UNIVERSITAS
GADJAH MADA
**Analisis Hubungan Faktor Ergonomi terhadap Efektivitas Barista secara Parsial dan Simultan Menggunakan Pendekatan Korelasi dan Partial Least Squares-Structural Equation Modeling (PLS-SEM)**
Anfasu Arif Billah, Ir. Andi Rahadiyan Wijaya, S.T., M.Sc., Ph.D., IPM., ASEAN Eng.
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

# INTISARI

Pertumbuhan konsumsi kopi di Indonesia mencapai 8%, lebih tinggi dibandingkan rata-rata global sebesar 6%, sehingga mendorong perkembangan industri kedai kopi dan meningkatnya kebutuhan tenaga kerja barista. Dalam bekerja, barista menghadapi aktivitas fisik yang berpotensi menimbulkan risiko ergonomi, beban kerja mental yang tinggi, serta pengaruh faktor lingkungan kerja. Pada Tomoro Coffee, pelatihan ergonomi belum pernah dilaksanakan, sementara observasi awal menunjukkan adanya keluhan nyeri punggung bawah dan efektivitas kerja yang relatif rendah. Oleh karena itu, penelitian ini dilakukan untuk menganalisis pengaruh faktor ergonomi terhadap efektivitas kerja barista.

Pengumpulan data dilakukan melalui observasi terhadap 25 barista menggunakan metode *purposive sampling*. Observasi dilakukan pada tiga *shift* kerja, yaitu *opening*, *middle*, dan *closing*, serta pada tiga tingkat keramaian pelanggan, yaitu *low*, *medium*, dan *high traffic*. Sampel dipilih dengan kriteria barista diamati pada ketiga kondisi keramaian serta bekerja pada hari kerja dan akhir pekan. Efektivitas kerja diukur menggunakan metode *Overall Labor Effectiveness* (OLE), risiko ergonomi fisik menggunakan *Quick Exposure Check* (QEC), dan beban kerja mental menggunakan NASA *Task Load Index* (NASA-TLX). Selain itu, dilakukan pengukuran faktor lingkungan kerja yang meliputi suhu, kebisingan, dan pencahayaan. Analisis hubungan secara parsial dilakukan menggunakan korelasi Pearson, sedangkan analisis pengaruh secara simultan dilakukan menggunakan *Partial Least Squares Structural Equation Modeling* (PLS-SEM).

Hasil penelitian menunjukkan bahwa nilai rata-rata OLE sebesar 56,14%, berada di bawah standar efektivitas kerja sebesar 85%. Nilai rata-rata QEC sebesar 68,41% menunjukkan bahwa barista berada pada level aksi yang memerlukan investigasi lebih lanjut, sedangkan nilai rata-rata NASA-TLX sebesar 70,39 menunjukkan beban kerja mental yang tinggi. Faktor lingkungan kerja yang meliputi pencahayaan, suhu, dan kebisingan secara umum telah memenuhi standar yang berlaku. Hasil analisis korelasi menunjukkan bahwa efektivitas kerja memiliki hubungan signifikan dengan ergonomi fisik dan beban kerja mental, namun tidak memiliki hubungan signifikan dengan faktor lingkungan kerja. Hasil analisis PLS-SEM menunjukkan bahwa ergonomi fisik dan beban kerja mental berpengaruh negatif terhadap efektivitas kerja, dengan ergonomi fisik memiliki nilai koefisien jalur yang lebih besar dibandingkan beban kerja mental.

**Kata Kunci: Barista, Ergonomi, Efektivitas Pekerja, Korelasi, *Partial Least Square Structural Equation Modeling*.**

UNIVERSITAS
GADJAH MADA
**Analisis Hubungan Faktor Ergonomi terhadap Efektivitas Barista secara Parsial dan Simultan Menggunakan Pendekatan Korelasi dan Partial Least Squares-Structural Equation Modeling (PLS-SEM)**
Anfasu Arif Billah, Ir. Andi Rahadiyan Wijaya, S.T., M.Sc., Ph.D., IPM., ASEAN Eng.
**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

# ABSTRACT

Coffee consumption in Indonesia has grown by 8%, exceeding the global average of 6%, thereby driving the growth of the coffee shop industry and increasing the demand for baristas. In their work, baristas face physical activities that may pose ergonomic risks, a high mental workload, and the effects of workplace environmental factors. At Tomoro Coffee, no ergonomics training has ever been conducted, while initial observations indicate complaints of lower back pain and relatively low work efficiency. Therefore, this study was conducted to analyze the impact of ergonomic factors on baristas' work efficiency.

Data collection was conducted through observations of 25 baristas using purposive sampling. The observations were conducted during three shifts (opening, middle, and closing) and at three levels of customer traffic: low, medium, and high. Samples were selected based on the criterion that baristas were observed under all three crowding conditions and while working on weekdays and weekends. Work effectiveness was measured using the Overall Labor Effectiveness (OLE) method, physical ergonomic risks using the Quick Exposure Check (QEC), and mental workload using the NASA Task Load Index (NASA-TLX). In addition, measurements were taken of workplace environmental factors, including temperature, noise, and lighting. Partial correlation analysis was performed using Pearson's correlation coefficient, while simultaneous analysis of effects was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM).

The research results show that the average OLE score was 56.14%, which is below the work effectiveness standard of 85%. The average QEC score of 68.41% indicates that the baristas are at an action level requiring further investigation, while the average NASA-TLX score of 70.39 indicates a high mental workload. Workplace environmental factors, including lighting, temperature, and noise, generally meet applicable standards. The results of the correlation analysis indicate that work effectiveness is significantly associated with physical ergonomics and mental workload, but is not significantly associated with work environment factors. The results of the PLS-SEM analysis indicate that physical ergonomics and mental workload have a negative effect on work effectiveness, with physical ergonomics having a larger path coefficient than mental workload.

**Keyword: Barista, Ergonomic, Labor Effectiveness, Correlation, Partial Least Square Structural Equation Modeling.**