

Human Resource Efficiency in Improving Logistics Management: An Applied Study at Kuwait Flour Mills & Bakeries Company

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ABSTRACT

Food-manufacturing organizations depend on coordinated human, production, storage, transport, and information capabilities. This study develops and evaluates a multidimensional model linking human resource efficiency with logistics management performance at Kuwait Flour Mills & Bakeries Company. Human resource efficiency was represented by competence and skill utilization, training and continuous development, workforce planning and deployment, performance management and motivation, and digital readiness and cross-functional coordination. Logistics management performance was represented by procurement and supply coordination, inventory management, warehousing and material handling, transportation and distribution, and logistics service reliability and cost efficiency. The analysis included 218 questionnaire responses measured on a five-point Likert scale. After removing one procurement item with a standardized loading below 0.60, the final 44-item instrument demonstrated acceptable internal consistency and convergent validity (Cronbach's alpha = 0.750-0.871; CR = 0.752-0.870; AVE = 0.505-0.576). The five human-resource dimensions jointly accounted for 62.9% of the variance in overall logistics management performance. Digital readiness and cross-functional coordination showed the strongest standardized association, followed by workforce planning, competence utilization, training, and performance management. The study provides an internally consistent model, a validated measurement structure, and practical implications for strengthening human-resource alignment with logistics priorities.

Keywords: Human Resource Efficiency; Logistics Management; Workforce Competence; Training And Development; Digital Readiness; Food Manufacturing; Kuwait. JEL Classification: M12; M11; L66; O15.

INTRODUCTION

Logistics management in food manufacturing is inseparable from the availability, deployment, competence, and coordination of human resources. Procurement schedules, inventory accuracy, warehouse safety, production continuity, transport reliability, and cost control all depend on employees who can interpret information, operate systems, coordinate across departments, and respond to disruptions. Human resource efficiency is therefore not merely an administrative concern; it is an operational capability through which organizations convert labor, knowledge, and technology into reliable logistics outcomes (Ding et al., 2015; Evangelista et al., 2023; Patrucco et al., 2022).

The relevance of this relationship is particularly evident in organizations that contribute to national food security. Kuwait Flour Mills & Bakeries Company operates a diversified portfolio that includes mills, macaroni, biscuits, vegetable oil, Arabic and European bakeries, gluten-free products, artisanal bakeries, coffee, and animal feed. This breadth creates an interconnected logistics environment involving imported and locally sourced inputs, production planning, stock rotation, storage, handling, fleet coordination, distribution, quality control, and rapid replenishment (Kuwait Flour Mills & Bakeries Company [KFMBC], n.d.-a, n.d.-b).

The scientific problem addressed by the model is the distinction between possessing a workforce and using that workforce efficiently. Organizations may employ experienced personnel and invest in technology while still facing inventory discrepancies, delayed replenishment, weak interdepartmental coordination, avoidable handling loss, or inconsistent distribution performance. Human resource efficiency requires competent placement, continuous skill development, demand-aligned staffing, informative performance systems, motivation for improvement, and digital collaboration. Contemporary logistics research increasingly treats these elements as capability-building mechanisms rather than peripheral support activities (Hohenstein et al., 2014; Masad et al., 2025; Rodriguez-Rudi et al., 2024).

Existing evidence links recruitment, training, motivation, skills, and knowledge-based HR practices with logistics and supply-chain capability. However, the literature remains fragmented across isolated HR practices, broad organizational outcomes, and logistics-service-provider contexts. Fewer studies integrate competence, development, deployment, performance motivation, and digital coordination within one model tailored to a diversified food manufacturer. The present study therefore evaluates a coherent measurement and analytical structure within the organizational context of KFMBC.

The study aims to: (1) develop a theoretically grounded measure of human resource efficiency; (2) evaluate the reliability, convergent validity, and discriminant validity of the proposed constructs; (3) estimate the predictive association between human resource efficiency dimensions and overall logistics management performance; (4) compare the dimensions across procurement, inventory, warehousing, transportation, and logistics reliability/cost outcomes; and (5) provide practical recommendations for strengthening the alignment between human-resource systems and logistics priorities.

