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Electronic commerce activities in Algerian exporting companies - Empirical study-

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Abstract: This study aims to examine the reality of e-commerce practices (electronic stores, e-marketing, warehousing and logistics management, and cybersecurity) among a sample of Algerian exporting companies. The study found that the level of e-commerce activities was slightly high. The results were interpreted and discussed, and recommendations were made, the most important of which was the need to establish an e-marketing unit within the companies studied.

Keywords: Algerian companies; e-commerce; e-marketing; e-store; export.

1. Introduction

1.1. Research Problematic:

As has been demonstrated in previous studies, doing business abroad is more complex than doing business only in national or local markets, for various reasons. Lack of proximity, language and culture are all factors that can dampen the international development of businesses or, at least, make it less rapid than national development.

Furthmore, the world has witnessed tremendous growth in recent years in the field of e-commerce, which has come to rival traditional commerce in terms of transaction volume and growth rates, which are rising significantly.

In this perspective, International trade is one of the areas that has been affected by the results of the technological and information revolution, as it has moved from traditional transactions and contracts to a new type of electronic virtual transactions, and this has led to the emergence of what is known as electronic commerce, as the latter has become the core of international trade . In contrast, the Algerian government is implementing a national strategy to develop e-commerce and digital transformation, focused on removing bureaucratic and financial barriers and facilitating access for local products to global markets .Based on the above**, what is the reality of the adoption of electronic commerce activities by the Algerian exporting businesses?**

1.2. Research Aims:

- Develop the conceptual framework of the different axes and variables making up the study and clarify the nature of the theoretical relation between them;
- Highlighting the importance of E-commerce as one of the modern management tools in Algerian exporting businesses.
- Identify the reality of practicing the various aspects of electronic commerce in the Algerian Exporting Businesses.
- Provide a set of suggestions for the management of the study businesses based on the findings.

1.3. The structure of the research:

The research was divided into two axes; the first axis addressed the various theoretical concepts of the study, while the second axis was used to conduct the field study on the sample exporting businesses.

1.4. Study methodology:

This study is considered a quantitative analytical cross-sectional. multiple regression was used to test hypotheses using the SPSS technique.

1.5.Community and sample study:

The study community is represented by all managers of commercial Algerian exporting SME's, Those who have expressed an interest in engaging in e-commerce activities within their businesses. To achieve the research objectives, the questionnaire was distributed electronically to a number of managers whom we were able to contact either by phone or via their personal email addresses. So, a random sample of managers was selected and the researcher distributed (52) questionnaires, from which (47) questionnaires were retrieved.

2. Literature review

2.1 Definition of E-commerce

E-commerce mean the implementation and management of commercial activities related to goods and services by transferring data via the Internet or similar technical systems. The common concept of e-commerce generally extends to three types of activities: (KOUACHI & KEDDI, 2022, pp. 555-556); (BOULAHIA & LAKHAL, 2019, pp. 105-106)

-First, Internet connection or access services and related technical content services, a clear example of which is the services provided by Internet Service Providers (ISPs);

-Second, the delivery or technical provision of services;

-Third, the use of the Internet as a medium or means of distributing services and goods and services delivered in a non-technical manner (normal physical delivery).

From the above definition, we conclude that, in practice, e-commerce takes many forms, such as offering goods and services online, conducting sales via websites, making cash payments using credit cards or other means of payment, creating virtual stores, carrying out supply and distribution activities via the Internet, and providing financial services, transportation and shipping services, and others via the Internet.

2.2 General environment for e-commerce

There is a logical fact: there is no e-commerce without electronic means. And certainly, the expression of integrated technology is the computer system, in its broadest sense, which allows connection between it and other systems to ensure the exchange and transfer of information and achieve access to the system and from it to other systems (BEKIHEL & KAROUCHA, 2024, p. 167).

