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The Impact of Marketing Intelligence on the Logistical Performance of Algerian Economic Enterprises

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Abstract:
The study aims to reveal and diagnose the extent of the impact of marketing intelligence on logistical performance in Algerian economic enterprises through empirical verification. To achieve this objective, a questionnaire was adopted as the main tool for data collection and distributed electronically to a sample of 385 enterprises. A total of 347 questionnaires were retrieved, of which 338 were found valid for the study after review and validation. The statistical software (SPSS 26) was used for data processing and analysis. The results of hypothesis testing indicated the existence of a strong positive correlation between marketing intelligence and logistical performance, as well as a positive effect of marketing intelligence on logistical performance.

Keywords: Marketing intelligence, logistical performance, economic enterprise, Algeria.
JEL Classification: M31, M21, O55.

Introduction

Over the past decades, enterprises have continuously fluctuated amidst an environment characterized by uncertainty and instability across various domains. They are no longer immune to risks and fluctuations that have had a lasting impact on achieving leadership.

From another perspective, and based on implementing the institution's ambitious, proactive, and foresight-driven vision—anchored in principles aligned with priorities to accelerate the adoption of best integrated and effective practices in response to ongoing changes and transformations—enterprises seek to enhance their competitiveness and strengthen the pathways to building sustainable competitive advantage. This competitive edge plays a pivotal and leading role in paving the way toward meeting the requirements of upgrading and consolidating the institution's market position, reflecting the process of establishing the foundations of its strategic priorities.

Research Problem

In light of the above, the research problem can be framed as follows:

- What is the impact of marketing intelligence on logistical performance in Algerian economic enterprises?

To address this central problem and achieve the study's objectives, it is broken down into the following sub-questions:

- Is there a correlation between marketing intelligence and logistical performance in Algerian economic enterprises?

- Are there statistically significant differences in the mean responses of the study sample regarding the study dimensions (marketing intelligence, logistical performance) attributable to differences in general information of Algerian economic enterprises?
- What is the effect of marketing intelligence dimensions on logistical performance in Algerian economic enterprises?

Research Hypotheses

In line with the above and in order to answer the sub-questions, the study adopted the following hypotheses to be tested:

- There is no statistically significant correlation at the significance level ($\propto = 0.05$) between marketing intelligence and logistical performance in the enterprises under study.
- There are no statistically significant differences at the significance level ($\propto = 0.05$) in the mean responses of the study sample regarding the study dimensions (marketing intelligence, logistical performance) attributable to differences in general information of the enterprises under study.
- There is no statistically significant effect at the significance level ($\propto = 0.05$) of the dimensions of marketing intelligence on logistical performance in the enterprises under study.

Significance of the Study

The importance of this study emerges through its practical and scientific contributions:

- This study extends previous research and adds to the body of scientific knowledge with some contributions.
- It highlights the growing role of marketing intelligence in organizational life and its effectiveness in marketing decision-making to face economic repercussions.
- It provides insights for economic enterprises to capitalize on information wealth by formulating marketing strategies capable of seizing opportunities, avoiding threats, and responding effectively and promptly.

Research Objectives

This study aims to achieve the following objectives:

- To build a knowledge framework related to marketing intelligence and logistical performance.
- To determine the nature and degree of correlation between marketing intelligence and logistical performance.
- To reveal and diagnose the impact of marketing intelligence on logistical performance by empirically verifying its potential influence.
- To reach findings that explain and interpret the effect relationship between marketing intelligence and logistical performance in the enterprises under study.

Theoretical Framework of Marketing Intelligence and Logistical Performance

First: Marketing Intelligence

As a result of the rapidly changing business environment, marked by the continuous growth of customer needs and desires, enterprises have increasingly recognized the importance of keeping pace with these developments and meeting challenges by adopting and integrating ideas capable of achieving competitive advantage.

1. The Concept of Marketing Intelligence

Also known as marketing intelligence or market intelligence, it stems from the enterprise's need for early and rapid information to adapt to its environment and monitor changes to face threats proactively. This has driven enterprises toward using marketing intelligence (Jassim Al-Sumaidaie & Othman Youssef, 2011, p. 355).

The concept is not new. In the early 1960s, *Kelley* emphasized its importance for enterprises in the era of the information revolution. Marketing intelligence refers to developing insights derived from data for use in marketing decision-making (Jan Lies, 2019, p. 135). Over time, it has evolved from a mere technical tool to a fundamental element of contemporary marketing strategies (Emona & Khanb, 2024, p. 10).

