	6	6	12

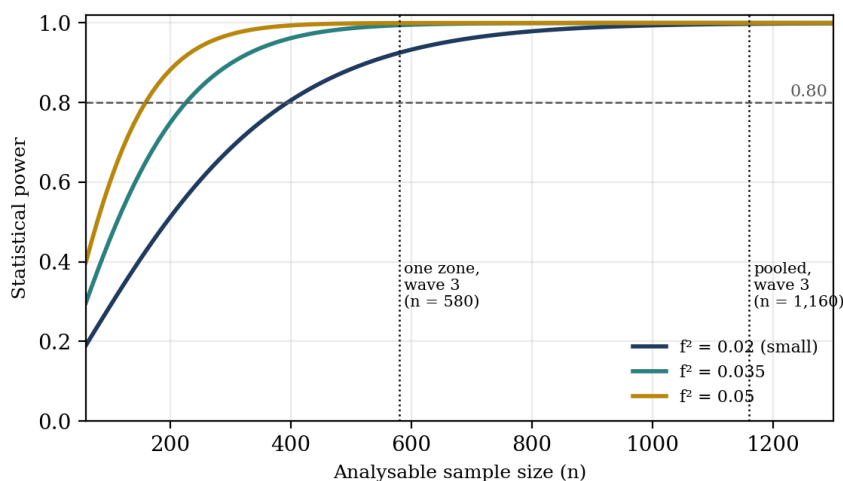


Figure 2. Statistical power for a single interaction term at $\alpha = .05$, by analysable sample size and effect size (Cohen's f^2). Dotted lines mark the expected wave-3 samples for one zone and for both zones pooled.

2.4 Measures

Table 3 lists the constructs. WLB is measured with an adaptation of the work/nonwork interference and enhancement measure of Fisher et al. (2009), which captures work interference with personal life, personal-life interference with work, and enhancement in both directions. Hayman's (2005) three-factor scale is retained as a comparison measure for earlier WLB studies. Workload, flexibility, and institutional support items are developed for this study from the JD-R framework (Bakker & Demerouti, 2007) and piloted with about 60 staff per zone. Psychological well-being uses the WHO-5 index (Topp et al., 2015). Self-report performance is complemented by records-based indicators to reduce reliance on a single source.

Table 3. Constructs, measures and data sources

Construct	Instrument or source	Waves	Notes
Work-life balance	Adapted work/nonwork interference and enhancement measure (Fisher et al., 2009); Hayman (2005) subscales for comparison	1-3	Back-translated into Hausa; invariance tested

Workload, flexibility, institutional support	Study-developed items guided by JD-R	1–3	Piloted in both zones
Insecurity exposure	Study-developed index: travel and access restrictions, incidents experienced or witnessed in past 12 months	1–3	Used as moderator (H2)
Performance	Self-rated teaching, research and service; records-based publications, supervision load, courses taught, timely grade submission	1–3	Records used only with written consent
Well-being; intention to leave	WHO-5 (Topp et al., 2015); three adapted intention-to-leave items	1–3	Support information given to all participants
Policy awareness and use	Eight study-developed items	1–3	Mediator (H8)
Policy Implementation Index	10 provisions scored 0 (absent), 1 (on paper) or 2 (implemented); range 0–20	Audit at baseline and follow-up	Provisions include maternity and paternity leave, flexible hours, childcare, counselling, workload norms, study leave, transport or security support
Staff characteristics	Gender, rank, discipline, dependants, caregiving, commute, on- or off-campus housing	1	Rank bands and discipline clusters as in section 2.3

2.5 Procedures and data quality

Instruments are prepared in English and Hausa using forward and back translation (Brislin, 1970), and interviews may be conducted in Hausa, Kanuri, or English as the participant prefers. Surveys are delivered by tablet or secure online link, with a paper option, and each participant has a unique code that links waves without storing names. Each wave is scheduled mid-semester to avoid examination and vacation periods and runs for about two months (Figure 3). If industrial action interrupts a wave, fieldwork is postponed, and a strike indicator is recorded as a covariate, given the length of the 2022 strike. To limit common-method bias, waves are separated in time, records-based indicators come from a second source, and a marker variable is included (Podsakoff et al., 2003).

