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Information and Communication Technology as a Mechanism for the Establishment of E-Commerce: A Comparative Analytical Study between Syria and Algeria

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Abstract

This study aims to examine the role of Information and Communication Technology (ICT) as a mechanism for the establishment of e-commerce through a comparative analytical study between Algeria and Syria, based on a set of digital indicators related to technological infrastructure and digital readiness. The study adopts the descriptive analytical method along with the comparative approach in order to assess the status of these indicators in both countries. The findings reveal that Algeria demonstrates better performance in terms of internet penetration, connection speed, and the development of electronic payment systems compared to Syria. The study also shows that the weakness of digital infrastructure and institutional readiness in Syria constrains the growth of e-commerce. It concludes that ICT represents a fundamental pillar for the development of e-commerce; however, its effectiveness depends on the availability of an integrated digital environment. Accordingly, the study recommends strengthening digital infrastructure, improving electronic payment systems, and promoting digital transformation within institutions to foster the growth of e-commerce.

Keywords: E-commerce ; Digital Infrastructure ; Internet Usage ; Electronic Payment ; Information and Communication Technology.

ملخص:

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I- Introduction:

The contemporary world is witnessing rapid advancements in the field of Information and Communication Technology (ICT), which has become a fundamental element across various economic and social domains. This is attributed to the modern means it provides for information exchange, transaction facilitation, and performance enhancement. Such technological evolution has given rise to e-commerce as one of the most prominent manifestations of the digital economy, offering institutions and individuals new opportunities to conduct commercial activities with greater speed, flexibility, and efficiency, thereby transcending the traditional boundaries of markets. Consequently, e-commerce has emerged as a

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significant pillar in enhancing economic activity and improving institutional competitiveness amid global digital transformations.

In light of the accelerating digital transformations characterizing the global economy, ICT has become an essential component in supporting diverse economic activities, particularly e-commerce, as a leading manifestation of the modern digital economy. This technology contributes to facilitating commercial transactions, expanding market reach, and reducing exchange costs, thereby enhancing the efficiency of commercial activity and increasing opportunities for growth.

However, the extent to which ICT is leveraged in the field of e-commerce varies from one country to another, depending on the level of development of digital infrastructure, the degree of internet penetration, institutional readiness, and the advancement of electronic payment systems. In this context, a clear disparity emerges between Syria and Algeria regarding digital readiness indicators, which consequently reflects on the level of e-commerce development in both countries.

Against this backdrop, the central research problem of this study revolves around the following main question:

To what extent does Information and Communication Technology contribute to the establishment of e-commerce, and what are the differences in this regard between Algeria and Syria?

1. Significance of the Study

This study derives its significance from the importance of ICT as one of the fundamental pillars of the digital economy, and from the increasingly pivotal role that e-commerce plays in supporting economic activity and enhancing the efficiency of commercial transactions.

Furthermore, the significance of this study stems from its attempt to highlight the impact of ICT on the establishment of e-commerce through an analysis of selected digital indicators and a comparative assessment of digital readiness levels between Syria and Algeria. This comparative approach facilitates a deeper understanding of the digital divide between the two countries and helps identify the factors influencing the development of e-commerce.

2. Objectives of the Study: This study aims to achieve the following objectives:

- To highlight the role of Information and Communication Technology in supporting and enabling e-commerce.

- To analyze the current status of ICT indicators in both Syria and Algeria.

- To assess the level of digital readiness in both countries and its contribution to supporting e-commerce.

- To conduct a comparative analytical study between Algeria and Syria to identify differences in the utilization of ICT in the field of e-commerce.

- To present findings and recommendations that may contribute to improving the digital environment and promoting e-commerce development.

3. Research Methodology

The study adopts a descriptive-analytical approach through the presentation and analysis of ICT indicators related to e-commerce. Additionally, a comparative method is employed to examine Syria and Algeria in terms of their levels of digital readiness and the contribution of ICT to supporting e-commerce.

4. Structure of the Study: The study is organized into two main sections:

Theoretical Framework: This section addresses the fundamental concepts related to Information and Communication Technology, e-commerce, and the relationship between them in supporting economic activities.

Comparative Analytical Study: This section presents a comparative analysis between Syria and Algeria through an examination of ICT indicators and an assessment of their contribution to the development of e-commerce in both countries.

Theoretical Framework: Information and Communication Technology and E-Commerce

Information and Communication Technology, in its various contemporary forms—including information transmission, storage, and the exchange of goods and services that can be delivered electronically—has constituted a fundamental pillar in both international and domestic trade, particularly in developed countries. This has led to the proliferation of the concept of e-commerce, whose role has expanded significantly due to its effective impact on markets, institutional performance, and competitive capabilities.

