

The Impact of Adopting the Kaizen Strategy on Human Resource Performance in the Manufacturing Sector -Case Study of BATICIM enterprise in Oum El Bouaghi Province-

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Abstract:

This study aims to analyze the impact of adopting the Kaizen strategy on human resource performance in the industrial sector through a case study of the BATICIM enterprise in Oum El Bouaghi province. A descriptive-analytical approach using a questionnaire and linear regression analysis on a sample of 90 employees. Findings indicate a strong, statistically significant positive relationship between the Kaizen strategy and human resource performance, with the Kaizen dimensions collectively explaining 58.5% of the variance in performance. Work discipline and working conditions were identified as the most influential factors, while waste reduction showed no significant effect when other variables were held constant. The study concluded that improving the work environment and strengthening a culture of institutional discipline are key factors in enhancing human performance. It recommended fostering a Kaizen culture through continuous training and awareness programs, involving employees in performance evaluation, improving the physical, organizational, and social conditions of work, and re-evaluating waste reduction mechanisms in line with employees' own initiatives.

Keywords: Kaizen strategy; Human resource performance; manufacturing sector.

Jel Classification Codes: L60, M11, M12.

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1. Introduction

Organizations are facing increasing challenges in a rapidly changing competitive environment, which drives them to seek modern management approaches to improve performance and enhance competitiveness. Among the most prominent of these approaches is the adoption of the Kaizen strategy, particularly in the manufacturing sector. Kaizen is a philosophy based on small, continuous improvements at both individual and group levels, achieved by reducing waste, enhancing value-added activities, and involving all employees in the development process through their daily contributions and suggestions. This philosophy is characterized by its simplicity and ease of application, in addition to its role in boosting employee morale and motivation, thereby creating an organizational environment that fosters innovation and sustainable improvement.

It has become increasingly evident that the human factor represents a critical competitive advantage, especially in the context of the Fourth Industrial Revolution, which is not limited to technological advancement but also involves rethinking how human resources are managed and developed. Ensuring the effective use of modern technologies and engaging employees in continuous improvement processes are essential. Accordingly, the Kaizen strategy serves as an appropriate tool to support this transformation. From this perspective, this study aims to analyze the impact of adopting the Kaizen strategy on human resource performance in the manufacturing sector, with a focus on its role in developing competencies, improving the work environment, and enhancing the quality of human performance in alignment with the organization's strategic goals.

Based on the foregoing discussion, the research problem can be formulated as follows: Is there an impact of adopting the Kaizen strategy on human resource performance in the manufacturing sector in general, and in the BATICIM enterprise in Oum El Bouaghi province in particular?

This main question gives rise to several sub-questions, namely:

➤ Is there a statistically significant impact of the resource waste reduction strategy on human resource performance in the institution under study at the 5% significance level?

➤ Is there a statistically significant impact of the workplace discipline strategy on human resource performance in the institution under study at the 5% significance level?

➤ Is there a statistically significant impact of the working conditions strategy on human resource performance in the institution under study at the 5% significance level?

Based on the research problem and the previously mentioned sub-questions, the following hypotheses can be formulated:

➤ Main Hypothesis: There is an impact of adopting the Kaizen strategy on human resource performance in the manufacturing sector in general, and in the BATICIM company in particular.

➤ (H_1^0): There is a statistically significant impact of the resource waste reduction strategy on human resource performance in the institution under study at the 5% significance level.

➤ (H_2^0): There is a statistically significant impact of the workplace discipline strategy on human resource performance in the institution under study at the 5% significance level.

➤ (H_3^0): There is a statistically significant impact of the working conditions strategy on human resource performance in the institution under study at the 5% significance level.

To explore the research problem and achieve the study objectives a descriptive-analytical methodology was adopted deemed suitable for the nature of this inquiry, as it allows for the description and analysis of its key components and fundamental dimensions. Additionally, the case study method has been employed by focusing on one of the industrial institutions in Oum El Bouaghi Province, namely the BATICIM enterprise, with the aim of providing a practical perspective on the reality of Kaizen strategy implementation and its impact on human resource performance.

