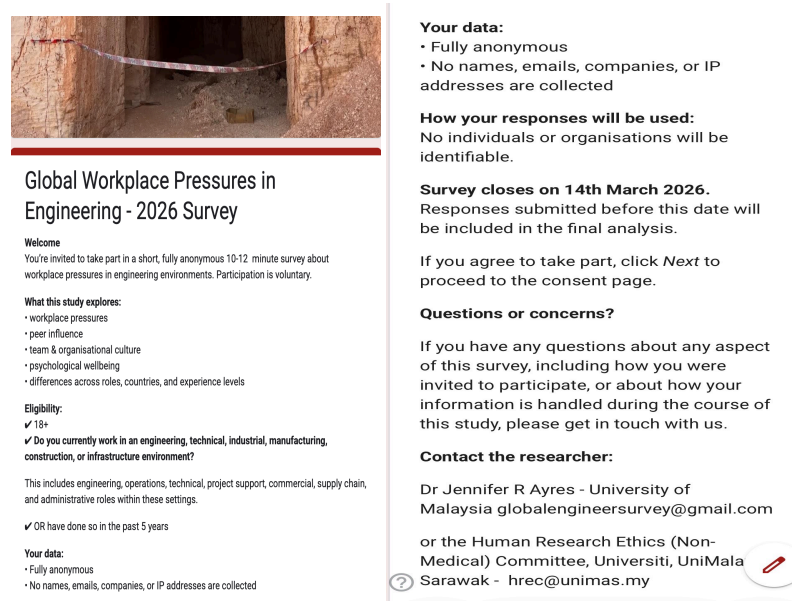


SUPPLEMENTAL MATERIAL 1: INFORMED CONSENT PROCESS DOCUMENTATION

Overview

This supplementary material documents the informed consent process employed in the survey, demonstrating compliance with ethical research standards and commitment to participant protection. The survey implements a multi-step consent process with automated routing to ensure active rather than passive consent.

Figure S1: Survey Welcome Page (Participant Information Sheet)



Global Workplace Pressures in Engineering - 2026 Survey

Welcome
You're invited to take part in a short, fully anonymous 10-12 minute survey about workplace pressures in engineering environments. Participation is voluntary.

What this study explores:

- workplace pressures
- peer influence
- team & organisational culture
- psychological wellbeing
- differences across roles, countries, and experience levels

Eligibility:

- ✓ 18+
- ✓ Do you currently work in an engineering, technical, industrial, manufacturing, construction, or infrastructure environment?

This includes engineering, operations, technical, project support, commercial, supply chain, and administrative roles within these settings.

✓ OR have done so in the past 5 years

Your data:

- Fully anonymous
- No names, emails, companies, or IP addresses are collected

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How your responses will be used:
No individuals or organisations will be identifiable.

Survey closes on 14th March 2026.
Responses submitted before this date will be included in the final analysis.

If you agree to take part, click *Next* to proceed to the consent page.

Questions or concerns?

If you have any questions about any aspect of this survey, including how you were invited to participate, or about how your information is handled during the course of this study, please get in touch with us.

Contact the researcher:

Dr Jennifer R Ayres - University of Malaysia globalengineersurvey@gmail.com

or the Human Research Ethics (Non-Medical) Committee, Universiti, UniMala Sarawak - hrec@unimas.my

The survey welcome page serves as the Participant Information Sheet. This page provides comprehensive study information, including:

- Study title and purpose
- What the study explores (workplace pressures, peer influence, team culture, psychological wellbeing, role differences)
- Eligibility criteria (18+, current/recent work in engineering or related fields)
- Data handling and anonymity protections
- Survey duration and closure date
- Researcher contact information
- Human Research Ethics Committee details

Key features:

- Information presented before any questions
- Clear, accessible language
- Comprehensive without overwhelming
- Contact details prominently displayed

Figure S2: Comprehension Check with Automated Routing

The screenshot shows a survey question interface. At the top, there is a text box containing the question: "I have read the participation information sheet - very first page of this survey explaining what areas this survey will explore, eligibility, how the data is stored and contact details." Below this, a smaller text box states: "If you answer no, you will be taken back to the front page to read the data and can then return to the survey." The question is a multiple-choice type, as indicated by the "Multiple choice" dropdown menu. There are three radio button options: "Yes", "No", and "Add option or add 'Other'". The "Yes" option is selected. To the right of each option is a routing action: "Continue to next section" for "Yes", and "Go to section 1 (Global Workplace P...ing - 2026 Survey)" for "No". At the bottom right, there is a "Required" toggle switch which is turned on (red).

