

The Pre-Customs Release System and Supply Chain Efficiency: The Case of Egypt

DR. MOSTAFA GAD¹, PROF. DR. SABER SHAKER²

¹Saxony Egypt University

²Faculty of Commerce, Helwan University

Abstract- *This research investigates the relationship between the Advance Cargo Information (ACI) system and supply chain efficiency, with a focus on its impact on international trade and customs clearance procedures in Egypt. As part of Egypt's digital transformation strategy, the ACI system was introduced to modernize customs administration, enhance transparency, and improve operational efficiency in logistics. The study explores how the implementation of the ACI system influences customs clearance times, reduces bureaucratic inefficiencies, mitigates risks, and ensures compliance with international trade regulations. Through a mixed-methods approach combining qualitative and quantitative data, including surveys, case studies, and statistical analysis, the research assesses the real-world effects of ACI on shipping, logistics operations, and customs procedures. Findings reveal that the ACI system contributes to improving supply chain efficiency by reducing delays, automating processes, and increasing the accuracy of trade documentation. However, challenges such as system adaptability, training for stakeholders, and integration with global supply chain networks remain critical concerns. The study concludes with recommendations for policymakers, businesses, and logistics professionals on optimizing ACI implementation to maximize economic and trade benefits. These insights contribute to the broader understanding of digital customs transformation and its role in enhancing supply chain management.*

Indexed Terms- *Supply Chain Efficiency, Advance Cargo Information (ACI), Customs Clearance, Digital Transformation, Trade Facilitation, Logistics, International Trade.*

I. INTRODUCTION

The Single Window System is managed by Misr Technology Services (MTS), The new single-window system, the Single Window Customs Initiative, is also administered by Misr Technology Services (MTS) and aims to modernize and automate customs administration, simplify procedures, and reduce clearance times. According to the decree, importers must submit the necessary consignment documents to Egyptian agencies at ports of entry, including Customs, the General Organization for Import & Export Control (GOEIC), the National Food Safety Authority, and the Ministry of Agriculture's Plant Quarantine and Veterinary Services, through the single window system 48 hours before shipment arrival. The Customs Authority has announced a few instructions from the head of authority No. 3) of 2022 regarding customs data with the pre-clearance system. (National Single Window for Egypt Trade Accross Borders, 2024).

This is part of the Egyptian state's digital transformation directives, represented by the Ministry of Finance, to encourage dealers to follow the pre-clearance system, which will facilitate the movement of imports and reduce customs release time rates, following international best practices. The commitment of customs sites and logistic centers to customs data with the pre-clearance system is required.

Identify the constructs of a Journal – Essentially a journal consists of five major sections. The number of pages may vary depending upon the topic of research work but generally comprises up to 5 to 7 pages. These are:

- 1) Abstract
- 2) Introduction

- 3) Research Elaborations
- 4) Results or Finding
- 5) Conclusions

1.1. Research Problem.

In 2019, the "Single Window - Nafeza" system began, establishing logistical centers at Customs Centers. This system covers 95% of imports and exports in Egypt, and importers can submit documents electronically through the Single Window Customs Initiative. The government administers the new single-window system. Still, there were many obstacles to working with the MTS (Manifest Tracking System) on a system that operates in various ports, leading to a gap in application and complexity in the customs release system. Some of the issues are summarized as follows:

- There is no feature to add, copy, or merge on the system.
- The system does not allow deleting a supply order or an invoice if it was uploaded to the system by mistake.
- Several reports are unavailable, including the laboratory rejected and expired messages reports, but the payment has not been made yet.
- The Authority's fees on the window system are not updated promptly, which forces the costs to be calculated manually by the financial auditor.
- In the case of an expired certificate for customs, there is no possibility of working on a request for food safety, technical support, and vice versa.
- Delayed sending, sometimes identical to the accepted and laboratory-accepted message, leads to a delay in the person concerned.
- In the event of a laboratory rejection and the response to the grievances is sufficient, no matching is issued, which leads to delaying the person concerned.
- There is no warning or notice on the window if the examination report is returned to the review department.
- Lack of guidance from MTS officials regarding the possibility of identifying pre-examination certificates (ELAC) on the window.
- Some of the reports that were available on the system have disappeared and closed with the matches issued.

When viewing some reports, the phrase "The required documents cannot be displayed" appears. Some reports that need to be added in the first place are missing, such as a statement of messages issued with conformity, the total number of conformity certificates, follow-up requests for inspection, a statement of the letters that have received a rejection notice, a request for a grievance procedure, and a statement of the letters for which a decision was issued "under reservation." When the result of the laboratory refusal grievance is received, there is no option in the field of grievance result to be satisfied with the laboratory results according to the decision of the Grievance Committee, which forces the user to be satisfied with what is written. Also, when the result is matched by the Grievance Committee, it is not included in the matching automatically, which forces editing and re-recording results.

There is a problem in displaying the files listed on the window from the outside, which causes a great loss of time during the review. Moreover, the release time for shipments in Egypt can take up to 505 hours, at 1554 dollars per container, compared to 344 dollars in Morocco, 126 dollars in Turkey, and 961 dollars in the UAE. According to the World Bank's 2018 Sports Report, the value of export release in Egypt is 136 hours for \$100 per container, while procedures in neighboring countries such as the United Arab Emirates take only two days.

1.2. Research Quotation

- Is there a relationship between the new system and clearance time?
- Is it forbidden to enter materials that do not conform to standard specifications?
- Is the new system accepted smoothly in the Egyptian and international markets?
- What about data security?
- Will the total cost change before and after implementing the new system?

1.3. Research Objectives.

This research aims to critically study the impact of applying the pre-clearance system for shipments through blockchain techniques on the performance of supply chains and workflows. This study aims to determine whether there is a statistically significant

relationship between the speed of shipment clearance and market acceptance of this system in Egypt. Additionally, the study examines how the market influences industries such as the gold and jewelry industry and how the pre-clearance system will impact these industries.

Considering the research problem, the following research objectives and hypotheses have been formulated:

1. Explore the current situation of the release system for shipments.
2. Identify the prerequisites for implementing the pre-clearance system in ports.
3. Provide a systematic understanding of the relationship between the new organizational system and supply chain efficiency.

1.4. Research Hypotheses.

Based on the research objectives, the following hypotheses have been formulated for empirical testing:

- Null Hypothesis (H₀): The pre-clearance system positively impacts supply chain efficiency.
- Alternative Hypothesis (H₁): The pre-clearance system hurts supply chain efficiency.
- Null Hypothesis (H₀): There is no significant relationship between the pre-clearance system and supply chain efficiency.

1.5. Pre-release System and Supply Chain Efficiency

Supply chain management (SCM) is the process of managing the flow of goods and services to and from a business, including every step involved in turning raw materials and components into final products and getting them to the ultimate customer. Effective SCM can help streamline a company's activities to eliminate waste, maximize customer value, and gain a competitive advantage in the marketplace (FERNANDO, 2024).