The contemporary world is witnessing profound and rapid transformations driven by the remarkable development of Information and Communication Technology (ICT), which has become a fundamental pillar in various economic activities, particularly in both international and domestic trade. ICT, in its diverse applications—including information transmission, storage, and the electronic exchange of goods and services—has significantly reshaped the way business is conducted, especially in developed countries that have been at the forefront of this digital transformation. As a result, the concept of e-commerce has emerged as a key component of the digital economy, with its role expanding considerably due to its effective impact on market dynamics, institutional performance, and competitive advantage.

Within this context, ICT no longer merely supports traditional commercial operations; rather, it has contributed to redefining business models and restructuring global value chains. Advanced technologies such as cloud computing, big data analytics, and artificial intelligence have enabled organizations to enhance production efficiency, optimize distribution systems, and strengthen data-driven decision-making processes. Furthermore, digital platforms have played a pivotal role in reducing geographical barriers and transaction costs, thereby allowing firms—particularly small and medium-sized enterprises (SMEs)—to access international markets and compete more effectively.

Moreover, the widespread diffusion of digital technologies has fostered innovation and created new opportunities for entrepreneurship, while also promoting financial inclusion through the development of electronic payment systems and digital financial services. This transformation has facilitated secure and efficient online transactions, thereby increasing consumer trust and participation in e-commerce activities. However, despite these advantages, the expansion of e-commerce also presents several challenges, including cybersecurity risks, data privacy concerns, digital inequality, and the need for appropriate legal and regulatory frameworks. Therefore, examining the role of ICT in the development of e-commerce has become a critical academic necessity to better understand the dimensions and implications of this digital transformation, which this chapter aims to explore through both theoretical and applied perspectives.

1. Information and Communication Technology (ICT)

ICT represents an indispensable component in the contemporary world. In practice, efforts must be intensified and societal cultures developed to address the challenges of the knowledge era. The widespread dissemination of ICT has led to rapid technological, social, political, and economic transformations (Mudasiru, 2005, p. 316). Achieving numerous objectives, technology is of significant importance not only for accomplishing these goals (Gherzouli, 2011, p. 19) but also because it has become an essential necessity.

1.1. Definition of Information and Communication Technology

ICT encompasses all digital media, computing devices, and various technological software. It is a term that refers to interconnected and interrelated technologies that enhance communication capabilities and facilitate the exchange of information (Shoklovski, Palen Leysia, & Sutton, 2008, p. 1).

According to the international definition provided by the Organisation for Economic Co-operation and Development (OECD), ICT refers to those economic activities that contribute to making information visible, processing it, storing it, and transmitting it through electronic means (Bakoush, Banaoula, & Bouabdelli, 2017, p. 21).

ICT can be defined as follows:

All technological, economic, academic, and organizational activities related to technologies that enable individuals and institutions to process and transmit information anytime and anywhere in a faster and more effective manner (Barkan & Jalid, 2017, p. 40).

The convergence of three elements: microelectronics, computing, and modern communication media, encompassing all devices, systems, and software related to the automated handling of information: its acquisition, organization, processing, analysis, storage, selection, transmission over long distances, reproduction, and presentation in appropriate formats —whether visual, printed, or auditory (Eida & Omran, 2019, p. 29).

Based on the foregoing, it can be concluded that Information and Communication Technology comprises a set of techniques and inventions that deal

with various types of information and different systems employed to process media and communication content.

1.2. Components and Characteristics of ICT

ICT consists of several elements that evolve in response to continuous demand. These components include (Alaoui, 2015, pp. 237–238):

Hardware: Encompassing all types of computers, characterized by speed, lower cost, and technical capabilities surpassing human abilities.

Software: The language and means through which users interact with data stored on hardware.

Networks: These networks enable the utilization of remote communication capabilities, facilitating the easy and seamless exchange of information.

Information and Communication Technology (ICT) is a comprehensive system composed of interrelated elements that enable the collection, processing, storage, and transmission of information. Its main components include:

Hardware: Refers to the physical devices and equipment used in ICT systems, such as computers, servers, routers, smartphones, and data centers. These devices form the infrastructure that supports digital operations and communication processes.

Software: Includes operating systems, applications, and programs that control hardware and enable users to perform specific tasks. Software ranges from basic system software to advanced applications such as enterprise resource planning (ERP) and e-commerce platforms.

Networks and Telecommunications: Encompass communication systems that connect devices and facilitate data exchange, including the internet, intranets, wireless networks, and satellite communications. These networks are essential for enabling real-time communication and global connectivity.

Data and Information: Represent the raw facts and processed information that are generated, stored, and analyzed within ICT systems. Data is a critical resource that supports decision-making and strategic planning.

Human Resources (People): Include users, IT professionals, developers, and system administrators who design, manage, and utilize ICT systems. Human expertise is essential for the effective functioning and continuous improvement of ICT.