LITERATURE REVIEW

Theoretical Foundations

Human capital theory treats education, experience, and skill development as investments that enhance productive capacity (Becker, 1964). In logistics settings, technical, analytical, safety, and coordination knowledge can improve operational decisions, but human capital creates value only when organizational systems deploy it effectively. Skilled employees cannot improve inventory accuracy or distribution reliability when staffing is misaligned, information is inaccessible, or responsibilities and incentives are unclear.

The resource-based view further explains that employee knowledge can support durable organizational advantage when it is valuable and embedded in complementary routines (Barney, 1991). Human resource efficiency is therefore conceptualized as an organizational capability rather than a collection of individual attributes. The ability-motivation-opportunity framework adds that performance improves when employees possess the required abilities, are motivated to contribute, and have opportunities to apply their knowledge through participation, information access, teamwork, and technology-enabled coordination (Appelbaum et al., 2000; Jiang et al., 2012).

Human Resource Efficiency and Its Dimensions

Human resource efficiency refers to the organization's capacity to obtain strong operational contribution from its workforce while protecting quality, safety, adaptability, and responsible resource use. It differs from labor-cost minimization because indiscriminate staffing reduction may weaken continuity and service reliability. The proposed construct comprises five interrelated dimensions.

Competence and Skill Utilization. This dimension captures the availability and job-relevant use of technical, analytical, safety, communication, and problem-solving skills. Effective skill matching reduces errors, accelerates decisions, and enables operational problems to be addressed at their source (Ding et al., 2015; Patrucco et al., 2022).

Training and Continuous Development. This dimension reflects systematic efforts to maintain and expand knowledge related to operating procedures, food and occupational safety, inventory and warehouse systems, transport processes, emergency response, and digital tools. Knowledge-based training has been associated with stronger logistics capability and organizational performance (Evangelista et al., 2023; Rodriguez-Rudi et al., 2024).

Workforce Planning and Deployment. This dimension concerns the alignment of staffing numbers, timing, specialization, and location with operational demand. It includes shift planning, succession coverage, workload balancing, and rapid redeployment during demand peaks or disruptions (Christopher, 2022; Masad et al., 2025).

Performance Management and Motivation. This dimension aligns employee behavior with logistics priorities through clear indicators, feedback, accountability, recognition, and developmental action. Relevant outcomes include inventory accuracy, handling errors, vehicle utilization, on-time dispatch, safety, and waste reduction (Appelbaum et al., 2000; Jiang et al., 2012).

Digital Readiness and Cross-functional Coordination. This integrated capability reflects employees' ability to use enterprise, inventory, warehouse, transport, analytics, and tracking systems while sharing accurate information across HR, procurement, planning, stores, production, quality, and distribution. The integrated treatment is theoretically justified because technology generates logistics value only when data are timely and used across functional boundaries (Jahangir et al., 2025; Masad et al., 2025).

Logistics Management Performance and Its Dimensions

Logistics management comprises the planning, implementation, and control of material, information, and service flows from supply through production and distribution. Its performance should be assessed multidimensionally because a single financial indicator cannot capture availability, accuracy, flow efficiency, reliability, responsiveness, and cost (Beamon, 1999; Gunasekaran et al., 2001). The proposed model includes five operational domains.

Procurement and Supply Coordination. This domain concerns material availability, information exchange, supplier-problem resolution, and alignment among procurement, quality, stores, production, and planning.

Inventory Management. This domain includes record accuracy, replenishment discipline, stock rotation, traceability, and the reduction of shortages, excess stock, and expiry.

Warehousing and Material Handling. This domain covers receiving, storage, picking, internal movement, loading, space and equipment utilization, safety, cleanliness, and handling-loss reduction.

Transportation and Distribution. This domain reflects route and vehicle utilization, dispatch accuracy, delivery timing, product condition, monitoring, and corrective action.