II. RESEARCH METHODOLOGY & DATA ANALYSIS

Methodological procedures for the study

The methodological procedures of the study are one of the basic aspects that researchers must clarify to establish the scientific methods they followed during the implementation of the research work. These

procedures refer to the ways and methods that researchers used to reach the research results. Accordingly, research principles require detailing all the paths and aspects that the researcher took during the implementation of his research work, to prove his results with supported facts, and to support this with solid scientific principles and theories, based on research methods. Since the methodology is the most important basis in research work, research work without a clear methodology becomes devoid of its original scientific value, which must be clearly linked to the specific methods that include principles that have been identified by research methods, and stipulate conditions for their use in order to achieve the judgment of the research results as trustworthy results that can be relied upon and generalized. In this context, this chapter of the methodological study that the researcher followed in his current study explains the methods, approaches, procedures and tools that the researcher used, starting from defining the research problem and passing through the method he chose as a path for the study, and ending with examining its research hypotheses. And answering the research questions, with the aim of achieving the goal for which this research was designed.

First: the methodological procedures of the study

In order to achieve the objectives of the study, the researcher used the descriptive analytical approach, which is the approach that seeks to describe the phenomena studied, analyze the data related to the phenomenon studied, and study the relationships between the components of this phenomenon, as the approach deals with studying existing events, phenomena, and practices available for study without the researcher interfering in their course, and the researcher must interact with them through description and analysis. This approach is considered a way to search for the present to answer specific questions without the researcher intervening in controlling variables or introducing new treatments, but rather studying what is present or existing, so the researcher relied on this approach to reach accurate and detailed knowledge about the research problem, and to achieve a better and more accurate perception of the phenomenon under study, and by relying on two main sources of data collection, which are:

A - Secondary sources: In addressing the theoretical framework of the study, the researcher turned to secondary data sources, which are represented by relevant Arabic and foreign books and references, periodicals, articles, reports, previous research and studies that addressed the subject of the study, and research and reading on various Internet sites.

B - Primary sources: They consist of collecting primary data in the field, using a questionnaire designed specifically for this purpose and distributed to the sample members to collect the required data.

Second: Field of study

A - This study was conducted: on employees of companies operating in the field of logistics.

B - A sample to study reliability and validity: Before expanding his current study, the researcher began by relying on a sample to study reliability and validity, aiming to determine the aspects related to the strength of the tool, its clarity, and its suitability to the research goal, in terms of content, reliability, and the extent of the respondents' understanding of its components. Accordingly, the researcher relied on distributing a sample to study reliability. And honesty consists of (80) respondents; This is to verify the validity of the questionnaire, represented by (validity and reliability criteria) for the study tool, which is considered the main step before starting to distribute questionnaires to the actual study sample. After verifying the validity of the questionnaire, represented by (validity and reliability), the questionnaires were distributed to the actual study sample. The sample for studying reliability and validity is outside the scope of the actual study sample.

B - The actual sample: After verifying the validity and reliability of the measurement tool, the researcher sent the questionnaires electronically via email to the study sample members. The number of those who responded to the questionnaire questions was (455) questionnaires.

Results related to describing the characteristics of the study sample

Table No. (3) shows the distribution of sample members according to the gender variable

Gender	number	%
Male	283	62.2%
Female	172	37.8%
Total	455	100%

Table 1 :Distribution of sample members according to the gender variable

By reviewing Table No. (3) on the distribution of the study sample according to the gender variable, the (males) category represents 62.2% of the total study sample, which is the highest percentage in the gender variable, while the (females) category represents 37.8% of the total population. The total sample of the study, which is the lowest percentage in the Gender variable.

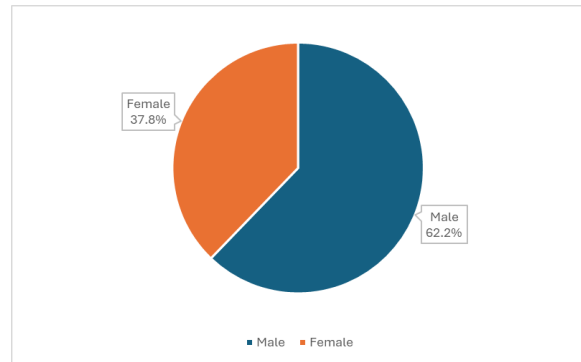


Figure 1 It shows the distribution of the sample according to the Gender variable

Age	number	%
From 25 years to less than 35 years	148	32.5%
From 35 years to less than 45 years	151	33.2%
From 45 years to less than 55 years	104	22.9%
55years and over	52	11.4%
Total	455	100%

Table 2 : Shows the distribution of the sample according to the age variable

By reviewing Table 5, which details the distribution of the study sample members according to the age variable, it is evident that the age group (From 35 years to less than 45 years) represents 33.2% of the total study sample, making it the highest percentage in the age variable. Conversely, the age group (55 years and over) represents 11.4% of the total study

sample, making it the lowest percentage in the age variable.

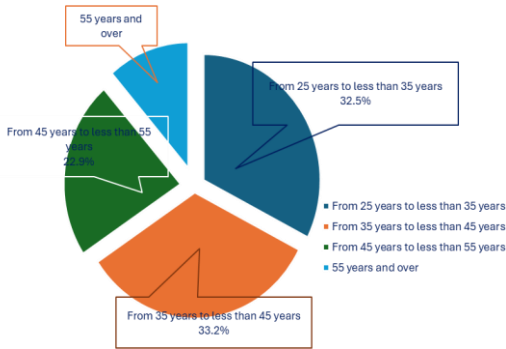


Figure 2 It shows the distribution of the sample according to the age variable.

Education level	number	%
Intermediate/Secondary	75	16.5%
University qualification	319	70.1%
Postgraduate Diploma	25	5.5%
Master	24	5.3%
PhD	12	2.6%
Total	455	100%

Figure 3 Shows the distribution of sample members according to the variable of Education level

Reviewing Table No. 8, which presents the distribution of the study sample according to the educational level variable, it is evident that the "University qualification" category represents 70.1% of the total study sample, making it the largest percentage within the educational level variable. On the other hand, the "PhD" category represents 2.6% of the total study sample, which is the highest percentage within the educational level variable.

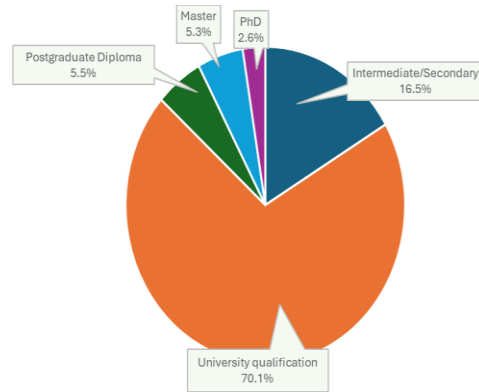


Figure 4 shows the distribution of the sample according to the variable of Education level¹

Table No. (6) Shows the distribution of sample members according to the variable of Years of Experience

Years of Experience	number	%
Less than 5 years	66	14.5%
From 5 years to less than 10 years	160	35.2%
From 10 years to less than 15 years	197	43.3%
15 years and over	32	7.0%
Total	455	100%

Table 3 Shows the distribution of sample members according to the variable of Years of Experience

Reviewing Table No. 6, which presents the distribution of the study sample according to the years of experience variable, it is evident that the "From 10 years to less than 15 years" category represents 43.3% of the total study sample, making it the highest percentage within the years of experience variable. On the other hand, the "15 years and over" category represents 7% of the total study sample, making it the lowest percentage within the variable years of experience.

