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MAPPING THE NATURE OF LABOUR RISKS ON CONSTRUCTION SITES IN ELDORET TOWN, KENYA: PREVALENCE, RECURRENCE, WORKERS' EXPERIENCE AND SUPERVISORY PROFILE

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ABSTRACT

Labour is the largest controllable input on most building sites, yet the risks it carries are seldom described with the precision needed to manage them. This study profiled labour risks in construction projects in Eldoret Town, Kenya, distinguishing how widely each risk is encountered (prevalence) from how often it recurs (frequency). Guided by the Theory of Planned Behaviour, a convergent parallel mixed-methods design was used. Questionnaires were completed by 81 contractors, site engineers and foremen (88% of 92 sampled) across four zones, and 12 manual construction workers were interviewed. Data were analysed with SPSS and thematic analysis. Accidents and injuries were the most widely encountered risk (97.5%), followed by strikes and labour disputes (74.1%), labour shortage and skill mismatch (53.1% each), poor working conditions (44.4%) and labour turnover (32.1%). Frequency told a different story: accidents were mostly rated rare (M = 2.14, SD = 0.89), whereas skill mismatch recurred most regularly (M = 2.86, SD = 1.08), with 79.0% of respondents reporting it at least occasionally. Workers traced mismatch to artisans (fundis) who bring unskilled helpers onto skilled tasks, while shortages and turnover were situational, driven by workload peaks and wage competition. Labour risk in Eldoret is therefore common but uneven. The study recommends skills verification at the point of engagement, risk-management training for supervisors, and enforceable minimum site-welfare standards.

KEYWORDS: *Labour risk; Skill mismatch; Construction projects; Risk prevalence; Theory of Planned Behaviour; Eldoret; Kenya*

1. INTRODUCTION

1.1 Background

Construction is among the most labour-intensive activities in the Kenyan economy, and a building is only as sound as the people who set it out, mix it, lay it and supervise it. Risk on a building site is therefore not confined to design or finance; much of it is carried onto the site by the workforce itself. Husin, Mubarak and Fachrurrazi (2019) treat labour, materials and equipment as the three principal risk groups affecting project quality, and the International Labour Organization's estimate of some 60,000 construction-site fatalities worldwide each year (cited in Ghani & Ridho, 2024) shows what is at stake when labour risk goes unmanaged.

In Kenya the concern is concrete. Building collapses reported in Kiambu, Nairobi and other towns in 2021–2022 sharpened public worry about workmanship and site supervision, matters on which the National Construction Authority (NCA) holds a regulatory mandate (Otido & Omwenga, 2019). Mitullah and Wachira (2003) described Kenyan construction labour as largely informal: workers are engaged casually, often without written contracts, and are recruited through gang leaders and foremen who link them to projects. Informality keeps site costs low but weakens accountability, because neither skills nor terms of engagement are routinely verified. Comparable pressures, including skills gaps, low wages and an unattractive industry image, have been documented in Malaysia (Rahim et al., 2016) and Nigeria (Oseghale, Abiola-Falemu & Oseghale, 2015).

1.2 Statement of the Problem

Construction-risk research has typically ranked risks by perceived importance (Zou, Zhang & Wang, 2007; Abd El-Karim, Mosa El Nawawy & Abdel-Alim, 2017). A ranking, however, hides a distinction that matters for management: a hazard that almost every site has experienced at some point is not the same as a problem that disturbs work week after week. Each calls for a different response, one built around preparedness and severity, the other around routine prevention. Evidence that separates the two is scarce for Kenya's secondary towns, where small residential projects dominate and much work is still manual. This article addresses that gap by treating prevalence and frequency as distinct measures and complementing both with workers' own accounts. Evidence on the effectiveness of mitigation strategies and on the consequences of labour risk for project management, drawn from the same study, is reported in a companion article (Mong'are, Muthoka & Sitawa, 2026).