E-commerce is a computer, a network, solutions, a website, and content. A computer allows data to be entered, processed, designed, displayed, and retrieved. A network allows information to be transmitted in both directions, from the system and to it. Solutions enable the establishment to fulfill its obligations and the customer to fulfill his obligations (e-commerce software solutions) (DRISSI & HAMOU, 2021, p. 133). A website displays products or services and related information, in addition to media activities and marketing mechanisms. and content that is in itself the vocabulary of the website in terms of products, services, and related matters, but within the framework of a presentation that encourages acceptance and reveals the technical (specifically e-commerce solutions) and marketing capabilities of the website (Guenachi & Belhadi , 2025, pp. 160-161).

Within this general concept of e-commerce needs, it involves all means of conducting its activities, including hardware, software, solutions, communication networks, means of communication and data exchange, network subscriptions, information security solutions, payment fulfillment, and online service delivery. Since the Internet is a network of networks, e-commerce is linked to its current existence on the Internet.

2.3.E-commerce practices in exporting businesses

Therefore, the most important e-commerce activities in exporting businesses can be highlighted as follows:

A. **Create an online store**: E-commerce is becoming an essential part of the digital economy, accessible to all SMEs looking to expand their reach beyond borders. By investing in an online store or partnering with existing platforms such as Amazon and Alibaba, SMEs can expand their reach beyond borders without physical infrastructure, adapting their offerings to the language, currency, and preferences of each target market (Moussi, 2010, pp. 267-268).

B. **Digital Marketing**: e-commerce platforms enable exporting companies to make direct sales, manage payments in different currencies, and facilitate compliance with customs regulations.

In addition, digital marketing and online analytics tools provide exporting companies with accurate data on consumer preferences and market trends in real time, enabling them to tailor their marketing and sales strategies to the needs of each specific market (TAHIR & ZEBIRI, 2017).

C. **Warehousing and logistics management**: Logistics is one of the most challenging aspects of exporting goods, especially when it comes to managing long-distance shipments and tight deadlines. Artificial intelligence (AI) can be an export technology that helps transform this field by enabling companies to optimize their transportation routes, forecast demand, and improve operational efficiency (BOUZEROUATA & EL MENYARI, 2024, p. 447).

By using AI, exporting companies can anticipate logistical issues, such as transportation delays, stockouts, or supply chain failures. In addition, AI-based systems analyze large amounts of data in real time to optimize inventory management, make more accurate demand forecasts, and select the most efficient suppliers, enabling exporting companies to reduce their operating costs and improve their ability to respond to market fluctuations (bahloul & azzi, 2024, pp. 246-247).

D**. Cybersecurity**: Exporting companies must pay particular attention to cybersecurity in e-commerce to protect their data and reputation, as the digital market is a prime target for cybercriminals. Risks include phishing attacks, SQL injections, malware, and data breaches, which can result in significant financial losses.

To protect against this, it is essential to take a proactive approach, combining technical measures (SSL encryption, strong authentication, regular updates) with organizational measures (employee awareness, emergency plan, domain name protection) (Mahmood , 2025, p. 44).

2.4. Advantages of e-commerce for small and medium-sized exporting businesses

In a world where borders are fading, e-commerce is revolutionizing the way small and medium-sized enterprises (SMEs) access international markets. With just a few clicks, local products can now reach consumers around the globe, offering businesses export opportunities that were once reserved for major market actors (Alzahrani, 2019). Some advantages of e-commerce for small and medium-sized exporting businesses can be displayed:

- E-commerce platforms offer built-in analytics tools, allowing SMEs to collect data on customer behavior, preferences, demographics, and purchasing habits. With this data, SMEs can refine their offerings, optimize their marketing campaigns, and personalize the customer experience, while quickly adjusting to international market preferences and prices (BENALIA, 2019, p. 332);
- Using e-commerce, SMEs can reach international customers in a targeted and cost-effective way: Facebook and Instagram offer advertising options that allow you to refine your audience based on location, age, interests, and purchasing habits, which is a boon for small businesses with limited marketing budgets (BOUZEROUATA & EL MENYARI, 2024, p. 448);
- E-commerce often incorporates logistics and payment processing solutions, thereby reducing the complexity of cross-border transactions (BEKIHEL & KAROUCHA, 2024, p. 169).