Logistics Service Reliability and Cost Efficiency. This integrated outcome combines continuity, dependable fulfillment, error and waste reduction, labor and equipment productivity, and responsible resource use. Reliability and cost are treated jointly because cost savings that undermine continuity or quality do not constitute efficient logistics performance in a food-security context (Christopher, 2022).

Research Gap and Contribution

The model contributes theoretically by integrating the resource-based view with ability-motivation-opportunity logic; methodologically by evaluating a multidimensional instrument across the principal logistics functions of a food manufacturer; and contextually by examining human-resource efficiency within a major Kuwaiti food-security organization.

Study Hypotheses and Model

The proposed model assumes that logistics management performance is positively associated with a coordinated bundle of employee competence, continuous development, workforce deployment, performance motivation, and digital cross-functional readiness. The hypotheses are stated in null form for statistical testing.

H01: The combined dimensions of human resource efficiency have no statistically significant predictive association with overall logistics management performance at $\alpha \leq 0.05$.

H01a: Competence and skill utilization has no statistically significant predictive association with overall logistics management performance.

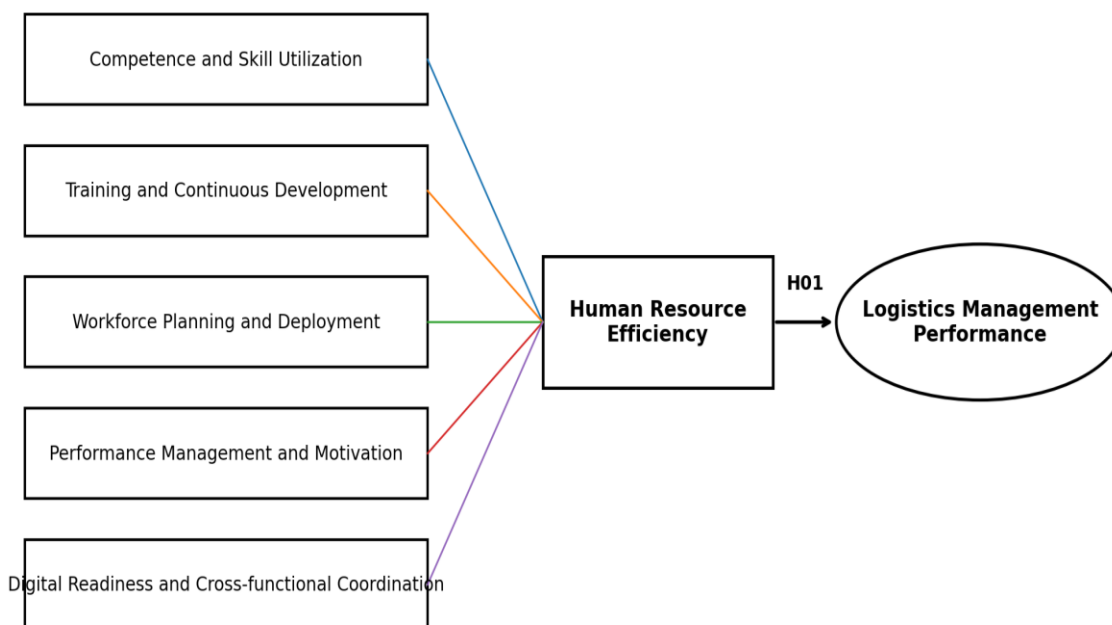
H01b: Training and continuous development has no statistically significant predictive association with overall logistics management performance.

H01c: Workforce planning and deployment has no statistically significant predictive association with overall logistics management performance.

H01d: Performance management and motivation has no statistically significant predictive association with overall logistics management performance.

H01e: Digital readiness and cross-functional coordination has no statistically significant predictive association with overall logistics management performance.

Figure (1). Proposed Study Model



METHODOLOGY

Research Design and Context

The study adopted a quantitative, cross-sectional, descriptive-analytical design. A structured questionnaire was used to assess employees' perceptions of human-resource practices and logistics management performance at Kuwait Flour Mills & Bakeries Company. This design was appropriate because the study sought to evaluate the measurement model, estimate the relative levels of the study constructs, and test the

predictive associations among multiple dimensions. Interpretations were framed as statistical associations rather than definitive causal effects.