According to *Philip Kotler*, marketing intelligence is *"a set of procedures and sources used to obtain information about developments occurring in the marketing environment"* (Kotler & Dubois, 2003, p. 140). Similarly, the Society of Competitive Intelligence Professionals (SCIP) defines it as *"the ethical and legitimate process of gathering, analyzing, and disseminating relevant, appropriate, and valid information about the marketing environment"* (Jacques Lambin, 2008, p. 143). It is also described as *"leveraging internal and external data of the enterprise, reanalyzing it to formulate statistics with the aim of improving marketing responsiveness"* (Wright & Calof, 2006, p. 454).

However, not all enterprises possess the capacity or knowledge to integrate it effectively into their systems. This incapacity creates a gap that prevents the full utilization of market data, especially in highly competitive environments (Shwawreh & Tawfiq Awamleh, 2025, p. 376).

Thus, marketing intelligence can be defined as the ethical process of sensing, monitoring, collecting, and analyzing all internal and external marketing environment data and providing it to decision-makers, while ensuring confidentiality and protection against any data breaches.

For effective implementation, marketing intelligence must meet several characteristics (Ekhlassi & Alinaghian, 2017, p. 361):

- **Relevance:** Providing information directly significant to the situation while avoiding low-value or irrelevant data.
- **Usability:** Delivering information in a way that can be applied across multiple contexts to seize opportunities.
- **Timeliness:** The timing of intelligence delivery determines decision-making effectiveness, along with safeguarding it from leaks to competitors or unauthorized parties.
- **Accuracy:** The information must be correct, reliable, and trusted by the recipient.
- **Completeness:** Covering all possible scenarios clearly for decision-makers.
- **Objectivity:** Free from personal bias, emotional inclinations, or subjective opinions, focusing strictly on objectives.

2. Components of Marketing Intelligence

According to *Crowley*, marketing intelligence comprises the following elements:

- **Customer Understanding:** Enterprises increasingly recognize that the customer is their new "king." Hence, they must shift from a product-centric to a customer-centric approach (Kotler, 2003, p. 36). The customer, whether individual or institutional, is willing to pay when purchasing a product or benefiting from a service (Demeure, 2008, p. 348). Thus, enterprises must utilize all their resources to gather data on customer needs, preferences, cultures, lifestyles, purchasing power, behaviors, habits, and traditions to satisfy them better than competitors (Khoa Dam, Dinh, & Menvielle, 2019, p. 186).
- **Market Understanding:** The market is one of the most critical variables enterprises must recognize in defining their strategy. It offers strategic opportunities to create new market prospects, deliver customer value, develop new products or solutions, expand existing product lines, and redesign current strategies (Patric Kunle Ade, Mufutau Akanbi, & Ismail Tubosun, 2017, p. 57).
- **Product Intelligence:** Given the vital role of products in shaping strategic decisions, enterprises must align their offerings with customer needs and desires. This ensures the development of suitable products that match customer expectations (Dalal & Nouri, 2018, p. 225; Khoa Dam, Dinh, & Menvielle, 2019, p. 186).
- **Competitor Intelligence:** To counter threats hindering strategic success, enterprises must collect and analyze data on current and potential competitors, including their behavior and strategies. This enables enterprises to anticipate competitor moves, assess their strategies, and quickly design counterstrategies to neutralize, avoid, or mitigate such threats (Patric Kunle Ade, Mufutau Akanbi, & Ismail Tubosun, 2017, p. 56).

Second: Logistical Performance

1. The Concept of Logistics

Also known as *supply*, the term logistics was first used in the military context to organize army supplies and ensure their constant provision with weapons and provisions. According to the Logistics Management Council, it is part of supply chain activities that cover planning, execution methods, and monitoring of logistics operations. It ensures the efficient flow of materials, storage of goods, and management of related information and data from the point of origin to the point of consumption for the purpose of generating customer satisfaction or gaining their loyalty (Mohamed Ali & Al-Kanani, 2009, p. 36).

It is also defined as the management of the flow of goods, information, and other resources—including energy and people—between the point of origin and the point of consumption to meet customer requirements. This encompasses the integration of information, transportation, inventory, warehousing, material handling, and packaging (Kumar Rajuldevi, Veeramachaneni, & Kare, 2009, p. 10).

From the above definitions, logistics can be considered an integrated and organized process that includes planning, implementation, inventory management, monitoring, and forecasting. It is characterized by high efficiency aimed at achieving predetermined objectives. The main goals of logistics services are to deliver high-quality service at minimum cost, which includes ensuring the delivery of the right product to the right place at the right time, maintaining customer satisfaction, and optimizing inventory.

These services are essentially represented in: improving efficiency, responsiveness, reducing unexpected events, minimizing inventory, lowering transportation and logistics costs, and enhancing quality (Eric & Richard, 2025, p. 117).

2. The Importance of Logistics

The importance of logistics lies in its ability to reduce costs, increase profits, and enhance the efficiency of production and distribution processes, in addition to ensuring customer satisfaction through providing the right products at the right time and place. It also improves customer experience, ensures product quality, and reduces supply chain risks, thereby boosting competitiveness and overall economic growth.