Despite the growing academic interest in examining the impact of adopting the Kaizen strategy on human resource performance across various sectors as reflected in studies such as Lizarelli (2025),

which explored the relationship between Kaizen and ESG performance in industrial institutions; Adjemi and Sahnoune (2025), which focused on empowering human resources in the banking sector; and Shojaei (2024), which applied path analysis to assess Kaizen's effects in the automotive industry in Iran most of these studies remain confined to different organizational and economic contexts. They often overlook the specific features of the local work environment and contextual variables within Algerian industrial institutions.

From this perspective, the present study gains importance by addressing a clear research gap concerning the limited empirical investigations of Kaizen implementation in the Algerian context. The study aims to examine how the three core dimensions of Kaizen- waste reduction, workplace discipline, and working conditions- relate to human resource performance, using the BATICIM enterprise in Oum El Bouaghi Province as a case study. By adopting a descriptive-analytical approach and applying rigorous statistical methods, this study makes a valuable contribution to the academic literature on enhancing institutional performance in industrial settings.

2. Theoretical Framework

2.1 Kaizen: From Japanese Industry to a Global Management Strategy

Kaizen is one of the most prominent modern Japanese management philosophies. The term literally means “change for the better” (Rahmanian & Rahmatinejad, 2013). It originates in Japan in 1950 as a response to administrative inefficiencies and a forecasted labor shortage. The main motivation behind its adoption is to improve the quality of Japanese industrial products which were considered low quality at the time and to revitalize the country’s industrial base to compete in global markets, particularly against the United States. Although it originated in the 1950s, Kaizen did not gain international recognition until the 1980s, following the publication of Masaaki Imai’s book *Kaizen: The Key to Japan's Competitive Success* in 1986, and its registration as a trademark in the United States.

At its core, Kaizen embodies the principle of continuous, incremental improvement in key organizational processes, emphasizing the cumulative impact of small changes over time. The idea is that a series of minor, ongoing improvements is often more effective and sustainable than a single radical change. Successful implementation of Kaizen rests on three fundamental pillars: order and cleanliness, elimination of waste, and standardization (Chanda, 2017, p. 03). In industrial settings, Kaizen contributes to reducing waste related to machinery, labor, and production methods.

Kaizen is considered one of the key lean management approaches, aiming to create value for the end customer, minimize waste, and achieve ongoing improvement through short cycles involving employee participation. This stems from the belief that those closest to the process are best equipped to identify inefficiencies and propose effective solutions. Unlike traditional organizational change, which often takes months or years, Kaizen enables rapid and responsive change through cycles that can be completed in days or weeks (von Thiele Schwarz et al., 2017, p. 969).

Moreover, kaizen extends beyond the industrial sector; it represents a holistic philosophy applicable across diverse organizational and social contexts. Unlike Western management systems that focus primarily on outcomes, Kaizen emphasizes human effort and collective participation, from top management to frontline workers. Implementation failure is often due to a lack of managerial commitment or employee acceptance. Masaaki Imai stresses that correct implementation of Kaizen humanizes the work environment, reduces mental and physical burdens on workers, and promotes scientific thinking and waste elimination.

Bassant and Caffyn (1994) describe Kaizen as a continuous process of incremental innovation, often carried out through small-scale projects called “Kaizen events,” which are gradually applied across all departments and units. However, these improvements may lose their impact if the three foundational pillars are not observed. (Erez, 2016, p. 226) highlights the difference between Kaizen and

innovation: while Kaizen relies on gradual, step by step improvements that maintain the status quo, innovation requires radical changes or major investments. Thus, Kaizen is more evolutionary, whereas innovation is revolutionary.

Colenso (2000) captured the spirit of Kaizen with his counter to the business adage “If it ain’t broke, don’t fix it,” proposing instead: “If it ain’t broke, don’t ignore it because it will break someday.” This reflects kaizen’s preventive and proactive approach, which encourages organizations to detect early warning signs and take action before problems escalate (Erez, 2016, p. 225).

With regard to the basic principles of Kaizen, the global Kaizen philosophy includes four main principles: (Ali Fawzy, Sherif, & Zohry, 2025, p. 220)

➤ Kaizen is process-oriented; processes need to be improved before results can be improved.