Population and Sampling

The study population comprised managers, supervisors, specialists, and operational/technical employees whose roles are connected with human resources, administration, procurement, supply, production planning, warehouses and stores, transportation, distribution, quality, and related operational support. A stratified purposive sampling approach was used to ensure representation of decision-making and operational levels across the principal HR and logistics-related functions. The final sample comprised 218 respondents. All substantive responses were measured using a five-point Likert scale.

Sample Characteristics

Table (1). Distribution of the Study Sample (N = 218)

Variable	Category	Frequency	Percent (%)
Management level	Senior management	22	10.1
	Middle management	48	22.0
	Supervisory	66	30.3
	Operational/technical	82	37.6
	Total	218	100.0
Experience	< 5 years	39	17.9
	5–10 years	67	30.7
	11–15 years	58	26.6
	> 15 years	54	24.8
	Total	218	100.0
Educational level	Secondary/technical	24	11.0
	Diploma	45	20.6
	Bachelor's	112	51.4
	Master's	33	15.1
	Doctorate	4	1.8
	Total	218	100.0
Function/Department	Human resources/administration	28	12.8
	Procurement/supply	36	16.5
	Warehousing/stores	43	19.7
	Transport/distribution	39	17.9
	Production/planning	48	22.0
	Quality/other support	24	11.0
	Total	218	100.0

The sample gives the greatest representation to operational/technical and supervisory roles because these groups are closest to daily logistics execution. Departmental representation is distributed across the principal HR and logistics-related functions, supporting the inclusion of respondents with different levels of operational and administrative responsibility.

Instrument Development and Measurement Refinement

The questionnaire contains demographic items, 25 human-resource-efficiency items, and an initially proposed 20 logistics-management items. All substantive items use a five-point scale from 1 = Strongly Disagree to 5 = Strongly Agree. Items were derived from the theoretical definitions and adapted to food-manufacturing logistics (Beamon, 1999; Ding et al., 2015; Evangelista et al., 2023; Gunasekaran et al., 2001; Jiang et al., 2012). Measurement refinement was conducted before testing the structural relationships. Procurement item LMP1 was removed because its standardized one-factor loading was 0.584, below the prespecified 0.60 criterion, and removal increased the procurement construct's AVE above 0.50. The final instrument therefore contains 44 substantive items. The retained procurement items continue to cover material availability, interfunctional information sharing, and supplier-problem resolution.

Statistical Analysis

Frequencies and percentages describe the study sample. Means and standard deviations summarize the constructs. Cronbach's alpha assesses internal consistency, while composite reliability (CR) and average variance extracted (AVE) assess construct reliability and convergent validity. Factorability is evaluated through the Kaiser-Meyer-Olkin measure and Bartlett's test. A ten-factor maximum-likelihood solution with varimax rotation examines the proposed dimensional structure. Discriminant validity is assessed using the Fornell-Larcker criterion and the heterotrait-monotrait ratio (HTMT). Pearson correlations summarize bivariate associations. Multiple linear regression estimates the unique predictive association of the five human-resource dimensions with overall logistics management performance and with each logistics domain. Variance inflation factors, Durbin-Watson, and the Breusch-Pagan test assess key regression assumptions. Statistical significance is evaluated at $\alpha \leq 0.05$ (Field, 2018; Hair et al., 2019).

Reliability, Convergent Validity, and Discriminant Validity

Table (2). Measurement Quality of the Final Constructs (N = 218)