- **Importance of logistics for customers:** Its importance is reflected in the extent to which it meets customer requirements while minimizing costs. Logistics managers should constantly ask themselves how responsive the system is to customer needs, how to maximize satisfaction while reducing company costs, and how to identify activities that customers value most and differentiate them from competitors (Gasparotti, 2017, p. 7).
- **Importance of logistics in international trade:** By facilitating the movement of goods and services across borders, logistics enables enterprises to penetrate markets and reach new customers. Logistics services are essential for enterprises of all sizes (Akmalov & Khalid, 2024, p. 41).
- **Importance of logistics in economic development:** Logistics infrastructure is a fundamental element of economic development, as it allows enterprises to access new markets, reduce transportation costs, and increase efficiency. This infrastructure includes transport systems such as ports, airports, highways, and railways, as well as warehouses and distribution centers (Akmalov & Khalid, 2024, p. 41).

3. Measuring the Effectiveness of Logistical Performance in Enterprises

Logistical performance efficiency and effectiveness are used in analyzing enterprise operations and are essential for project success. Measuring this effectiveness is crucial to improving the efficiency of both the enterprise and its supply chain (Shepherd & Guenter, 2006, p. 245).

Some of the most widely used models for measuring logistics performance include:

- Key Performance Indicators (KPIs),
- The Balanced Scorecard Model,
- The Business Excellence Model,
- The Performance Measurement Framework,

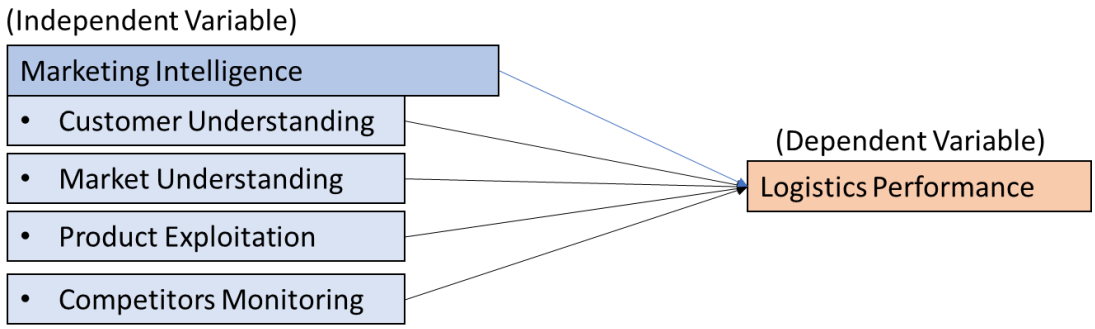
- The Supply Chain Operations Reference (SCOR) Model (Robert, 2020, p. 311).

Applied Framework of the Study

1. Tools and Procedures Followed in the Study

- **Study Model:**
  A standard model was constructed to provide a clear representation of the study's dimensions and to define the method of hypothesis testing. The figure below illustrates the model of the present study:

Figure No. (01): The Current Study Model



Source: Prepared by the Researchers

The figure above shows the variables related to the study hypotheses: the independent variable represented by marketing intelligence with its dimensions (customer understanding, market understanding, product intelligence, competitor intelligence), and the dependent variable represented by logistical performance.

- **Study Population and Sampling Method:**
  Study Population: Since the phenomenon under study concerns the impact of marketing intelligence on logistical performance in Algerian economic enterprises, the population includes all entities sharing the characteristics of this phenomenon. Accordingly, the study population consists of all Algerian economic enterprises operating within the national territory.

Sample: The study sample represents part of the population, reflecting all its attributes. Due to the difficulty of studying the entire population—given its large size and wide geographic spread—the researchers relied on an electronic questionnaire as the primary data collection tool, using purposive sampling directed to the managers of these enterprises. This was done because the questions in the form require respondents with sufficient knowledge of the study variables, and the sample covered enterprises across most Algerian regions.

The questionnaire was distributed to a sample of 385 economic enterprises. A total of 347 questionnaires were retrieved, of which 338 were valid for analysis after review and validation.

- **Questionnaire Design:**
  To enhance the credibility, accuracy, and detail of the study, the questionnaire was designed as the main data collection tool based on the model variables and research hypotheses, while ensuring clarity and simplicity. It consisted of:
  Section One: General information about the economic enterprise (ownership type, classification by activity, classification by number of employees, classification by age).
  Section Two: The study dimensions, comprising 50 items distributed across two axes:
    - Axis One: Marketing intelligence (30 items), divided into four dimensions (customer understanding, market understanding, product intelligence, competitor tracking).
    - Axis Two: Logistical performance (20 items).
- **Validity and Reliability of the Questionnaire:**
  Expert Review: The questionnaire was presented to a group of seven experts and specialists in the field, including

faculty members from the University of El Oued, University of Algiers 3, and University of Laghouat, to ensure its suitability for collecting primary data and the clarity of its items for the study's objectives. Based on their feedback, necessary adjustments were made (shortening, merging, moving, or deleting items).