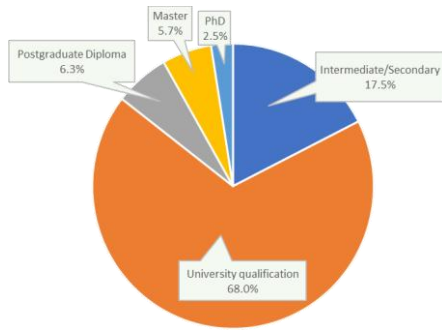


Figure 5 shows the distribution of the sample according to the variable of Years of Experience.

Third: Study tool - This study adopted two tools:

The first tool: A questionnaire was prepared by the researcher by reviewing previous related studies and research, in addition to seeking the opinions and viewpoints of arbitrators and those with experience and expertise. Accordingly, the study tool (questionnaire) consisted of three main sections as follows:

First Section: The first section consists of a set of questions that aim to identify the primary data.

The second section: pertains to the independent variable (Advance Cargo Information Declaration - ACID) and consists of 20 statements divided into 4 dimensions.

The third section: pertains to the dependent variable (Supply chain efficiency) and consists of 18 statements. More specifically, Table No. 6 provides a detailed overview of the study variables, their measurement elements, and the codes of the corresponding questions reflected in the questionnaire.

variables	Dimensions	code	N# of questions
independent variable (Advance Cargo Information Declaration - ACID)	Technological dimension	X1	5
	Organizational dimension	X2	5
	Human dimension	X3	5
	Digital Governance	X4	5
Dependent variable (Supply chain efficiency)		Y	18

Table 4 provides a detailed overview of the study variables

Study tool design

The questionnaire was designed according to the five-point Likert scale, where the paragraphs of the questionnaire are presented to the respondents, and for each paragraph, five answers specify the level of their agreement with them, and the answers are given numerical weights that represent the degree of response to the statement, as shown in Table No. (7).

Strongly Agree	disagree	neutral	Agree	Strongly Agree
5	4	3	2	1

Table 5 Likert scale scores

The respondents' responses to the items of the scale were measured according to the five-point Likert scale, and the level of importance was calculated according to the following equation: the level of importance = (the upper limit of the answer - the lower limit of the answer) ÷ the upper limit of the answer.

Significance level = (5 - 1) ÷ 5 = 0.80, as shown in Table (7)

significance level	relative weight	weighted average
Very weak	%36 - %20	1.80 – 1
weak	%52 - %36.1	– 1.81 2.60
Medium	%68 - %52.1	– 2.61 3.40
High	%84 - %68.1	– 3.41 4.20

Very High	- %100	%84.1	5 – 4.21
-----------	-----------	-------	----------

This gives a clear indication that the averages that range between (1-1.80) indicate a very low level of agreement on the terms and dimensions of the questionnaire, while the averages that range between (1.81-2.60) indicate that there is a low level of agreement on the terms and dimensions of the questionnaire. While averages ranging between (2.61 - 3.40) indicate a medium level of agreement on the terms and dimensions of the questionnaire, and averages ranging between (3.41 - 4.20) indicate a high level of agreement on the terms and dimensions of the questionnaire. Between (4.21 - 5), it indicates a very high level of agreement on the terms and dimensions of the questionnaire.

The second tool: Logistics services performance indicators. Table No. (8) shows these indicators in more detail.

Indicator Name	2018 - 2019	2022 - 2022
Efficiency of customs clearance process	2.60	2.80
Track and trace shipment routes	2.72	2.90
Logistics Performance Index	2.82	3.10
Shipments reach the recipient according to the schedule.	3.19	3.60
Easy to arrange shipments	2.79	3.20

Table 6 shows the performance indicators of logistics services

Fourth: The validity and reliability of the study tool

1.6. Item Discrimination Coefficient

The item discrimination coefficient is defined as the extent of the effectiveness of a single item in differentiating between individuals with high ability and individuals with low ability, where individuals with high capabilities have preference in answering the paragraph, and the researcher calculated the item discrimination coefficient for the items through (Corrected Item-Total Correlation)) Corrected correlation coefficients between each item and the total score of its dimension, as shown in the tables

that show the results of the individual discrimination coefficient.

First: The Item Discrimination Index for the Independent Variable (Advance Cargo Information Declaration - ACID)

Table (9) Corrected correlation coefficients between each statement and the total score for each dimension of Advance Cargo Information Declaration – ACID, n = 80

phrase number	Corrected Correlation	Item-Total	phrase number	Corrected Correlation	Item-Total	phrase number	Corrected Correlation	Item-Total	phrase number	Corrected Correlation	Item-Total
1	0.896	6	0.912	11	0.711	16	0.671				
2	0.889	7	0.812	12	0.763	17	0.762				
3	0.810	8	0.709	13	0.666	18	0.703				
4	0.829	9	0.851	14	0.738	19	0.787				
5	0.788	10	0.726	15	0.672	20	0.591				

Table 7) Corrected correlation coefficients between each statement and the total score for each dimension of Advance Cargo Information Declaration – ACID

() Significant correlation at significance level 0.01

It was clear from the previous table (9) that the phrases of the technological dimension have achieved substantial correlations with the total corrected degree of the dimension to which they belong, ranging between (0.788 – 0.896), and it is also clear that the statements of the organizational dimension have achieved substantial correlations with the corrected total degree of the dimension to which they belong, where they ranged between (0.726 – 0.912), and it is also clear that the statements of the human dimension achieved substantial correlations with the corrected overall score of the axis to which they belong, ranging from (0.666 – 0.763), and it is also clear that the statements of the digital governance dimension have achieved substantial correlations with the corrected overall score of the dimension to

which they belong, ranging from (0.591 – 0.787), so the discriminating coefficient of phrases is good.

Second: The Item Discrimination Index for the Dependent Variable (Supply chain efficiency).

Table (10) Corrected correlation coefficients between each statement of the Supply chain efficiency and the total score, n = 80

phrase number	Corrected Correlation	Item-Total	phrase number	Corrected Correlation	Item-Total
Supply chain efficiency					
1	0.928	7	0.924	13	0.794
2	0.916	8	0.843	14	0.789
3	0.860	9	0.820	15	0.818
4	0.853	10	0.816	16	0.840
5	0.859	11	0.873	17	0.832
6	0.910	12	0.819	18	0.723

Table 8 Corrected correlation coefficients between each statement of the Supply chain efficiency

() Significant correlation at significance level 0.01

It is clear from the previous table (10) that the supply chain efficiency statements achieved significant correlations with the total corrected score of the dimension to which they belong, as they ranged between (0.723 - 0.928), and thus the discrimination coefficient for the statements is considered good.

1.7. Internal consistency

Internal consistency is defined as the degree of correlation between items. It is a measure based on the degree of pairwise correlations between different statements in the same test. Since correlations between statements, most of the time, vary in magnitude, using the average correlation between statements is a simple and straightforward approach to show the degree of correlation Among the different statements in the test, internal consistency = mean internal correlation.