Procedures and Processes: Refer to the rules, protocols, and methods governing the operation, security, and management of ICT systems. These ensure consistency, efficiency, and reliability in digital operations.

1.3. Characteristics of ICT:

ICT is distinguished by several key features that contribute to its growing importance in modern economies:

Speed and Efficiency: ICT enables rapid processing and transmission of information, significantly reducing time and operational costs.

Connectivity and Global Reach: It allows communication and interaction across geographical boundaries, facilitating global trade and international collaboration.

Automation: ICT supports the automation of processes, reducing human intervention and increasing productivity and accuracy.

Interactivity: Enables real-time interaction between users, systems, and organizations, improving communication and service delivery.

Scalability and Flexibility: ICT systems can be easily expanded or adapted to meet changing organizational needs and technological advancements.

Accessibility: Provides users with access to information and services anytime and anywhere, particularly through mobile and cloud technologies.

Cost Reduction: Reduces transaction and operational costs by digitizing processes and minimizing the need for physical resources.

Data Management and Storage Capacity: Allows for the storage and analysis of large volumes of data, supporting data-driven decision-making.

ICT is distinguished from other technologies by several key characteristics, including: time reduction, spatial compression, sharing of intellectual tasks with machines, miniaturization, artificial intelligence, interactivity, asynchronicity, decentralization, connectivity, mobility and portability, convertibility, non-mass audience orientation, ubiquity, dissemination, and global reach.

2. E-Commerce

E-commerce emerged approximately three decades ago, and its concept evolved during the last quarter of the previous century alongside advancements in electronic devices. It serves consumer interests and preferences, thereby advancing industry and communication means—both audio and visual—bringing nations and peoples closer together despite geographical distances.

Building upon this evolution, e-commerce has progressively transformed from a complementary commercial instrument into a fundamental driver of economic growth and digital transformation at both national and global levels. This transformation has been largely supported by the rapid expansion of internet infrastructure, the widespread adoption of mobile technologies, and the continuous development of secure and efficient electronic payment systems. As a result, e-commerce has experienced accelerated growth across both developed and developing economies, contributing to the reconfiguration of traditional market structures and the emergence of a more interconnected and dynamic global marketplace.

In this regard, the expansion of e-commerce has significantly influenced consumer behavior, as individuals increasingly prioritize convenience, speed, price transparency, and access to a wide variety of products and services regardless of geographical constraints. This shift in consumption patterns has, in turn, compelled firms to adopt innovative digital strategies, invest in technological capabilities, and enhance their online presence in order to remain competitive in an increasingly digitalized environment. Businesses are now required to integrate advanced tools such as data analytics, digital marketing, and automated logistics systems to improve customer experience and operational efficiency.

Furthermore, the rise of e-commerce has contributed to the growth of new economic sectors and the promotion of entrepreneurship, particularly within small and medium-sized enterprises (SMEs), by reducing market entry barriers and providing access to global value chains. It has also strengthened the role of digital platforms as key intermediaries in facilitating transactions, connecting producers and consumers, and enabling new forms of economic interaction. In parallel, governments and international institutions have begun to recognize the strategic importance of e-commerce as a lever for economic diversification, job creation, and sustainable development, leading to increased efforts to support digital transformation through policies, infrastructure development, and capacity-building initiatives.

However, despite its numerous advantages, the rapid expansion of e-commerce also presents a set of complex challenges that require careful consideration. These include issues related to cybersecurity threats, data privacy and protection, consumer trust, digital inequality between and within countries, and the need for comprehensive and adaptive legal and regulatory frameworks. Additionally, concerns regarding taxation, electronic fraud, and cross-border trade regulations further complicate the digital commercial environment. Therefore, understanding the multifaceted nature of e-commerce and its relationship with Information and Communication Technology has become essential from both an academic and practical perspective.

Accordingly, this chapter aims to explore the evolution and development of e-commerce, analyze its economic and technological dimensions, and assess its role in shaping modern trade systems. It will also highlight the opportunities it offers for businesses and economies, while addressing the key challenges that must be overcome to ensure its sustainable and inclusive growth within the global digital economy.

2.1. Definition of E-Commerce

- E-commerce refers to the processes of marketing, selling, purchasing, and exchanging products, services, and information through computer networks and the internet (Burhan & Khattab, 2010, p. 9). It can also be described as any form of communication aimed at directly or indirectly marketing goods, services, or the image of a project, organization, or individual engaged in commercial, industrial, artisanal, or organized professional activities (Khalifa, 2013, p. 20).

- The World Intellectual Property Organization (WIPO) defines e-commerce as encompassing all electronic means used for commercial purposes. Similarly, the International Telecommunication Union (ITU) defines it as including the processes of production, advertising, sale, and distribution of products through electronic means, relying on the processing and transmission of digital data, and involving both individuals and institutions (Tarzi, 2016, p. 110).