1.3 Theoretical Framework

The study draws on the Theory of Planned Behaviour (Ajzen, 1991), which explains intentional action through attitudes towards a behaviour, subjective norms and perceived behavioural control. Applied to construction, the theory directs attention to how contractors and supervisors evaluate labour

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risk (attitude), what clients, regulators and peers expect of them (subjective norms), and whether they believe they have the means to act (perceived control). It also offers an interpretive lens for the findings: a risk that is widespread yet tolerated may signal a normalised attitude rather than an absence of exposure.

2. OBJECTIVES

The study sought to (i) determine the prevalence of labour risks in construction projects in Eldoret Town Municipality; (ii) establish how frequently each risk recurs; (iii) explore how manual construction workers experience these risks; and (iv) describe the professional profile of those who manage labour on the sites. Together these objectives answer one research question: what is the nature of labour risks in construction projects in Eldoret Town Municipality, Kenya?

3. METHODOLOGY

A pragmatist paradigm and a convergent parallel mixed-methods design were adopted (Creswell & Plano Clark, 2018). The quantitative and qualitative strands were collected concurrently, analysed separately and merged at the interpretation stage, concept by concept. The quantitative strand used a structured questionnaire administered by two trained research assistants to contractors, site engineers and foremen. It combined a select-all item on the risks encountered with five-point frequency scales (1 = very rarely to 5 = very frequently). The qualitative strand used semi-structured interviews with manual construction workers, held on site, with responses recorded in field notes.

The instruments were pre-tested on three construction projects in Shabab, Nakuru County, with 12 respondents; ambiguous items were reworded and instructions clarified. Face and content validity were established through review by supervisors in the Department of Technology Education, and Cronbach's alpha exceeded 0.70 for all key scales (Hair, Black, Babin & Anderson, 2019). Rigour in the qualitative strand was guided by the credibility, confirmability, transferability and dependability criteria of Lincoln and Guba (1985). Authorisation was obtained from the University of Eldoret, and a research permit from the National Commission for Science, Technology and Innovation (NACOSTI). Participants gave informed consent and were assured of anonymity.

4. SAMPLING DESIGN

The target population was 300 people directly involved in building work on about 40 active sites in four zones: 120 construction professionals and 180 manual construction workers (Uasin Gishu County Development Office, 2023). Yamane's (1967) formula, $n = N / (1 + Ne^2)$ at $e = 0.05$, gave 36 sites and 92 professionals. Professionals were selected by simple random sampling (23 per zone). Twelve manual workers (three per zone) were recruited by convenience sampling from active sites, a pragmatic choice that favours access over representativeness (Table 1). Of the 92 questionnaires distributed, 81 were returned complete (88.0%), above the 70% benchmark commonly applied to survey research (Draugalis, Coons & Plake, 2008). All 12 interviews were completed.

Table 1: Sampling summary by zone

Zone	Sites targeted	Sites sampled	Professionals sampled	Workers interviewed
Langas	12	10	23	3
Maili Nne	9	8	23	3
Kimumu	9	9	23	3
Elgon View	10	9	23	3
Total	**40**	**36**	**92**	**12**

Source: Field survey data.

5. STATISTICAL DESIGN

Questionnaire data were cleaned, coded and analysed in SPSS version 25. Frequencies and percentages described prevalence and respondent characteristics, while means and standard deviations summarised frequency ratings. Interview notes were coded and organised into themes following Braun and Clarke (2006), and the themes were then set against the survey results to identify convergence and divergence. Interviewees are identified by code (MCW1 to MCW12, for manual construction worker).

6. GEOGRAPHICAL AREA

The study was conducted in Eldoret Municipality, Uasin Gishu County, a commercial hub of western Kenya whose zones combine commercial, institutional and residential development. Four zones were chosen to represent different stages of growth: Langas, where residential building has expanded near major institutions; Maili Nne, a peri-urban area zoned for commercial development; Kimumu, which has drawn new residential and educational projects as the town has grown; and Elgon View, a low-density zone in which regulations allow only bungalows, mansionettes and servants' quarters.