From what has been presented, we can conclude that electronic commerce helps small and medium-sized enterprises improve their standards, enhance product quality, and establish commercial expertise in international markets.

3.Practical framework of the study

3.1 Normality Distribution Test

Before embarking on the application of the different tests, you should begin to understand the nature of the data, whether or not to track the normal distribution. If it follows the normal distribution, the parametric tests will be used and applied. If they do not follow the normal distribution, the non- parametric tests will be used (Qadri and Murtat, 2019, page 63).

In order to verify the objectivity of the results in the current study, the Skewness and Kurtosis tests were conducted to ensure that the study data are free of statistical problems that may adversely affect the results of the study hypotheses test as shown in Table 01.

Table (01): Skewness & Kurtosis Test for the Scales

Variables	Skewness factor	Kurtosis factor
Create an online store	-0.969	2.124
Digital marketing	-1.169	3.311
Warehouse and logistics management	-2.210	7.768
Cybersecurity	-1.953	9463.

Source: results obtained from Statistics SPSS IBM 0.21software.

3. 2 Multicollinearity test

The lack of correlation of independent variables (E-commerce practices) will be verified by a test of Variance Inflation Factor (VIF), Tolerance test, and Table 02 Clarify this.

Table (02): Multicollinearity Test for the Scales

Variables	Variance inflation factor (VIF)	Tolerance factor
Create an online store	1.002	0.997
Digital marketing	1.417	0.705
Warehouse and logistics management	1.415	0.707
Cybersecurity	1.408	0.712

Source: results obtained from Statistics SPSS IBM 0.21software.

From table 2 we note that the VIF for the independent variables of the study is limited between 1.002 and 1.417 and is less than 10, and the tolerance is limited between 0.707 and 0.997, which is more than 0.1, so there is no correlation between the independent variables and no problems arise when analysing and testing the validity of hypotheses. Problems with the correlation of independent variables arise if the VIF exceeds the value of 10 and the tolerance factor is less than 0.1 (Mekrache, 2015, p. 200).

3.3 Reliability

Reliability estimates are based on the average internal correlation between all individual items within a test ranging between 0, 1 and the value 70. It is considered an appropriate value for reliability (Sekaran & Bougie, 2016).

After the exploratory factor analysis was performed, the reliability test was carried out. Table 03 shows that Cronbach's alpha coefficients exceeded the recommended level, with values ranging from (.711 to .932). On the other hand, the value of the total consistency coefficient for E-commerce practices the scale was (.817).

Table (03): Reliability Test E-commerce practices

Code	Item	Alpha coefficients
Reliability test for for Create an online store Scales		
A1	Develop an attractive and easy to use website that displays products and services in a clear manner..	. 712
A2	Provide various electronic payment options such as credit cards, bank transfers, and e-wallets	.894
A3	Ensure a convenient and safe shopping experience for customers.	.879
Cronbach's alpha value for the scale as a whole.		**.711**
Reliability test for Digital marketing		
B1	Use search engine optimization (SEO) to increase the site's visibility in search results.	.865
B2	Use Social media marketing to reach a wider audience.	.819
B3	Using paid online advertising to promote products .	.902
B4	Use Leverage content marketing to deliver valuable information to customers	.925
Cronbach's alpha value for the scale as a whole.		**.901**
Reliability test for Warehouse and logistics management		
C1	Track inventory and manage logistics processes efficiently.	.904
C2	Providing customers with multiple, reliable shipping options.	.878
C3	Provide shipment tracking information to customers.	.852
Cronbach's alpha value for the scale as a whole.		**.861**
Reliability test for Cybersecurity		
D1	Secure the website and prevent hacks.	.804
D2	Protect customer data from unauthorized access	.922
D3	Implement strict security measures to protect financial transactions.	.925
Cronbach's alpha value for the scale as a whole.		**.932**
Cronbach's alpha value for e-commerce practices		**.817**

Source: results obtained from Statistics SPSS IBM 0.21software.