Reliability Testing: Reliability is a crucial condition for ensuring that the questionnaire consistently measures the intended factors and that its results can be generalized. To verify its reliability and validity, Cronbach's Alpha coefficient was used, as shown in the following table.

Table No. (01): Results of the Reliability and Validity Test of the Questionnaire

Axes – Dimensions – Number of Items – Reliability Coefficient – Validity Coefficient

Axis	Dimensions	Number of Items	Reliability Coefficient	Validity Coefficient
First Axis: Marketing Intelligence Dimensions	Customer Understanding	07	0.835	0.914
	Market Understanding	08	0.912	0.955
	Product Intelligence	07	0.904	0.951
	Competitor Tracking	08	0.883	0.940
Total Marketing Intelligence Dimensions		30	0.956	0.978
Second Axis: Logistical Performance		20	0.925	0.962
Total Axes		50	0.940	0.970

Source: Prepared by the researchers based on SPSS outputs.

Reliability is expressed by the reliability coefficients, and the closer they are to one, the greater the ability of the tool to achieve the study objectives. The table above shows that:

- All reliability coefficients are high and close to one, which demonstrates the tool's capacity to achieve the study's objectives.
- The reliability coefficients of the marketing intelligence dimensions ranged between **83.5% and 91.2%**, while the overall reliability coefficient of all marketing intelligence dimensions reached **95.6%**, which is considered good according to established statistical and scientific standards. This proves the stability and content validity of the questionnaire.
- As for the logistical performance axis, the reliability coefficient reached **92.5%**, which is also good.
- The reliability coefficient of the overall study axes reached **94%**, which is excellent.
- The validity coefficient (square root of the reliability coefficient) for all axes and dimensions of the study exceeded **91%**, confirming the content validity of both the study axes and their dimensions. Accordingly, the questionnaire adequately represents the study population.

- **Statistical Analysis Methods**

To facilitate the processing and analysis of data and to assist in extracting results, the statistical software **SPSS 26** was used, in addition to a set of statistical tests appropriate to the study variables. These included:

- *Cronbach's Alpha* to assess the reliability of the measurement tool,
- *Kolmogorov–Smirnov* and *Shapiro–Wilk* tests to verify data normality,
- *Pearson correlation matrix* to show the degree of association between variables,

- *One-way ANOVA* test to examine difference hypotheses,
- *Multiple linear regression* to identify the extent of the influence of independent variable dimensions on the dependent variable.

Second: Hypotheses Testing and Results Analysis

1/ Normality Test

Before testing the hypotheses and applying statistical tools, it is necessary to first determine whether the data follow a normal distribution. This is important for selecting the appropriate statistical methods. To confirm this, the *Kolmogorov–Smirnov* and *Shapiro–Wilk* tests were applied, with the following hypotheses set at a significance level ($\propto = 0.05$):

- **H0:** The data follow a normal distribution.
- **H1:** The data do not follow a normal distribution.

The current study consists of the marketing intelligence axis with its four dimensions, in addition to the logistical performance axis. After entering the data into SPSS, the following table was obtained:

Table (02): Normality Test

Axes & Dimensions	**Kolmogorov–Smirnov**		**Shapiro–Wilk**	
	Statistic Value	Sig. Level	Statistic Value	Sig. Level
Customer Understanding	0.121	0.150	0.962	0.166
Market Understanding	0.076	0.095	0.917	0.221
Product Intelligence	0.107	0.225	0.922	0.241
Competitor Tracking	0.610	0.209	0.978	0.136
Marketing Intelligence Axis	0.090	0.191	0.949	0.201
Logistical Performance Axis	0.151	0.200	0.956	0.604

Source: Prepared by the researchers based on SPSS outputs.

Interpretation:

- The significance values of the Kolmogorov–Smirnov test for all marketing intelligence dimensions (customer understanding, market understanding, product intelligence, competitor tracking), as well as logistical performance, were all **greater than 0.05**, leading to rejection of the alternative hypothesis (H1) and acceptance of the null hypothesis (H0). This indicates that the data follow a normal distribution.
- Similarly, the Shapiro–Wilk test values for the same axes and dimensions were also **greater than 0.05**, confirming acceptance of the null hypothesis (H0) and rejection of the alternative (H1). This also indicates that the data follow a normal distribution.

Based on both normality tests, the data are normally distributed.

2/ Parametric Testing

Since the data follow a normal distribution, and the current study examines three types of hypotheses—relationship, difference, and effect—the method of statistical significance was adopted for decision-making. The criterion compares the tabulated *Sig.* value with the significance level (0.05):

- If *Sig.* $< 0.05 \rightarrow$ reject H0 and accept H1.
- If *Sig.* $> 0.05 \rightarrow$ accept H0 and reject H1.