-A widely accepted scientific definition of e-commerce refers to it as the conduct of commercial transactions through electronic networks, particularly the internet. According to World Trade Organization, e-commerce is defined as *“the production, distribution, marketing, sale, or delivery of goods and services by electronic means.”* This definition highlights the comprehensive nature of e-commerce, as it encompasses all stages of the commercial process, from production to final delivery, carried out through digital platforms.

-Similarly, Organisation for Economic Co-operation and Development provides a more operational perspective, defining e-commerce as *“the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders.”* This definition emphasizes the transactional aspect of e-commerce, focusing on the exchange process enabled by digital technologies.

- From an academic standpoint, e-commerce can therefore be understood as an integrated digital system that facilitates commercial interactions between businesses, consumers, and governments (such as B2B, B2C, and C2C models), relying on Information and Communication Technology (ICT) to ensure efficiency, speed, and global reach. These definitions collectively underline that e-commerce is not limited to online buying and selling, but rather represents a broader transformation of traditional commerce into a digitally driven ecosystem.

2.2. Characteristics of E-Commerce: The characteristics of e-commerce include:

- The prosperity of e-commerce depends on the existence of a developed economy with a broad and flexible production base, as well as a comprehensive information and communication network.

- The tradable nature of e-commerce has eliminated borders and restrictions; whereas companies previously required specific licenses and compliance with numerous regulations to sell their products, such procedures are no longer necessary.

- E-commerce enables markets to target specific demographic segments by modifying online advertisements to specify information about the intended audience, such as age, occupation, etc.

- E-commerce has eliminated paper documentation for completing transactions, from purchase orders to the electronic receipt of goods; however, this raises challenges regarding the verification and authentication of such operations.

- E-commerce represents a practical application of globalization, wherein the world functions as a small village unrestricted by spatial or temporal barriers. Nevertheless, it presents problems and challenges that require those engaging in it to ensure excellence through the following:

- Rapid delivery of new goods and services to customers;

- Continuous innovation in methods and conditions for customer service;

- Credibility in offerings, accuracy of data, and fulfillment of commitments;

- Continuous monitoring of technological developments and sustained investment in new software (Zerouki, 2024, p. 8).

2.3. The Role of ICT in Developing E-Commerce

Information and communications play an increasingly important role in economic and social development, particularly given that recent advancements in communication technology have reduced barriers to long-distance communication (Darwish Al-Leban, 2003, p. 17). In some countries, the information industry has gained such economic weight that it has become the dominant industry, replacing heavy and manufacturing industries. Consequently, some scholars argue that the economy of the future will be fundamentally based on information (Makawi, 1997, p. 35). The process of implementing and adopting e-commerce revolves around a "knowledge management" strategy through a system for collecting, storing, organizing, and retrieving data and information —a complex and intertwined process that can only be accomplished by leveraging modern technologies in the field of media and communication.

E-commerce represents one of the two components of what is known as the Digital Economy. The digital economy is based on two realities: e-commerce and information technology. In the era of computing and communication, information technology—or the information industry—is what has created the actual and tangible existence of e-commerce, as it relies on computing, communication, and various technical means for executing and managing commercial activities (Al-Mubayyidin, 2010, p. 18).

One of the most essential requirements for implementing an e-commerce project is the existence of an ICT infrastructure. This includes developing wired and wireless communication networks, providing software, equipment, and information services, ensuring universal internet access, striving to protect data, information, communications, operations, and electronic documents, and securing electronic payment processes. Notably, new risks have emerged in societies, such as cybercrimes involving sabotage, hacking, destruction, forgery of documents, and theft, which necessitate information security measures.

The banking services industry is developing new systems and applications to maximize the benefits of the latest technologies. With the emergence of e-commerce, electronic payment and settlement methods have become the cornerstone of its success and development. The success of e-commerce in its early stages relied on the use of certain available payment and settlement systems, alongside the development of some of their methods and the introduction of new methods more suited to the nature and requirements of e-commerce in its comprehensive sense, which includes conducting all types of commercial transactions, including low-value transactions, using electronic methods (Jalid & Damad, 2009, p. 81).

The fundamental role of ICT is to provide a foundation for building the information society and the digital economy. Hence, it can be asserted that ICT constitutes an appropriate technical infrastructure and a fertile ground indispensable for the application of e-commerce.

Applied Framework: A comparative analytical study between Syria and Algeria

E-commerce has become one of the most prominent manifestations of digital transformation in the modern economy, offering opportunities to expand markets, improve the efficiency of commercial transactions, and reduce costs. The development of this type of commerce depends on the availability of a suitable digital environment, including internet penetration, advancement of communication networks, adoption of ICT within institutions, and the effectiveness of electronic payment systems. In this context, both Syria and Algeria strive to keep pace with this digital transformation despite the challenges facing their digital and economic infrastructures. Therefore, studying the reality of e-commerce in Syria and Algeria through an analysis of indicators related to digital environment readiness is essential for diagnosing the level of development in this sector, identifying key factors influencing its growth, and highlighting challenges that limit its contribution to economic activity.