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3.4 Testing Hypotheses

In order to test the hypotheses of the study, we used the arithmetic means, standard deviations, and degrees of agreement of the statements, and Table 04 shows this.

- Hypothesis 01: "There is a relatively high level of Creating online store practice in the economic organizations under study".

- Hypothesis 02: "There is a relatively high level of practicing Digital marketing in the economic organizations under study".

- Hypothesis 03: "There is a relatively high level of practicing Warehouse and logistics management in the economic organizations under study".

-Hypothesis 04: "There is relatively high level of practicing Cybersecurity in the economic organizations under study.

Table (04): Results of the Arithmetic means, standard deviations and degrees of agreement for the questionnaire statements

statements	Arithmetic means	standard deviations	Degrees of agreement
Develop an attractive and easy to use website that displays products and services in a clear manner.	3.79	0.961	1
Provide various electronic payment options such as credit cards, bank transfers, and e-wallets.	3.59	1.024	3
Ensure a convenient and safe shopping experience for customers.	3.77	1.021	2
Create an online store	**3.72**	**0.771**	-
Use search engine optimization (SEO) to increase the site's visibility in search results.	3.69	1.312	3
Use Social media marketing to reach a wider audience.	3.59	1.024	4
Using paid online advertising to promote products.	3.83	1.002	1
Use Leverage content marketing to deliver valuable information to customers.	3.77	1.004	2
Digital marketing	**3.68**	**0.779**	-
Track inventory and manage logistics processes efficiently.	3.66	0.541	1
Providing customers with multiple, reliable shipping options.	3.40	0.751	2
Provide shipment tracking information to customers.	3.21	0.552	3

Warehouse and logistics management	**3.42**	**0.817**	-
Secure the website and prevent hacks.	3.65	1.040	2
Protect customer data from unauthorized access.	3.11	0.664	3
Implement strict security measures to protect financial transactions.	3.68	0.977	1
Cybersecurity	**3.44**	**0.697**	-

Source: results obtained from Statistics SPSS IBM 0.21software.

According to the table above, the dimensions of electronic commerce are arranged according to their arithmetic averages in ascending order, where the first rank was in favor of Create an online store, then Digital marketing, and Cybersecurity, and in the last place we find Warehouse and logistics management to a lesser degree

-The arithmetic mean of the Create an online store dimension is 3.72, which falls within the fourth category of the five-point Likert scale in the domain [3.40; 4.20], indicating that the respondents confirm a relatively high level of creatiing online stores from the study organizations. Thus, the first hypothesis which states that: “There is relatively high level of Creating online store practice in the economic organizations under study”.

- The arithmetic mean of the Digital marketing dimension is 3.68, which falls within the fourth category of the five-point Likert scale in 3 domains [.40; 4.20], indicating that the respondents confirm a relatively high level of practicing Digital marketing activities in the organizations under study. Thus, the second hypothesis which states that: “There is a relatively high level of practicing Digital marketing in the economic organizations under study”.

-The arithmetic mean of the Warehouse and logistics management dimension is 3.42, which falls within the fourth category of the five-point Likert scale in the domain [3.40; 4.20], indicating that the respondents confirm a relatively high level of practicing Warehouse and logistics management activities in the organizations under study. Thus, the third hypothesis which states that: “There is a relatively high level of practicing Warehouse and logistics management in the economic organizations under study”.

-The arithmetic mean of the Cybersecurity dimension is 3.44, which falls within the fourth category of the five-point Likert scale in the domain [3.40; 4.20], indicating that the respondents confirm a relatively high level of practicing Cybersecurity activities in the organizations under study. Thus, the fourth hypothesis which states that: “There is a relatively high level of practicing Cybersecurity in the economic organizations under study”.

