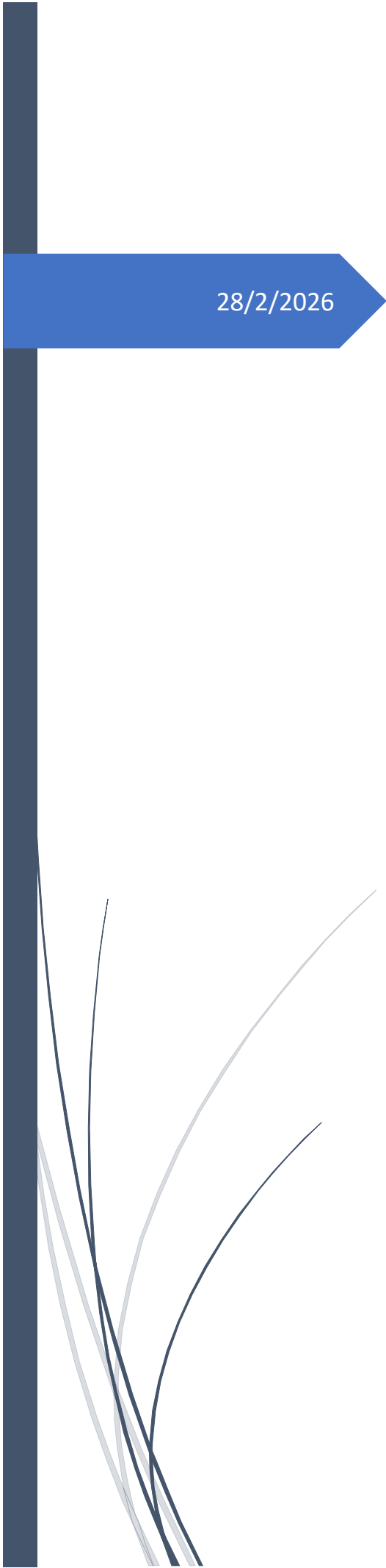


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28/2/2026

MBA

**Digital transformation and trade liberalization:
Implications for Developing Economies in the
Mediterranean Region**

Author: Irene Tsoukaki

Supervising Tutor: Theodosios Palaskas

HELLENIC OPEN UNIVERSITY

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Supervising committee

DPS: Mihiotis Athanasios

1st Supervisor: Palaskas Theodosios

2nd Supervisor: Sartzetakis Eftychios

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ACRONYMS

AfCFTA: African Continental Free Trade Area

CIS: Commonwealth of Independent States

DPA: Data Protection Authority

DSB: Dispute Settlement Body

EAC: East African Community

ECOWAS: Economic Community of West African States

FTAs: Free Trade Areas

GATS: General Agreement on Trade in Services

GATT: General Agreement on Tariffs and Trade

GDPR: General Data Protection Regulation

GSP: Generalized System of Preferences

ICT: Information and Communication Technology

IMF: International Monetary Fund

IoT: Internet of Things IoT

LDCs: Least developing countries

MNCs: Mediterranean non-EU-countries

MFN: Most Favored Nations

MTN: Multilateral Trade Negotiations

NRA: National Regulatory Agency

OECD: Organization for Economic Co-operation and Development

PIF: Pacific Islands Forum

R&D: Research & Development

SMEs: Small and medium-sized enterprises

TRIPS: Trade-Related Aspects of Intellectual Property Rights

UNCTAD: UN Trade & Development

VCR: Videocassette recorder

WTO: World Trade Organization

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Chapter 1

Introduction

Progressive elimination or reduction of restrictions on international trade is known as trade liberalization. These restrictions may include tariffs or non-tariff measures like quotas and licensing requirements. Economists typically view the relaxation or removal of these constraints as essential for fostering free trade. However, the contemporary global economy is increasingly shaped by digital technologies, services, and data flows.

International trade has altered the way the countries participate. Digital transformation with e-commerce, digital platforms and cross-border digital services has reshaped the global economy. Economies are based now more to knowledge and services. Agreements such as General Agreement on Trade (GATS) and organizations helped this shift from industrial to service-oriented economies.

Digitalization can solve many problems but also can create more. In developing countries these challenges are more significant. Transaction costs could be reduced, the access in the market share can be easier for small and medium enterprises and also their participation in global value chain can be achieved without an extensive infrastructure.

In Mediterranean region, these dynamics are particularly significant since these countries are characterized by heterogeneity, but also by their strategic position between Europe, Africa and the Middle East. Many of these economies are undergoing economic reforms in digital innovation and trade openness. However, political instability in some cases, legal framework difficulties and infrastructure disparities make the transition difficult.

Post-World War II multilateralism¹

Important historical points in trade liberalization include the **General Agreement on Tariffs and Trade (GATT)** which was established in 1947, providing a framework for industrial countries, annexed to this Agreement, to conduct negotiations that lowered tariffs, quotas and subsidies. The Bretton Woods Institutions, the International Monetary Fund (IMF) and World Bank were created at the Bretton Conference (1944) with purpose to regulate and liberalize trade. (Bretton Woods Project, 2019) The Bretton Woods Institutions and GATT are closely connected because together they formed the post-World War II international economic order.

GATT worked through a series of negotiation rounds in which each member agreed to lower trade barriers and establish rules for fair competition. It emphasized the transparency in trade policies, the gradual tariff reductions, the peaceful resolution of trade disputes and the **Non-discrimination principle** especially among the Most Favored Countries (MFN). In that principle a country must treat all trading partners equally. It must offer the same benefit in every country that cooperates. This organization remained the foundation of international trade rules until 1995, when it was replaced and expanded by the World Trade Organization (WTO).

The **Bretton Woods Institutions** were set up in 1944 to help rebuild the postwar economy based on international economic cooperation. Proponents of this institutions thought that a peaceful global economic interaction was necessary to maintain the security and to avoid the development of dangerous ideologies such as fascism and subsequently the provocation of war as they have recently experienced. (Bretton Woods Project, 2019)

The Multilateral Trade Negotiations (MTN), also called the “**Tokyo Round**” was a significant event which lasted from 1973 to 1979. It was important because except of

¹ **Multilateralism:** the principle of participation by three or more parties, especially by the governments of different countries.

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tariff reductions-which were reduced in previous rounds of negotiations, the negotiations emphasized multilateral agreements on no-tariff measures, reflecting their rising importance in international commerce. Developing countries received further improvements on tropical products through the Generalized System of Preferences (GSP). (Kemper, 1980)

The **Countervailing and Antidumping Duties Codes** updated international rules on how countries may respond to unfair trade practices as export subsidies, domestic subsidies and dumping (selling goods abroad below fair value). These codes clarified and standardized the actions governments can take to counter such practices. The U.S added a new requirement that industries prove “material injury” before duties can be imposed.

The **Customs Valuation Code** set a standard method for valuing goods to calculate import duties. These valuation procedures contribute toward certainty in trade. Both importers and exporters will calculate the duty that will be applied to an item.

The **Government Procurement Code** aimed to prevent discriminatory application of domestic rules on quality, safety and environmental standards, ensuring fair market access domestic and foreign suppliers. (Harvey, 1980)

The **Uruguay Round** was an ambitious set of international negotiations which held under the GATT sponsorship between 1986 and 1994. It led to the reduction in tariffs and the creation of World Trade Organization (WTO). It covered almost all trade policy issue, so it was the largest trade negotiation in history. The Uruguay Round marked the largest transformation of international trade rules since GATT was established. The discussions sought to expand the reach of the trading system to encompass new domains, including services (GATS- The General Agreement on Trade in Services), intellectual property (TRIPS- Trade-Related Aspects of Intellectual Property Rights), telecommunications, AIDS treatment and genes of wild rice and to overhaul trade in sensitive sectors like agriculture and textiles. (Saylor Academy- Andy Schmitz, 2012)

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To oversee and maintain all the Uruguay Round agreements, countries created the World Trade Organization (WTO), an institution based in Geneva, led by a director-general and a modest staff. The WTO carries forward GATT's goal of promoting trade liberalization and economic growth. (World Trade Organization, n.d.)