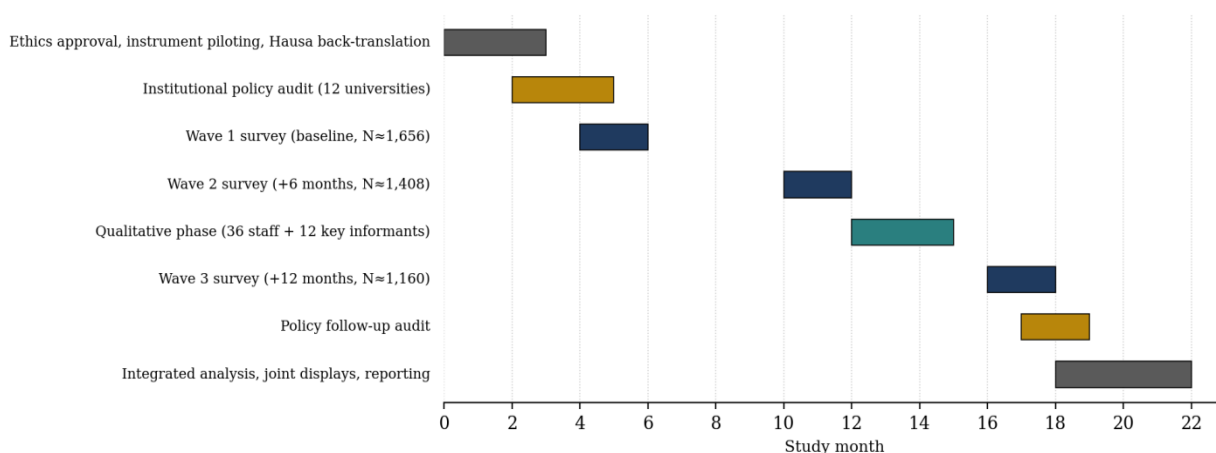


Figure 3. Study schedule over 22 months, showing the three survey waves, the qualitative phase after wave 2, the two policy audits and the integrated analysis.



2.6 Analysis plan

Measurement. Each scale is examined with confirmatory factor analysis, judged against conventional fit guidelines (Hu & Bentler, 1999), with composite reliability and average variance extracted for convergent validity (Fornell & Larcker, 1981). Measurement invariance (configural, metric, scalar) is tested across zone, gender, rank, discipline, and wave, treating a drop in CFI of more than .01 as evidence against invariance (Chen, 2007; Putnick & Bornstein, 2016). Where scalar invariance fails, partial invariance is tested, and otherwise only latent associations are compared across groups. Baseline associations and moderation (H1–H5). Models use department random intercepts and university fixed effects (Hox et al., 2018). Moderation is tested with interaction terms and probed with simple slopes (Hayes, 2022), and gender $\times$ rank cells are reported with confidence intervals as an intersectional extension (Crenshaw, 1989). Tests are grouped into hypothesis families and adjusted with the Holm (1979) procedure. Longitudinal analysis (H6). Latent growth curve models describe trajectories, and random-intercept cross-lagged panel models separate stable between-person differences from within-person cross-lagged effects (Hamaker et al., 2015). Missing data are handled by full-information maximum likelihood, attrition is analysed by comparing completers with dropouts, and inverse-probability weights serve as a sensitivity check (Enders, 2010). Policy evaluation (H7, H8). The Policy Implementation Index is described at both audits and related to staff outcomes in multilevel models, with awareness tested as a mediator (Hayes, 2022). If at least three universities adopt new provisions between audits, staggered difference-in-differences estimators are applied (Callaway & Sant'Anna, 2021), with wild cluster bootstrap inference because the number of clusters is small (Cameron et al., 2008). This part of the analysis is exploratory. Qualitative analysis. Interviews are audio-recorded, transcribed and, where needed, translated, and analysed by reflexive thematic analysis (Braun & Clarke, 2006). The topic guide is built from wave-2 results, and findings are merged with survey results in joint displays (Guetterman et al., 2015).