1. Key Indicators of E-Commerce

Discussing e-commerce necessitates first examining the digital and informational infrastructure. The most critical element in e-commerce is the infrastructure, including internet networks, advanced communication and information networks. This section addresses the key indicators relied upon for establishing e-commerce.

It is inconceivable to discuss e-commerce without addressing its environment, which primarily includes the number of internet users, as this network constitutes the foundation upon which all e-commerce operations are built. Additionally, analyzing indicators of fixed and mobile telephone networks is essential, as telephone lines represent the primary means of accessing the internet and, consequently, the electronic world. They also serve as important indicators of a society's increasing orientation toward e-commerce.

The essential requirements for ICT include software, equipment, and information services. Analyzing the indicator of ICT usage in institutions reveals that institutions facing increasingly rapid growth in the information economy urgently need to adopt the best applications for utilizing ICT (Calder & Watkins, 2008, p. 18).

Regarding the electronic payment indicator, innovation in employing information technology and the resulting e-commerce technology represents the most significant factor distinguishing the performance of one bank from another in the field of financial operations (Salah, 2010, p. 3). Both Syria and Algeria, amid the enormous technological development that has become imperative for every country to adapt and become an effective player in the economy and international exchanges, have shown interest in employing electronic payment techniques to facilitate commercial transactions. They have initiated the introduction and adoption of modern payment methods, striving for years to generalize them across their entire national territories. Among the most notable developments is the exclusive payment of all government service bills and university fees through the electronic payment system (Asad, 2024, p. 31).

2. The Reality of E-Commerce in Syria (2025)

Analyzing ICT indicators in Syria represents a fundamental step toward understanding the reality of e-commerce, as these indicators constitute the essential foundation upon which the digital economy is built. Accordingly, this section presents a set of digital indicators reflecting the level of development of the environment supporting e-commerce in Syria during 2025, with the aim of highlighting strengths and weaknesses in this domain.

Table (1):Analysis of the Reality of E-Commerce in Syria (2025)

Indicator	Value	Interpretation and Analysis	Impact on E-commerce
Internet Users Rate	35.8%	Internet penetration remains low compared to global averages, meaning that a large segment of the population has limited access to online markets.	This leads to a limited e-commerce market size and a lower number of potential online consumers.
Mobile Phone Penetration Rate	77.6%	The high mobile phone penetration reflects the availability of an important means of accessing the Internet and digital services.	It contributes to expanding opportunities for mobile commerce, especially through shopping applications.
Fixed Internet Speed	3.35 Mbps	The low speed limits the quality of access to websites and digital platforms and affects transaction speed.	This reduces the efficiency of electronic platforms and makes online purchasing processes less smooth.
Mobile Internet Speed	12–13 Mbps	Mobile Internet is more efficient than fixed Internet, increasing dependence on it for digital commercial activities.	It enhances the potential growth of e-commerce via smartphones despite weak fixed-line networks.
Smartphone Ownership	63%	A considerable proportion of the population owns smart devices that allow access to digital applications and online platforms.	This forms a supportive technological base for e-commerce through smart applications.
Use of ICT in Enterprises	Weak to Moderate	Enterprises still have limited use of digital systems and electronic marketing channels.	This leads to weak online presentation of products and services and reduces business competitiveness.
Availability of Digital Equipment in Enterprises	Low	The shortage of computers and network connectivity weakens the technical readiness of enterprises.	It hinders the development of online platforms and the management of digital business operations.
Electronic Payment Index	Very Weak	Cash payment methods are still dominant, while digital payment tools remain poorly adopted.	This represents a major obstacle to completing online transactions and limits consumer trust.
Overall Digital Readiness	Low	The digital infrastructure is incomplete, with limited technical and financial services required for e-commerce.	This slows the development of e-commerce and weakens its economic contribution.

Source: Data compiled by the researchers based on (Kemp, 2025), (International Telecommunication Union, 2025), (World Bank Group, 2025), and (UN Trade and Development, 2025).

General Analysis of Table(1):

The analysis of Syria's digital environment indicators reveals that the reality of e-commerce continues to face numerous structural and technical challenges that limit its development and desired dissemination. Despite recording a considerable rate of mobile phone penetration and smartphone ownership, the proportion of internet users remains relatively low, reflecting limited access to digital and commercial electronic services for a large segment of the population. This weakness in internet penetration directly affects the size of the electronic market, as the number of consumers capable of accessing digital platforms and conducting online commercial transactions decreases, negatively impacting the growth and expansion of e-commerce within the national economy.