7. RESULTS AND DISCUSSION

7.1 Profile of the Respondents

Table 2 summarises the 81 professionals who responded. The group was overwhelmingly male (96.3%), mostly vocationally trained (55.6%) and led numerically by foremen and supervisors (56.8%). Only 4.9% held a degree, and 24.7% had primary or secondary education alone. Experience was substantial, with 63.0% reporting ten or more years in the industry, and 95.1% were registered with a professional body. The typical respondent is thus a practice-trained supervisor working on a residential site. Such a cadre is a strength for day-to-day enforcement but, as discussed below, may be thinly equipped for formal risk assessment. The near-absence of women (3.7%) also means that site safety arrangements are designed and judged almost entirely from a male vantage point, which may matter for protective equipment and welfare facilities.

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Table 2: Profile of the construction professionals (N = 81)

Characteristic	n	%
Gender		
Male	78	96.3
Female	3	3.7
Highest education		
Vocational training	45	55.6
Secondary	15	18.5
Diploma	12	14.8
Primary	5	6.2
Degree or higher	4	4.9
Role		
Foreman / supervisor	46	56.8
Contractor	20	24.7
Site engineer	15	18.5
Experience		
Under 10 years	30	37.0
10–20 years	36	44.4
20–30 years	8	9.9
Over 30 years	7	8.6
Project type		
Residential	53	65.4
Commercial	22	27.2
Infrastructure	6	7.4
Professional registration		
Registered	77	95.1
Not registered	4	4.9

Source: Field survey data.

7.2 Prevalence of Labour Risks

Respondents ticked the risks they had encountered (Table 3). Accidents and injuries were reported almost universally (97.5%), followed by strikes and labour disputes (74.1%). Labour shortage and skill mismatch were each reported by 53.1%, poor working conditions by 44.4% and high labour turnover by 32.1%. Labour risk in Eldoret is therefore multi-dimensional, spanning safety, workforce adequacy, skills alignment and employee relations.

Table 3: Labour risks encountered by respondents (select all that apply; N = 81)

Labour risk	n	%
Accidents and injuries	79	97.5
Strikes and labour disputes	60	74.1
Labour shortage	43	53.1
Skill mismatch	43	53.1
Poor working conditions	36	44.4
High labour turnover	26	32.1

Source: Field survey data.

7.3 Frequency of Labour Risks

Prevalence says whether a risk has been met; frequency says how often it returns (Table 4). On this measure the order changed. Accidents, though near-universal, were mostly rated rare (M = 2.14, SD = 0.89): 62 of 81 respondents chose “rarely” or “very rarely”. Skill mismatch recorded the highest mean (M = 2.86, SD = 1.08), and 64 respondents (79.0%) said it occurred at least occasionally. Ratings for mismatch were polarised, however, with 15 respondents choosing “very rarely”. Labour shortage (M = 2.41), poor working conditions (M = 2.11) and turnover (M = 1.95, SD = 1.33) were less regular, and the grand mean of 2.29 places labour risk between “rarely” and “occasionally”. Because prevalence was a select-all item and frequency a rating answered by every respondent, the two measures are read as complementary patterns rather than directly comparable figures (Figure 1).

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Table 4: Frequency of occurrence of labour risks (N = 81)

Labour risk	Very rarely	Rarely	Occasionally	Frequently	Very frequently	M	SD
Accidents and injuries	16 (19.8)	46 (56.8)	14 (17.3)	2 (2.5)	3 (3.7)	2.14	0.89
Labour shortage	9 (11.1)	44 (54.3)	16 (19.8)	10 (12.3)	2 (2.5)	2.41	0.93
Skill mismatch	15 (18.5)	2 (2.5)	49 (60.5)	9 (11.1)	6 (7.4)	2.86	1.08
High labour turnover	46 (56.8)	14 (17.3)	6 (7.4)	9 (11.1)	6 (7.4)	1.95	1.33
Poor working conditions	11 (13.6)	59 (72.8)	4 (4.9)	5 (6.2)	2 (2.5)	2.11	0.81
Grand mean						**2.29**	**1.01**

Note. Cells show n (%). Scale: 1 = very rarely, 5 = very frequently. Source: Field survey data.