2.1/ Relationship Hypotheses Testing

The correlation coefficient was tested to identify the significance level using *Pearson correlation*, whose values range between -1 and +1.

- The closer the value to **+1**, the stronger the positive relationship.
- The closer the value to **0**, the weaker the relationship.
- A value of **-1** indicates a perfect negative correlation.

Hypothesis 1:

There is no statistically significant correlation at the significance level ($\propto = 0.05$) between marketing intelligence and logistical performance in the studied enterprises.

- H0: No relationship between the variables ($r = 0$).
- H1: A relationship exists between the variables ($r \neq 0$).

Table (03): Correlation Coefficient between Study Variables

Marketing Intelligence Dimensions	Logistical Performance Axis
	Correlation Coefficient
Customer Understanding	0.715**
Market Understanding	0.808**
Product Intelligence	0.745**
Competitor Tracking	0.802**
Marketing Intelligence Axis	0.790**

Source: Prepared by the researchers based on SPSS outputs.

Interpretation:

- The relationship between *customer understanding* and logistical performance is **positive and strong** ($r = 0.715$), with statistical significance ($sig = 0.000 < 0.05$), leading to rejection of H0.
- The relationship between *market understanding* and logistical performance is **positive and strong** ($r = 0.808$, $sig = 0.010 < 0.05$), leading to rejection of H0.
- The relationship between *product intelligence* and logistical performance is **positive and strong** ($r = 0.745$, $sig = 0.038 < 0.05$), leading to rejection of H0.
- The relationship between *competitor tracking* and logistical performance is **positive and strong** ($r = 0.802$, $sig = 0.002 < 0.05$), leading to rejection of H0.
- The overall relationship between *marketing intelligence* and logistical performance is **positive and strong** ($r = 0.790$, $sig = 0.000 < 0.05$), leading to rejection of H0.

The first hypothesis—stating that no significant relationship exists between marketing intelligence and logistical performance in the studied enterprises—is rejected.

2.2/ Difference Hypotheses Testing

One-Way ANOVA Test:

This test is used to determine differences between the means of study sample responses according to specific characteristics, when the sample is divided into more than two groups. The current study includes four characteristics:

1. Type of enterprise ownership,

2. Classification of the enterprise by activity,
3. Classification of the enterprise by number of employees,
4. Classification of the enterprise by age.

Hypothesis 2:
There are no statistically significant differences at the significance level ($\propto = 0.05$) in the mean responses of the study sample regarding the study axes (marketing intelligence, logistical performance) that can be attributed to differences in the general information of the enterprises under study.

This main hypothesis includes four sub-hypotheses:

- **Sub-hypothesis 1:** There are no differences in mean responses due to the variable of enterprise ownership type.
    - **Partial null hypothesis 1:** No differences exist in mean responses regarding marketing intelligence due to enterprise ownership type.
    - **Partial null hypothesis 2:** No differences exist in mean responses regarding logistical performance due to enterprise ownership type.

To test the above hypotheses, the *ANOVA* test was applied to both axes, as shown in the following table:

Table (04): ANOVA Test of Differences According to Enterprise Ownership Type

Axes	Calculated F value	Significance level
Marketing Intelligence Axis	1.551	0.392
Logistical Performance Axis	0.923	0.515

Source: Prepared by the researchers based on SPSS outputs

According to the test results, the calculated statistical value of Fisher's test (F) for the two axes (marketing intelligence and logistical performance) was respectively (1.551, 0.923), with significance levels of (0.392, 0.515), both greater than (0.05). This indicates acceptance of all the partial null hypotheses, which state that there are no differences between the means of the sample responses on the study axes (marketing intelligence and logistical performance) attributable to the variable of the enterprise's ownership type.

Sub-hypothesis 2: There are no differences between the means of the sample responses attributable to the classification of the enterprise according to its activity.

This hypothesis is divided into two partial null hypotheses:

- Partial null hypothesis 1: There are no differences between the means of the sample responses on the marketing intelligence axis attributable to the classification of the enterprise according to its activity.
- Partial null hypothesis 2: There are no differences between the means of the sample responses on the logistical performance axis attributable to the classification of the enterprise according to its activity.

To test these hypotheses, the (ANOVA) test was applied for both axes, as shown below:

Table 05: ANOVA test on the study axes according to enterprise activity classification

Axes	Calculated F value	Significance level
Marketing Intelligence Axis	2.023	0.426
Logistical Performance Axis	0.763	0.719

Source: Prepared by the researchers based on SPSS outputs

The table above shows that the calculated statistical value of Fisher's test (F) for the two axes (marketing intelligence and logistical performance) was respectively (2.023, 0.763), with significance levels of (0.426, 0.719), both greater than (0.05). This indicates acceptance of all the partial null hypotheses, which state that there are no differences between the means of the sample responses on the study axes (marketing intelligence and logistical performance) attributable to the enterprise activity classification.