Results of Internal Consistency for the Study Variables Items

First: Results of internal consistency of the ACID dimensions

Table (11) shows the minimum, maximum and average scores for the correlations between the paragraphs of the dimensions of ACID, n = 80

Dimensions of sustainable facility management	Correlations average	Correlations minimum	Correlations maximum
Inter-Item Correlations Technological dimension	0.764	0.590	0.941
Inter-Item Correlations Organizational dimension	0.704	0.591	0.892
Inter-Item Correlations Human dimension	0.590	0.506	0.678
Inter-Item Correlations Digital Governance	0.579	0.448	0.689

Table 9 Shows that all the phrases of the digital technology dimension

The previous table (11) shows that all the phrases of the digital technology dimension achieved statistically significant correlations with each other ranging between (0.590 - 0.941), with an average correlation of (0.764), and this value indicates the existence of good internal consistency between the phrases of the digital technology dimension. Also, all the phrases of the organizational dimension achieved statistically significant correlations with each other ranging between (0.591 - 0.892), with an average correlation of (0.704), and this value indicates the existence of good internal consistency between the phrases of the organizational dimension. Also, all the phrases of the human dimension achieved statistically significant correlations with each other ranging between (0.506 - 0.678), with an average correlation of (0.590), and this value indicates the existence of good internal consistency between the phrases of the

human dimension. Also, all the phrases of the digital governance dimension achieved statistically significant correlations with each other ranging between (0.448 - 0.689), with an average correlation of It reached (0.579), and this value indicates the existence of good internal consistency between the phrases of the digital governance dimension, and these values indicate the existence of good internal consistency between the phrases of the advance shipment registration system dimensions.

Second: Results of internal consistency of the phrases (Supply chain efficiency)

Table (12) Shows the minimum, maximum and average degrees of correlation between Supply chain efficiency statements, n = 80

Here are some Recommendations and development points for the Egyptian Customs Nafeza System:

Dimensions of sustainable facility management	Correlations average	Correlations minimum	Correlations maximum
Inter-Item Correlations Supply chain efficiency	0.730	0.454	0.987

Table 10 shows that all supply chain efficiency statements achieved statistically significant correlations

The previous table (12) shows that all supply chain efficiency statements achieved statistically significant correlations with each other ranging between (0.454 - 0.987), with an average correlation of (0.730). This value indicates the presence of good internal consistency between supply chain efficiency statements.

3 – reliability

Reliability refers to the extent to which a scale or test (questionnaire) produces the same results when administered multiple times under the same conditions and circumstances. In other words, reliability means that the measurement tool provides

stable results and does not significantly change if re-administered to the same sample at different times. The researcher assessed the reliability of the study tool through two methods: split-half reliability and Cronbach's alpha.

1.8. First: Results of the stability of the phrases of the dimensions of (ACID)

Table (13) shows the split-half reliability coefficients and Cronbach's alpha for the statements of the dimensions of ACID, n = 80

Variable	Split half		Alpha Cronbach coefficient
	Correlation Before	Correlation after	
Technological dimension	0.870	0.933	0.941
Organizational dimension	0.838	0.915	0.923
Human dimension	0.782	0.881	0.878
Digital Governance	0.747	0.860	0.873

Table 11 Variable Split half Alpha Cronbach coefficient

The previous table No. (13) shows the following:

First: Split half: The researcher calculated the stability of the ACID dimensions using the split-half method. The stability values ranged between (0.933) for the technological dimension as a maximum, and (0.860) for the digital governance dimension as a minimum. The above split-half indicators indicate that the ACID dimensions have a high stability coefficient and can achieve the study objectives. The researcher is confident in applying them to the study sample.

1.9. Second: Cronbach's alpha reliability coefficient:

The researcher calculated the stability of the ACID dimensions using Cronbach's alpha method. The stability values ranged between (0.941) for the technological dimension as a maximum, and (0.873) for the digital governance dimension as a minimum. The above Cronbach's alpha indicators indicate that the ACID dimensions have a high stability coefficient and can achieve the study's objectives. The researcher is confident in applying them to the study sample.

Second: Results of the stability of the phrases (Supply chain efficiency)

Table (14) Shows the split-half reliability coefficients and Cronbach's alpha for the Supply chain efficiency statements, n = 80

		Split half	
nu	user test	test components	
In the study, the researcher relied on (spss 27) and (Amos 24)			
1	Tests to measure the reliability and validity of the study variables	Item Discrimination coefficient	
		internal consistency	
2	Tests to measure the descriptive analysis of the variables of the study	Frequency tables and percentages	Alpha Cronbach's coefficient
		Arithmetic mean & Relative weight	
		standard deviation & Graphics	
3	hypotheses tests	Simple Linear Regression Analysis	
		(Stepwise) Regression	Multiple
	Correlation Before	Correlation after	
	Supply chain efficiency	0.984	0.992 0.980

Table 12 Alpha Cronbach coefficient

The previous table No. (14) shows the following:

First: Split half:

The researcher calculated the stability of the supply chain efficiency items using the split-half method, and the stability values were (0.992). The above split-half indicators indicate that the supply chain efficiency statements have a high stability coefficient and can achieve the study objectives.

Second: Cronbach's alpha reliability coefficient:

The researcher calculated the stability of the supply chain efficiency items using the Cronbach's alpha method, and the stability values were (0.980). The above Cronbach's alpha indicators indicate that the supply chain efficiency statements have a high

stability coefficient and can achieve the study's objectives.

Normal Distribution

Statisticians use two types of statistical tests to test hypotheses, the first type is parametric tests, and the second type is non-parametric tests. The use of parametric tests requires the natural distribution of the data to be tested statistically, while non-parametric tests are used as an alternative to parametric tests in case the natural distribution condition of the data is not met, but only in the case of small samples with a size less than (30) individuals. For samples with a size greater than (30) individuals, the condition of natural distribution can be abandoned according to the central limit theorem, and Norman (2010)² concluded that parametric tests can be used with Likert scale data regardless of sample size, and regardless of whether the data follows a normal distribution or not. In this study, parametric tests will be used according to what was mentioned previously, regardless of the natural distribution of the data.

Sixth: The statistical treatments used in the study

Table No. (15) Statistical tests used in the study.

Table 13 Statistical tests used in the study

After following the steps of scientific research in the methodology, tools, statistical methods, and ensuring the psychometric properties of these tools, and by applying them to a survey sample, it was possible to start the field study and present and discuss the results according to the proposed hypotheses.

(The results of the field study)

Descriptive statistics results for the dimensions of (Advance Cargo Information Declaration - ACID)

First: Analysis of Statements: "Technological dimension"

Table (16) Means and standard deviations of the opinions of the study sample regarding the items (Technological dimension), n = 455

n	items of Technological dimension	mean	Std. Deviation	relative weight	significance level

1	The single window system (window) contributes to improving the efficiency of operations.	4.17	.554	83.40 %	High
2	The single window system (window) contains an integrated package of new technologies that facilitate digital practices.	4.20	.546	84.00 %	High
3	The single window system (window) positively affects the workflow.	4.18	.532	83.60 %	High
4	The single window system (window) helps improve the quality of data available for decision-making.	4.15	.537	83.00 %	High
5	The single window system (window) helps reduce costs.	4.03	.570	80.60 %	High
total Technological dimension		4.144	0.438	82.88 %	High

Table 14 Means and standard deviations of the opinions of the study sample regarding the items (Technological dimension), n = 455

*Items numbers were placed in the order of their occurrence in the questionnaire list in all study tables. The previous table No. (16) shows the arithmetic means and standard deviations of the study sample's responses to the technological dimension statements. The total score in the table indicates that the study sample's score is (high), as the arithmetic mean of the total score for the technological dimension was

(4.144) with a standard deviation of (0.438) and a percentage of (82.88%), which indicates a decrease in the dispersion of the opinions of the study sample and a convergence of opinions.