Construct/Dimension	Items	Alpha	CR	AVE	Loading range	Decision
Competence and Skill Utilization	5	0.863	0.863	0.557	0.703-0.786	Acceptable
Training and Continuous Development	5	0.870	0.869	0.571	0.720-0.790	Acceptable
Workforce Planning and Deployment	5	0.853	0.852	0.536	0.695-0.755	Acceptable
Performance Management and Motivation	5	0.870	0.869	0.571	0.723-0.810	Acceptable
Digital Readiness and Cross-functional Coordination	5	0.871	0.870	0.573	0.730-0.792	Acceptable
Procurement and Supply Coordination	3	0.750	0.752	0.505	0.637-0.801	Acceptable
Inventory Management	4	0.845	0.844	0.576	0.718-0.786	Acceptable
Warehousing and Material Handling	4	0.841	0.840	0.567	0.745-0.765	Acceptable
Transportation and Distribution	4	0.819	0.819	0.532	0.666-0.802	Acceptable
Logistics Service Reliability and Cost Efficiency	4	0.830	0.830	0.551	0.678-0.812	Acceptable

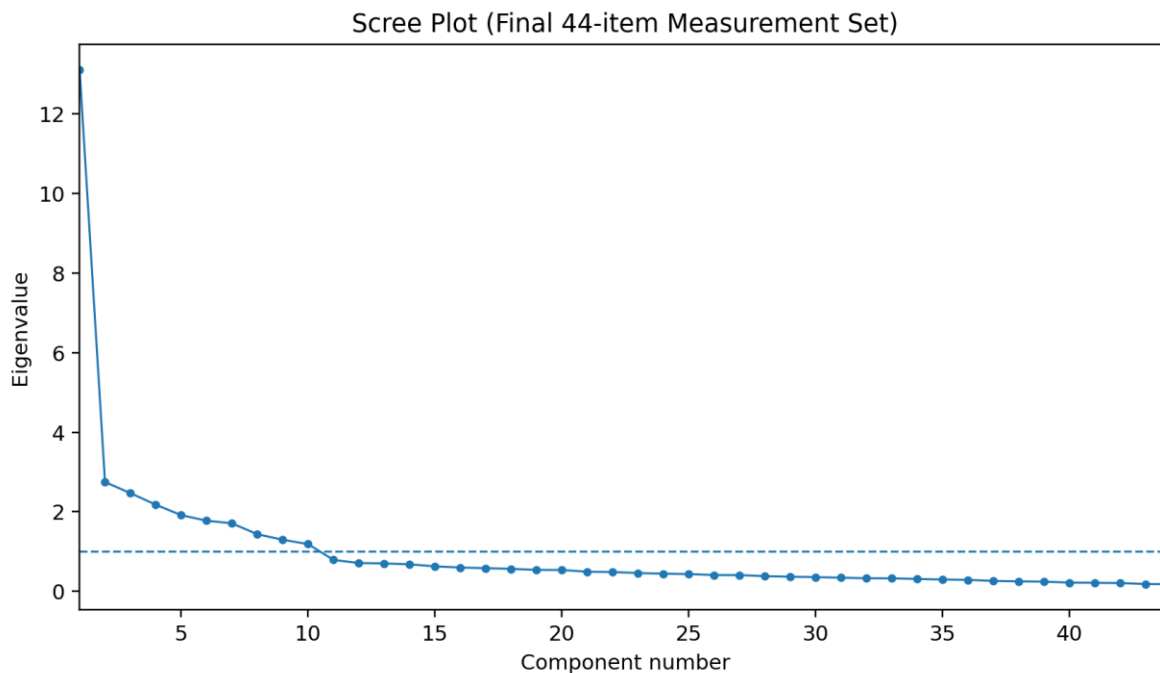
Cronbach's alpha values range from 0.750 to 0.871, and CR values range from 0.752 to 0.870. All AVE values exceed 0.50, ranging from 0.505 to 0.576. The Fornell-Larcker criterion is satisfied for every construct pair, and HTMT values range from 0.237 to 0.667, below the conservative 0.85 threshold. These results support internal consistency, convergent validity, and discriminant validity for the final measurement structure.

Factorability and Common-Method Diagnostic

Table (3). KMO and Bartlett's Test for the Final 44-item Set

Test	Value
Kaiser-Meyer-Olkin (KMO)	0.913
Bartlett's test: chi-square	4976.830
df	946
Sig. (p-value)	< 0.001

Figure (2). Scree Plot of the Final Measurement Set



The KMO value of 0.913 indicates excellent sampling adequacy, and Bartlett's test is statistically significant (chi-square = 4976.830, df = 946, $p < 0.001$). Ten eigenvalues exceed 1.0 and account for 67.8% of total variance. The ten-factor maximum-likelihood solution yields primary loadings from 0.529 to 0.777; no secondary loading exceeds 0.40.

