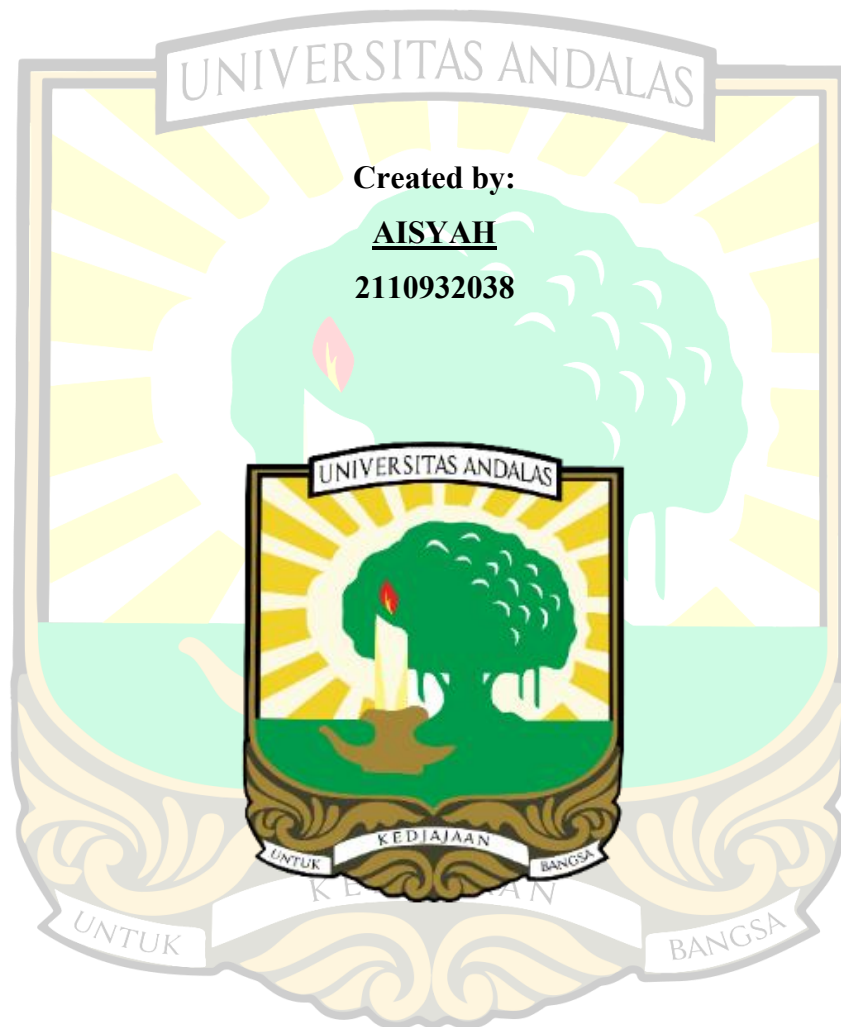


**DEVELOPMENT OF AN ARTIFICIAL INTELLIGENCE ADOPTION
READINESS INDEX FOR SMALL INDUSTRIES IN WEST SUMATRA**

FINAL PROJECT



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AISYAH

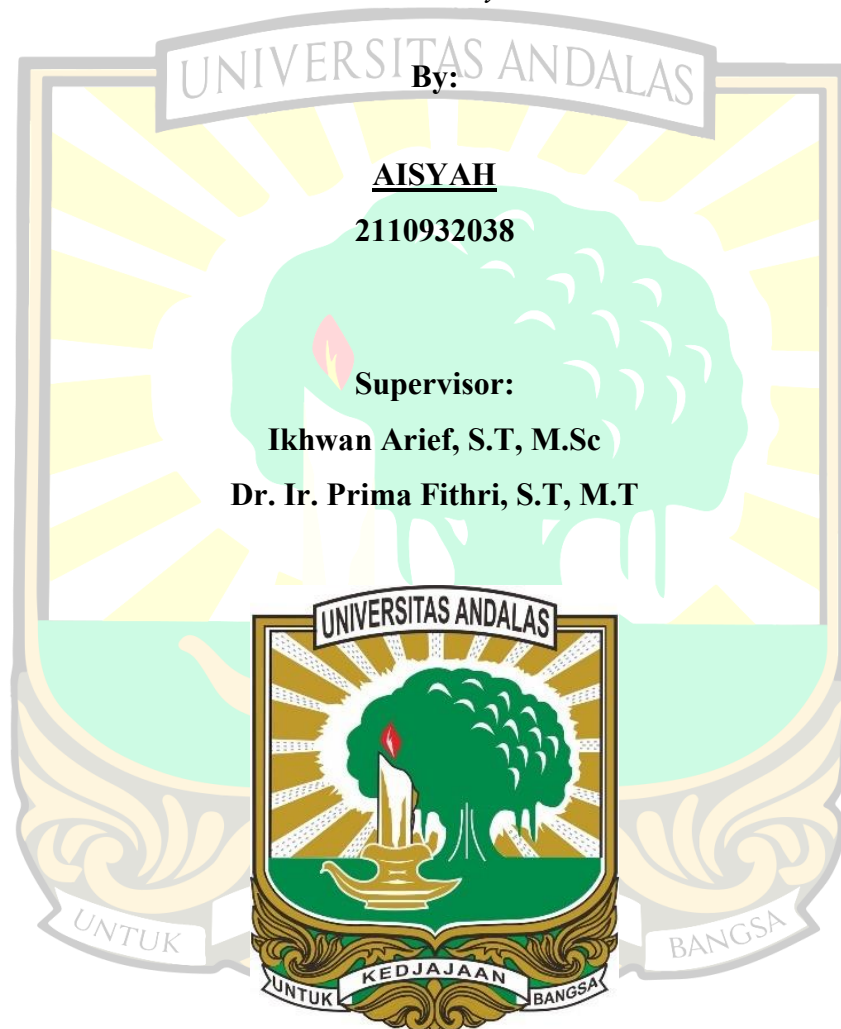
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**DEPARTMENT OF INDUSTRIAL ENGINEERING
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PADANG
2026**