Sub-hypothesis 3: There are no differences between the means of the sample responses attributable to the classification of the enterprise according to the number of employees.

This hypothesis is divided into two partial null hypotheses:

- Partial null hypothesis 1: There are no differences between the means of the sample responses on the marketing intelligence axis attributable to the enterprise's number of employees.
- Partial null hypothesis 2: There are no differences between the means of the sample responses on the logistical performance axis attributable to the enterprise's number of employees.

To test these hypotheses, the (ANOVA) test was applied for both axes, as shown below:

Table 06: ANOVA test on the study axes according to enterprise size (number of employees)

Axes	Calculated F value	Significance level
Marketing Intelligence Axis	2.125	0.588
Logistical Performance Axis	0.864	0.687

Source: Prepared by the researchers based on SPSS outputs

From Table (06), it appears that the calculated statistical value of Fisher's test (F) for the two axes (marketing intelligence and logistical performance) was respectively (2.125, 0.864), with significance levels of (0.588, 0.687), both greater than (0.05). This leads to the acceptance of all the partial null hypotheses, which state that there are no differences between the means of the sample responses on the study axes (marketing intelligence and logistical performance) attributable to the classification of the enterprise according to the number of employees.

Sub-hypothesis 4: There are no differences between the means of the sample responses attributable to the classification of the enterprise according to its age.

This hypothesis is divided into two partial null hypotheses:

- Partial null hypothesis 1: There are no differences between the means of the sample responses on the marketing intelligence axis attributable to the age of the enterprise.
- Partial null hypothesis 2: There are no differences between the means of the sample responses on the logistical performance axis attributable to the age of the enterprise.

To test these hypotheses, the (ANOVA) test was applied for both axes, as shown below:

Table 07: ANOVA test on the study axes according to enterprise age

Axes	Calculated F value	Significance level
Marketing Intelligence Axis	1.959	0.254
Logistical Performance Axis	0.583	0.761

Source: Prepared by the researchers based on SPSS outputs

Based on the results of the above table, it is observed that the calculated statistical value of Fisher's test (F) for the two axes (marketing intelligence, logistical performance) amounted respectively to (1.959, 0.583), with significance levels of

(0.254, 0.761). Since these values are greater than (0.05), this indicates the acceptance of all null sub-hypotheses, which state that there are no differences in the mean responses of the sample on the study axes (marketing intelligence, logistical performance) attributable to the variable of firm age classification.

Accordingly, the second hypothesis is accepted, which asserts that there are no statistically significant differences at the significance level ($\propto = 0.05$) between the mean responses of the sample regarding the study axes (marketing intelligence, logistical performance) due to differences in the general characteristics of the firms under study.

02.03/ Testing the Effect Hypotheses:
The correlation coefficient provides the degree of association between variables, without distinguishing between the independent (predictor) variable and the dependent (predicted) variable. For more precision in decision-making, the effect hypothesis is tested to estimate prediction using the multiple linear regression model, in order to determine the explanatory power of the marketing intelligence dimensions (independent variables) on logistical performance (dependent variable). The relationship is formulated mathematically in an estimable way. In this model, the statistical significance criterion is applied by comparing the probability values of the tests (Fisher, Student). If the values are less than or equal to the significance level (0.05), the null hypothesis is rejected.

02.03.01/ Assumptions of the Multiple Linear Regression Model:
To rely on the model results for prediction and for more accurate interpretation of the phenomenon, the following assumptions must be verified:

- No bias in the applied analysis: the model is correctly specified.
- The number of observations is greater than the number of parameters: meaning observations exceed the explanatory variables.
- Model simplicity: the model is linear, with its functional form expressed as a straight line (Gujarati, 2015, p. 78), mathematically:
  $Y=\beta0+\beta1x1+\beta2x2+\beta3x3+\beta4x4$
- Linearity of the relationship between independent and dependent variables: i.e., the independent variables are linearly related to the dependent variable. This was confirmed by the existence of a strong, positive, and statistically significant correlation at the level ($\propto = 0.05$) between marketing intelligence dimensions and logistical performance, ranging from (0.715 to 0.808) (see Table 03).
- Normality of distribution: confirmed by the Kolmogorov-Smirnov and Shapiro-Wilk tests (see Table 02).
- No multicollinearity among explanatory variables: i.e., low correlation coefficients between independent variables. According to Ruth (2005, p. 12), correlation coefficients should not exceed (0.7). The correlation matrix is presented below:

Table (08): Results of Correlation Test among Independent Variables

	Customer Understanding	**Market Understanding**	**Product Intelligence**	**Competitor Tracking**
Customer Understanding	1	0.651	0.593	0.644
Sig.	0.000	0.000	0.000	0.000
Market Understanding	0.651	1	0.528	0.697
Sig.	0.000	0.000	0.000	0.000
Product Intelligence	0.593	0.528	1	0.643
Sig.	0.000	0.000	0.000	0.000

	Customer Understanding	Market Understanding	Product Intelligence	Competitor Tracking
Competitor Tracking	0.644	0.697	0.643	1
Sig.	0.000	0.000	0.000	0.000

Source: Prepared by researchers based on SPSS outputs.