➤ Improving and maintaining standards: combining innovations with the continuous efforts to maintain and enhance performance standards is the only way to achieve lasting improvement.

➤ Kaizen focused on small improvements of work standards coming from ongoing efforts. There can be no improvement if there were no standards. The PDCA cycle was used to support the desired behaviors. This cycle of continuous improvement had become a common method in kaizen, it was used to generate improvement habits in employees.

➤ People orientation: Kaizen should involve everyone in the organization, from top management to frontline employees. One of the strongest mechanisms aligning with this third principal was group-oriented kaizen. teams focus primarily on improving work methods, routines and procedures usually identified by management.

In terms of implementation, Kaizen follows a defined sequence: identifying the area for improvement, analyzing the root cause of the problem, justifying the improvement, planning corrective measures, implementing the project, evaluating results, and institutionalizing the

new standard. This change process is characterized by four main traits: continuous, incremental, cost-effective, and participatory.

Kaizen implementation is embedded in a set of interrelated systems and tools, including: 5S, Kaizen events, the 5 Whys method, Total Productive Maintenance (TPM), and the Just-In-Time (JIT) system. Other associated practices include: Suggestion systems, Kaizen costing, Quality Control Circles (QCC), Total Quality Management (TQM), the Toyota Production System (TPS), Kanban, elimination of the seven types of waste, and Poka-Yoke (error-proofing).

The success of Kaizen has led to its spread outside Japan, with the Japan International Cooperation Agency (JICA) launching its first programme in Singapore, achieving impressive results, which led the Singapore Productivity and Standards Board to become a regional training center. In Africa, Kaizen is beginning to make its way through multinational companies in the industrial and service sectors, although its spread remains limited due to a lack of institutional and logistical support.

2.2 Human resource as a key organizational asset

Human resources are considered one of the fundamental pillars upon which organizations are built, alongside material, financial, and intangible assets. They represent competent individuals capable of delivering effective services, positioning them as a central component of organizational asset structures (Medani & Belkebir, 2021, p. 241). This significance takes on a strategic dimension due to the role human resources play in directing and utilizing other assets to achieve organizational objectives. Peter Drucker reinforced this concept by emphasizing that employees should be regarded as a resource equal to -if not more valuable than- other organizational assets, given their capacity for coordination, decision-making, and creativity. He thus advocated for job designs that consider employees' needs and provide opportunities for professional growth and development (Medani & Belkebir, 2021, p. 241). In the same context, Chambrier (1996) argued that the success of organizational change does not depend solely on

adopting new technologies but rather on their interaction with modern production methods and emerging human resource management (HRM) policies, thereby reinforcing the strategic role of HRM within the organization (Benabderrahmane, 2020, p. 44). Accordingly, several scholars have linked overall organizational performance to human resource performance. Schivelli, for instance, asserted that total output is the result of the interaction of multiple factors - primarily labor- which reflects performance based on the employee's capacity and the nature of their tasks (Bouhadid, 2014, p. 135).

Human resource performance is defined as the achievement of results through the execution of specific tasks within a given time frame, based on three key pillars: ability, effort, and opportunity (Alouane & Tellouche, 2020, p. 350). However, performance is not solely dependent on competence; it is also influenced by motivation, which is shaped more by social interaction than by material conditions (Bouressace, 2023, p. 07). In a similar vein, some researchers argue that HR performance is also embodied in a set of practices that enable the organization to acquire human resources aligned with its quantitative and qualitative needs (Zemmour & Mabrouk, 2022, p. 110). From a normative perspective, performance is evaluated through two dimensions: efficiency, which reflects the internal use of human resources to produce one unit of output, and effectiveness, which indicates the extent to which goals and expected results are achieved as outlined in the ISO 2000 standard (Bouhadid, 2014, p. 135). Based on this comprehensive perspective, human resource performance is defined as the result of the interaction between ability, effort, and opportunity within an organizational context that emphasizes motivation and the necessary conditions for achieving targeted outcomes. Improving this performance requires an integrated process composed of five essential stages: performance planning (defining tasks and responsibilities), performance guidance (continuous communication), performance diagnosis (identifying and analyzing performance gaps), performance evaluation (measuring outcomes), and performance development (enhancing strengths and addressing

weaknesses through organizational change strategies). (Alouane & Alshamary, 2024, p. 298)