The first unrotated factor accounts for 29.8% of item variance. This Harman diagnostic does not prove the absence of common-method bias, but it indicates that a single factor does not dominate the responses. Anonymity, clear item wording, separation of predictor and criterion sections, and the inclusion of objective operational indicators are recommended as procedural safeguards in subsequent studies (Podsakoff et al., 2003).

RESULTS

Relative Importance of Human Resource Efficiency Dimensions

Table (4). Human Resource Efficiency Dimensions

Dimension	Mean	Std. Deviation
Competence and Skill Utilization	3.867	0.768
Workforce Planning and Deployment	3.806	0.747
Training and Continuous Development	3.800	0.779
Digital Readiness and Cross-functional Coordination	3.659	0.808
Performance Management and Motivation	3.640	0.785

All dimensions fall within the high range. Competence and Skill Utilization ranks first ($M = 3.867$, $SD = 0.768$), whereas Performance Management and Motivation has the lowest mean ($M = 3.640$, $SD = 0.785$). This pattern suggests that technical competence is more established than motivation and digitally enabled coordination.

Relative Importance of Logistics Management Dimensions

Table (5). Logistics Management Performance Dimensions

Dimension	Mean	Std. Deviation
Procurement and Supply Coordination	3.879	0.703
Logistics Service Reliability and Cost Efficiency	3.831	0.765
Warehousing and Material Handling	3.798	0.800
Inventory Management	3.781	0.798
Transportation and Distribution	3.772	0.754

The logistics dimensions also fall within the high range. Procurement and Supply Coordination ranks first ($M = 3.879$, $SD = 0.703$), while Transportation and Distribution ranks last ($M = 3.772$, $SD = 0.754$). The findings suggest that procurement coordination is perceived more favorably than transportation and distribution, where route conditions, fleet availability, delivery windows, and product freshness create greater operational complexity.

Correlation Analysis

Table (6). Means, Standard Deviations, and Pearson Correlations

Variable	M	SD	1	2	3	4	5	6
1. HRC	3.867	0.768	-					
2. HRT	3.800	0.779	0.504***	-				
3. HRP	3.806	0.747	0.339***	0.468***	-			
4. HRM	3.640	0.785	0.431***	0.474***	0.462***	-		
5. HRD	3.659	0.808	0.375***	0.579***	0.442***	0.366***	-	
6. LM	3.812	0.496	0.556***	0.637***	0.576***	0.531***	0.636***	-

Note. HRC = competence and skill utilization; HRT = training and continuous development; HRP = workforce planning and deployment; HRM = performance management and motivation; HRD = digital readiness and cross-functional coordination; LM = overall logistics management performance. *** $p < 0.001$.

All five human-resource dimensions are positively associated with overall logistics management performance. The correlations are strong enough to justify multivariable testing but remain below levels that would suggest construct redundancy.

Main Regression Model

Table (7). Multiple Regression Predicting Overall Logistics Management Performance

Predictor	B	SE	β	t	p	VIF
Competence and Skill Utilization	0.139	0.032	0.216	4.288	< 0.001	1.446
Training and Continuous Development	0.119	0.037	0.187	3.220	0.001	1.929
Workforce Planning and Deployment	0.145	0.034	0.219	4.299	< 0.001	1.482
Performance Management and Motivation	0.088	0.032	0.139	2.709	0.007	1.503
Digital Readiness and Cross-functional Coordination	0.184	0.033	0.299	5.640	< 0.001	1.609

Model summary: $R = 0.793$; $R^2 = 0.629$; adjusted $R^2 = 0.620$; $F(5, 212) = 71.934$; $p < 0.001$; Durbin-Watson = 2.213; Breusch-Pagan $p = 0.608$.