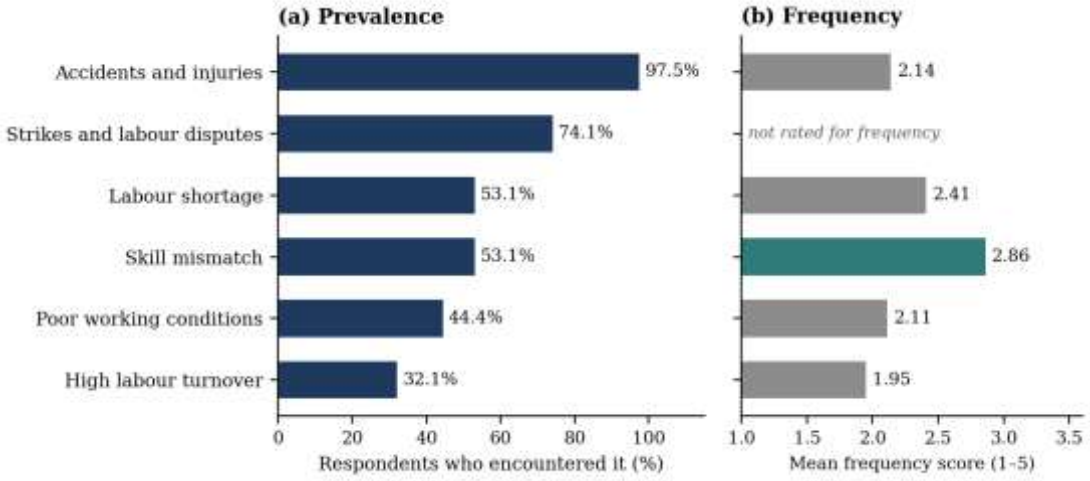


Figure 1: Prevalence (a) and mean frequency (b) of labour risks. Strikes and disputes were not rated for frequency.

7.4 Workers' Accounts

The interviews explain why the two measures diverge. Five themes emerged.

Accidents: episodic but serious. Workers described accidents as intermittent, with weight falling on severity rather than frequency:

> "On most sites, accidents happen once in a while, not every day. But when they happen, they are serious, like someone falling or getting cut" (MCW1).
>
> "Even though we wear helmets and boots, sometimes small injuries happen, especially when carrying heavy things. They don't stop the work but they remind us the job is risky" (MCW9).

Skill mismatch: dilution through the fundi network. Mismatch was described as a daily operational drag, created when artisans (fundis) bring in helpers who are then treated as skilled:

> "Sometimes the fundis bring people who do not really know the work industry. They spend more time correcting us, and the job delays" (MCW4).
>
> "When the fundis are few and they bring new unskilled helpers who also come in as fundis, mistakes increase and materials are wasted" (MCW11).

Labour shortage: a temporary imbalance. Shortages followed peak tasks or competition from better-paying sites rather than a permanent lack of workers: "Sometimes when there is more work, like roofing or pouring concrete, not enough workers show up. Then the rest of us available that day get overworked" (MCW2); "On some days, many workers go to other sites with better pay" (MCW7).

Turnover: a wage response. Workers left when a better rate appeared elsewhere: "Some people come for two or three weeks, then leave if they find another site paying more. It happens, but not all the time" (MCW6).

Working conditions: uneven by site. Provision of basic welfare varied from contractor to contractor: "Some sites are okay, they give us water and shade, but others have nothing" (MCW3); "Safety gear is not always provided. Sometimes you bring your own gloves or gumboots if you can afford" (MCW8).