The above table shows that all correlation coefficients between the independent variables are below (0.7) and statistically significant at the level ($\propto = 0.05$).

- **Tolerance and VIF Tests:** These are used to further confirm the absence of multicollinearity.
    - *Variance Inflation Factor (VIF):* A value exceeding (10) confirms multicollinearity, indicating a problem in the regression model (Gujarati, 2015, p. 463).
    - *Tolerance Test:* Values closer to (0) indicate stronger multicollinearity, whereas values closer to (1) confirm the absence of multicollinearity among explanatory variables (Gujarati, 2015, p. 463).

Table (09): Results of Tolerance and VIF Tests for Independent Variables

Independent Variables	Tolerance	VIF
Customer Understanding	0.499	2.562
Market Understanding	0.566	2.511
Product Intelligence	0.487	2.055
Competitor Tracking	0.483	2.114

Source: Prepared by researchers based on SPSS outputs.

As shown in the table above, all VIF values for the explanatory variables (customer understanding, market understanding, product intelligence, competitor tracking) are below (10), and all Tolerance values are not close to (0). This confirms the absence of multicollinearity among the explanatory (independent) variables.

02.03.02/ Measures of the Estimated Regression Model Quality:
The overall significance of the model is tested, i.e., its ability to explain the causal relationship between variables.

- H0: ($\beta1 = \beta2 = \beta3 = \beta4 = 0$) → Regression is not significant (no statistically significant effect at $\propto = 0.05$ of marketing intelligence dimensions on logistical performance in the studied firms).
- H1: ($\beta1 \neq \beta2 \neq \beta3 \neq \beta4 \neq 0$) → Regression is significant (there is a statistically significant effect at $\propto = 0.05$ of marketing intelligence dimensions on logistical performance in the studied firms).

Table (10): Results of Multiple Linear Regression Testing the Effect of Marketing Intelligence Dimensions on Logistical Performance

Dependent Variable	R	R^2	F Calculated	DF	Sig.	B (Coefficients)	T Calculated	Sig.
Logistical Performance	0.827	0.683	115.365	4	0.000	$\beta0 = 0.736$	4.489	0.000
Customer Understanding				333		0.294	3.813	0.014
Market Understanding				337		0.227	3.710	0.008
Product Intelligence						0.205	2.519	0.038

Dependent Variable	R	R^2	F Calculated	DF	Sig.	B (Coefficients)	T Calculated	Sig.
Competitor Tracking						0.459	6.254	0.012

Source: Prepared by researchers based on SPSS outputs.

The estimated multiple linear regression equation can therefore be mathematically expressed as follows:

$Y=\beta0+0.294X1+0.227X2+0.205X3+0.459X4$

Where:

- Y: Logistical performance
- X1: Customer understanding
- X2: Market understanding
- X3: Product intelligence
- X4: Competitor tracking

$\hat{Y} = \beta0 + \beta1\ x1 + \beta2\ x2 + \beta3\ x3 + \beta4\ x4$
$\hat{Y} = 0.736 + 0.294\ x1 + 0.227\ x2 + 0.205\ x3 + 0.459\ x4$

Where:

- **$\hat{Y}$**: Represents the estimated dependent variable (logistical performance).
- **β0**: Represents the estimated constant of regression.
- **x1**: Represents customer understanding.
- **x2**: Represents market understanding.
- **x3**: Represents product intelligence.
- **x4**: Represents competitor tracking.
- **β1, β2, β3, β4**: Represent the estimated partial coefficients of the independent variables (customer understanding, market understanding, product intelligence, and competitor tracking, respectively).

The results shown in the above table indicate that the correlation coefficient was (r = 0.827), which demonstrates a strong positive relationship between the independent variables and the dependent variable, confirming the solid relationship between marketing intelligence dimensions and logistical performance.

Meanwhile, the coefficient of determination (R^2) was (0.683), meaning that 68.3% of the variation in the dependent variable can be explained by the independent variables (marketing intelligence dimensions). In other words, the dimensions of marketing intelligence can predict 68.3% of the variations in logistical performance, while the remaining 31.7% is attributed to factors not included in the current study model.