The WTO was also created to deal with disputes, which are handled by the Dispute Settlement Body (DSB). Each member country has a representative on the DSB. They have the right to object to the trade policies of another country, but only when those measures fall short of commitments outlined in WTO agreements.

The GATS (General Agreement on Trade in Services) in 1994 was an essential component of the legal framework trading system, through which WTO members commit to the liberalization of the service sectors. The GATS permitted the evolution of the global telecommunications markets for multinational telecom companies, so many members of WTO could include such commitments in their schedules. (Saylor Academy, 2012)

Shift in developing countries

During the past half century, the composition of trade has change radically. The growth of global trade has increased more rapidly than overall world output. Developing countries, excluding Eastern Europe and the former Soviet Union, achieved GDP increases more than 5 percent. Low- and middle-income countries in East Asia made the largest gains, more than 10 percent a year. In South Asia growth has increased more than 6 percent in 1996 but has decreased in India and Pakistan in 1997. Latin America and the Caribbean had a growth of 3 percent, twice the increase of 1980s. Also, Argentina, Mexico and Peru showed increasing economic growth. (Bank, 1998)

The collapse of the Soviet bloc revealed the fundamental economic weakness of centrally planned systems. The state held a monopoly on foreign trade, eliminating competition and isolating economies from foreign markets. Central planning and administrative pricing caused inefficiencies, shortages and technological stagnation.

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This refusal for free international trade created structural distortions that later made transition more painful.

The fall of the Berlin Wall (1989) and the dissolution of the Soviet Union (1991) ended political constraints that had prevented trade openness. Soviet-style communism tried to implement a non-market and non-private economy. Private ownership was unexpected, since the main idea was national economy based on state ownership or cooperatives. Once these regimes fell, opening to global markets became a critical pillar of reform.

Most former communist countries experienced strong economic growth and rising income levels relative to Western Europe after establishing market economies, though this progress was temporarily disrupted by the 2008-2009 financial crisis and the 2020 pandemic. (D., 2006)

In 2022, the World Bank explicit describes that “trade is an engine of growth that create better jobs, reduces poverty, and increases economic opportunity”. Recent studies indicate that trade liberalization boosts economic growth by about 1.0 to 1.5 percent points, leading to income gains of 10-20 percent over ten years. Since 1990, global trade has raised overall incomes by 24 percent and by 50 percent among poorest 40 percent, helping more than a billion people escape poverty.

Many developing countries struggle to benefit from global trade due to barriers such as weak infrastructure, restrictive regulations and limited market access. Poorly connected markets, as remote or landlocked regions, has limited opportunities at the liberal trade. The gains from globalization have been uneven. Asian countries, particularly China have poverty reduction, while other regions still face inequality. Rising protectionism, job concerns in advanced economies and shocks like Covid-19 and the war in Ukraine have intensified doubts about the open trade.

Even though digitalization creates opportunities for extroversion in global markets, many developing countries lack the necessary digital foundations and therefore risk being left out. Advanced and developing countries must manage to strengthen the shift

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toward skills, mobility and gender equality. Also, trade can help spread green technologies and promote environmental goods. (World Bank Group , 2022)

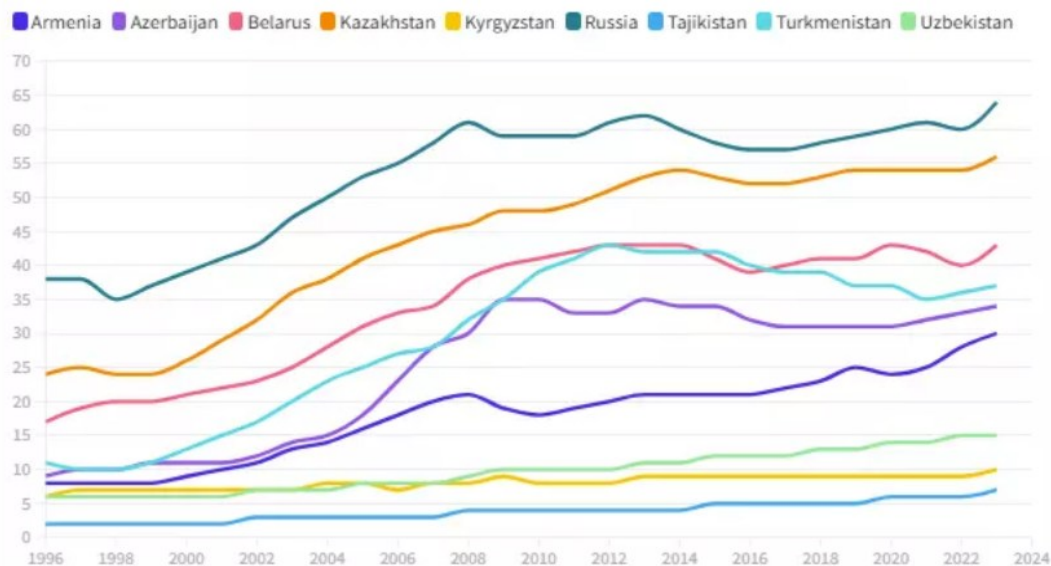


Figure 1: Post Soviet countries: GDP per capita, constant prices, purchasing power parity, 2017 international dollar, Germany = 100, 1996-2023 (IMF, 2024)

According to UNCTAD's Global Trade Update, the global trade reached a record US\$ 33 trillion in 2024. Importantly, services grew by 9%, faster than goods. This shift was due the digitalization. Remote work, digital platforms, ICT etc. are becoming more important in development trajectories. (UNtrade & development , 2025)

At the Reinventing Bretton Woods Washington Economic Festival in 2024, an important session was the “Cross-Border Payment and the Future of Money in a Deglobalized World”, the panel explored how shifting to open, frictionless systems could efficiently boost the institutions and expand access to financial services. Dante Disparte, featured Circle's Chief Strategy Officer and Head of Global Policy pointed out that *the rails on which money moves may matter more, or at least as much as, the money itself*. (Stablecoins, 2025)

Chapter 2

Digital trade liberalization and regulatory frameworks (law/policy)

The global economy is changing shape due to digital transformation and this requires governments to safeguard the potential of e-commerce and digital trade, especially in developing countries. UNCTAD's e-Trade Implementation Support Mechanism helps countries to act on the policy recommendations in their e-Trade Readiness Assessments and national e-commerce strategies.

Developing countries, such as Fiji, Kenya, Trinidad and Tobago and Zambia have adopted e-commerce policy. Emerging governance frameworks in Cambodia, Jordan and Vanuatu are positive steps but has limited resources and capacities. Developments and initiative which help businesses and consumers, with less bureaucracy which in turn is a significant problem due to insufficient digitalization have been observed. Such examples are fibre optic in Côte d'Ivoire and Digital Acceleration Project in Malawi.

With the cooperation of three organizations- the East African Community (EAC), the Economic Community of West African States (ECOWAS) and Pacific Islands Forum (PIF), regulations on e-commerce, data tracking and protection and cybersecurity invest in trust of these countries. Such mechanisms emerge in Rwanda, Tunisia and Senegal but often are constrained by limited capacities and funding. Also, digital education and youth entrepreneurship programs are initiatives that aim to close the gaps in digital inequality. (development, 2025)

A challenge for industrial policy is the development of digital technologies. Companies work with on-line platforms and offer real or virtual services and shape new conditions in a multi-faceted market. The economic value of these companies does not depend on the actual value but a perceived value, there must be a different way of market capitalization. Several internet-based companies have higher rankings in those

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indicators, so they are more ahead of industrial companies. Unfortunately, in Europe the digital sector is still developing compared the US.