It is noted from this table that statement No. (2) obtained the highest arithmetic means, which amounted to (4.20) with a standard deviation of (0.546), and a percentage of (84%), and came with a (high) score.

While statement No. (5) obtained the lowest arithmetic means, which amounted to (4.03) with a standard deviation of (0.570), and a percentage of (80.60%), and came with a (high) score.

Second: Analysis of Statements: "Digital Innovation" Table (17) Means and standard deviations of the opinions of the study sample regarding the items (Organizational dimension), n = 455

Item number	items of Organizational dimension	mean	Std. Deviation	relative weight	significance level
6	I believe that the regulatory policies in the one-stop shop system (window) are clear and understandable.	4.17	.612	83.40 %	High
7	I believe that the window has enough flexibility to respond to changes in the external environment.	4.19	.532	83.80 %	High
8	There are enough opportunities for training and development.	4.07	.535	81.40 %	High
9	The Egyptian Company for Electronic Commerce Technology supports employees to achieve their	4.14	.588	82.80 %	High

	career goals.				
10	The Egyptian Company for Electronic Commerce Technology works to implement regulatory policies effectively and transparently.	4.01	.647	80.20%	High
	total Organizational dimension	4.115	0.506	82.30%	High

Table 15 Means and standard deviations of the opinions of the study sample regarding the items (Organizational dimension),

*Items numbers were placed in the order of their occurrence in the questionnaire list in all study tables. The previous table No. (17) shows the arithmetic means and standard deviations of the study sample's responses to the organizational dimension statements. The total score in the table indicates that the study sample's score is (high), as the arithmetic mean of the total score for the organizational dimension was (4.115) with a standard deviation of (0.506) and a percentage of (82.30%), which indicates a decrease in the dispersion of the opinions of the study sample and a convergence of opinions.

It is noted from this table that statement No. (7) obtained the highest arithmetic means, which amounted to (4.19) with a standard deviation of (0.532), and a percentage of (83.80%), and came in a (high) degree.

While statement No. (10) obtained the lowest arithmetic means, which amounted to (4.01) with a standard deviation of (0.647), and a percentage of (80.20%), and came in a (high) degree.

Third: Analysis of Statements: " Human dimension " Table (18) Means and standard deviations of the opinions of the study sample regarding the items (Human dimension), n = 455

n	items of Human dimension	mean	Std. Deviation	relative weight	significance level
---	--------------------------	------	----------------	-----------------	--------------------

11	I was able to adapt easily to the new technology used in the work.	3.91	.673	78.20%	High
12	The training on the new single window system (window) was sufficient to enable me to perform my work tasks effectively.	3.94	.596	78.80%	High
13	The transition to the single window system (window) contributed to increasing the quality of work performance.	3.77	.511	75.40%	High
14	I received adequate support from management during the training process on using the single window	3.81	.569	76.20%	High

	system (window).				
15	I feel confident in my ability to benefit from the technological transformation and use the single window system (window).	3.72	.632	74.40%	High
total Human dimension		3.832	0.535	76.64%	High

Table 16 Means and standard deviations of the opinions of the study sample regarding the items (Human dimension)

*Items numbers were placed in the order of their occurrence in the questionnaire list in all study tables. The previous table No. (18) shows the arithmetic means and standard deviations of the study sample's responses to the human dimension statements. The total score in the table indicates that the study sample's score is (high), as the arithmetic mean of the total score for the human dimension was (3.832) with a standard deviation of (0.535) and a percentage of (76.64%), which indicates a decrease in the dispersion of the opinions of the study sample and a convergence of opinions.

It is noted from this table that statement No. (12) obtained the highest arithmetic means, which amounted to (3.94) with a standard deviation of (0.596), and a percentage of (78.80%), and came in a (high) degree.

While statement No. (15) obtained the lowest arithmetic means, which amounted to (3.72) with a standard deviation of (0.632), and a percentage of (74.40%), and came in a (high) degree.

Fourth: Analysis of Statements: " Digital Governance "

Table (19) Means and standard deviations of the opinions of the study sample regarding the items (Digital Governance), n = 455

nu	Items of Digital Governance	mean	Std. Deviation	relative weight	Significance level
16	governance contributes to improving transparency within the organization	4.17	.656	83.40%	high
17	enhances trust between the organization	4.16	.693	83.20%	High
18	provides robust framework for data management	4.20	.632	84.00%	high
19	agovernance contributes to improving strategic decision-	4.18	.644	83.60%	High
20	Digital governance helps achieve compliance with laws and	4.13	.678	82.60%	High
total Digital Governance		4.168	0.531	83.36%	High

Table 17 Means and standard deviations of the opinions of the study sample regarding the items (Digital Governance)

*Items numbers were placed in the order of their occurrence in the questionnaire list in all study tables. The previous table No. (19) shows the arithmetic means and standard deviations of the study sample's responses to the digital governance statements. The total score in the table indicates that the study sample's score is (high), as the arithmetic mean of the total score for digital governance was (4.168) with a standard deviation of (0.531) and a percentage of (83.36%), which indicates a decrease in the dispersion of the study sample's opinions and a convergence of opinions.

It is noted from this table that statement No. (18) obtained the highest arithmetic means, which amounted to (4.20) with a standard deviation of (0.632), and a percentage of (84%), and came with a (high) score.

While statement No. (20) obtained the lowest arithmetic means, which amounted to (4.13) with a standard deviation of (0.678), and a percentage of (82.60%), and came with a (high) score. Technological dimension

Table (20) Averages, Standard Deviations and Weighted Percentage Average of Study Sample Opinions in Each Dimension of Advance Cargo Information Declaration - ACID

Table 18 Averages, Standard Deviations and Weighted Percentage Average of Study Sample Opinions in Each Dimension of Advance Cargo Information Declaration - ACID

The previous table No. (20) shows the arithmetic means and standard deviations of the study sample's responses to each dimension of the ACID system, arranged in descending order of importance. The total score in the table indicates that the ACID dimensions score is (high), as the arithmetic mean of this total score was (4.065) with a standard deviation of (0.321) and a percentage of (81.30%), which indicates a decrease in the dispersion of the study sample's opinions towards the ACID dimensions. It is noted in this table that the dimensions of the ACID system came in a high degree, as the digital governance dimension came in first place with a (high) degree with an arithmetic mean of (4.168), which is higher than the overall arithmetic mean of (4.065), a standard deviation of (0.531), and a percentage of (83.36%), while the human dimension came in last place with an arithmetic mean of (3.832), which is lower than the overall arithmetic mean of (4.065), a standard deviation of (0.535), and a percentage of (76.64%).