2.3 The relationship between kaizen practices and Human resource performance

The Kaizen strategy is a gradual and continuous improvement approach that encompasses all areas of management and production. It is centered on human resources and places significant emphasis on standardization. Dickson et al. (2009) highlighted that Kaizen is a learning-by-doing method focused more on the process than the result, while Smith (1990) emphasized that eliminating fear is essential for the success of Kaizen (JOANNA, 2017, p. 83).

Based on these principles, numerous studies have linked Kaizen practices to human resource (HR) performance, particularly in terms of HR policies and the impact of these practices on employee behavior and operational outcomes. From a lean manufacturing perspective, HR performance and Kaizen practices are closely related. Practices such as recruitment, training, evaluation, motivation, job design, and employee engagement contribute to increased motivation, commitment, cooperation, collaboration, flexibility, organizational affiliation, and reduced turnover and absenteeism (NGUYEN & NGUYEN, 2022, p. 147).

Kaizen is also characterized by teamwork design, continuous problem-solving, daily improvement, creative thinking, information sharing, and work discipline. The impact of these characteristics has been measured through goal clarity, team positivity, management support, and ongoing reflection. These outcomes lead to improved HR performance in areas such as expertise, creative thinking, planning ability, project control, learning behavior, change acceptance, and awareness (NGUYEN & NGUYEN, 2022, p. 147).

Employee involvement in improving the work environment is central to the Kaizen philosophy, as it values each worker's contribution based on their hands-on experience with daily operations. Employees working directly on production lines often have a clearer understanding of practical issues and opportunities for improvement

that may not be visible to senior management. By giving them the chance to propose improvements, they feel valued and a sense of belonging, which enhances their motivation and performance. The employee suggestion system is an effective tool for encouraging this engagement and improving product quality.

Similarly, researchers such as Suarez-Barraza and Ramis-Pujol (2010) noted that Kaizen contributes to enhancing the recruitment of human resources without compromising performance, as it is an effective tool for improving both internal and external service quality (JOANNA, 2017, p. 83).

Furthermore, Kaizen is an ongoing, never-ending process. As Skrzypek (2010) demonstrated, the application of Kaizen techniques in organizations leads to remarkable results, including an 85% reduction in production cycles, a 75% reduction in assembly time, a 50% reduction in storage space usage, a 40% increase in productivity, a 97% reduction in waste, an 80% reduction in project development time, a 75% reduction in investment expenditure, and a 93% reduction in complaints (JOANNA, 2017, p. 84).

The Global Workforce Happiness Index highlights the critical role of employee satisfaction and loyalty in driving innovation, organizational development, and future strategy formulation. This aligns closely with the Kaizen philosophy, which emphasizes continuous improvement and considers employees as central agents of change. When employees are satisfied and engaged, they are more likely to contribute innovative ideas and support quality and efficiency initiatives. Their loyalty also facilitates the sustainable adoption of Kaizen practices, creating a work environment that promotes ongoing improvement and adaptability, ultimately enhancing the organization's strategic effectiveness and sustainability. (JOANNA, 2017, p. 84)

3. Research methodology

3.1 Research Instrument and Variable

Based on a review of previous studies related to the research topic, it was found that the questionnaire is the most suitable tool for achieving the objectives of the study. Accordingly, a questionnaire was

designed consisting of two parts: the first part focuses on the demographic characteristics of the study sample, while the second part is divided into two axes. The first axis addresses the concept of Kaizen through 15 items distributed across three dimensions: the strategy of reducing resource waste, the strategy of job discipline, and the strategy of working conditions. The second axis focuses on human resource performance in the organization through 5 items, as presented in Table No (01).