Worldwide trade liberalization along with the completion of the internal market of the EU created intense pressures on small and medium-sized enterprises in relation to global trade competitors such as China. This competition originated either from emerging countries on low or medium technology, where European countries failed to integrate R & D technologies.

Intangible assets

Intangible assets in digital economy such as intellectual property, brand reputation and customer data affect business value. Businesses, investors and regulators must develop better methods for valuing these assets. New technologies can enhance the measurement and analysis of these assets. Digital platform companies like e-commerce and social media businesses need this approach. The ability to reflect the true value of intangible assets has implications for long term sustainability, planning, a broader financial system and transparency. (Theodore Narku Odonkor, 2023)

R&D investments is an important factor that contribute to accumulation of knowledge, innovative property and economic competencies and show the importance of these intangible assets. In Europe, R&D expenditure has increased but is still low relatively to US or Japan.

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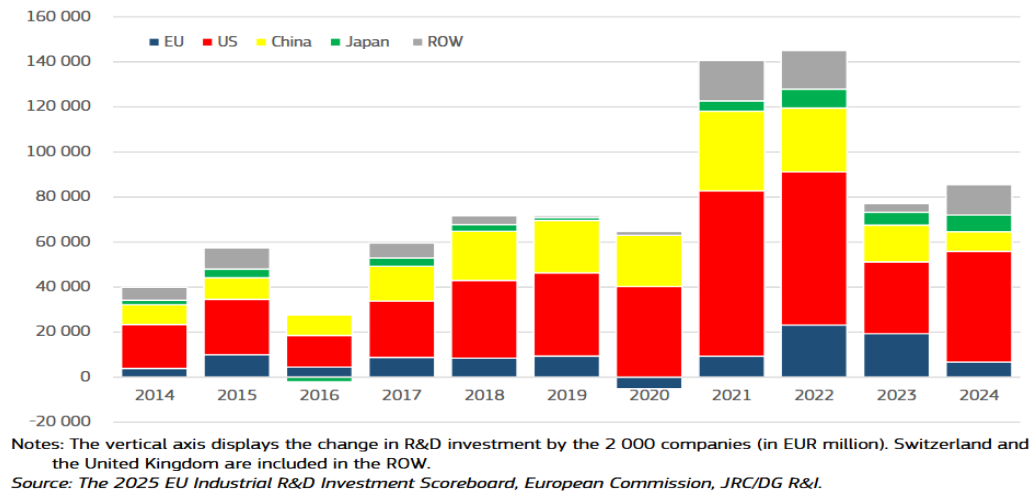


Figure 2: R&D investment growth by regions, top 200 companies, 2014-2024

Cyber-policy

Europe has been reluctant to adopt digital technologies, so its sector is relatively small compared to that of US. There is a low growth performance both in terms of actual value as well as in prospective. Another problem is that Europe does not invest in digital assets like data, which is the raw material for ICTs technologies. This factor leads to lower willingness to invest in ICT and so reduces the ability to fully benefit from it. Competitiveness also fails in the industrial sector.

European industrial policy makers should prevent market abuse, with regulations that includes merger control, state aid and competitive behavior. The diffusion of digital technologies blurs the boundaries of competition since market dynamics changes much faster and the product cycles are unfolding quicker, so the regulations policy must be updated more frequently. (Gruber, 2016)

The digital infrastructure in Africa is expanding, but also lags behind the demand for digital services. All Africa nations are members of the AfCFTA (African Continental Free Trade Area), which is responsible for the digital policymaking. Morocco has an

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ambitious plan: Digital Morocco 2030. The country envisions to be a digital hub in North Africa. Economy and public services will be transformed through digital technology and innovation. Up to 3000 Start-up companies will be enlisted to complete this digital transformation. 270000 new jobs, new skilled jobs will be created till 2030 and Morocco will be the first in ranking on the UN's E-Government Development Index among African countries. (AFRICA, 2025)

Industry 4.0 started in the 2010 range and includes the digital transformation of manufacturing industries. It is supported by 5G network and encompasses technologies like 3D printings, the Internet of Things (IoT), artificial intelligence and big data analytics. It focuses on interconnectivity, automaton, machine learning and real-time data. It refers to the fourth industrial revolution. The first started in 1780s with the mechanized production with water and steam power. The second started in 1870s with the mass production aided by electrical power. The third was in the late 1960s and included the automated production aided by computers and electronics.

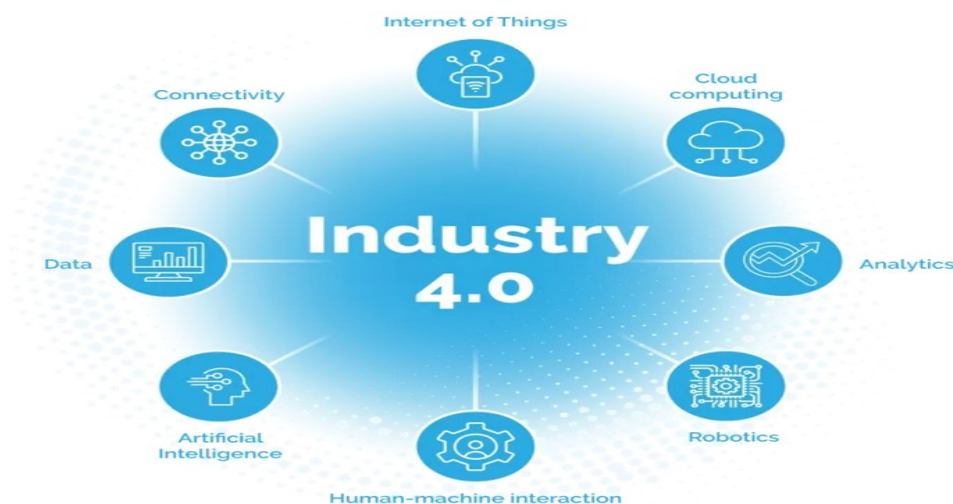


Figure 3: industry 4.0 by TELECTIC communications

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Cyber-security

Cyber security in EU is one of the most important priorities. The attack on crucial information infrastructures and on commercial and personal data led the EU to publish its first cyber security strategy - "An Open, Safe and Secure Cyberspace" - in 2013. Priorities of this strategy was the cyber resilience for the European companies, the reduce of the cybercrime, the establishment of a coherent cyberspace policy for EU. (Commission, 2013)

Cyber security in Africa nations is a primary factor. A threshold level for internet penetration is 10-15% of significant hacking activities. In many African countries this level has already been reached. Two countries with the highest cyber piracy in 2017 were from Africa. Zimbabwe and Libya. The unlicensed software in these countries were 89% and 90% respectively.

Increasing cyberattacks in these nations may be due to low budget for cybersecurity from governments and organizations. It is reported to be less than 1% and many organizations has zero budget. Surveys has shown that many banks have insecure systems and have high risk from threats, such as hacking, malicious insiders etc. other reasons could be the lack of skills among Internet users, weak legislations and law enforcement. (John Otozi Ugah, 2025)

Digital Policy flexibility

The 1995 Barcelona Declaration signed by EU, North Africa and other Mediterranean nations was to create an area of peace, stability and shared prosperity. This plan should be achieved through political, social, cultural and financial cooperation. The political and security partnership was based on human rights and fundamental principles like rules of the law and democracy, territorial integrity, elimination of weapons of mass destruction, combat terrorism, organized crime and drug trafficking.

The economic and financial partnership led to the creation of Free Trade Areas (FTAs), which involves the gradual elimination of customs barriers and are in accordance with the rules of the WTO. The partners agreed to focus on several priorities to support the

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establishment of FTA. These included creating a customs system for cumulating the origin of goods, adjusting rules on competition and intellectual property and fostering market economy reforms, private sector development, technology transfer and integration of Mediterranean non-EU-countries (MNCs).