Furthermore, the indicators show that fixed internet speed in Syria remains weak compared to the requirements of the modern digital economy, limiting the efficiency of using commercial websites and electronic platforms and affecting the speed of digital operations and user experience quality. Although mobile internet speed is relatively better—encouraging the use of smartphones for e-commerce—this reliance alone is insufficient to achieve an effective digital environment, particularly given the weakness of digital infrastructure and the absence of stable, high-quality communication services. This situation limits the capacity of economic institutions to develop their online commercial activities or provide high-quality electronic services capable of attracting consumers and enhancing their trust.

On another note, the weak use of ICT within institutions emerges as one of the fundamental factors hindering e-commerce development. The limited adoption of modern digital systems by institutions, coupled with insufficient technical infrastructure, reduces their capacity to establish effective electronic platforms or efficiently manage digital sales and marketing operations. This technological shortcoming affects institutional competitiveness in the digital market, resulting in limited online presence and weakening opportunities to leverage the advantages of e-commerce in expanding markets, reducing costs, and improving customer services.

Additionally, the weakness of electronic payment systems represents one of the most significant obstacles facing e-commerce in Syria. Commercial transactions

continue to rely heavily on traditional payment methods, given the limited dissemination of digital payment means and low confidence in electronic financial systems. This situation reduces the capacity of consumers and institutions to complete commercial transactions electronically and diminishes the level of security and flexibility required for successful online commercial exchanges. Consequently, the absence of an effective electronic payment infrastructure is among the most prominent factors explaining the slow growth of e-commerce and its weak contribution to economic activity.

Based on the foregoing, it can be concluded that the reality of e-commerce in Syria reflects low digital readiness resulting from the interplay of several factors, including weak internet penetration, limited efficiency of digital infrastructure, weak digital transformation within institutions, and the absence of a sophisticated electronic payment system. Despite the availability of some supportive components, such as the relative penetration of mobile phones and smartphones, these factors remain insufficient in the absence of an integrated digital environment capable of supporting e-commerce. Therefore, developing this sector requires integrated efforts, including improving communication infrastructure, expanding the use of ICT within institutions, and enhancing electronic payment systems, thereby contributing to creating a conducive environment for the growth of e-commerce and increasing its contribution to economic development.

To further support our study on the reality of communication infrastructure in Syria, the following table presents the indicator of business sector and government institution usage of networks, as included in comprehensive reports on media technologies.

Table :(2) Evolution of Network Usage Indicators in Syria (2022–2025)

Year	Business Network Usage Index	Government Network Usage Index	Interpretation	Impact on E-commerce
2022	Very Weak	Very Weak	There was an almost complete reliance on traditional methods within public and private institutions, with very limited digitalization.	This resulted in severe limitations on e-commerce activity and the absence of a supportive digital environment.
2023	Weak	Weak	A limited adoption of some digital solutions began in certain institutions, but without widespread implementation.	This led to a very slight improvement in electronic activity, without any real impact on the market.
2024	Weak to Low Moderate	Weak	There was limited expansion in internet usage within institutions, without any real digital transformation.	E-commerce remained weak, with traditional transactions continuing to dominate.
2025	Low Moderate	Weak to Low Moderate	There was a relative increase in network usage, but without digital integration or comprehensive e-government systems.	This marked a very slow beginning for e-commerce growth, but it remained unstable.

Source: Network Readiness Index (2022–2025).

The evolution of indicators for business sector and government network usage in Syria during 2022–2025 reveals that the level of digital transformation remains weak, with only minimal improvement insufficient to constitute structural change. Government institutions and business organizations continue to rely heavily on traditional management and administrative methods, with clear limitations in employing ICT and digital services. This negatively reflects on digital environment readiness and constrains e-commerce development. This delay can be attributed, alongside technical and economic factors, to political and security factors that have affected the pace of digital transformation by weakening investments in the communications sector, delaying digitalization projects, and redirecting priorities toward addressing emergency circumstances rather than developing digital infrastructure. Therefore, weak network usage within institutions reflects not only technological delay but also results from the interplay of multiple factors that have contributed to slowing the digitalization process overall.

3. The Reality of E-Commerce in Algeria (2025)

E-commerce in Algeria is witnessing gradual development during 2025, driven by improvements in ICT infrastructure and the expanding use of the internet and smartphones. Efforts to develop digital services and electronic payment systems have also contributed to enhancing the adoption of electronic transactions among individuals and institutions. In this context, the presentation of the following digital indicators aims to evaluate the reality of e-commerce in Algeria and measure its readiness for transition toward the digital economy.