7.5 Discussion

Prevalence and frequency call for different responses. Accidents behave like a rare-but-severe hazard: nearly every professional has seen one, but few see them often. Ordinary frequency monitoring will therefore understate them, and preparedness, induction and incident recording are better suited than routine counting. The same professionals' low frequency ratings alongside workers' acknowledgement that injuries "remind us the job is risky" (MCW9) can be read, through the Theory of Planned Behaviour, as risk being accepted as part of the job, an attitude that may blunt pressure for stronger controls. This interpretation is offered tentatively, since attitudes were not measured directly.

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Skill mismatch is the persistent operational risk. Its high mean and the share of respondents rating it at least occasional (79.0%) mark it as the risk that disturbs everyday work most regularly, in line with evidence that skills gaps are central to labour risk in Malaysia and Nigeria (Rahim et al., 2016; Oseghale et al., 2015). The interviews add a mechanism specific to Kenya's informal labour market. Because artisans act as the channel through which labour reaches the site (Mitullah & Wachira, 2003), skill is certified by reputation and contact, not by testing, and a helper can be promoted by assertion. Where verification is absent, mistakes, rework and material waste follow, as MCW11 described.

Shortage, turnover and welfare are situational. Workers linked shortages and exits to workload peaks and wage competition between sites, which is what a casual, daily-wage market would predict (Mitullah & Wachira, 2003). The uneven provision of water, shade and protective gear suggests that welfare depends on the individual contractor rather than on enforced minimum standards.

The supervisory profile matters. With 55.6% vocationally trained and 4.9% degree-qualified, supervisors bring strong craft knowledge but may have limited exposure to structured risk assessment. Akintoye and MacLeod (1997) found that practitioners in the United Kingdom relied mainly on judgement and experience rather than formal techniques, and the Eldoret profile suggests a similar reliance. High professional registration (95.1%) alongside persistent skills-related risk indicates that registration of supervisors does not by itself secure the competence of the wider workforce.

Limitations. The findings reflect one town, self-reported perceptions and a cross-sectional design. The interview sample was small
(n = 12) and recruited by convenience, with no demographic data collected, and severity was not scored. Findings should be read as analytical rather than statistical generalisations.

8. SUGGESTIONS

(1) **Verify skills at the point of engagement.** Contractors should keep a simple site skills register, and artisans who bring helpers should declare the competence level of each. Trade testing and recognition of prior learning can give informal artisans a route to certified status, with NCA-accredited institutions providing structured training.

(2) **Build supervisors' risk capacity.** Short modules in risk assessment, task allocation and incident recording should be offered to foremen and supervisors.

(3) **Record both prevalence and frequency.** A site risk register that logs near-misses and minor injuries as well as serious incidents would show where rare-but-severe events cluster.

(4) **Make basic welfare non-optional.** Clean water, shade and issued protective equipment, sized for all workers, should be minimum conditions checked in NCA inspections.

(5) **Stabilise labour supply.** Sequencing labour-heavy tasks such as roofing and concrete pours, and paying promptly and competitively, would reduce situational shortages and exits.

9. CONCLUSION

Labour risks in Eldoret's construction projects are widespread but uneven. Accidents are the most commonly encountered risk and also the least frequent, whereas skill mismatch is the most regularly recurring and is rooted in informal recruitment through artisan networks. Shortages, turnover and poor welfare are situational responses to workload, wages and contractor practice. Managing labour risk effectively therefore requires distinguishing risks that call for preparedness from those that call for routine prevention, and acting on both at the level of the site and the regulator.

10. AREAS FOR FURTHER RESEARCH

Future studies could (i) score severity alongside prevalence and frequency; (ii) triangulate perceptions with incident and attendance records; (iii) track how labour risks change across construction phases; (iv) compare counties with different economic and regulatory conditions; and (v) include women and informal workers more fully, with demographic data on interviewees.

DECLARATIONS

Ethical approval and consent. A research permit was obtained from NACOSTI and authorisation from the University of Eldoret. Participation was voluntary, informed consent was obtained and anonymity was maintained.

Declaration of interest. The authors declare no known competing financial interests or personal relationships that could have influenced this work.

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