The countries aimed to modernize economic and social structures and support vulnerable populations, promote free trade, harmonize customs procedures and remove unnecessary technical barriers in agricultural trade. Their cooperation aimed to strengthen regional cooperation among MNCs and create supportive environment for industry and SMEs (small and medium-sized enterprises). The partners should identify priorities in transport infrastructure, information technology development and telecommunications modernization. (EUR-Lex)

The Ankara agreement, is an agreement between Türkiye and European Economic Community (the Eu's predecessor) which was signed in 1963. It was an agreement for the abolition of tariffs and quotas on industrial goods. In December 2016, the Commission proposed to modernize the Customs union and to extend trade relations to areas such as services, public procurement and sustainable development. (EU)

Personal data regulation in EU

European data protection law- especially the **General Data Protection Regulation** (GDPR)- is the core of the regulatory framework shaping how personal data must be handled. The GDPR introduces strong accountability obligations for data controllers, such as transparency, lawful basis for processing, data minimization, purpose limitation and security requirements. Also creates rights for individuals, which are meant to rebalance the relationship between users and data-processing entities. There rights include access, erasure, rectification, portability, objection and others.

Regulators-like Data Protection Authority (DPA)- are responsible for monitoring compliance, issuing sanctions and providing guidance. The regulatory model strengthens protection and accountability, but its effectiveness depends on enforcement,



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resources and the ability of citizens to understand and use their rights in practice.

(Miranda, 2018)

Chapter 3

The digital inequality

The digital divide problem presents a substantial barrier to hinder the growth of the advanced IT talent pool essential for sustaining e-commerce in every country. The trajectory that each person will follow through their studies in order to acquire the necessary knowledge and the appropriate life opportunities are different aspects of everyday life and are largely related to the ease of using new technologies.

Even though governments give attention to growth in the e-commerce activities with ultimate goal to bridge this digital gap, many low-income households have been labelled as “have not” groups in central cities and rural areas, rural youth, less educated households and senior citizens. These inequities can be addressed with more data on each household with the use of communications technologies.

Although recent years, reports suggest that there is an increasing access to personal computers, modems and online services, at the same time a large gap has been observed between different groups according to inequalities in income, race and geographic characteristics.

Information goods such as TVs, radios and VCRs diffuse more rapidly than information services such as telephones, cable or electricity which require an essential public infrastructure. Also, goods require purchase, whereas services require subscription, which low-income household cannot afford.

Other perspectives about these gaps in digital domain are related with political and economic benefits. Low-income communities cannot pressure their governments for infrastructure in telecommunications due to lack of information or because they have other priorities such as health care or child care services. (Lentz, 2016)

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Digital inequality and international economic law

Digitalization and datafication are advancing rapidly but their positive impacts are distributed unevenly among nations and populations. To prevent these gains from captured by only a few, coordinated cross-border approach is needed. Digital platforms and broadband infrastructure cannot be addressed separately. These issues at each layer are interconnected, dealing with one layer in isolation risks missing the broader digital ecosystem.

Digital infrastructure allows people to participate in the digital economy which helps them to have a better life. The COVID-19 crisis was a characteristic demonstration of the need to bridge the digital divide. In the USA the online delivery, e-commerce, e-education and e-health has increased by 20-40% since the pandemic.

These market dynamics lead to strong information and power asymmetries between platforms and individuals. At the developing countries with 47% and particularly the least developing countries (LDCs) with only 19% of individuals were online in 2019, shows that the digital divides persist between more and less connected communities and people. The technology evolution will exacerbate the current digital divide, since it demands high levels of investments required to adopt 5G network.

Telecom liberalization removed the cross-subsidies that once supported universal service. In competitive markets, providers prioritize urban customers, leaving rural and low-income users behind. Although market competition may boost broadband deployment, it tends to privilege high-revenue areas, meaning that access becomes plentiful overall but remains unevenly shared across different communities.

Inequality exists also at datafication. Digital markets are structured around data-driven business models, where personal data is treated as an economic asset. Large technology companies rely on data collection, profiling and targeted advertising to generate revenue, which creates incentives to gather as much data as possible. Even when regulation exists, market incentives can undermine accountability, because maximizing

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profit encourages extensive data exploitation. Companies implement accountability frameworks mainly to maintain legitimacy and avoid sanctions. (Miranda, 2018)

The USA and East Asia account for 90% of the market for large-scale digital platforms, whereas Africa and Latin America's combined share comprises only 1% of the market. The most important feature of a digital platform is the scale, because in this way gain access to more and more of its user's data. Such examples are Amazon, Google, Facebook, Baidu and Alibaba. Their assets are data and is becoming a form of capital. We can talk for data capitalism, which works both domestically on countries home populations but also on global scale. (Peng, 2022)

Policy and services in Africa

Africa has remained behind in telecommunications development. Political instability or dysfunctional stability, such as dictatorships would not let the countries to function realistically. Decaying institutions, which cannot prepare African youth for the 21th century innovations in telecommunications. Low literacy rates and low levels of development of the various media of communications-radio, newspapers, television-are in accordance with the development in telecommunications.

It is essential for African nations the innovation in telecommunications. The countries that lack technology infrastructure cannot compete effectively in global economy. The World Bank warns that if African countries cannot take advantage of the information revolution, then they may be crashed by it.

To remove the barrier to telecommunications development in Africa was to adopt policies that are almost of radical nature in these sectors. These included the commercialization, the liberalization and the privatization. That means that government should have put distanced itself from the management and adopted a more businesslike approach. Also, should have moved from monopoly toward open entry market. And finally, should have increased the participation of private sector in ownership and control of telecommunications infrastructure. (M'Bayo, 2018)

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This was achieved to a large extent. Most countries have multiple mobile operators that compete one another. Many nations have moved from monopoly to duopoly. Many countries have adopted a relatively liberal policy toward foreign investment in telecommunications networks allowing foreigners to own more than 51 per cent of these companies. Initially, the investments were from US and European Union. Now, the investments has come from investors in other developing countries, such as Morocco. More than 80 per cent of the investment in private operators has come from companies based in Africa or Middle East. Only recently investors from developed countries re-entered Africa's telecommunications. Vodafone, based in the United Kingdom, bought 70 percent of Ghana Telecom in 2008, and France Telecom bought 51 percent of Telecom Kenya.

All African countries have introduced new laws and regulations for telecommunications. A national regulatory agency (NRA) has to establish the rules that protect the customers by regulating prices and monitoring quality in services. (Mark Williams, 2011)

On 21 March 2018, African countries pledged to launch the African Continental Trade Area (AfCFTA), which is important for services and negotiating of goods. This agreement is very important since is the biggest agreement in the history of the World Trade Organization (WTO). The goal of this agreement is to integrate and the facilitate the movement of entrepreneurs, goods and investments.