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FINAL PROJECT

*As one of the requirements for completing the Bachelor's program in the
Department of Industrial Engineering, Faculty of Engineering, Andalas
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ABSTRACT

Small industries have an important role in the economy of West Sumatra, but still face various challenges in increasing competitiveness, especially in adopting Artificial Intelligence (AI) technology. This study aims to analyze the influence of dynamic capabilities on AI adoption readiness in small industries and calculate the AI Adoption Readiness Index as a tool to assess the level of readiness. The research model focuses on three dimensions of dynamic capabilities, namely sensing, seizing, and transforming. AI adoption readiness is measured through four control variable domains, namely technology readiness, human resources, data management, and organizational readiness.

This study uses a descriptive approach and quantitative explanation. Primary data was collected through surveys and questionnaires open to small industry respondents in West Sumatra. Secondary data is obtained from industry reports, national statistics, and relevant literature. The relationships between variables were analyzed using Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach.

The results showed that the model had a moderate explainability with an R-square value of 0.673, which means that 67.3 percent of the variation in AI adoption readiness can be explained by the variables in the model. The results of the hypothesis test showed that sensing ($\beta = 0.458$, $p < 0.001$) and transforming ($\beta = 0.390$, $p = 0.006$) capabilities had a positive and significant influence on AI adoption readiness. Meanwhile, seizing capabilities and control variables such as business age, number of employees, location, and subsectors did not show a significant influence. These findings underscore the importance of strengthening sensing and transforming capabilities to support AI adoption and digital transformation in small industries in West Sumatra.

Keywords : Artificial Intelligence, Small Industries, Dynamic Capabilities, AI Readiness Index, SEMPLS

ABSTRAK

Industri kecil memiliki peran penting dalam perekonomian Sumatera Barat, namun masih menghadapi berbagai tantangan dalam meningkatkan daya saing, terutama dalam mengadopsi teknologi Kecerdasan Buatan (Artificial Intelligence/AI). Penelitian ini bertujuan untuk menganalisis pengaruh kapabilitas dinamis terhadap kesiapan adopsi AI pada industri kecil serta menghitung Indeks Kesiapan Adopsi AI sebagai alat untuk menilai tingkat kesiapan tersebut. Model penelitian berfokus pada tiga dimensi kapabilitas dinamis, yaitu sensing, seizing, dan transforming. Kesiapan adopsi AI diukur melalui empat domain variabel kontrol yaitu kesiapan teknologi, sumber daya manusia, pengelolaan data, dan kesiapan organisasi.

Penelitian ini menggunakan pendekatan deskriptif dan eksplanasi kuantitatif. Data primer dikumpulkan melalui survei dan kuesioner terbuka kepada responden industri kecil di Sumatera Barat. Data sekunder diperoleh dari laporan industri, statistik nasional, dan literatur yang relevan. Hubungan antar variabel dianalisis menggunakan Structural Equation Modeling (SEM) dengan pendekatan Partial Least Squares (PLS).

Hasil penelitian menunjukkan bahwa model memiliki daya jelaskan yang moderat dengan nilai R-square sebesar 0,673, yang berarti bahwa 67,3 persen variasi kesiapan adopsi AI dapat dijelaskan oleh variabel-variabel dalam model. Hasil pengujian hipotesis menunjukkan bahwa kapabilitas sensing ($\beta = 0,458$, $p < 0,001$) dan transforming ($\beta = 0,390$, $p = 0,006$) memiliki pengaruh positif dan signifikan terhadap kesiapan adopsi AI. Sementara itu, kapabilitas seizing serta variabel kontrol seperti usia usaha, jumlah karyawan, lokasi, dan subsektor tidak menunjukkan pengaruh yang signifikan. Temuan ini menegaskan pentingnya memperkuat kapabilitas sensing dan transforming untuk mendukung adopsi AI dan transformasi digital pada industri kecil di Sumatera Barat.

Keywords : Artificial Intelligence, Industri Kecil, Kapabilitas Dinamis, Indeks Kesiapan AI, SEMPLS