Question 3 comprehension check with automated routing. Participants are asked to confirm they have read the Participant Information Sheet (the welcome page). Those who select "No" are automatically routed back to the welcome page to review the information before proceeding with the survey. This ensures active rather than passive consent.

Key features of automated routing:

- "Yes" response: Participant proceeds to the remaining consent items (Q4) and then to the survey
- "No" response: Participant automatically returned to the welcome page to read/re-read information
- After returning to the welcome page, the participant can re-attempt Q3
- Process repeats until participant confirms comprehension

Routing logic:

Q3: Have you read the participation information sheet?

└ Yes → Continue to Q4 (voluntary participation consent)

└ No → Route back to Section 1 (Welcome page)

└ After reviewing → Return to Q3

└ Process repeats until "Yes" selected

Multi-Step Consent Process Summary

The survey implements four-step informed consent:

Step 1: Information Provision

- Welcome page displays comprehensive Participant Information Sheet
- Covers purpose, eligibility, data handling, duration, contacts

- Presented before any consent questions

Step 2: Comprehension Check (Q3)

- Confirms participant has read the information
- Automated routing ensures information is accessed
- Prevents progression without confirmed comprehension

Step 3: Age Confirmation (Q2)

- Confirms participant is 18 years or older
- Binary Yes/No response
- "No" responses terminate survey participation

Step 4: Voluntary Participation (Q4)

- Confirms participation is voluntary
- Binary Yes/No response
- "No" responses terminate survey participation

Ethical Safeguards

Active Consent Design The Q3 comprehension check with automated routing transforms what might be a passive checkbox into an active verification process. Participants who attempt to proceed without reading the information are redirected, ensuring informed rather than perfunctory consent.

Anonymity Protection: No identifying information is collected.

- No names
- No email addresses
- No organisational identifiers
- No IP addresses
- Google Forms is configured to disable login requirements and response tracking

Right to Withdraw Participants can:

- Close the survey at any time without consequence
- Skip optional questions (Q101)
- Decline to answer individual items (N/A options provided in role-specific modules)

Transparency All data handling procedures disclosed:

- How data will be stored (secure, institutional accounts)
- How data will be used (research purposes, published aggregated findings)
- Who will have access (research team only)
- How long data will be retained (standard research retention periods)
- How anonymity is protected (no identifiers, aggregated reporting)

Implementation Notes

Technical Configuration: The automated routing in Q3 is implemented through Google Forms branching logic:

- "Yes" response → Section 2 (Continue to Q4)
- "No" response → Section 1 (Return to welcome page)

This ensures the routing is automatic and cannot be bypassed by participants.

Pilot Testing: The consent process was pilot tested with engineering practitioners before ethics approval to verify:

- Comprehension check routing functioned correctly
- Information was transparent and accessible
- The process did not create an undue burden
- All pathways led to appropriate outcomes

Ethics Approval: The consent process received approval from the Human Research Ethics Committee of Universiti Malaysia Sarawak. The ethics committee specifically reviewed:

- Welcome page content (Participant Information Sheet)
- Multi-step consent process
- Comprehension check with routing
- Anonymity protections
- Data handling procedures

Comparison with Standard Practice

Traditional Consent Processes: Many online surveys use simple checkbox consent:

- "I have read and understood the information above"
- Passive rather than active verification
- No mechanism to ensure information was actually accessed

This Survey's Enhanced Approach:

- Participant Information Sheet on a separate welcome page
- Explicit comprehension check question
- Automated routing back to information if not confirmed
- Multi-step verification (comprehension + age + voluntary participation)
- Active engagement is required rather than a passive checkbox

Advantages:

- Greater confidence participants are genuinely informed.
- Demonstrates institutional commitment to ethical research

- Reduces the likelihood of participants claiming they "didn't know" about study procedures
- Creates an audit trail showing all participants confirmed information access

Verification

The consent process can be independently verified through:

1. Response timestamps: All retained responses have timestamps after ethics approval date
2. Survey configuration: Google Forms settings show login requirements disabled and response tracking off
3. Routing logic: Q3 branching can be inspected in form builder
4. No test data: All pilot testing responses were permanently deleted prior to ethics approval and deployment

Conclusion

This informed consent process represents best practice in online survey research ethics. By combining comprehensive information provision with active verification of comprehension and automated safeguards, the design ensures genuine informed consent while maintaining participant respect and autonomy.