Table (3): Analysis of the Reality of E-Commerce in Algeria (2025)

Indicator	Value	Interpretation and Analysis	Impact on E-commerce
Internet Users Rate	78%	This relatively high rate reflects the expansion of the digital user base and the increasing spread of digital awareness.	It contributes to expanding the electronic market and increasing demand for digital services.
Mobile Phone Penetration Rate	114%	A penetration rate exceeding the total population (multiple subscriptions) indicates a saturated mobile market.	It facilitates access to electronic platforms through mobile devices.
Fixed Internet Speed	16.2 Mbps	This reflects a relative improvement in infrastructure, although the speed remains moderate.	It improves the user experience but may still limit high-bandwidth services.
Mobile Internet Speed	26.1 Mbps	A good speed compared to the regional average, reflecting improvements in mobile network infrastructure.	It strongly supports e-commerce through applications and smartphones.
Smartphone Ownership Rate	72%	The high ownership rate indicates the widespread availability of devices that support digital applications.	It enhances mobile commerce (**m-commerce**) through application-based transactions.
Use of ICT in Enterprises	4.1 / 5	This good level reflects a gradual institutional digital transformation.	It improves the efficiency of electronic transactions within companies.
Availability of Digital Equipment in Enterprises	4.0 / 5	This indicates relatively good digital infrastructure availability within enterprises.	It facilitates the management of online stores and digital services.
Electronic Payment Index	3.9 / 5	This shows moderate to good progress in digital payment systems.	It directly supports e-commerce growth and reduces reliance on cash transactions.
Overall Digital Readiness	4.2 / 5	A moderately high level reflecting a digital environment that is continuously improving.	It provides a relatively favorable environment for the expansion of e-commerce.

Source: Prepared by the researchers based on (DataReportal, 2025), (Internet Society, 2026), and (World Economic Forum, 2026).

General Analysis of Table (3):

The ICT indicators in Algeria for 2025 reveal a relatively advanced level of digital development, primarily reflected in the high internet penetration rate of 78% and mobile phone penetration exceeding 100%, indicating significant saturation in the communications market and expanded use of digital media within society. Furthermore, improvements in fixed and mobile internet speeds reflect gradual development in digital infrastructure, directly supporting the quality of electronic services and enhancing the usability of digital platforms.

Additionally, the relatively high rate of smartphone ownership promotes the proliferation of application-based e-commerce, particularly given users' increasing reliance on mobile phones as a primary means of internet access. The development of indicators related to ICT usage within institutions and the availability of digital equipment reflects the onset of institutional digital transformation, contributing to improved transaction efficiency and facilitating the management of electronic commercial activities.

Moreover, the electronic payment indicator and overall digital readiness are at moderate to good levels, indicating improvement in the financial and regulatory environment supporting e-commerce, although this domain remains in development and has not yet reached full maturity. Accordingly, it can be concluded that Algeria possesses a promising digital foundation that positions it to expand the scope of e-commerce; however, achieving greater growth requires enhancing the inclusivity of electronic payments and further improving the quality of digital services.

4. Comparative Analysis of ICT Indicators: Syria and Algeria (2025)

The comparison between Syria and Algeria in 2025 reveals a pronounced and multifaceted digital divide across key ICT indicators, which directly shapes the trajectory and effectiveness of e-commerce development in both countries. This divergence reflects not only differences in technological infrastructure but also broader economic, institutional, and regulatory conditions that influence digital transformation processes.

In terms of digital infrastructure, Algeria demonstrates a clear advantage, particularly in internet user penetration (78% compared to 35.8% in Syria), as well as in both fixed and mobile internet speeds. These indicators highlight a more developed and accessible network environment that facilitates user engagement with digital platforms and supports the expansion of online commercial activities. In contrast, Syria continues to experience limited internet diffusion and relatively low connection quality, which restricts access to digital services and reduces the efficiency and reliability of online transactions. This gap in infrastructure significantly affects the scalability of e-commerce activities and limits market expansion.

Regarding smartphone penetration, Algeria again records higher levels, which enhances the adoption of mobile-based applications and strengthens the role of mobile commerce (m-commerce) as a key driver of digital trade. Conversely, the relatively lower penetration in Syria constrains the widespread use of digital platforms, thereby limiting consumer participation in online markets. This disparity further reflects differences in income levels, affordability of digital devices, and accessibility to modern communication technologies.

At the institutional level, Algeria exhibits a higher degree of ICT integration within both public and private sectors, as evidenced by better indicators of technology usage and the availability of digital equipment. This reflects a more advanced stage of institutional digital transformation, enabling businesses to adopt e-commerce models more efficiently and improve operational performance. In contrast, Syria remains at weak to moderate levels of ICT adoption within institutions, largely due to structural constraints, limited investment capacity, and the impact of prolonged instability, which has hindered the modernization of administrative and economic systems.