Table 1. Presentation of the Questionnaire Design

Part one: Descriptive data of the study sample: gender, age, educational qualification and years of experience		
Part Two		
Axis One: Kaizen Strategy in the Company		
Variable	Item Sequence	Content
Reducing Resource Waste Strategy	01- 05	The institution focuses on promoting a culture of rationalization by reducing financial and time costs, providing the necessary work tools to minimize movement, adopting competency-based recruitment, and ensuring a clean and motivating work environment.
Workplace Discipline Strategy	06-10	The company relies on dedicated programs to set work priorities and involves employees in improvement plans through brainstorming. It also implements performance improvement programs and provides continuous support for research and development activities.
Working Condition Strategy	11- 15	This strategy focuses on the precise definition of tasks and performance standards, relying on field supervision, while aligning and simplifying procedures to serve the organization’s goals and enhance its effectiveness and efficiency.
Axis two: Human Resources Performance in the company		
Item Sequence	Content	
16- 20	This section focuses on employees’ commitment to internal regulations and their efforts to deliver professional performance that meets quality and cost standards, with evaluation based on the results achieved.	

Source : Prepared by researchers.

3.2 Sampling Data Collection

After preparing the questionnaire, the study population and sample were defined, as the study population represents the foundational framework of applied research and includes all individuals or units to which the study results can be generalized. The theoretical framework was applied to a sample from BATICIM Company for the production of iron and electric poles, located in Oum El Bouaghi province, which employs 108 workers. Due to the difficulty of reaching all employees, a random sample was selected using Steven Thompson's formula, which determined the minimum required sample size to be 85 participants. To ensure objectivity and accuracy of responses, 100 questionnaires were manually distributed to randomly selected employees, and 90 valid questionnaires were ultimately retrieved for analysis. This sample size is considered statistically sufficient according to the adopted Steven Thompson formula.

3.3 Validity and Reliability

Before distributing the research questionnaire, its relevance and comprehensiveness in relation to the research objectives were verified by a group of expert academic reviewers specialized in the field of marketing. As for the reliability of the measurement tool, it was tested using Cronbach's Alpha, as shown in the table below.

Table 2. Validity and Reliability test

	Reducing Resource Waste	Workplace Discipline	Working Condition	Kaizen Strategy	Human Resources Performance
Cronbach Alpha	0.924	0.916	0.916	0.933	0.886

Source: Prepared by the researchers based on SPSS (V25) outputs.

The consistency and reliability of the study's measurement scales were verified using Cronbach's Alpha coefficient. The reliability coefficients for all scales were calculated, as presented in Table (2). The values ranged between 0.886 and 0.933, which are considered to be within the good to excellent range. This indicates that

the questionnaire's axes and dimensions demonstrate a high level of internal consistency.

3.4 Kolmogorov-Smirnov Test for Normal Distribution

After conducting the normality test, it was found that the p-values for the dimensions related to the Kaizen strategy and human resource performance in the institution whether considered individual or collectively are greater than the significance level (5%). This leads us to accept the null hypothesis and reject the alternative hypothesis, which states that the data follow a normal distribution.

3.5 Results and Discussion

3.5.1 Respondent Demographics

The questionnaire included four variables related to the personal data of the research sample, as shown in the table below.

Table 3. Respondent Demographics

	Categories	Frequency	Percent
gender	Male	57	63.3%
	Female	33	36.7%
age	Under 30 years	12	13.3%
	30 to 40 years	40	44.4%
	41 to 50 years	30	33.3%
	Over 50 years	08	8.9%
educational qualification	Secondary Level	19	21.1%
	University Level	71	78.9%
years of experience	Less than 5 years	15	16.7%
	5 to 10 years	24	26.7%
	11 to 15 years	21	23.3%
	16 to 20 years	16	17.8%
	More than 20 years	14	15.6%

Source: Prepared by the researchers based on SPSS (V25) outputs.

The data indicates that the study sample is predominantly male (63.3%) and largely concentrated within the 30–50 age range (77.7%). Most participants hold a university-level education (78.9%) and possess a moderate level of professional experience, primarily between 5 and 15 years. These characteristics reflect a relatively

diverse sample, with a notable predominance of middle-aged, highly educated, and moderately experienced individuals factors that may influence their perspectives on the topics addressed in the questionnaire.