2.7 Ethical considerations

Approval will be sought from the research ethics committee of each participating university, or an equivalent permission letter where none exists. Participation is voluntary with written informed consent and the right to withdraw. Data are stored in encrypted form under participant codes and handled in line with the Nigeria Data Protection Act (Federal Republic of Nigeria, 2023). Results are reported in aggregate, and cells with fewer than five respondents are suppressed so that no individual or small department can be identified. Fieldwork in areas under security advisories uses remote data collection instead of travel. Participants whose well-being scores fall in the low range are given information on available counselling services.

3. PLANNED RESULTS AND DECISION RULES

No primary data have yet been collected, so this paper reports no empirical results. To prevent flexible interpretation later, the reporting plan and decision rules are fixed in advance:

1. Results will be reported in the order of the hypotheses, preceded by response rates, retention by wave and attrition analysis, and by the measurement and invariance results.
2. A hypothesis is treated as supported when the estimate is in the predicted direction, its 95% confidence interval excludes zero after Holm adjustment, and the effect is at least small ($f^2 \geq 0.02$; Cohen, 1988). Interaction terms must meet the same standard.
3. Estimates will be compared with the range reported in earlier Nigerian studies, about 17% to 26% of variance explained (Gelwasa & Dorh, 2026). Estimates well below that range will be interpreted as a possible contextual difference, not as an error.
4. Null and contrary findings will be reported in full, and any departure from this plan will be labelled as such. Policy-level findings (H7, H8) will be described as exploratory.



4. EXPECTED CONTRIBUTIONS TO KNOWLEDGE

1. The first published, multi-institution evidence on WLB and academic staff performance for the North-East and North-West, closing the zone gap identified in the companion review.
2. Disaggregated estimates by gender, rank and discipline, including intersectional gender $\times$ rank estimates, where earlier Nigerian studies largely reported pooled results.
3. Within-person longitudinal evidence on whether WLB drives performance, performance drives WLB, or both, in a setting where nearly all prior evidence is cross-sectional.
4. A Policy Implementation Index that separates provisions on paper from provisions in practice, and a first test of how it relates to staff outcomes.
5. An English–Hausa instrument set with documented invariance evidence that other researchers can reuse.

5. LIMITATIONS AND RISK MANAGEMENT

Several risks are acknowledged. Attrition above the assumed 30% would reduce power, and the response is oversampling at baseline, weighting, and sensitivity analysis. Insecurity or industrial action may interrupt fieldwork, so schedules are flexible and remote collection is available. Purposive selection of 12 universities limits generalization beyond the sampled institutions and zones, and the small number of universities limits policy-level inference. Self-reported performance may be biased, which is why records-based indicators are collected. Translation may alter item meaning, which is why back-translation and invariance testing are built in. Finally, a panel design strengthens but does not by itself establish causal inference, and the findings will be described accordingly.

6. RECOMMENDATIONS

1. For the research team: register the plan in a public registry before wave 1, complete the instrument pilot in both zones, and secure access agreements with registrars and ASUU branches early.
2. For funders: support multi-year funding, since the design spans about 22 months, with budget for translation, tablets, and secure data storage. Public research funders such as TETFund is natural candidates.
3. For university managers: record current WLB-related provisions now, so that a baseline exists, and where flexible scheduling or workload norms are introduced, document the date and scope so their effects can be assessed, in line with the companion review's call for piloting such policies while evidence accumulates.

7. CONCLUSION

The companion review showed that the case for attention to work–life balance among Nigerian academics is strong, but that the evidence for the North-East and North-West is thin. This paper responds with a design that samples both zones directly, tests differences by gender, rank and discipline, follows staff over 12 months, explains the patterns through interviews, and evaluates what universities actually provide. Because the data are yet to be collected, the paper's contribution is a transparent, pre-specified plan against which the eventual results can be judged. If implemented as described, the study will give university managers and policymakers in Northern Nigeria evidence drawn from their own institutions.

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