From a financial and governance perspective, the disparity becomes even more pronounced. Algeria has made relative progress in developing electronic payment systems, which play a critical role in facilitating secure and efficient online transactions. On the other hand, Syria continues to face significant limitations in this area, where the electronic payment ecosystem remains underdeveloped. This constitutes a major structural barrier to e-commerce, as the absence of reliable digital payment solutions discourages both consumers and businesses from engaging in online trade. Additionally, Algeria’s higher level of overall digital readiness indicates a more supportive regulatory and institutional framework, whereas Syria’s lower readiness reflects challenges related to governance, policy implementation, and economic constraints.

Moreover, it is important to highlight that the political and security context in Syria has played a crucial role in shaping this digital gap. Prolonged instability has negatively affected infrastructure development, reduced investment in ICT sectors, and weakened institutional capacities, all of which have slowed down the country’s digital transformation. In contrast, Algeria has benefited from relatively more stable conditions, allowing for gradual improvements in digital infrastructure and policy frameworks supporting the digital economy.

In light of these findings, it can be concluded that Algeria possesses a relatively mature and evolving digital ecosystem that provides a favorable environment for the growth and sustainability of e-commerce. Conversely, Syria continues to experience a multidimensional digital lag, characterized by weak infrastructure, limited institutional digitalization, underdeveloped electronic payment systems, and broader economic and political constraints. These factors collectively limit the ability of ICT to effectively support and expand e-commerce activities, thereby widening the digital and economic gap between the two countries.

Conclusion:

Through the comparative analysis of ICT indicators between Syria and Algeria during 2025, it is evident that there is a clear disparity in the level of digital readiness between the two countries, which directly reflects on each country's capacity to develop e-commerce.

The findings indicate that Algeria possesses a more developed digital infrastructure in terms of internet penetration, connection speed, and smartphone ownership, in addition to relative progress in ICT usage within institutions and the availability of digital equipment. Furthermore, indicators of electronic payment and overall digital readiness have recorded better levels, suggesting a more conducive environment for e-commerce growth.

Conversely, Syria has demonstrated relatively low levels across most indicators, particularly regarding internet penetration, connection quality, institutional readiness, and electronic payment systems. This reflects the existence of a clear digital divide that constrains the development of e-commerce and reduces its effectiveness in the Syrian economy.

The political and security situation in Syria represents one of the most significant factors influencing the stagnation of digital infrastructure development in general, and e-commerce growth in particular. Years of instability have contributed to weakening investments in the ICT sector, limiting the modernization of digital infrastructure, and disrupting certain economic policies supportive of digital transformation. Furthermore, this situation has affected confidence levels in electronic

transactions and the development of digital payment systems, thereby slowing the transition toward an integrated digital economy and consequently reducing opportunities for effective and sustainable e-commerce growth.

Based on the foregoing, it can be affirmed that Information and Communication Technology plays a pivotal role in supporting e-commerce; however, this role varies from one country to another depending on the level of digital development and institutional and financial readiness.

Findings:

1. A clear digital divide exists between Algeria and Syria across all ICT indicators.

2. Algeria demonstrates superiority in digital infrastructure (internet, mobile phones, speed).

3. Digital readiness in Syria is weak, particularly at the institutional and electronic payment levels.

4. The relationship between ICT development and e-commerce growth is directly proportional.

5. Financial readiness (electronic payment) is among the most critical factors determining e-commerce success.

6. Internet availability alone is insufficient; an integrated digital environment—infrastructure + institutions + electronic payment—is essential.

Based on the empirical findings, it is evident that Information and Communication Technology contributes to developing and enhancing e-commerce. The study demonstrates that as the level of ICT development increases (as in Algeria), the level of e-commerce readiness rises; conversely, as this technology weakens (as in Syria), the economy's capacity to adopt e-commerce declines.

Thus, it can be confirmed that the relationship between the two variables is directly proportional, contingent upon comprehensive digital readiness—not merely internet availability.

Recommendations:

1. It is essential to develop digital infrastructure in both Syria and Algeria by improving internet speed and quality and expanding coverage.

2. Support digital transformation within economic institutions through the integration of ICT into management, administration, and marketing.

3. Provide modern digital equipment within institutions to facilitate electronic commercial transactions.

4. Enhance electronic payment systems and expand their usage to reduce reliance on traditional cash transactions.

5. Promote awareness of electronic payment and e-commerce among individuals and institutions through education and training.

6. Improve overall digital readiness through comprehensive national policies for digital transformation encompassing all sectors.

7. Reduce the digital divide within individual countries, particularly between urban and rural areas.

8. Develop the legal framework regulating e-commerce to ensure consumer protection and the security of digital transactions.

9. Encourage investment in the digital economy and support startups in the field of e-commerce.

10. Enhance cooperation between public and private sectors to accelerate the digitalization process and expand the use of modern technology.

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