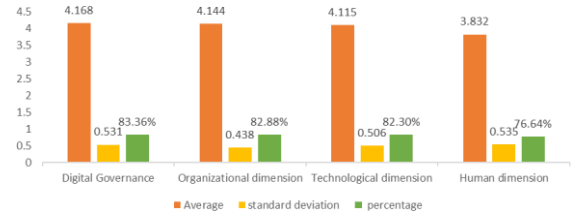


Figure 6 shows the average and percentage values of the study sample's opinions on the dimensions of the ACID system

Chart No. (11) shows the average and percentage values of the study sample's opinions on the dimensions of the ACID system.

dimensions of ACID	Number of phrases	Order of importance	mean	Std. Deviation	relative weight	significance level
Digital Governance	5	1	4.168		83.36%	High
Technologica l dimension	5	2	4.144	0.438		
Organizational dimension	5	3		0.506		
Human dimension	5	4		0.535		
total degree of dimensions of Advance Cargo Information Declaration - ACID						

Descriptive Statistics Results (Supply chain efficiency)

Table (21) Means and standard deviations of the opinions of the study sample regarding the Supply chain efficiency statements, n = 455

	items of Supply chain efficiency		Deviation	relative weight	significance level
1	Suppliers always meet delivery deadlines.	3.98	.483	%	high
2	Costs associated with the supply chain are in line with the organization's budget.	4.10	.508	0%	High
3	Inventory management in the organization is efficient and reduces surpluses and shortages.	3.85	.463	0%	high
4	Costs associated with the supply chain are in line with the organization's budget.	3.67	.505	0%	High
5	Supply chain operations are transparent as required.	3.81	.467	0%	High
6	There is effective coordination between different	3.95	.490	0%	high

	departments in the supply chain.				
7	Technology used in the supply chain supports operational efficiency.	3.97	.493	0%	High
8	The system used for forecasting demand helps reduce waste.	4.08	.510	%	high
9	There are effective strategies for managing risks in the supply chain.	3.87	.469	%	High
10	The organization's supply chain adheres to environmental and social sustainability standards.	3.67	.516	%	High
11	The organization's supply chain is flexible and able to adapt to unexpected circumstances	3.80	.484	%	high
12	Clearance time	3.96	.506	%	high

	became shorter in duration.				
13	The single window system (window) always works stably in the system without problems.	4.12	.511	%	high
14	After implementing the system, costs decreased.	3.84	.463	%	high
15	Production lines were not affected due to the shortage of raw materials after implementing the new system.	3.66	.496	%	high
16	External suppliers accepted the new work system well.	3.79	.488	%	high
17	Training was available for supply chain workers.	3.94	.508	%	high
18	The system got rid of fake suppliers with poor	3.99	.478	%	high

	quality and there was transparency in the work				
	total Supply chain efficiency	3.891	0.403	77.82%	High

Table 19 Means and standard deviations of the opinions of the study sample regarding the Supply chain efficiency statements

*Items numbers were placed in the order of their occurrence in the questionnaire list in all study tables. The previous table No. (21) shows the arithmetic means and standard deviations of the study sample's responses to the supply chain efficiency statements. The total score in the table indicates that the study sample's score is (very high), as the arithmetic mean of the total score for supply chain efficiency was (3.891) with a standard deviation of (0.403) and a percentage of (77.82%), which indicates a decrease in the dispersion of the study sample's opinions and a convergence of opinions.

It is noted from this table that statement No. (13) obtained the highest arithmetic means, which amounted to (4.12) with a standard deviation of (0.511), and a percentage of (82.40%), and came in a (high) degree.

While statement No. (15) obtained the lowest arithmetic means, which amounted to (3.66) with a standard deviation of (0.488), and a percentage of (73.20%), and came in a (high) degree.

Analyze the suitability of data to test study hypotheses

Before starting to test the study hypotheses, which are “the impact of the single window system on the efficiency of the supply chain”, for regression, there are a set of procedures that must be carried out to fit the data to the assumptions of the regression analysis, which are represented by the Tolerance test and the Variance Inflation Factor (VIF) coefficient.

Table (22) shows the results of the variance inflation test and the permissible variance

un	dimensions of ACID	Variance Inflation Factor (VIF)	Tolerance
1	Technological dimension	1.381	0.724
2	Organizational dimension	1.084	0.923
3	Human dimension	1.264	0.791
4	Digital Governance	1.083	0.924

Table 20 shows the results of the variance inflation test and the permissible variance

The results in Table (22) show that there is no multicollinearity between the independent variables, and this is confirmed by the values of the variance inflation factor (VIF) test standard for the dimensions of the independent variable (ACID), which ranged between (1.071 - 1.377), which is a well-accepted value; since whenever the VIF value is greater than (3), there is a possibility of multicollinearity, and if it is greater than (10), this confirms the presence of multicollinearity between the variables, and since the VIF value for the study variables is less than (3) and less than (10), there is no multicollinearity.

Tolerance test is one of the measures that indicate the presence or absence of the problem of multicollinearity. If the value of Tolerance is greater than (0.05), this indicates the absence of the problem of multicollinearity. However, if the value of Tolerance is less than (0.05), this indicates the presence of the problem of multicollinearity. The values of Tolerance ranged between (0.726 - 0.933), and all these values are considered greater than (0.05). From the above, there is no multicollinearity between the dimensions of the independent variable (Hamadoush, 2019).

Results of the study hypotheses

main hypothesis: There is a statistically significant impact relationship between the dimensions of Advance Cargo Information Declaration - ACID on the Supply chain efficiency

The following sub-hypotheses derive from this hypothesis:

First sub-hypothesis:

There is a statistically significant impact relationship of technological dimension on supply chain efficiency.

To validate the first sub-hypothesis, the researcher used simple linear regression.

Table No. (23) shows the results of simple linear regression analysis of the impact of technological dimension on supply chain efficiency.

Dependent variable	R	R ² Square	f	Sig	DF	Regression coefficient β	t	Significance	
Supply chain efficiency			24		Regr	ant	4		
			6.6		Resid	4	tech	1.6	
			91		ual	5	nolo	9	
					Tota	3	gical	7	
				l	4	dime	2		
Prediction equation (Simple linear regression)					supply chain efficiency = 29.164 + 1.972 technological dimension.				

It is clear from the previous table No. (22) that there is a relationship of the impact of the technological dimension on the efficiency of the supply chain, where the correlation coefficient R (0.594) at the level of significance (0.01), while the coefficient of determination reached (0.353), meaning that the value of (35.3%) of the change in R² achieving supply chain efficiency, resulting from the change in the technological dimension, and the value of the degree of regression coefficient β (1.972), meaning that a one-degree increase in the technological dimension leads to an increase in supply chain efficiency by (1.972), and the significance of this effect is confirmed by the calculated F value (246.691), which is a function of a significant level

(0.01), and the calculated T value (15.706) It is a function at a significant level (0.01), and from the above it is clear to us the acceptance of the first sub-hypothesis, which states: There is a statistically significant impact relationship of the technological dimension on supply chain efficiency.

