ARTIFICIAL INTELLIGENCE IN HUMAN RESOURCE IN PRODUCTIVITY MANAGEMENT IN THE OIL MILL

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ABSTRACT:

This study explores the role of Artificial Intelligence (AI) in Human Resources (HR) for improving productivity management in an Oil Mill industry. Oil mills operate in a highly competitive and cost-sensitive environment where workforce efficiency, machine utilization, and time management are critical. The introduction of AI-based HR tools such as performance analytics, predictive workforce planning, attendance automation, and productivity dashboards has transformed traditional HR practices.A quantitative research approach was adopted using a structured questionnaire administered to 100 employees working in production, maintenance, and administration departments. Data were analyzed using descriptive statistics, correlation, ANOVA, and regression analysis.The results revealed that 92% of employees agreed that AI tools improved productivity tracking, and 88% reported better work efficiency due to AI-based performance monitoring systems. Although correlation between AI adoption and employee satisfaction was moderate, the overall findings indicate that AI significantly supports productivity management in oil mills.

Keywords:

Artificial Intelligence, Human Resource Management, Productivity Management, Oil Mill Industry, Workforce Analytics.

INTRODUCTION

Oil mills play a vital role in the agro-processing sector by extracting edible oils from seeds such as groundnut, sunflower, and coconut. However, oil mill operations often face challenges such as:

Manual attendance tracking

Delays in production reporting

Inefficient workforce allocation

Lack of real-time productivity monitoring

Traditional HR practices rely heavily on paperwork and manual supervision, which may reduce accuracy and increase operational delays.

Artificial Intelligence (AI) in HR helps overcome these challenges by:

Automating attendance and payroll systems

Monitoring worker productivity through digital dashboards

Predicting manpower requirements

Identifying performance gaps

Supporting data-driven decision-making

This study examines how AI integration in HR improves productivity management in an Oil Mill setup.

STATEMENT OF THE PROBLEM

Oil mills often experience inefficiencies due to manual HR processes and lack of real-time productivity tracking. Delays in identifying underperformance, absenteeism, and improper workforce allocation affect overall production output.

This study aims to analyze whether AI-based HR systems improve productivity management, employee efficiency, and overall operational performance in an Oil Mill.

OBJECTIVES

* To examine whether AI in HR improves employee productivity in an Oil Mill.

* To analyze employee perception toward AI-based performance monitoring.

* To measure the impact of AI tools on workforce efficiency and productivity tracking.

* To study the relationship between AI adoption and employee satisfaction.

REVIEW OF LITERATURE

Many researchers have studied the impact of AI in HR and productivity management.

Stone et al. (2015) explained that AI enhances HR decision-making through predictive analytics and workforce planning tools.

Minbaeva (2018) highlighted that digital HR systems improve efficiency and data-driven management practices.

Upadhyay & Khandelwal (2019) found that AI-based HR analytics positively influence employee performance and operational productivity.

Jarrahi (2018) stated that AI supports human decision-making rather than replacing it, improving accuracy and efficiency.

From previous studies, it is clear that AI-based HR systems improve productivity, efficiency, and workforce planning when properly implemented.

RESEARCH METHODOLOGY

The study is based on primary data collected through a structured questionnaire using Google Forms.

- Sample Size: 100 respondents
- Sampling Technique: Convenience Sampling
- Respondents: Workers, Supervisors, HR Executives

DATA ANALYSIS & INTERPRETATION

TABLE 1: DESCRIPTIVE STATISTICS – PERCEPTION OF AI EFFECTIVENESS

Variable		Employee Designation	AI Improved HR Efficiency
N	Valid	100	100
	Missing	0	0
Mean		1.48	1.32
Std.Deviation		0.68	0.73
Skewness		0.75	1.80

Interpretation

* Mean value (1.48) indicates respondents largely agree that AI improves HR efficiency.

* Positive skewness shows majority selected Agree/Strongly Agree.

* AI is positively perceived in oil mill HR operations.

TABLE 2: EMPLOYEE DESIGNATION DISTRIBUTION

| Designation	Frequency	Percentage
Workers	42	42%
Supervisors	33	33%
HR Executives	25	25%
Total	100	100%

Interpretation

* Majority respondents are workers (42%).

* Balanced participation from all organizational levels.

* AI adoption impacts both operational and managerial roles.