3.5.2 Analysis of the dimensions and axes of the study tool

This study relied on the five-point Likert scale to measure participants’ attitudes, which includes five levels of agreement ranging from “Strongly Disagree” to “Strongly Agree,” with values assigned from 1 to 5. To interpret the results of this scale, the boundaries of each category were determined using the formula: $\text{Category Length} = \text{Range} / \text{Number of Categories}$, where the range equals the difference between the highest and lowest values. The category length was calculated to be 0.8, and starting from the value (1), the beginning and end points of each category were defined accordingly to facilitate accurate interpretation of participants’ responses.

Table 4. The coding is based on the five point likert scale

Range	(1-1.8)	(1.8-2.6)	(2.6-3.4)	(3.4-4.2)	(4.2-5)
Direction	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Degree of Agreement	Very Low	Low	Moderate	High	Very High
Weight	01	02	03	04	05

Source: Prepared by the researchers.

After determining the study scale, the results obtained from the descriptive analysis of the questionnaire’s axes and dimensions will be presented, as shown in the following table.

Table5. Analysis of the dimensions and axes of the study tool

Dimension/Axis	Mean	Standard Deviation	Relative Weight	Rank	Degree of Agreement
Kaizen Strategy	3.365	0.756	67.30%	02	Neutral
Reducing Resource Waste	3.436	0.901	68.72%	02	Agree
Workplace Discipline	3.173	0.866	63.46%	03	Neutral
Working Condition	3.487	0.781	69.74%	01	Agree
Human Resources Performance	3.407	0.764	68.14%	01	Agree

Source: Prepared by the researchers based on SPSS (V25) outputs.

The results showed that the mean values of the study axes ranged between (3.365 – 3.407), falling between the assumed lower mean (4) and upper mean (5), indicating that participants were neutral toward the axis of "Kaizen strategy in the company" and agreed with the axis of "human resource performance in the organization." The standard deviations ranged from (0.756 – 0.764), reflecting a high level of consistency in participants' responses. The relative importance of the axes ranged between (67.30% – 68.14%), with an overall average of (67.72%), indicating a relatively high level of agreement. The "human resource performance" axis ranked first in terms of agreement, while the "Kaizen strategy" axis ranked lowest. At the level of the sub-dimensions of the Kaizen axis, "working conditions" ranked first, followed by "waste reduction," while "workplace discipline" came in last.

3.5.3 Hypotheses Testing

The aim of this study is to verify the validity of the main hypothesis adopted. However, before conducting the multiple regression analysis to test this hypothesis, the three sub-hypotheses were first examined using simple regression analysis, as a preliminary step toward testing the main hypothesis. Prior to applying this analysis, a series of tests were conducted to ensure that the data met the assumptions required for simple regression analysis. The results obtained from this analysis are presented in the following table.

Table 6. The Impact of Each Dimension of Kaizen on Human Resource Performance

Model	∂	β	R	R ²	T	Sig T	F	Sig F
Reducing Resource Waste	1.849	0.453	0.534	0.286	5.932	0.000	35.188	0.000
Workplace Discipline	1.442	0.619	0.702	0.492	9.239	0.000	85.363	0.000
Working Condition	1.058	0.674	0.688	0.474	8.897	0.000	79.163	0.000

Source: Prepared by the researchers based on SPSS (V25) outputs.

➤ (H_1^0): There is a statistically significant impact of the resource waste reduction strategy on human resource performance in the institution under study at the 5% significance level.

The estimation results revealed a positive correlation between the dimension of resource waste reduction and the performance of human resources in the institution under study, with a correlation coefficient of 53.4%. The coefficient of determination (R^2), estimated at 28.6%, indicates that the waste reduction strategy explains a considerable portion of the variance in human resource performance. The simple linear regression test also confirmed the statistical significance of the model at the 5% level, leading to the rejection of the null hypothesis and acceptance of the alternative hypothesis, which affirms the existence of a statistically significant relationship between the two variables. This result can be interpreted by highlighting the importance of waste reduction strategies in enhancing human resource performance through minimizing unnecessary activities and focusing on value-added tasks. Involving employees in continuous improvement initiatives also strengthens their sense of empowerment and belonging, which positively affects performance quality and reduces error and rework rates. Moreover, such practices contribute to developing employee competencies through ongoing training in improvement tools. Previous studies have confirmed that implementing these strategies leads to improved indicators of human resource performance, such as job satisfaction, discipline, and productivity, making waste reduction a key factor in achieving institutional excellence

➤ (H_2^0): There is a statistically significant impact of the workplace discipline strategy on human resource performance in the institution under study at the 5% significance level.