Second sub-hypothesis:

There is a statistically significant impact relationship of organizational dimension on supply chain efficiency.

Table No. (24) shows the results of simple linear regression analysis of the impact of organizational dimension on supply chain efficiency.

Dependent variable	R	R ² Square	Sig	DF	Regression coefficient β		Sig
					Constant	organizational dimension	
supply chain efficiency	0.539	0.290	0.005	1	38.288	1.546	0.000
Prediction equation (Simple linear regression)				supply chain efficiency = 38.288 + 1.546 organizational dimension.			

It is clear from the previous table No. (24) that there is an impact relationship of the organizational dimension on the efficiency of the supply chain, as the correlation coefficient R reached (0.539) at a significance level of (0.01), while the coefficient of determination R² reached (0.290), meaning that the value of (29%) of the change in achieving supply chain efficiency is a result of the change in the organizational dimension, and the value of the regression coefficient β reached (1.546), which means that an increase of one degree in the organizational dimension leads to an increase in the efficiency of the supply chain by an amount of

(1.546), and the significance of this effect is confirmed by the calculated F value, which reached (185.305), which is significant at a significance level of (0.01), and the calculated T value reached (13.613), which is significant at a significance level of (0.01). From the above, it is clear to us that the second sub-hypothesis is accepted, which states that: There is a statistically significant impact relationship of organizational dimension on supply chain efficiency.

Third sub-hypothesis:

There is a statistically significant impact relationship of the human dimension on the efficiency of the supply chain.

Table No. (23) shows the results of simple linear regression analysis of the impact of human dimension on supply chain efficiency.

Dependent variable	R	R ² Square	Sig	DF	Regression coefficient β	t	Sig
supply chain efficiency	0.605	0.366	0.000	1	38.630	16.159	0.000
Prediction equation (Simple linear regression)				supply chain efficiency = 38.630 + 1.640 human dimension.			

Table 21 shows the results of simple linear regression analysis of the impact of human dimension on supply chain efficiency

It is clear from the previous table No. (23) that there is an impact relationship of the human dimension on the efficiency of the supply chain, as the correlation coefficient R reached (0.605) at a significance level of (0.01), while the coefficient of determination R² reached (0.366), meaning that (36.6%) of the change in achieving supply chain efficiency is a result of the change in the human dimension. The value of the

regression coefficient β reached (1.640), which means that a one-degree increase in the human dimension leads to an increase in the efficiency of the supply chain by an amount of (1.640). The significance of this effect is confirmed by the calculated F value, which reached (261.102), which is significant at a significance level of (0.01), and the calculated T value reached (16.159), which is significant at a significance level of (0.01). From the above, it is clear to us that the third sub-hypothesis is accepted, which states that: There is a statistically significant impact relationship of the human dimension on the efficiency of the supply chain.

Fourth sub-hypothesis:

There is a statistically significant impact relationship of digital governance on supply chain efficiency.

Table No. (24) shows the results of simple linear regression analysis of the impact of digital governance on supply chain efficiency.

Dependent Variable	R	Square R ²	F	Significance	DF	β	Regression coefficient	t	SD
supply chain	0.556	0.309	203.037	0.00	1	Constant	38.313	14.249	0.00
						Regression	1.522	14.249	0.00

Model	R ²	df	Sum of Squares	Mean Square	F	Sig. F
Regression	0.667	4	8990.195	2247.549	605.126	0.00
Residual		520	1931.375	3.714		
Total		524	10921.570			

Prediction equation (Simple linear regression)	supply chain efficiency = 38.313 + 1.522 digital governance.
--	--

Table 22 (shows the results of simple linear regression analysis of the impact of digital governance on supply chain efficiency

It is clear from the previous table No. (24) that there is a relationship between the impact of digital governance on supply chain efficiency, as the correlation coefficient R reached (0.556) at a significance level of (0.01), while the coefficient of determination R² reached (0.309), meaning that (30.9%) of the change in achieving supply chain efficiency is due to the change in digital governance. The value of the regression coefficient β reached (1.522), which means that a one-degree increase in digital governance leads to an increase in supply chain efficiency by an amount of (1.522). The significance of this effect is confirmed by the calculated F value, which reached (203.037), which is significant at a significance level of (0.01), and the calculated T value reached (14.249), which is significant at a significance level of (0.01). From the above, it is clear to us that the fourth sub-hypothesis is accepted, which states that: There is a statistically significant impact relationship for digital governance on supply chain efficiency.

Major hypothesis: There is a statistically significant impact relationship between the dimensions of Advance Cargo Information Declaration - ACID on the Supply chain efficiency.

To verify the validity of this hypothesis, the researcher used the multiple regression analysis method to test this hypothesis, and before conducting

the multiple regression test, the researcher made sure of the validity of the model as shown in the following table.

Table (25) results of the regression analysis to ensure the validity of the model in testing the first main hypothesis

Table 23) results of the regression analysis to ensure the validity of the model in testing the first main hypothesis

The statistical results shown in the previous table No. (25) indicate that the model is valid for testing the

main hypothesis, due to the higher calculated F value (605.126) than its tabular value at a significance level of 0.01 and degrees of freedom (4,520,524). It is clear from the same table that the dimensions of independent variable (Advance Cargo Information Declaration - ACID) in this model explain estimated (82.3%) of the change in the dependent variable (Supply chain efficiency), based on the value of the coefficient of determination $R^2 = (0.823)$, which is a very good explanatory ability to explain the variance in the dependent variable (Supply chain efficiency).

Based on the stability of the model's validity, the main hypothesis was tested using stepwise multiple regression analysis to test the priority of entering the dimensions of Advance Cargo Information Declaration - ACID into the regression analysis model with the aim of determining the explanatory power of each dimension of Advance Cargo Information Declaration - ACID in the dependent variable (Supply chain efficiency). Table No. (28) shows the results of the stepwise multiple regression analysis.

Table (26) shows the relationship between the dimensions of Advance Cargo Information Declaration - ACID and Supply chain efficiency

dimensions of Advance Cargo Information Declaration - ACID	R	R ²	β	Constant	F	Si g. F	T	Si g. T
Human dimension	0.605	0.366	1.181	-11.816	261.102	0.00	19.080	0.00
Digital Governance	0.795	0.632	1.158		387.563	0.00	20.001	0.00
Organizational dimension	0.884	0.782	1.028		540.299	0.00	16.789	0.00
Technological dimension	0.900	0.810	0.673		486.000	0.00	8.440	0.00

Prediction equation (Multiple linear regression)	Supply chain efficiency = -11.816 + 1.181 Human dimension + 1.158 Digital Governance + 1.028 Organizational dimension + 0.673 Technological dimension.
--	--

Table 24 shows the relationship between the dimensions of Advance Cargo Information Declaration - ACID and Supply chain efficiency

It is clear from the previous table No. (26) that:

- The entry of the dimensions of the Advance Cargo Information Declaration - ACID (the independent variable) into the regression equation, the dimension (the human dimension) occupied the first place in its entry into the regression equation and explains (36.6%) of the value of the impact strength on the Supply chain efficiency (the dependent variable) based on the coefficient of determination (R^2), and the value of the degree of the regression coefficient β reached (1.181), which means that a one-degree increase in the dimension of the human dimension leads to an increase in the Supply chain efficiency by a value of (1.181), and the significance of this effect is confirmed by the calculated F value, which reached (261.102), which is significant at a significance level of (0.01), and the calculated T value reached (19.080), which is significant at a significance level of (0.01).
- This is followed by the dimension of (digital governance), which explained, along with the dimension of (human dimension), a percentage of (63.2%) of the value of the power of influence on the Supply chain efficiency (the dependent variable), as the value of the degree of influence β reached (1.158), which means that an increase of one degree in each of the human dimension and digital governance leads to an increase in the Supply chain efficiency by a value of (1.158), and the significance of this effect is confirmed by the calculated F value, which reached (387.563), which is significant at a significance level of (0.01), and the calculated T value reached (20.001), which is significant at a significance level of (0.01).