Services are so attractive lately is because of the GDP of countries. The World Bank Development Indicators show that services account for about 50% in low-income countries, 54% in middle-income countries and about 72% in high-income countries. The liberalization of trade in services in combination with the evolution of technologies and e-commerce helped to boost the economic sector and not only, to eliminate monopolies and protect intellectual property. (Simo, 2020)

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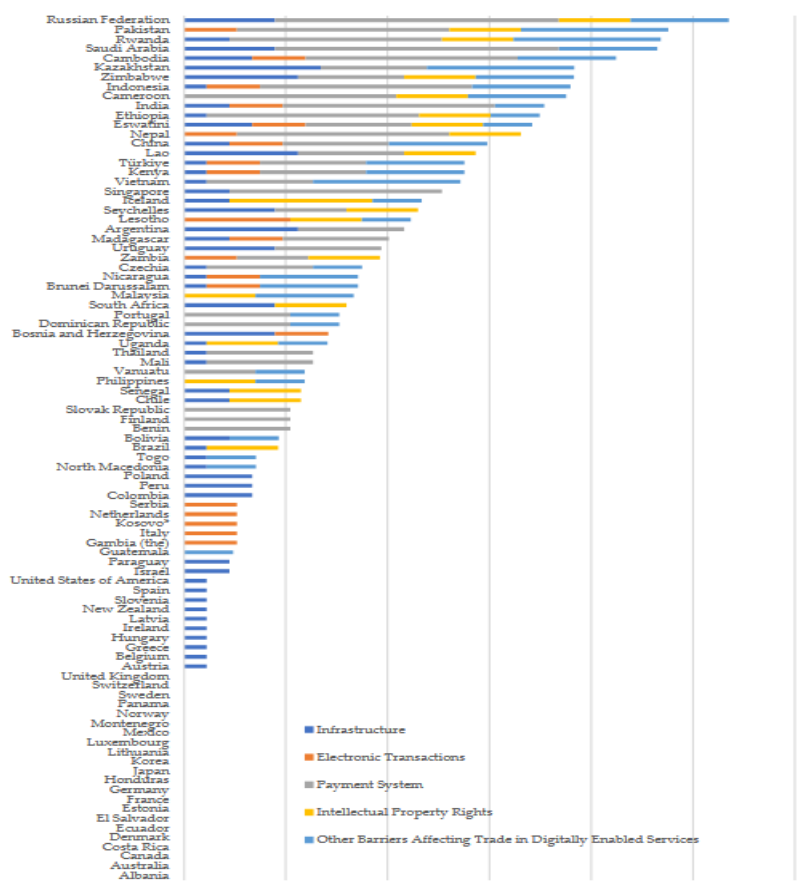
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Digital upgrading

The development of information and communication technology (ICT) has increased the digital upgrading of industries and has decreased the barriers for knowledge acquisition. Also has helped countries to enhance their international competitiveness and promote the technological innovation.

However, digital trade is concerned and responsible for the transmission of sensitive data, such as personal privacy and national security information. Unfortunately, the infrastructure in many countries is lacking or the government regulations create obstacles to the free flow of trade. (Wang, 2025)

Figure 4: Total restrictiveness index affecting digital services trade. Oeconomia copernicana



Chapter 4

Descriptive Exploration

The purpose of this paper is to determine the effects of trade liberalization in digital and e-commerce services, like:

- enabling factors such as infrastructure, skills, regulations,
- trade openness, such as e-commerce restrictions, data flows and digital tariffs,
- trust, such as cybersecurity, privacy protection
- Cross border digital trade, meaning the actual flows or performance in cross-border digital services,
- Digital services restrictiveness and
- GDP per capita

The selected countries are located at the foot of the Mediterranean basin and were selected from three different continents, Africa, Asia and Europe. The goal of this dissertation is to study the evolution of these countries in digital services due to the trade liberalization, but also how the economy of the region may be affected due to the structure and the law framework of their governments.

The indicators studies are listed below with their corresponding diagrams. The data has been downloaded from the Organization for Economic Co-operation and Development (OECD). The selected countries are: Algeria, Egypt, European Union, Israel, Morocco and Türkiye. The initial thought included Lebanon, but the data from OECD had zero prices.

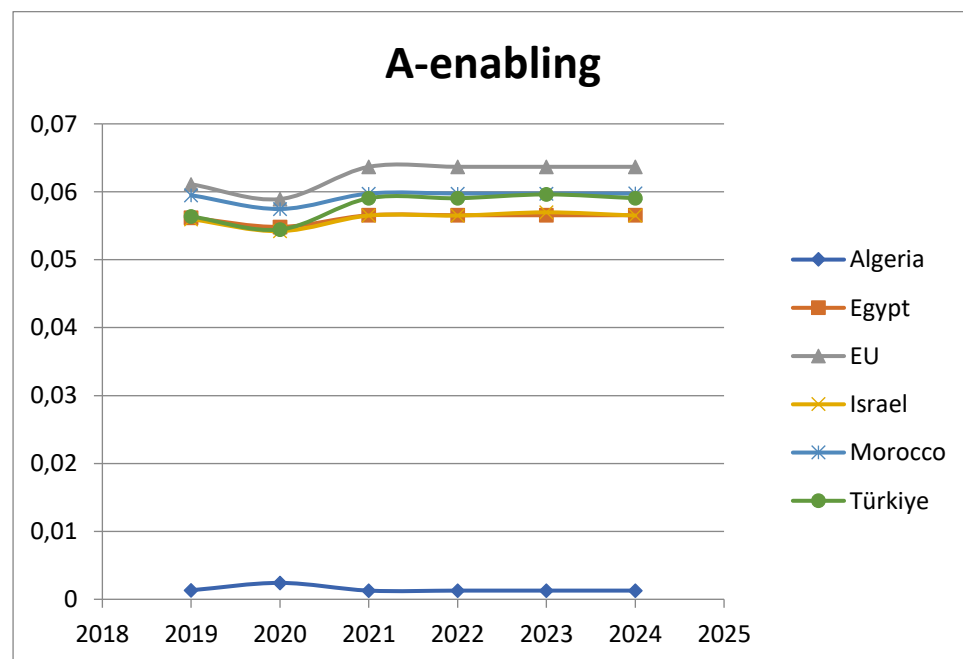
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Digital enabling environment

It includes factors such as infrastructure, digital skills, connectivity and general readiness to support digital economy.

The A-enabling component shows a heterogeneity across EU and neighboring countries. The highest score is EU score from 0,056 in 2017 to 0,0637 in 2024, which reflects the maturity in law framework and an advanced digital infrastructure. Israel and Turkey are also improved through the years. Egypt and Morocco seem to have major improvements in digital evolution and e-commerce. Unfortunately, Algeria has no significant increase in these scores through the years, indicating a structural barrier to digital trade readiness.

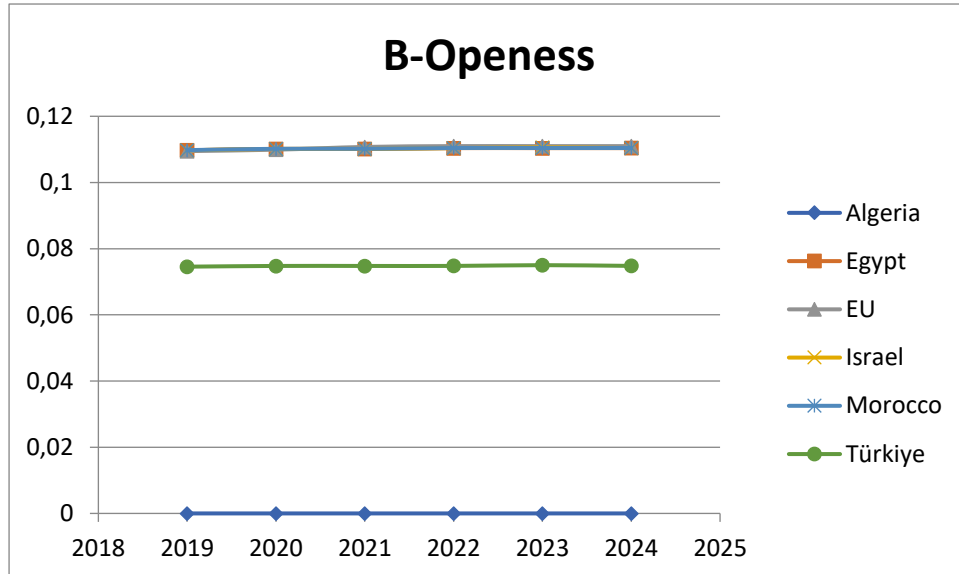


B- Openness

B-Openness captures how open and accessible a country is for digital trade. If it has a higher score then it has a greater openness to digital trade.