The model is statistically significant and accounts for 62.9% of the variance in overall logistics management performance. H_{01} is therefore rejected. All five predictors have positive, statistically significant unique associations.

Digital Readiness and Cross-functional Coordination is the strongest predictor ($\beta = 0.299$, $p < 0.001$). VIF values remain below 2.0, the Durbin-Watson statistic is close to 2.0, and the Breusch-Pagan test is non-significant, indicating no material multicollinearity, residual autocorrelation, or heteroscedasticity in the regression model.

Dimension-Level Regression Models

Table (8). Significant Standardized Predictors of Logistics Dimensions

Logistics outcome	R^2	F	Model p	Significant standardized predictors
Procurement and Supply Coordination	0.217	11.745	< 0.001	Workforce Planning and Deployment ($\beta = 0.158$, $p = 0.033$); Performance Management and Motivation ($\beta = 0.209$, $p = 0.005$); Digital Readiness and Cross-functional Coordination ($\beta = 0.160$, $p = 0.039$)
Inventory Management	0.352	23.004	< 0.001	Training and Continuous Development ($\beta = 0.164$, $p = 0.034$); Workforce Planning and Deployment ($\beta = 0.196$, $p = 0.004$); Digital Readiness and Cross-functional Coordination ($\beta = 0.288$, $p < 0.001$)
Warehousing and Material Handling	0.263	15.147	< 0.001	Competence and Skill Utilization ($\beta = 0.178$, $p = 0.013$)
Transportation and Distribution	0.228	12.508	< 0.001	Competence and Skill Utilization ($\beta = 0.229$, $p = 0.002$); Digital Readiness and Cross-functional Coordination (β

				= 0.268, $p < 0.001$)
Logistics Service Reliability and Cost Efficiency	0.348	22.610	< 0.001	Training and Continuous Development ($\beta = 0.318$, $p < 0.001$); Workforce Planning and Deployment ($\beta = 0.182$, $p = 0.008$)

All five domain-level models are statistically significant. The results indicate that the most relevant human-resource mechanism differs by logistics outcome: procurement is associated with planning, performance alignment, and digital coordination; inventory is associated with training, workforce planning, and digital readiness; warehousing is associated primarily with competence; transportation is associated with competence and digital readiness; and reliability/cost efficiency is associated with training and workforce planning. These differences support a differentiated rather than uniform HR-logistics alignment strategy.

Hypothesis Decisions

Table (9). Summary of Hypothesis Testing

Hypothesis	Tested relationship	Result	Decision
H01	Combined dimensions → overall logistics management	$R^2 = 0.629$; $p < 0.001$	Rejected
H01a	Competence and Skill Utilization → overall logistics management	$\beta = 0.216$; $p < 0.001$	Rejected
H01b	Training and Continuous Development → overall logistics management	$\beta = 0.187$; $p = 0.001$	Rejected
H01c	Workforce Planning and Deployment → overall logistics management	$\beta = 0.219$; $p < 0.001$	Rejected
H01d	Performance Management and Motivation → overall logistics management	$\beta = 0.139$; $p = 0.007$	Rejected
H01e	Digital Readiness and Cross-functional Coordination → overall logistics management	$\beta = 0.299$; $p < 0.001$	Rejected

DISCUSSION

The findings support the theoretical proposition that human resource efficiency should be modeled as part of the logistics architecture rather than as an external administrative input. The combined model accounts for a substantial share of variation in logistics management performance, which is consistent with the resource-based view: employee knowledge creates operational value when it is organized through complementary systems of development, deployment, motivation, and coordination (Barney, 1991). The pattern also corresponds with the ability-motivation-opportunity framework because the five dimensions represent mechanisms through which employees become able, willing, and organizationally enabled to contribute (Appelbaum et al., 2000; Jiang et al., 2012).

Digital readiness and cross-functional coordination has the strongest standardized association with overall logistics performance. This pattern is theoretically plausible because integrated logistics increasingly depends on accurate data entry, shared visibility, rapid exception handling, and coordinated use of enterprise systems. Technology alone is insufficient: its operational value depends on employee capability, timely information, and cooperation across procurement, planning, stores, production, quality, transport, and distribution (Jahangir et al., 2025).