In line with the above, the significance of this effect was confirmed using the Fisher test, with a calculated value of (F = 115.365) and a significance level (sig = 0.000), which is lower than (0.05). This leads to the rejection of the null hypothesis and the acceptance of the alternative hypothesis, indicating that the regression is statistically significant. Thus, the dependent variable can be predicted through the independent variables (marketing intelligence dimensions), which proves the validity, quality, and high predictive performance of the model.

Moreover, the significance of the regression constant was tested using the (t) statistic associated with β0, where the calculated value was (t = 4.489) with a significance level (sig = 0.000), which is lower than (0.05).

2.3.3 Partial Quality Testing of the Regression Model

This refers to testing the sub-hypotheses derived from the third hypothesis:

- **Main Hypothesis 3**: There is no statistically significant effect at the significance level ($\propto = 0.05$) of marketing intelligence dimensions on logistical performance in the institutions under study.

From this hypothesis, four null sub-hypotheses are derived:

1. **First Sub-hypothesis**: Customer understanding has no statistically significant effect at ($\propto = 0.05$) on logistical performance.
    - Results show $\beta 1 = 0.294$, which is statistically significant (Sig = 0.014 < 0.05). Thus, the null sub-hypothesis is rejected, and the alternative is accepted, confirming a significant positive effect of customer understanding on logistical performance. An increase of one unit in customer understanding raises logistical performance by 0.294, controlling for the other variables (x2, x3, x4).
2. **Second Sub-hypothesis**: Market understanding has no statistically significant effect at ($\propto = 0.05$) on logistical performance.
    - Results show $\beta 2 = 0.227$, with Sig = 0.008 (< 0.05). Hence, the null is rejected, and the alternative is accepted, proving a positive effect. A one-unit increase in market understanding enhances logistical performance by 0.227, independent of the other variables.
3. **Third Sub-hypothesis**: Product intelligence has no statistically significant effect at ($\propto = 0.05$) on logistical performance.
    - Results show $\beta 3 = 0.205$, with Sig = 0.038 (< 0.05). The null is rejected, and the alternative is accepted, confirming a significant positive effect. A one-unit increase in product intelligence improves logistical performance by 0.205, independent of the other variables.
4. **Fourth Sub-hypothesis**: Competitor tracking has no statistically significant effect at ($\propto = 0.05$) on logistical performance.
    - Results show $\beta 4 = 0.459$, with Sig = 0.012 (< 0.05). The null is rejected, and the alternative is accepted, confirming a significant positive effect. A one-unit increase in competitor tracking improves logistical performance by 0.459, independent of the other variables.

In sum, all dimensions of marketing intelligence play a significant role in influencing logistical performance in the institutions under study. Hence, these independent variables can be relied upon to predict the dependent variable. Therefore, the third hypothesis is rejected, and it is concluded that there is a statistically significant effect at ($\propto = 0.05$) of marketing intelligence dimensions on logistical performance.

Conclusion

In light of the successive and large-scale qualitative leaps in the business environment, including the explosion of information, the acceleration of its fundamental impact, and its generative capacity, enterprises have recently been compelled to intensify exceptional efforts to ensure the enablers of success and deliver outstanding performance. This is achieved by identifying a pioneering and distinctive developmental path that demonstrates the ability to possess high flexibility, adapt, and effectively deal with various challenges through proactive plans based on more efficient analysis of economic variables.

After presenting the research problem, developing the model, and testing the hypotheses, the study reached the following findings:

The study revealed a strong and positive correlation, statistically significant at the 0.05 level, between all dimensions of marketing intelligence individually and logistical performance, as well as a positive correlation when these dimensions are adopted collectively by the enterprises under study.

The results showed no statistically significant differences at the 0.05 level between the mean responses of the sample on the study variables (marketing intelligence and logistical performance) attributable to differences in the general information of the enterprises under study.

The findings demonstrated a positive and statistically significant effect, at the 0.05 level, of the dimensions of marketing intelligence on logistical performance in the enterprises under study.

Based on these results, the following recommendations are proposed:

Increase the diversification of intelligence information sources and adapt to the information revolution by establishing data systems that ensure privacy and confidentiality, in order to identify threats, get closer to customers, monitor any signals or indicators, and respond to even the smallest environmental changes, thereby avoiding informational gaps.

Focus on fostering a positive climate by maintaining investment in intellectual capital and enhancing its efficiency, as it is considered the driver of future wealth. This can be achieved through the mobilization, recruitment, and utilization of specialized staff, along with intensifying training courses and programs.

Accelerate the advancement of public economic enterprises toward achieving a prestigious position by abandoning traditional management practices and adopting modern standards to enhance their efficiency and strengthen their role as a source of added value.

Open the doors of economic enterprises to universities by promoting cooperation and integration to fund ideas and scientific research, improve their quality, and contribute to transforming them into outstanding and applicable projects.

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