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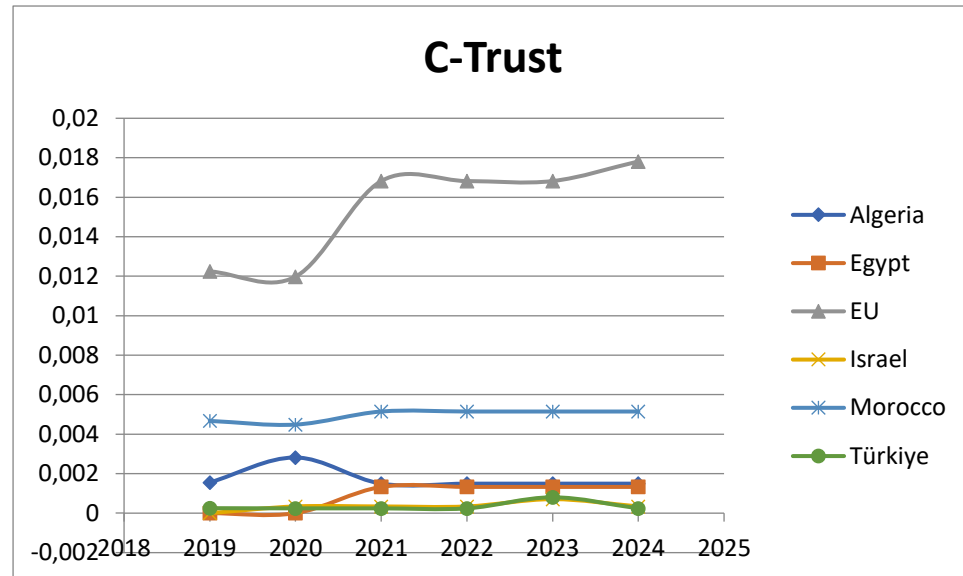
The graphic reveals that no country has an extreme increase or decrease over time. Digital trade openness changes slowly. EU displays the highest level of digital trade openness, followed by Israel, Egypt and Morocco, forming a group of consistently open markets. Türkiye, however, remains significantly below this group, indicating a lower degree of integration in digital trade. Algeria has extremely low openness or has no available data.

C-Trust

C-trust refers to trust in digital systems, consumer protection, cybersecurity readiness, privacy protection and reliability. The graphic shows significant disparities across the European neighborhood.

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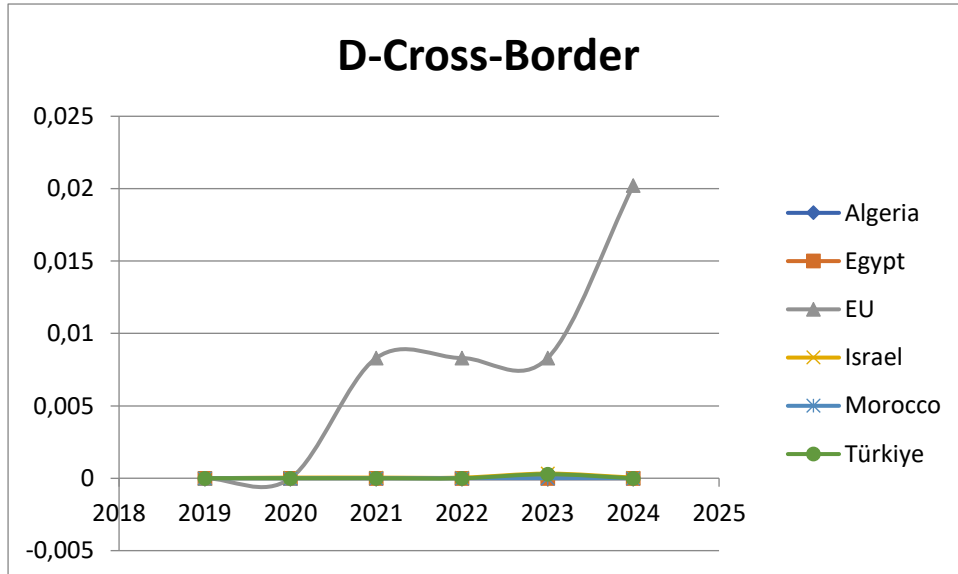
The EU consistently has the greatest scores, reflecting an advanced regulatory environment, including General Data Protection Regulation (GDPR). Egypt and Israel demonstrate a limited user trust but with a modest progress after 2020. Morocco and Algeria maintain relatively low and stable levels of digital trust, with only minor improvements. Türkiye records the lowest trust index values throughout the period, which indicate persistent gaps in trust, cybersecurity and consumer protection. The trust landscape is highly uneven.

D-Cross Border

This variable shows how the data flows, which are the rules that describe the openness or the restrictiveness of data movement. As we can see Algeria, Morocco and Egypt have no measurable digital trade integration. Israel shows a lightly integration into global trade. Türkiye becomes active in 2023 and does not show a consistent policy alignment. EU increases through the years the integration.

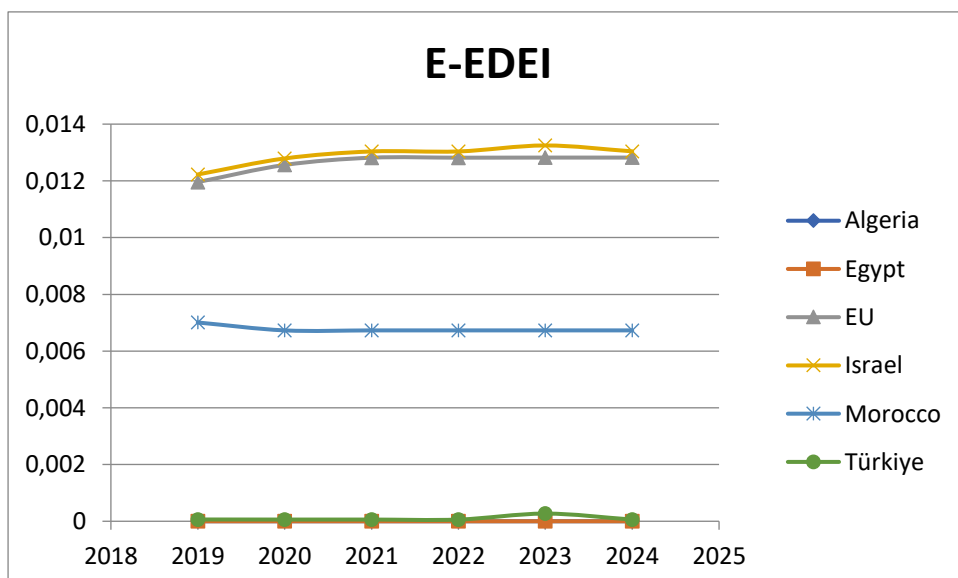
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E-EDEI

The variable E-EDEI is a very important since shows the strength of local e-commerce rules. EU strengthens its digital market, data protection and e-commerce fluency. Israel also shows a strong tech ecosystem and cybersecurity. Morocco has a moderate digital strength. Türkiye has a low integration and consistent. Algeria and Egypt show no measurable digital economy integration.



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Robustness

To assess the robustness, I conduct three alternative specifications: weighted institutional variables, unweighted variables and models controlling for economic size through log-transformed GDP.