The results indicated a strong positive correlation (70.2%) between workplace discipline and human resource performance, with the discipline strategy explaining approximately 49.2% of performance variation, confirming its significant impact. The regression analysis showed statistical significance at the 5% level,

supporting the hypothesis that workplace discipline positively affects employee performance. This strategy fosters a structured and respectful work environment, reduces absenteeism and tardiness, enhances focus on objectives, and supports a culture of accountability and continuous improvement. Studies have shown that fair and transparent disciplinary practices boost job satisfaction, organizational commitment, and operational efficiency, contributing to institutional excellence.

➤ (H_3^0): There is a statistically significant impact of the working conditions strategy on human resource performance in the institution under study at the 5% significance level.

The estimation results revealed a positive correlation between the dimension of Working condition and the performance of human resources within the institution under study, with a correlation coefficient of 68.8%. Referring to the coefficient of determination (R^2), estimated at 47.4%, it is evident that the working condition strategy explains approximately 47.4% of the variation in human resource performance, indicating a significant effect. Moreover, the results of the simple linear regression test demonstrated the statistical significance of the model, as the calculated F-value was significant at the 5% level. Consequently, the null hypothesis was rejected, and the alternative hypothesis stating that there is a statistically significant relationship between the two variables was accepted. Accordingly, the third sub-hypothesis, which posits a statistically significant effect of the working condition strategy on human resource performance, is confirmed: The strategy of improving working conditions is considered one of the fundamental pillars of modern human resource management due to its direct and indirect impact on employee performance within the organization. Numerous studies have shown that providing a safe, comfortable, and motivating work environment contributes to enhancing job satisfaction, strengthening intrinsic motivation, and reducing absenteeism and employee turnover, ultimately leading to improved performance levels. Working conditions encompass physical aspects (such as lighting, ventilation,

cleanliness, and safety), organizational factors (such as working hours, work-life balance, and task clarity), and social dimensions (such as peer relationships and managerial support). Western models, such as Herzberg’s Two-Factor Theory, emphasize that favorable working conditions are essential hygiene factors that prevent dissatisfaction and create an environment conducive to high performance. Implementing this strategy also fosters employee loyalty and engagement, promotes a positive work culture rooted in productivity and efficiency, and serves as a vital lever for achieving the organization's strategic goals.

➤ **Main Hypothesis:** There is an impact of adopting the Kaizen strategy on human resource performance in the manufacturing sector in general, and in the BATICIM company in particular.

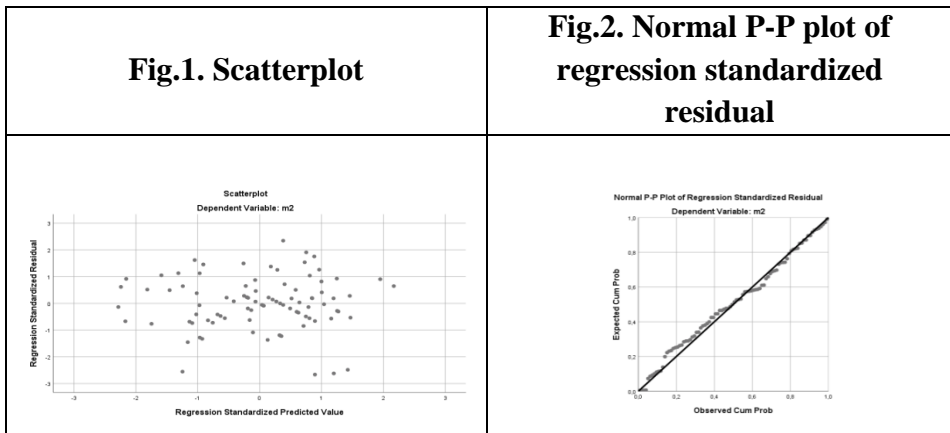
To test this hypothesis, we used the multiple linear regression method, and the results obtained are presented in the following table:

Table 7. The impact of kaizen strategy dimensions on human resource performance

Model	R	R.Square	Adjusted R.Square		Std.Error of the Estimate		
		0.767	0.588	0.574		0.49929	
ANOVA							
Model	Sum of Squares		DF	M.S	F	Sig	
Regression	30.597		03	10.199	40.912	0.000	
Residual	21.439		86	0.249			
Total	52.036		89	-			
Coefficients							
Model	Unstandardized Coefficients		Beta	T	Sig	Collinearity Statistics	
	β	Std. Error				VIF	Tolerance
Constant	0.854	0.249	-	3.433	0.001	-	-
Reducing Resource Waste	0.106	0.092	0.125	1.153	0.252	2.448	0.409
Workplace Discipline	0.429	0.089	0.487	4.802	0.000	2.143	0.467
Working Condition	0.446	0.102	0.455	4.348	0.000	2.289	0.437
Durbin Watson= 1.913							
Human resource performance=0.854+ 0.49 workplace discipline + 0.446working condition							

Source: Prepared by the researchers based on SPSS (V25) outputs.

The analysis revealed a strong positive linear correlation ($R = 76.7\%$) between the dimensions of Kaizen and human resource performance, with the coefficient of determination ($R^2 = 58.5\%$) indicating that Kaizen practices explain approximately 58.5% of the variance in HR performance, representing a high effect size according to Cohen (1988). ANOVA results confirmed the statistical significance of the overall model ($F = 40.912, p < 5\%$), leading to the acceptance of the alternative hypothesis. Among the independent variables, only "workplace discipline" and "working conditions" showed statistically significant effects at the 5% level, contributing 42.9% and 44.6%, respectively, to changes in HR performance. In terms of standardized regression coefficients, these variables accounted for 48.7% and 45.5% of the variation. The Durbin-Watson statistic confirmed no autocorrelation, while multicollinearity was ruled out as VIF values were below 10 and tolerance values above 5%. Additionally, diagnostic plots confirmed the absence of heteroscedasticity and verified the normal distribution of residuals, indicating the robustness and reliability of the regression model.



Source: Prepared by the researchers based on SPSS (V25) outputs.

4. CONCLUSION

This study aimed to analyze the impact of adopting the Kaizen strategy on human resource performance in the industrial sector, through a case study of the BATICIM company in the Wilaya of Oum

El Bouaghi. The study was based on a main hypothesis and three sub-hypotheses addressing the three core dimensions of Kaizen: reducing resource waste, workplace discipline, and working conditions.

The results confirmed a strong and statistically significant positive relationship between the overall Kaizen strategy and human resource performance. The multiple regression analysis showed that the Kaizen dimensions collectively explain 58.5% of the variations in human resource performance, which represents a high effect size. Among the three dimensions, workplace discipline and working conditions were found to have the most significant impact on performance, whereas the dimension related to reducing resource waste did not show statistical significance when other variables were held constant.

These findings reinforce that cultivating a supportive organizational climate and fostering a disciplined work culture are key to maximizing human capital potential. The study also confirms that Kaizen practices enhance employee motivation, engagement, and performance by focusing on continuous improvement, participatory decision-making, and problem-solving at all organizational levels.

Based on the findings, there is a clear need to offer a set of practical recommendations that can enhance the effectiveness of Kaizen strategy implementation in industrial institutions and improve human resource performance by emphasizing the most influential dimensions. The key recommendations are as follows:

➤ Institutionalize a Kaizen culture across all departments through continuous training and awareness campaigns that highlight its benefits and implementation mechanisms.

➤ Promote workplace discipline by establishing clear and fair organizational rules and involving employees in performance evaluation processes.

➤ Improve working conditions by addressing physical, organizational, and social aspects that influence employee satisfaction and productivity.

➤ Reassess waste reduction mechanisms to align them more closely with improvement initiatives proposed by employees themselves

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