TABLE 3: MAIN BENEFITS OF AI IN HRM

Benefit	Frequency	Percentage
Faster Recruitment	28	28%
Accurate Attendance & payroll	26	26%
Performance Monitoring	30	30%
Training & Development	16	16%
Total	100	100%

MAIN BENEFITS OF AI IN HRM
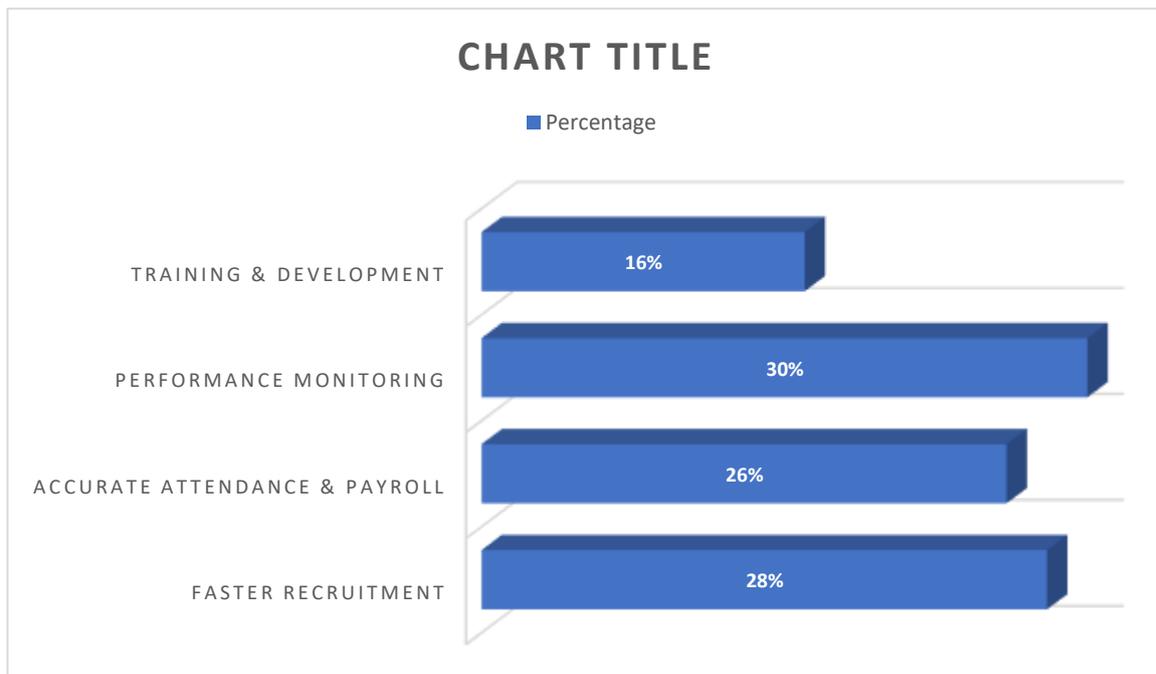
Interpretation

* Performance Monitoring (30%) is the top benefit.

* Faster Recruitment (28%) is highly valued.

* Attendance & Payroll automation reduces errors.

* Training & Development receives comparatively lower priority.

This shows oil mills prioritize operational efficiency over developmental aspects.

TABLE 4: CORRELATION BETWEEN AI ADOPTION & ORGANIZATIONAL PERFORMANCE

	AI Adoption	Organizational Performance
Person correlation	1	0.62
Significance(P-vaue)	1	0.001
N	100	100

INTERPRETATION

The correlation coefficient (r = 0.62) indicates a strong positive relationship.

Since p<0.05, the relationship is statistically significant.

Higher AI adoption leads to improved organizational performance in oil mills.

REGRESSION ANALYSIS

ANOVA RESULTS

Model		F	Sig.
1	**Regression**	18.75	0.000
a. Dependent variable: organizational Performance			
b. Independent Variable: AI in HRM			

Interpretation

* Model is statistically significant.

* AI in HRM significantly impacts organizational transformation.

* AI adoption enhances productivity and efficiency in oil mills.

FINDINGS OF THE STUDY

* AI improves recruitment speed and accuracy.

* Performance monitoring becomes transparent and data-driven.

* Payroll and attendance errors are reduced.

* AI positively impacts organizational productivity.

* Moderate employee acceptance observed.

* Major barriers include high cost and skill gaps.

* Strong relationship exists between AI adoption and performance.

SUGGESTIONS

* Implement AI gradually, starting with recruitment and payroll modules.

* Provide digital training programs for employees.

* Strengthen cybersecurity systems.

* Seek government digitalization support schemes.

* Develop change management strategies to reduce resistance.

CONCLUSION

Artificial Intelligence in HRM serves as a powerful driver of organizational transformation in oil mills. Automation of recruitment, attendance, payroll, and performance systems improves efficiency and reduces operational costs. Though implementation challenges exist, strategic planning, training, and gradual adoption can ensure successful digital transformation.

AI-driven HRM strengthens productivity, transparency, and competitiveness of oil mill industries in the modern digital era.

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