Workforce planning and competence utilization also make strong unique contributions. Food-manufacturing logistics requires continuous shift coverage, specialized roles, rapid replacement, safe material handling, accurate records, and immediate operational judgment. These results align with evidence that HR practices

contribute to logistics competencies and that supply-chain growth is constrained when organizations lack the required skills and deployment capacity (Ding et al., 2015; Patrucco et al., 2022).

Training is particularly important for inventory management and logistics reliability/cost efficiency. Standardized training can reduce procedural variation, product damage, rework, safety incidents, inaccurate records, and inefficient resource use. Performance management and motivation show a smaller but significant overall association and are especially relevant to procurement coordination, where role-specific indicators, feedback, accountability, and recognition can focus attention on supplier responsiveness, purchase-order accuracy, and cross-functional problem resolution.

The domain-level variation is theoretically meaningful. No single HR dimension dominates every logistics outcome. This supports a configuration perspective in which HR practices should be matched to the operational process being improved. The findings therefore reinforce the importance of designing differentiated HR interventions for procurement, inventory, warehousing, transportation, and logistics reliability/cost outcomes.

CONCLUSION

This study develops and validates a multidimensional model linking five dimensions of human resource efficiency with five domains of logistics management performance. The final 44-item instrument demonstrates acceptable internal consistency, convergent validity, discriminant validity, factor structure, and regression diagnostics. The results show that all five human-resource dimensions are positively associated with overall logistics management performance, with digital readiness and cross-functional coordination showing the strongest unique association.

The principal conclusion is that a coherent empirical approach to HR efficiency and logistics management should integrate competence, training, workforce deployment, performance motivation, and digital coordination rather than relying on a single HR practice. The model provides a useful basis for organizational assessment and for designing targeted initiatives that connect human-resource systems with logistics priorities.

PRACTICAL RECOMMENDATIONS

1. Develop a logistics competency framework covering technical, digital, analytical, safety, and coordination requirements for procurement, stores, warehousing, transport, production planning, and distribution roles.
2. Build recurring role-based training pathways and evaluate training through workplace indicators such as stock accuracy, handling loss, safety, order cycle time, and on-time dispatch.
3. Integrate workforce capacity planning with production forecasts, seasonal demand, leave patterns, absenteeism, shift requirements, and critical-role coverage.
4. Align appraisal and recognition systems with logistics outcomes, including supplier lead-time adherence, purchase-order accuracy, stock variance, expiry reduction, loading accuracy, delivery reliability, and waste control.
5. Strengthen employee capability in ERP, inventory, warehouse, transport, reporting, and analytics systems, while assigning clear ownership for data quality and timeliness.
6. Establish a cross-functional logistics governance team involving HR, procurement, planning, production, quality, stores, transport, distribution, finance, and IT.
7. Validate HR interventions through pilot projects and objective pre/post indicators before wider implementation.

LIMITATIONS AND FUTURE RESEARCH

The study is limited by its cross-sectional design, reliance on self-reported perceptions, and focus on a single organizational context. These characteristics limit definitive causal interpretation and may reduce the

generalizability of the findings to other sectors or organizations. Common-source measurement may also inflate some associations despite the measurement and diagnostic procedures applied.

Future research should combine employee perceptions with objective indicators such as stock accuracy, expiry, shrinkage, order cycle time, on-time delivery, overtime, safety incidents, vehicle utilization, and cost per unit. Longitudinal or pre/post designs would provide stronger evidence regarding whether HR interventions precede measurable logistics improvement. Comparative studies across Kuwaiti food manufacturers, public industrial organizations, or Gulf countries would further strengthen external validity.

Ethical Considerations

Participation was voluntary, and respondents were informed about the study purpose, confidentiality, withdrawal rights, and the use of aggregated results. The questionnaire did not request personally identifying information. Data were handled confidentially and used only for academic purposes, with access limited to the research team.

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