- This is followed by the dimension (organizational dimension), which explained, along with each of (human dimension and digital governance), a percentage of (78.2%) of the value of the power of influence on the Supply chain efficiency (the dependent variable), as the value of the degree of influence β reached (1.028), which means that an increase of one degree in each of the human dimension, digital governance, and organizational dimension leads to an increase in the Supply chain efficiency by a value of (1.028), and the significance of this effect is confirmed by the calculated F value, which reached (540.299), which is significant at a significance level of (0.01), and the calculated T value reached (16.789), which is significant at a significance level of (0.01).
- This is followed by the dimension (technological dimension), which explained, along with each of (human dimension, digital governance, and organizational dimension), a percentage of (81.2%) of the value of the power of influence on the Supply chain efficiency (the dependent variable), as the value of the degree of influence β reached (0.673), which means that an increase of one degree in each of the human dimension, digital governance, organizational dimension, and technological dimension leads to an increase in the Supply chain efficiency by a value of (0.673), and the significance of this effect is confirmed by the calculated F value, which reached (486.234), which is significant at a significance level of (0.01), and the calculated T value reached (8.445), which is significant at a significance level of (0.01).

This means that the Advance Cargo Information Declaration - ACID dimensions taken together indicate that 81.2% of the change in supply chain efficiency (the dependent variable) is due to these dimensions taken together, and 18.8% of the change in supply chain efficiency (the dependent variable) is due to random error or other factors.

Based on the above, we accept the main hypothesis, which states that: There is a statistically significant impact relationship between the dimensions of Advance Cargo Information Declaration - ACID on the Supply chain efficiency.

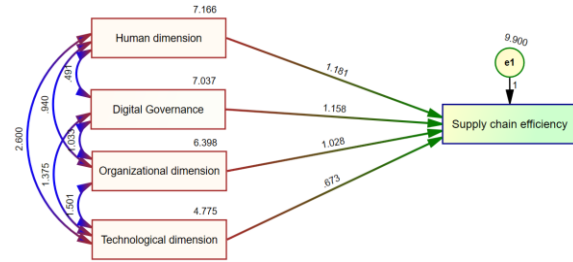


Figure 7 Illustrates the relationship between the dimensions of the Advance Cargo Information Declaration - ACID and supply chain efficiency.

Figure No. (12)³ Illustrates the relationship between the dimensions of the Advance Cargo Information Declaration - ACID and supply chain efficiency.

The previous figure shows the relationship between the dimensions of the Advance Cargo Information Declaration - ACID and the supply chain efficiency. The numbers on the path of the arrows represent the degree of the regression coefficient β of the dimensions of the Advance Cargo Information Declaration - ACID on the supply chain efficiency, while the numbers above the curved arrows represent the covariance between the variables, and the numbers above each variable represent the variance.

1.10. Logistics Performance Analysis: Egypt (2018-2019 vs. 2022-2023)

Introduction

This section examines the logistics performance of Egypt based on key performance indicators from two periods: 2018-2019 and 2022-2023. The indicators assessed include customs clearance efficiency, tracking and tracing shipment routes, overall logistics performance, timely shipments, and ease of arranging shipments.

Table (29) shows Data Summary (world bank, 2024)

Indicator	2018-2019	2022-2023	Percentage Change (%)
Customs clearance efficiency	2.60	2.80	+7.69%
Tracking and tracing shipment routes	2.72	2.90	+6.62%
Overall logistics performance	2.82	3.10	+9.93%
Timely shipments	3.19	3.60	+12.85%
Easy of arranging shipments	2.79	3.20	+14.69%

Table 25 Logistics Performance Analysis: Egypt (2018-2019 vs. 2022-2023)

- **Trend Analysis:** A clear upward trend can be observed across all indicators between 2018-2019 and 2022-2023. The most significant improvements are in the ease of arranging shipments (14.69%) and timely shipments (12.85%). These increases reflect enhancements in Egypt's logistics infrastructure and service efficiency during the given periods.
- **Mean Performance Comparison:** The mean logistics performance for all indicators combined shows a noticeable improvement:
 - Mean Performance (2018-2019): 2.82
 - Mean Performance (2022-2023): 3.12
- The overall mean increases of approximately 10.54% highlights Egypt's progress in logistical operations, aligning with global trends of improving logistics through technology and better infrastructure.

CONCLUSIONS, & RECOMMENDATIONS

The analysis of Egypt's logistics performance indicates significant progress over the four-year period. Enhancements in customs clearance efficiency, shipment tracking, and logistics processes have contributed to Egypt's better overall performance, which is crucial for facilitating trade and supporting economic growth. Future research could further explore the factors driving these improvements and their impact on the broader economy.

The Egyptian Customs Window System was launched in 2014 as part of the government's efforts to enhance customs procedures and facilitate trade. The main goal of the system is to reduce the time and effort required for customs clearance by standardizing procedures and providing an electronic platform for all customs transactions.

Developments:

- 2015: The pilot phase of the Single Window System began at several ports and customs zones.
- 2018: The system was expanded to include more ports and entry points, with improvements in the technology used.
- 2020: New features were introduced, such as integration with other systems, including the Ministry of Trade and Industry.

3) Challenges and Obstacles

1. **Technological Infrastructure:**
 - There is a lack of modern technological infrastructure at some points, which affects the system's effectiveness.
2. **User Training:** Continuous training for users on the new system is needed, as inefficiencies in using the system can lead to delays in procedures.
3. **Resistance to Change:** The system may face resistance from some employees and importers who are accustomed to traditional methods.
4. **Coordination Among Government Agencies:** Insufficient coordination among different agencies dealing with trade and customs can lead to overlapping procedures.
5. **Cybersecurity Concerns:** There are concerns about data protection and ensuring cybersecurity for the system, especially with the increase in cyber threats.
6. **Regulatory Updates:** Continuous changes in laws and regulations necessitate regular updates to the system, which require additional resources. Despite the challenges facing the Egyptian Customs Window System, it represents a significant step toward improving the efficiency of customs procedures and enhancing trade. Success in implementing this system requires collaboration among all stakeholders, including the government and the private sector.

FOOTNOTES

- 1 Format: prepared by the researcher
- 2 Norman, G. (2010). Likert scales, levels of measurement and the “laws” of statistics. *Advances in health sciences education*, 15(5), 625-632.
- 3 Figure source Amos software