Weighted institutional variables

Table 1

$A_enabling = 39 \cdot 10^{-5} + 0.669 \cdot RTA_A_enabling + 0.96 \cdot WTO_A_enabling$
$B_Openness = -1.7 \cdot 10^{-5} + 0.0025 \cdot RTB_B_Openness + 0.988 \cdot WTO_B_enabling + 0.0083 \cdot INDIGO$
$C_trust = 1.86 \cdot 10^{-19} + 1 \cdot RTA_C_trust - 7.54 \cdot 10^{-18} \cdot INDIGO_r$
$D_Cross = 3.1 \cdot 10^{-19} + 1 \cdot RTA_D_Cross - 3.8 \cdot 10^{-18} \cdot INDIGO_r$
$E_EDEI = 2.66 \cdot 10^{-5} + 1 \cdot RTA_E_EDEI + 0.9882 \cdot WTO_E_EDEI$

Unweighted variables

Table 2

$A_enabling = 4.6 \cdot 10^{-6} + 0.296 \cdot RTA_A_enabling + 0.978 \cdot WTO_A_enabling + 5.83 \cdot 10^{-16} \cdot GDP + 0.0081 \cdot INDIGO$
$B_Openness = -5.4 \cdot 10^{-5} + 0.12 \cdot RTB_B_Openness + 0.99 \cdot WTO_B_enabling + 2.52 \cdot GDP - 0.00054 \cdot INDIGO$
$C_trust = 0 + 1 \cdot RTA_C_trust$
$D_Cross = 4.36 \cdot 10^{-20} + 1 \cdot RTA_D_Cross_{it} - 5.1 \cdot 10^{-32} \cdot GDP_{o,it} - 2.1 \cdot 10^{-19} \cdot INDIGO_r$
$E_EDEI = 1.83 \cdot 10^{-6} + 0.93 \cdot RTA_E_EDEI + 0.9988 \cdot WTO_E_EDEI - 9.2 \cdot 10^{-19} \cdot GDP_o + 4.84 \cdot 10^{-5} \cdot INDIGO_r$

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log-transformed GDP

Table 3

$A_enabling = -0,00651 + 0,487 * RTA_A_enabling + 0,9775 * WTO_A_enabling + 0,000581 * \log GDP + 0,007241 * INDIGO$
$B_Openness = -0,00296 + 0,16 * RTB_B_Openness + 0,999 * WTO_B_enabling + 2,62 * 10^{-4} * \log GDP - 0,00041 * INDIGO$
$C_trust = 2,43 * 10^{-17} + 1 * RTA_C_trust + 0 * WTO_C_trust - 2,1 * 10^{-18} * \log GDP_o - 1,7 * 10^{-18} * INDIGO_r$
$D_Cross = 1,54 * 10^{-18} + 1 * RTA_D_Cross, it + 0 * WTO_D_Cross - 1,3 * 10^{-19} * \log GDP_o - 4,3 * 10^{-19} * INDIGO_r$
$E_EDEI = 3,66 * 10^{-05} + 0,930 * RTA_E_EDEI + 0,999 * WTO_E_EDEI - 3,1 * 10^{-06} * GDP_o + 5,29 * 10^{-05} * INDIGO_r$

The most important determinant of integration are the regional trade agreements and WTO membership. Across all specifications, these two factors remain stable. GDP exhibits limited explanatory power particularly in weighted and log-transformed models.

The weighted variables show the structural role of the institutions and explain integration outcomes, since the coefficients on RTA and WTO are close to 1. Unweighted models reduce mechanical dependence and confirm that the dominance of institutions is not artifact of weighting. Log- transformed GDP variables control the macroeconomic scale and so institutional factors remain the principal determinants of integration outcomes.

The selection of these three specifications allows the distinction between structural institutional quality, raw associations and effects onto macroeconomic scale. Overall, these results provide strong evidence that economic integration depends by institutions and secondary by macroeconomic size and regulatory quality. The analysis does not

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claim causal identifications but provides robust evidence of the institutional effect onto economic integration.

Descriptive statistics

Table 4	Mean	Median	Min	Max	St.Dev.	N
A_enabling	0,033056	0,043503	0,000172	0,05	0,019249	36
B_openness	0,050449	0,06303	0	0,067349	0,023772	36
C_trust	0,002341	0,000202	0	0,013554	0,004704	36
D_Cross	0,000169	0	0	0,00241	0,000452	36
E_EDEI	0,001264	0,000151	0	0,004819	0,001795	36
RTA	0,000374	7,53E-05	0	0,001958	0,000701	36
WTO	0,000912	0	0	0,003012	0,00131	36
logGDP	11,73214	11,64619	11,11238	12,55901	0,483988	36
INDIGO	0,08728	0,105881	0,000373	0,138133	0,043039	36

This table show us that integration outcomes are rare and uneven. Institutions matter a lot. This supports the main finding. At this table we can see that dependent variables exhibit relatively small values consistent with weighted measures of institutional integration. The highest average among the outcomes has B-Openness, while trust and cross-border shows very low mean values. The overall integration index (E_EDEI) remains low on average suggesting integration occurs only partial like European Union, which is a great example for interconnection between countries through trade. RTA and WTO indices show low means and medians, which mean that uneven participation intensity across the sample.

The log-transformed GDP, shows variation across countries. The institutional indicator (INDIGO) shows substantial variability, which reflect that these countries have different law environments and regulations.

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Multicollinearity

The problem with the data from OECD is that gives $R^2=1$ and that indicates that there must be a data structure problem. So, I gather data from WTO database and I used indicators with digital environment like telecommunications, computers and information services exports. The data are transformed into logarithms to address skewness and scale differences across countries. The results are shown above.

Digital Exports

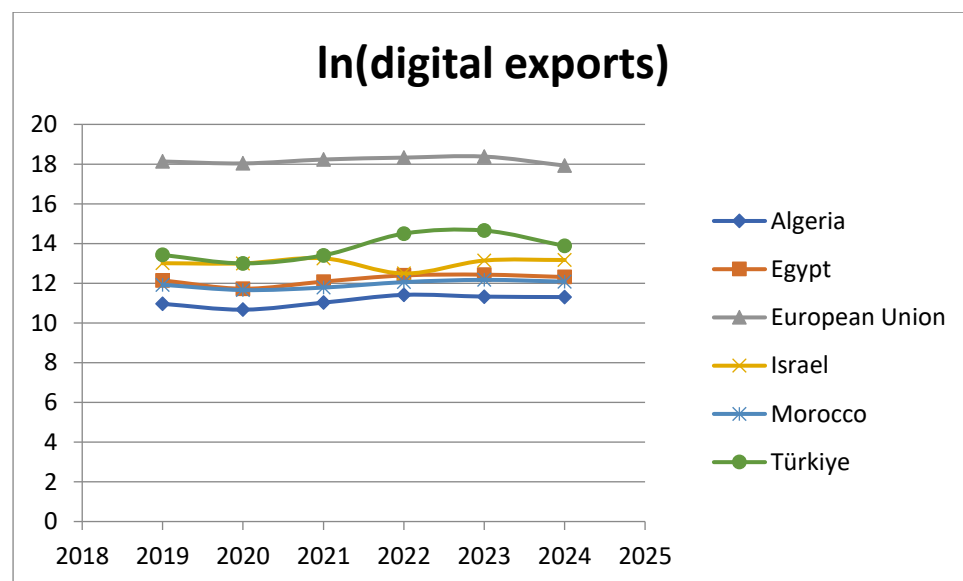


Table 5

Table 5	Mean	Median	Min	Max	St.Dev.	N
Ln(Dig. Exports)	13,37	12,46086	10,66937	18,37812	2,360301	36

The Table 5 reports descriptive statistics for the natural logarithm. The range reflects an inequality between economies. The standard deviation shows moderate dispersion across observations and the mean and median are close and shows an almost symmetrical distribution.