3.5 Discussion of results

-There is a slightly high level of practice Creating an online store at the level of the studied organizations. This can be explained by the fact that the respondent businesses are more interested in the use of technologies such as digital stores has enabled businesses to optimize their processes, improve transparency, reduce costs, and increase the efficiency of export management.

However, the method of managing stores on these developments is random, retaining customer loyalty after attracting them to an online store is one of the most significant challenges facing e-commerce businesses, given how easily visitors can quickly access

numerous stores offering the same products and easily compare their prices and brands. This is where the importance of competition lies in focusing on strengthening the customer relationship and the services provided through the store, such as offering small gifts, providing price promotions, maintaining the privacy of each customer's information, tracking customer behavior online.

-There is a slightly high level of practice digital marketing at the level of the study organizations; this can be explained by the fact that the marketing practices in exporting has profoundly transformed global trade.

-There is a slightly high level of Warehouse and logistics management practice at the level of the study businesses; this can be explained by the fact that the technology in exporting has profoundly transformed global trade. Traditionally, exporting businesses faced numerous obstacles, such as inventory management, complex customs requirements, and logistical barriers. However, technological solutions have revolutionized this landscape, making international trade more accessible, efficient, and profitable.

Today, new technology in exporting helps companies overcome trade barriers by facilitating the management of complex logistics processes, ensuring transaction transparency, and offering analytical tools that improve strategic decision-making. Thanks to various innovations, exporting companies can optimize their presence in international markets and be more competitive in an increasingly interconnected global environment.

-There is a slightly high level of Cybersecurity practice at the level of the study organizations; this can be explained by the fact that the participating institutions are committed to protecting the personal information provided to them, and therefore employ a combination of security technologies, procedures, and organizational measures to help protect personal information from unauthorized access, use, or disclosure by unauthorized parties. When sensitive personal data (such as credit card information) is transmitted over the Internet, it is protected using SSL encryption.

In summary of what has been presented, it can be said that, technology in export (using e-commerce) plays a crucial role in the global economy, enabling companies to access international markets and expand their customer base. Over the years, export processes have faced various obstacles, such as high operating costs, logistical complexities, customs regulations, and difficulties in obtaining accurate information about international markets. However, technology in export has transformed this landscape by providing innovative solutions that facilitate global trade.

4. CONCLUSION

From the theoretical and field aspects of this study, it is clear that the shift from traditional trade to digital (electronic) has opened international markets, creating opportunities for any business to go global. Online store, digital marketing, and electronic payment enable brands to communicate directly with consumers anywhere in the world. And global feedback helps businesses to optimize products and attract a greater audience. On the other hand, the results of the field study found that there is a slightly high level of e-commerce practice in the study Algerian exporting businesses, especially digital marketing and electronic payment.

Based on the results obtained, the following suggestions can be made:

- The need for serious consideration by the managers of the exporting businesses under study and Algerian institutions in general to integrate electronic commerce into their overall strategies, and to give vigilance systems and strategic information systems in general the status they deserve;
- The need to adopt a culture of e- commerce among all members of economic

businesses, by adopting the involvement of everyone without exception in this process to achieve the goals set through it;

- Expanding the work of the electronic payment services system and providing financial services via the Internet;

- Work on raising awareness and spreading e-commerce literacy in cooperation and participation with educational and academic institutions.

- The Algerian Ministry of Foreign Trade is to develop a practical guide on cybersecurity in e-commerce. The aim of this guide is to help identify how exporting companies can take advantage of the rapidly growing foreign e-commerce market. This will help develop a practical and concrete roadmap for exporting their services and goods via e-commerce to foreign markets in complete security.

Lastly, we note that we have found it important to cover other subjects directly or indirectly associated with this study, with a view to achieving further expansion in the study's area. These relevant themes can therefore be included:

-A diagnostic study of database maintenance and protection procedures in the e-commerce stores;

- A study on the Importance of Integrating Artificial Intelligence into digital marketing operations.

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