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Table 6
$\text{Ln}(\text{Digital exports}) = -35,17 + 19,55 \text{ A-enabling} + 1,77 \ln \text{GDP}$
$\text{Ln}(\text{Digital exports}) = -35,5926 + 18,465 \text{ B-Openness} + 1,77 \ln \text{GDP}$
$\text{Ln}(\text{Digital exports}) = -12,85 + 281,08,55 \text{ C-Trust} + 0,945 \ln \text{GDP}$
$\text{Ln}(\text{Digital exports}) = -30,245 + 1152,573 \text{ D-Cross} + 1,61 \ln \text{GDP}$
$\text{Ln}(\text{Digital exports}) = -23,2425 + 524,74 \text{ E-EDEI} + 1,33 \ln \text{GDP}$

The Table 6 shows that countries with a better regulatory framework (A_Enabling positive) export more digital services. B_Openess also is positive and this shows that open markets and fewer barriers increase the digital activity. C_Trust is strong positive and this suggests the trust on institution is crucial for e-commerce. Also, D-Cross Border is strong positive and shows that countries with a better flow on data have a better digital global connectivity. E_EDEI is also strong positive and suggests that countries with a healthy digital ecosystem have more opportunities for increased exports.

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Conclusion

During the past half century, the composition of trade has change radically. The growth of global trade has increased more rapidly than overall world output. This study examines the relationship between e-commerce, policy conditions, law frameworks, and institutions participation in Mediterranean developing economies.

The results suggest that a country must invest in digital infrastructure, must pass laws that help the country take advantage of trade liberalization. Another important factor is cyber security, which build trust in digital transactions.

Digitalization and datafication are advancing rapidly but their positive impacts are distributed unevenly among nations and populations. Africa has remained behind in telecommunications development. To remove the barrier to telecommunications development in Africa has to adopt policies that are almost of radical nature in these sectors. These included the commercialization, the liberalization and the privatization.

The global economy is shifting very fast due to digital transformation and this requires governments to safeguard the potential of e-commerce and digital trade, especially in developing countries. Organizations like UNCTAD's e-Trade Implementation Support Mechanism, the East African Community (EAC), the Economic Community of West African States (ECOWAS) and Pacific Islands Forum (PIF), help countries to act on the policy recommendations in their e-Trade Readiness Assessments and national e-commerce strategies, regulations on e-commerce, data tracking and protection and cybersecurity invest in trust of these countries.

The 1995 Barcelona Declaration signed by EU, North Africa and other Mediterranean nations which led to the creation of Free Trade Areas (FTAs), the Ankara agreement, an agreement between Türkiye and European Economic Community (the Eu's predecessor) should lead to the gradual elimination of customs barriers and should be in accordance with the rules of the WTO. The political and security partnership is based on human rights and fundamental principles like rules of the law and democracy,

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territorial integrity, elimination of weapons of mass destruction, combat terrorism, organized crime and drug trafficking.

All African countries have introduced new laws and regulations for telecommunications. A national regulatory agency (NRA), the African Continental Trade Area (AfCFTA) are efforts that protect the customers by regulating prices and monitoring quality in services.

In Mediterranean basin, the integration is highly uneven. European Mediterranean countries have a larger integration in digital trade, due to shared rules and regulation with the EU, free trade agreements, and strong institutional ties, which reflects the maturity in law framework and an advanced digital infrastructure.

Israel and Turkey are also improved through the years. Egypt and Morocco seem to have major improvements in digital evolution and e-commerce. Morocco seems like is trying to achieve its goal. To be “Digital Morocco 2030”.

Unfortunately, Algeria has no significant increase in these scores through the years, indicating a structural barrier to digital trade readiness.

Three specifications, the weighted variables, the unweighted models, the log-transformed GDP variables allows the distinction between structural institutional quality, raw associations and effects onto macroeconomic scale. These results do not provide strong evidence because the data are correlated. Data from WTO transformed into natural logarithms shows strong evidence that infrastructure, skills institutional reliability and law frameworks are essential for trade economy growth, through foreign investment, competitiveness and tech reliability.

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SUMMARY

Trade liberalization is the progressive elimination or reduction of restrictions in international trade. The global economy is reshaped and on these days is more to knowledge and services and is characterized by digital technologies and e-commerce.

In Mediterranean region, these dynamics are more polar. Their heterogeneity and their strategic position between Europe, Africa and the Middle East explain the reason of this subject selection in this dissertation.

Important agreements like General Agreement of Tariffs and Trade (GATT), the Tokyo Round and most important the Uruguay Round and Institutions like Bretton Woods Institutions, the International Monetary Fund (IMF), World Bank and others were responsible for the formation of international trade rules, including services (GATS), intellectual property (TRIPS), and telecommunications.

Lack of digital foundations, infrastructure, cyber policy and security lead to digital inequality. Regulations, data tracking, cyber security, digital education are some initiatives that aim to close these gaps. Digital technologies in EU has a low growth performance due to lack of data adoption of digital technologies. African countries have an expanding digital infrastructure but they cannot satisfy the market demands. Morocco has a plan for extensive digitalization by 2030.

In this dissertation, we have seen that the integration is highly uneven between these Mediterranean countries. EU countries show better digital infrastructure, stronger institutional ties, better free trade agreements, which suggest maturity in law frameworks, digitalization and datafication.

ΠΕΡΙΛΗΨΗ

Η απελευθέρωση του εμπορίου είναι η σταδιακή εξάλειψη ή μείωση των περιορισμών στο διεθνές εμπόριο. Η παγκόσμια οικονομία αναδιαμορφώνεται και στις μέρες μας επικεντρώνεται περισσότερο στη γνώση και τις υπηρεσίες και χαρακτηρίζεται από τις ψηφιακές τεχνολογίες και το ηλεκτρονικό εμπόριο.

Στην περιοχή της Μεσογείου, αυτές οι δυναμικές είναι πιο πολωμένες. Η ετερογένεια και η στρατηγική τους θέση μεταξύ Ευρώπης, Αφρικής και Μέσης Ανατολής εξηγούν τον λόγο επιλογής αυτού του θέματος σε αυτή τη διατριβή.

Σημαντικές συμφωνίες όπως η Γενική Συμφωνία Δασμών και Εμπορίου (GATT), ο Γύρος του Τόκου και ο πιο σημαντικός Γύρος της Ουρουγουάη, καθώς και θεσμοί όπως οι θεσμοί Bretton Woods, το Διεθνές Νομισματικό Ταμείο (ΔΝΤ), η Παγκόσμια Τράπεζα και άλλοι υπεύθυνοι για τη διαμόρφωση των κανόνων του διεθνούς εμπορίου, συμπεριλαμβανομένων των υπηρεσιών (GATS), της πνευματικής ιδιοκτησίας (TRIPS) και των τηλεπικοινωνιών.

Η έλλειψη ψηφιακών θεμελίων, υποδομών, πολιτικής και ασφάλειας στον κυβερνοχώρο οδηγεί σε ψηφιακή ανισότητα. Οι κανονισμοί, η παρακολούθηση δεδομένων, η ασφάλεια στον κυβερνοχώρο, η ψηφιακή εκπαίδευση είναι μερικές πρωτοβουλίες που στοχεύουν στο να κλείσουν αυτά τα κενά. Οι ψηφιακές τεχνολογίες στην ΕΕ έχουν χαμηλή απόδοση ανάπτυξης λόγω της έλλειψης υιοθέτησης δεδομένων από τις ψηφιακές τεχνολογίες. Οι αφρικανικές χώρες έχουν μια αναπτυσσόμενη ψηφιακή υποδομή, αλλά δεν μπορούν να ικανοποιήσουν τις απαιτήσεις της αγοράς. Το Μαρόκο έχει ένα σχέδιο για εκτεταμένη ψηφιοποίηση έως το 2030.

Σε αυτήν την εργασία, θα δούμε ότι η ενσωμάτωση είναι εξαιρετικά άνιση μεταξύ αυτών των μεσογειακών χωρών. Οι χώρες της ΕΕ παρουσιάζουν καλύτερη ψηφιακή υποδομή, ισχυρότερους θεσμικούς δεσμούς, καλύτερες συμφωνίες ελεύθερων συναλλαγών, γεγονός που υποδηλώνει ωριμότητα στα νομοθετικά πλαίσια, την ψηφιοποίηση και την επεξεργασία δεδομένων.

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